

# SERVICE INFORMATION

## Trucks

Group **28**

Release **03**

Engine Control Module (ECM), Aftertreatment Control Module  
(ACM), Electrical System Version 4

Diagnostic Trouble Codes (DTC)

From Build Date 1.5.2016





# Foreword

The descriptions and service procedures contained in this manual are based on designs and technical studies carried out through January 2016.

The products are under continuous development. Vehicles and components produced after the above date may therefore have different specifications and repair methods. When this is deemed to have a significant bearing on this manual, an updated version of this manual will be issued to cover the changes.

The new edition of this manual will update the changes.

In service procedures where the title incorporates an operation number, this is a reference to an V.S. T. (Volvo Standard Times).

Service procedures which do not include an operation number in the title are for general information and no reference is made to an V.S.T.

Each section of this manual contains specific safety information and warnings which must be reviewed before performing any procedure. If a printed copy of a procedure is made, be sure to also make a printed copy of the safety information and warnings that relate to that procedure. The following levels of observations, cautions and warnings are used in this Service Documentation:

**Note:** Indicates a procedure, practice, or condition that must be followed in order to have the vehicle or component function in the manner intended.

**Caution:** Indicates an unsafe practice where damage to the product could occur.

**Warning:** Indicates an unsafe practice where personal injury or severe damage to the product could occur.

**Danger:** Indicates an unsafe practice where serious personal injury or death could occur.

**Mack Trucks, Inc.**  
Greensboro, NC USA

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|                                                                    |     |
|--------------------------------------------------------------------|-----|
| <b>Troubleshooting</b> .....                                       | 2   |
| Engine Control Module (ECM) Diagnostic Trouble Codes (DTCs) .....  | 2   |
| Aftertreatment Control Module (ACM) Diagnostic Trouble Codes ..... | 208 |



# Troubleshooting



## Troubleshooting

# Engine Control Module (ECM) Diagnostic Trouble Codes (DTCs)

### Table of Contents — Engine Management System (EMS) Fault Codes

|                                                                                  |         |
|----------------------------------------------------------------------------------|---------|
| U000188 CAN Communication Backbone 2 Net                                         | page 14 |
| U001088 CAN Communication Backbone 1 Net                                         | page 14 |
| U010100 Lost Communication with TECU                                             | page 14 |
| P034031 Camshaft Position Sensor "A" Bank 1 or Single Sensor                     | page 15 |
| P034138 Camshaft Position Sensor A Circuit Range/Performance                     | page 15 |
| P042000 Catalyst System Efficiency Below Threshold                               | page 15 |
| P054100 Intake Air Heater A Circuit Low                                          | page 18 |
| P054300 Intake Air Heater A Circuit Open                                         | page 18 |
| P001676 Crankshaft Position - Camshaft Position Correlation                      | page 19 |
| P007164 Ambient Air Temperature Sensor Range/Performance                         | page 19 |
| P02CD00 Cylinder 1 Fuel Injector Offset Learning at Max Limit                    | page 20 |
| P02CF00 Cylinder 2 Fuel Injector Offset Learning at Max Limit                    | page 21 |
| P02D100 Cylinder 3 Fuel Injector Offset Learning at Max Limit                    | page 22 |
| P02D300 Cylinder 4 Fuel Injector Offset Learning at Max Limit                    | page 23 |
| P02D500 Cylinder 5 Fuel Injector Offset Learning at Max Limit                    | page 24 |
| P02D700 Cylinder 6 Fuel Injector Offset Learning at Max Limit                    | page 25 |
| P033531 Crankshaft Position Sensor "A" page                                      | 26      |
| P033531 Crankshaft Position Sensor A Circuit Range/Performance                   | page 26 |
| P033900 Crankshaft Position Sensor A Circuit Intermittent                        | page 26 |
| P203F00 Reductant Level Low                                                      | page 27 |
| P203F00 Reductant Tank Temperature Sensor Circuit Range/Performance              | page 27 |
| P208064 Exhaust Gas Temperature Sensor Circuit Range/Performance Bank 1 Sensor 1 | page 28 |
| P220013 NOx Sensor Bank 1 Sensor 1                                               | page 28 |
| P220164 NOx Sensor Bank 1 Sensor 1                                               | page 29 |
| P060100 Internal Control Module Memory Check Sum Error                           | page 30 |
| P061700 Starter Relay Circuit High                                               | page 30 |
| P063051 VIN Not Programmed or Incompatible - ECM/PCM                             | page 30 |
| P066800 PCM/ECM/TCM Internal Temperature Sensor Circuit Low                      | page 31 |
| P06B100 Sensor Power Supply A Circuit Low                                        | page 31 |
| P06B200 Sensor Power Supply A Circuit High                                       | page 31 |
| P06B400 Sensor Power Supply B Circuit Low                                        | page 32 |
| P06B500 Sensor Power Supply B Circuit High                                       | page 32 |

|                                                                                            |         |
|--------------------------------------------------------------------------------------------|---------|
| P20EE00 SCR NOx Catalyst Efficiency Below Threshold (Bank 1)                               | page 32 |
| P26067F Intake Air Heater B Circuit Range/Performance                                      | page 33 |
| P023400 Turbocharger/Supercharger Overboost Condition                                      | page 34 |
| P029900 Turbocharger/Supercharger Underboost                                               | page 34 |
| U300001 Electronic control unit                                                            | page 35 |
| U300041 Electronic control unit                                                            | page 36 |
| U300044 Electronic control unit                                                            | page 36 |
| U300045 Electronic control unit                                                            | page 36 |
| U300049 Electronic control unit                                                            | page 36 |
| P007015 Ambient Air Temperature Sensor "A"                                                 | page 37 |
| P007200 Ambient Air Temperature Circuit Low                                                | page 37 |
| P009A00 Engine Air Intake Temperature - Correlation                                        | page 38 |
| P011013 Intake Air Temperature Sensor 1 Bank 1                                             | page 38 |
| P011200 Intake Air Temperature Sensor 1 Circuit Low Bank 1                                 | page 39 |
| P01162A Engine Coolant Temperature Circuit Range/Performance                               | page 39 |
| P011700 Engine Coolant Temperature Circuit Low                                             | page 40 |
| P012200 Throttle/Pedal Position Sensor/Switch "A" Circuit Low                              | page 40 |
| P012300 Throttle/Pedal Position Sensor/Switch "A" Circuit High                             | page 41 |
| P021700 Engine Coolant Over Temperature Condition                                          | page 41 |
| P040100 Engine Exhaust Gas Recirculation 1 Valve Position Flow Insufficient Detected       | page 42 |
| P040200 Engine Exhaust Gas Recirculation 1 Valve Position Flow Excessive Detected          | page 43 |
| P048013 Fan 1 Control Circuit                                                              | page 44 |
| P050013 Wheel-Based Vehicle Speed                                                          | page 44 |
| P051B64 Engine High Resolution Crankcase Pressure Circuit Range/Performance                | page 44 |
| P051A13 Crankcase Pressure Sensor                                                          | page 45 |
| P051D00 Engine High Resolution Crankcase Pressure                                          | page 46 |
| P052300 Engine Oil Pressure Circuit High                                                   | page 46 |
| P052400 Engine Oil Pressure Too Low                                                        | page 46 |
| P222613 Barometric Pressure Circuit                                                        | page 47 |
| P222900 Barometric Pressure Circuit High                                                   | page 47 |
| P226600 Water In Fuel Indicator Circuit Low                                                | page 47 |
| P244B00 Aftertreatment 1 Diesel Particulate Filter Differential Pressure Too High (Bank 1) | page 48 |
| P246300 Particulate Filter Restriction - Soot Accumulation Bank 1                          | page 49 |
| P250C00 Engine Oil Level Circuit Low                                                       | page 49 |
| P250F00 Engine Oil Level Too Low                                                           | page 49 |
| P255613 Engine Coolant Level Sensor/Switch                                                 | page 50 |
| P255800 Engine Coolant Level Circuit Low                                                   | page 51 |
| P255900 Engine Coolant Level Circuit High                                                  | page 51 |

|                                                                                 |         |
|---------------------------------------------------------------------------------|---------|
| P256000 Engine Coolant Level Low                                                | page 51 |
| P256300 Engine Intake Manifold #1 Pressure Circuit Range/Performance            | page 52 |
| P257831 Turbocharger Speed Sensor                                               | page 52 |
| P207F00 Reductant Quality                                                       | page 53 |
| P108600 Oil Level Moderately Low                                                | page 53 |
| U014100 Lost Communication With VMCU                                            | page 54 |
| P229F64 NOx Sensor Gas Outlet Removed                                           | page 54 |
| P229E13 NOx Sensor Bank 1 Sensor 2                                              | page 55 |
| P220B1C NOx Sensor Supply Voltage Circuit Bank 1 Sensor 2                       | page 55 |
| P220F93 NOx Sensor Heater Control Circuit Range/Performance Bank 1 Sensor 2     | page 56 |
| P208E00 Aftertreatment Reagent Dosing Valve Clogged                             | page 57 |
| P215A64 Vehicle Speed - Wheel Speed Correlation                                 | page 58 |
| P069200 Fan 1 Control Circuit High                                              | page 58 |
| P069100 Fan 1 Control Circuit Low                                               | page 58 |
| U015500 Lost Communication With Instrument Panel Cluster (IPC) Control Module   | page 59 |
| P052013 Engine Oil Pressure Sensor/Switch "A"                                   | page 59 |
| P260513 Intake Air Heater "B" Control                                           | page 59 |
| P06E800 Sensor Power Supply "C" Circuit High                                    | page 60 |
| P06E700 Sensor Power Supply "C" Circuit Low                                     | page 60 |
| P00AF00 Turbocharger/Supercharger Boost Control "A" Module Performance          | page 61 |
| P066613 Control Module Internal Temperature Sensor "A"                          | page 61 |
| P040C00 Exhaust Gas Recirculation Temperature Sensor "A" Circuit Low            | page 61 |
| P030100 Cylinder 1 Misfire Detected                                             | page 62 |
| P020113 Cylinder 1 Injector "A"                                                 | page 63 |
| P030300 Cylinder 3 Misfire Detected                                             | page 63 |
| P020313 Cylinder 3 Injector "A"                                                 | page 64 |
| P020413 Cylinder 4 Injector "A"                                                 | page 65 |
| P020513 Cylinder 5 Injector "A"                                                 | page 65 |
| P020613 Cylinder 6 Injector "A"                                                 | page 65 |
| P220E93 NOx Sensor Heater Control Circuit Range/Performance (Bank 1 Sensor 1)   | page 66 |
| P250A13 Engine Oil Level Sensor                                                 | page 66 |
| P026C00 Fuel Injection Quantity Lower Than Expected                             | page 67 |
| P026D00 Fuel Injection Quantity Higher Than Expected                            | page 69 |
| P245364 Diesel Particulate Filter Pressure Sensor "A" Circuit Range/Performance | page 70 |
| P249F00 Excessive Time To Enter Closed Loop DPF Regeneration Control            | page 71 |
| P24A000 Closed Loop DPF Regeneration Control At Limit - Temperature Too Low     | page 72 |
| P20DC00 Exhaust Aftertreatment Fuel Supply Control Stuck Closed                 | page 73 |
| P20CF7A Exhaust Aftertreatment Fuel Injector "A" Stuck Open                     | page 75 |

|                                                                                    |          |
|------------------------------------------------------------------------------------|----------|
| P269800 Exhaust Aftertreatment Fuel Injector "A" Performance                       | page 75  |
| P20D000 Exhaust Aftertreatment Fuel Injector "A" Stuck Closed                      | page 76  |
| P200200 Diesel Particulate Filter Efficiency Below Threshold (Bank 1)              | page 77  |
| P208464 Exhaust Gas Temperature Sensor Circuit Range/Performance (Bank 1 Sensor 2) | page 79  |
| P242B64 Exhaust Gas Temperature Sensor Circuit Range/Performance (Bank 1 Sensor 3) | page 80  |
| P020213 Cylinder 2 Injector "A"                                                    | page 81  |
| P030600 Cylinder 6 Misfire Detected                                                | page 81  |
| P24A100 Closed Loop DPF Regeneration Control At Limit - Temperature Too High       | page 82  |
| P245900 Diesel Particulate Filter Regeneration Frequency (Bank 1)                  | page 83  |
| P24A200 Diesel Particulate Filter Regeneration Incomplete (Bank 1)                 | page 84  |
| P040B64 Exhaust Gas Recirculation Temperature Sensor "A" Circuit Range/Performance | page 86  |
| P052164 Engine Oil Pressure Sensor/Switch Range/Performance                        | page 87  |
| P050700 Idle Control System - RPM Higher Than Expected                             | page 87  |
| P206B64 Reductant Quality Sensor Range/Performance                                 | page 88  |
| P030200 Cylinder 2 Misfire Detected                                                | page 89  |
| P030400 Cylinder 4 Misfire Detected                                                | page 90  |
| P030500 Cylinder 5 Misfire Detected                                                | page 90  |
| P054F00 Idle Control System - Fuel Quantity Higher Than Expected                   | page 91  |
| P050600 Idle Control System - RPM Lower Than Expected                              | page 93  |
| P030000 Random Misfire Detected                                                    | page 92  |
| P25793A Turbocharger Speed Sensor "A" Circuit Range/Performance                    | page 94  |
| P220300 NOx Sensor Circuit High Bank 1 Sensor 1                                    | page 95  |
| P242800 Exhaust Gas Temperature Too High                                           | page 95  |
| P100113 Engine stop switch                                                         | page 96  |
| P100211 Preheat Relay                                                              | page 96  |
| P100212 Preheat Relay                                                              | page 97  |
| P100213 Preheat Relay                                                              | page 97  |
| P102111 Volvo Compression Brake (VCB) Control Circuit                              | page 97  |
| P102112 Volvo Compression Brake (VCB) Control Circuit                              | page 98  |
| P102113 Volvo Compression Brake (VCB) Control Circuit                              | page 98  |
| U010E00 Lost Communication With Reductant Control Module                           | page 98  |
| U012900 Lost Communication With Brake System Control Module                        | page 99  |
| P019513 Engine Oil Temperature Sensor "A"                                          | page 99  |
| P20FE9A Reductant Metering Unit Performance                                        | page 99  |
| P026500 Injector 2 Short Circuit High                                              | page 100 |
| P026800 Injector 3 Short Circuit High                                              | page 101 |
| P027100 Injector 4 Short Circuit High                                              | page 101 |
| P027400 Injector 5 Short Circuit High                                              | page 101 |

|                                                                                                       |          |
|-------------------------------------------------------------------------------------------------------|----------|
| P027700 Injector 6 Short Circuit High                                                                 | page 102 |
| P019664 Oil Temperature                                                                               | page 102 |
| P019700 Oil Temperature Short Circuit Low                                                             | page 102 |
| P026200 Injector 1 Short Circuit High                                                                 | page 103 |
| P20F400 AdBlue Consumption Too Low                                                                    | page 103 |
| U029E00 Lost Communication With NOx Sensor "B"                                                        | page 103 |
| U029D00 Lost Communication With NOx Sensor "A"                                                        | page 104 |
| U010C00 Lost Communication With Turbocharger/Supercharger Control Module A                            | page 104 |
| P203B00 Aftertreatment Reagent Level Warning                                                          | page 104 |
| U016700 Lost Communication With Vehicle Immobilizer Control Module                                    | page 105 |
| P220A1C NOx Sensor Supply Voltage Circuit (Bank 1 Sensor 1)                                           | page 105 |
| U042600 Invalid Data Received From Vehicle Immobilizer Control Module                                 | page 106 |
| P22A100 NOx Sensor Circuit High Bank 1 Sensor 2                                                       | page 106 |
| P113F11 Buffered Idle Validation Switch Wire - VECU Side                                              | page 106 |
| P113F12 Buffered Idle Validation Switch Wire - VECU Side                                              | page 107 |
| P114113 Buffered Idle Validation Switch Wire - ECM Side                                               | page 107 |
| P114123 Buffered Idle Validation Switch Wire - ECM Side                                               | page 107 |
| P114124 Buffered Idle Validation Switch Wire - ECM Side                                               | page 108 |
| P114212 Fan Thermal Switch                                                                            | page 108 |
| P114213 Fan Thermal Switch                                                                            | page 109 |
| P114000 Volvo Compression Brake (VCB) Control Oil Temperature Too Low                                 | page 109 |
| P06DD00 Engine Oil Pressure Control Circuit Performance/Stuck Off                                     | page 109 |
| P113711 Oil Thermostat                                                                                | page 110 |
| P113712 Oil Thermostat                                                                                | page 110 |
| P113713 Oil Thermostat                                                                                | page 110 |
| P011164 Intake Air Temperature Sensor 1 Circuit Range/Performance Bank 1                              | page 111 |
| P114500 Reductant Level Moderately Low                                                                | page 111 |
| P115000 Throttle/Pedal Position Sensor/Switch "A"/"D" Voltage Correlation                             | page 112 |
| P114800 Lost Communication With ECM According To Turbocharger/Supercharger Control Module "A"         | page 112 |
| P11497E Intake Air Heater "B" Circuit                                                                 | page 112 |
| P213600 Throttle/Pedal Position Sensor/Switch "A"/"C" Voltage Correlation                             | page 113 |
| P006E00 Turbocharger/Supercharger Boost Control "A" Supply Voltage Circuit                            | page 113 |
| P021900 Engine Overspeed Condition                                                                    | page 113 |
| P115100 Aftertreatment System Over Temperature                                                        | page 114 |
| P26047F Intake Air Heater "A" Circuit Range/Performance                                               | page 114 |
| P115400 Body Control Module "A" Lost Communication With Instrument Panel Cluster (IPC) Control Module | page 115 |
| P115500 Lost Communication with Aftertreatment Diesel Particulate Filter Regeneration Inhibit Switch  | page 115 |
| P008B00 Low Pressure Fuel System Pressure - Too High                                                  | page 115 |

|                                                                                     |          |
|-------------------------------------------------------------------------------------|----------|
| U032300 Software Incompatibility With Instrument Panel Control Module               | page 116 |
| U033100 Software Incompatibility With Body Control Module "A"                       | page 116 |
| U301700 Control Module Timer/Clock Performance                                      | page 116 |
| P117600 Starter Motor Deactivated - Over Temperature                                | page 117 |
| P117700 Starter Motor Deactivated - Gearbox Not in Neutral                          | page 117 |
| P117900 Starter Motor Deactivated - PTO Active                                      | page 117 |
| U1FFF68 Factory Mode Active                                                         | page 118 |
| P040A13 Exhaust Gas Recirculation Temperature Sensor "A"                            | page 118 |
| P052712 Fan Speed Sensor Circuit Range/Performance                                  | page 118 |
| P054E00 Idle Control System - Fuel Quantity Lower Than Expected                     | page 119 |
| P004607 Turbocharger/Supercharger Boost Control "A" Circuit Range/Performance       | page 120 |
| P222764 Barometric Pressure Sensor "A" Circuit Range/Performance                    | page 120 |
| P24A400 Diesel Particulate Filter Restriction - Soot Accumulation Too High (Bank 1) | page 121 |
| P009700 Intake Air Temperature Sensor 2 Circuit Low (Bank 1)                        | page 121 |
| P009513 Intake Air Temperature Sensor 2 Bank 1                                      | page 121 |
| P268300 Engine Coolant Bypass Valve Control Circuit High                            | page 122 |
| P268200 Engine Coolant Bypass Valve Control Circuit Low                             | page 122 |
| P268113 Engine Coolant Bypass Valve "A" Control                                     | page 123 |
| P011513 Engine Coolant Temperature Sensor 1                                         | page 123 |
| P012800 Coolant Thermostat (Coolant Temp Below Thermostat Regulating Temperature)   | page 123 |
| P042200 Catalyst 2 Efficiency Below Threshold (Bank 1)                              | page 124 |
| P245700 Exhaust Gas Recirculation Cooler Efficiency Below Threshold                 | page 127 |
| P040913 EGR Differential Pressure Sensor                                            | page 128 |
| P046C64 EGR Differential Pressure Sensor Circuit Range/Performance                  | page 128 |
| P040600 EGR Differential Pressure Sensor Circuit High                               | page 129 |
| P269000 Cylinder 5 Injector Data Incompatible                                       | page 130 |
| P269100 Cylinder 6 Injector Data Incompatible                                       | page 130 |
| P026A00 Charge Air Cooler Efficiency Below Threshold                                | page 130 |
| P02CC00 Cylinder 1 Fuel Injector Offset Learning at Min Limit                       | page 131 |
| P268C00 Cylinder 1 Injector Data Incompatible                                       | page 132 |
| P268D00 Cylinder 2 Injector Data Incompatible                                       | page 133 |
| P268E00 Cylinder 3 Injector Data Incompatible                                       | page 133 |
| P268F00 Cylinder 4 Injector Data Incompatible                                       | page 133 |
| P050200 Vehicle Speed Sensor "A" Circuit Low                                        | page 133 |
| P05E400 Park Brake Sensor/Switch Circuit Low                                        | page 134 |
| P269A00 Exhaust Aftertreatment Fuel Injector "A" Circuit High                       | page 134 |
| P269900 Exhaust Aftertreatment Fuel Injector "A" Circuit Low                        | page 135 |
| P269713 Exhaust Aftertreatment Fuel Injector "A"                                    | page 135 |

|                                                                                      |          |
|--------------------------------------------------------------------------------------|----------|
| P20DE00 Exhaust Aftertreatment Fuel Pressure Sensor Circuit Range/Performance        | page 135 |
| P20DD13 Exhaust Aftertreatment Fuel Pressure Sensor                                  | page 137 |
| P20E000 Exhaust Aftertreatment Fuel Pressure Sensor Circuit High                     | page 137 |
| P053E00 Crankcase Pressure Too High                                                  | page 138 |
| U012100 Lost Communication With Anti-Lock Brake System (ABS) Control Module          | page 138 |
| P226C00 Turbocharger Boost Control "A" Slow Response                                 | page 138 |
| P04D900 Closed Loop EGR Control At Limit - Flow Too Low                              | page 139 |
| P04DA00 Closed Loop EGR Control At Limit - Flow Too High                             | page 140 |
| P040313 EGR "A" Control                                                              | page 141 |
| P048900 EGR "A" Control Circuit Low                                                  | page 142 |
| P02D400 Cylinder 5 Fuel Injector Offset Learning At Min Limit                        | page 142 |
| P02D600 Cylinder 6 Fuel Injector Offset Learning At Min Limit                        | page 143 |
| P02D000 Cylinder 3 Fuel Injector Offset Learning At Min Limit                        | page 144 |
| P02CE00 Cylinder 2 Fuel Injector Offset Learning At Min Limit                        | page 145 |
| P02D200 Cylinder 4 Fuel Injector Offset Learning At Min Limit                        | page 146 |
| P25AB00 Piston Cooling Oil Control Circuit High                                      | page 147 |
| P25AA00 Piston Cooling Oil Control Circuit Low                                       | page 147 |
| P25AC00 Piston Cooling Oil Control Circuit Performance/Stuck Off                     | page 148 |
| P210900 Throttle/Pedal Position Sensor "A" Minimum Stop Performance                  | page 148 |
| P216300 Throttle/Pedal Position Sensor "A" Maximum Stop Performance                  | page 148 |
| P006964 Manifold Absolute Pressure - Barometric Pressure Correlation                 | page 149 |
| P20D713 Exhaust Aftertreatment Fuel Supply Control                                   | page 149 |
| P20DA00 Exhaust Aftertreatment Fuel Supply Control Circuit High                      | page 150 |
| P20D900 Exhaust Aftertreatment Fuel Supply Control Circuit Low                       | page 150 |
| P010513 Manifold Absolute Pressure/Barometric Pressure Sensor                        | page 150 |
| P010800 Manifold Absolute Pressure/Barometric Pressure Sensor Circuit High           | page 151 |
| P25AE00 Piston Cooling Oil Pressure Too Low                                          | page 151 |
| P25A913 Piston Cooling Oil Control                                                   | page 152 |
| P05407E Intake Air Heater "A" Control                                                | page 152 |
| P225C00 NOx Sensor Performance - Signal Stuck High Bank 1 Sensor 1                   | page 152 |
| P225E00 NOx Sensor Performance - Signal Stuck High Bank 1 Sensor 2                   | page 154 |
| P225F00 NOx Sensor Performance - Signal Stuck Low Bank 1 Sensor 2                    | page 155 |
| P240F00 EGR Slow Response                                                            | page 155 |
| P056E92 Cold Start Turbocharger/Supercharger Boost Control "A" Performance           | page 156 |
| P003A00 Turbocharger/Supercharger Boost Control "A" Position Exceeded Learning Limit | page 156 |
| P221A00 NOx Sensor 1/2 Correlation Bank 1                                            | page 157 |
| P225D00 NOx Sensor Performance - Signal Stuck Low Bank 1 Sensor 1                    | page 158 |
| P10E100 Particulate Filter Differential Pressure Critically High                     | page 158 |

|                                                                                   |          |
|-----------------------------------------------------------------------------------|----------|
| P10E200 Particulate Filter Differential Pressure Moderately High                  | page 158 |
| P10EB00 EGR Differential Pressure Sensor "A" Circuit Below Range                  | page 159 |
| P10EC00 EGR Differential Pressure Sensor "A" Circuit Above Range                  | page 159 |
| P22FB92 NOx Sensor Performance - Sensing Element Bank 1 Sensor 1                  | page 160 |
| P22FE00 NOx Sensor Performance - Sensing Element Bank 1 Sensor 2                  | page 160 |
| P110D00 Engine Stop Switch Circuit High                                           | page 161 |
| P110E00 Engine Stop Switch Circuit Low                                            | page 162 |
| P110F9E Engine Stop Switch Stuck                                                  | page 162 |
| P10FE00 Particulate Filter Restriction - Soot Accumulation Moderately High Bank 1 | page 162 |
| P055A13 Engine Oil Pressure Sensor/Switch "B"                                     | page 163 |
| P055B64 Piston Cooling Oil Pressure Sensor Range/Performance                      | page 163 |
| P055D00 Piston Cooling Oil Pressure Sensor Circuit High                           | page 164 |
| P112900 Transmission Fluid Temperature Moderately High                            | page 164 |
| P029800 Engine Oil Over Temperature                                               | page 164 |
| P021800 Transmission Fluid Over Temperature Condition                             | page 165 |
| U116C00 Lost Communication with TCM on Powertrain CAN                             | page 165 |
| U116F00 Lost Communication with Reductant Control Module on Engine Subnet         | page 165 |
| P111A00 Intake Manifold Temperature Too High                                      | page 166 |
| P111C00 Compressor Discharge Temperature Too High                                 | page 166 |
| P111D00 Engine Coolant Level Moderately Low                                       | page 166 |
| P111E00 Engine Coolant Temperature Moderately High                                | page 167 |
| P112100 EGR Temperature Too High                                                  | page 167 |
| P112198 EGR Temperature Too High                                                  | page 167 |
| P05EB00 Cold Start SCR NOx Catalyst Inlet Temperature Too Low                     | page 168 |
| P112200 EGR Temperature Moderately High                                           | page 168 |
| P112500 Engine Oil Temperature Moderately High                                    | page 169 |
| U008088 Vehicle Communication Engine Subnet                                       | page 169 |
| U117888 Vehicle Communication Powertrain CAN                                      | page 170 |
| P253913 Low Pressure Fuel System Sensor Circuit                                   | page 170 |
| P254200 Low Pressure Fuel System Sensor Circuit High                              | page 171 |
| P064200 Sensor Reference Voltage "A" Circuit Low                                  | page 171 |
| P064300 Sensor Reference Voltage "A" Circuit High                                 | page 172 |
| P065200 Sensor Reference Voltage "B" Circuit Low                                  | page 172 |
| P04DB00 Crankcase Ventilation System Disconnected                                 | page 172 |
| P04D800 Excessive Time To Enter Closed Loop EGR Control                           | page 173 |
| P008A00 Low Pressure Fuel System Pressure - Too Low                               | page 174 |
| P113500 Crankcase Pressure Relative To Ambient Pressure Too High                  | page 174 |
| P113600 NOx Sensor 1/2 Correlation Calibration Error Bank 1                       | page 175 |

|                                                                                              |          |
|----------------------------------------------------------------------------------------------|----------|
| P055F00 Engine Oil Pressure Out of Range                                                     | page 175 |
| U014200 Lost Communication With Body Control Module "B"                                      | page 175 |
| P04DD00 Cold Start EGR "A" Flow Insufficient Detected                                        | page 176 |
| P101200 Cold Start Cylinder 1 Fuel Injector Offset Learning at Min Limit                     | page 177 |
| P101400 Cold Start Cylinder 2 Fuel Injector Offset Learning at Min Limit                     | page 178 |
| P102300 Cold Start Cylinder 3 Fuel Injector Offset Learning at Min Limit                     | page 179 |
| P102500 Cold Start Cylinder 4 Fuel Injector Offset Learning at Min Limit                     | page 181 |
| P102700 Cold Start Cylinder 5 Fuel Injector Offset Learning at Min Limit                     | page 182 |
| P102900 Cold Start Cylinder 6 Fuel Injector Offset Learning at Min Limit                     | page 183 |
| P101100 Cold Start Cylinder 1 Fuel Injector Offset Learning at Max Limit                     | page 184 |
| P101300 Cold Start Cylinder 2 Fuel Injector Offset Learning at Max Limit                     | page 186 |
| P101D00 Cold Start Cylinder 3 Fuel Injector Offset Learning at Max Limit                     | page 187 |
| P102400 Cold Start Cylinder 4 Fuel Injector Offset Learning at Max Limit                     | page 188 |
| P102600 Cold Start Cylinder 5 Fuel Injector Offset Learning at Max Limit                     | page 189 |
| P102800 Cold Start Cylinder 6 Fuel Injector Offset Learning at Max Limit                     | page 191 |
| P24FC00 Particulate Matter Sensor Heater Control Circuit Driver Current/Temperature Too High | page 192 |
| P103B00 Reagent Dosing Valve Inducement                                                      | page 192 |
| P103400 Particulate Matter Sensor System Voltage Too High                                    | page 193 |
| P103100 Particulate Matter Sensor Clogged Tip                                                | page 194 |
| P103200 Particulate Matter Sensor Removed from Exhaust                                       | page 194 |
| U02A300 Lost Communication With PM Sensor                                                    | page 194 |
| P24AF00 Particulate Matter Sensor Circuit Range/Performance                                  | page 195 |
| P24B000 Particulate Matter Sensor Circuit Low                                                | page 195 |
| P24B100 Particulate Matter Sensor Circuit High                                               | page 196 |
| P24B313 Particulate Matter Sensor Heater Control                                             | page 196 |
| P24B492 Particulate Matter Sensor Heater Control Circuit Range/Performance                   | page 197 |
| P24B500 Particulate Matter Sensor Heater Control Circuit Low                                 | page 197 |
| P24F600 Exhaust Aftertreatment Fuel Air Purge Valve Stuck Open                               | page 198 |
| P24F700 Exhaust Aftertreatment Fuel Air Purge Valve Stuck Closed                             | page 199 |
| P24F813 Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit                          | page 200 |
| P24FA00 Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit Low                      | page 200 |
| P24FB00 Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit High                     | page 200 |
| P24D000 Particulate Matter Sensor Supply Voltage Circuit Low                                 | page 201 |
| P24D100 Particulate Matter Sensor Regeneration Incomplete                                    | page 201 |
| P24DA00 Particulate Matter Sensor Exhaust Sample Error Bank 1                                | page 202 |
| P05FD00 Turbocharger/Supercharger Boost Control "A" Temperature Too High                     | page 203 |
| P226D00 Particulate Filter Deteriorated/Missing Substrate Bank 1                             | page 203 |
| P249C00 Excessive Time To Enter Closed Loop Reductant Injection Control                      | page 204 |

P2AB047 Particulate Matter Sensor Processor page 204

P027E00 Cold Start Fuel Injection Quantity Lower Than Expected page 205

P027F00 Cold Start Fuel Injection Quantity Higher Than Expected page 206

### **Aftertreatment Control Module (ACM) Diagnostic Trouble Codes**

U000188 CAN Communication Backbone 2 Net - Bus off page 208

U001088 CAN Communication Backbone 1 Net - Bus off page 208

U010000 Lost Communication with EMS - No Sub Type Information page 209

P054415 Exhaust Gas Temperature Sensor Bank 1 Sensor 1 - Circuit Short To Battery or Open page 209

P205A13 Reductant Tank Temperature Sensor - Circuit Open page 209

P20BA00 Reductant Heater A Control Performance - No Sub Type Information page 210

P063000 VIN Not Programmed or Incompatible - ECM/PCM - No Sub Type Information page 210

P066800 PCM/ECM/TCM Internal Temperature Sensor Circuit Low - No Sub Type Information page 211

P06B100 Sensor Power Supply A Circuit Low - No Sub Type Information page 211

P06B200 Sensor Power Supply A Circuit High - No Sub Type Information page 211

P06B400 Sensor Power Supply B Circuit Low - No Sub Type Information page 212

P06B500 Sensor Power Supply B Circuit High - No Sub Type Information page 212

U300041 Electronic control unit - General Checksum Failure page 212

U300044 Electronic control unit - Data Memory Failure page 213

U300045 Electronic control unit - Program Memory Failure page 213

U300049 Electronic control unit - Internal Electronic Failure page 213

P203115 Exhaust Gas Temperature Sensor Bank 1 Sensor 2 - Circuit Short To Battery or Open page 214

P203200 Engine Exhaust Gas Temperature Circuit Low (Bank 1 Sensor 2) - No Sub Type Information page 214

P245213 Particulate Filter Pressure Sensor "A" - Circuit Open page 214

P245400 Aftertreatment 1 Diesel Particulate Filter Differential Pressure Circuit Low - No Sub Type Information page 215

U014100 Lost Communication With VMCU - No Sub Type Information page 215

U015500 Lost Communication With Instrument Panel Cluster (IPC) Control Module - No Sub Type Information page 216

P066613 Control Module Internal Temperature Sensor "A" - Circuit Open page 216

P107B13 Retarder Water Temperature Sensor - Circuit Open page 216

P107C13 Retarder Oil Temperature Sensor - Circuit Open page 217

P107D13 Retarder Valve - Circuit Open page 217

page 218 Retarder Air Pressure Sensor - Circuit Open

P202D00 Aftertreatment Reagent Pressure Leakage - No Sub Type Information page 218

P204A13 Reductant Pressure Sensor - Circuit Open page 219

P205C00 Aftertreatment Reagent Tank Temperature Short Circuit Low - No Sub Type Information page 219

P208A13 Reductant Pump "A" Control - Circuit Open page 219

P204B64 Aftertreatment Reagent Pump Orifice Orifice Blocked - Signal Plausibility Failure page 220

P054500 Exhaust Gas Temperature Short Circuit Low - No Sub Type Information page 220

|                                                                                                                             |          |
|-----------------------------------------------------------------------------------------------------------------------------|----------|
| P20B297 Reductant Heater Coolant Control Valve Performance/Stuck Open - Component or System Operation Obstructed or Blocked | page 221 |
| P20B400 Reductant Heater Coolant Control Valve Circuit High - No Sub Type Information                                       | page 222 |
| P20B300 Reductant Heater Coolant Control Valve Circuit Low - No Sub Type Information                                        | page 223 |
| P20B113 Reductant Heater Coolant Control Valve Control - Circuit Open                                                       | page 223 |
| P208B00 Reductant Pump "A" Control Performance/Stuck Off - No Sub Type Information                                          | page 224 |
| P204900 Aftertreatment Reagent Dosing Valve Short Circuit High - No Sub Type Information                                    | page 225 |
| P204800 Aftertreatment Reagent Dosing Valve Short Circuit Low - No Sub Type Information                                     | page 225 |
| P204713 Reductant Injection Valve Control Bank 1 Unit 1 - Circuit Open                                                      | page 225 |
| P20C400 Aftertreatment Reagent Hose Heater 3 Short Circuit High - No Sub Type Information                                   | page 226 |
| P20C300 Aftertreatment Reagent Hose Heater 3 Short Circuit Low - No Sub Type Information                                    | page 226 |
| P20C113 Reductant Heater "C" Control - Circuit Open                                                                         | page 226 |
| P20BC00 Aftertreatment Reagent Hose Heater 1 Short Circuit High - No Sub Type Information                                   | page 227 |
| P20BB00 Aftertreatment Reagent Hose Heater 1 Short Circuit Low - No Sub Type Information                                    | page 227 |
| P20B913 Reductant Heater "A" Control - Circuit Open                                                                         | page 228 |
| P20A300 Aftertreatment Reagent Direction Valve Short Circuit High - No Sub Type Information                                 | page 228 |
| P20A200 Aftertreatment Reagent Direction Valve Short Circuit Low - No Sub Type Information                                  | page 228 |
| P20A013 Reductant Purge Control Valve - Circuit Open                                                                        | page 57  |
| P20A107 Aftertreatment Reagent Direction Valve Mechanical Problem - Mechanical Failures                                     | page 229 |
| P065900 ACM Actuator High Supply 1 Short Circuit High - No Sub Type Information                                             | page 229 |
| P065800 ACM Actuator High Supply 1 Short Circuit Low - No Sub Type Information                                              | page 230 |
| P208D00 Aftertreatment Reagent Pump Control Short Circuit High - No Sub Type Information                                    | page 230 |
| P208C00 Aftertreatment Reagent Pump Control Short Circuit Low - No Sub Type Information                                     | page 231 |
| P203A13 Reductant Level Sensor "A" - Circuit Open                                                                           | page 231 |
| P204364 Aftertreatment Reagent Tank Temperature Sensor Stuck - Signal Plausibility Failure                                  | page 231 |
| P056300 ECU Battery Potential Above Range - No Sub Type Information                                                         | page 232 |
| P204C00 Aftertreatment Reagent Pressure Sensor Circuit Low - No Sub Type Information                                        | page 233 |
| P203C00 Aftertreatment Reagent Level Short Circuit Low - No Sub Type Information                                            | page 233 |
| P20E892 Reductant Pressure Too Low - Performance or Incorrect Operation                                                     | page 233 |
| P21CA00 Reductant Control Module Supply Voltage - No Sub Type Information                                                   | page 234 |
| P10AD13 Reductant Pump "A" Control Low Side - Circuit Open                                                                  | page 235 |
| P10AE00 Reductant Pump "A" Control Low Side Circuit Low - No Sub Type Information                                           | page 235 |
| P10AF00 Reductant Pump "A" Control Low Side Circuit High - No Sub Type Information                                          | page 235 |
| P10CE97 Reductant Return No Flow Detected - Component or System Operation Obstructed or Blocked                             | page 236 |
| P26E800 Actuator Supply Voltage "D" Circuit Low - No Sub Type Information                                                   | page 134 |
| P24FF00 Reductant Temperature Too High - No Sub Type Information                                                            | page 236 |
| U1FFF68 Factory Mode Active - Event Information                                                                             | page 237 |
| P206C00 Reductant Quality Sensor Low - No Sub Type Information                                                              | page 237 |

|                                                                                                |          |
|------------------------------------------------------------------------------------------------|----------|
| P206A13 Reductant Quality - Circuit Open                                                       | page 237 |
| P242C00 Exhaust Gas Temperature Sensor Circuit Low (Bank 1 Sensor 3) - No Sub Type Information | page 238 |
| P267100 Actuator Supply Voltage "B" Circuit High - No Sub Type Information                     | page 238 |
| P267000 Actuator Supply Voltage "B" Circuit Low - No Sub Type Information                      | page 238 |
| P242A15 Exhaust Gas Temperature Sensor Bank 1 Sensor 3 - Circuit Short To Battery or Open      | page 239 |
| U02A200 Lost Communication with Reductant Quality Module - No Sub Type Information             | page 239 |
| U114600 Lost Communication With ECM on Engine Subnet - No Sub Type Information                 | page 240 |
| U008088 Vehicle Communication Engine Subnet - Bus off                                          | page 240 |
| P109A00 Retarder Water Temperature Moderately High - No Sub Type Information                   | page 240 |
| P109B00 Retarder Water Temperature Too High - No Sub Type Information                          | page 241 |
| P109C00 Retarder Water Temperature Sensor Circuit Low - No Sub Type Information                | page 241 |
| P109D00 Retarder Oil Temperature High - No Sub Type Information                                | page 241 |
| P109F00 Retarder Oil Temperature Sensor Circuit Low - No Sub Type Information                  | page 242 |
| P10A300 Retarder Air Pressure High - No Sub Type Information                                   | page 242 |
| P10A464 Retarder Air Pressure Sensor Range/Performance - Signal Plausibility Failure           | page 242 |
| P10A500 Retarder Air Pressure Sensor Circuit High - No Sub Type Information                    | page 243 |
| P10A600 Retarder Valve Circuit High - No Sub Type Information                                  | page 243 |
| P10A700 Retarder Valve Circuit Low - No Sub Type Information                                   | page 243 |

**U000188 CAN Communication Backbone 2 Net - Bus off**

|                                        |                                                                                                                                                                |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U000188                                                                                                                                                        |
| <b>Component / System</b>              | CAN Communication Backbone 2 Net                                                                                                                               |
| <b>Monitor Strategy Description</b>    | Bus Off                                                                                                                                                        |
| <b>Fault Limit</b>                     | It has not been possible to send frames on High Speed CAN Communication Bus and It has not been possible to receive frames on High Speed CAN Communication Bus |
| <b>Enable Conditions</b>               | N/A                                                                                                                                                            |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                               |
| <b>Time Required For DTC To Be Set</b> | 5.05s                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                           |

**U001088 CAN Communication Backbone 1 Net - Bus off**

|                                        |                                                                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U001088                                                                                                                                                            |
| <b>Component / System</b>              | CAN Communication Backbone 1                                                                                                                                       |
| <b>Monitor Strategy Description</b>    | Bus Off                                                                                                                                                            |
| <b>Fault Limit</b>                     | It has not been possible to send frames on Medium Speed CAN Communication Bus and It has not been possible to receive frames on Medium Speed CAN Communication Bus |
| <b>Enable Conditions</b>               | N/A                                                                                                                                                                |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 5.05s                                                                                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                               |

**U010100 Lost Communication with TECU - No Sub Type Information**

|                                        |                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U010100                                                                                  |
| <b>Component / System</b>              | CAN Communication Backbone 1                                                             |
| <b>Monitor Strategy Description</b>    | Bus Off                                                                                  |
| <b>Fault Limit</b>                     | Lost communication with TCM on Medium Speed CAN Communication Bus                        |
| <b>Enable Conditions</b>               | N/A                                                                                      |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U0010/88U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 9.1s                                                                                     |
| <b>MIL Illumination</b>                | N/A                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                     |

**P034031 Camshaft Position Sensor "A" Bank 1 or Single Sensor - No Signal**

|                                        |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|
| <b>DTC</b>                             | P034031                                                                          |
| <b>Component / System</b>              | Camshaft Position Sensor "A" Bank 1                                              |
| <b>Monitor Strategy Description</b>    | No Signal                                                                        |
| <b>Fault Limit</b>                     | No signal is detected on the cam wheel                                           |
| <b>Enable Conditions</b>               | N/A                                                                              |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 9.1s                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                             |

**P034138 Camshaft Position Sensor A Circuit Range/Performance - Signal Frequency Incorrect**

|                                        |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|
| <b>DTC</b>                             | P034138                                                                          |
| <b>Component / System</b>              | Camshaft Position Sensor A Circuit Range/Performance                             |
| <b>Monitor Strategy Description</b>    | Signal Frequency Incorrect                                                       |
| <b>Fault Limit</b>                     | Noisy signal detected                                                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Running</li> </ul>               |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                               |
| <b>MIL Illumination</b>                | 3                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                             |

**P042000 Catalyst System Efficiency Below Threshold - No Sub Type Information**

|                                     |                            |
|-------------------------------------|----------------------------|
| <b>DTC</b>                          | P042000                    |
| <b>Component / System</b>           | Catalyst System            |
| <b>Monitor Strategy Description</b> | Efficiency Below Threshold |

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b> | <ul style="list-style-type: none"><li>• Catalyst System Monitor Failure Event</li><li>• AND</li><li>• Ratio of diesel that slipped through the catalyst and oxidized in the Particulate Filter above 2.799999952316284 ratio</li><li>• AND</li><li>• SCR conversion efficiency below (80% + Offset dependent on Average SCR NOx Catalyst Temperature</li><li>• OR</li><li>• Empty Can Monitor Failure Event<ul style="list-style-type: none"><li>• AND</li><li>• (The number of quick temperature changes before the catalyst / The number of quick temperature changes after catalyst) below 1.75ratio. For current status, read MID 21 - Catalyst Monitor Bank 1, TID 99 - Diesel oxidation catalyst missing substrate, MID 21 - Catalyst Monitor Bank 1, TID 9C - Ratio of diesel that slipped through DOC</li></ul></li></ul> |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b> | <ul style="list-style-type: none"> <li>• Hydrocarbon Conversion Monitor Enable Conditions</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• Engine Speed between 590rpm and 3000rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1Nm and 4000Nm</li> <li>• AND</li> <li>• Exhaust Aftertreatment Fuel Injection Active</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 3 between 200°C and 600°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 170°C and 400°C</li> <li>• AND</li> <li>• SCR warming active</li> <li>• OR <ul style="list-style-type: none"> <li>• Empty Can Monitor Enable Conditions</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• not Exhaust Aftertreatment Fuel Injection Active</li> <li>• AND</li> <li>• Engine Speed above 550rpm</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 above 20°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 above 20°C</li> <li>• AND <ul style="list-style-type: none"> <li>• Derivative of Exhaust Gas Temperature Sensor 1 above 3.75°C</li> <li>• AND</li> <li>• Derivative of Exhaust Gas Temperature Sensor 2 below 2.5°C</li> <li>• OR <ul style="list-style-type: none"> <li>• Derivative of Exhaust Gas Temperature Sensor 1 below (-1 * 3.75°C)</li> <li>• AND</li> <li>• Derivative of Exhaust Gas Temperature Sensor 2 above (-1 * 2.5°C)</li> </ul> </li> </ul> </li> </ul> </li> </ul> |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P2080/64, P2084/64, P242B/64, P2229/00, P2226/13, P0072/00, P0070/15, P20DD/13, P20E0/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, U029D/00, P22FE/00, P220B/1C, P229E/13, P22A1/00, P220F/93, U029E/00, P20EE/00, P2201/64, P225D/00, P229F/64, P225F/00, P20D0/00, P24F6/00, P20DC/00, P20CF/7A, P2229/00, U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 1000s                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## P054100 Intake Air Heater A Circuit Low - No Sub Type Information

|                                        |                                                                                                                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P054100                                                                                                                                                                                                             |
| <b>Component / System</b>              | Intake Air Heater A Circuit                                                                                                                                                                                         |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:7 above (0.722562V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>AND</li> <li>Voltage on B:7 below (2.863488V * (UnfilteredBatteryVoltage / 24.0V))</li> </ul> |
| <b>Enable Conditions</b>               | N/A                                                                                                                                                                                                                 |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                         |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                |

## P054300 Intake Air Heater A Circuit Open - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P054300                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>              | Intake Air Heater A Circuit Open                                                                                                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | A Circuit Open                                                                                                                                                                                                                                                                                                  |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:7 above (25.138032V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>OR</li> <li>Voltage on B:7 above (2.863488V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>OR</li> <li>Voltage on B:7 below (20.579645V * (UnfilteredBatteryVoltage / 24.0V))</li> </ul> |
| <b>Enable Conditions</b>               | N/A                                                                                                                                                                                                                                                                                                             |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                                                                                                                     |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                                                                                                              |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## P001676 Crankshaft Position - Camshaft Position Correlation - Wrong Mounting Position

|                                 |                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------|
| DTC                             | P001676                                                                                                       |
| Component / System              | Crankshaft Position                                                                                           |
| Monitor Strategy Description    | Camshaft Position Correlation                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Phase error due to incorrect angle between cam and flywheel</li> </ul> |
| Enable Conditions               | N/A                                                                                                           |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                   |
| Time Required For DTC To Be Set | 6s                                                                                                            |
| MIL Illumination                | 3                                                                                                             |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                          |

## P007164 Ambient Air Temperature Sensor Range/Performance - Signal Plausibility Failure

|                                 |                                                                                                                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P007164                                                                                                                                                                                                       |
| Component / System              | Ambient Air Temperature Sensor Range/Performance                                                                                                                                                              |
| Monitor Strategy Description    | Signal Plausibility Failure                                                                                                                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Difference during Precrank between mean value of (Engine Exhaust Temperature, HC Heat Temperature, DPF Temperature) and Ambient Air Temperature above 40° C</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine in Precrank mode</li> <li>AND</li> <li>Engine Speed below 100rpm</li> <li>AND</li> <li>Engine Soak Time above 28800s</li> </ul>                                 |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P2229/00, P2226/13, U3017/00</li> </ul>                               |
| Time Required For DTC To Be Set | 0.5s                                                                                                                                                                                                          |
| MIL Illumination                | 3                                                                                                                                                                                                             |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                          |

## P02CD00 Cylinder 1 Fuel Injector Offset Learning at Max Limit - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P02CD00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>              | Cylinder 1 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 86 - Balancing of injector 1, fuel angle</li> </ul>                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active</li> <li>AND</li> <li>PTO is active</li> <li>AND</li> <li>The indicated torque is not stable</li> <li>AND</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>  |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P02CF00 Cylinder 2 Fuel Injector Offset Learning at Max Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P02CF00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>              | Cylinder 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 86 - Balancing of injector 1, fuel angle</li> </ul>                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active</li> <li>AND</li> <li>PTO is active</li> <li>AND</li> <li>The indicated torque is not stable</li> <li>AND</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>  |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P02D100 Cylinder 3 Fuel Injector Offset Learning at Max Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P02D100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>              | Cylinder 3 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 88 - Balancing of injector 3, fuel angle</li> </ul>                                                                                                                                                                                                                                                                       |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active</li> <li>AND</li> <li>PTO is active</li> <li>AND</li> <li>The indicated torque is not stable</li> <li>AND</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>  |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P02D300 Cylinder 4 Fuel Injector Offset Learning at Max Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P02D300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>              | Cylinder 4 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 89 - Balancing of injector 4, fuel angle</li> </ul>                                                                                                                                                                                                                                                                       |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active</li> <li>AND</li> <li>PTO is active</li> <li>AND</li> <li>The indicated torque is not stable</li> <li>AND</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>  |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P02D500 Cylinder 5 Fuel Injector Offset Learning at Max Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P02D500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>              | Cylinder 5 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 8A - Balancing of injector 5, fuel angle</li> </ul>                                                                                                                                                                                                                                                                       |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active</li> <li>AND</li> <li>PTO is active</li> <li>AND</li> <li>The indicated torque is not stable</li> <li>AND</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>  |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P02D700 Cylinder 6 Fuel Injector Offset Learning at Max Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P02D700                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>              | Cylinder 6 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 8A - Balancing of injector 6, fuel angle</li> </ul>                                                                                                                                                                                                                                                                       |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active</li> <li>AND</li> <li>PTO is active</li> <li>AND</li> <li>The indicated torque is not stable</li> <li>AND</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>  |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P033531 Crankshaft Position Sensor "A" - No Signal**

|                                 |                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------|
| DTC                             | P033531                                                                                                         |
| Component / System              | Crankshaft Position Sensor                                                                                      |
| Monitor Strategy Description    | No Signal                                                                                                       |
| Fault Limit                     | <ul style="list-style-type: none"> <li>No crank teeth detected between cam teeth by the control unit</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                                                |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                     |
| Time Required For DTC To Be Set | 1s                                                                                                              |
| MIL Illumination                | 3                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                            |

**P033638 Crankshaft Position Sensor A Circuit Range/Performance - Signal Frequency Incorrect**

|                                 |                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P033638                                                                                                                         |
| Component / System              | Crankshaft Position Sensor A                                                                                                    |
| Monitor Strategy Description    | Signal Frequency                                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>More crank teeth than expected detected between cam teeth by the control unit</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                                                                |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                     |
| Time Required For DTC To Be Set | 6s                                                                                                                              |
| MIL Illumination                | 3                                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                            |

**P033900 Crankshaft Position Sensor A Circuit Intermittent - No Sub Type Information**

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| DTC                             | P033900                                                                           |
| Component / System              | Crankshaft Position Sensor A                                                      |
| Monitor Strategy Description    | Circuit Intermittent                                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Intermittent crank speed signal</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                  |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>       |
| Time Required For DTC To Be Set | 6s                                                                                |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## P203F00 Reductant Level Low - No Sub Type Information

|                                 |                                                                                                                                                                                             |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P203F00                                                                                                                                                                                     |
| Component / System              | Reductant System                                                                                                                                                                            |
| Monitor Strategy Description    | Reductant Level Low                                                                                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Reductant level below 0.100000001490116% for 15s. For current status, read MID 98 - NOx Catalyst Monitor Bank 1, TID A9 - Reductant level</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Reductant Tank Temperature above -99°C</li> </ul>                                                                                                    |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P205B/64</li> </ul>                                                                                                                 |
| Time Required For DTC To Be Set | 25s                                                                                                                                                                                         |
| MIL Illumination                | 0                                                                                                                                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                        |

## P205B64 Reductant Tank Temperature Sensor Circuit Range/Performance - Signal Plausibility Failure

|                                 |                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P205B64                                                                                                                                                                                                                          |
| Component / System              | Reductant Tank Temperature Sensor                                                                                                                                                                                                |
| Monitor Strategy Description    | Circuit Range/Performance                                                                                                                                                                                                        |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Difference during Precrank between mean value of (Boost Temperature, EGR Temperature, Engine Coolant Temperature, Compressor Temperature) and Urea Tank Temperature above 40°C</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine in Precrank mode</li> <li>AND</li> <li>Engine Speed below 100rpm</li> <li>AND</li> <li>Engine Soak Time above 28800s</li> </ul>                                                    |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P2229/00, P2226/13, U3017/00</li> </ul>                                                  |
| Time Required For DTC To Be Set | 0.5s                                                                                                                                                                                                                             |
| MIL Illumination                | 3                                                                                                                                                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                             |

## P208064 Exhaust Gas Temperature Sensor Circuit Range/Performance Bank 1 Sensor 1 - Signal Plausibility Failure

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P208064                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Component / System              | Exhaust Gas Temperature Sensor Circuit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Monitor Strategy Description    | Range/Performance Bank 1 Sensor 1 — Signal Plausibility Failure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• Evaluation Between The Sensors Performed During Engine Running: <ul style="list-style-type: none"> <li>• AND</li> <li>• Difference between Exhaust Gas Temperature Sensor 1 and Sensor 2 above 70°C</li> <li>• AND</li> <li>• Difference between Exhaust Gas Temperature Sensor 1 and Sensor 3 above 70°C</li> </ul> </li> <li>• OR <ul style="list-style-type: none"> <li>• Exhaust Gas Temperature Sensor 1 below 100°C</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                       |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• Evaluation Between The Sensors Performed During Engine Running: <ul style="list-style-type: none"> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• AmbientAirTemperature_VMCU between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp above 60°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 500Nm and 2000Nm</li> <li>• AND</li> <li>• Modeled Exhaust Gas Temperature at Bank 1 Sensor 1 between 200°C and 400°C and below 25°C</li> <li>• AND</li> <li>• Difference Between Modelled Exhaust Gas Temperature At Sensor 2 And Modelled Exhaust Gas Temperature At Sensor 3 below 25°C</li> <li>• AND</li> <li>• Difference Between Modelled Exhaust Gas Temperature At Sensor 1 And Modelled Exhaust Gas Temperature At Sensor 2 below 25°C</li> </ul> </li> </ul> |
| Disable Conditions              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P0072/00, P0070/15, P2229/00, P2226/13, P0117/00, P0115/13, U3000/01, U3017/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Time Required For DTC To Be Set | 35s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## P220013 NOx Sensor Bank 1 Sensor 1 - Circuit Open

|                    |                            |
|--------------------|----------------------------|
| DTC                | P220013                    |
| Component / System | NOx Sensor Bank 1 Sensor 1 |

|                                        |                                                                                                                                                                             |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Internal Open Circuit signal containing status and error byte received from Upstream NOx sensor evaluated as NOT_RELIABLE</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Ignition key turned ON</li> </ul>                                                                                                    |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U029D/00, U3000/01</li> </ul>                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                        |

## P220164 NOx Sensor Bank 1 Sensor 1 - Signal Plausibility Failure

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P220164                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Component / System</b>           | NOx Sensor Bank 1 Sensor 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Monitor Strategy Description</b> | Circuit Open                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>The Upstream NOx Difference (upstream NOx sensor measured NOx flow – modeled NOx flow) is compared to a low and high fault threshold map (NOx flow threshold as a function of modeled NOx flow). The difference must be below Low Limit or above High Limit repeatedly 4No Unit times. Evaluation time for each repeated evaluation is 4.5s. For current status, read MID 01 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 1, TID 80 - NOx massflow difference between estimated and measured in g/s</li> </ul> |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa and 105kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>Steady state: No quick changes in engine speed and torque</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 110°C</li> <li>AND</li> <li>tc_IndTrqValue between 1425Nm and 2500Nm</li> <li>AND</li> <li>Engine Speed between 1475rpm and 2150rpm above conditions valid for 5s</li> </ul>                                                                                  |
| <b>Disable Conditions</b>           | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Fuel Injector is activated</li> <li>OR</li> <li>Regeneration ongoing</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>P225D/00, P225F/00, P242B/64, P0420/00, P0402/00, P0401/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P225D/00, P220F/93, P225F/00, U029D/00, U029E/00</li> </ul>       |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 180s                 |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

## P060100 Internal Control Module Memory Check Sum Error - No Sub Type Information

|                                 |                                                       |
|---------------------------------|-------------------------------------------------------|
| DTC                             | P060100                                               |
| Component / System              | Internal Control Module Memory Check Sum Error        |
| Monitor Strategy Description    | Memory Check Sum Error                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>N/A</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul> |
| Disable Conditions              | No Active DTC's:                                      |
| Time Required For DTC To Be Set | N/A                                                   |
| MIL Illumination                | 3                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                  |

## P061700 Starter Relay Circuit High - No Sub Type Information

|                                 |                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------|
| DTC                             | P061700                                                                                                  |
| Component / System              | Starter Relay Circuit                                                                                    |
| Monitor Strategy Description    | Circuit High                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                  |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                         |
| Time Required For DTC To Be Set | 2s                                                                                                       |
| MIL Illumination                | N/A                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                     |

## P063051 VIN Not Programmed or Incompatible - ECM/PCM - Not Programmed

|                              |                                                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P063051                                                                                                                            |
| Component / System           | Starter Relay Circuit                                                                                                              |
| Monitor Strategy Description | Circuit High                                                                                                                       |
| Fault Limit                  | <ul style="list-style-type: none"> <li>The Vehicle Identification Number is not or incorrectly written (see DID 0xF802)</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>New key cycle</li> </ul>                                                                    |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                        |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 0.5s                 |
| MIL Illumination                | 0                    |
| Probable Causes                 | <i>See Tech Tool</i> |

## P066800 PCM/ECM/TCM Internal Temperature Sensor Circuit Low - No Sub Type Information

|                                 |                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------|
| DTC                             | P066800                                                                                       |
| Component / System              | PCM/ECM/TCM Internal Temperature Sensor                                                       |
| Monitor Strategy Description    | Circuit Low                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on N/A:ECU internal below 0.147705V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                         |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                   |
| Time Required For DTC To Be Set | 13s                                                                                           |
| MIL Illumination                | N/A                                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                                          |

## P06B100 Sensor Power Supply A Circuit Low - No Sub Type Information

|                                 |                                                                             |
|---------------------------------|-----------------------------------------------------------------------------|
| DTC                             | P06B100                                                                     |
| Component / System              | Sensor Power Supply A Circuit                                               |
| Monitor Strategy Description    | Circuit Low                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:7 below 4.5V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                       |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 5.5s                                                                        |
| MIL Illumination                | 3                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                        |

## P06B200 Sensor Power Supply A Circuit High - No Sub Type Information

|                              |                                                                             |
|------------------------------|-----------------------------------------------------------------------------|
| DTC                          | P06B200                                                                     |
| Component / System           | Sensor Power Supply A Circuit                                               |
| Monitor Strategy Description | Circuit High                                                                |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Voltage on A:7 above 5.5V</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>N/A</li> </ul>                       |

|                                 |                                |
|---------------------------------|--------------------------------|
| Disable Conditions              | No Active DTC's:<br>• U3000/01 |
| Time Required For DTC To Be Set | 5.5s                           |
| MIL Illumination                | 3                              |
| Probable Causes                 | <i>See Tech Tool</i>           |

### P06B400 Sensor Power Supply B Circuit Low - No Sub Type Information

|                                 |                                |
|---------------------------------|--------------------------------|
| DTC                             | P06B400                        |
| Component / System              | Sensor Power Supply A Circuit  |
| Monitor Strategy Description    | Circuit Low                    |
| Fault Limit                     | • Voltage on B:17 below 4.5V   |
| Enable Conditions               | • N/A                          |
| Disable Conditions              | No Active DTC's:<br>• U3000/01 |
| Time Required For DTC To Be Set | 5.5s                           |
| MIL Illumination                | 3                              |
| Probable Causes                 | <i>See Tech Tool</i>           |

### P06B500 Sensor Power Supply B Circuit High- No Sub Type Information

|                                 |                                |
|---------------------------------|--------------------------------|
| DTC                             | P06B500                        |
| Component / System              | Sensor Power Supply A Circuit  |
| Monitor Strategy Description    | Circuit High                   |
| Fault Limit                     | • Voltage on B:17 above 5.5V   |
| Enable Conditions               | • N/A                          |
| Disable Conditions              | No Active DTC's:<br>• U3000/01 |
| Time Required For DTC To Be Set | 5.5s                           |
| MIL Illumination                | 3                              |
| Probable Causes                 | <i>See Tech Tool</i>           |

### P20EE00 SCR NOx Catalyst Efficiency Below Threshold (Bank 1) - No Sub Type Information

|                              |                  |
|------------------------------|------------------|
| DTC                          | P20EE00          |
| Component / System           | SCR NOx Catalyst |
| Monitor Strategy Description | Efficiency Low   |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Average SCR NOx Catalyst Temperature between 255°C and 450°C</li> <li>• AND</li> <li>• Calculated exhaust mass flow between 0.100000001490116kg/s and 0.5kg/s</li> <li>• AND</li> <li>• Engine Speed between 1100rpm and 2050rpm</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• The reductant delivery system is operating normally, the engine is operating in a functional normal engine mode, there is a reductant injection demand</li> <li>• AND</li> <li>• Steady state: No quick changes in engine speed, torque, exhaust mass flow and EATS temperature</li> <li>• AND</li> <li>• Reductant flow since the reductant tank has been refilled above 600g</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P225D/00, P225F/00, P2201/64, P229F/64, P242B/64, P0420/00, P0402/00, P0401/00, P225C/00, P225E/00, P20FE/9A, P221A/00, P20EE/00, P2080/64, P2084/64, P208E/00, P0072/00, P0070/15, P2229/00, P2226/13, U3000/01, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P0111/64, P0112/00, P0110/13, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P220F/93, U029D/00, U029E/00, U3017/00</li> </ul>                                                                                                                                                                                                                                                                                           |
| <b>Time Required For DTC To Be Set</b> | 1800s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## P26067F Intake Air Heater B Circuit Range/Performance - Actuator Stuck Off

|                                        |                                                                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20EE00                                                                                                                                                                            |
| <b>Component / System</b>              | Intake Air Heater B                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | Circuit Range/Performance                                                                                                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• The preheat element is inactive when there is a preheat activation request. Only for 12 volt systems. and 2No Unit equals to 2</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Running</li> </ul>                                                                                                                 |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                               |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                                                                                                |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## P023400 Turbocharger/Supercharger Overboost Condition - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P023400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Component / System              | Turbocharger/Supercharger Overboost Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Monitor Strategy Description    | Overboost Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Difference between Sensed Boost Pressure and Estimated Boost Pressure above 60kPa. For current status, read MID 85 - Boost Pressure Control Monitor Bank 1, TID 95 - Boost pressure; high pressure evaluation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                         |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Speed between 1350rpm and 1650rpm</li> <li>AND</li> <li>Engine Torque in percent between 90- and 105-</li> <li>AND</li> <li>se_BoostTemp between -25°C and 130°C</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 120°C</li> <li>AND</li> <li>Absolute Engine Speed rate of change below 10rpm</li> <li>AND</li> <li>Absolute Engine Torque rate of change below 50Nm</li> <li>AND</li> <li>Absolute Estimated Boost Pressure rate of change below 10kPa</li> </ul> |
| Disable Conditions              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P0097/00, P0095/13, P0108/00, P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

## P029900 Turbocharger/Supercharger Underboost - No Sub Type Information

|                              |                           |
|------------------------------|---------------------------|
| DTC                          | P029900                   |
| Component / System           | Turbocharger/Supercharger |
| Monitor Strategy Description | Underboost                |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Difference between Sensed Boost Pressure and Estimated Boost Pressure below -50kPa. For current status, read MID 85 - Boost Pressure Control Monitor Bank 1, TID 96 - Boost pressure; low pressure evaluation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed between 1350rpm and 1650rpm</li> <li>• AND</li> <li>• Engine Torque in percent between 90- and 105-</li> <li>• AND</li> <li>• se_BoostTemp between -25°C and 130°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> <li>• AND</li> <li>• Absolute Engine Speed rate of change below 10rpm</li> <li>• AND</li> <li>• Absolute Engine Torque rate of change below 50Nm</li> <li>• AND</li> <li>• Absolute Estimated Boost Pressure rate of change below 10kPa</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01 P0335/31 P0336/38 P0489/00 P0403/13 P006E/00 P00AF/00 P0046/07 P1148/00 P0097/00 P0095/13 P0108/00 P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### U300001 Electronic control unit - General Electrical Failure

|                                        |                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U300001                                                                                         |
| <b>Component / System</b>              | Electronic control unit                                                                         |
| <b>Monitor Strategy Description</b>    | General Electronic Failure                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on N/A:ECU internal below 0.148926V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                         |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                            |

**U300041 General Checksum Failure**

|                                 |                                                                             |
|---------------------------------|-----------------------------------------------------------------------------|
| DTC                             | U300041                                                                     |
| Component / System              | Electronic control unit                                                     |
| Monitor Strategy Description    | General Electronic Failure                                                  |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Program memory corruption</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                       |
| Disable Conditions              | No Active DTC's:                                                            |
| Time Required For DTC To Be Set | 0s                                                                          |
| MIL Illumination                | N/A                                                                         |
| Probable Causes                 | <i>See Tech Tool</i>                                                        |

**U300044 Electronic control unit - Data Memory Failure**

|                                 |                                                                  |
|---------------------------------|------------------------------------------------------------------|
| DTC                             | U300044                                                          |
| Component / System              | Electronic control unit                                          |
| Monitor Strategy Description    | Data Memory Failure                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>RAM corruption</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>            |
| Disable Conditions              | No Active DTC's:                                                 |
| Time Required For DTC To Be Set | 0s                                                               |
| MIL Illumination                | N/A                                                              |
| Probable Causes                 | <i>See Tech Tool</i>                                             |

**U300045 Electronic control unit - Program Memory Failure**

|                                 |                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------|
| DTC                             | U300045                                                                                                   |
| Component / System              | Electronic control unit                                                                                   |
| Monitor Strategy Description    | Program Memory Failure                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Program memory corruptionSoftware memory checksum error</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                     |
| Disable Conditions              | No Active DTC's:                                                                                          |
| Time Required For DTC To Be Set | 0s                                                                                                        |
| MIL Illumination                | N/A                                                                                                       |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                      |

**U300049 Electronic control unit - Internal Electronic Failure**

|                    |                         |
|--------------------|-------------------------|
| DTC                | U300049                 |
| Component / System | Electronic control unit |

|                                        |                                                                      |
|----------------------------------------|----------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Internal Electronic Failure                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>ECU internal error</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                |
| <b>Disable Conditions</b>              | No Active DTC's:                                                     |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                   |
| <b>MIL Illumination</b>                | N/A                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                 |

### P007015 Ambient Air Temperature Sensor "A" - Circuit Short To Battery or Open

|                                        |                                                                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P007015                                                                                                           |
| <b>Component / System</b>              | Ambient Air Temperature Sensor "A"                                                                                |
| <b>Monitor Strategy Description</b>    | Circuit Short or Open                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Sensor voltage above 4.5 V</li> </ul>                                      |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                  |
| <b>Time Required For DTC To Be Set</b> | 11.4s                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                              |

### P007200 Ambient Air Temperature Circuit Low - No Sub Type Information

|                                        |                                                                                                                   |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P007200                                                                                                           |
| <b>Component / System</b>              | Ambient Air Temperature Circuit                                                                                   |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Sensor voltage above 4.5 V</li> </ul>                                      |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                  |
| <b>Time Required For DTC To Be Set</b> | 11.4s                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                              |

**P009A00 Engine Air Intake Temperature - Correlation - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P009A00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>              | Air Intake                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Monitor Strategy Description</b>    | Correlation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Difference between Sensed Boost Temperature and Modeled Boost Temperature below -45°C</li> <li>• OR</li> <li>• Difference between Sensed Boost Temperature and Modeled Boost Temperature above 45°C</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Vehicle Speed above 65km/h for 20s</li> <li>• AND</li> <li>• se_CoolantTemp above 60°C</li> <li>• AND</li> <li>• se_CoolantTemp below 120°C</li> <li>• AND</li> <li>• Engine Speed between 1200rpm and 1850rpm</li> <li>• AND</li> <li>• Engine Torque as percent of max rated Torque at current Engine Speed between 0% and 60%</li> <li>• AND</li> <li>• Air Mass Flow between 0.0700000002980232kg/s and 0.360000014305115kg/s</li> <li>• AND</li> <li>• Difference between deteriorated and nominal CAC temperature below 20°C above conditions valid for 5s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P0112/00, P0110/13, P2229/00, P2226/13, P0108/00, P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**P011013 Intake Air Temperature Sensor 1 Bank 1 - Circuit Open**

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| <b>DTC</b>                          | P011013                                |
| <b>Component / System</b>           | Intake Air Temperature Sensor 1 Bank 1 |
| <b>Monitor Strategy Description</b> | Circuit Open                           |

|                                        |                                                                                                                                                                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:43 above 0.794240V</li> <li>• OR</li> <li>• Voltage on B:43 above 0.023671V <ul style="list-style-type: none"> <li>• Voltage on B:43 below 0.175672V</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                           |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                                     |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                                |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                              |

### P011200 Intake Air Temperature Sensor 1 Circuit Low Bank 1 - No Sub Type Information

|                                        |                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P011013                                                                             |
| <b>Component / System</b>              | Intake Air Temperature Sensor 1 Circuit Low Bank 1                                  |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:43 below 0.023671V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                             |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>       |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                |

### P01162A Engine Coolant Temperature Circuit Range/Performance - Signal Stuck In Range

|                                     |                                                                                                                                                                                                             |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P011013                                                                                                                                                                                                     |
| <b>Component / System</b>           | Engine Coolant Temperature Circuit Range/Performance                                                                                                                                                        |
| <b>Monitor Strategy Description</b> | Signal Stuck In Range                                                                                                                                                                                       |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Difference during Precrank between Engine Coolant Temperature and mean value of(EGR Temperature, Compressor Temperature, Boost Temperature ) above 40°C</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Coolant Temperature at engine start below 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Engine Running</li> <li>• AND</li> <li>• Engine considered to be fully warmed up</li> <li>• AND</li> <li>• Engine in Precrank mode</li> <li>• AND</li> <li>• Engine Speed below 100rpm</li> <li>• AND</li> <li>• Engine Soak Time above 28800s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P2229/00, P2226/13, U3017/00</li> </ul>                                                                                                                                                                                                                                                  |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                         |

## P011700 Engine Coolant Temperature Circuit Low - No Sub Type Information

|                                        |                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P011700                                                                             |
| <b>Component / System</b>              | Engine Coolant Temperature Circuit                                                  |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:27 below 0.147705V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                             |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>       |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                 |
| <b>MIL Illumination</b>                | 3                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                |

## P012200 Throttle/Pedal Position Sensor/Switch "A" Circuit Low - No Sub Type Information

|                                     |                                                                                 |
|-------------------------------------|---------------------------------------------------------------------------------|
| <b>DTC</b>                          | P012200                                                                         |
| <b>Component / System</b>           | Throttle/Pedal Position Sensor/Switch "A"                                       |
| <b>Monitor Strategy Description</b> | Circuit Low                                                                     |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Sensor voltage below 0.38 V</li> </ul> |

|                                        |                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery Voltage &gt; 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                             |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                                                         |
| <b>MIL Illumination</b>                |                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                         |

## P012300 Throttle/Pedal Position Sensor/Switch "A" Circuit High - No Sub Type Information

|                                        |                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P012300                                                                                                      |
| <b>Component / System</b>              | Throttle/Pedal Position Sensor/Switch "A"                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                 |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Sensor voltage above 4.25 V</li> </ul>                              |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery Voltage &gt; 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                             |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                         |

## P021700 Engine Coolant Over Temperature Condition - No Sub Type Information

|                                        |                                                                                                                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P021700                                                                                                                                                                             |
| <b>Component / System</b>              | Engine Coolant Temperature                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Temperature Over Condition                                                                                                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• se_CoolantTemp above (3.5No Unit + 107No unit + Output from look-up tables with inputs se_AmbAirPres and EngineCoolantPressure)</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• The engine must be running for at least (30s + 10s) seconds.</li> </ul>                                                                    |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                                                                                                                                |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                |

**P040100 Engine Exhaust Gas Recirculation 1 Valve Position Flow Insufficient Detected - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P040100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Component / System</b>              | Engine Exhaust Gas Recirculation 1 Valve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Monitor Strategy Description</b>    | Flow Insufficient                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Percentage of Ratio between Egr Mass Flow and Demanded Egr Mass Flow below (70% + Offset dependent on se_AmbAirPres). For current status, read MID 31 - EGR Monitor Bank 1, TID 84 - Exhaust gas recirculation flow percent of demanded; high flow evaluation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine running</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 120°C</li> <li>AND</li> <li>Engine Speed between 1300rpm and 2200rpm</li> <li>AND</li> <li>tc_IndTrqValue between 1500Nm and 2600Nm</li> <li>AND</li> <li>Ratio between Egr Mass Flow Demand and sum of Air Mass Flow and Egr Mass Flow Demand between 0.200000002980232ratio and 0.600000023841858ratio</li> <li>AND</li> <li>Demanded Egr Mass Flow between 0.100000001490116kg/s and 0.400000005960464kg/s</li> <li>AND</li> <li>Demanded Egr Mass Flow rate of change between -0.00999999977648258kg/s and 0.0199999995529652kg/s</li> <li>AND</li> <li>Engine Speed rate of change between -5rpm and 20rpm</li> <li>AND</li> <li>EGR valve Control PWM between 80% and 100% above conditions valid for 2s</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0097/00, P0095/13, P0117/00, P0115/13, P0406/00, P0409/13, P2229/00, P2226/13, P0108/00, P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Time Required For DTC To Be Set</b> | 4s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## P040200 Engine Exhaust Gas Recirculation 1 Valve Position Flow Excessive Detected - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P040200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Component / System</b>              | Engine Exhaust Gas Recirculation 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Monitor Strategy Description</b>    | Valve Position Flow Excessive Detected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Percentage of Ratio between Egr Mass Flow and Demanded Egr Mass Flow above (130% + Offset dependent on se_AmbAirPres). For current status, read MID 31 - EGR Monitor Bank 1, TID 83 - Exhaust gas recirculation flow percent of demanded; low flow evaluation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine running</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 120°C</li> <li>AND</li> <li>Engine Speed between 600rpm and 2000rpm</li> <li>AND</li> <li>tc_IndTrqValue between 1000Nm and 3000Nm</li> <li>AND</li> <li>Ratio between Egr Mass Flow Demand and sum of Air Mass Flow and Egr Mass Flow Demand between 0ratio and 0.25ratio</li> <li>AND</li> <li>Demanded Egr Mass Flow between 0kg/s and 0.100000001490116kg/s</li> <li>AND</li> <li>Demanded Egr Mass Flow rate of change between -0.0299999993294477kg/s and 0.0149999996647239kg/s</li> <li>AND</li> <li>Engine Speed rate of change between 0rpm and 200rpm</li> <li>AND</li> <li>EGR valve Control PWM between 0% and 90% above conditions valid for 1s</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0097/00, P0095/13, P0117/00, P0115/13, P0406/00, P0409/13, P2229/00, P2226/13, P0108/00 P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Time Required For DTC To Be Set</b> | 3s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

**P048013 Fan 1 Control Circuit - Circuit Open**

|                                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| DTC                             | P048013                                                                                                              |
| Component / System              | Fan 1 Control Circuit                                                                                                |
| Monitor Strategy Description    | Circuit Open                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                                    |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| Time Required For DTC To Be Set | 6s                                                                                                                   |
| MIL Illumination                | N/A                                                                                                                  |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                 |

**P050013 Wheel-Based Vehicle Speed - Circuit Open**

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| DTC                             | P050013                                                                                                           |
| Component / System              | Wheel-Based Vehicle Speed                                                                                         |
| Monitor Strategy Description    | Circuit Open                                                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Sensor current below 0.1 mA</li> </ul>                                     |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                  |
| Time Required For DTC To Be Set | 3s                                                                                                                |
| MIL Illumination                | 3                                                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                              |

**P051B64 Engine High Resolution Crankcase Pressure Circuit Range/Performance - Signal Plausibility Failure**

|                              |                                                                                                                                                                                                     |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P051B64                                                                                                                                                                                             |
| Component / System           | Engine High Resolution Crankcase Pressure                                                                                                                                                           |
| Monitor Strategy Description | Circuit Range/Performance                                                                                                                                                                           |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Crankcase pressure compared to reference pressure below -15kPa</li> <li>OR</li> <li>Crankcase pressure compared to reference pressure below 15kPa</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed below 180rpm</li> <li>• OR</li> <li>• Engine Speed between 10000rpm and 0rpm             <ul style="list-style-type: none"> <li>• AND</li> <li>• tc_IndTrqValue between 10000Nm and 10Nm</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• EGR valve Control PWM between 30% and 100%</li> <li>• AND</li> <li>• Turbocharger/SuperchargerA Position between 100% and 0%</li> <li>• AND</li> <li>• No quick changes in engine speed and torque</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0105/13, P0108/00, P051D/00, P051A/13, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Time Required For DTC To Be Set</b> | 1s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P051A13 Crankcase Pressure Sensor - Circuit Open

|                                        |                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P051A13                                                                                                                                                                                                |
| <b>Component / System</b>              | Crankcase Pressure Sensor                                                                                                                                                                              |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:28 above 4.757080V</li> <li>• AND</li> <li>• Voltage on B:28 below 4.852295V</li> <li>• OR</li> <li>• Voltage on B:28 below 0.307617V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• Voltage on B:17 below 4.5V</li> <li>• OR</li> <li>• Voltage on B:17 above 5.5V</li> <li>• U3000/01</li> </ul>                                |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                   |

**P051D00 Engine High Resolution Crankcase Pressure - No Sub Type Information**

|                                        |                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P051D00                                                                                                                                                         |
| <b>Component / System</b>              | Engine High Resolution Crankcase Pressure                                                                                                                       |
| <b>Monitor Strategy Description</b>    | Crankcase Pressure                                                                                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:28 above 4.852295V</li> </ul>                                                                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                           |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>Voltage on B:17 below 4.5V</li> <li>OR</li> <li>Voltage on B:17 above 5.5V</li> <li>U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                            |

**P052300 Engine Oil Pressure Circuit High - No Sub Type Information**

|                                        |                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P052300                                                                                                                                                         |
| <b>Component / System</b>              | Engine Oil Pressure Circuit                                                                                                                                     |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:11 above 4.852295V</li> </ul>                                                                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                           |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>Voltage on B:17 below 4.5V</li> <li>OR</li> <li>Voltage on B:17 above 5.5V</li> <li>U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                            |

**P052400 Engine Oil Pressure Too Low - No Sub Type Information**

|                                     |                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P052400                                                                                                               |
| <b>Component / System</b>           | Engine Oil Pressure                                                                                                   |
| <b>Monitor Strategy Description</b> | Oil Pressure Too Low                                                                                                  |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>se_OilPres below Output from a look-up table with input EngineSpeed</li> </ul> |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul>        |

|                                 |                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------|
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P0523/00, P0520/13</li> </ul> |
| Time Required For DTC To Be Set | 10s                                                                                                |
| MIL Illumination                | N/A                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                               |

## P222613 Barometric Pressure Circuit - Circuit Open

|                                 |                                                                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P222613                                                                                                                                                                                                                                                                    |
| Component / System              | Barometric Pressure Circuit                                                                                                                                                                                                                                                |
| Monitor Strategy Description    | Circuit Open                                                                                                                                                                                                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on N/A:ECU internal above 4.782715V <ul style="list-style-type: none"> <li>AND</li> <li>Voltage on N/A:ECU internal below 4.852295V</li> </ul> </li> <li>OR</li> <li>Voltage on N/A:ECU internal below 0.117188V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                                                      |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                                                                             |
| Time Required For DTC To Be Set | 13s                                                                                                                                                                                                                                                                        |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                          |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                       |

## P222900 Barometric Pressure Circuit High - No Sub Type Information

|                                 |                                                                                               |
|---------------------------------|-----------------------------------------------------------------------------------------------|
| DTC                             | P222900                                                                                       |
| Component / System              | Barometric Pressure Circuit                                                                   |
| Monitor Strategy Description    | Circuit High                                                                                  |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on N/A:ECU internal above 4.852295V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                         |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul>                |
| Time Required For DTC To Be Set | 13s                                                                                           |
| MIL Illumination                | 3                                                                                             |
| Probable Causes                 | <i>See Tech Tool</i>                                                                          |

## P226600 Water In Fuel Indicator Circuit Low - No Sub Type Information

|                    |                         |
|--------------------|-------------------------|
| DTC                | P226600                 |
| Component / System | Water In Fuel Indicator |

|                                        |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:8 below 0.208740V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                            |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>      |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                             |

## P244B00 Aftertreatment 1 Diesel Particulate Filter Differential Pressure Too High (Bank 1) - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P244B00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Component / System</b>           | Aftertreatment 1 Diesel Particulate Filter                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Monitor Strategy Description</b> | Differential Pressure Too High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Measured differential pressure as percentage of modeled differential pressure above 350 %. For current status, read MID B2 - PM Filter Monitor Bank 1, TID 8E - Diesel particulate filter differential pressure</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Engine Speed between 1150rpm and 2000rpm</li> <li>AND</li> <li>tc_IndTrqValue between 1200Nm and 3000Nm</li> <li>AND</li> <li>Exhaust Flow between 0.280000001192093kg/s and 0.699999988079071kg/s</li> <li>AND</li> <li>Modeled differential pressure over the DPF between 0kPa and 1120kPa</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 2 between 250°C and 475°C</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 3 between 250°C and 475°C</li> <li>AND</li> <li>No quick changes in Engine Speed, Torque, Exhaust Mass Flow, Modeled Differential Pressure, Exhaust Gas Temperature Sensor 2 or Exhaust Gas Temperature Sensor 3</li> </ul> |
| <b>Disable Conditions</b>           | <ul style="list-style-type: none"> <li>Diesel injection in the aftertreatment system is active</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>P2084/64, P242B/64, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 2s                   |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

## P246300 Particulate Filter Restriction - Soot Accumulation Bank 1 - No Sub Type Information

|                                 |                                                                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P246300                                                                                                                                                                               |
| Component / System              | Particulate Filter Restriction                                                                                                                                                        |
| Monitor Strategy Description    | Soot Accumulation                                                                                                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Moderately high soot load in aftertreatment diesel particulate filter.</li> </ul>                                                              |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine is running for (30s + 10s)</li> </ul>                                                                                                   |
| Disable Conditions              | <ul style="list-style-type: none"> <li>Diesel injection in the aftertreatment system is active</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 4s                                                                                                                                                                                    |
| MIL Illumination                | N/A                                                                                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                  |

## P250C00 Engine Oil Level Circuit Low - No Sub Type Information

|                                 |                                                                              |
|---------------------------------|------------------------------------------------------------------------------|
| DTC                             | P250C00                                                                      |
| Component / System              | Engine Oil Level                                                             |
| Monitor Strategy Description    | Circuit Low                                                                  |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on B:4 below 0.05V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                        |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>  |
| Time Required For DTC To Be Set | 35s                                                                          |
| MIL Illumination                | N/A                                                                          |
| Probable Causes                 | <i>See Tech Tool</i>                                                         |

## P250F00 Engine Oil Level Too Low - No Sub Type Information

|                              |                  |
|------------------------------|------------------|
| DTC                          | P250F00          |
| Component / System           | Engine Oil Level |
| Monitor Strategy Description | Level Low        |

|                                        |                                                                                                                                                                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• If calculated value for oil level below -5% and</li> <li>• AND</li> <li>• Engine must be in prerunning during a specific time, defined by output from map with input se_OilTemp</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Not Running</li> </ul>                                                                                                                                                              |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P250C/00, P250A/13</li> </ul>                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                |

## P255613 Engine Coolant Level Sensor/Switch - Circuit Open

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P255613                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Component / System</b>              | Engine Coolant Level Sensor/Switch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:23 above <math>(24.424390V * (UnfilteredBatteryVoltage / 24.0V))</math></li> <li>• OR</li> <li>• Voltage on B:23 above <math>(15.949894V * (UnfilteredBatteryVoltage / 24.0V))</math> <ul style="list-style-type: none"> <li>• AND</li> <li>• Voltage on B:23 below <math>(23.559100V * (UnfilteredBatteryVoltage / 24.0V))</math></li> </ul> </li> <li>• OR</li> <li>• Voltage on B:23 above <math>(11.088209V * (UnfilteredBatteryVoltage / 24.0V))</math> <ul style="list-style-type: none"> <li>• AND</li> <li>• Voltage on B:23 below <math>(13.577035V * (UnfilteredBatteryVoltage / 24.0V))</math></li> </ul> </li> <li>• OR</li> <li>• Voltage on B:23 above <math>(6.574425V * (UnfilteredBatteryVoltage / 24.0V))</math> <ul style="list-style-type: none"> <li>• AND</li> <li>• Voltage on B:23 below <math>(8.724271V * (UnfilteredBatteryVoltage / 24.0V))</math></li> </ul> </li> <li>• OR</li> <li>• Voltage on B:23 above <math>(2.863488V * (UnfilteredBatteryVoltage / 24.0V))</math> <ul style="list-style-type: none"> <li>• AND</li> <li>• Voltage on B:23 below <math>(4.469182V * (UnfilteredBatteryVoltage / 24.0V))</math></li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

**P255800 Engine Coolant Level Circuit Low - No Sub Type Information**

|                                        |                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P255800                                                                                                                               |
| <b>Component / System</b>              | Engine Coolant Level                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:23 below <math>(2.863488V * (UnfilteredBatteryVoltage / 24.0V))</math></li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                 |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                           |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                                                                   |
| <b>MIL Illumination</b>                | N/A                                                                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                  |

**P255900 Engine Coolant Level Circuit High - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P255900                                                                                                                                                                                                                                           |
| <b>Component / System</b>              | Engine Coolant Level                                                                                                                                                                                                                              |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:23 above <math>(23.559100V * (UnfilteredBatteryVoltage / 24.0V))</math></li> <li>AND</li> <li>Voltage on B:23 below <math>(24.424390V * (UnfilteredBatteryVoltage / 24.0V))</math></li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                             |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                              |

**P256000 Engine Coolant Level Low - No Sub Type Information**

|                                        |                                                                                                               |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P256000                                                                                                       |
| <b>Component / System</b>              | Engine Coolant Level                                                                                          |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                  |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>se_CoolantLvl below (1No unit - 0No Unit)</li> </ul>                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 0s) seconds.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P2559/00, P2558/00, P2556/13</li> </ul>     |
| <b>Time Required For DTC To Be Set</b> | 20s                                                                                                           |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## P256300 Engine Intake Manifold #1 Pressure Circuit Range/Performance - No Sub Type Information

|                                 |                                                                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P256300                                                                                                                                                                                                         |
| Component / System              | Engine Intake Manifold #1                                                                                                                                                                                       |
| Monitor Strategy Description    | Pressure Circuit Range                                                                                                                                                                                          |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Turbo Speed below 0rpm</li> </ul>                                                                                                                                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine running</li> <li>AND</li> <li>Engine Speed between 1000rpm and 2000rpm</li> <li>AND</li> <li>tc_IndTrqValue above 1000Nm above conditions valid for 5s</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38</li> </ul>                                                                                                                 |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                                                              |
| MIL Illumination                | 3                                                                                                                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                            |

## P257831 Turbocharger Speed Sensor - No Signal

|                                 |                                                                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P257831                                                                                                                                                                                                         |
| Component / System              | Turbocharger Speed Sensor                                                                                                                                                                                       |
| Monitor Strategy Description    | No Signal                                                                                                                                                                                                       |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Turbo Speed below 0rpm</li> </ul>                                                                                                                                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine running</li> <li>AND</li> <li>Engine Speed between 1000rpm and 2000rpm</li> <li>AND</li> <li>tc_IndTrqValue above 1000Nm above conditions valid for 5s</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38</li> </ul>                                                                                                                 |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                                                              |
| MIL Illumination                | 3                                                                                                                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                            |

## P207F00 Reductant Quality - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P207F00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Component / System</b>              | Reductant Quality                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b>    | Pressure Circuit Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Increased reductant flow has not improved conversion efficiency and the flow cannot be increased further</li> <li>AND</li> <li>Reductant concentration below 18%</li> <li>AND</li> <li>Conversion efficiency has decreased rapidly</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Average SCR NOx Catalyst Temperature between 255°C and 450°C</li> <li>AND</li> <li>Calculated exhaust mass flow between 0.100000001490116kg/s and 0.5kg/s</li> <li>AND</li> <li>Engine Speed between 1100rpm and 2050rpm</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 105kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>The reductant delivery system is operating normally, the engine is operating in a functional normal engine mode, there is a reductant injection demand</li> <li>AND</li> <li>Steady state: No quick changes in engine speed, torque, exhaust mass flow and EATS temperature</li> <li>AND</li> <li>Reductant flow since the reductant tank has been refilled above 600g</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P225D/00, P225F/00, P2201/64, P229F/64, P225C/00, P225E/00, P20FE/9A, P242B/64, P0420/00, P0402/00, P0401/00, P221A/00, P20EE/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P111C/00, P0111/64, P0112/00, P0110/13, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P220F/93, P1136/00, U029D/00, U029E/00, U3017/00</li> </ul>                                                                                                                                                                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 1800s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P108600 Oil Level Moderately Low - No Sub Type Information

|                                     |           |
|-------------------------------------|-----------|
| <b>DTC</b>                          | P108600   |
| <b>Component / System</b>           | Oil Level |
| <b>Monitor Strategy Description</b> | Level Low |

|                                        |                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• If calculated value for oil level below 4%</li> <li>• AND</li> <li>• Engine must be in prerunning during a specific time, defined by output from map with input se_OilTemp</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Not Running</li> </ul>                                                                                                                                                         |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P250C/00, P250A/13</li> </ul>                                                                                                                              |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                                                                                                                                                             |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                           |

## U014100 Lost Communication With VMCU - No Sub Type Information

|                                        |                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U014100                                                                                                                                                                                                          |
| <b>Component / System</b>              | VMCU                                                                                                                                                                                                             |
| <b>Monitor Strategy Description</b>    | Lost Signal                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Lost communication with BCM on Medium Speed CAN Communication Bus</li> <li>• OR</li> <li>• Lost communication with BCM on Medium Speed CAN Communication Bus</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                          |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U0010/88</li> </ul>                                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 9.1s                                                                                                                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                             |

## P229F64 NOx Sensor Gas Outlet Removed - Signal Plausibility Failure

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P229F64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Component / System</b>           | NOx Sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Monitor Strategy Description</b> | Outlet Removed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• The sensor shall respond to tip-in events (sudden power increase). Maximum and minimum NOx levels are saved during evaluation events. When 5No Unit events have passed, the sensor is considered stuck low if the difference between the highest and lowest value is lower than 5No Unit. For current status, read MID 02 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 2, TID 9F - Difference in ppm between highest and lowest NOx level</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 1200Nm and 1900Nm</li> <li>• AND</li> <li>• Engine Speed above 1200rpm</li> <li>• AND</li> <li>• Average SCR NOx Catalyst Temperature between 150°C and 300°C</li> <li>• AND</li> <li>• Tip-in event: quick increase of power.</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P225D/00, P225F/00, P242B/64, P0420/00, P0402/00, P0401/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P225D/00, P220F/93, P225F/00, U029D/00, U029E/00</li> </ul>                                         |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                               |

## P229E13 NOx Sensor Bank 1 Sensor 2 - Circuit Open

|                                        |                                                                                                                                                                                                                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P229E13                                                                                                                                                                                                                                                                          |
| <b>Component / System</b>              | NOx Sensor Bank 1                                                                                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Internal Open Circuit signal containing status and error byte received from Downstream NOx sensor evaluated as NOT_RELIABLE</li> </ul>                                                                                                  |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Ignition Key Turned On</li> </ul>                                                                                                                                                                                                       |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Internal Open Circuit signal containing status and error byte from Downstream NOx sensor not yet evaluated or not yet recieved</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U029E/00 U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                             |

## P220B1C NOx Sensor Supply Voltage Circuit Bank 1 Sensor 2 - Circuit Voltage Out of Range

|                                     |                                                   |
|-------------------------------------|---------------------------------------------------|
| <b>DTC</b>                          | P220B1C                                           |
| <b>Component / System</b>           | NOx Sensor Supply Voltage Circuit Bank 1 Sensor 2 |
| <b>Monitor Strategy Description</b> | Circuit Voltage Out of Range                      |

|                                        |                                                                                                                                                                                                                                                                              |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Internal Supply Voltage signal containing status and error byte received from Downstream NOx sensor evaluated as NOT_RELIABLE</li> </ul>                                                                                              |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Ignition Key Turned On</li> </ul>                                                                                                                                                                                                     |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Internal Open Circuit signal containing status and error byte from Downstream NOx sensor not yet evaluated or not yet received</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U029E/00 U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                         |

## P220F93 NOx Sensor Heater Control Circuit Range/Performance Bank 1 Sensor 2 - No Operation

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P220F93                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Component / System</b>              | NOx Sensor Heater Control Circuit                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Internal status and error byte received from Downstream NOx sensor not evaluated as GOOD within a reasonable time. For current status, read MID 42 - Exhaust Gas Sensor Heater Monitor Bank 1 - Sensor 2, TID 9E - Heating Time</li> </ul>                                                                                                                                |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_BattVolt between 11.5V and 16V</li> <li>AND</li> <li>Engine must be running</li> <li>AND</li> <li>not Exhaust Aftertreatment Fuel Injecton Active for 30s</li> <li>AND</li> <li>Downstream NOx sensor must be activated by EMS</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Downstream NOx sensor Start Up Diagnosis reported OK</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P229E/13, P22A1/00, P220B/1C, U029E/00, U3000/01</li> </ul>                                                                                                                                                                                |
| <b>Time Required For DTC To Be Set</b> | 180s                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                             |

**P208E00 Aftertreatment Reagent Dosing Valve Clogged - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P208E00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>              | Aftertreatment Reagent Dosing Valve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Monitor Strategy Description</b>    | Dosing Valve Clogged                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Reagent pump dutycycle during high dosingReagent pump dutycycle during low/no dosings shall have a difference smaller than: 18.5No Unit. For current status, read MID 98 - NOx Catalyst Monitor Bank 1, TID A0 - Reductant pump duty cycle</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine Running</li> <li>AND</li> <li>(Reagent Pressure - 900kPa) between (215kPa * -1) and 215kPa</li> <li>AND</li> <li>Demanded Reductant Injection Flow below 0.0500000007450581g/s</li> <li>AND</li> <li>Catalyst tank temperature between 10°C and 55°C</li> <li>AND</li> <li>All conditions from part 1, except:</li> <li>AND</li> <li>Demanded Reductant Injection Flow below 0.0500000007450581g/s</li> <li>AND</li> <li>Drive the truck for at least 15 minutes in order to raise SCR temperature</li> <li>AND</li> <li>Average SCR NOx Catalyst Temperature above 250°C</li> <li>AND</li> <li>Demanded Reductant Injection Flow shall have injected at least: 75g</li> <li>AND</li> <li>Demanded Reductant Injection Flow above 0.449999988079071g/s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Time Required For DTC To Be Set</b> | 1200s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**P20A013 Reductant Purge Control Valve - Circuit Open**

|                                     |                                                                                                           |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P20A013                                                                                                   |
| <b>Component / System</b>           | Reductant Purge Control Valve                                                                             |
| <b>Monitor Strategy Description</b> | Dosing Valve Clogged                                                                                      |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                         |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>Actuator must be inactive, i.e. duty must be 0.0%.</li> </ul>      |
| <b>Disable Conditions</b>           | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P20B3/00, P10AE/00, P10A7/00</li> </ul> |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 10s                  |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

## P215A64 Vehicle Speed - Wheel Speed Correlation - Signal Plausibility Failure

|                                 |                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------|
| DTC                             | P215A64                                                                                                  |
| Component / System              | Vehicle Speed                                                                                            |
| Monitor Strategy Description    | Wheel Speed Correlation                                                                                  |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Difference between vehicle speed and ABS above 12 km/h</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine speed above 500 RPM</li> </ul>                             |
| Disable Conditions              | No Active DTC's:                                                                                         |
| Time Required For DTC To Be Set | 13s                                                                                                      |
| MIL Illumination                | 3                                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                     |

## P069200 Fan 1 Control Circuit High - No Sub Type Information

|                                 |                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------|
| DTC                             | P069200                                                                                                  |
| Component / System              | Fan 1 Control Circuit                                                                                    |
| Monitor Strategy Description    | Circuit High                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                  |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                              |
| Time Required For DTC To Be Set | 6s                                                                                                       |
| MIL Illumination                | N/A                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                     |

## P069100 Fan 1 Control Circuit Low - No Sub Type Information

|                                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| DTC                             | P069100                                                                                                              |
| Component / System              | Fan 1 Control Circuit                                                                                                |
| Monitor Strategy Description    | Circuit Low                                                                                                          |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                               |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| Time Required For DTC To Be Set | 6s                                                                                                                   |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## U015500 Lost Communication With Instrument Panel Cluster (IPC) Control Module - No Sub Type Information

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| DTC                             | U015500                                                                                                             |
| Component / System              | IPC Control Module                                                                                                  |
| Monitor Strategy Description    | Lost Signal                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with IPC on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                               |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88, U3000/01</li> </ul>                               |
| Time Required For DTC To Be Set | 15s                                                                                                                 |
| MIL Illumination                | 3                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                |

## P052013 Engine Oil Pressure Sensor/Switch "A" - Circuit Open

|                                 |                                                                                                                                                                                                                                             |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P052013                                                                                                                                                                                                                                     |
| Component / System              | Engine Oil Pressure Sensor/Switch "A"                                                                                                                                                                                                       |
| Monitor Strategy Description    | Circuit Open                                                                                                                                                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on B:11 above 4.787598V AND               <ul style="list-style-type: none"> <li>Voltage on B:11 below 4.852295V</li> </ul> </li> <li>OR</li> <li>Voltage on B:11 below 0.212402V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                       |
| Disable Conditions              | <ul style="list-style-type: none"> <li>Voltage on B:17 below 4.5V</li> <li>OR</li> <li>Voltage on B:17 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                    |
| Time Required For DTC To Be Set | 7s                                                                                                                                                                                                                                          |
| MIL Illumination                | 3                                                                                                                                                                                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                        |

## P260513 Intake Air Heater "B" Control - Circuit Open

|                              |                       |
|------------------------------|-----------------------|
| DTC                          | P260513               |
| Component / System           | Intake Air Heater "B" |
| Monitor Strategy Description | Circuit Open          |

|                                        |                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:14 above (25.138032V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>• OR</li> <li>• Voltage on B:14 above (2.863488V * (UnfilteredBatteryVoltage / 24.0V)) AND <ul style="list-style-type: none"> <li>• AND</li> <li>• Voltage on B:14 below (20.579645V * (UnfilteredBatteryVoltage / 24.0V))</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                                                                                                                                     |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                                                                                                                                                                               |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                        |

### P06E800 Sensor Power Supply "C" Circuit High - No Sub Type InformationSensor Power Supply "C" Circuit High - No Sub Type Information

|                                        |                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------|
| <b>DTC</b>                             | P06E800                                                                       |
| <b>Component / System</b>              | Power Supply "C"                                                              |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                  |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:1 above 5.5V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                       |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                          |
| <b>MIL Illumination</b>                | 3                                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                          |

### P06E700 Sensor Power Supply "C" Circuit Low - No Sub Type Information

|                                        |                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------|
| <b>DTC</b>                             | P06E700                                                                       |
| <b>Component / System</b>              | Sensor Power Supply "C"                                                       |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                   |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:1 below 4.5V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                       |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                          |
| <b>MIL Illumination</b>                | 3                                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                          |

## P00AF00 Turbocharger/Supercharger Boost Control "A" Module Performance - No Sub Type Information

|                                 |                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------|
| DTC                             | P00AF00                                                                                                     |
| Component / System              | Turbocharger/Supercharger Boost Control "A"                                                                 |
| Monitor Strategy Description    | Module Performance                                                                                          |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Internal failure detected by Turbocharger/Supercharger A.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                       |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, U010C/00</li> </ul>                       |
| Time Required For DTC To Be Set | 1s                                                                                                          |
| MIL Illumination                | 3                                                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                        |

## P066613 Control Module Internal Temperature Sensor "A" - Circuit Open

|                                 |                                                                                                                                                                 |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P066613                                                                                                                                                         |
| Component / System              | Turbocharger/Supercharger Boost Control "A"                                                                                                                     |
| Monitor Strategy Description    | Module Performance                                                                                                                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on N/A:ECU internal above 0.147705V</li> <li>AND</li> <li>Voltage on N/A:ECU internal below 1.119385V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                           |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                     |
| Time Required For DTC To Be Set | 13s                                                                                                                                                             |
| MIL Illumination                | N/A                                                                                                                                                             |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                            |

## P040C00 Exhaust Gas Recirculation Temperature Sensor "A" Circuit Low - No Sub Type Information

|                              |                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------|
| DTC                          | P040C00                                                                           |
| Component / System           | Exhaust Gas Recirculation Temperature Sensor "A"                                  |
| Monitor Strategy Description | Circuit Low                                                                       |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Voltage on B:48 below 0.023671V</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>       |

|                                 |               |
|---------------------------------|---------------|
| Time Required For DTC To Be Set | 7s            |
| MIL Illumination                | 3             |
| Probable Causes                 | See Tech Tool |

## P030100 Cylinder 1 Misfire Detected - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P030100                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Component/ System               | Exhaust Gas Recirculation Temperature Sensor "A"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Monitor Strategy Description    | Circuit Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• PTO is not active</li> <li>• AND <ul style="list-style-type: none"> <li>• Gear engaged</li> <li>• AND</li> <li>• EngineSpeed between 550rpm and 1650rpm</li> <li>• AND</li> <li>• Torque value between 406Nm and 1800Nm</li> <li>• AND</li> <li>• Engine is not idling</li> </ul> </li> <li>• OR <ul style="list-style-type: none"> <li>• Engine is idling</li> <li>• AND</li> <li>• Torque value between 0Nm and 610Nm</li> <li>• AND</li> <li>• EngineSpeed between 450rpm and 800rpm</li> <li>• AND</li> <li>• Vehicle stand still</li> <li>• AND</li> <li>• If a misfire fault code has been set you will also need to consider similar conditions in order to heal the fault code. Similar conditions window is defined by engine speed, engine torque and coolant temperature at the moment the fault code is set. Considering the similar conditions means that the fault code has to be evaluated in an operating point within the similar conditions window in order to heal it. The similar conditions information relevant to Misfire fault codes is available via P1NL2. Note that for the diagnostic function to be active, the 'similar conditions' and all conditions listed herein must be met.</li> </ul> </li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Disable Conditions              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Time Required For DTC To Be Set | 120s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Probable Causes                 | See Tech Tool                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**P020113 Cylinder 1 Injector "A" - Circuit Open**

|                                        |                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P020113                                                                                      |
| <b>Component / System</b>              | Cylinder 1 Injector "A"                                                                      |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                 |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Current driving the injector rises to slow</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                        |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                  |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                         |

**P030300 Cylinder 3 Misfire Detected - No Sub Type Information**

|                                     |                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P030300                                                                                                                                                                                                                                                                                                          |
| <b>Component / System</b>           | Cylinder 3                                                                                                                                                                                                                                                                                                       |
| <b>Monitor Strategy Description</b> | Misfire Detected                                                                                                                                                                                                                                                                                                 |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Misfire rate for cylinder 3 above 80%. For current status, read MID A4 - Misfire Cylinder 3 Data, TID 0C - Misfire counts for last/current driving cycles, MID A4 - Misfire Cylinder 3 Data, TID 0B - Moving average misfire counts for last 10 driving cycles</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• PTO is not active</li> <li>• AND</li> <li>• Gear Engaged <ul style="list-style-type: none"> <li>• AND</li> <li>• EngineSpeed between 550rpm and 1650rpm</li> <li>• AND</li> <li>• Torque value between 406Nm and 1800Nm</li> <li>• AND</li> <li>• Engine is not idling</li> </ul> </li> <li>• OR <ul style="list-style-type: none"> <li>• Engine is idling</li> <li>• AND</li> <li>• Torque value between 0Nm and 610Nm</li> <li>• AND</li> <li>• EngineSpeed between 450rpm and 800rpm</li> <li>• AND</li> <li>• Vehicle stand still</li> <li>• AND</li> <li>• If a misfire fault code has been set you will also need to consider similar conditions in order to heal the fault code. Similar conditions window is defined by engine speed, engine torque and coolant temperature at the moment the fault code is set. Considering the similar conditions means that the fault code has to be evaluated in an operating point within the similar conditions window in order to heal it. The similar conditions information relevant to Misfire fault codes is available via P1NL2. Note that for the diagnostic function to be active, the 'similar conditions' and all conditions listed herein must be met.</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 120s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## P020313 Cylinder 3 Injector "A" - Circuit Open

|                                     |                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P020313                                                                                        |
| <b>Component / System</b>           | Cylinder 3 Injector "A"                                                                        |
| <b>Monitor Strategy Description</b> | Circuit Open                                                                                   |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Current driving the injector rises to slow</li> </ul> |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• Engine Running</li> </ul>                             |
| <b>Disable Conditions</b>           | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>           |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 0.5s                 |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

### P020413 Cylinder 4 Injector "A" - Circuit Open

|                                 |                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------|
| DTC                             | P020413                                                                                      |
| Component / System              | Cylinder 4 Injector "A"                                                                      |
| Monitor Strategy Description    | Circuit Open                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Current driving the injector rises to slow</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                             |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                  |
| Time Required For DTC To Be Set | 0.5s                                                                                         |
| MIL Illumination                | 3                                                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                                                         |

### P020513 Cylinder 5 Injector "A" - Circuit Open

|                                 |                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------|
| DTC                             | P020513                                                                                      |
| Component / System              | Cylinder 5 Injector "A"                                                                      |
| Monitor Strategy Description    | Circuit Open                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Current driving the injector rises to slow</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                             |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                  |
| Time Required For DTC To Be Set | 0.5s                                                                                         |
| MIL Illumination                | 3                                                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                                                         |

### P020613 Cylinder 6 Injector "A" - Circuit Open

|                              |                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------|
| DTC                          | P020613                                                                                      |
| Component / System           | Cylinder 6 Injector "A"                                                                      |
| Monitor Strategy Description | Circuit Open                                                                                 |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Current driving the injector rises to slow</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                             |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                  |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 0.5s                 |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

## P220E93 NOx Sensor Heater Control Circuit Range/Performance (Bank 1 Sensor 1) - No Operation

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P220E93                                                                                                                                                                                                                                                                                                                                                                                                             |
| Component / System              | NOx Sensor Heater Control Circuit                                                                                                                                                                                                                                                                                                                                                                                   |
| Monitor Strategy Description    | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Internal status and error byte received from Upstream NOx sensor not evaluated as GOOD within a reasonable time. For current status, read MID 41 - Exhaust Gas Sensor Heater Monitor Bank 1 - Sensor 1, TID 9E - Heating Time</li> </ul>                                                                                                                                     |
| Enable Conditions               | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_BattVolt between 11.5V and 16V</li> <li>AND</li> <li>Engine must be running</li> <li>AND</li> <li>not Exhaust Aftertreatment Fuel Injection Active for 30s</li> <li>AND</li> <li>Upstream NOx sensor must be activated by EMS</li> </ul> |
| Disable Conditions              | <ul style="list-style-type: none"> <li>Upstream NOx sensor Start Up Diagnosis reported OK</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>P2200/13, P2203/00, P220A/1C, U029D/00, U3000/01</li> </ul>                                                                                                                                                                                            |
| Time Required For DTC To Be Set | 180s                                                                                                                                                                                                                                                                                                                                                                                                                |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                |

## P250A13 Engine Oil Level Sensor - Circuit Open

|                                 |                                                                              |
|---------------------------------|------------------------------------------------------------------------------|
| DTC                             | P250A13                                                                      |
| Component / System              | Engine Oil Level Sensor                                                      |
| Monitor Strategy Description    | Circuit Open                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on B:4 above 4.85V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                        |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>  |
| Time Required For DTC To Be Set | 35s                                                                          |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

**P026C00 Fuel Injection Quantity Lower Than Expected - No Sub Type Information**

|                              |                                                                                                                                                                                                                             |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P026C00                                                                                                                                                                                                                     |
| Component / System           | Fuel Injection Quantity                                                                                                                                                                                                     |
| Monitor Strategy Description | Level Lower than Expected                                                                                                                                                                                                   |
| Fault Limit                  | <ul style="list-style-type: none"><li>Average of the ratio between estimated and requested fuel quantity, above 75%. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 8C - Fuel injection amount</li></ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• EGR content in the intake manifold [100 = only EGR, no fresh air] between 0ratio and 20ratio</li> <li>• AND</li> <li>• se_BoostTemp between -7°C and 120°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 1000Nm and 4000Nm</li> <li>• AND</li> <li>• Engine Speed between 1000rpm and 2200rpm <ul style="list-style-type: none"> <li>• AND</li> <li>• se_EngExhTempOut between 100°C and 460°C</li> <li>• AND</li> <li>• se_HcHeatTempOut between 200°C and 460°C</li> <li>• AND</li> <li>• se_DpfTempOut between 200°C and 460°C</li> </ul> </li> <li>• AND</li> <li>• above conditions valid for 10s</li> <li>• AND</li> <li>• Exhaust Flow between 0kg/s and 100kg/s</li> <li>• AND</li> <li>• The estimated lambda must be between the upper and lower limits between 1ratio and 2.599999904632568ratio</li> <li>• AND</li> <li>• Engine running for 10s</li> <li>• AND</li> <li>• The diagnosis can be performed only once per driving cycle</li> <li>• AND</li> <li>• The engine must be in a stable operating state, i.e., engine speed, torque, boost pressure and EGR value should be stable.</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0115/13, P0117/00, P2226/13, P2229/00, P0105/13, P0108/00, P0095/13, P0097/00, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0406/00, P0409/13, P2200/13, P2203/00, P0340/31, P0335/31, P2080/64, P2084/64, P242B/64, P0069/64, P0096/64, P0234/00, P0299/00, P040B/64, P04D9/00, P0401/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Time Required For DTC To Be Set</b> | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**P026D00 Fuel Injection Quantity Higher Than Expected - No Sub Type Information**

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P026D00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Component / System</b>           | Fuel Injection Quantity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b> | Higher Level than Expected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• 128% above Average of the ratio between estimated and requested fuel quantity.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 8C - Fuel injection amount</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• EGR content in the intake manifold [100 = only EGR, no fresh air] between 0ratio and 20ratio</li> <li>• AND</li> <li>• se_BoostTemp between -7°C and 120°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 1000Nm and 4000Nm</li> <li>• AND</li> <li>• Engine Speed between 1000rpm and 2200rpm <ul style="list-style-type: none"> <li>• AND</li> <li>• se_EngExhTempOut between 100°C and 460°C</li> <li>• AND</li> <li>• se_HcHeatTempOut between 200°C and 460°C</li> <li>• AND</li> <li>• se_DpfTempOut between 200°C and 460°C</li> </ul> </li> <li>• AND</li> <li>• above conditions valid for 10s</li> <li>• AND</li> <li>• Exhaust Flow between 0kg/s and 100kg/s</li> <li>• AND</li> <li>• The estimated lambda must be between the upper and lower limits between 1ratio and 2.599999904632568ratio</li> <li>• AND</li> <li>• Engine running for 10s</li> <li>• AND</li> <li>• The diagnosis can be performed only once per driving cycle</li> <li>• AND</li> <li>• The engine must be in a stable operating state, i.e., engine speed, torque, boost pressure and EGR value should be stable.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P0115/13, P0117/00, P2226/13, P2229/00, P0105/13, P0108/00, P0095/13, P0097/00, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0406/00, P0409/13, P2200/13, P2203/00, P0340/31, P0335/31, P2080/64, P2084/64, P242B/64, P0069/64, P0096/64, P0234/00, P0299/00, P040B/64, P04D9/00, P0401/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                         |

## P245364 Diesel Particulate Filter Pressure Sensor "A" Circuit Range/Performance - Signal Plausibility Failure

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P245364                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Component / System</b>           | Fuel Injection Quantity                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Monitor Strategy Description</b> | Higher Level than Expected                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Failure event for diagnosis in AfterRun             <ul style="list-style-type: none"> <li>AND</li> <li>Compensated Diesel Particulate Filter Differential Pressure above 1.5kPa</li> </ul> </li> <li>OR</li> <li>Failure event for diagnosis during high load</li> <li>AND</li> <li>Compensated Diesel Particulate Filter Differential Pressure below 1.649999976158142kPa</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Enable conditions for running the diagnosis in AfterRun <ul style="list-style-type: none"> <li>• AND</li> <li>• Engine Off</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 between -8°C and 400°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 3 between -8°C and 400°C</li> </ul> </li> <li>• OR</li> <li>• Enable conditions for running the diagnosis during high load</li> <li>• AND</li> <li>• Engine Speed between 1400rpm and 1900rpm</li> <li>• AND</li> <li>• tc_IndTrqValue above 1000Nm</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 between 270°C and 500°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 3 between 240°C and 400°C</li> <li>• AND</li> <li>• Exhaust Flow above 0.280000001192093kg/s</li> <li>• AND</li> <li>• Modeled differential pressure over the DPF above 3kPa</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P2084/64, P242B/64, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Time Required For DTC To Be Set</b> | 1s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## P249F00 Excessive Time To Enter Closed Loop DPF Regeneration Control - No Sub Type Information

|                                     |                                                                                                                                             |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P249F00                                                                                                                                     |
| <b>Component / System</b>           | DPF                                                                                                                                         |
| <b>Monitor Strategy Description</b> | Excessive Time to Enter Close Loop                                                                                                          |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injection Control Forced in Open Loop 0.5ratio of the time.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Regeneration Active</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 225°C and 550°C</li> <li>• AND</li> <li>• Modeled Exhaust Gas Temperature Sensor 2 between 300°C and 650°C</li> <li>• AND</li> <li>• Exhaust Flow between 0.0500000007450581kg/s and 0.600000023841858kg/s</li> <li>• AND</li> <li>• tc_IndTrqValue below 5Nm</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P2080/64, P2084/64, P242B/64, P0072/00, P0070/15, P2229/00, P2226/13, P0117/00, P0115/13, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Time Required For DTC To Be Set</b> | 200s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P24A000 Closed Loop DPF Regeneration Control At Limit - Temperature Too Low - No Sub Type Information

|                                     |                                                                                                                                                                                                     |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P24A000                                                                                                                                                                                             |
| <b>Component / System</b>           | DPF                                                                                                                                                                                                 |
| <b>Monitor Strategy Description</b> | Control At Limit                                                                                                                                                                                    |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Closed Loop Exhaust Aftertreatment Fuel Injecton Control At Maximum Limit 0.699999988079071ratio of the time. Regeneration Temperature Too Low.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Regeneration Active</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 120°C</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 1 between 225°C and 550°C</li> <li>AND</li> <li>Modeled Exhaust Gas Temperature Sensor 2 between 300°C and 650°C</li> <li>AND</li> <li>Exhaust Flow between 0.0500000007450581kg/s and 0.600000023841858kg/s</li> <li>AND</li> <li>tc_IndTrqValue below 5Nm</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P2080/64, P2084/64, P242B/64, P0072/00, P0070/15, P2229/00, P2226/13, P0117/00, P0115/13, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 50s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P20DC00 Exhaust Aftertreatment Fuel Supply Control Stuck Closed - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P20DC00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>           | EATS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Monitor Strategy Description</b> | Fuel Supply Control Stuck Closed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Monitor A Failure Event IDTC_ATI1_FP_PL</li> <li>AND</li> <li>se_AhiFuelPres below 100kPa               <ul style="list-style-type: none"> <li>AND NOT</li> <li>se_AhiFuelPres below 45kPa</li> <li>AND</li> <li>se_AhiFuelPres below 300kPa                   <ul style="list-style-type: none"> <li>OR</li> <li>se_AhiFuelPres above 200kPa</li> <li>AND</li> <li>se_AhiFuelPres above 200kPa</li> </ul> </li> </ul> </li> <li>OR</li> <li>Monitor B Failure Event IDTC_ATI1_FP_PL</li> <li>AND</li> <li>Fuel Pressure In The Exhaust Aftertreatment Fuel Injector below 0kPa for 60s</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• se_BattVolt between 10V and 16V</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND <ul style="list-style-type: none"> <li>▪ Diagnosis not completed this driving cycle</li> </ul> </li> <li>• OR <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injector Active</li> <li>• AND</li> <li>• Diagnosis not completed the last 7200s</li> </ul> </li> <li>• se_CoolantTemp above 20°C</li> <li>• AND</li> <li>• Exhaust Flow above 0.00999999977648258kg/s</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 0°C and 500°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 between 120°C and 400°C</li> </ul><br><ul style="list-style-type: none"> <li>• OR <ul style="list-style-type: none"> <li>▪ Monitor B Enable Conditions IDTC_ATI1_FP_PL</li> <li>• AND</li> <li>• se_BattVolt between 10V and 16V</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND</li> <li>• se_CoolantTemp above 20°C</li> <li>• AND</li> <li>• Exhaust Flow above 0.00999999977648258kg/s</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 0°C and 500°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 between 120°C and 400°C</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P2697/13, P2699/00, P20D9/00, P20D7/13, P20E0/00, P20DD/13, P24FA/00, P24F8/13, U3000/01, P0117/00, P0115/13, U3000/01, P20DD/13, P20E0/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P215A/64</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Time Required For DTC To Be Set</b> | 90s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**P20CF7A Exhaust Aftertreatment Fuel Injector "A" Stuck Open - Fluid Leak or Seal Failure**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20CF7A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Component / System</b>              | EATS Injector "A"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b>    | Stuck Open                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• se_AhiFuelPres below 75kPa</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• se_BattVolt between 10V and 16V</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND</li> <li>• Diagnosis not completed this driving cycle <ul style="list-style-type: none"> <li>• OR</li> <li>• Exhaust Aftertreatment Fuel Injector Active</li> <li>• AND</li> <li>• Diagnosis not completed the last 7200s</li> </ul> </li> <li>• se_CoolantTemp above 20°C</li> <li>• AND</li> <li>• Exhaust Flow above 0.00999999977648258kg/s</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 0°C and 500°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 between 120°C and 400°C</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P2697/13, P2699/00, P20D9/00, P20D7/13, P20E0/00, P20DD/13, P24FA/00, P24F8/13, U3000/01, P0117/00, P0115/13, U3000/01, P20DD/13, P20E0/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P215A/64</li> </ul>                                                                                                                                                                                                                                                                                                             |
| <b>Time Required For DTC To Be Set</b> | 90s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**P269800 Exhaust Aftertreatment Fuel Injector "A" Performance - No Sub Type Information**

|                                     |                                                                                                                                |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P269800                                                                                                                        |
| <b>Component / System</b>           | EATS Injector "A"                                                                                                              |
| <b>Monitor Strategy Description</b> | Injector Performance                                                                                                           |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injector "A" loss of injection above 0.75ratio</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Hydrocarbon Conversion Monitor Enable Conditions</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>Engine Speed between 590rpm and 3000rpm</li> <li>AND</li> <li>tc_IndTrqValue between 1Nm and 4000Nm</li> <li>AND</li> <li>Exhaust Aftertreatment Fuel Injector Active</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 3 between 200°C and 600°C</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 1 between 170°C and 400°C</li> <li>AND</li> <li>SCR warming active</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P2080/64, P2084/64, P242B/64, P2229/00, P2226/13, P0072/00, P0070/15, P20DD/13, P20E0/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, U029D/00, P22FE/00, P220B/1C, P229E/13, P22A1/00, P220F/93, U029E/00, P20EE/00, P2201/64, P225D/00, P229F/64, P225F/00, P20D0/00, P24F6/00, P20DC/00, P20CF/7A, P2697/13, P2699/00, P20D9/00, P20D7/13, P20E0/00, P20DD/13, P24FB/00, P24FA/00, P24F8/13, U3000/01</li> </ul>                                                               |
| <b>Time Required For DTC To Be Set</b> | 1000s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## P20D000 Exhaust Aftertreatment Fuel Injector "A" Stuck Closed - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P20D000                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>           | EATS Injector "A"                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Monitor Strategy Description</b> | Injector Stuck Closed                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>se_AhiFuelPres above 140kPa <ul style="list-style-type: none"> <li>AND NOT</li> </ul> </li> <li>se_AhiFuelPres below 45kPa <ul style="list-style-type: none"> <li>AND</li> </ul> </li> <li>se_AhiFuelPres below 300kPa <ul style="list-style-type: none"> <li>OR <ul style="list-style-type: none"> <li>se_AhiFuelPres above 200kPa</li> <li>AND</li> <li>se_AhiFuelPres above 200kPa</li> </ul> </li> </ul> </li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• se_BattVolt between 10V and 16V</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND</li> <li>• Diagnosis not completed this driving cycle               <ul style="list-style-type: none"> <li>• OR                   <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injector Active</li> <li>• AND</li> <li>• Diagnosis not completed the last 7200s</li> </ul> </li> </ul> </li> <li>• se_CoolantTemp above 20°C</li> <li>• AND</li> <li>• Exhaust Flow above 0.00999999977648258kg/s</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 0°C and 500°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 between 120°C and 400°C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0117/00, P0115/13, U3000/01, P20DD/13, P20E0/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P215A/64</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Time Required For DTC To Be Set</b> | 90s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## P200200 Diesel Particulate Filter Efficiency Below Threshold (Bank 1) - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                      |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P200200                                                                                                                                                                                                                                                                              |
| <b>Component / System</b>           | EATS Injector "A"                                                                                                                                                                                                                                                                    |
| <b>Monitor Strategy Description</b> | Injector Stuck Closed                                                                                                                                                                                                                                                                |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Number of PM Sensor evaluations exceeding 330sdivided by total number of PM Sensor evaluations below 0.100000001490116ratio. For current status, read MID B2 - PM Filter Monitor Bank 1, TID AA - Ratio of soot slip through DPF</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> <li>• AND</li> <li>• Demanded fuel flow from aftertreatment fuel injector below 0.01 for 60s</li> <li>• AND</li> <li>• Engine Speed between 400rpm and 2750rpm</li> <li>• AND</li> <li>• Average Particulate Filter Temperature between 400rpm and 2750rpm</li> <li>• AND <ul style="list-style-type: none"> <li>• not Status flag for regeneration active</li> <li>• AND</li> <li>• Engine is running. The running time is accumulated across key cycles. above conditions valid for 1200s</li> </ul> </li> <li>• AND</li> <li>• Engine is running without a reset of DPF Poisoning Levels (R1AGC) occurring. The time since last reset is accumulated across key cycles. for 28800s</li> <li>• AND <ul style="list-style-type: none"> <li>• All DTCs (Diagnostic Trouble Codes) are reset</li> <li>• OR</li> <li>• 2 seconds have passed since EECU startup</li> <li>• OR</li> <li>• A new drive cycle detected</li> <li>• AND</li> <li>• Diesel Particulate Filter OBD not finished this drivecycle</li> <li>• AND</li> <li>• Reset of DPF Poisoning Levels (R1AGC) is activated or a reprogramming of the EECU has occurred.</li> <li>• OR</li> <li>• All DTCs (Diagnostic Trouble Codes) are reset</li> <li>• OR</li> <li>• Engine is running after a PM sensor diagnostic evaluation. This time is accumulated across key cycles. for 0s</li> <li>• AND</li> <li>• Dew point for PM sensor reached above conditions valid for 0s</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P2229/00, P2226/13, P0072/00, P0070/15, P2084/64, P242B/64, U02A3/00, P24D1/00, P24DA/00, P24B1/00, P24FC/00, P24B3/13, P24B5/00, P24B4/92, P24B0/00, P24AF/00, P2AB0/47, P24D0/00, P1034/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 335s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P208464 Exhaust Gas Temperature Sensor Circuit Range/Performance (Bank 1 Sensor 2) - Signal Plausibility Failure

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P208464                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Component / System</b>              | Exhaust Gas Temperature Sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Monitor Strategy Description</b>    | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Evaluation Between The Sensors Performed During Engine Running:</li> <li>• AND</li> <li>• Difference between Exhaust Gas Temperature Sensor 1 and Sensor 2 above 70°C <ul style="list-style-type: none"> <li>• AND</li> <li>• Difference between Exhaust Gas Temperature Sensor 2 and Sensor 3 above 70°C</li> </ul> </li> <li>• OR</li> <li>• Exhaust Gas Temperature Sensor 2 below 100°C</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Evaluation Between The Sensors Performed During Engine Running:</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• AmbientAirTemperature_VMCU between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp above 60°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 500Nm and 2000Nm</li> <li>• AND</li> <li>• Modeled Exhaust Gas Temperature at Bank 1 Sensor 1 between 200°C and 400°C</li> <li>• AND</li> <li>• below 25°C</li> <li>• AND</li> <li>• Difference Between Modelled Exhaust Gas Temperature At Sensor 2 And Modelled Exhaust Gas Temperature At Sensor 3 below 25°C</li> <li>• AND</li> <li>• Difference Between Modelled Exhaust Gas Temperature At Sensor 1 And Modelled Exhaust Gas Temperature At Sensor 2 below 25°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injection Active</li> <li>• OR</li> <li>• Exhaust Pressure Control Valve A PWM above 5%</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• PP0072/00, P0070/15, P2229/00, P2226/13, P0117/00, P0115/13, U3000/01, U3017/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Time Required For DTC To Be Set</b> | 35s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

**P242B64 Exhaust Gas Temperature Sensor Circuit Range/Performance (Bank 1 Sensor 3) - Signal Plausibility Failure**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P242B64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Component / System</b>              | Exhaust Gas Temperature Sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Monitor Strategy Description</b>    | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Evaluation Between The Sensors Performed During Engine Running:</li> <li>• AND</li> <li>• Difference between Exhaust Gas Temperature Sensor 1 and Sensor 2 above 70°C <ul style="list-style-type: none"> <li>• AND</li> <li>• Difference between Exhaust Gas Temperature Sensor 2 and Sensor 3 above 70°C</li> </ul> </li> <li>• OR</li> <li>• Exhaust Gas Temperature Sensor 2 below 100°C</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Evaluation Between The Sensors Performed During Engine Running:</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• AmbientAirTemperature_VMCU between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp above 60°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 500Nm and 2000Nm</li> <li>• AND</li> <li>• Modeled Exhaust Gas Temperature at Bank 1 Sensor 1 between 200°C and 400°C</li> <li>• AND</li> <li>• below 25°C</li> <li>• AND</li> <li>• Difference Between Modelled Exhaust Gas Temperature At Sensor 2 And Modelled Exhaust Gas Temperature At Sensor 3 below 25°C</li> <li>• AND</li> <li>• Difference Between Modelled Exhaust Gas Temperature At Sensor 1 And Modelled Exhaust Gas Temperature At Sensor 2 below 25°C</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injector Active</li> <li>• OR</li> <li>• Exhaust Pressure Control Valve A PWM above 5%</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• PP0072/00, P0070/15, P2229/00, P2226/13, P0117/00, P0115/13, U3000/01, U3017/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Time Required For DTC To Be Set</b> | 35s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## P020213 Cylinder 2 Injector "A" - Circuit Open

|                                        |                                                                                                                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P020213                                                                                                                                                                                                                                      |
| <b>Component / System</b>              | Cylinder 2 Injector "A"                                                                                                                                                                                                                      |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                                                                                 |
| <b>Fault Limit</b>                     | Current driving the injector rises to slow                                                                                                                                                                                                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                                                                                                                                                                             |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Fuel Injector Active</li> <li>OR</li> <li>Exhaust Pressure Control Valve A PWM above 5%</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                         |

## P030600 Cylinder 6 Misfire Detected - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P030600                                                                                                                                                                                                                                                        |
| <b>Component / System</b>           | Cylinder 6                                                                                                                                                                                                                                                     |
| <b>Monitor Strategy Description</b> | Misfire                                                                                                                                                                                                                                                        |
| <b>Fault Limit</b>                  | Misfire rate for cylinder 6 above 80%. For current status, read MID A7 - Misfire Cylinder 6 Data, TID 0C - Misfire counts for last/current driving cycles, MID A7 - Misfire Cylinder 6 Data, TID 0B - Moving average misfire counts for last 10 driving cycles |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• PTO Not Active <ul style="list-style-type: none"> <li>• AND</li> <li>• Gear engaged</li> <li>• AND</li> <li>• EngineSpeed between 550rpm and 1650rpm</li> <li>• AND</li> <li>• Torque value between 406Nm and 1800Nm</li> <li>• AND</li> <li>• Engine is not idling</li> </ul> </li> <li>• OR <ul style="list-style-type: none"> <li>• Engine is idling</li> <li>• AND</li> <li>• Torque value between 0Nm and 610Nm</li> <li>• AND</li> <li>• EngineSpeed between 450rpm and 800rpm</li> <li>• AND</li> <li>• Vehicle stand still</li> </ul> </li> <li>• AND</li> <li>• If a misfire fault code has been set you will also need to consider similar conditions in order to heal the fault code. Similar conditions window is defined by engine speed, engine torque and coolant temperature at the moment the fault code is set. Considering the similar conditions means that the fault code has to be evaluated in an operating point within the similar conditions window in order to heal it. The similar conditions information relevant to Misfire fault codes is available via P1NL2. Note that for the diagnostic function to be active, the 'similar conditions' and all conditions listed herein must be met.</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 120s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## P24A100 Closed Loop DPF Regeneration Control At Limit - Temperature Too High - No Sub Type Information

|                                     |                                                                                                                                                                                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P24A100                                                                                                                                                                                               |
| <b>Component / System</b>           | DPF                                                                                                                                                                                                   |
| <b>Monitor Strategy Description</b> | Regeneration Control At Limit                                                                                                                                                                         |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Closed Loop Exhaust Aftertreatment Fuel Injection Control At Minimum Limit 0.699999988079071ratio of the time.. Regeneration Temperature Too Low.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Regeneration Active</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 120°C</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 1 between 225°C and 550°C</li> <li>AND</li> <li>Modeled Exhaust Gas Temperature Sensor 2 between 300°C and 650°C</li> <li>AND</li> <li>Exhaust Flow between 0.0500000007450581kg/s and 0.600000023841858kg/s</li> <li>AND</li> <li>tc_IndTrqValue below 5Nm</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P2080/64, P2084/64, P242B/64, P0072/00, P0070/15, P2229/00, P2226/13, P0117/00, P0115/13, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 50s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P245900 Diesel Particulate Filter Regeneration Frequency (Bank 1) - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P245900                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Component / System</b>           | DPF                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Monitor Strategy Description</b> | Filter Regeneration Frequency                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Difference between pressure based and Kalman filter based soot models above 0.600000023841858ratio</li> <li>AND</li> <li>Time since last regeneration above 16400s</li> <li>AND</li> <li>Number of too frequent regenerations in a row above 2cnt. For current status, read MID B2 - PM Filter Monitor Bank 1, TID 8F - Soot level compared to estimated soot level</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Regeneration Active</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>not Status flag for EATS control routine active</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 120°C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                                                                                                                                                                     |
| <b>Time Required For DTC To Be Set</b> | 16400s                                                                                                                                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                            |

## P24A200 Diesel Particulate Filter Regeneration Incomplete (Bank 1) - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P24A200                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Component / System</b>           | DPF                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Monitor Strategy Description</b> | Filter Regeneration Frequency                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Too small reduction of actual Diesel Particulate Filter soot loading</li> <li>AND</li> <li>Differential pressure percent after parked Diesel Particulate Filter regeneration above 150%. For current status, read MID B2 - PM Filter Monitor Bank 1, TID 90 - Differential pressure over diesel particulate filter, MID B2 - PM Filter Monitor Bank 1, TID 91 - Soot reduction calculated from differential pressure sensor</li> </ul> |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b> | <ul style="list-style-type: none"> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> <li>• AND</li> <li>• AHI-injection demand of 0.01g/s or more for 600s</li> <li>• AND</li> <li>• not Diesel Particulate Filter regeneration triggered by OBD-tool</li> <li>• AND</li> <li>• Engine Speed between 550rpm and 2100rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1Nm and 4000Nm</li> <li>• AND</li> <li>• Exhaust Flow between 0.180000007152557kg/s and 0.699999988079071kg/s</li> <li>• AND</li> <li>• Average Particulate Filter Temperature between 250°C and 475°C</li> <li>• AND</li> <li>• No quick changes in engine speed or torque</li> <li>• AND</li> <li>• No quick changes in Diesel Particulate Filter temperature</li> <li>• AND</li> <li>• Ongoing moving Diesel Particulate Filter regeneration above conditions valid for 10s</li> <li>• OR <ul style="list-style-type: none"> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> <li>• AND</li> <li>• AHI-injection demand of 0.01g/s or more for 600s</li> <li>• AND</li> <li>• not Diesel Particulate Filter regeneration triggered by OBD-tool</li> <li>• AND</li> <li>• Engine Speed between 800rpm and 2100rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1Nm and 4000Nm</li> <li>• AND</li> <li>• Exhaust Flow between 0.200000002980232kg/s and 0.699999988079071kg/s</li> <li>• AND</li> <li>• Average Particulate Filter Temperature between 225°C and 475°C</li> <li>• AND</li> <li>• No quick changes in engine speed or torque</li> <li>• AND</li> <li>• No quick changes in Diesel Particulate Filter temperature</li> <li>• AND</li> </ul> </li> </ul> |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                        |                                                                                                                                                                                                                                                                              |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>P2084/64, P242B/64, P2453/64, P0072/00, P0070/15, P0339/00, P0335/31, P0336/38, U3000/01, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P0111/64, P0112/00, P0110/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 1200s                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                         |

## P040B64 Exhaust Gas Recirculation Temperature Sensor "A" Circuit Range/Performance - Signal Plausibility Failure

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P040B64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Component / System</b>              | Intake Air Temperature Sensor 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Monitor Strategy Description</b>    | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>(se_EgrTemp - se_CoolantTemp) below -45°C</li> <li>OR</li> <li>(se_EgrTemp - se_CoolantTemp) above 45°C</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine running</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>Engine Speed between 550rpm and 800rpm</li> <li>AND</li> <li>tc_IndTrqValue between 0Nm and 500Nm</li> <li>AND</li> <li>EGR A Flow between 0kg/s and 0.0799999982118607kg/s</li> <li>AND</li> <li>EGR valve Control PWM between 15% and 100%</li> <li>AND</li> <li>Engine considered fully warmed up above conditions valid for 30s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38, P0489/00, P0403/13, P040C/00, P040A/13, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P0406/00, P0409/13, P2229/00, P2226/13</li> </ul>                                                                                                                                                                                                                                                                                                              |
| <b>Time Required For DTC To Be Set</b> | 12s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## P052164 Engine Oil Pressure Sensor/Switch Range/Performance - Signal Plausibility Failure

|                                 |                                                                                                                                                                               |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P052164                                                                                                                                                                       |
| Component / System              | Intake Air Temperature Sensor 2                                                                                                                                               |
| Monitor Strategy Description    | Circuit Range/Performance                                                                                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• se_OilPres above 100kPa</li> <li>• OR</li> <li>• se_OilPres above 600kPa</li> <li>• OR</li> <li>• se_OilPres below 230kPa</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                       |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0523/00, P0520/13, U3017/00</li> </ul>                                                                   |
| Time Required For DTC To Be Set | 4s                                                                                                                                                                            |
| MIL Illumination                | 3                                                                                                                                                                             |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                          |

## P050700 Idle Control System - RPM Higher Than Expected - No Sub Type Information

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P050700                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Component / System           | Idle Control System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Monitor Strategy Description | RPM High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Fault Limit                  | <ul style="list-style-type: none"> <li>• Average engine speed during the evaluation period above 800rpm</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Enable Conditions            | <ul style="list-style-type: none"> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• VehicleSpeed below 0.100000001490116km/h</li> <li>• AND</li> <li>• Power take-off is not active</li> <li>• AND</li> <li>• Engine running for 60s</li> <li>• AND</li> <li>• Stable engine speed</li> <li>• AND</li> <li>• Stable engine torque</li> <li>• AND</li> <li>• Idle governor is active above conditions valid for 5s</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0117/00, P0115/13, P2229/00, P0340/31, P0335/31, U3000/01, P0115/13, P0117/00, P0070/15, P0072/00, P2229/00, P2226/13, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38, P0016/76, P0340/31, P0341/38, P0500/13, P0502/00, P215A/64</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                        |

## P206B64 Reductant Quality Sensor Range/Performance - Signal Plausibility Failure

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P206B64                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Component / System</b>              | Reductant Quality Sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Monitor Strategy Description</b>    | Signal Plausibility                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>If a DTC in the "Inhibited by the following DTC's"-list is failed or not evaluated, it might inhibit this DTC</li> <li>AND</li> <li>Reductant concentration below 18%</li> <li>AND</li> <li>Difference between the filtered NOx conversion and the expected NOx conversion, based on reductant concentration, above 5%</li> </ul>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Average SCR NOx Catalyst Temperature between 255°C and 450°C</li> <li>AND</li> <li>Calculated exhaust mass flow between 0.100000001490116kg/s and 0.5kg/s</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>Engine Speed between 1100rpm and 2050rpm</li> <li>AND</li> <li>The reductant delivery system is operating normally, the engine is operating in a functional normal engine mode, there is a reductant injection demand</li> <li>AND</li> <li>Steady state: No quick changes in engine speed, torque, exhaust mass flow and EATS temperature</li> <li>AND</li> <li>Reductant flow since the reductant tank has been refilled above 600g</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P225D/00, P225F/00, P2201/64, P229F/64, P225C/00, P225E/00, P20FE/9A, P242B/64, P0420/00, P0402/00, P0401/00, P221A/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P0111/64, P0112/00, P0110/13, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P220F/93, U029D/00, U029E/00, U3017/00</li> </ul>                                                                                                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 7200s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## P030200 Cylinder 2 Misfire Detected - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P030200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Component / System              | Cylinder                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Monitor Strategy Description    | Misfire Detected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Misfire rate for cylinder 2 above 80%. For current status, read MID A3 - Misfire Cylinder 2 Data, TID 0C - Misfire counts for last/current driving cycles, MID A3 - Misfire Cylinder 2 Data, TID 0B - Moving average misfire counts for last 10 driving cycles</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Enable Conditions               | <ul style="list-style-type: none"> <li>PTO is not active</li> <li>AND <ul style="list-style-type: none"> <li>Gear engaged</li> <li>AND</li> <li>EngineSpeed between 550rpm and 1650rpm</li> <li>AND</li> <li>Torque value between 406Nm and 1800Nm</li> <li>AND</li> <li>Engine is not idling</li> </ul> </li> <li>OR <ul style="list-style-type: none"> <li>Engine is idling</li> <li>AND</li> <li>Torque value between 0Nm and 610Nm</li> <li>AND</li> <li>EngineSpeed between 450rpm and 800rpm</li> <li>AND</li> <li>Vehicle stand still</li> </ul> </li> <li>AND</li> <li>If a misfire fault code has been set you will also need to consider similar conditions in order to heal the fault code. Similar conditions window is defined by engine speed, engine torque and coolant temperature at the moment the fault code is set. Considering the similar conditions means that the fault code has to be evaluated in an operating point within the similar conditions window in order to heal it. The similar conditions information relevant to Misfire fault codes is available via P1NL2. Note that for the diagnostic function to be active, the 'similar conditions' and all conditions listed herein must be met.</li> </ul> |
| Disable Conditions              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01 P0262/00 P0201/13 P0265/00 P0202/13 P0268/00 P0203/13 P0271/00 P0204/13 P0274/00 P0205/13 P0277/00 P0206/13 P0339/00 P0335/31 P0336/38</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Time Required For DTC To Be Set | 120s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P030400 Cylinder 4 Misfire Detected - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P030400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>              | Cylinder 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | Misfire Detected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Misfire rate for cylinder 4 above 80%. For current status, read MID A5 - Misfire Cylinder 4 Data, TID 0C - Misfire counts for last/current driving cycles, MID A5 - Misfire Cylinder 4 Data, TID 0B - Moving average misfire counts for last 10 driving cycles</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>PTO is not active</li> <li>AND <ul style="list-style-type: none"> <li>Gear engaged</li> <li>AND</li> <li>EngineSpeed between 550rpm and 1650rpm</li> <li>AND</li> <li>Torque value between 406Nm and 1800Nm</li> <li>AND</li> <li>Engine is not idling</li> </ul> </li> <li>OR <ul style="list-style-type: none"> <li>Engine is idling</li> <li>AND</li> <li>Torque value between 0Nm and 610Nm</li> <li>AND</li> <li>EngineSpeed between 450rpm and 800rpm</li> <li>AND</li> <li>Vehicle stand still</li> </ul> </li> <li>AND</li> <li>If a misfire fault code has been set you will also need to consider similar conditions in order to heal the fault code. Similar conditions window is defined by engine speed, engine torque and coolant temperature at the moment the fault code is set. Considering the similar conditions means that the fault code has to be evaluated in an operating point within the similar conditions window in order to heal it. The similar conditions information relevant to Misfire fault codes is available via P1NL2. Note that for the diagnostic function to be active, the 'similar conditions' and all conditions listed herein must be met.</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01 P0262/00 P0201/13 P0265/00 P0202/13 P0268/00 P0203/13 P0271/00 P0204/13 P0274/00 P0205/13 P0277/00 P0206/13 P0339/00 P0335/31 P0336/38</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 120s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P030500 Cylinder 5 Misfire Detected - No Sub Type Information**

|                                     |                  |
|-------------------------------------|------------------|
| <b>DTC</b>                          | P030400          |
| <b>Component / System</b>           | Cylinder 5       |
| <b>Monitor Strategy Description</b> | Misfire Detected |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Misfire rate for cylinder 5 above 80%. For current status, read MID A5 - Misfire Cylinder 5 Data, TID 0C - Misfire counts for last/current driving cycles, MID A5 - Misfire Cylinder 4 Data, TID 0B - Moving average misfire counts for last 10 driving cycles</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>PTO is not active</li> <li>AND <ul style="list-style-type: none"> <li>Gear engaged</li> <li>AND</li> <li>EngineSpeed between 550rpm and 1650rpm</li> <li>AND</li> <li>Torque value between 406Nm and 1800Nm</li> <li>AND</li> <li>Engine is not idling</li> </ul> </li> <li>OR <ul style="list-style-type: none"> <li>Engine is idling</li> <li>AND</li> <li>Torque value between 0Nm and 610Nm</li> <li>AND</li> <li>EngineSpeed between 450rpm and 800rpm</li> <li>AND</li> <li>Vehicle stand still</li> </ul> </li> <li>AND</li> <li>If a misfire fault code has been set you will also need to consider similar conditions in order to heal the fault code. Similar conditions window is defined by engine speed, engine torque and coolant temperature at the moment the fault code is set. Considering the similar conditions means that the fault code has to be evaluated in an operating point within the similar conditions window in order to heal it. The similar conditions information relevant to Misfire fault codes is available via P1NL2. Note that for the diagnostic function to be active, the 'similar conditions' and all conditions listed herein must be met.</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01 P0262/00 P0201/13 P0265/00 P0202/13 P0268/00 P0203/13 P0271/00 P0204/13 P0274/00 P0205/13 P0277/00 P0206/13 P0339/00 P0335/31 P0336/38</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 120s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## P054F00 Cylinder 5 Idle Control System - Fuel Quantity Higher Than Expected - No Sub Type Information

|                                     |                                                                                                                                        |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P054F00                                                                                                                                |
| <b>Component / System</b>           | Idle Control System                                                                                                                    |
| <b>Monitor Strategy Description</b> | Fuel Quantity Higher Than Expected                                                                                                     |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Average fuel quantity in each injection for the evaluation period above 140mg/stroke</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• not Fuel cut inactive</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• VehicleSpeed below 0.100000001490116km/h</li> <li>• AND</li> <li>• Power take-off is not active</li> <li>• AND</li> <li>• Engine running for 60s</li> <li>• AND</li> <li>• Stable engine speed</li> <li>• AND</li> <li>• Stable engine torque</li> <li>• AND</li> <li>• Idle governor is active above conditions valid for 5s</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P0117/00, P0115/13, P2229/00, P0340/31, P0335/31, U3000/01, P0115/13, P0117/00, P0070/15, P0072/00, P2229/00, P2226/13, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38, P0016/76, P0340/31, P0341/38, P0500/13, P0502/00, P215A/64</li> </ul>                                                                                                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 185s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P030000 Random Misfire Detected

|                                     |                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P054F00                                                                                                                                                                                                                                                                                                            |
| <b>Component / System</b>           | Cylinder                                                                                                                                                                                                                                                                                                           |
| <b>Monitor Strategy Description</b> | Misfire                                                                                                                                                                                                                                                                                                            |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Total misfire rate above 5%. For current status, read MID A1 - Misfire Monitor General Data, TID 0C - Misfire counts for last/current driving cycles, MID A1 - Misfire Monitor General Data, TID 0B - Moving average misfire counts for last 10 driving cycles</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• PTO is not active <ul style="list-style-type: none"> <li>• AND</li> <li>• Gear engaged</li> <li>• AND</li> <li>• EngineSpeed between 550rpm and 1650rpm</li> <li>• AND</li> <li>• Torque value between 406Nm and 1800Nm</li> <li>• AND</li> <li>• Engine is not idling</li> </ul> </li> <li>• OR <ul style="list-style-type: none"> <li>• Engine is idling</li> <li>• AND</li> <li>• Torque value between 0Nm and 610Nm</li> <li>• AND</li> <li>• EngineSpeed between 450rpm and 800rpm</li> <li>• AND</li> <li>• Vehicle stand still</li> <li>• AND</li> <li>• If a misfire fault code has been set you will also need to consider similar conditions in order to heal the fault code. Similar conditions window is defined by engine speed, engine torque and coolant temperature at the moment the fault code is set. Considering the similar conditions means that the fault code has to be evaluated in an operating point within the similar conditions window in order to heal it. The similar conditions information relevant to Misfire fault codes is available via P1NL2. Note that for the diagnostic function to be active, the 'similar conditions' and all conditions listed herein must be met.</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 480s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## P050600 Idle Control System - RPM Lower Than Expected - No Sub Type Information

|                                     |                                                                                                                    |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P050600                                                                                                            |
| <b>Component / System</b>           | Idle Control System                                                                                                |
| <b>Monitor Strategy Description</b> | Fuel Quantity Higher Than Expected                                                                                 |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Average engine speed during the evaluation period below 450rpm</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• not Fuel cut inactive</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• VehicleSpeed below 0.100000001490116km/h</li> <li>• AND</li> <li>• Power take-off is not active</li> <li>• AND</li> <li>• Engine running for 60s</li> <li>• AND</li> <li>• Stable engine speed</li> <li>• AND</li> <li>• Stable engine torque</li> <li>• AND</li> <li>• Idle governor is active above conditions valid for 5s</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P0117/00, P0115/13, P2229/00, P0340/31, P0335/31, U3000/01, P0115/13, P0117/00, P0070/15, P0072/00, P2229/00, P2226/13, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38, P0016/76, P0340/31, P0341/38, P0500/13, P0502/00, P215A/64</li> </ul>                                                                                                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P25793A Turbocharger Speed Sensor "A" Circuit Range/Performance - Signal Has Too Many Pulses

|                                     |                                                                                                                                                                                 |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P25793A                                                                                                                                                                         |
| <b>Component / System</b>           | Turbocharger Speed Sensor A                                                                                                                                                     |
| <b>Monitor Strategy Description</b> | Circuit Range/Performance                                                                                                                                                       |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Ratio between Fault Timer (incremented when Turbo Overspeed Flag is TRUE) and Evaluation Timer above 0.899999976158142ratio</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed between 1500rpm and 2100rpm</li> <li>• AND</li> <li>• tc_IndTrqValue below (2000Nm - Offset dependent on Engine Speed and se_AmbAirPres)</li> <li>• AND</li> <li>• Engine Speed rate of change between -50rpm and 50rpm</li> <li>• AND</li> <li>• Engine Torque rate of change between -50Nm and 50Nm</li> <li>• AND</li> <li>• Engine Running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C above conditions valid for 2s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0097/00, P0095/13, P0117/00, P0115/13, P0406/00, P0409/13, P2229/00, P2226/13, P0108/00, P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 30s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## P220300 NOx Sensor Circuit High Bank 1 Sensor 1 - No Sub Type Information

|                                        |                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P220300                                                                                                                                                                        |
| <b>Component / System</b>              | NOx Sensor                                                                                                                                                                     |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                                                                                   |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Internal Short Circuit signal containing status and error byte received from Upstream NOx sensor evaluated as NOT_RELIABLE</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Ignition Key Turned On</li> </ul>                                                                                                     |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U029D/00, U3000/01</li> </ul>                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                           |

## P242800 Exhaust Gas Temperature Too High - No Sub Type Information

|                           |            |
|---------------------------|------------|
| <b>DTC</b>                | P242800    |
| <b>Component / System</b> | NOx Sensor |

|                                 |                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------|
| Monitor Strategy Description    | Circuit High                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>EngineExhaustGasTemperature above (540No unit + 0No Unit)</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                       |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                 |
| Time Required For DTC To Be Set | 10s                                                                                                         |
| MIL Illumination                | N/A                                                                                                         |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                        |

## P100113 Engine stop switch - Circuit Open

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P100113                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Component / System              | Engine Stop Switch                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Monitor Strategy Description    | Circuit Open                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:27 above (24.424390V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>OR</li> <li>Voltage on A:27 above (20.303109V * (UnfilteredBatteryVoltage / 24.0V))               <ul style="list-style-type: none"> <li>AND</li> <li>Voltage on A:27 below (23.559100V * (UnfilteredBatteryVoltage / 24.0V))</li> </ul> </li> <li>OR</li> <li>Voltage on A:27 above (2.863488V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>AND</li> <li>Voltage on A:27 below (18.135422V * (UnfilteredBatteryVoltage / 24.0V))</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Time Required For DTC To Be Set | 7s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| MIL Illumination                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## P100211 Preheat Relay - Circuit Short To Ground

|                                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| DTC                             | P100211                                                                                                              |
| Component / System              | Engine Stop Switch                                                                                                   |
| Monitor Strategy Description    | Circuit Open                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                               |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| Time Required For DTC To Be Set | 6s                                                                                                                   |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

### P100212 Preheat Relay - Circuit Short To Ground

|                                 |                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------|
| DTC                             | P100212                                                                                                 |
| Component / System              | Engine Stop Switch                                                                                      |
| Monitor Strategy Description    | Circuit Open                                                                                            |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                 |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                             |
| Time Required For DTC To Be Set | 6s                                                                                                      |
| MIL Illumination                | N/A                                                                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                    |

### P100213 Preheat Relay - Circuit Open

|                                 |                                                                                                            |
|---------------------------------|------------------------------------------------------------------------------------------------------------|
| DTC                             | P100213                                                                                                    |
| Component / System              | Engine Stop Switch                                                                                         |
| Monitor Strategy Description    | Circuit Open                                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                          |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be below 100.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                |
| Time Required For DTC To Be Set | 10s                                                                                                        |
| MIL Illumination                | N/A                                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                       |

### P102111 Compression Brake Control Circuit - Circuit Short To Ground

|                                 |                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------|
| DTC                             | P102111                                                                                |
| Component / System              | Compression Brake Control Circuit                                                      |
| Monitor Strategy Description    | Short Circuit                                                                          |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active.</li> </ul>             |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>            |
| Time Required For DTC To Be Set | 5.3s                                                                                   |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## P102112 Compression Brake Control Circuit - Circuit Short To Ground

|                                 |                                                                                         |
|---------------------------------|-----------------------------------------------------------------------------------------|
| DTC                             | P102112                                                                                 |
| Component / System              | Compression Brake Control Circuit                                                       |
| Monitor Strategy Description    | Short Circuit to Battery                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active.</li> </ul>              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>             |
| Time Required For DTC To Be Set | 5.3s                                                                                    |
| MIL Illumination                | N/A                                                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                                                    |

## P102113 Compression Brake Control Circuit - Circuit Open

|                                 |                                                                             |
|---------------------------------|-----------------------------------------------------------------------------|
| DTC                             | P102113                                                                     |
| Component / System              | Compression Brake Control Circuit                                           |
| Monitor Strategy Description    | Circuit Open                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Open circuit is detected.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active.</li> </ul>  |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 5.3s                                                                        |
| MIL Illumination                | N/A                                                                         |
| Probable Causes                 | <i>See Tech Tool</i>                                                        |

## U010E00 Lost Communication With Reductant Control Module - No Sub Type Information

|                                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| DTC                             | U010E00                                                                                                              |
| Component / System              | Reductant Control Module                                                                                             |
| Monitor Strategy Description    | Lost Communication                                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with EACM on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul>                                          |
| Time Required For DTC To Be Set | 15s                                                                                                                  |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## U012900 Lost Communication With Brake System Control Module - No Sub Type Information

|                                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| DTC                             | U012900                                                                                                              |
| Component / System              | BSCM                                                                                                                 |
| Monitor Strategy Description    | Lost Communication                                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with BSCM on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul>                                          |
| Time Required For DTC To Be Set | 9.6s                                                                                                                 |
| MIL Illumination                | N/A                                                                                                                  |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                 |

## P019513 Engine Oil Temperature Sensor "A" - Circuit Open

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| DTC                             | P019513                                                                           |
| Component / System              | Engine Oil Temperature Sensor                                                     |
| Monitor Strategy Description    | Circuit Open                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:31 above 4.931641V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>       |
| Time Required For DTC To Be Set | 13s                                                                               |
| MIL Illumination                | N/A                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                              |

## P20FE9A Reductant Metering Unit Performance - Component or System Operating Conditions

|                              |                                                                                                                                                                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P20FE9A                                                                                                                                                                                                                                      |
| Component / System           | Reductant Metering Unit Performance                                                                                                                                                                                                          |
| Monitor Strategy Description | Component or System Operating Conditions                                                                                                                                                                                                     |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Reductant concentration below 18%</li> <li>AND</li> <li>Filtered NOx conversion below 71%. For current status, read MID 98 - NOx Catalyst Monitor Bank 1, TID AB - Reductant concentration</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Average SCR NOx Catalyst Temperature between 255°C and 450°C</li> <li>• AND</li> <li>• Calculated exhaust mass flow between 0.100000001490116kg/s and 0.5kg/s</li> <li>• AND</li> <li>• Engine Speed between 1100rpm and 2050rpm</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• The reductant delivery system is operating normally, the engine is operating in a functional normal engine mode, there is a reductant injection demand</li> <li>• AND</li> <li>• Steady state: No quick changes in engine speed, torque, exhaust mass flow and EATS temperature</li> <li>• AND</li> <li>• Reductant flow since the reductant tank has been refilled above 600g</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P225D/00, P225F/00, P2201/64, P229F/64, P225C/00, P225E/00, P242B/64, P0420/00, P0402/00, P0401/00, P221A/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P0111/64, P0112/00, P0110/13, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P220F/93, U029D/00, U029E/00, U3017/00</li> </ul>                                                                                                                                                                                                                                                                                                                                             |
| <b>Time Required For DTC To Be Set</b> | 3600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## P026500 Injector 2 Short Circuit High - No Sub Type Information

|                                        |                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P026500                                                                                           |
| <b>Component / System</b>              | Injector 2                                                                                        |
| <b>Monitor Strategy Description</b>    | Short Circuit High                                                                                |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Current driving the injector rises to quickly</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• This diagnosis is done when engine running</li> </ul>    |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>              |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                              |

**P026800 Injector 3 Short Circuit High - No Sub Type Information**

|                                        |                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P026800                                                                                         |
| <b>Component / System</b>              | Injector 3                                                                                      |
| <b>Monitor Strategy Description</b>    | Short Circuit High                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Current driving the injector rises to quickly</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>This diagnosis is done when engine running</li> </ul>    |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                     |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                            |

**P027100 Injector 4 Short Circuit High - No Sub Type Information**

|                                        |                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P027100                                                                                         |
| <b>Component / System</b>              | Injector 4                                                                                      |
| <b>Monitor Strategy Description</b>    | Short Circuit High                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Current driving the injector rises to quickly</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>This diagnosis is done when engine running</li> </ul>    |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                     |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                            |

**P027400 Injector 5 Short Circuit High - No Sub Type Information**

|                                        |                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P027400                                                                                         |
| <b>Component / System</b>              | Injector 5                                                                                      |
| <b>Monitor Strategy Description</b>    | Short Circuit High                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Current driving the injector rises to quickly</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>This diagnosis is done when engine running</li> </ul>    |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                     |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                            |

**P027700 Injector 6 Short Circuit High - No Sub Type Information**

|                                 |                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------|
| DTC                             | P027700                                                                                         |
| Component / System              | Injector 5                                                                                      |
| Monitor Strategy Description    | Short Circuit High                                                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Current driving the injector rises to quickly</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>This diagnosis is done when engine running</li> </ul>    |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                     |
| Time Required For DTC To Be Set | 0.5s                                                                                            |
| MIL Illumination                | 3                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                            |

**P019664 Oil Temperature - Signal Plausibility Failure**

|                                 |                                                                                                                                                                                                                            |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P019664                                                                                                                                                                                                                    |
| Component / System              | Injector 5                                                                                                                                                                                                                 |
| Monitor Strategy Description    | Short Circuit High                                                                                                                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Difference during Precrank between Oil Temperature and mean value of (EGR Temperature, Boost Temperature, Compressor Temperature, Engine Coolant Temperature) above 40°C</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine in Precrank mode</li> <li>AND</li> <li>Engine Speed below 100rpm</li> <li>AND</li> <li>Engine Soak Time above 28800s</li> </ul>                                              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0523/00, P0520/13, P0197/00, P0195/13, U3017/00</li> </ul>                                                                                              |
| Time Required For DTC To Be Set | 1200s                                                                                                                                                                                                                      |
| MIL Illumination                | N/A                                                                                                                                                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                       |

**P019700 Oil Temperature Short Circuit Low - No Sub Type Information**

|                              |                                                                                   |
|------------------------------|-----------------------------------------------------------------------------------|
| DTC                          | P019700                                                                           |
| Component / System           | Oil Temperature Short Circuit Low                                                 |
| Monitor Strategy Description | Short Circuit Low                                                                 |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Voltage on A:31 below 0.100098V</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>E</li> </ul>                               |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>       |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 13s                  |
| MIL Illumination                | N/A                  |
| Probable Causes                 | <i>See Tech Tool</i> |

### P026200 Injector 1 Short Circuit High - No Sub Type Information

|                                 |                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------|
| DTC                             | P026200                                                                                          |
| Component / System              | Injector 1 Short Circuit High - No Sub Type Information                                          |
| Monitor Strategy Description    | Short Circuit Low                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Current driving the injector rises too quickly</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>This diagnosis is done when engine running</li> </ul>     |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                      |
| Time Required For DTC To Be Set | 0.5s                                                                                             |
| MIL Illumination                | 3                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                             |

### P20F400 AdBlue Consumption Too Low - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P20F400                                                                                                                                                                                                                                                                                                                                      |
| Component / System              | Injector 1 Short Circuit High - No Sub Type Information                                                                                                                                                                                                                                                                                      |
| Monitor Strategy Description    | Short Circuit Low                                                                                                                                                                                                                                                                                                                            |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Calculated reductant consumption below -101%</li> </ul>                                                                                                                                                                                                                                               |
| Enable Conditions               | <ul style="list-style-type: none"> <li>This diagnosis is done when engine running</li> </ul>                                                                                                                                                                                                                                                 |
| Disable Conditions              | <ul style="list-style-type: none"> <li>The filtered reductant level between 100mm and 500mm</li> <li>AND</li> <li>Reductant Tank Temperature above -5°C for 900s</li> <li>AND</li> <li>Reductant consumed in this driving cycle above 1000g</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>P205B/64, U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 172800s                                                                                                                                                                                                                                                                                                                                      |
| MIL Illumination                | N/A                                                                                                                                                                                                                                                                                                                                          |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                         |

### U029E00 Lost Communication With NOx Sensor "B" - No Sub Type Information

|                              |                                                                                                                       |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| DTC                          | U029E00                                                                                                               |
| Component / System           | NOx Sensor B                                                                                                          |
| Monitor Strategy Description | Lost Communication                                                                                                    |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Lost communication with NOX2 on Vehicle Communication Engine Subnet</li> </ul> |

|                                 |                                                                             |
|---------------------------------|-----------------------------------------------------------------------------|
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                       |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0080/88</li> </ul> |
| Time Required For DTC To Be Set | 9.199999999999999s                                                          |
| MIL Illumination                | 3                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                        |

## U029D00 Lost Communication With NOx Sensor "A" - No Sub Type Information

|                                 |                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| DTC                             | U029D00                                                                                                               |
| Component / System              | NOx Sensor A                                                                                                          |
| Monitor Strategy Description    | Lost Communication                                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with NOX1 on Vehicle Communication Engine Subnet</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                 |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0080/88</li> </ul>                                           |
| Time Required For DTC To Be Set | 9.199999999999999s                                                                                                    |
| MIL Illumination                | 3                                                                                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                  |

## U010C00 Lost Communication With Turbocharger/Supercharger Control Module A - No Sub Type Information

|                                 |                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| DTC                             | U010C00                                                                                                               |
| Component / System              | Turbocharger/Supercharger                                                                                             |
| Monitor Strategy Description    | Lost Communication                                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with VGTM on Vehicle Communication Engine Subnet</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                 |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0080/88</li> </ul>                                           |
| Time Required For DTC To Be Set | 9.25s                                                                                                                 |
| MIL Illumination                | 3                                                                                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                  |

## P203B00 Aftertreatment Reagent Level Warning - No Sub Type Information

|                              |                                                                                                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P203B00                                                                                                                                         |
| Component / System           | Aftertreatment Reagent Level                                                                                                                    |
| Monitor Strategy Description | Lost Communication                                                                                                                              |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Deviation between highest and lowest urea tank level measurements during diagnosis below 10mm</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Urea level in tank between 140mm and 370mm</li> <li>• AND</li> <li>• Reductant Tank Temperature above -5°C for 900s</li> <li>• AND</li> <li>• Reagent dosing pump active</li> <li>• AND</li> <li>• Accumulated urea demand above 10000g</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P205B/64, U3000/01</li> </ul>                                                                                                                                                                                                     |
| <b>Time Required For DTC To Be Set</b> | 1s                                                                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                        |

## U016700 Lost Communication With Vehicle Immobilizer Control Module - No Sub Type Information

|                                        |                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------|
| <b>DTC</b>                             | U016700                                                                       |
| <b>Component / System</b>              | Vehicle Control Module                                                        |
| <b>Monitor Strategy Description</b>    | Lost Communication                                                            |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Signal response time out.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                       |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                            |
| <b>MIL Illumination</b>                | N/A                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                          |

## P220A1C NOx Sensor Supply Voltage Circuit (Bank 1 Sensor 1) - Circuit Voltage Out of Range

|                                        |                                                                                                                                                                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P220A1C                                                                                                                                                                                                                       |
| <b>Component / System</b>              | Vehicle Control Module                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b>    | Lost Communication                                                                                                                                                                                                            |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Internal Supply Voltage signal containing status and error byte received from Upstream NOx sensor evaluated as NOT_RELIABLE</li> </ul>                                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Ignition Key Turned On</li> </ul>                                                                                                                                                    |
| <b>Disable Conditions</b>              | Internal Supply Voltage signal containing status and error byte from Upstream NOx sensor not yet evaluated or not yet recieved<br><br>No Active DTC's: <ul style="list-style-type: none"> <li>• U029D/00, U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                          |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## U042600 Invalid Data Received From Vehicle Immobilizer Control Module - No Sub Type Information

|                                 |                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------|
| DTC                             | U042600                                                                                                  |
| Component / System              | Vehicle Immobilizer Control Module                                                                       |
| Monitor Strategy Description    | Lost Communication                                                                                       |
| Fault Limit                     | <ul style="list-style-type: none"> <li>EMS- and Immobilizer unit security codes do not match.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                    |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                              |
| Time Required For DTC To Be Set | 0s                                                                                                       |
| MIL Illumination                | N/A                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                     |

## P22A100 NOx Sensor Circuit High Bank 1 Sensor 2 - No Sub Type Information

|                                 |                                                                                                                                                                                 |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P22A100                                                                                                                                                                         |
| Component / System              | NOx Sensor Circuit High Bank 1 Sensor 2                                                                                                                                         |
| Monitor Strategy Description    | NOx Sensor Circuit Bank 1 Sensor 2                                                                                                                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Internal Short Circuit signal containing status and error byte received from Down-stream NOx sensor evaluated as NOT_RELIABLE</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Ignition Key Turned On</li> </ul>                                                                                                        |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U029E/00, U3000/01</li> </ul>                                                                                           |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                              |
| MIL Illumination                | 3                                                                                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                            |

## P113F11 Buffered Idle Validation Switch Wire - VECU Side - Circuit Short To Ground

|                              |                                                                                                                                            |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P113F11                                                                                                                                    |
| Component / System           | VECU Side                                                                                                                                  |
| Monitor Strategy Description | Circuit Short To Ground                                                                                                                    |
| Fault Limit                  | <ul style="list-style-type: none"> <li>VECU input IVS1 is high (close to Vbat) and VECU output BUFFIVS is low (close to ground)</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul>                          |

|                                 |                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------|
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P0643/00, P0642/00</li> </ul> |
| Time Required For DTC To Be Set | 5.5s                                                                                       |
| MIL Illumination                | N/A                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                       |

## P113F12 Buffered Idle Validation Switch Wire - VECU Side - Circuit Short To Battery

|                                 |                                                                                                                                              |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P113F12                                                                                                                                      |
| Component / System              | Idle Validation Switch                                                                                                                       |
| Monitor Strategy Description    | Circuit Short To Battery                                                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• VECU input IVS1 is low (close to ground) and VECU output BUFFIVS is high (close to Vbat)</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery voltage should be above 8V</li> </ul>                      |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P0643/00, P0642/00</li> </ul>                                                   |
| Time Required For DTC To Be Set | 5.5s                                                                                                                                         |
| MIL Illumination                | N/A                                                                                                                                          |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                         |

## P114113 Buffered Idle Validation Switch Wire - ECM Side - Circuit Open

|                                 |                                                                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P114113                                                                                                                                                                                                                                                |
| Component / System              | Idle Validation Switch                                                                                                                                                                                                                                 |
| Monitor Strategy Description    | Circuit Open                                                                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• Voltage on B:15 above <math>(7.643673V * (UnfilteredBatteryVoltage / 24.0V))</math></li> <li>• AND</li> <li>• Voltage on B:15 below <math>(18.294068V * (UnfilteredBatteryVoltage / 24.0V))</math></li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                                                       |
| Time Required For DTC To Be Set | 7s                                                                                                                                                                                                                                                     |
| MIL Illumination                | N/A                                                                                                                                                                                                                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                   |

## P114123 Buffered Idle Validation Switch Wire - ECM Side - Signal Stuck Low

|                    |                                      |
|--------------------|--------------------------------------|
| DTC                | P114123                              |
| Component / System | Buffered Idle Validation Switch Wire |

|                                        |                                                                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Signal Stuck Low                                                                                                                                  |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Calculated pedal position percentage above 50%</li> <li>AND</li> <li>se_BufferedIvs equals to 0</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                             |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P1141/13</li> </ul>                                                             |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                |
| <b>MIL Illumination</b>                | N/A                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                              |

### P114124 Buffered Idle Validation Switch Wire - ECM Side - Signal Stuck High

|                                        |                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P114124                                                                                                                        |
| <b>Component / System</b>              | Buffered Idle Validation Switch Wire                                                                                           |
| <b>Monitor Strategy Description</b>    | Signal Stuck Low                                                                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Calculated pedal position percentage below 1% and se_BufferedIvs equals to 1</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                          |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P1141/13</li> </ul>                                          |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                             |
| <b>MIL Illumination</b>                | N/A                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                           |

### P114212 Fan Thermal Switch - Circuit Short To Battery

|                                        |                                                                                                                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P114212                                                                                                                               |
| <b>Component / System</b>              | Buffered Idle Validation Switch Wire                                                                                                  |
| <b>Monitor Strategy Description</b>    | Signal Stuck Low                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on A:5 above 3.999023V</li> <li>AND</li> <li>Voltage on A:5 below 4.199219V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                 |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                           |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                    |
| <b>MIL Illumination</b>                | N/A                                                                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                  |

## P114213 Fan Thermal Switch - Circuit Open

|                                 |                                                                                                                                       |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P114213                                                                                                                               |
| Component / System              | Buffered Idle Validation Switch Wire                                                                                                  |
| Monitor Strategy Description    | Signal Stuck Low                                                                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:5 above 0.816650V</li> <li>AND</li> <li>Voltage on A:5 below 3.999023V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                 |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                           |
| Time Required For DTC To Be Set | 7s                                                                                                                                    |
| MIL Illumination                | N/A                                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                  |

## P114000 Compression Brake (VCB) Control Oil Temperature Too Low - No Sub Type Information

|                                 |                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------|
| DTC                             | P114000                                                                                                            |
| Component / System              | Buffered Idle Validation Switch Wire                                                                               |
| Monitor Strategy Description    | Signal Stuck Low                                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Engine oil temperature is too low when engine brake is demanded.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine must be running.</li> </ul>                                          |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                        |
| Time Required For DTC To Be Set | 0s                                                                                                                 |
| MIL Illumination                | N/A                                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                               |

## P06DD00 Engine Oil Pressure Control Circuit Performance/Stuck Off - No Sub Type Information

|                              |                                                                                                                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P06DD00                                                                                                                                                                                                       |
| Component / System           | Engine Oil Pressure Control Circuit                                                                                                                                                                           |
| Monitor Strategy Description | Performance/Stuck Off                                                                                                                                                                                         |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Difference in Oil Pressure (Piston Cooling Valve forced open) and Oil Pressure (Piston Cooling Valve forced closed) above 180kPa</li> </ul>                            |
| Enable Conditions            | <ul style="list-style-type: none"> <li>tc_IndTrqValue between 0Nm and 200Nm</li> <li>AND</li> <li>Engine Speed between 1000rpm and 1300rpm</li> <li>AND</li> <li>se_OilTemp between 80°C and 120°C</li> </ul> |

|                                        |                                                                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P055A/13, P055D/00, P25AB/00, P25AA/00, P25A9/13, P0523/00, P0520/13, P0197/00, P0195/13, U3017/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 4s                                                                                                                                                                                 |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                               |

## P113711 Oil Thermostat - Circuit Short To Ground

|                                        |                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P113711                                                                                                              |
| <b>Component / System</b>              | Oil Thermostat                                                                                                       |
| <b>Monitor Strategy Description</b>    | Short Circuit To Ground                                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                       |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                   |
| <b>MIL Illumination</b>                | N/A                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                 |

## P113712 Oil Thermostat - Circuit Short To Battery

|                                        |                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P113712                                                                                                            |
| <b>Component / System</b>              | Oil Thermostat                                                                                                     |
| <b>Monitor Strategy Description</b>    | Short Circuit To Battery                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                     |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                 |
| <b>MIL Illumination</b>                | N/A                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                               |

## P113713 Oil Thermostat - Circuit Open

|                                     |                                                                                                                      |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P113713                                                                                                              |
| <b>Component / System</b>           | Oil Thermostat                                                                                                       |
| <b>Monitor Strategy Description</b> | Circuit Open                                                                                                         |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Open circuit fault is detected..</li> </ul>                                   |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |

|                                        |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                             |

## P011164 Intake Air Temperature Sensor 1 Circuit Range/Performance Bank 1 - Signal Plausibility Failure

|                                        |                                                                                                                                                                                                              |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P011164                                                                                                                                                                                                      |
| <b>Component / System</b>              | Intake Air Temperature Sensor 1                                                                                                                                                                              |
| <b>Monitor Strategy Description</b>    | Circuit Range/Performance Bank 1                                                                                                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Difference during Precrank between Compressor Temperature and mean value of (EGR Temperature, Engine Coolant Temperature, Boost Temperature ) above 40°C</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine in Precrank mode</li> <li>• AND</li> <li>• Engine Speed below 100rpm</li> <li>• AND</li> <li>• Engine Soak Time above 28800s</li> </ul>                      |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P2229/00, P2226/13, U3017/00</li> </ul>               |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                         |

## P114500 Reductant Level Moderately Low - No Sub Type Information

|                                        |                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P114500                                                                                    |
| <b>Component / System</b>              | Reductant Level                                                                            |
| <b>Monitor Strategy Description</b>    | Level Moderately Low                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Reductant level below 12% for 15s</li> </ul>      |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Reductant Tank Temperature above -99°C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P205B/64</li> </ul>           |
| <b>Time Required For DTC To Be Set</b> | 25s                                                                                        |
| <b>MIL Illumination</b>                | N/A                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                       |

## P115000 Throttle/Pedal Position Sensor/Switch "A"/"D" Voltage Correlation - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P115000                                                                                                                                                                                                                                                                                            |
| Component / System              | Throttle/Pedal Position Sensor/Switch "A"/"D"                                                                                                                                                                                                                                                      |
| Monitor Strategy Description    | Voltage Correlation                                                                                                                                                                                                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>2 different occasions can set this code: (VECU input IVS1 is low AND VECU input IVS2 is high AND accelerator sensor voltage below 0.65V) OR (VECU input IVS1 is high AND VECU input IVS2 is low AND accelerator pedal sensor voltage above 1.2V)</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul>                                                                                                                                                                                  |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P0643/00, P0642/00</li> </ul>                                                                                                                                                                                                              |
| Time Required For DTC To Be Set | 5.5s                                                                                                                                                                                                                                                                                               |
| MIL Illumination                | N/A                                                                                                                                                                                                                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                               |

## P114800 Lost Communication With ECM According To Turbocharger/ Supercharger Control Module "A" - No Sub Type Information

|                                 |                                                                                                                  |
|---------------------------------|------------------------------------------------------------------------------------------------------------------|
| DTC                             | P114800                                                                                                          |
| Component / System              | ECM                                                                                                              |
| Monitor Strategy Description    | Lost Communication With ECM                                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Communication failure detected by Turbocharger/Supercharger A.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Delay after ECU startup before diagnose is enabled: 10sec</li> </ul>      |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, U010C/00</li> </ul>                            |
| Time Required For DTC To Be Set | 3s                                                                                                               |
| MIL Illumination                | 3                                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                             |

## P11497E Intake Air Heater "B" Circuit - Actuator Stuck On

|                              |                                                                                                                                                                                                  |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P11497E                                                                                                                                                                                          |
| Component / System           | ECM                                                                                                                                                                                              |
| Monitor Strategy Description | Lost Communication With ECM                                                                                                                                                                      |
| Fault Limit                  | <ul style="list-style-type: none"> <li>The preheat element is active when there is no preheat activation request. Only for 12 volt systems</li> <li>AND</li> <li>2No Unit equals to 2</li> </ul> |

|                                 |                                                                               |
|---------------------------------|-------------------------------------------------------------------------------|
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>   |
| Time Required For DTC To Be Set | 10s                                                                           |
| MIL Illumination                | N/A                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                          |

## P213600 Throttle/Pedal Position Sensor/Switch "A"/"C" Voltage Correlation - No Sub Type Information

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| DTC                             | P213600                                                                                                           |
| Component / System              | Throttle/Pedal Position Sensor/Switch "A"/"C"                                                                     |
| Monitor Strategy Description    | Voltage Correlation                                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Sensor voltage above 6 V</li> </ul>                                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                  |
| Time Required For DTC To Be Set | 5.5s                                                                                                              |
| MIL Illumination                | N/A                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                              |

## P006E00 Turbocharger/Supercharger Boost Control "A" Supply Voltage Circuit - No Sub Type Information

|                                 |                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------|
| DTC                             | P006E00                                                                                                     |
| Component / System              | Turbocharger/Supercharger Boost Control "A"                                                                 |
| Monitor Strategy Description    | Supply Voltage Circuit                                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Low voltage detected by Turbocharger/Supercharger A.</li> </ul>      |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Delay after ECU startup before diagnose is enabled: 10sec</li> </ul> |
| Disable Conditions              | <ul style="list-style-type: none"> <li>U3000/01, U010C/00</li> </ul> No Active DTC's:                       |
| Time Required For DTC To Be Set | 95s                                                                                                         |
| MIL Illumination                | 3                                                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                        |

## P021900 Engine Overspeed Condition - No Sub Type Information

|                              |                     |
|------------------------------|---------------------|
| DTC                          | P021900             |
| Component / System           | Engine              |
| Monitor Strategy Description | Overspeed Condition |

|                                        |                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Too high engine speed detected.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>The engine must be running.</li> </ul>     |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>U3000/01</li> </ul> No Active DTC's:       |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                |
| <b>MIL Illumination</b>                | N/A                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                              |

## P115100 Aftertreatment System Over Temperature - No Sub Type Information

|                                        |                                                                                                                                                                             |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P115100                                                                                                                                                                     |
| <b>Component / System</b>              | Aftertreatment System                                                                                                                                                       |
| <b>Monitor Strategy Description</b>    | System Over Temperature                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Temperature in the aftertreatment system above (0No Unit + 490No unit)</li> </ul>                                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>The engine must be running (30s + 10s).</li> </ul>                                                                                   |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Aftertreatment Hydrocarbon Injector is active</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 4s                                                                                                                                                                          |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                        |

## P26047F Intake Air Heater "A" Circuit Range/Performance - Actuator Stuck Off

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P26047F                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Component / System</b>              | Intake Air Heater A                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Monitor Strategy Description</b>    | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>The preheat element is inactive when there is a preheat activation request               <ul style="list-style-type: none"> <li>AND                   <ul style="list-style-type: none"> <li>2No Unit equals to 1</li> </ul> </li> <li>OR                   <ul style="list-style-type: none"> <li>2No Unit equals to 2</li> </ul> </li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>The engine must be running</li> </ul>                                                                                                                                                                                                                                                                                                                      |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                              |

## P115400 Lost communication between IPC and BCM on Medium Speed CAN Communication Bus

|                                 |                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P115400                                                                                                                        |
| Component / System              | IPC and BCM                                                                                                                    |
| Monitor Strategy Description    | Lost Communication                                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication between IPC and BCM on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                          |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul>                                                    |
| Time Required For DTC To Be Set | 5s                                                                                                                             |
| MIL Illumination                | 3                                                                                                                              |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                           |

## P115500 Lost Communication with Aftertreatment Diesel Particulate Filter Regeneration Inhibit Switch - No Sub Type Information

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| DTC                             | P115500                                                                                                             |
| Component / System              | DPF Inhibit Switch                                                                                                  |
| Monitor Strategy Description    | Lost Communication                                                                                                  |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with IPC on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                               |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul>                                         |
| Time Required For DTC To Be Set | 19s                                                                                                                 |
| MIL Illumination                | N/A                                                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                |

## P008B00 Low Pressure Fuel System Pressure - Too High - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P008B00                                                                                                                                                                                                                                               |
| Component / System              | Fuel System                                                                                                                                                                                                                                           |
| Monitor Strategy Description    | Fuel System Pressure Too High                                                                                                                                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>se_FuelPres above (100kPa + Offset dependent on fuel value and Engine Speed)</li> </ul>                                                                                                                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Speed between 400rpm and 2500rpm</li> </ul>                                                                                                                                                             |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P0070/15, P0072/00, P2229/00, P2226/13, P24F7/00, P20D0/00, P20CF/7A, P20DC/00, P24F6/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P20E0/00, P20DD/13, P2542/00, P2539/13, U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                                                                                                    |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## U032300 Software Incompatibility With Instrument Panel Control Module - No Sub Type Information

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| DTC                             | U032300                                                                                                             |
| Component / System              | IPC                                                                                                                 |
| Monitor Strategy Description    | Software Incompatibility                                                                                            |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with IPC on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                               |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul>                                         |
| Time Required For DTC To Be Set | 39s                                                                                                                 |
| MIL Illumination                | 3                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                |

## U033100 Software Incompatibility With Body Control Module "A" - No Sub Type Information

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| DTC                             | U033100                                                                                                             |
| Component / System              | Body Control Module A                                                                                               |
| Monitor Strategy Description    | Software Incompatibility                                                                                            |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with BCM on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                               |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul>                                         |
| Time Required For DTC To Be Set | 39s                                                                                                                 |
| MIL Illumination                | 3                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                |

## U301700 Control Module Timer/Clock Performance - No Sub Type Information

|                              |                                                                                                                                                                                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | U301700                                                                                                                                                                                                                                                |
| Component / System           | Control Module                                                                                                                                                                                                                                         |
| Monitor Strategy Description | Timer/Clock Performance                                                                                                                                                                                                                                |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Engine running monitor Failure Condition</li> <li>AND</li> <li>not Time that Real Time Clock signal has advanced after 1080s has passed according to ECM between (1080s - 1560s) and (1080s + 1560s)</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Engine running monitor Enable Conditions: Engine running</li> </ul>                                                                                                                                             |

|                                 |                                          |
|---------------------------------|------------------------------------------|
| Disable Conditions              | No Active DTC's:<br>• P0117/00, P0115/13 |
| Time Required For DTC To Be Set | 1080s                                    |
| MIL Illumination                | 3                                        |
| Probable Causes                 | <i>See Tech Tool</i>                     |

### P117600 Starter Motor Deactivated - Over Temperature - No Sub Type Information

|                                 |                                                        |
|---------------------------------|--------------------------------------------------------|
| DTC                             | P117600                                                |
| Component / System              | Control Module                                         |
| Monitor Strategy Description    | Timer/Clock Performance                                |
| Fault Limit                     | • Starter motor is overheated when start is requested. |
| Enable Conditions               | • N/A                                                  |
| Disable Conditions              | No Active DTC's:<br>• P0617/00                         |
| Time Required For DTC To Be Set | 1s                                                     |
| MIL Illumination                | N/A                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                   |

### P117700 Starter Motor Deactivated - Gearbox Not in Neutral - No Sub Type Information

|                                 |                                                                |
|---------------------------------|----------------------------------------------------------------|
| DTC                             | P117700                                                        |
| Component / System              | Starter Motor                                                  |
| Monitor Strategy Description    | Gearbox Not in Neutral                                         |
| Fault Limit                     | • Gear box is not in neutral position when start is requested. |
| Enable Conditions               | • N/A                                                          |
| Disable Conditions              | No Active DTC's:<br>• P0617/00                                 |
| Time Required For DTC To Be Set | 1s                                                             |
| MIL Illumination                | N/A                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                           |

### P117900 Starter Motor Deactivated - PTO Active - No Sub Type Information

|                              |                                            |
|------------------------------|--------------------------------------------|
| DTC                          | P117900                                    |
| Component / System           | Starter Motor                              |
| Monitor Strategy Description | Starter Deactivated                        |
| Fault Limit                  | • The starter motor is stopped due to PTO. |
| Enable Conditions            | • N/A                                      |

|                                        |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P0617/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 1s                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                             |

## U1FFF68 The factory mode is active through P1HCF

|                                        |                                                                                               |
|----------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U1FFF68                                                                                       |
| <b>Component / System</b>              | Factory Mode                                                                                  |
| <b>Monitor Strategy Description</b>    | Factory Mode Active                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• The factory mode is active through P1HCF.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• New Key Cycle</li> </ul>                             |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul>              |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                          |

## P040A13 Exhaust Gas Recirculation Temperature Sensor "A" - Circuit Open

|                                        |                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P040A13                                                                                                                                                                                                |
| <b>Component / System</b>              | Exhaust Gas Recirculation Temperature Sensor "A"                                                                                                                                                       |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:48 above 0.794240V</li> <li>• OR</li> <li>• Voltage on B:48 above 0.023671V</li> <li>• AND</li> <li>• Voltage on B:48 below 0.175672V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• New Key Cycle</li> </ul>                                                                                                                                      |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                   |

## P052712 Fan Speed Sensor Circuit Range/Performance - Circuit Short To Battery

|                                     |                                            |
|-------------------------------------|--------------------------------------------|
| <b>DTC</b>                          | P052712                                    |
| <b>Component / System</b>           | Fan Speed Sensor Circuit Range/Performance |
| <b>Monitor Strategy Description</b> | Circuit Check                              |

|                                        |                                                                                                             |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• se_FanSpd equals to 0 rpm</li> </ul>                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Running</li> </ul>                                          |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0692/00, P0691/00, P0480/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                        |

## P054E00 Idle Control System - Fuel Quantity Lower Than Expected - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P054E00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Component / System</b>              | Idle Control System                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b>    | Fuel Quantity Lower Than Expected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Average fuel quantity in each injection for the evaluation period below 5mg/stroke</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• VehicleSpeed below 0.100000001490116km/h</li> <li>• AND</li> <li>• Power take-off is not active</li> <li>• AND</li> <li>• Engine running for 60s</li> <li>• AND</li> <li>• Stable engine speed</li> <li>• AND</li> <li>• Stable engine torque</li> <li>• AND</li> <li>• Idle governor is active above conditions valid for 5s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P0117/00, P0115/13, P2229/00, P0340/31, P0335/31, U3000/01, P0115/13, P0117/00, P0070/15, P0072/00, P2229/00, P2226/13, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13, P0339/00, P0335/31, P0336/38, P0016/76, P0340/31, P0341/38, P0500/13, P0502/00, P215A/64</li> </ul>                                                                                                                                                                              |
| <b>Time Required For DTC To Be Set</b> | 185s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P004607 Turbocharger/Supercharger Boost Control "A" Circuit Range/Performance - Mechanical Failures

|                                 |                                                                                                             |
|---------------------------------|-------------------------------------------------------------------------------------------------------------|
| DTC                             | P004607                                                                                                     |
| Component / System              | Turbocharger/Supercharger Boost Control                                                                     |
| Monitor Strategy Description    | Circuit Range/Performance                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Failure detected by Turbocharger/Supercharger A.</li> </ul>          |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Delay after ECU startup before diagnose is enabled: 10sec</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, U010C/00</li> </ul>                       |
| Time Required For DTC To Be Set | 10s                                                                                                         |
| MIL Illumination                | 3                                                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                        |

## P222764 Barometric Pressure Sensor "A" Circuit Range/Performance - Signal Plausibility Failure

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P004607                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Component / System           | Turbocharger/Supercharger Boost Control                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Monitor Strategy Description | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Fault Limit                  | <ul style="list-style-type: none"> <li>se_AmbAirPres below 44kPa</li> <li>OR</li> <li>se_AmbAirPres above 114kPa</li> <li>OR</li> <li>Ambient air pressure compared to reference pressure below -15kPa</li> <li>OR</li> <li>Ambient air pressure compared to reference pressure above 15kPa</li> </ul>                                                                                                                                                                                      |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Engine Speed below 180rpm</li> <li>OR</li> <li>Engine Speed between 10000rpm and 0rpm</li> <li>AND</li> <li>tc_IndTrqValue between 10000Nm and 10Nm</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>EGR valve Control PWM between 30% and 100%</li> <li>AND</li> <li>Turbocharger/Supercharger A Position between 100% and 0%</li> <li>AND</li> <li>No quick changes in engine speed and torque</li> </ul> |

|                                        |                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P0105/13, P0108/00, P051D/00, P051A/13, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P2229/00, P2226/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 1s                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                   |

## P24A400 Diesel Particulate Filter Restriction - Soot Accumulation Too High (Bank 1) - No Sub Type Information

|                                        |                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P24A400                                                                                                                            |
| <b>Component / System</b>              | Diesel Particulate Filter Restriction                                                                                              |
| <b>Monitor Strategy Description</b>    | Soot Accumulation Too High                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>The aftertreatment diesel particulate filter load is considered critically high.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                                                                   |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                     |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                                                                 |
| <b>MIL Illumination</b>                | 3                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                               |

## P009700 Intake Air Temperature Sensor 2 Circuit Low (Bank 1) - No Sub Type Information

|                                        |                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------|
| <b>DTC</b>                             | P009700                                                                           |
| <b>Component / System</b>              | Intake Air Temperature Sensor 2                                                   |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on A:47 below 0.147705V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul>    |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                              |

## P009513 Intake Air Temperature Sensor 2 Bank 1 - Circuit Open

|                                     |                                 |
|-------------------------------------|---------------------------------|
| <b>DTC</b>                          | P009513                         |
| <b>Component / System</b>           | Intake Air Temperature Sensor 2 |
| <b>Monitor Strategy Description</b> | Circuit Open                    |

|                                        |                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:47 above 4.910889V</li> <li>• OR</li> <li>• Voltage on A:47 above 0.147705V</li> <li>• AND</li> <li>• Voltage on A:47 below 0.289307V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                          |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                                                                                                                                    |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                   |

## P268300 Engine Coolant Bypass Valve Control Circuit High - No Sub Type Information

|                                        |                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P268300                                                                                                    |
| <b>Component / System</b>              | Engine Coolant Bypass Valve                                                                                |
| <b>Monitor Strategy Description</b>    | Control Circuit High                                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Short circuit to battery is detected.</li> </ul>                  |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                              |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                         |
| <b>MIL Illumination</b>                | N/A                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                       |

## P268200 Engine Coolant Bypass Valve Control Circuit Low - No Sub Type Information

|                                        |                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P268200                                                                                                                |
| <b>Component / System</b>              | Engine Coolant Bypass Valve                                                                                            |
| <b>Monitor Strategy Description</b>    | Control Circuit Low                                                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Short circuit to ground is detected.</li> </ul>                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                          |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                   |

**P268113 Engine Coolant Bypass Valve "A" Control - Circuit Open**

|                                        |                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P268113                                                                                                              |
| <b>Component / System</b>              | Engine Coolant Bypass Valve                                                                                          |
| <b>Monitor Strategy Description</b>    | Control Circuit Open                                                                                                 |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                   |
| <b>MIL Illumination</b>                | 3                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                 |

**P011513 Engine Coolant Temperature Sensor 1 - Circuit Open**

|                                        |                                                                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P011513                                                                                                                                                                                      |
| <b>Component / System</b>              | Engine Coolant Bypass Valve                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Control Circuit Open                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on B:27 above 4.913330V</li> <li>OR</li> <li>Voltage on B:27 above 0.147705V</li> <li>AND</li> <li>Voltage on B:27 below 0.231934V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                        |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                  |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                         |

**P012800 Coolant Thermostat (Coolant Temp Below Thermostat Regulating Temperature) - No Sub Type Information**

|                                     |                                                                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P012800                                                                                                                                        |
| <b>Component / System</b>           | Engine Coolant Bypass Valve                                                                                                                    |
| <b>Monitor Strategy Description</b> | Control Circuit Open                                                                                                                           |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>se_CoolantTemp below Table derived value dependent on Average Engine Torque (typically 71 C)</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 150kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• Engine considered fully warmed up</li> <li>• AND</li> <li>• Engine Speed between 500rpm and Table derived value dependent on Ambient Air Temperature (typically 1100 rpm)</li> <li>• AND</li> <li>• tc_IndTrqValue between 0Nm and Table derived value dependent on Ambient Air Temperature (typically 900 Nm)</li> <li>• AND</li> <li>• Vehicle Speed above 0km/h above conditions valid for 14s               <ul style="list-style-type: none"> <li>• OR</li> <li>• Engine running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 150kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• Cumulative Idle Speed percentage during cycle below 50%</li> <li>• AND</li> <li>• Cumulative Fuel Cut percentage during cycle below 50%</li> <li>• AND</li> <li>• Minimum Engine Coolant Temperature below 51°C</li> <li>• AND</li> <li>• Engine considered fully warmed up</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P0116/2A, P0097/00, P0095/13, P2229/00, P2226/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

### P042200 Catalyst 2 Efficiency Below Threshold (Bank 1) - No Sub Type Information

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| <b>DTC</b>                          | P042200                             |
| <b>Component / System</b>           | Catalyst 2                          |
| <b>Monitor Strategy Description</b> | Efficiency Below Threshold (Bank 1) |

|                    |                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b> | <ul style="list-style-type: none"><li>• SCR conversion efficiency below (80% + Offset dependent onAverage SCR NOx Catalyst Temperature)</li><li>• AND</li><li>• Ratio of diesel that slipped through the catalyst and oxidized in the Particulate Filter below 0ratio. For current status, read MID B2 - PM Filter Monitor Bank 1, TID 92 - Ratio of converted NOx</li></ul> |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b> | <ul style="list-style-type: none"> <li>• Hydrocarbon Conversion Monitor Enable Conditions</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• Engine Speed between 590rpm and 3000rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1Nm and 4000Nm</li> <li>• AND</li> <li>• Exhaust Aftertreatment Fuel Injector Active</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 3 between 200°C and 600°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 170°C and 400°C</li> <li>• AND</li> <li>• SCR warming active</li> <li>• OR <ul style="list-style-type: none"> <li>• Empty Can Monitor Enable Conditions</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• not Exhaust Aftertreatment Fuel Injector Active</li> <li>• AND</li> <li>• Engine Speed above 550rpm</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 above 20°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 above 20°C</li> <li>• AND <ul style="list-style-type: none"> <li>• Derivative of Exhaust Gas Temperature Sensor 1 above 3.75°C</li> <li>• AND</li> <li>• Derivative of Exhaust Gas Temperature Sensor 2 below 2.5°C <ul style="list-style-type: none"> <li>• OR <ul style="list-style-type: none"> <li>• Derivative of Exhaust Gas Temperature Sensor 1 below (-1 * 3.75°C)</li> <li>• AND</li> <li>• Derivative of Exhaust Gas Temperature Sensor 2 above (-1 * 2.5°C)</li> </ul> </li> </ul> </li> </ul> </li> </ul> </li> </ul> |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>P2080/64, P2084/64, P242B/64, P2229/00, P2226/13, P0072/00, P0070/15, P20DD/13, P20E0/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, U029D/00, P22FE/00, P220B/1C, P229E/13, P22A1/00, P220F/93, U029E/00, P20EE/00, P2201/64, P225D/00, P229F/64, P225F/00, P20D0/00, P24F6/00, P20DC/00, P20CF/7A, U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 1000s                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P245700 Exhaust Gas Recirculation Cooler Efficiency Below Threshold - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P245700                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Component / System</b>           | Exhaust Gas Recirculation Cooler                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Monitor Strategy Description</b> | Efficiency Below Threshold                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Ratio (Modeled Exhaust Manifold Temp - EGR Temp) / (Modeled Exhaust Manifold Temp - Engine Coolant Temp) below 0.769999980926514ratio. For current status, read MID 31 - EGR Monitor Bank 1, TID 82 - Exhaust gas recirculation cooler efficiency</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>Engine Speed between 1400rpm and 1700rpm</li> <li>AND</li> <li>tc_IndTrqValue between 1800Nm and 2600Nm</li> <li>AND</li> <li>EGR valve Control PWM between 50% and 101%</li> <li>AND</li> <li>EGR A Flow between 0.0599999986588955kg/s and 0.200000002980232kg/s</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 110°C</li> <li>AND</li> <li>Modeled Exhaust Manifold Temperature between 300°C and 650°C</li> <li>AND</li> <li>Modeled Exhaust Manifold Temperature rate of change between -10°C and 10°</li> <li>AND</li> <li>EGR Mass Flow rate of change between -0.0149999996647239kg/s and 0.0149999996647239kg/s above conditions valid for 2s</li> </ul> |
| <b>Disable Conditions</b>           | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38, P0489/00, P0403/13, P040C/00, P040A/13, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P2229/00, P2226/13, P0105/13, P0108/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 10s                  |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

### P040913 EGR Differential Pressure Sensor - Circuit Open

|                                 |                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P040913                                                                                                                                                                                                |
| Component / System              | EGR Differential Pressure Sensor                                                                                                                                                                       |
| Monitor Strategy Description    | Circuit Open                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:21 below 0.207520V</li> </ul>                                                                                                                      |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                  |
| Disable Conditions              | <ul style="list-style-type: none"> <li>Voltage on A:7 below 4.5V</li> <li>OR</li> <li>Voltage on A:7 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 7s                                                                                                                                                                                                     |
| MIL Illumination                | 0                                                                                                                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                   |

### P046C64 EGR Differential Pressure Sensor - Circuit Open

|                              |                                                                                                                                                                                                                                                                                                       |
|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P046C64                                                                                                                                                                                                                                                                                               |
| Component / System           | EGR Differential Pressure Sensor                                                                                                                                                                                                                                                                      |
| Monitor Strategy Description | Circuit Range/Performance                                                                                                                                                                                                                                                                             |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Difference between estimated and real EGR differential pressure below -10No Unit</li> <li>OR</li> <li>Difference between estimated and real EGR differential pressure above 7No Unit</li> <li>OR</li> <li>se_EgrDiffPres above 2.180000066757202kPa</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed between 1100rpm and 1800rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1600Nm and 2800Nm</li> <li>• AND NOT <ul style="list-style-type: none"> <li>• not Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• not se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• not se_CoolantTemp between 60°C and 120°C</li> </ul> </li> <li>• AND</li> <li>• Turbocharger/Supercharger A Position between 40% and 100%</li> <li>• AND</li> <li>• EGR valve Control PWM above 5Nm</li> <li>• OR <ul style="list-style-type: none"> <li>• NOT <ul style="list-style-type: none"> <li>• not Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• not se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• not se_CoolantTemp between 60°C and 120°C</li> </ul> </li> <li>• Engine Speed between 0rpm and 315rpm</li> <li>• AND</li> <li>• EGR valve Control PWM below 0.100000001490116%</li> <li>• AND</li> <li>• Pressure difference between exhaust manifold and inlet manifold below 1000kPa</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0406/00, P0409/13, P0489/00, P0403/13, P0105/13, P0108/00, P006E/00, P00AF/00, P0046/07, P1148/00, P2229/00, P2226/13, P0095/13, P0097/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, U029D/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P040600 EGR Differential Pressure Sensor Circuit High - No Sub Type Information

|                                     |                                                                                                            |
|-------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P040600                                                                                                    |
| <b>Component / System</b>           | EGR Differential Pressure Sensor                                                                           |
| <b>Monitor Strategy Description</b> | Circuit Range/Performance                                                                                  |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Voltage on A:7 below 4.5V OR Voltage on A:7 above 5.5V</li> </ul> |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                    |
| <b>Disable Conditions</b>           | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                       |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 7s                   |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

### P269000 Cylinder 5 Injector Data Incompatible - No Sub Type Information

|                                 |                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------|
| DTC                             | P269000                                                                                         |
| Component / System              | Injector 5                                                                                      |
| Monitor Strategy Description    | Data Incompatible                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Trim Code checksum of Injector 5 is incorrect</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> </ul>                                        |
| Disable Conditions              | No Active DTC's:                                                                                |
| Time Required For DTC To Be Set | 0s                                                                                              |
| MIL Illumination                | 3                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                            |

### P269100 Cylinder 6 Injector Data Incompatible - No Sub Type Information

|                                 |                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------|
| DTC                             | P269100                                                                                         |
| Component / System              | Injector 6                                                                                      |
| Monitor Strategy Description    | Data Incompatible                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Trim Code checksum of Injector 6 is incorrect</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> </ul>                                        |
| Disable Conditions              | No Active DTC's:                                                                                |
| Time Required For DTC To Be Set | 0s                                                                                              |
| MIL Illumination                | 0                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                            |

### P026A00 Charge Air Cooler Efficiency Below Threshold - No Sub Type Information

|                              |                                                                                                                                                                                                                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P026A00                                                                                                                                                                                                                                                                                                  |
| Component / System           | Injector 6                                                                                                                                                                                                                                                                                               |
| Monitor Strategy Description | Data Incompatible                                                                                                                                                                                                                                                                                        |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Ratio between Modeled CaC Temp and difference between Modeled Deteriorated and Modeled Nominal CaC Temp below 0.00100000004749745ratio. For current status, read MID 85 - Boost Pressure Control Monitor Bank 1, TID 94 - Charge air cooler efficiency</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Vehicle Speed above 65km/h for 20s</li> <li>• AND</li> <li>• se_CoolantTemp above 60°C</li> <li>• AND</li> <li>• se_CoolantTemp below 120°C</li> <li>• AND</li> <li>• Engine Speed between 1400rpm and 1900rpm</li> <li>• AND</li> <li>• Engine Torque as percent of max rated Torque at current Engine Speed between 75% and 102%</li> <li>• AND</li> <li>• Air Mass Flow between 0.280000030994415kg/s and 0.600000023841858kg/s</li> <li>• AND</li> <li>• Difference between deteriorated and nominal CAC temperature above 17°C above conditions valid for 20s</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P0097/00, P0095/13, P0112/00, P0110/13, P2229/00, P2226/13, P0108/00, P0105/13, P0105/13, P009A/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

## P02CC00 Cylinder 1 Fuel Injector Offset Learning at Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                        |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P02CC00                                                                                                                                                                                                                                                                                |
| <b>Component / System</b>           | Cylinder 1 Fuel Injector                                                                                                                                                                                                                                                               |
| <b>Monitor Strategy Description</b> | Offset Learning at Min Limit                                                                                                                                                                                                                                                           |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• -100Percentage below Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 86 - Balancing of injector 1, fuel angle</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## P268C00 Cylinder 1 Injector Data Incompatible - No Sub Type Information

|                                        |                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P268C00                                                                                           |
| <b>Component / System</b>              | Cylinder 1 Fuel Injector                                                                          |
| <b>Monitor Strategy Description</b>    | Data Incompatible                                                                                 |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Trim Code checksum of Injector 1 is incorrect</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> </ul>                                        |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                  |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                                |
| <b>MIL Illumination</b>                | 0                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                              |

**P268D00 Cylinder 2 Injector Data Incompatible - No Sub Type Information**

|                                        |                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P268D00                                                                                         |
| <b>Component / System</b>              | Cylinder 2 Fuel Injector                                                                        |
| <b>Monitor Strategy Description</b>    | Data Incompatible                                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Trim Code checksum of Injector 2 is incorrect</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Key On</li> </ul>                                        |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                            |

**P268E00 Cylinder 3 Injector Data Incompatible - No Sub Type Information**

|                                        |                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P268E00                                                                                         |
| <b>Component / System</b>              | Cylinder 3 Fuel Injector                                                                        |
| <b>Monitor Strategy Description</b>    | Data Incompatible                                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Trim Code checksum of Injector 3 is incorrect</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Key On</li> </ul>                                        |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                            |

**P268F00 Cylinder 4 Injector Data Incompatible - No Sub Type Information**

|                                        |                                                                                                 |
|----------------------------------------|-------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P268F00                                                                                         |
| <b>Component / System</b>              | Cylinder 4 Fuel Injector                                                                        |
| <b>Monitor Strategy Description</b>    | Data Incompatible                                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Trim Code checksum of Injector 4 is incorrect</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Key On</li> </ul>                                        |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                            |

**P050200 Vehicle Speed Sensor "A" Circuit Low - No Sub Type Information**

|                                     |                          |
|-------------------------------------|--------------------------|
| <b>DTC</b>                          | P050200                  |
| <b>Component / System</b>           | Vehicle Speed Sensor "A" |
| <b>Monitor Strategy Description</b> | Circuit Low              |

|                                        |                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Sensor voltage below 2.5 V</li> </ul>                                          |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery voltage should be above 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 3s                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                    |

### P05E400 Park Brake Sensor/Switch Circuit Low - No Sub Type Information

|                                        |                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P05E400                                                                                                                 |
| <b>Component / System</b>              | Park Brake Sensor/Switch                                                                                                |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Sensor voltage below 0.1 V</li> </ul>                                          |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery voltage should be above 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                    |

### P269A00 Exhaust Aftertreatment Fuel Injector "A" Circuit High - No Sub Type Information

|                                        |                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P269A00                                                                                                                |
| <b>Component / System</b>              | Exhaust Aftertreatment Fuel Injector "A"                                                                               |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Short circuit to battery is detected</li> </ul>                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                          |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                   |

### P26E800 Actuator Supply Voltage "D" Circuit Low - No Sub Type Information

|                           |                                         |
|---------------------------|-----------------------------------------|
| <b>DTC</b>                | P26E800                                 |
| <b>Component / System</b> | Actuator Supply Voltage "D" Circuit Low |

|                                        |                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Short Circuit                                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Battery voltage is over 38 Volt.</li> </ul>                     |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Supply must be fully active, i.e. duty must be 100%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                            |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                   |

### P269900 Exhaust Aftertreatment Fuel Injector "A" Circuit Low - No Sub Type Information

|                                        |                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P269900                                                                                                          |
| <b>Component / System</b>              | Exhaust Aftertreatment Fuel Injector "A"                                                                         |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected</li> </ul>                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be above 0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                      |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                               |
| <b>MIL Illumination</b>                | 3                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                             |

### P269713 Exhaust Aftertreatment Fuel Injector "A" - Circuit Open

|                                        |                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P269713                                                                                                              |
| <b>Component / System</b>              | Exhaust Aftertreatment Fuel Injector "A"                                                                             |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                   |
| <b>MIL Illumination</b>                | 3                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                 |

### P20DE00 Exhaust Aftertreatment Fuel Pressure Sensor Circuit Range/Performance - No Sub Type Information

|                           |                                             |
|---------------------------|---------------------------------------------|
| <b>DTC</b>                | P20DE00                                     |
| <b>Component / System</b> | Exhaust Aftertreatment Fuel Pressure Sensor |

| Monitor Strategy Description | Circuit Range/Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>           | <ul style="list-style-type: none"> <li>• se_AhiFuelPres below 45kPa</li> <li>• AND</li> <li>• se_AhiFuelPres below 300kPa</li> <li>• OR               <ul style="list-style-type: none"> <li>• se_AhiFuelPres above 200kPa</li> <li>• AND</li> <li>• se_AhiFuelPres above 200kPa</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>     | <ul style="list-style-type: none"> <li>• se_BattVolt between 10V and 16V</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND</li> <li>• Diagnosis not completed this driving cycle</li> <li>• OR               <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injecton Active</li> <li>• AND</li> <li>• Diagnosis not completed the last 7200s</li> </ul> </li> <li>• se_CoolantTemp above 20°C</li> <li>• AND</li> <li>• Exhaust Flow above 0.00999999977648258kg/s</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 1 between 0°C and 500°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 2 between 120°C and 400°C</li> <li>• AND</li> <li>• se_BattVolt between 10V and 16V</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND</li> <li>• Diagnosis not completed this driving cycle</li> <li>• OR               <ul style="list-style-type: none"> <li>• Exhaust Aftertreatment Fuel Injecton Active</li> <li>• AND</li> <li>• Diagnosis not completed the last 7200s</li> </ul> </li> <li>• AND</li> <li>• Exhaust Flow below 0.5kg/s</li> <li>• AND</li> <li>• se_CoolantTemp above 30°C</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>P2697/13, P2699/00, P20D9/00, P20D7/13, P20E0/00, P20DD/13, P24FA/00, P24F8/13, U3000/01, P0117/00, P0115/13, U3000/01, P20DD/13, P20E0/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P0111/64, P0112/00, P0110/13, P215A/64</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 90s                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                 |

## P20DD13 Exhaust Aftertreatment Fuel Pressure Sensor - Circuit Open

|                                        |                                                                                                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20DD13                                                                                                                                                                                                                                              |
| <b>Component / System</b>              | Exhaust Aftertreatment Fuel Pressure Sensor                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on A:50 above 4.787598V</li> <li>AND</li> <li>Voltage on A:50 below 4.852295V               <ul style="list-style-type: none"> <li>OR</li> <li>Voltage on A:50 below 0.212402V</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                                |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Voltage on A:7 below 4.5V</li> <li>OR</li> <li>Voltage on A:7 above 5.5V</li> </ul> No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                            |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                                                   |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                 |

## P20E000 Exhaust Aftertreatment Fuel Pressure Sensor - Circuit Open

|                                     |                                                                                                                                                                                                           |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P20E000                                                                                                                                                                                                   |
| <b>Component / System</b>           | Exhaust Aftertreatment Fuel Pressure Sensor                                                                                                                                                               |
| <b>Monitor Strategy Description</b> | Circuit Open                                                                                                                                                                                              |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Voltage on A:50 above 4.852295V</li> </ul>                                                                                                                         |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                     |
| <b>Disable Conditions</b>           | <ul style="list-style-type: none"> <li>Voltage on A:7 below 4.5V</li> <li>OR</li> <li>Voltage on A:7 above 5.5V</li> </ul> No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01</li> </ul> |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 7s                   |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

## P053E00 Exhaust Aftertreatment Fuel Pressure Sensor - Circuit Open

|                                 |                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P053E00                                                                                                                     |
| Component / System              | Exhaust Aftertreatment Fuel Pressure Sensor                                                                                 |
| Monitor Strategy Description    | Circuit Open                                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Too high difference between ambient air pressure and crank case pressure.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul>              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P051D/00, P051A/13</li> </ul>                             |
| Time Required For DTC To Be Set | 999s                                                                                                                        |
| MIL Illumination                | 3                                                                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                        |

## U012100 Lost Communication With Anti-Lock Brake System (ABS) Control Module - No Sub Type Information

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| DTC                             | U012100                                                                                                             |
| Component / System              | Anti-Lock Brake System (ABS) Control Module                                                                         |
| Monitor Strategy Description    | Lost Communication                                                                                                  |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with ABS on Medium Speed CAN Communication Bus</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A.</li> </ul>                                                              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul>                                         |
| Time Required For DTC To Be Set | 10s                                                                                                                 |
| MIL Illumination                | 3                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                |

## P226C00 Turbocharger Boost Control "A" Slow Response - No Sub Type Information

|                              |                                                                                                                                                                                                                                                                     |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P226C00                                                                                                                                                                                                                                                             |
| Component / System           | Turbocharger Boost Control "A"                                                                                                                                                                                                                                      |
| Monitor Strategy Description | Slow Response                                                                                                                                                                                                                                                       |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Difference of Sensed Boost Pressure evaluated in high and low evaluation windows below 92kPa. For current status, read MID 85 - Boost Pressure Control Monitor Bank 1, TID 97 - Boost system response measurement</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed between 500rpm and 1400rpm</li> <li>• AND</li> <li>• Engine Torque in percent between 0- and 15- above conditions valid for 5s</li> <li>• AND</li> <li>• Directly followed by a high load operation condition with Engine Speed between 1050rpm and 1800rpm and tc_IndTrqValue between 83- and 105- for (2s + 6s)</li> <li>• AND</li> <li>• se_BoostTemp between -25°C and 130°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P0097/00, P0095/13, P0108/00, P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 2s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P04D900 Closed Loop EGR Control At Limit - Flow Too Low - No Sub Type Information

|                                     |                                                                                                                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P04D900                                                                                                                                                                           |
| <b>Component / System</b>           | Closed Loop EGR Control At Limit                                                                                                                                                  |
| <b>Monitor Strategy Description</b> | Flow Too Low                                                                                                                                                                      |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Difference between Demanded and Actual Burned Air Fraction above Output MAP Value dependant on Engine Speed and Engine Torque</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed between 1400rpm and 1800rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1100Nm and 1700Nm</li> <li>• AND</li> <li>• Exhaust Flow between 0.200000002980232kg/s and 0.6000000023841858kg/s</li> <li>• AND</li> <li>• Engine Speed rate of change between -25rpm and 25rpm</li> <li>• AND</li> <li>• Engine Torque rate of change between -70Nm and 120Nm</li> <li>• AND</li> <li>• Exhaust Mass Flow rate of change between -0.0399999991059303kg/s and 0.100000001490116kg/s</li> <li>• AND</li> <li>• Engine running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C above conditions valid for 1s</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0097/00, P0095/13, P0117/00, P0115/13, P0406/00, P0409/13, P2229/00, P2226/13, P0108/00, P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Time Required For DTC To Be Set</b> | 15s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## P04DA00 Closed Loop EGR Control At Limit - Flow Too High - No Sub Type Information

|                                     |                                                                                                                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P04DA00                                                                                                                                                                           |
| <b>Component / System</b>           | Closed Loop EGR Control At Limit                                                                                                                                                  |
| <b>Monitor Strategy Description</b> | Flow Too High                                                                                                                                                                     |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Difference between Demanded and Actual Burned Air Fraction below Output MAP Value dependant on Engine Speed and Engine Torque</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed between 1400rpm and 1800rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1100Nm and 1700Nm</li> <li>• AND</li> <li>• Exhaust Flow between 0.200000002980232kg/s and 0.6000000023841858kg/s</li> <li>• AND</li> <li>• Engine Speed rate of change between -25rpm and 25rpm</li> <li>• AND</li> <li>• Engine Torque rate of change between -70Nm and 120Nm</li> <li>• AND</li> <li>• Exhaust Mass Flow rate of change between -0.0399999991059303kg/s and 0.100000001490116kg/s</li> <li>• AND</li> <li>• Engine running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C above conditions valid for 1s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0097/00, P0095/13, P0117/00, P0115/13, P0406/00, P0409/13, P2229/00, P2226/13, P0108/00, P0105/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Time Required For DTC To Be Set</b> | 15s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

## P040313 Closed Loop EGR Control At Limit - Flow Too Low - No Sub Type Information

|                                        |                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P040313                                                                                                    |
| <b>Component / System</b>              | EGR "A" Control - Circuit Open                                                                             |
| <b>Monitor Strategy Description</b>    | Flow Too Low                                                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                              |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                       |

**P048900 EGR "A" Control Circuit Low - No Sub Type Information**

|                                        |                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P048900                                                                                                  |
| <b>Component / System</b>              | EGR "A" Control Circuit                                                                                  |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                              |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                     |

**P02D400 Cylinder 5 Fuel Injector Offset Learning At Min Limit - No Sub Type Information**

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P02D400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Component / System</b>           | Cylinder 5 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b> | Offset Learning At Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>-100Percentage below Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 8A - Balancing of injector 5, fuel angle.</li> </ul>                                                                                                                                                                                                                                                                     |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable.</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## P02D600 Cylinder 6 Fuel Injector Offset Learning At Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P02D600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>           | Cylinder 6 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b> | Offset Learning At Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• -100Percentage below Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 8A - Balancing of injector 6, fuel angle.</li> </ul>                                                                                                                                                                                                                                                                                                         |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
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| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable.</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## P02D000 Cylinder 3 Fuel Injector Offset Learning At Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P02D000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>           | Cylinder 3 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b> | Offset Learning At Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• -100Percentage below Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 88 - Balancing of injector 3, fuel angle</li> </ul>                                                                                                                                                                                                                                                                                                          |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable.</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## P02CE00 Cylinder 2Fuel Injector Offset Learning At Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P02CE00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>           | Cylinder 3 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b> | Offset Learning At Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• -100Percentage below Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 88 - Balancing of injector 2, fuel angle</li> </ul>                                                                                                                                                                                                                                                                                                          |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable.</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## P02D200 Cylinder 4 Fuel Injector Offset Learning At Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P02D200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>           | Cylinder 3 Fuel Injector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b> | Offset Learning At Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• -100Percentage below Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.. For current status, read MID 81 - Fuel System Monitor Bank 1, TID 88 - Balancing of injector 4, fuel angle</li> </ul>                                                                                                                                                                                                                                                                                                          |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable.</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

### P25AB00 Piston Cooling Oil Control Circuit High - No Sub Type Information

|                                        |                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P25AB00                                                                                                    |
| <b>Component / System</b>              | Piston Cooling Oil Control Circuit                                                                         |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Short circuit to battery is detected.</li> </ul>                  |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                       |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                         |
| <b>MIL Illumination</b>                | N/A                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                       |

### P25AA00 Piston Cooling Oil Control Circuit Low - No Sub Type Information

|                                        |                                                                                                                       |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P25AA00                                                                                                               |
| <b>Component / System</b>              | Piston Cooling Oil Control Circuit                                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Short circuit to ground is detected.</li> </ul>                              |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Actuator must not be fully active, i.e. duty must be below 100.0%</li> </ul> |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                  |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                    |
| <b>MIL Illumination</b>                | 3                                                                                                                     |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                  |

**P25AC00 Piston Cooling Oil Control Circuit Performance/Stuck Off - No Sub Type Information**

|                                 |                                                                                                                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P25AC00                                                                                                                                                                                                       |
| Component / System              | Piston Cooling Oil Control Circuit                                                                                                                                                                            |
| Monitor Strategy Description    | Performance/Stuck Off                                                                                                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>When piston cooling valve is forced open and closed the oil pressure change below 30kPa</li> </ul>                                                                     |
| Enable Conditions               | <ul style="list-style-type: none"> <li>tc_IndTrqValue between 0Nm and 200Nm</li> <li>AND</li> <li>Engine Speed between 1000rpm and 1300rpm</li> <li>AND</li> <li>se_OilTemp between 80°C and 120°C</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P055A/13, P055D/00, P25AB/00, P25AA/00, P25A9/13, P0523/00, P0520/13, P0197/00, P0195/13, U3017/00</li> </ul>                               |
| Time Required For DTC To Be Set | 4s                                                                                                                                                                                                            |
| MIL Illumination                | 3                                                                                                                                                                                                             |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                          |

**P210900 Throttle/Pedal Position Sensor "A" Minimum Stop Performance - No Sub Type Information**

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| DTC                             | P210900                                                                                                           |
| Component / System              | Throttle/Pedal Position Sensor "A"                                                                                |
| Monitor Strategy Description    | Performance/Stuck Off                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Sensor voltage between 0.38 V and 0.65 V</li> </ul>                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                  |
| Time Required For DTC To Be Set | 5.5s                                                                                                              |
| MIL Illumination                | 3                                                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                              |

**P216300 Throttle/Pedal Position Sensor "A" Maximum Stop Performance - No Sub Type Information**

|                              |                                                                                           |
|------------------------------|-------------------------------------------------------------------------------------------|
| DTC                          | P216300                                                                                   |
| Component / System           | Throttle/Pedal Position Sensor "A"                                                        |
| Monitor Strategy Description | Performance/Stuck Off                                                                     |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Sensor voltage between 1.2 V and 4.25 V</li> </ul> |

|                                        |                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery voltage should be above 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                                                                    |
| <b>MIL Illumination</b>                | 3                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                    |

## P006964 Manifold Absolute Pressure - Barometric Pressure Correlation - Signal Plausibility Failure

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P006964                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>              | Manifold Absolute Pressure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Monitor Strategy Description</b>    | Barometric Pressure Correlation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Boost pressure compared to reference pressure below -15kPa</li> <li>• OR</li> <li>• Boost pressure compared to reference pressure above 15kPa</li> </ul>                                                                                                                                                                                                                                                                                                                                                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed below 180rpm</li> <li>• OR</li> <li>• Engine Speed between 10000rpm and 0rpm <ul style="list-style-type: none"> <li>• AND</li> <li>• tc_IndTrqValue between 10000Nm and 10Nm</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• EGR valve Control PWM between 30% and 100%</li> <li>• AND</li> <li>• Turbocharger/Supercharger A Position between 100% and 0%</li> <li>• AND</li> <li>• No quick changes in engine speed and torque</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0105/13, P0108/00, P051D/00, P051A/13, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Time Required For DTC To Be Set</b> | 1s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

## P20D713 Exhaust Aftertreatment Fuel Supply Control - Circuit Open

|                                     |                                            |
|-------------------------------------|--------------------------------------------|
| <b>DTC</b>                          | P20D713                                    |
| <b>Component / System</b>           | Exhaust Aftertreatment Fuel Supply Control |
| <b>Monitor Strategy Description</b> | Circuit Open                               |

|                                        |                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                   |
| <b>MIL Illumination</b>                | 3                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                 |

## P20DA00 Exhaust Aftertreatment Fuel Supply Control Circuit High - No Sub Type Information

|                                        |                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20DA00                                                                                                             |
| <b>Component / System</b>              | Exhaust Aftertreatment Fuel Supply Control Circuit                                                                  |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                        |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                             |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                         |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                |

## P20D900 Exhaust Aftertreatment Fuel Supply Control Circuit High - No Sub Type Information

|                                        |                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20D900                                                                                                  |
| <b>Component / System</b>              | Exhaust Aftertreatment Fuel Supply Control Circuit                                                       |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                              |
| <b>Time Required For DTC To Be Set</b> | 5.1s                                                                                                     |
| <b>MIL Illumination</b>                | N/A                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                     |

## P010513 Manifold Absolute Pressure/Barometric Pressure Sensor - Circuit Open

|                                     |                                                    |
|-------------------------------------|----------------------------------------------------|
| <b>DTC</b>                          | P010513                                            |
| <b>Component / System</b>           | Exhaust Aftertreatment Fuel Supply Control Circuit |
| <b>Monitor Strategy Description</b> | Circuit High                                       |

|                                        |                                                                                                                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:22 above 4.702148V</li> <li>• AND</li> <li>• Voltage on A:22 below 4.852295V <ul style="list-style-type: none"> <li>• OR</li> <li>• Voltage on A:22 below 0.297852V</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                          |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Voltage on A:7 below 4.5V</li> <li>• OR</li> <li>• Voltage on A:7 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                   |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                             |

### P010800 Manifold Absolute Pressure/Barometric Pressure Sensor Circuit High - No Sub Type Information

|                                        |                                                                                                                                                                                                                |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P010800                                                                                                                                                                                                        |
| <b>Component / System</b>              | Manifold Absolute Pressure/Barometric Pressure Sensor                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                                                                                                                   |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:22 above 4.852295V</li> </ul>                                                                                                                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                        |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Voltage on A:7 below 4.5V</li> <li>• OR</li> <li>• Voltage on A:7 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                             |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                           |

### P25AE00 Piston Cooling Oil Pressure Too Low - No Sub Type Information

|                                     |                                                                                                                  |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P25AE00                                                                                                          |
| <b>Component / System</b>           | Piston Cooling Oil Pressure                                                                                      |
| <b>Monitor Strategy Description</b> | Pressure Too Low                                                                                                 |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• The signal se_OilPresPcj is above a critical limit</li> </ul>           |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• The engine must be running for at least (30s + 10s) seconds.</li> </ul> |

|                                        |                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01, P055D/00, P055A/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                 |

## P25A913 Piston Cooling Oil Control - Circuit Open

|                                        |                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P25A913                                                                                                                |
| <b>Component / System</b>              | Piston Cooling Oil Control                                                                                             |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Open circuit fault is detected.</li> </ul>                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                       |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                   |

## P05407E Intake Air Heater "A" Control - Actuator Stuck On

|                                        |                                                                                                                                                                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P05407E                                                                                                                                                                                                                                                              |
| <b>Component / System</b>              | Intake Air Heater "A" Control                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b>    | Actuator Stuck On                                                                                                                                                                                                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• The preheat element is active when there is no preheat activation request</li> <li>• AND</li> <li>• 2No Unit equals to 1 <ul style="list-style-type: none"> <li>• OR</li> <li>• 2No Unit equals to 2</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• The engine must be running.</li> </ul>                                                                                                                                                                                      |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                                                                     |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                 |

## P225C00 NOx Sensor Performance - Signal Stuck High Bank 1 Sensor 1 - No Sub Type Information

|                           |                        |
|---------------------------|------------------------|
| <b>DTC</b>                | P225C00                |
| <b>Component / System</b> | NOx Sensor Performance |

| Monitor Strategy Description | Signal Stuck High Bank 1 Sensor 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>           | <ul style="list-style-type: none"> <li>Upstream NOx level above 50ppm</li> <li>AND</li> <li>A filter is applied to the NOx level that may require the evaluation to be repeated a few times to set the fault.. For current status, read MID 01 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 1, TID 81 - NOx concentration in ppm</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>     | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa and 105kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>tc_IndTrqValue between 1200Nm and 1900Nm</li> <li>AND</li> <li>Engine Speed above 1200rpm</li> <li>AND</li> <li>Average SCR NOx Catalyst Temperature between 150°C and 300°C</li> <li>AND</li> <li>Tip-in event: quick increase of power. <ul style="list-style-type: none"> <li>OR</li> <li>se_AmbAirPres between 75kPa and 105kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>No fuel injected to engine (motoring)</li> <li>AND</li> <li>Engine Brake Percentage between 0% and 100%</li> <li>AND</li> <li>se_ThrottlePos1 between -1% and 101%</li> <li>AND</li> <li>EGR valve Control PWM between -1% and 101%</li> <li>AND</li> <li>Engine Speed between 725rpm and 2500rpm</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 1 between 150°C and 300°C</li> <li>AND</li> <li>Average SCR NOx Catalyst Temperature above 175°C</li> <li>AND</li> </ul> </li> <li>not false above conditions valid for 6s</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Fuel Injector is activated.</li> <li>OR</li> <li>Regeneration ongoing.</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P225D/00, P225F/00, P242B/64, P0420/00, P0402/00, P0401/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P225D/00, P220F/93, P225F/00, U029D/00, U029E/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P225E00 NOx Sensor Performance - Signal Stuck High Bank 1 Sensor 2 - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P225E00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Component / System</b>           | NOx Sensor Performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Monitor Strategy Description</b> | Signal Stuck High Bank 1 Sensor 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Downstream NOx level above 50ppm</li> <li>AND</li> <li>A filter is applied to the NOx level that may require the evaluation to be repeated a few times to set the fault.. For current status, read MID 02 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 2, TID 81 - NOx concentration in ppm</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa and 105kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>No fuel injected to engine (motoring)</li> <li>AND</li> <li>Demanded Reductant Injection Flow below 0.100000001490116g/s</li> <li>AND</li> <li>Engine Brake Percentage between 0% and 100%</li> <li>AND</li> <li>se_ThrottlePos1 between -1% and 101%</li> <li>AND</li> <li>EGR valve Control PWM between -1% and 101%</li> <li>AND</li> <li>Engine Speed between 725rpm and 2500rpm</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 1 between 150°C and 300°C</li> <li>AND</li> <li>Average SCR NOx Catalyst Temperature above 175°C above conditions valid for 6s</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Fuel Injector is activated.</li> <li>OR</li> <li>Regeneration ongoing.</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P225D/00, P225F/00, P242B/64, P0420/00, P0402/00, P0401/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P225D/00, P220F/93, P225F/00, U029D/00, U029E/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P225F00 NOx Sensor Performance - Signal Stuck Low Bank 1 Sensor 2 - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P225F00                                                                                                                                                                                                                                                                                                                                  |
| <b>Component / System</b>              | NOx Sensor Performance                                                                                                                                                                                                                                                                                                                   |
| <b>Monitor Strategy Description</b>    | Signal Stuck Low Bank 1 Sensor 2                                                                                                                                                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>The Downstream NOx Sensor considered removed from the exhaust system when the sensor measure too high lambda value or too low NOx value during high engine speed and high load. The fault evaluation need to be repeated for a number of times to take a decision, and report the IDTC</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine Speed above 1000rpm</li> <li>AND</li> <li>tc_IndTrqValue above 1100Nm</li> <li>AND</li> <li>Internal lambda signal quality from Downstream NOx sensor received and evaluated as GOOD</li> </ul>                                                                                            |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Lambda value measured by the Downstream NOx sensor above 12lambda</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P229E/13, P22A1/00, P220B/1C, U029E/00, U3000/01</li> </ul>                                                                                           |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                     |

## P240F00 EGR Slow Response - No Sub Type Information

|                                     |                                                                                                                                                                                                    |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P240F00                                                                                                                                                                                            |
| <b>Component / System</b>           | EGR                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b> | Slow Response                                                                                                                                                                                      |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>EGR valve fails to follow command. For current status, read MID 31 - EGR Monitor Bank 1, TID 85 - Exhaust gas recirculation response measurement</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Speed between 1400rpm and 2000rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 500Nm and 1200Nm</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> <li>• AND</li> <li>• Exhaust Gas Temperature Sensor 3 above 200°C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0406/00, P0409/13, P0489/00, P0403/13, P0105/13, P0108/00, P006E/00, P00AF/00, P0046/07, P1148/00, P0095/13, P0097/00, P040A/13, P040C/00</li> </ul>                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 3600s                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                           |

### P056E92 Cold Start Turbocharger/Supercharger Boost Control "A" Performance - Performance or Incorrect Operation

|                                        |                                                                                                                                                                                                                                                       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P056E92                                                                                                                                                                                                                                               |
| <b>Component / System</b>              | Cold Start Turbocharger/Supercharger Boost Control "A"                                                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | Performance/Operation                                                                                                                                                                                                                                 |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Any Fault reported from SRA (Vgt) to ECM during Cold Start Mode</li> </ul>                                                                                                                                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Cold start mode is active</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 110kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -15°C and 50°C above conditions valid for 0s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0335/31, P0336/38, P0072/00, P0070/15, P2229/00, P2226/13</li> </ul>                                                                                                             |
| <b>Time Required For DTC To Be Set</b> | 0.100000001490116s                                                                                                                                                                                                                                    |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                     |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                  |

### P003A00 Turbocharger/Supercharger Boost Control "A" Position Exceeded Learning Limit - No Sub Type Information

|                                     |                                                        |
|-------------------------------------|--------------------------------------------------------|
| <b>DTC</b>                          | P003A00                                                |
| <b>Component / System</b>           | Cold Start Turbocharger/Supercharger Boost Control "A" |
| <b>Monitor Strategy Description</b> | Position Exceeded Learning Limit                       |

|                                        |                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Self-calibration failure detected by Turbocharger/Supercharger A</li> </ul>  |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Self-calibration failure detected by Turbocharger/Supercharger A.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, U010C/00</li> </ul>                               |
| <b>Time Required For DTC To Be Set</b> | 1s                                                                                                                  |
| <b>MIL Illumination</b>                | N/A                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                |

## P221A00 NOx Sensor 1/2 Correlation Bank 1 - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P221A00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>              | NOx Sensor 1/2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Monitor Strategy Description</b>    | Correlation Bank 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Difference between Upstream and Downstream NOx sensor lambda above 1lambda</li> <li>AND</li> <li>Lambda difference must be greater than Limit repeatedly this number of times: 15boolDuring this time each: 0.600000023841858s. For current status, read MID 01 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 1, TID 93 - Difference in measured lambda values between NOx sensor 1 and 2</li> </ul>                                                                                                                                     |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa and 105kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>Steady state: No quick changes in engine speed and torque</li> <li>AND</li> <li>tc_IndTrqValue between 1000Nm and 9999Nm</li> <li>AND</li> <li>Engine Speed between 1300rpm and 1900rpm above conditions valid for 9s</li> </ul>                                                                                                                                                                       |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Exhaust Aftertreatment Fuel Injector is activated</li> <li>OR</li> <li>Regeneration ongoing.</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>P225D/00, P225F/00, P242B/64, P0420/00, P0402/00, P0401/00, P0072/00, P0070/15, P2229/00, P2226/13, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P0111/64, P0112/00, P0110/13, P22FB/92, P220A/1C, P2200/13, P2203/00, P220E/93, P22FE/00, P220B/1C, P229E/13, P22A1/00, P225D/00, P220F/93, P225F/00, U029D/00, U029E/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 180s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**P225D00 NOx Sensor Performance - Signal Stuck Low Bank 1 Sensor 1 - No Sub Type Information**

|                                 |                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P225D00                                                                                                                                                                                                                                                                                                                                |
| Component / System              | NOx Sensor Performance                                                                                                                                                                                                                                                                                                                 |
| Monitor Strategy Description    | Signal Stuck Low Bank 1 Sensor 1                                                                                                                                                                                                                                                                                                       |
| Fault Limit                     | <ul style="list-style-type: none"> <li>The Upstream NOx Sensor considered removed from the exhaust system when the sensor measure too high lambda value or too low NOx value during high engine speed and high load. The fault evaluation need to be repeated for a number of times to take a decision, and report the IDTC</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Speed above 1000rpm</li> <li>AND</li> <li>tc_IndTrqValue above 1100Nm</li> <li>AND</li> <li>Internal lambda signal quality from Upstream NOx sensor received and evaluated as GOOD</li> </ul>                                                                                            |
| Disable Conditions              | <ul style="list-style-type: none"> <li>Lambda value measured by the Upstream NOx sensor above 12lambda</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>P2200/13, P2203/00, P220A/1C, U029D/00, U3000/01</li> </ul>                                                                                                  |
| Time Required For DTC To Be Set | 10s                                                                                                                                                                                                                                                                                                                                    |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                   |

**P10E100 Particulate Filter Differential Pressure Critically High - No Sub Type Information**

|                                 |                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P10E100                                                                                                                                    |
| Component / System              | Particulate Filter Differential Pressure                                                                                                   |
| Monitor Strategy Description    | Pressure Critically High                                                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Compensated Diesel Particulate Filter Differential Pressure above (30No unit + 0No Unit)</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 0s) seconds.</li> </ul>                              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                |
| Time Required For DTC To Be Set | 5s                                                                                                                                         |
| MIL Illumination                | N/A                                                                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                       |

**P10E200 Particulate Filter Differential Pressure Moderately High - No Sub Type Information**

|                              |                                          |
|------------------------------|------------------------------------------|
| DTC                          | P10E200                                  |
| Component / System           | Particulate Filter Differential Pressure |
| Monitor Strategy Description | Pressure Moderately High                 |

|                                        |                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Compensated Diesel Particulate Filter Differential Pressure above (30No unit + 999No Unit)</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 0s) seconds.</li> </ul>                                |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                  |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                           |
| <b>MIL Illumination</b>                | N/A                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                         |

## P10EB00 EGR Differential Pressure Sensor "A" Circuit Below Range - No Sub Type Information

|                                        |                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10EB00                                                                                      |
| <b>Component / System</b>              | EGR Differential Pressure Sensor "A"                                                         |
| <b>Monitor Strategy Description</b>    | Circuit Below Range                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>se_EgrDiffPres below -1.600000023841858kPa</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>se_CoolantTemp above 65°C</li> </ul>                  |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                  |
| <b>Time Required For DTC To Be Set</b> | 15s                                                                                          |
| <b>MIL Illumination</b>                | N/A                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                         |

## P10EC00 EGR Differential Pressure Sensor "A" Circuit Above Range - No Sub Type Information

|                                        |                                                                                             |
|----------------------------------------|---------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10EC00                                                                                     |
| <b>Component / System</b>              | EGR Differential Pressure Sensor "A"                                                        |
| <b>Monitor Strategy Description</b>    | Circuit Above Range                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>se_EgrDiffPres above 1.600000023841858kPa</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>se_CoolantTemp above 65°C</li> </ul>                 |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                 |
| <b>Time Required For DTC To Be Set</b> | 15s                                                                                         |
| <b>MIL Illumination</b>                | N/A                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                        |

**P22FB92 NOx Sensor Performance - Sensing Element Bank 1 Sensor 1 - Performance or Incorrect Operation**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P22FB92                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Component / System</b>              | NOx Sensor Performance - Sensing Element Bank 1 Sensor 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Monitor Strategy Description</b>    | Performance or Incorrect Operation                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Internal status and error byte received from Upstream NOx sensor evaluated as bad sensor quality</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_BattVolt between 11.5V and 16V</li> <li>AND</li> <li>Engine must be running</li> <li>AND</li> <li>not Exhaust Aftertreatment Fuel Injector Active for 30s</li> <li>AND</li> <li>Upstream NOx sensor must be activated by EMS</li> <li>AND</li> <li>Upstream NOx sensor heater quality must be GOOD (sensor heated)</li> <li>AND</li> <li>A stable indicated torque value without quick changes below 33Nm for 2s</li> <li>AND</li> <li>Internal status and error byte received from Upstream NOx sensor evaluated as GOOD</li> <li>AND</li> <li>Internal status and error byte received from Downstream NOx sensor evaluated as GOOD</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>Upstream NOx sensor Start Up Diagnosis not reported OK</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P2200/13, P2203/00, P220A/1C, U029D/00, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 250s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

**P22FE00 NOx Sensor Performance - Sensing Element Bank 1 Sensor 2 - No Sub Type Information**

|                                     |                                                                                                                                                      |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P22FE00                                                                                                                                              |
| <b>Component / System</b>           | Sensing Element Bank 1 Sensor 2                                                                                                                      |
| <b>Monitor Strategy Description</b> | NOx Sensor Performance                                                                                                                               |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Internal status and error byte received from Downstream NOx sensor evaluated as bad sensor quality</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_BattVolt between 11.5V and 16V</li> <li>• AND</li> <li>• Engine must be running</li> <li>• AND</li> <li>• not Exhaust Aftertreatment Fuel Injector Active for 30s</li> <li>• AND</li> <li>• Downstream NOx sensor must be activated by EMS</li> <li>• AND</li> <li>• Downstream NOx sensor heater quality must be GOOD (sensor heated)</li> <li>• AND</li> <li>• A stable indicated torque value without quick changes below 33Nm for 2s</li> <li>• AND</li> <li>• Internal status and error byte received from Upstream NOx sensor evaluated as GOOD</li> <li>• AND</li> <li>• Internal status and error byte received from Downstream NOx sensor evaluated as GOOD</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Downstream NOx sensor Start Up Diagnosis not reported OK</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P229E/13, P22A1/00, P220B/1C, U029E/00, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Time Required For DTC To Be Set</b> | 250s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## P110D00 Engine Stop Switch Circuit High - No Sub Type Information

|                                        |                                                                                                                                                                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P110D00                                                                                                                                                                                                                       |
| <b>Component / System</b>              | Engine Stop Switch Circuit                                                                                                                                                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit High                                                                                                                                                                                                                  |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:27 above (23.559100V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>• AND</li> <li>• Voltage on A:27 below (24.424390V * (UnfilteredBatteryVoltage / 24.0V))</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                       |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                          |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                          |

**P110E00 Engine Stop Switch Circuit Low - No Sub Type Information**

|                                 |                                                                                                                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P110E00                                                                                                                                                                                                               |
| Component / System              | Engine Stop Switch Circuit                                                                                                                                                                                            |
| Monitor Strategy Description    | Circuit Low                                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:27 above (0.731483V * (UnfilteredBatteryVoltage / 24.0V))</li> <li>AND</li> <li>Voltage on A:27 below (2.863488V * (UnfilteredBatteryVoltage / 24.0V))</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                 |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                                                                           |
| Time Required For DTC To Be Set | 7s                                                                                                                                                                                                                    |
| MIL Illumination                | N/A                                                                                                                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                  |

**P110F9E Engine Stop Switch Stuck - Stuck On**

|                                 |                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P110F9E                                                                                                                                                            |
| Component / System              | Engine Stop Switch Stuck                                                                                                                                           |
| Monitor Strategy Description    | Stuck On                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Stop button is active during start-up</li> <li>AND</li> <li>Stop button becomes active when vehicle speed &gt; 0</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P110D/00, P1001/13</li> </ul>                                                                    |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                 |
| MIL Illumination                | N/A                                                                                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                               |

**P10FE00 Particulate Filter Restriction - Soot Accumulation Moderately High Bank 1 - No Sub Type Information**

|                                 |                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------|
| DTC                             | P10FE00                                                                                                       |
| Component / System              | Particulate Filter Restriction                                                                                |
| Monitor Strategy Description    | Soot Accumulation Moderately High Bank 1                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>High soot load in aftertreatment diesel particulate filter.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine is running for (30s + 10s)</li> </ul>                           |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                   |
| Time Required For DTC To Be Set | 4s                                                                                                            |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## P055A13 Engine Oil Pressure Sensor/Switch "B" - Circuit Open

|                                 |                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P055A13                                                                                                                                                                                                                                |
| Component / System              | Engine Oil Pressure Sensor/Switch "B"                                                                                                                                                                                                  |
| Monitor Strategy Description    | Circuit Open                                                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on B:19 above 4.787598V</li> <li>AND</li> <li>Voltage on B:19 below 4.852295V <ul style="list-style-type: none"> <li>OR</li> <li>Voltage on B:19 below 0.212402V</li> </ul> </li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine is running for (30s + 10s)</li> </ul>                                                                                                                                                    |
| Disable Conditions              | <ul style="list-style-type: none"> <li>Voltage on B:17 below 4.5V</li> <li>OR</li> <li>Voltage on B:17 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                               |
| Time Required For DTC To Be Set | 7s                                                                                                                                                                                                                                     |
| MIL Illumination                | N/A                                                                                                                                                                                                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                   |

## P055B64 Piston Cooling Oil Pressure Sensor Range/Performance - Signal Plausibility Failure

|                                 |                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P055B64                                                                                                                                                                                                            |
| Component / System              | Piston Cooling Oil Pressure Sensor                                                                                                                                                                                 |
| Monitor Strategy Description    | Sensor Range/Performance                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Difference between demanded piston cooling pressure and measured piston cooling pressure between -30kPa and 30kPa</li> <li>OR</li> <li>se_OilPresPcj above 30kPa</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P055A/13, P055D/00, P25AB/00, P25AA/00, P25A9/13, P0523/00, P0520/13, P0197/00, P0195/13, U3017/00</li> </ul>                                    |
| Time Required For DTC To Be Set | 10s                                                                                                                                                                                                                |
| MIL Illumination                | N/A                                                                                                                                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                               |

**P055D00 Piston Cooling Oil Pressure Sensor Circuit High - No Sub Type Information**

|                                 |                                                                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P055D00                                                                                                                                                                                                  |
| Component / System              | Piston Cooling Oil Pressure Sensor                                                                                                                                                                       |
| Monitor Strategy Description    | Circuit High                                                                                                                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on B:19 above 4.852295V</li> </ul>                                                                                                                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                    |
| Disable Conditions              | <ul style="list-style-type: none"> <li>Voltage on B:17 below 4.5V</li> <li>OR</li> <li>Voltage on B:17 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 7s                                                                                                                                                                                                       |
| MIL Illumination                | N/A                                                                                                                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                     |

**P112900 Transmission Fluid Temperature Moderately High - No Sub Type Information**

|                                 |                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------|
| DTC                             | P112900                                                                                                        |
| Component / System              | Transmission Fluid                                                                                             |
| Monitor Strategy Description    | Temperature Moderately High                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>PFTransmissionOilTemp above (154No unit + 0No Unit)</li> </ul>          |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                    |
| Time Required For DTC To Be Set | 2s                                                                                                             |
| MIL Illumination                | N/A                                                                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                           |

**P029800 Engine Oil Over Temperature - No Sub Type Information**

|                                 |                                                                                                               |
|---------------------------------|---------------------------------------------------------------------------------------------------------------|
| DTC                             | P029800                                                                                                       |
| Component / System              | Engine Oil                                                                                                    |
| Monitor Strategy Description    | Over Temperature                                                                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>se_OilTemp above (128No unit + 7No Unit)</li> </ul>                    |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0197/00, P0195/13</li> </ul>               |
| Time Required For DTC To Be Set | 70s                                                                                                           |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | N/A                  |
| Probable Causes  | <i>See Tech Tool</i> |

## P021800 Transmission Fluid Over Temperature Condition - No Sub Type Information

|                                 |                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------|
| DTC                             | P021800                                                                                                        |
| Component / System              | Transmission Fluid                                                                                             |
| Monitor Strategy Description    | Fluid Over Temperature Condition                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>PFTransmissionOilTemp above (154No unit + 6No Unit)</li> </ul>          |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                    |
| Time Required For DTC To Be Set | 2s                                                                                                             |
| MIL Illumination                | N/A                                                                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                           |

## U116C00 Lost Communication with TCM on Powertrain CAN - No Sub Type Information

|                                 |                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| DTC                             | U116C00                                                                                                               |
| Component / System              | TCM                                                                                                                   |
| Monitor Strategy Description    | Lost Communication                                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with TCM on Vehicle Communication Powertrain CAN</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                 |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U1178/88</li> </ul>                                           |
| Time Required For DTC To Be Set | 9.1s                                                                                                                  |
| MIL Illumination                | N/A                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                  |

## U116F00 Lost Communication with Reductant Control Module on Engine Subnet - No Sub Type Information

|                              |                                                                                                                       |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| DTC                          | U116F00                                                                                                               |
| Component / System           | Reductant Control Module                                                                                              |
| Monitor Strategy Description | Lost Communication                                                                                                    |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Lost communication with EACM on Vehicle Communication Engine Subnet</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                 |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>U0080/88</li> </ul>                                           |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 14s                  |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

### P111A00 Intake Manifold Temperature Too High - No Sub Type Information

|                                 |                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P111A00                                                                                                                             |
| Component/ System               | Intake Manifold                                                                                                                     |
| Monitor Strategy Description    | Temperature Too High                                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>se_BoostTemp above ( Output from look-up table with input EngineSpeed + 2No Unit)</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul>                      |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0097/00, P0095/13</li> </ul>                                     |
| Time Required For DTC To Be Set | 12s                                                                                                                                 |
| MIL Illumination                | N/A                                                                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                |

### P111C00 Compressor Discharge Temperature Too High - No Sub Type Information

|                                 |                                                                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P111C00                                                                                                                                                                  |
| Component/ System               | Compressor Discharge Temperature                                                                                                                                         |
| Monitor Strategy Description    | Temperature Too High                                                                                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Estimated air temperature out from compressor above ( Output from look-up table with input se_AmbAirPres + 0.5No Unit)</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul>                                                           |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0110/13</li> </ul>                                                                                    |
| Time Required For DTC To Be Set | 15s                                                                                                                                                                      |
| MIL Illumination                | N/A                                                                                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                     |

### P111D00 Engine Coolant Level Moderately Low - No Sub Type Information

|                              |                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------|
| DTC                          | P111D00                                                                                                       |
| Component/ System            | Engine Coolant Level                                                                                          |
| Monitor Strategy Description | Moderately Low                                                                                                |
| Fault Limit                  | <ul style="list-style-type: none"> <li>se_CoolantLvl below (1No unit - 999No Unit)</li> </ul>                 |
| Enable Conditions            | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 0s) seconds.</li> </ul> |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P2559/00, P2558/00, P2556/13</li> </ul>     |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 20s                  |
| MIL Illumination                | N/A                  |
| Probable Causes                 | <i>See Tech Tool</i> |

### P111E00 Engine Coolant Level Moderately High - No Sub Type Information

|                                 |                                                                                                                                                                                                 |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P111E00                                                                                                                                                                                         |
| Component / System              | Engine Coolant Level                                                                                                                                                                            |
| Monitor Strategy Description    | Moderately High                                                                                                                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>se_CoolantTemp above (3.099999904632568No Unit + 107No unit + Output from look-up tables with inputs se_AmbAirPres and EngineCoolantPressure)</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul>                                                                                  |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0117/00, P0115/13</li> </ul>                                                                                                 |
| Time Required For DTC To Be Set | 4s                                                                                                                                                                                              |
| MIL Illumination                | N/A                                                                                                                                                                                             |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                            |

### P112100 EGR Temperature Too High - No Sub Type Information

|                                 |                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------|
| DTC                             | P112100                                                                                                        |
| Component / System              | EGR Temperature                                                                                                |
| Monitor Strategy Description    | Temperature Too High                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>se_EgrTemp above (220No unit + 0No Unit)</li> </ul>                     |
| Enable Conditions               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P040C/00, P040A/13</li> </ul>                |
| Time Required For DTC To Be Set | 40s                                                                                                            |
| MIL Illumination                | N/A                                                                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                           |

### P112198 EGR Temperature Too High - Component or System Over Temperature

|                              |                                                                                                                |
|------------------------------|----------------------------------------------------------------------------------------------------------------|
| DTC                          | P112198                                                                                                        |
| Component / System           | EGR Temperature                                                                                                |
| Monitor Strategy Description | Temperature Too High                                                                                           |
| Fault Limit                  | <ul style="list-style-type: none"> <li>se_EgrTemp above (220No unit + 0No Unit)</li> </ul>                     |
| Enable Conditions            | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul> |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P040C/00, P040A/13</li> </ul>                |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 40s                  |
| MIL Illumination                | N/A                  |
| Probable Causes                 | <i>See Tech Tool</i> |

## P05EB00 Cold Start SCR NOx Catalyst Inlet Temperature Too Low - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P05EB00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Component / System              | SCR NOx Catalyst                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Monitor Strategy Description    | Inlet Temperature Too Low                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>EATS heating efficiency below 30%</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Hydrocarbon Conversion Monitor Enable Conditions</li> <li>AND</li> <li>Engine Speed between 500rpm and 2500rpm</li> <li>AND</li> <li>tc_IndTrqValue between 0Nm and 3000Nm</li> <li>AND</li> <li>Cold start mode is active</li> <li>AND</li> <li>Aftertreatment Diesel Injector Fuel Flow above 9.9999999747524e-07g/s</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 1 between 240°C and 450°C</li> <li>AND</li> <li>SCR warming active above conditions valid for 3s</li> </ul> |
| Disable Conditions              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>P0335/31, P0336/38, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P20DD/13, P20E0/00, P20D0/00, P24F6/00, P20DC/00, P20CF/7A, P20DE/00, P24F7/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, U3000/01</li> </ul>                                                                                                                                                                                             |
| Time Required For DTC To Be Set | 1800s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## P112200 EGR Temperature Moderately High - No Sub Type Information

|                              |                                                                                     |
|------------------------------|-------------------------------------------------------------------------------------|
| DTC                          | P112200                                                                             |
| Component / System           | EGR Temperature                                                                     |
| Monitor Strategy Description | Inlet Temperature Too Low                                                           |
| Fault Limit                  | <ul style="list-style-type: none"> <li>EATS heating efficiency below 30%</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Hydrocarbon Conversion Monitor Enable Conditions</li> <li>AND</li> <li>Engine Speed between 500rpm and 2500rpm</li> <li>AND</li> <li>tc_IndTrqValue between 0Nm and 3000Nm</li> <li>AND</li> <li>Cold start mode is active</li> <li>AND</li> <li>Aftertreatment Diesel Injector Fuel Flow above 9.9999999747524e-07g/s</li> <li>AND</li> <li>Exhaust Gas Temperature Sensor 1 between 240°C and 450°C</li> <li>AND</li> <li>SCR warming active above conditions valid for 3s</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0335/31, P0336/38, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P20DD/13, P20E0/00, P20D0/00, P24F6/00, P20DC/00, P20CF/7A, P20DE/00, P24F7/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, U3000/01</li> </ul>                                                                                                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 1800s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## P112500 Engine Oil Temperature Moderately High - No Sub Type Information

|                                        |                                                                                                                |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P112500                                                                                                        |
| <b>Component / System</b>              | Engine Oil Temperature                                                                                         |
| <b>Monitor Strategy Description</b>    | Temperature Moderately High                                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>se_OilTemp above (128No unit + 2No Unit)</li> </ul>                     |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>The engine must be running for at least (30s + 10s) seconds.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P0197/00, P0195/13</li> </ul>                |
| <b>Time Required For DTC To Be Set</b> | 70s                                                                                                            |
| <b>MIL Illumination</b>                | N/A                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                           |

## U008088 Vehicle Communication Engine Subnet - Bus off

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| <b>DTC</b>                          | U008088                             |
| <b>Component / System</b>           | Vehicle Communication Engine Subnet |
| <b>Monitor Strategy Description</b> | Bus Off                             |

|                                        |                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• It has not been possible to send frames on Vehicle Communication Engine Subnet</li> <li>• AND</li> <li>• It has not been possible to receive frames on Vehicle Communication Engine Subnet</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                        |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                                                  |
| <b>Time Required For DTC To Be Set</b> | 5.05s                                                                                                                                                                                                                                          |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                           |

### U117888 Vehicle Communication Engine Subnet - Bus off

|                                        |                                                                                                                                                                                                                                                  |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U117888                                                                                                                                                                                                                                          |
| <b>Component / System</b>              | Vehicle Communication Engine Subnet                                                                                                                                                                                                              |
| <b>Monitor Strategy Description</b>    | Bus Off                                                                                                                                                                                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• It has not been possible to send frames on Vehicle Communication Powertrain CAN</li> <li>• AND</li> <li>• It has not been possible to receive frames on Vehicle Communication Powertrain CAN</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                          |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul>                                                                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 5.05s                                                                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                             |

### P253913 Low Pressure Fuel System Sensor Circuit - Circuit Open

|                                     |                                                                                                                                                                                                                                                                |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P253913                                                                                                                                                                                                                                                        |
| <b>Component / System</b>           | Low Pressure Fuel System Sensor Circuit                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b> | Circuit Open                                                                                                                                                                                                                                                   |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Voltage on B:16 above 4.787598V</li> <li>• AND</li> <li>• Voltage on B:16 below 4.852295V               <ul style="list-style-type: none"> <li>• OR</li> <li>• Voltage on B:16 below 0.212402V</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                        |

|                                        |                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Voltage on B:17 below 4.5V</li> <li>• OR</li> <li>• Voltage on B:17 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                             |

## P254200 Low Pressure Fuel System Sensor Circuit High - No Sub Type Information

|                                        |                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P254200                                                                                                                                                                                                          |
| <b>Component / System</b>              | Low Pressure Fuel System Sensor Circuit                                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Circuit Open                                                                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on B:16 above 4.787598V</li> <li>• AND</li> <li>• Voltage on B:16 below 4.852295V</li> <li>• OR</li> <li>• Voltage on B:16 below 0.212402V</li> </ul>           |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                          |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Voltage on B:17 below 4.5V</li> <li>• OR</li> <li>• Voltage on B:17 above 5.5V</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                               |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                             |

## P064200 Sensor Reference Voltage "A" Circuit Low - No Sub Type Information

|                                        |                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P064200                                                                                                                 |
| <b>Component / System</b>              | Sensor Reference Voltage "A"                                                                                            |
| <b>Monitor Strategy Description</b>    | Circuit Low                                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Sensor voltage below 4 V</li> </ul>                                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery voltage should be above 8V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                      |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

### P064300 Sensor Reference Voltage "A" Circuit High - No Sub Type Information

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| DTC                             | P064300                                                                                                           |
| Component / System              | Sensor Reference Voltage "A"                                                                                      |
| Monitor Strategy Description    | Circuit High                                                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Sensor voltage above 4.5 V</li> </ul>                                      |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                  |
| Time Required For DTC To Be Set | 6s                                                                                                                |
| MIL Illumination                | 3                                                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                              |

### P065200 Sensor Reference Voltage "B" Circuit Low - No Sub Type Information

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| DTC                             | P065200                                                                                                           |
| Component / System              | Sensor Reference Voltage "B"                                                                                      |
| Monitor Strategy Description    | Circuit Low                                                                                                       |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Sensor voltage below 0.1 V</li> </ul>                                      |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                  |
| Time Required For DTC To Be Set | 6s                                                                                                                |
| MIL Illumination                | N/A                                                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                              |

### P04DB00 Crankcase Ventilation System Disconnected - No Sub Type Information

|                              |                                                                                                                                                                                                   |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P04DB00                                                                                                                                                                                           |
| Component / System           | Crankcase Ventilation System                                                                                                                                                                      |
| Monitor Strategy Description | System Disconnected                                                                                                                                                                               |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Crankcase pressure difference between operation window with high oil pressure and operation window with low pressure below 0.150000005960464kPa</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 120°C</li> <li>• AND</li> <li>• Engine running time above 2s               <ul style="list-style-type: none"> <li>• OR</li> <li>• se_OilPres between 300kPa and 800kPa</li> <li>• AND</li> <li>• tc_IndTrqValue between 0Nm and 50Nm</li> <li>• AND</li> <li>• Engine Speed between 1150rpm and 3000rpm above conditions valid for 2.5s                   <ul style="list-style-type: none"> <li>• se_OilPres between 80kPa and 230kPa</li> <li>• AND</li> <li>• tc_IndTrqValue between 0Nm and 300Nm</li> <li>• AND</li> <li>• Engine Speed between 500rpm and 750rpm above conditions valid for 8s</li> </ul> </li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Engine brake</li> </ul> No Active DTC's: <ul style="list-style-type: none"> <li>• U3000/01, P0523/00, P0520/13, P051D/00, P051A/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## P04D800 Excessive Time To Enter Closed Loop EGR Control - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P04D800                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Component / System</b>           | EGR Control                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Monitor Strategy Description</b> | Excessive Time To Enter Closed Loop                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• se_CoolantTemp below 20°C</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• The engine is running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 105kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -40°C and 55°C</li> <li>• AND</li> <li>• Engine Speed between 750rpm and 3000rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 500Nm and 3000Nm</li> <li>• AND</li> <li>• Estimated engine coolant temperature above 20°C above conditions valid for 5s</li> </ul> |

|                                 |                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38, P0072/00, P0070/15, P0117/00, P0115/13, P2229/00, P2226/13</li> </ul> |
| Time Required For DTC To Be Set | 250s                                                                                                                                                           |
| MIL Illumination                | 3                                                                                                                                                              |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                           |

## P008A00 Low Pressure Fuel System Pressure - Too Low - No Sub Type Information

|                                 |                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P008A00                                                                                                                                    |
| Component / System              | Fuel System                                                                                                                                |
| Monitor Strategy Description    | Low Pressure                                                                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>se_FuelPres below (100kPa + Offset dependent on fuel value and Engine Speed)</li> </ul>             |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Speed between 400rpm and 2500rpm</li> </ul>                                                  |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>P0070/15, P0072/00, P2229/00, P2226/13, P2542/00, P2539/13, U3000/01</li> </ul> |
| Time Required For DTC To Be Set | 300s                                                                                                                                       |
| MIL Illumination                | N/A                                                                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                       |

## P113500 Crankcase Pressure Relative To Ambient Pressure Too High - No Sub Type Information

|                                 |                                                                                                                                                                                    |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P113500                                                                                                                                                                            |
| Component / System              | Crankcase Pressure                                                                                                                                                                 |
| Monitor Strategy Description    | Pressure Relative To Ambient Pressure Too High                                                                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Too high difference between ambient air pressure and crank case pressure.</li> </ul>                                                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Speed below 2800rpm</li> <li>AND</li> <li>Engine torque below 6000Nm</li> <li>AND</li> <li>Ambient temperature below -8°C</li> </ul> |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P051D/00, P051A/13</li> </ul>                                                             |
| Time Required For DTC To Be Set | 0s                                                                                                                                                                                 |
| MIL Illumination                | N/A                                                                                                                                                                                |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                               |

**P113600 NOx Sensor 1/2 Correlation Calibration Error Bank 1 - No Sub Type Information**

|                                        |                                                                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P113600                                                                                                                                                    |
| <b>Component / System</b>              | NOx Sensor 1/2 Correlation                                                                                                                                 |
| <b>Monitor Strategy Description</b>    | Correlation Calibration Error Bank 1                                                                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>not Upstream NOx Sensor available in EMS</li> <li>OR</li> <li>not Downstream NOx Sensor available in EMS</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                      |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                                                                |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                                                                                         |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                       |

**P055F00 Engine Oil Pressure Out of Range - No Sub Type Information**

|                                        |                                                                                                                                                                                 |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P055F00                                                                                                                                                                         |
| <b>Component / System</b>              | Engine Oil Pressure                                                                                                                                                             |
| <b>Monitor Strategy Description</b>    | Out of Range                                                                                                                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Difference between estimated oil pressure and real oil pressure below -100kPa</li> </ul>                                                 |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine Speed between 900rpm and 1700rpm</li> <li>AND</li> <li>se_OilTemp between 80°C and 120°C</li> </ul>                               |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, P055A/13, P055D/00, P25AB/00, P25AA/00, P25A9/13, P0523/00, P0520/13, P0197/00, P0195/13, U3017/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 120s                                                                                                                                                                            |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                            |

**U014200 Lost Communication With Body Control Module "B" - No Sub Type Information**

|                                     |                                                                                                                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | U014200                                                                                                                   |
| <b>Component / System</b>           | Body Control Module "B"                                                                                                   |
| <b>Monitor Strategy Description</b> | Lost Communication                                                                                                        |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Lost communication with BBM_TRUCK on Medium Speed CAN Communication Bus</li> </ul> |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                     |

|                                        |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• U0010/88</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 15s                                                                              |
| <b>MIL Illumination</b>                | N/A                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                             |

## P04DD00 Cold Start EGR "A" Flow Insufficient Detected - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P04DD00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Component / System</b>           | Cold Start EGR "A"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Monitor Strategy Description</b> | Flow Insufficient Detected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Percentage of Ratio between Egr Mass Flow and Demanded Egr Mass Flow below (70% + Offset dependent on se_AmbAirPres)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• Engine running</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• Engine Speed between 1300rpm and 2200rpm</li> <li>• AND</li> <li>• tc_IndTrqValue between 1500Nm and 2600Nm</li> <li>• AND</li> <li>• Ratio between Egr Mass Flow Demand and sum of Air Mass Flow and Egr Mass Flow Demand between 0.200000002980232ratio and 0.6000000023841858ratio</li> <li>• AND</li> <li>• Demanded Egr Mass Flow between 0.100000001490116kg/s and 0.4000000005960464kg/s</li> <li>• AND</li> <li>• Demanded Egr Mass Flow rate of change between -0.00999999977648258kg/s and 0.200000002980232kg/s</li> <li>• AND</li> <li>• Engine Torque rate of change between -20Nm and 20Nm</li> <li>• AND</li> <li>• Engine Speed rate of change between -5rpm and 20rpm</li> <li>• AND</li> <li>• EGR valve Control PWM between 80% and 100%</li> <li>• AND</li> <li>• se_CoolantTemp above -40°C</li> <li>• AND</li> <li>• Cold start mode is active above conditions valid for 2s</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U3000/01, P0335/31, P0336/38, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0097/00, P0095/13, P0117/00, P0115/13, P0406/00, P0409/13, P2229/00, P2226/13, P0108/00, P0105/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 4s                                                                                                                                                                                                                                                                                                                   |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                 |

## P101200 Cold Start Cylinder 1 Fuel Injector Offset Learning at Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P101200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>           | Cold Start Cylinder 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> <li>AND</li> <li>This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### P101400 Cold Start Cylinder 1 Fuel Injector Offset Learning at Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P101400                                                                                                                                                                   |
| <b>Component / System</b>           | Cold Start Cylinder 2                                                                                                                                                     |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Min Limit                                                                                                                                |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• 100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> <li>• AND</li> <li>• This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P102300 Cold Start Cylinder 3 Fuel Injector Offset Learning at Min Limit - No Sub Type Information

|                                     |                                            |
|-------------------------------------|--------------------------------------------|
| <b>DTC</b>                          | P102300                                    |
| <b>Component / System</b>           | Cold Start Cylinder 3                      |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Min Limit |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• 100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> <li>• AND</li> <li>• This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**P102500 Cold Start Cylinder 4 Fuel Injector Offset Learning at Min Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P102500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>              | Cold Start Cylinder 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset Learning at Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> <li>AND</li> <li>This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active.</li> <li>OR</li> <li>PTO is active.</li> <li>OR</li> <li>The indicated torque is not stable.</li> <li>OR</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                         |                      |
|-------------------------|----------------------|
| <b>MIL Illumination</b> | 3                    |
| <b>Probable Causes</b>  | <i>See Tech Tool</i> |

## P102700 Cold Start Cylinder 5 Fuel Injector Offset Learning at Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P102700                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>           | Cold Start Cylinder 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Min Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> <li>AND</li> <li>This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### P102900 Cold Start Cylinder 6 Fuel Injector Offset Learning at Min Limit - No Sub Type Information

|                                     |                                                                                                                                                                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P102900                                                                                                                                                                   |
| <b>Component / System</b>           | Cold Start Cylinder 5                                                                                                                                                     |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Min Limit                                                                                                                                |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• 100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> <li>• AND</li> <li>• This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P101100 Cold Start Cylinder 1 Fuel Injector Offset Learning at Max Limit - No Sub Type Information

|                                     |                                            |
|-------------------------------------|--------------------------------------------|
| <b>DTC</b>                          | P101100                                    |
| <b>Component / System</b>           | Cold Start Cylinder 1                      |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Max Limit |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> <li>AND</li> <li>This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active.</li> <li>OR</li> <li>PTO is active.</li> <li>OR</li> <li>The indicated torque is not stable.</li> <li>OR</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

**P101300 Cold Start Cylinder 2 Fuel Injector Offset Learning at Max Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P101300                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>              | Cold Start Cylinder 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset Learning at Max Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> <li>AND</li> <li>This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active.</li> <li>OR</li> <li>PTO is active.</li> <li>OR</li> <li>The indicated torque is not stable.</li> <li>OR</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                         |                      |
|-------------------------|----------------------|
| <b>MIL Illumination</b> | 3                    |
| <b>Probable Causes</b>  | <i>See Tech Tool</i> |

## P101D00 Cold Start Cylinder 3 Fuel Injector Offset Learning at Max Limit - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P101D00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>           | Cold Start Cylinder 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Max Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> <li>AND</li> <li>This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

### P102400 Cold Start Cylinder 4 Fuel Injector Offset Learning at Max Limit - No Sub Type Information

|                                     |                                                                                                                                                                           |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P102400                                                                                                                                                                   |
| <b>Component / System</b>           | Cold Start Cylinder 4                                                                                                                                                     |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Max Limit                                                                                                                                |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• 100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> <li>• AND</li> <li>• This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## P102600 Cold Start Cylinder 5 Fuel Injector Offset Learning at Max Limit - No Sub Type Information

|                                     |                                            |
|-------------------------------------|--------------------------------------------|
| <b>DTC</b>                          | P102600                                    |
| <b>Component / System</b>           | Cold Start Cylinder 5                      |
| <b>Monitor Strategy Description</b> | Fuel Injector Offset Learning at Max Limit |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• 100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• tc_IndTrqValue above 75Nm</li> <li>• AND</li> <li>• tc_IndTrqValue below 600Nm</li> <li>• AND</li> <li>• se_AmbAirPres above 75kPa</li> <li>• AND</li> <li>• Ambient Air Temperature above -8°C</li> <li>• AND</li> <li>• Ambient Air Temperature below 55°C</li> <li>• AND</li> <li>• The vehicle speed should be zero</li> <li>• AND</li> <li>• Engine Speed above 450rpm</li> <li>• AND</li> <li>• Engine Speed below 800rpm</li> <li>• AND</li> <li>• Accelerator pedal not pressed</li> <li>• AND</li> <li>• se_CoolantTemp above 45°C</li> <li>• AND</li> <li>• This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• The starter motor is active.</li> <li>• OR</li> <li>• PTO is active.</li> <li>• OR</li> <li>• The indicated torque is not stable.</li> <li>• OR</li> <li>• The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

**P102800 Cold Start Cylinder 6 Fuel Injector Offset Learning at Max Limit - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P102800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Component / System</b>              | Cold Start Cylinder 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Fuel Injector Offset Learning at Max Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>100Percentage above Cylinder balancing fueling offset ratios in percentage of the fault code limit for each injector.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>tc_IndTrqValue above 75Nm</li> <li>AND</li> <li>tc_IndTrqValue below 600Nm</li> <li>AND</li> <li>se_AmbAirPres above 75kPa</li> <li>AND</li> <li>Ambient Air Temperature above -8°C</li> <li>AND</li> <li>Ambient Air Temperature below 55°C</li> <li>AND</li> <li>The vehicle speed should be zero</li> <li>AND</li> <li>Engine Speed above 450rpm</li> <li>AND</li> <li>Engine Speed below 800rpm</li> <li>AND</li> <li>Accelerator pedal not pressed</li> <li>AND</li> <li>se_CoolantTemp above 45°C</li> <li>AND</li> <li>This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> </ul> |
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>The starter motor is active.</li> <li>OR</li> <li>PTO is active.</li> <li>OR</li> <li>The indicated torque is not stable.</li> <li>OR</li> <li>The engine speed is not stable</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>U3000/01, P2229/00, P2226/13, P0300/00, P0301/00, P0302/00, P0303/00, P0304/00, P0305/00, P0306/00, P0115/13, P0117/00, P0262/00, P0201/13, P0265/00, P0202/13, P0268/00, P0203/13, P0271/00, P0204/13, P0274/00, P0205/13, P0277/00, P0206/13</li> </ul>                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## P24FC00 Particulate Matter Sensor Heater Control Circuit Driver Current/ Temperature Too High - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P24FC00                                                                                                                                                                                                                                              |
| Component / System              | Particulate Matter Sensor                                                                                                                                                                                                                            |
| Monitor Strategy Description    | Heater Control Circuit Driver Current/Temperature Too High                                                                                                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>PM Sensor Module Heater Over Temperature</li> </ul>                                                                                                                                                           |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>AND</li> <li>PM Sensor is in regenerating mode.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                      |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                                                                                                   |
| MIL Illumination                | 3                                                                                                                                                                                                                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                 |

## P103B00 Reagent Dosing Valve Inducement - No Sub Type Information

|                              |                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                          | P103B00                                                                                                                                                                                                                                                                                                                                                                                                       |
| Component / System           | Reagent Dosing Valve                                                                                                                                                                                                                                                                                                                                                                                          |
| Monitor Strategy Description | Dosing Valve Inducement                                                                                                                                                                                                                                                                                                                                                                                       |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Reagent pump dutycycle when urea injector PWM signal is at a high levelReagent pump dutycycle when urea injector PWM signal is at a low level shall have a difference smaller than 1- Evaluation should be done 1- times, with a fault ratio of 80-</li> <li>AND</li> <li>ReagentPumpDCHighRes below (128% - Offset dependent on Catalyst tank temperature)</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine running</li> <li>• AND</li> <li>• (Reagent Pressure - 900kPa) between (215kPa * -1) and 215kPa</li> <li>• AND</li> <li>• Catalyst tank temperature between 10°C and 55°C</li> <li>• AND</li> <li>• Catalyst system active for at least 810s</li> <li>• AND</li> <li>• Drive the truck for at least 15 minutes in order to raise SCR temperature and allow activation of catalyst dosing</li> <li>• AND</li> <li>• asm_ACRDosageValve between 0% and 1%</li> <li>• AND</li> <li>• All conditions from part 1, except:</li> <li>• AND</li> <li>• asm_ACRDosageValve between 0% and 1%</li> <li>• AND</li> <li>• asm_ACRDosageValve above 97%</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 3600s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

## P103400 Particulate Matter Sensor System Voltage Too High - No Sub Type Information

|                                        |                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P103400                                                                                                                                                                 |
| <b>Component / System</b>              | Particulate Matter Sensor                                                                                                                                               |
| <b>Monitor Strategy Description</b>    | Voltage Check                                                                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• PM Sensor Module System Voltage Too High</li> </ul>                                                                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Key On</li> <li>• AND</li> <li>• Battery voltage should be above 8V</li> </ul>                                                 |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P2AB0/47</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                    |

**P103100 Particulate Matter Sensor Clogged Tip - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P103100                                                                                                                                                                                                                                              |
| <b>Component / System</b>              | Particulate Matter Sensor                                                                                                                                                                                                                            |
| <b>Monitor Strategy Description</b>    | Sensor Clogged                                                                                                                                                                                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                                |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>AND</li> <li>PM Sensor is in regenerating mode.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                            |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                   |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                 |

**P103200 Particulate Matter Sensor Removed from Exhaust - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P103200                                                                                                                                                                                                                                                                                                                 |
| <b>Component / System</b>              | Particulate Matter Sensor                                                                                                                                                                                                                                                                                               |
| <b>Monitor Strategy Description</b>    | Sensor Removed from Exhaust                                                                                                                                                                                                                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                                                                                                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>AND</li> <li>PM Sensor is in sensing mode</li> <li>AND</li> <li>PM Sensor has been in sensing mode for 20 minutes.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                                                                               |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                     |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                    |

**U02A300 Lost Communication With PM Sensor - No Sub Type Information**

|                                     |                                                       |
|-------------------------------------|-------------------------------------------------------|
| <b>DTC</b>                          | U02A300                                               |
| <b>Component / System</b>           | Particulate Matter Sensor                             |
| <b>Monitor Strategy Description</b> | Lost Communication                                    |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>N/A</li> </ul> |

|                                        |                      |
|----------------------------------------|----------------------|
| <b>Enable Conditions</b>               | • N/A                |
| <b>Disable Conditions</b>              | No Active DTC's:     |
| <b>Time Required For DTC To Be Set</b> | 9.6s                 |
| <b>MIL Illumination</b>                | 3                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i> |

## P24AF00 Particulate Matter Sensor Circuit Range/Performance - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P24AF00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Component / System</b>              | Particulate Matter Sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Internal Circuit Diagnostics of PM sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• PM Sensor Module Boost Voltage Out of Range</li> <li>• OR</li> <li>• PM Sensor Heater Current Leakage Fault</li> <li>• OR</li> <li>• PM Sensor Module Voltage Reference Out of Range</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• PM Sensor is in sensing mode</li> <li>• OR</li> <li>• PM Sensor is in regenerating mode</li> <li>• AND</li> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C               <ul style="list-style-type: none"> <li>• OR</li> <li>• PM Sensor is in regenerating mode.</li> </ul> </li> <li>• AND</li> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C               <ul style="list-style-type: none"> <li>• OR</li> <li>• PM Sensor is in sensing mode.</li> </ul> </li> <li>• AND</li> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P24DA/00, P24D1/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P24B000 Particulate Matter Sensor Circuit Low - No Sub Type Information

|                           |                           |
|---------------------------|---------------------------|
| <b>DTC</b>                | P24B000                   |
| <b>Component / System</b> | Particulate Matter Sensor |

|                                        |                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Internal Circuit Diagnostics of PM Sensor                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>PM Sensor Electrodes Short to Ground Fault</li> </ul>                                                                                                                                                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>PM Sensor is in sensing mode</li> <li>AND</li> <li>Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P24DA/00, P24D1/00, P24AF/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                           |

## P24B100 Particulate Matter Sensor Circuit High - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P24B100                                                                                                                                                                                                                                        |
| <b>Component / System</b>              | Particulate Matter Sensor                                                                                                                                                                                                                      |
| <b>Monitor Strategy Description</b>    | Internal Circuit Diagnostics of PM Sensor                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>PM Sensor Electrodes Short to Supply Voltage Fault</li> <li>OR</li> <li>PM Sensor Internal Short Circuit Fault</li> </ul>                                                                               |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>PM Sensor is in sensing mode</li> <li>AND</li> <li>Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                           |

## P24B313 Particulate Matter Sensor Heater Control - Circuit Open

|                                     |                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P24B313                                                                                   |
| <b>Component / System</b>           | Particulate Matter Sensor                                                                 |
| <b>Monitor Strategy Description</b> | Internal Circuit Diagnostics of PM Sensor                                                 |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>PM Sensor Electrodes Open Circuit Fault</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>• AND</li> <li>• PM Sensor is in regenerating mode.</li> <li>• AND</li> <li>• PM Sensor has been in sensing mode for 20 minutes.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                    |

## P24B492 Particulate Matter Sensor Heater Control Circuit Range/Performance - Performance or Incorrect Operation

|                                        |                                                                                                                                                                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P24B492                                                                                                                                                                                                                                                    |
| <b>Component / System</b>              | Particulate Matter Sensor                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b>    | Internal Circuit Diagnostics of PM Sensor                                                                                                                                                                                                                  |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• PM Sensor Controller Current Out of Range</li> </ul>                                                                                                                                                              |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>• AND</li> <li>• PM Sensor is in regenerating mode.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                          |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                       |

## P24B500 Particulate Matter Sensor Heater Control Circuit Low - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                            |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P24B500                                                                                                                                                                                                                                                    |
| <b>Component / System</b>           | Particulate Matter Sensor                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b> | Internal Circuit Diagnostics of PM Sensor                                                                                                                                                                                                                  |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• PM Sensor Regeneration Supply Voltage Fault</li> </ul>                                                                                                                                                            |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>• AND</li> <li>• PM Sensor is in regenerating mode.</li> </ul> |

|                                        |                                                                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                 |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                               |

## P24F600 Exhaust Aftertreatment Fuel Air Purge Valve Stuck Open - No Sub Type Information

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P24F600                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Component / System</b>              | Exhaust Aftertreatment Fuel Air Purge Valve                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Monitor Strategy Description</b>    | Valve Stuck Open                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>se_AhiFuelPres above 50kPa</li> <li>AND <ul style="list-style-type: none"> <li>NOT</li> <li>se_AhiFuelPres below 45kPa</li> </ul> </li> <li>AND <ul style="list-style-type: none"> <li>se_AhiFuelPres below 300kPa</li> <li>OR <ul style="list-style-type: none"> <li>se_AhiFuelPres above 200kPa</li> </ul> </li> </ul> </li> <li>AND <ul style="list-style-type: none"> <li>se_AhiFuelPres above 200kPa</li> </ul> </li> </ul>                                                |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>se_BattVolt between 10V and 16V</li> <li>AND</li> <li>Engine Speed between 475rpm and 3500rpm</li> <li>AND <ul style="list-style-type: none"> <li>Diagnosis not completed this driving cycle</li> <li>OR</li> <li>Exhaust Aftertreatment Fuel Injecton Active</li> </ul> </li> <li>AND <ul style="list-style-type: none"> <li>Diagnosis not completed the last 7200s</li> </ul> </li> <li>Exhaust Flow below 0.5kg/s</li> <li>AND</li> <li>se_CoolantTemp above 30°C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>P2697/13, P2699/00, P20D9/00, P20D7/13, P20E0/00, P20DD/13, P24FA/00, P24F8/13, U3000/01, P0117/00, P0115/13, U3000/01, P20DD/13, P20E0/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P215A/64</li> </ul>                                                                                                                                                 |
| <b>Time Required For DTC To Be Set</b> | 90s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

|                  |               |
|------------------|---------------|
| MIL Illumination | 3             |
| Probable Causes  | See Tech Tool |

## P24F700 Exhaust Aftertreatment Fuel Air Purge Valve Stuck Closed - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P24F700                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Component / System              | Exhaust Aftertreatment Fuel Air Purge Valve                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Monitor Strategy Description    | Valve Stuck Closed                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• se_AhiFuelPres below 70kPa</li> <li>• AND               <ul style="list-style-type: none"> <li>• NOT</li> <li>• se_AhiFuelPres below 45kPa</li> <li>• AND</li> <li>• se_AhiFuelPres below 300kPa                   <ul style="list-style-type: none"> <li>• OR</li> <li>• se_AhiFuelPres above 200kPa</li> <li>• AND</li> <li>• se_AhiFuelPres above 200kPa</li> </ul> </li> </ul> </li> </ul>                                                                            |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• se_BattVolt between 10V and 16V</li> <li>• AND</li> <li>• Engine Speed between 475rpm and 3500rpm</li> <li>• AND               <ul style="list-style-type: none"> <li>• Diagnosis not completed this driving cycle</li> <li>• OR</li> <li>• Exhaust Aftertreatment Fuel Injecton Active</li> <li>• AND</li> <li>• Diagnosis not completed the last 7200s</li> </ul> </li> <li>• Exhaust Flow below 0.5kg/s</li> <li>• AND</li> <li>• se_CoolantTemp above 30°C</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>• P2697/13, P2699/00, P20D9/00, P20D7/13, P20E0/00, P20DD/13, P24FA/00, P24F8/13, U3000/01, P0117/00, P0115/13, U3000/01, P20DD/13, P20E0/00, P2697/13, P2699/00, P20D9/00, P20D7/13, P24F8/13, P24FA/00, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P215A/64</li> </ul>                                                                                                                                              |
| Time Required For DTC To Be Set | 90s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Probable Causes                 | See Tech Tool                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**P24F813 Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit - Circuit Open**

|                                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| DTC                             | P24F813                                                                                                              |
| Component / System              | Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit                                                          |
| Monitor Strategy Description    | Circuit Open                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                                    |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| Time Required For DTC To Be Set | 6s                                                                                                                   |
| MIL Illumination                | 3                                                                                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                 |

**P24FA00 Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit Low - No Sub Type Information**

|                                 |                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------|
| DTC                             | P24FA00                                                                                                  |
| Component / System              | Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit                                              |
| Monitor Strategy Description    | Circuit Low                                                                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                   |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                              |
| Time Required For DTC To Be Set | 6s                                                                                                       |
| MIL Illumination                | 3                                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                     |

**P24FB00 Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit High - No Sub Type Information**

|                                 |                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| DTC                             | P24FB00                                                                                                              |
| Component / System              | Exhaust Aftertreatment Fuel Air Purge Valve Control Circuit                                                          |
| Monitor Strategy Description    | Circuit High                                                                                                         |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                              |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must not be fully active, i.e. duty must be below 100.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01</li> </ul>                                          |
| Time Required For DTC To Be Set | 6s                                                                                                                   |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## P24D000 Particulate Matter Sensor Supply Voltage Circuit Low - No Sub Type Information

|                                 |                                                                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P24D000                                                                                                                                                               |
| Component / System              | Particulate Matter Sensor                                                                                                                                             |
| Monitor Strategy Description    | Supply Voltage Circuit Low                                                                                                                                            |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Supply Voltage to Sensor Low</li> </ul>                                                                                        |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul>                                                     |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P24DA/00, P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P2AB0/47</li> </ul> |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                    |
| MIL Illumination                | 3                                                                                                                                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                  |

## P24D100 Particulate Matter Sensor Regeneration Incomplete - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P24D100                                                                                                                                                                                                                                              |
| Component / System              | Particulate Matter Sensor                                                                                                                                                                                                                            |
| Monitor Strategy Description    | PM Sensor Regeneration Incomplete                                                                                                                                                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>PM Sensor Regeneration Timeout Fault. For current status, read MID 43 - Exhaust Gas Sensor Heater Monitor Bank 1 - Sensor 3, TID A8 - Percentage of the regeneration heating profile</li> </ul>               |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>AND</li> <li>PM Sensor is in regenerating mode.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P24DA/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                      |
| Time Required For DTC To Be Set | 5s                                                                                                                                                                                                                                                   |
| MIL Illumination                | 3                                                                                                                                                                                                                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                 |

**P24DA00 Particulate Matter Sensor Exhaust Sample Error Bank 1 - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P24DA00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Component / System</b>              | Particulate Matter Sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Monitor Strategy Description</b>    | Exhaust Sample Error Bank 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• PM Sensor Tip Clogged Fault</li> <li>• OR</li> <li>• PM Sensor Removed From Exhaust Fault</li> <li>• OR</li> <li>• PM Sensor Fixed Resistance Fault</li> <li>• OR</li> <li>• PM Sensor Gain Too Low Fault</li> <li>• PM Sensor Gain Too High Fault. For current status, read MID 03 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 3, TID A2 - Difference between expected temperature decay and actual, MID 03 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 3, TID A3 - Internal heater temperature, MID 03 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 3, TID AC - Difference between internal temperature and exhaust temperature, MID 03 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 3, TID A4 - Difference between internal heater temperature and the exhaust temperature, MID 03 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 3, TID A5 - Percentage of maximum preheat time, MID 03 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 3, TID A6 - Difference in resistance of soot measurement sensor element, MID 03 - Exhaust Gas Sensor Monitor Bank 1 - Sensor 3, TID A7 - Resistance of soot measurement sensor element</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>• AND</li> <li>• PM Sensor is in sensing mode.</li> <li>• AND</li> <li>• PM Sensor has been in sensing mode for 20 minutes. <ul style="list-style-type: none"> <li>• OR</li> <li>• Engine Running. Stable engine conditions. No condensated steam in exhaust. The exhaust temperature after SCR is above 250C and below 500C</li> <li>• AND</li> <li>• PM Sensor is in regenerating mode.</li> </ul> </li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Disable Conditions</b>              | <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• P24D1/00, P24AF/00, P24B0/00, P24B1/00, P24B5/00, P24FC/00, P24B3/13, P24B4/92, P1034/00, P24D0/00, P2AB0/47</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Time Required For DTC To Be Set</b> | 5s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## P05FD00 Turbocharger/Supercharger Boost Control "A" Temperature Too High - No Sub Type Information

|                                 |                                                                                                                     |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------|
| DTC                             | P05FD00                                                                                                             |
| Component / System              | Turbocharger/Supercharger Boost Control "A"                                                                         |
| Monitor Strategy Description    | Temperature Too High                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>High temperature failure detected by Turbocharger/Supercharger A.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Delay after ECU startup before diagnose is enabled: 10sec</li> </ul>         |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U3000/01, U010C/00</li> </ul>                               |
| Time Required For DTC To Be Set | 120s                                                                                                                |
| MIL Illumination                | N/A                                                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                |

## P226D00 Turbocharger/Supercharger Boost Control "A" Temperature Too High - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P226D00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Component / System              | Turbocharger/Supercharger Boost Control "A"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Monitor Strategy Description    | Temperature Too High                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Insufficient thermal inertia due to missing particulate filter substrate</li> <li>AND</li> <li>The evaluation may need to be repeated a number of times. For current status, read MID B2 - PM Filter Monitor Bank 1, TID A1 - Missing substrate</li> </ul>                                                                                                                                                                                                                                                                    |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Ambient Air Temperature between -8°C and 55°C</li> <li>AND</li> <li>se_AmbAirPres between 75kPa and 120kPa</li> <li>AND</li> <li>se_CoolantTemp between 60°C and 120°C</li> <li>AND</li> <li>No recent aftertreatment fuel injection</li> <li>AND</li> <li>Engine Speed between 1000rpm and 2500rpm</li> <li>AND</li> <li>Average Particulate Filter Temperature between 150°C and 500°C</li> <li>AND</li> <li>Exhaust aftertreatment system temperature is increasing or decreasing above conditions valid for 4s</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P2084/64, P242B/64, P0105/13, P0108/00, P0095/13, P0097/00, P0409/13, P0406/00, P040A/13, P040C/00, P0339/00, P0335/31, P0336/38, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                                                                        |
| Time Required For DTC To Be Set | 1200s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## P249C00 Excessive Time To Enter Closed Loop Reductant Injection Control - No Sub Type Information

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P249C00                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Component / System              | Reductant Injection Control                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Monitor Strategy Description    | Excessive Time To Enter Closed Loop Reductant Injection Control                                                                                                                                                                                                                                                                                                                                                                                                |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Average SCR NOx Catalyst Temperature below 215°C</li> </ul>                                                                                                                                                                                                                                                                                                                                                             |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Heat power calculated from obtained kinetic engine power above 105kW</li> <li>AND</li> <li>se_CoolantTemp above 60°C</li> <li>AND</li> <li>The reductant delivery system is operating normally above conditions valid for 50s</li> <li>OR</li> <li>Average SCR NOx Catalyst Temperature above 215°C</li> <li>AND</li> <li>The reductant delivery system is operating normally above conditions valid for 30s</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P0335/31, P0336/38, P0072/00, P0070/15, P0071/64, P0117/00, P0115/13, P242B/64, U3000/01</li> </ul>                                                                                                                                                                                                                                                                                                    |
| Time Required For DTC To Be Set | 1200s                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## P2AB047 Particulate Matter Sensor Processor - Watchdog / Safety µC Failure

|                                 |                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------|
| DTC                             | P2AB047                                                                                                           |
| Component / System              | PM Sensor                                                                                                         |
| Monitor Strategy Description    | Safety Failure                                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>PM Sensor Processor Performance</li> </ul>                                 |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key On</li> <li>AND</li> <li>Battery voltage should be above 8V</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                  |
| Time Required For DTC To Be Set | 5s                                                                                                                |
| MIL Illumination                | 3                                                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                              |

## P027E00 Cold Start Fuel Injection Quantity Lower Than Expected - No Sub Type Information

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P027E00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Component / System</b>           | Cold Start Fuel Injection Quantity                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Monitor Strategy Description</b> | Quantity Lower Than Expected                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Average of the ratio between estimated and requested fuel quantity above 75%</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• EGR content in the intake manifold [100 = only EGR, no fresh air] between 0ratio and 20ratio</li> <li>• AND</li> <li>• se_BoostTemp between -7°C and 120°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 1000Nm and 4000Nm</li> <li>• AND</li> <li>• Engine Speed between 1000rpm and 2200rpm <ul style="list-style-type: none"> <li>• AND</li> <li>• se_EngExhTempOut between 100°C and 460°C</li> <li>• AND</li> <li>• se_HcHeatTempOut between 200°C and 460°C</li> <li>• AND</li> <li>• se_DpfTempOut between 200°C and 460°C</li> </ul> </li> <li>• AND</li> <li>• above conditions valid for 10s</li> <li>• AND</li> <li>• Exhaust Flow between 0kg/s and 100kg/s</li> <li>• AND</li> <li>• The estimated lambda must be between the upper and lower limits between 1ratio and 2.599999904632568ratio</li> <li>• AND</li> <li>• Engine running for 10s</li> <li>• AND</li> <li>• The diagnosis can be performed only once per driving cycle.</li> <li>• AND</li> <li>• The engine must be in a stable operating state, i.e., engine speed, torque, boost pressure and EGR value should be stable.</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Duty cycle of the aftertreatment air purge valve (part of the aftertreatment diesel injector) below 110%</li> <li>• OR</li> <li>• Accumulated amount of DPF hydrocarbon poisoning below 100ratio</li> <li>• OR</li> <li>• The aftertreatment diesel injection should be inactive for longer than 3s</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0115/13, P0117/00, P2226/13, P2229/00, P0105/13, P0108/00, P0095/13, P0097/00, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0406/00, P0409/13, P2200/13, P2203/00, P0340/31, P0335/31, P2080/64, P2084/64, P242B/64, P0069/64, P0096/64, P0234/00, P0299/00, P040B/64, P04D9/00, P0401/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## P027F00 Cold Start Fuel Injection Quantity Higher Than Expected - No Sub Type Information

|                                     |                                                                                                                                    |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P027F00                                                                                                                            |
| <b>Component / System</b>           | Cold Start Fuel Injection Quantity                                                                                                 |
| <b>Monitor Strategy Description</b> | Temperature Too High                                                                                                               |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• 128% above Average of the ratio between estimated and requested fuel quantity.</li> </ul> |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b> | <ul style="list-style-type: none"> <li>• This diagnosis is executed only when the engine is started after the engine has been off for at least 8 hours.</li> <li>• AND</li> <li>• se_CoolantTemp between 60°C and 110°C</li> <li>• AND</li> <li>• Ambient Air Temperature between -8°C and 55°C</li> <li>• AND</li> <li>• se_AmbAirPres between 75kPa and 120kPa</li> <li>• AND</li> <li>• EGR content in the intake manifold [100 = only EGR, no fresh air] between 0ratio and 20ratio</li> <li>• AND</li> <li>• se_BoostTemp between -7°C and 120°C</li> <li>• AND</li> <li>• tc_IndTrqValue between 1000Nm and 4000Nm</li> <li>• AND</li> <li>• Engine Speed between 1000rpm and 2200rpm <ul style="list-style-type: none"> <li>• AND</li> <li>• se_EngExhTempOut between 100°C and 460°C</li> <li>• AND</li> <li>• se_HcHeatTempOut between 200°C and 460°C</li> <li>• AND</li> <li>• se_DpfTempOut between 200°C and 460°C</li> </ul> </li> <li>• AND</li> <li>• above conditions valid for 10s</li> <li>• AND</li> <li>• Exhaust Flow between 0kg/s and 100kg/s</li> <li>• AND</li> <li>• The estimated lambda must be between the upper and lower limits between 1ratio and 2.599999904632568ratio</li> <li>• AND</li> <li>• Engine running for 10s</li> <li>• AND</li> <li>• The diagnosis can be performed only once per driving cycle.</li> <li>• AND</li> <li>• The engine must be in a stable operating state, i.e., engine speed, torque, boost pressure and EGR value should be stable.</li> </ul> |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | <ul style="list-style-type: none"> <li>• Duty cycle of the aftertreatment air purge valve (part of the aftertreatment diesel injector) below 110%</li> <li>• OR</li> <li>• Accumulated amount of DPF hydrocarbon poisoning below 100ratio</li> <li>• OR</li> <li>• The aftertreatment diesel injection should be inactive for longer than 3s</li> </ul> <p>No Active DTC's:</p> <ul style="list-style-type: none"> <li>• U3000/01, P0115/13, P0117/00, P2226/13, P2229/00, P0105/13, P0108/00, P0095/13, P0097/00, P2578/31, P0489/00, P0403/13, P006E/00, P00AF/00, P0046/07, P1148/00, P040C/00, P040A/13, P0072/00, P0070/15, P0406/00, P0409/13, P2200/13, P2203/00, P0340/31, P0335/31, P2080/64, P2084/64, P242B/64, P0069/64, P0096/64, P0234/00, P0299/00, P040B/64, P04D9/00, P0401/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

## Aftertreatment Control Module (ACM) Diagnostic Trouble Codes

### U000188 CAN Communication Backbone 2 Net - Bus off

|                                        |                                                                                                                                                                                                                                                                                                                             |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U000188                                                                                                                                                                                                                                                                                                                     |
| <b>Component / System</b>              | CAN Communication Backbone 2 Net                                                                                                                                                                                                                                                                                            |
| <b>Monitor Strategy Description</b>    | Bus Off                                                                                                                                                                                                                                                                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• It has not been possible to send frames on High Speed CAN Communication Bus and It has not been possible to receive frames on High Speed CAN Communication Bus</li> <li>• AND</li> <li>• It has not been possible to receive frames on High Speed CAN Communication Bus</li> </ul> |
| <b>Enable Conditions</b>               | N/A                                                                                                                                                                                                                                                                                                                         |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                                                                                                                                                                            |
| <b>Time Required For DTC To Be Set</b> | 5.05s                                                                                                                                                                                                                                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                        |

### U001088 CAN Communication Backbone 1 Net - Bus off

|                                        |                                                                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | U001088                                                                                                                                                            |
| <b>Component / System</b>              | CAN Communication Backbone 1                                                                                                                                       |
| <b>Monitor Strategy Description</b>    | Bus Off                                                                                                                                                            |
| <b>Fault Limit</b>                     | It has not been possible to send frames on Medium Speed CAN Communication Bus and It has not been possible to receive frames on Medium Speed CAN Communication Bus |
| <b>Enable Conditions</b>               | N/A                                                                                                                                                                |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 5.05s                                                                                                                                                              |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## U010000 Lost Communication with EMS - No Sub Type Information

|                                 |                                                                                |
|---------------------------------|--------------------------------------------------------------------------------|
| DTC                             | U010000                                                                        |
| Component / System              | ACM                                                                            |
| Monitor Strategy Description    | No Signal                                                                      |
| Fault Limit                     | Lost communication with ECM on Medium Speed CAN Communication Bus              |
| Enable Conditions               | N/A                                                                            |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>U0010/88</li> </ul> |
| Time Required For DTC To Be Set | 10s                                                                            |
| MIL Illumination                | N/A                                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                                           |

## P054415 Pre-DOC Temperature Sensor: Open Circuit Check

|                                 |                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------|
| DTC                             | P054415                                                                                                |
| Component / System              | Pre-DOC Temperature Sensor - Open                                                                      |
| Monitor Strategy Description    | Circuit Short To Battery or Open                                                                       |
| Fault Limit                     | Sensor Voltage > 2.26V (850°C) or 0.15 - 0.68V ( -100 - (-40)°C)                                       |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Key Position Key On</li> <li>Battery Voltage &gt; 8V</li> </ul> |
| Disable Conditions              | No Active DTC's:<br><ul style="list-style-type: none"> <li>N/A</li> </ul>                              |
| Time Required For DTC To Be Set | 13s                                                                                                    |
| MIL Illumination                | 3                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                   |

## P205A13 Reductant Tank Temperature Sensor - Circuit Open

|                              |                                                                                                        |
|------------------------------|--------------------------------------------------------------------------------------------------------|
| DTC                          | P205A13                                                                                                |
| Component / System           | Temperature Sensor - Open                                                                              |
| Monitor Strategy Description | Open Circuit                                                                                           |
| Fault Limit                  | Failure mode identifier broadcasted by reductant quality sensor (UQS) equals to 5                      |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Key Position Key On</li> <li>Battery Voltage &gt; 8V</li> </ul> |

|                                        |                                                                             |
|----------------------------------------|-----------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• N/A</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 0.2s                                                                        |
| <b>MIL Illumination</b>                | 3                                                                           |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                        |

## P20BA00 Reductant Heater A Control Performance - No Sub Type Information

|                                        |                                                                                                                                                                                      |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20BA00                                                                                                                                                                              |
| <b>Component / System</b>              | Temperature Sensor - Open                                                                                                                                                            |
| <b>Monitor Strategy Description</b>    | Open Circuit                                                                                                                                                                         |
| <b>Fault Limit</b>                     | "Defrosting has been active for 10800s OR Number of tries to start the pump 1000No Unithas been reached"                                                                             |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• ACM_UreaPressure above 500kPa for 30s</li> </ul>                                                                                            |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 30s                                                                                                                                                                                  |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                 |

## P063000 VIN Not Programmed or Incompatible - ECM/PCM - No Sub Type Information

|                                        |                                                                        |
|----------------------------------------|------------------------------------------------------------------------|
| <b>DTC</b>                             | P063000                                                                |
| <b>Component / System</b>              | ECM/PCM                                                                |
| <b>Monitor Strategy Description</b>    | VIN Check                                                              |
| <b>Fault Limit</b>                     | VIN Not Programmed or Incompatible - ECM/PCM - No Sub Type Information |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• New key cycle</li> </ul>      |
| <b>Disable Conditions</b>              | No Active DTC's:                                                       |
| <b>Time Required For DTC To Be Set</b> | 0.5s                                                                   |
| <b>MIL Illumination</b>                | 0                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                   |

**P066800 PCM/ECM/TCM Internal Temperature Sensor Circuit Low - No Sub Type Information**

|                                 |                                                       |
|---------------------------------|-------------------------------------------------------|
| DTC                             | P066800                                               |
| Component / System              | ECM/PCM                                               |
| Monitor Strategy Description    | Temperature Sensor Circuit Check                      |
| Fault Limit                     | Voltage on N/A:ECU internal below 0.147705V           |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul> |
| Disable Conditions              | No Active DTC's:                                      |
| Time Required For DTC To Be Set | 13s                                                   |
| MIL Illumination                | N/A                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                  |

**P06B100 Sensor Power Supply A Circuit Low - No Sub Type Information**

|                                 |                                                       |
|---------------------------------|-------------------------------------------------------|
| DTC                             | P06B100                                               |
| Component / System              | Sensor Power Supply                                   |
| Monitor Strategy Description    | Circuit Low                                           |
| Fault Limit                     | Voltage on N/A:ECU internal below 0.147705V           |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul> |
| Disable Conditions              | No Active DTC's:                                      |
| Time Required For DTC To Be Set | 5.5s                                                  |
| MIL Illumination                | 3                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                  |

**P06B200 Sensor Power Supply A Circuit High - No Sub Type Information**

|                                 |                                                       |
|---------------------------------|-------------------------------------------------------|
| DTC                             | P06B200                                               |
| Component / System              | Sensor Power Supply                                   |
| Monitor Strategy Description    | Circuit High                                          |
| Fault Limit                     | Voltage on A:50 above 5.5V                            |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul> |
| Disable Conditions              | No Active DTC's:                                      |
| Time Required For DTC To Be Set | 5.5s                                                  |
| MIL Illumination                | 3                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                  |

**P06B400 Sensor Power Supply B Circuit Low - No Sub Type Information**

|                                        |                                                       |
|----------------------------------------|-------------------------------------------------------|
| <b>DTC</b>                             | P06B400                                               |
| <b>Component / System</b>              | Sensor Power Supply Circuit B                         |
| <b>Monitor Strategy Description</b>    | Circuit Low                                           |
| <b>Fault Limit</b>                     | Voltage on A:51 below 4.5V                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                      |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                  |
| <b>MIL Illumination</b>                | 3                                                     |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                  |

**P06B500 Sensor Power Supply B Circuit High - No Sub Type Information**

|                                        |                                                       |
|----------------------------------------|-------------------------------------------------------|
| <b>DTC</b>                             | P06B400                                               |
| <b>Component / System</b>              | Sensor Power Supply Circuit B                         |
| <b>Monitor Strategy Description</b>    | Circuit High                                          |
| <b>Fault Limit</b>                     | Voltage on A:51 below 5.5V                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                      |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                  |
| <b>MIL Illumination</b>                | 3                                                     |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                  |

**U300041 Electronic control unit - General Checksum Failure**

|                                        |                                                                 |
|----------------------------------------|-----------------------------------------------------------------|
| <b>DTC</b>                             | U300041                                                         |
| <b>Component / System</b>              | Electronic Control Unit                                         |
| <b>Monitor Strategy Description</b>    | Checksum Failure                                                |
| <b>Fault Limit</b>                     | Program memory corruption                                       |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>New Key Cycle</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                |
| <b>Time Required For DTC To Be Set</b> | 0s                                                              |
| <b>MIL Illumination</b>                | N/A                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                            |

**U300044 Electronic control unit - Data Memory Failure**

|                                        |                                                                   |
|----------------------------------------|-------------------------------------------------------------------|
| <b>DTC</b>                             | U300044                                                           |
| <b>Component / System</b>              | ECU                                                               |
| <b>Monitor Strategy Description</b>    | Memory Failure                                                    |
| <b>Fault Limit</b>                     | RAM Corruption                                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• New Key Cycle</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                  |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                |
| <b>MIL Illumination</b>                | N/A                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                              |

**U300045 Electronic control unit - Program Memory Failure**

|                                        |                                                                   |
|----------------------------------------|-------------------------------------------------------------------|
| <b>DTC</b>                             | U300045                                                           |
| <b>Component / System</b>              | ECU                                                               |
| <b>Monitor Strategy Description</b>    | Checksum Error                                                    |
| <b>Fault Limit</b>                     | Program memory corruptionSoftware memory checksum error           |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• New Key Cycle</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                  |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                |
| <b>MIL Illumination</b>                | N/A                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                              |

**U300049 Electronic control unit - Internal Electronic Failure**

|                                        |                                                                   |
|----------------------------------------|-------------------------------------------------------------------|
| <b>DTC</b>                             | U300049                                                           |
| <b>Component / System</b>              | ECU                                                               |
| <b>Monitor Strategy Description</b>    | ECU internal error                                                |
| <b>Fault Limit</b>                     | ECU internal error                                                |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• New Key Cycle</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                  |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                |
| <b>MIL Illumination</b>                | N/A                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                              |

**P203115 Exhaust Gas Temperature Sensor Bank 1 Sensor 2 - Circuit Short To Battery or Open**

|                                 |                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P203115                                                                                                                                                                                                                                                                                                                |
| Component / System              | ECU                                                                                                                                                                                                                                                                                                                    |
| Monitor Strategy Description    | Exhaust Gas Temperature Sensor                                                                                                                                                                                                                                                                                         |
| Fault Limit                     | Short Circuit Check                                                                                                                                                                                                                                                                                                    |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• Voltage on A:34 above 2.260742V</li> <li>• OR               <ul style="list-style-type: none"> <li>• Voltage on A:34 above 0.147705V</li> </ul> </li> <li>• AND               <ul style="list-style-type: none"> <li>• Voltage on A:34 below 0.677490V</li> </ul> </li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                                                                                                                                                                                                                       |
| Time Required For DTC To Be Set | 13s                                                                                                                                                                                                                                                                                                                    |
| MIL Illumination                | 3                                                                                                                                                                                                                                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                   |

**P203200 Engine Exhaust Gas Temperature Circuit Low (Bank 1 Sensor 2) - No Sub Type Information**

|                                 |                                                         |
|---------------------------------|---------------------------------------------------------|
| DTC                             | P203115                                                 |
| Component / System              | ECU                                                     |
| Monitor Strategy Description    | Exhaust Gas Temperature Sensor                          |
| Fault Limit                     | Voltage on A:34 below 0.147705V                         |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• N/A</li> </ul> |
| Disable Conditions              | No Active DTC's:                                        |
| Time Required For DTC To Be Set | 13s                                                     |
| MIL Illumination                | 3                                                       |
| Probable Causes                 | <i>See Tech Tool</i>                                    |

**P245213 Particulate Filter Pressure Sensor "A" - Circuit Open**

|                              |                                 |
|------------------------------|---------------------------------|
| DTC                          | P245213                         |
| Component / System           | Particulate Filter              |
| Monitor Strategy Description | Pressure Sensor Circuit Check   |
| Fault Limit                  | Voltage on A:26 above 4.901123V |

|                                        |                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Voltage on A:50 below 4.5V</li> <li>• OR</li> <li>• Voltage on A:50 above 5.5V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                 |
| <b>MIL Illumination</b>                | 3                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                               |

## P245400 Aftertreatment 1 Diesel Particulate Filter Differential Pressure Circuit Low - No Sub Type Information

|                                        |                                                                                                                                    |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P245400                                                                                                                            |
| <b>Component / System</b>              | Particulate Filter                                                                                                                 |
| <b>Monitor Strategy Description</b>    | Diesel Particulate Filter Differential Pressure                                                                                    |
| <b>Fault Limit</b>                     | Voltage on A:26 below 0.147705V                                                                                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Voltage on A:50 below 4.5V</li> <li>• OR</li> <li>• Voltage on A:50 above 5.5V</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                 |
| <b>MIL Illumination</b>                | 3                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                               |

## U014100 Lost Communication With VMCU - No Sub Type Information

|                                        |                                                                               |
|----------------------------------------|-------------------------------------------------------------------------------|
| <b>DTC</b>                             | U014100                                                                       |
| <b>Component / System</b>              | VMCU                                                                          |
| <b>Monitor Strategy Description</b>    | DLost Signal                                                                  |
| <b>Fault Limit</b>                     | Lost communication with BCM on Medium Speed CAN Communication Bus             |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                       |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• U0010/88</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                           |
| <b>MIL Illumination</b>                | 3                                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                          |

**U015500 Lost Communication With Instrument Panel Cluster (IPC) Control Module - No Sub Type Information**

|                                 |                                                                             |
|---------------------------------|-----------------------------------------------------------------------------|
| DTC                             | U015500                                                                     |
| Component / System              | IPC                                                                         |
| Monitor Strategy Description    | Lost Communication                                                          |
| Fault Limit                     | Lost communication with IPC on Medium Speed CAN Communication Bus           |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                       |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0010/88</li> </ul> |
| Time Required For DTC To Be Set | 10s                                                                         |
| MIL Illumination                | 3                                                                           |
| Probable Causes                 | <i>See Tech Tool</i>                                                        |

**P066613 Control Module Internal Temperature Sensor "A" - Circuit Open**

|                                 |                                                                                                                                                                                                                                                                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | U015500                                                                                                                                                                                                                                                                                                                                              |
| Component / System              | IPC                                                                                                                                                                                                                                                                                                                                                  |
| Monitor Strategy Description    | Lost Communication                                                                                                                                                                                                                                                                                                                                   |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on N/A:ECU internal above 2.874756V</li> <li>OR               <ul style="list-style-type: none"> <li>Voltage on N/A:ECU internal above 0.147705V</li> <li>AND                   <ul style="list-style-type: none"> <li>Voltage on N/A:ECU internal below 1.237793V</li> </ul> </li> </ul> </li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                                                                                                                                |
| Disable Conditions              | No Active DTC's:                                                                                                                                                                                                                                                                                                                                     |
| Time Required For DTC To Be Set | 13s                                                                                                                                                                                                                                                                                                                                                  |
| MIL Illumination                | N/A                                                                                                                                                                                                                                                                                                                                                  |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                 |

**P107B13 Retarder Water Temperature Sensor - Circuit Open**

|                              |                                   |
|------------------------------|-----------------------------------|
| DTC                          | P107B13                           |
| Component / System           | Retarder Water Temperature Sensor |
| Monitor Strategy Description | Circuit Check                     |

|                                        |                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:11 above 2.214355V</li> <li>• OR             <ul style="list-style-type: none"> <li>• Voltage on A:11 above 0.147705V</li> </ul> </li> <li>• AND             <ul style="list-style-type: none"> <li>• Voltage on A:11 below 1.165771V</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                                                                            |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                                                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                                                                                                                                                                                                                                                |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                               |

### P107C13 Retarder Oil Temperature Sensor - Circuit Open

|                                        |                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P107C13                                                                                                                                                                                                                                                                                                            |
| <b>Component / System</b>              | Retarder Oil Temperature Sensor                                                                                                                                                                                                                                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                                                                                                                                                                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Voltage on A:15 above 2.214355V</li> <li>• OR             <ul style="list-style-type: none"> <li>• Voltage on A:15 above 0.147705V</li> </ul> </li> <li>• AND             <ul style="list-style-type: none"> <li>• Voltage on A:15 below 1.165771V</li> </ul> </li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                                                                                                                                                                                                                                                            |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                                                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                                                                                                                                                                                                                                                                |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                               |

### P107D13 Retarder Valve - Circuit Open

|                                     |                                                                                                             |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P107D13                                                                                                     |
| <b>Component / System</b>           | Retarder Oil Temperature Sensor                                                                             |
| <b>Monitor Strategy Description</b> | Circuit Check                                                                                               |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Open circuit fault is detected.</li> </ul>                         |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>• Actuator must be inactive, i.e. duty must be 0.0%.</li> </ul>      |
| <b>Disable Conditions</b>           | No Active DTC's: <ul style="list-style-type: none"> <li>• P0658/00, P20B3/00, P10AE/00, P20A2/00</li> </ul> |

|                                        |                      |
|----------------------------------------|----------------------|
| <b>Time Required For DTC To Be Set</b> | 6s                   |
| <b>MIL Illumination</b>                | 3                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i> |

## P107E13 Retarder Air Pressure Sensor - Circuit Open

|                                        |                                                                                                                                                                                                                                                      |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P107E13                                                                                                                                                                                                                                              |
| <b>Component / System</b>              | Retarder Air Pressure Sensor - Circuit Open                                                                                                                                                                                                          |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                                                                                                                                                                        |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                                                                                                                                                                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Voltage on A:19 above 4.797363V</li> <li>AND</li> <li>Voltage on A:19 below 4.852295V               <ul style="list-style-type: none"> <li>OR</li> <li>Voltage on A:19 below 0.202637V</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                                                                                                                                     |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                                                                                                                                                                                   |
| <b>MIL Illumination</b>                | N/A                                                                                                                                                                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                 |

## P202D00 Aftertreatment Reagent Pressure Leakage - No Sub Type Information

|                                        |                                                                                                                                                                                 |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P202D00                                                                                                                                                                         |
| <b>Component / System</b>              | Aftertreatment Reagent Pressure                                                                                                                                                 |
| <b>Monitor Strategy Description</b>    | Pressure Leakage                                                                                                                                                                |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Pump duty cycle above (60% + Offset dependent on Reductant Tank Temperature)</li> </ul>                                                  |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>ACM_UreaPressure above 500kPa</li> </ul>                                                                                                 |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 40s                                                                                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                            |

## P204A13 Reductant Pressure Sensor - Circuit Open

|                                 |                                                                                                                              |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P204A13                                                                                                                      |
| Component / System              | Reductant Pressure Sensor                                                                                                    |
| Monitor Strategy Description    | Circuit Open                                                                                                                 |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:30 above 4.887695V</li> </ul>                                            |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Voltage on A:51 below 4.5V</li> <li>OR</li> <li>Voltage on A:51 above 5.5V</li> </ul> |
| Disable Conditions              | No Active DTC's:                                                                                                             |
| Time Required For DTC To Be Set | 7s                                                                                                                           |
| MIL Illumination                | 3                                                                                                                            |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                         |

## P205C00 Aftertreatment Reagent Tank Temperature Short Circuit Low - No Sub Type Information

|                                 |                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P205C00                                                                                                                             |
| Component / System              | Reagent Tank Temperature                                                                                                            |
| Monitor Strategy Description    | Temperature Short Circuit                                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Failure mode identifier broadcasted by reductant quality sensor (UQS) equals to 4</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Voltage on A:51 below 4.5V</li> <li>OR</li> <li>Voltage on A:51 above 5.5V</li> </ul>        |
| Disable Conditions              | No Active DTC's:                                                                                                                    |
| Time Required For DTC To Be Set | 0.02s                                                                                                                               |
| MIL Illumination                | 3                                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                |

## P208A13 Reductant Pump "A" Control - Circuit Open

|                              |                                                                             |
|------------------------------|-----------------------------------------------------------------------------|
| DTC                          | P208A13                                                                     |
| Component / System           | Reductant Pump A                                                            |
| Monitor Strategy Description | Circuit Check                                                               |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Open circuit is detected.</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Actuator must be active.</li> </ul>  |

|                                        |                                                                                                                                              |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P10A7/00, P0658/00, P10AD/13, P10AF/00, P10AE/00, P20A2/00, P20B3/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                                           |
| <b>MIL Illumination</b>                | 3                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                         |

## P204B64 Aftertreatment Reagent Pump Orifice Orifice Blocked - Signal Plausibility Failure

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P208A13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Component / System</b>              | Aftertreatment Reagent Pump                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Monitor Strategy Description</b>    | Signal Plausibility Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• ACM_UreaPressure below 100kPa</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• NOT</li> <li>• Reductant Temperature below -4.5°C <ul style="list-style-type: none"> <li>• OR</li> <li>• UreaTankTemp below -9.5°C</li> </ul> </li> <li>• AND</li> <li>• not Key off</li> <li>• OR <ul style="list-style-type: none"> <li>• Reductant Temperature below -4.5°C</li> <li>• OR</li> <li>• UreaTankTemp below -9.5°C</li> </ul> </li> <li>• AND</li> <li>• EngineSpeed above 500rpm</li> <li>• AND</li> <li>• Control Module between 10V and 16V</li> <li>• AND</li> <li>• UreaTankTemp below 68°C</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P204C/00, P204A/13, P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92</li> </ul>                                                                                                                                                                                                                                                                                                                                                            |
| <b>Time Required For DTC To Be Set</b> | 10799s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## P054500 Exhaust Gas Temperature Short Circuit Low - No Sub Type Information

|                           |                         |
|---------------------------|-------------------------|
| <b>DTC</b>                | P054500                 |
| <b>Component / System</b> | Exhaust Gas Temperature |

|                                        |                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Short Circuit Check                                                               |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on A:42 below 0.147705V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                  |
| <b>Time Required For DTC To Be Set</b> | 13s                                                                               |
| <b>MIL Illumination</b>                | 3                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                              |

### P20B297 Reductant Heater Coolant Control Valve Performance/Stuck Open - Component or System Operation Obstructed or Blocked

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P20B297                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Component / System</b>           | Reductant Heater Coolant Control Valve                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Monitor Strategy Description</b> | Valve Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Reductant Tank Temperature below 10°C</li> <li>AND</li> <li>Reductant Temperature below -4.5°C             <ul style="list-style-type: none"> <li>OR</li> <li>UreaTankTemp below -9.5°C</li> </ul> </li> <li>EngineSpeed above 500rpm</li> <li>AND</li> <li>Control Module between 10V and 16V</li> <li>AND</li> <li>UreaTankTemp below 68°C</li> <li>AND</li> <li>Reductant Tank Temperature shall increase by at least 3°C during evaluation time</li> <li>AND</li> <li>Reductant Temperature shall increase by at least 1°C during evaluation time</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Reductant Tank Temperature below 10°C</li> <li>• AND</li> <li>• Reductant Temperature below -4.5°C             <ul style="list-style-type: none"> <li>• OR</li> <li>• UreaTankTemp below -9.5°C</li> </ul> </li> <li>• EngineSpeed above 500rpm</li> <li>• AND</li> <li>• Control Module between 10V and 16V</li> <li>• AND</li> <li>• UreaTankTemp below 68°C</li> <li>• AND</li> <li>• Reductant Tank Temperatureshall increase by at least 3°Cduring evaluation time</li> <li>• AND</li> <li>• Reductant Temperatureshall increase by at least 1°Cduring evaluation time             <ul style="list-style-type: none"> <li>• OR</li> <li>• Reductant Tank Temperature below 10°C</li> <li>• AND</li> <li>• not Reductant Tank Temperatureshall increase by at least 3°Cduring evaluation time</li> </ul> </li> <li>• OR</li> <li>• Reductant Temperature below -4.5°C             <ul style="list-style-type: none"> <li>• OR</li> <li>• UreaTankTemp below -9.5°C</li> </ul> </li> <li>• EngineSpeed above 500rpm</li> <li>• AND</li> <li>• Control Module between 10V and 16V</li> <li>• AND</li> <li>• UreaTankTemp below 68°C</li> <li>• AND</li> <li>• not Reductant Temperatureshall increase by at least 1°Cduring evaluation time</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92, P208B/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 10800s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

## P20B400 Reductant Heater Coolant Control Valve Circuit High - No Sub Type Information

|                                     |                                        |
|-------------------------------------|----------------------------------------|
| <b>DTC</b>                          | P20B400                                |
| <b>Component / System</b>           | Reductant Heater Coolant Control Valve |
| <b>Monitor Strategy Description</b> | Circuit Check                          |

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be fully active, i.e. duty must be 100%</li> </ul>   |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P10AE/00, P20A2/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |

## P20B300 Reductant Heater Coolant Control Valve Circuit Low - No Sub Type Information

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20B300                                                                                                   |
| <b>Component / System</b>              | Reductant Heater Coolant Control Valve                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be fully active, i.e. duty must be 0%</li> </ul>     |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P10AE/00, P20A2/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |

## P20B113 Reductant Heater Coolant Control Valve Control - Circuit Open

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20B113                                                                                                   |
| <b>Component / System</b>              | Reductant Heater Coolant Control Valve                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                         |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be fully active, i.e. duty must be 0%</li> </ul>     |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P10AE/00, P20A2/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 10s                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |

**P208B00 Reductant Pump "A" Control Performance/Stuck Off - No Sub Type Information**

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P208B00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Component / System</b>              | Reductant Pump "A"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Monitor Strategy Description</b>    | Control Performance Check                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Error state indicates that a severe error has occurred which prohibits the system from running and Error state is confirmed when the pump has failed to run after 5No Unitwithin300s</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>ACM_UreaPressure above 500kPa</li> <li>OR</li> <li>Turn engine off               <ul style="list-style-type: none"> <li>ACM_UreaPressure above 500kPa</li> </ul> </li> <li>OR</li> <li>NOT               <ul style="list-style-type: none"> <li>Reductant Temperature below -4.5°C                   <ul style="list-style-type: none"> <li>OR</li> <li>UreaTankTemp below -9.5°C</li> </ul> </li> </ul> </li> <li>not Ambient Air temperature below -1°C</li> <li>AND</li> <li>ACM_UreaPressure below 100kPa</li> <li>AND</li> <li>EngineSpeed above 500rpm</li> <li>AND</li> <li>Control Module between 10V and 16V</li> <li>AND</li> <li>UreaTankTemp below 68°C</li> <li>AND</li> <li>not Error state indicates that a severe error has occurred which prohibits the system from running</li> <li>AND</li> <li>Defrosting has not been performed</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

**P204900 Aftertreatment Reagent Dosing Valve Short Circuit High - No Sub Type Information**

|                                        |                                                                                         |
|----------------------------------------|-----------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P204900                                                                                 |
| <b>Component / System</b>              | Aftertreatment Reagent Dosing Valve                                                     |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                   |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                        |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                    |

**P204800 Aftertreatment Reagent Dosing Valve Short Circuit Low - No Sub Type Information**

|                                        |                                                                                        |
|----------------------------------------|----------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P204800                                                                                |
| <b>Component / System</b>              | Aftertreatment Reagent Dosing Valve                                                    |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                          |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                  |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                       |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                     |
| <b>MIL Illumination</b>                | 3                                                                                      |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                   |

**P204713 Reductant Injection Valve Control Bank 1 Unit 1 - Circuit Open**

|                                        |                                                                                                         |
|----------------------------------------|---------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P204713                                                                                                 |
| <b>Component / System</b>              | Reductant Injection Valve                                                                               |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit or short circuit to battery is detected.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active.</li> </ul>                              |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                        |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                      |

|                  |                      |
|------------------|----------------------|
| MIL Illumination | 3                    |
| Probable Causes  | <i>See Tech Tool</i> |

## P20C400 Aftertreatment Reagent Hose Heater 3 Short Circuit High - No Sub Type Information

|                                 |                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------|
| DTC                             | P20C400                                                                                                 |
| Component / System              | Aftertreatment Reagent Hose Heater 3                                                                    |
| Monitor Strategy Description    | Circuit Check                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                 |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P2670/00, P20BB/00</li> </ul>                   |
| Time Required For DTC To Be Set | 6s                                                                                                      |
| MIL Illumination                | 3                                                                                                       |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                    |

## P20C300 Aftertreatment Reagent Hose Heater 3 Short Circuit Low - No Sub Type Information

|                                 |                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------|
| DTC                             | P20C300                                                                                                 |
| Component / System              | Aftertreatment Reagent Hose Heater 3                                                                    |
| Monitor Strategy Description    | Circuit Check                                                                                           |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                  |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P2670/00, P20BB/00</li> </ul>                   |
| Time Required For DTC To Be Set | 6s                                                                                                      |
| MIL Illumination                | 3                                                                                                       |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                    |

## P20C113 Reductant Heater "C" Control - Circuit Open

|                              |                                      |
|------------------------------|--------------------------------------|
| DTC                          | P20C113                              |
| Component / System           | Aftertreatment Reagent Hose Heater 3 |
| Monitor Strategy Description | Circuit Check                        |

|                                        |                                                                                                   |
|----------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                 |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be 0.0%</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P2670/00, P20BB/00</li> </ul>             |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                |
| <b>MIL Illumination</b>                | 3                                                                                                 |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                              |

## P20BC00 Aftertreatment Reagent Hose Heater 1 Short Circuit High - No Sub Type Information

|                                        |                                                                                                          |
|----------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20BC00                                                                                                  |
| <b>Component / System</b>              | Aftertreatment Reagent Hose Heater 1                                                                     |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                            |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                  |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P2670/00, P20C3/00</li> </ul>                    |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                        |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                     |

## P20BB00 Aftertreatment Reagent Hose Heater 1 Short Circuit Low - No Sub Type Information

|                                        |                                                                                                    |
|----------------------------------------|----------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20BB00                                                                                            |
| <b>Component / System</b>              | Aftertreatment Reagent Hose Heater 1                                                               |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                      |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>             |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be 0.0%.</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P2670/00, P20C3/00</li> </ul>              |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                 |
| <b>MIL Illumination</b>                | 3                                                                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                               |

## P20B913 Reductant Heater "A" Control - Circuit Open

|                                 |                                                                                                    |
|---------------------------------|----------------------------------------------------------------------------------------------------|
| DTC                             | P20B913                                                                                            |
| Component / System              | Reductant Heater A                                                                                 |
| Monitor Strategy Description    | Circuit Check                                                                                      |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>             |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be 0.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P2670/00, P20C3/00</li> </ul>              |
| Time Required For DTC To Be Set | 6s                                                                                                 |
| MIL Illumination                | 3                                                                                                  |
| Probable Causes                 | <i>See Tech Tool</i>                                                                               |

## P20A300 Aftertreatment Reagent Direction Valve Short Circuit High - No Sub Type Information

|                                 |                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------|
| DTC                             | P20A300                                                                                                   |
| Component / System              | Aftertreatment Reagent Direction Valve                                                                    |
| Monitor Strategy Description    | Circuit Check                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                   |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be fully active, i.e. duty must be 100%.</li> </ul>  |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P20B3/00, P10AE/00, P10A7/00</li> </ul> |
| Time Required For DTC To Be Set | 6s                                                                                                        |
| MIL Illumination                | 3                                                                                                         |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                      |

## P20A200 Aftertreatment Reagent Direction Valve Short Circuit Low - No Sub Type Information

|                              |                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------|
| DTC                          | P20A200                                                                                                  |
| Component / System           | Aftertreatment Reagent Direction Valve                                                                   |
| Monitor Strategy Description | Circuit Check                                                                                            |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                   |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Actuator must be fully active, i.e. duty must be 0.0%.</li> </ul> |

|                                        |                                                                                                                |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P0658/00, P20B3/00, P10AE/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                             |
| <b>MIL Illumination</b>                | 3                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                           |

## P20A107 Aftertreatment Reagent Direction Valve Mechanical Problem - Mechanical Failures

|                                        |                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P20A107                                                                                                                                                                                                                                                                                                                                                       |
| <b>Component / System</b>              | Aftertreatment Reagent Direction Valve                                                                                                                                                                                                                                                                                                                        |
| <b>Monitor Strategy Description</b>    | Mechanical Problem                                                                                                                                                                                                                                                                                                                                            |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Turn key on</li> <li>• AND</li> <li>• A fault has been set in previous driving cycle</li> </ul>                                                                                                                                                                                                                      |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Turn engine off</li> <li>• AND</li> <li>• ACM_UreaPressure above 500kPa above conditions valid for 30s</li> <li>• OR <ul style="list-style-type: none"> <li>• ACM_UreaPressure above 950kPa</li> <li>• AND</li> <li>• Turn engine off</li> <li>• AND</li> <li>• ACM_UreaPressure above 500kPa</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92, P208B/00</li> </ul>                                                                                                                                                                |
| <b>Time Required For DTC To Be Set</b> | 0.02s                                                                                                                                                                                                                                                                                                                                                         |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                          |

## P065900 ACM Actuator High Supply 1 Short Circuit High - No Sub Type Information

|                                     |                                                                                           |
|-------------------------------------|-------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P065900                                                                                   |
| <b>Component / System</b>           | ACM Actuator High Supply 1                                                                |
| <b>Monitor Strategy Description</b> | Circuit Check                                                                             |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>• Short circuit to battery is detected.</li> </ul> |

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be inactive, i.e. duty must be 0.0%</li> </ul>       |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P20B3/00, P10AE/00, P20A2/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |

### P065800 ACM Actuator High Supply 1 Short Circuit Low - No Sub Type Information

|                                        |                                                                                                            |
|----------------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P065800                                                                                                    |
| <b>Component / System</b>              | ACM Actuator High Supply 1                                                                                 |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                     |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be fully inactive, i.e. duty must be 100%</li> </ul>  |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P20B3/00, P10AE/00, P20A2/00, P10A7/000</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5.5s                                                                                                       |
| <b>MIL Illumination</b>                | 3                                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                       |

### P208D00 Aftertreatment Reagent Pump Control Short Circuit High - No Sub Type Information

|                                        |                                                                                                                                         |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P208D00                                                                                                                                 |
| <b>Component / System</b>              | Aftertreatment Reagent Pump Control                                                                                                     |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                                                 |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active.</li> </ul>                                                              |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P10A7/00, P0658/00, P10AD/13, P10AF/00, P10AE/00, P20A2/00, P20B3/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                    |

**P208C00 Aftertreatment Reagent Pump Control Short Circuit Low - No Sub Type Information**

|                                        |                                                                                                                                         |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P208C00                                                                                                                                 |
| <b>Component / System</b>              | Aftertreatment Reagent Pump Control                                                                                                     |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                                                           |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                                                  |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active.</li> </ul>                                                              |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P10A7/00, P0658/00, P10AD/13, P10AF/00, P10AE/00, P20A2/00, P20B3/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                                                       |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                    |

**P203A13 Reductant Level Sensor "A" - Circuit Open**

|                                        |                                                                                                                                     |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P203A13                                                                                                                             |
| <b>Component / System</b>              | Reductant Level Sensor A                                                                                                            |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                                                       |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Failure mode identifier broadcasted by reductant quality sensor (UQS) equals to 5</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                               |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                    |
| <b>Time Required For DTC To Be Set</b> | 0.2s                                                                                                                                |
| <b>MIL Illumination</b>                | 3                                                                                                                                   |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                |

**P204364 Aftertreatment Reagent Tank Temperature Sensor Stuck - Signal Plausibility Failure**

|                                     |                                                                                                                                                                                                                                                                                                      |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P204364                                                                                                                                                                                                                                                                                              |
| <b>Component / System</b>           | Reductant Level Sensor A                                                                                                                                                                                                                                                                             |
| <b>Monitor Strategy Description</b> | Circuit Check                                                                                                                                                                                                                                                                                        |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Reductant Temperature shall increase by at least 1°C during evaluation time</li> <li>AND</li> <li>Reductant Tank Temperature below 10°C</li> <li>AND</li> <li>not Reductant Tank Temperature shall increase by at least 3°C during evaluation time</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Reductant Temperature below -4.5°C <ul style="list-style-type: none"> <li>• OR</li> <li>• UreaTankTemp below -9.5°C</li> </ul> </li> <li>• AND</li> <li>• EngineSpeed above 500rpm</li> <li>• AND</li> <li>• Control Module between 10V and 16V</li> <li>• AND</li> <li>• UreaTankTemp below 68°C</li> <li>• AND</li> <li>• not Reductant Temperature shall increase by at least 1°C during evaluation time <ul style="list-style-type: none"> <li>• OR</li> <li>• Reductant Temperature shall increase by at least 1°C during evaluation time</li> <li>• AND</li> <li>• Reductant Tank Temperature below 10°C</li> <li>• AND</li> <li>• not Reductant Tank Temperature shall increase by at least 3°C during evaluation time</li> </ul> </li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92, P208B/00</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Time Required For DTC To Be Set</b> | 10800s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

## P056300 ECU Battery Potential Above Range - No Sub Type Information

|                                        |                                                                                  |
|----------------------------------------|----------------------------------------------------------------------------------|
| <b>DTC</b>                             | P056300                                                                          |
| <b>Component / System</b>              | ECU                                                                              |
| <b>Monitor Strategy Description</b>    | Voltage Check                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• not Control Module above 36V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• N/A</li> </ul>                          |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                 |
| <b>Time Required For DTC To Be Set</b> | 0.02s                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                             |

**P204C00 Aftertreatment Reagent Pressure Sensor Circuit Low - No Sub Type Information**

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| DTC                             | P204C00                                                                           |
| Component / System              | Aftertreatment Reagent Sensor                                                     |
| Monitor Strategy Description    | Circuit Check                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:30 below 0.112305V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| Disable Conditions              | No Active DTC's:                                                                  |
| Time Required For DTC To Be Set | 7s                                                                                |
| MIL Illumination                | 3                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                              |

**P203C00 Aftertreatment Reagent Level Short Circuit Low - No Sub Type Information**

|                                 |                                                                                                                                                                    |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P203C00                                                                                                                                                            |
| Component / System              | Aftertreatment Reagent Level                                                                                                                                       |
| Monitor Strategy Description    | Failure Mode Reading                                                                                                                                               |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Failure mode identifier broadcasted by reductant quality sensor (UQS) equals to 4Voltage on A:30 below 0.112305V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                              |
| Disable Conditions              | No Active DTC's:                                                                                                                                                   |
| Time Required For DTC To Be Set | 0.02s                                                                                                                                                              |
| MIL Illumination                | 3                                                                                                                                                                  |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                               |

**P20E892A Reductant Pressure Too Low - Performance or Incorrect Operation**

|                              |                                                                                 |
|------------------------------|---------------------------------------------------------------------------------|
| DTC                          | P20E892                                                                         |
| Component / System           | Reductant Pressure                                                              |
| Monitor Strategy Description | Operation Rationality Check                                                     |
| Fault Limit                  | <ul style="list-style-type: none"> <li>ACM_UreaPressure above 650kPa</li> </ul> |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• not Reductant Temperature below -4.5°C \ <ul style="list-style-type: none"> <li>• OR</li> <li>• UreaTankTemp below -9.5°C</li> </ul> </li> <li>• not Ambient Air temperature below -1°C</li> <li>• AND</li> <li>• ACM_UreaPressure below 100kPa</li> <li>• AND</li> <li>• EngineSpeed above 500rpm</li> <li>• AND</li> <li>• Control Module between 10V and 16V</li> <li>• AND</li> <li>• UreaTankTemp below 68°C</li> <li>• AND</li> <li>• not Error state indicates that a severe error has occurred which prohibits the system from running</li> <li>• OR</li> <li>• not ACM_UreaPressure above 500kPa for 3s</li> <li>• AND</li> <li>• ACM_UreaPressure above 650kPa</li> </ul> |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Time Required For DTC To Be Set</b> | 0.02s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## P21CA00 Reductant Control Module Supply Voltage - No Sub Type Information

|                                        |                                                                                            |
|----------------------------------------|--------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P21CA00                                                                                    |
| <b>Component / System</b>              | Reductant Control Module                                                                   |
| <b>Monitor Strategy Description</b>    | Voltage Check                                                                              |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• not Control Module between 10V and 16V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• Control Module between 10V and 16V</li> </ul>     |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>• P0562/00, P0563/00</li> </ul>    |
| <b>Time Required For DTC To Be Set</b> | 20s                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                          |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                       |

**P10AD13 Reductant Pump "A" Control Low Side - Circuit Open**

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10AD13                                                                                                   |
| <b>Component / System</b>              | Reductant Control Pump                                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Open circuit fault is detected.</li> </ul>                         |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be inactive, i.e. duty must be 0.0%.</li> </ul>      |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P20B3/00, P20A2/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5.1s                                                                                                      |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |

**P10AE00 Reductant Pump "A" Control Low Side Circuit Low - No Sub Type Information**

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10AE00                                                                                                   |
| <b>Component / System</b>              | Reductant Control Pump                                                                                    |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be inactive, i.e. duty must be 0.0%.</li> </ul>      |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P20B3/00, P20A2/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |

**P10AF00 Reductant Pump "A" Control Low Side Circuit High - No Sub Type Information**

|                                     |                                                                                                          |
|-------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                          | P10AF00                                                                                                  |
| <b>Component / System</b>           | Reductant Control Pump                                                                                   |
| <b>Monitor Strategy Description</b> | Circuit Check                                                                                            |
| <b>Fault Limit</b>                  | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                  |
| <b>Enable Conditions</b>            | <ul style="list-style-type: none"> <li>Actuator must be fully active, i.e. duty must be 100%.</li> </ul> |

|                                        |                                                                                                                |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------|
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P0658/00, P20B3/00, P20A2/00, P10A7/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 5.1s                                                                                                           |
| <b>MIL Illumination</b>                | 3                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                           |

## P10CE97 Reductant Return No Flow Detected - Component or System Operation Obstructed or Blocked

|                                        |                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10CE97                                                                                                                                                                                        |
| <b>Component / System</b>              | Reductant Return                                                                                                                                                                               |
| <b>Monitor Strategy Description</b>    | Flow Detection                                                                                                                                                                                 |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• ACM_UreaPressure above 1100kPa</li> </ul>                                                                                                             |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• ACM_UreaPressure above 500kPa</li> </ul>                                                                                                              |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92, P208B/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 20s                                                                                                                                                                                            |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                              |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                           |

## P24FF00 Reductant Temperature Too High - No Sub Type Information

|                                        |                                                                                                                                                                                      |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10CE97                                                                                                                                                                              |
| <b>Component / System</b>              | Reductant Temperature                                                                                                                                                                |
| <b>Monitor Strategy Description</b>    | Temperature Check                                                                                                                                                                    |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>• Reductant Tank Temperature above 70°C</li> </ul>                                                                                            |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>• ACM_UreaPressure above 500kPa</li> <li>• AND</li> <li>• not Reductant Tank Temperature above 70°C</li> </ul>                                |
| <b>Disable Conditions</b>              | No Active DTC's:<br><ul style="list-style-type: none"> <li>• P10AF/00, P10AE/00, P208C/00, P208D/00, P208A/13, P204A/13, P204C/00, P2049/00, P2048/00, P2047/13, P20E8/92</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 2s                                                                                                                                                                                   |
| <b>MIL Illumination</b>                | 3                                                                                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                                                                 |

## U1FFF68 Factory Mode Active - Event Information

|                                 |                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------|
| DTC                             | P10CE97                                                                                    |
| Component / System              | Factory Mode                                                                               |
| Monitor Strategy Description    | Active                                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>The factory mode is active through P1HCF</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>New key cycle</li> </ul>                            |
| Disable Conditions              | No Active DTC's:                                                                           |
| Time Required For DTC To Be Set | 0.5s                                                                                       |
| MIL Illumination                | 3                                                                                          |
| Probable Causes                 | <i>See Tech Tool</i>                                                                       |

## P206C00 Reductant Quality Sensor Low - No Sub Type Information

|                                 |                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P206C00                                                                                                                             |
| Component / System              | Reductant Quality Sensor                                                                                                            |
| Monitor Strategy Description    | Failure Mode Identified                                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Failure mode identifier broadcasted by reductant quality sensor (UQS) equals to 4</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>New key cycle</li> </ul>                                                                     |
| Disable Conditions              | No Active DTC's:                                                                                                                    |
| Time Required For DTC To Be Set | 0.02s                                                                                                                               |
| MIL Illumination                | 3                                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                |

## P206A13 Reductant Quality - Circuit Open

|                                 |                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P206A13                                                                                                                             |
| Component / System              | Reductant Quality Circuit                                                                                                           |
| Monitor Strategy Description    | Failure Mode Identified                                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Failure mode identifier broadcasted by reductant quality sensor (UQS) equals to 5</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>New key cycle</li> </ul>                                                                     |
| Disable Conditions              | No Active DTC's:                                                                                                                    |
| Time Required For DTC To Be Set | 0.02s                                                                                                                               |
| MIL Illumination                | 3                                                                                                                                   |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                |

**P242C00 Exhaust Gas Temperature Sensor Circuit Low (Bank 1 Sensor 3) - No Sub Type Information**

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| DTC                             | P206A13                                                                           |
| Component / System              | Exhaust Gas Temperature Sensor Circuit                                            |
| Monitor Strategy Description    | Voltage Check                                                                     |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:39 below 0.147705V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| Disable Conditions              | No Active DTC's:                                                                  |
| Time Required For DTC To Be Set | 13s                                                                               |
| MIL Illumination                | 3                                                                                 |
| Probable Causes                 | <i>See Tech Tool</i>                                                              |

**P267100 Actuator Supply Voltage "B" Circuit High - No Sub Type Information**

|                                 |                                                                                                      |
|---------------------------------|------------------------------------------------------------------------------------------------------|
| DTC                             | P267100                                                                                              |
| Component / System              | Actuator Supply Voltage "B"                                                                          |
| Monitor Strategy Description    | Circuit Check                                                                                        |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>              |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Actuator must be inactive, i.e. duty must be 0.0%.</li> </ul> |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>P20C3/00, P20BB/00</li> </ul>                |
| Time Required For DTC To Be Set | 5.5s                                                                                                 |
| MIL Illumination                | 3                                                                                                    |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                 |

**P267000 Actuator Supply Voltage "B" Circuit Low - No Sub Type Information**

|                              |                                                                                                          |
|------------------------------|----------------------------------------------------------------------------------------------------------|
| DTC                          | P267000                                                                                                  |
| Component / System           | Actuator Supply Voltage "B"                                                                              |
| Monitor Strategy Description | Circuit Check                                                                                            |
| Fault Limit                  | <ul style="list-style-type: none"> <li>Short circuit to ground is detected.</li> </ul>                   |
| Enable Conditions            | <ul style="list-style-type: none"> <li>Actuator must be fully active, i.e. duty must be 100%.</li> </ul> |
| Disable Conditions           | No Active DTC's: <ul style="list-style-type: none"> <li>P20C3/00, P20BB/00</li> </ul>                    |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 5.5s                 |
| MIL Illumination                | 3                    |
| Probable Causes                 | <i>See Tech Tool</i> |

## P242A15 Exhaust Gas Temperature Sensor Bank 1 Sensor 3 - Circuit Short To Battery or Open

|                                 |                                                                                                                                                                                                        |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P242A15                                                                                                                                                                                                |
| Component / System              | Exhaust Gas Temperature Sensor Bank 1 Sensor 3                                                                                                                                                         |
| Monitor Strategy Description    | Voltage Check                                                                                                                                                                                          |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• Voltage on A:39 above 2.260742V</li> <li>• OR</li> <li>• Voltage on A:39 above 0.147705V</li> <li>• AND</li> <li>• Voltage on A:39 below 0.677490V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• Actuator must be fully active, i.e. duty must be 100%.</li> </ul>                                                                                             |
| Disable Conditions              | No Active DTC's:                                                                                                                                                                                       |
| Time Required For DTC To Be Set | 13s                                                                                                                                                                                                    |
| MIL Illumination                | 3                                                                                                                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                   |

## U02A200 Lost Communication with Reductant Quality Module - No Sub Type Information

|                                 |                                                                                                                         |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| DTC                             | U02A200                                                                                                                 |
| Component / System              | Reductant Quality Module                                                                                                |
| Monitor Strategy Description    | Lost Signal                                                                                                             |
| Fault Limit                     | <ul style="list-style-type: none"> <li>• Lost communication with UQSM on Vehicle Communication Engine Subnet</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>• Actuator must be fully active, i.e. duty must be 100%.</li> </ul>              |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>• U0080/88</li> </ul>                                           |
| Time Required For DTC To Be Set | 14s                                                                                                                     |
| MIL Illumination                | 3                                                                                                                       |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                    |

**U114600 Lost Communication With ECM on Engine Subnet - No Sub Type Information**

|                                 |                                                                                                                       |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------|
| DTC                             | U114600                                                                                                               |
| Component / System              | Engine Subnet                                                                                                         |
| Monitor Strategy Description    | Lost Communication                                                                                                    |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Lost communication with UQSM on Vehicle Communication Engine Subnet</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                 |
| Disable Conditions              | No Active DTC's: <ul style="list-style-type: none"> <li>U0080/88</li> </ul>                                           |
| Time Required For DTC To Be Set | 14s                                                                                                                   |
| MIL Illumination                | 3                                                                                                                     |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                  |

**U008088 Vehicle Communication Engine Subnet - Bus off**

|                                 |                                                                                                                                                                                                                                          |
|---------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTC                             | U008088                                                                                                                                                                                                                                  |
| Component / System              | Engine Subnet                                                                                                                                                                                                                            |
| Monitor Strategy Description    | Lost Communication                                                                                                                                                                                                                       |
| Fault Limit                     | <ul style="list-style-type: none"> <li>It has not been possible to send frames on Vehicle Communication Engine Subnet</li> <li>AND</li> <li>It has not been possible to receive frames on Vehicle Communication Engine Subnet</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                                                                                                                    |
| Disable Conditions              | No Active DTC's:                                                                                                                                                                                                                         |
| Time Required For DTC To Be Set | 5.05s                                                                                                                                                                                                                                    |
| MIL Illumination                | 3                                                                                                                                                                                                                                        |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                                                                                                                                     |

**P109A00 Retarder Water Temperature Moderately High - No Sub Type Information**

|                              |                                                                                                                  |
|------------------------------|------------------------------------------------------------------------------------------------------------------|
| DTC                          | P109A00                                                                                                          |
| Component / System           | Retarder Water Temperature                                                                                       |
| Monitor Strategy Description | Temperature Check                                                                                                |
| Fault Limit                  | <ul style="list-style-type: none"> <li>The filtered water temperature of the retarder is above limit.</li> </ul> |
| Enable Conditions            | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                            |
| Disable Conditions           | No Active DTC's:                                                                                                 |

|                                 |                      |
|---------------------------------|----------------------|
| Time Required For DTC To Be Set | 0s                   |
| MIL Illumination                | N/A                  |
| Probable Causes                 | <i>See Tech Tool</i> |

### P109B00 Retarder Water Temperature Too High - No Sub Type Information

|                                 |                                                                                                                          |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| DTC                             | P109B00                                                                                                                  |
| Component / System              | Retarder Water Temperature                                                                                               |
| Monitor Strategy Description    | Temperature Check                                                                                                        |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Retarder performance is derated due to high water- or oil temperature.</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>Engine Running</li> </ul>                                                         |
| Disable Conditions              | No Active DTC's:                                                                                                         |
| Time Required For DTC To Be Set | 0s                                                                                                                       |
| MIL Illumination                | N/A                                                                                                                      |
| Probable Causes                 | <i>See Tech Tool</i>                                                                                                     |

### P109C00 Retarder Water Temperature Sensor Circuit Low - No Sub Type Information

|                                 |                                                                                   |
|---------------------------------|-----------------------------------------------------------------------------------|
| DTC                             | P109C00                                                                           |
| Component / System              | Retarder Water Temperature                                                        |
| Monitor Strategy Description    | Sensor Circuit Check                                                              |
| Fault Limit                     | <ul style="list-style-type: none"> <li>Voltage on A:11 below 0.147705V</li> </ul> |
| Enable Conditions               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| Disable Conditions              | No Active DTC's:                                                                  |
| Time Required For DTC To Be Set | 13s                                                                               |
| MIL Illumination                | N/A                                                                               |
| Probable Causes                 | <i>See Tech Tool</i>                                                              |

### P109D00 Retarder Oil Temperature High - No Sub Type Information

|                              |                                                                                                         |
|------------------------------|---------------------------------------------------------------------------------------------------------|
| DTC                          | P109D00                                                                                                 |
| Component / System           | Retarder Oil Temperature                                                                                |
| Monitor Strategy Description | Temperature Check                                                                                       |
| Fault Limit                  | <ul style="list-style-type: none"> <li>The retarder oil temperature is above critical limit.</li> </ul> |

|                                        |                      |
|----------------------------------------|----------------------|
| <b>Enable Conditions</b>               | • N/A                |
| <b>Disable Conditions</b>              | No Active DTC's:     |
| <b>Time Required For DTC To Be Set</b> | 0s                   |
| <b>MIL Illumination</b>                | N/A                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i> |

### P109F00 Retarder Oil Temperature Sensor Circuit Low - No Sub Type Information

|                                        |                                   |
|----------------------------------------|-----------------------------------|
| <b>DTC</b>                             | P109F00                           |
| <b>Component / System</b>              | Retarder Oil Temperature          |
| <b>Monitor Strategy Description</b>    | Voltage Check                     |
| <b>Fault Limit</b>                     | • Voltage on A:15 below 0.147705V |
| <b>Enable Conditions</b>               | • N/A                             |
| <b>Disable Conditions</b>              | No Active DTC's:                  |
| <b>Time Required For DTC To Be Set</b> | 13s                               |
| <b>MIL Illumination</b>                | N/A                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>              |

### P10A300 Retarder Air Pressure High - No Sub Type Information

|                                        |                                                      |
|----------------------------------------|------------------------------------------------------|
| <b>DTC</b>                             | P10A300                                              |
| <b>Component / System</b>              | Retarder Air Pressure                                |
| <b>Monitor Strategy Description</b>    | Air Pressure Evaluation                              |
| <b>Fault Limit</b>                     | • The retarder air pressure is above critical limit. |
| <b>Enable Conditions</b>               | • N/A                                                |
| <b>Disable Conditions</b>              | No Active DTC's:                                     |
| <b>Time Required For DTC To Be Set</b> | 0s                                                   |
| <b>MIL Illumination</b>                | N/A                                                  |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                 |

### P10A464 Retarder Air Pressure Sensor Range/Performance - Signal Plausibility Failure

|                                     |                              |
|-------------------------------------|------------------------------|
| <b>DTC</b>                          | P10A464                      |
| <b>Component / System</b>           | Retarder Air Pressure Sensor |
| <b>Monitor Strategy Description</b> | Air Pressure Evaluation      |

|                                        |                                                                                                                                        |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Too big difference between requested retarder pressure and actual retarder pressure.</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                                                                                  |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                                                                       |
| <b>Time Required For DTC To Be Set</b> | 4s                                                                                                                                     |
| <b>MIL Illumination</b>                | N/A                                                                                                                                    |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                                                   |

### P10A500 Retarder Air Pressure Sensor Circuit High - No Sub Type Information

|                                        |                                                                                   |
|----------------------------------------|-----------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10A500                                                                           |
| <b>Component / System</b>              | Retarder Air Pressure Sensor                                                      |
| <b>Monitor Strategy Description</b>    | Voltage Check                                                                     |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Voltage on A:19 above 4.852295V</li> </ul> |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>N/A</li> </ul>                             |
| <b>Disable Conditions</b>              | No Active DTC's:                                                                  |
| <b>Time Required For DTC To Be Set</b> | 7s                                                                                |
| <b>MIL Illumination</b>                | N/A                                                                               |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                              |

### P10A600 Retarder Air Pressure Sensor Circuit High - No Sub Type Information

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>DTC</b>                             | P10A600                                                                                                   |
| <b>Component / System</b>              | Retarder Air Pressure Sensor                                                                              |
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"> <li>Short circuit to battery is detected.</li> </ul>                   |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"> <li>Actuator must be active, i.e. duty must be above 0.0%.</li> </ul>  |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"> <li>P0658/00, P20B3/00, P10AE/00, P20A2/00</li> </ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |

### P10A700 Retarder Valve Circuit Low - No Sub Type Information

|                           |                        |
|---------------------------|------------------------|
| <b>DTC</b>                | P10A700                |
| <b>Component / System</b> | Retarder Valve Circuit |

|                                        |                                                                                                           |
|----------------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>Monitor Strategy Description</b>    | Circuit Check                                                                                             |
| <b>Fault Limit</b>                     | <ul style="list-style-type: none"><li>• Short circuit to ground is detected.</li></ul>                    |
| <b>Enable Conditions</b>               | <ul style="list-style-type: none"><li>• Actuator must be inactive, i.e. duty must be 0.0%.</li></ul>      |
| <b>Disable Conditions</b>              | No Active DTC's: <ul style="list-style-type: none"><li>• P0658/00, P20B3/00, P10AE/00, P20A2/00</li></ul> |
| <b>Time Required For DTC To Be Set</b> | 6s                                                                                                        |
| <b>MIL Illumination</b>                | 3                                                                                                         |
| <b>Probable Causes</b>                 | <i>See Tech Tool</i>                                                                                      |





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## Mack Chassis - Fault Code List / Engine Control Module (ECM), Aftertreatment Control Module (ACM), Electrical System Version 4 Diagnostic Trouble Codes (DTC) Model Year 2013 - 2017



### Internal Content

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For more information on the Engine Control Module (ECM), Aftertreatment Control Module (ACM), Electrical System Version 4 Diagnostic Trouble Codes (DTC) ref to the links below.

| Fault Code List / Engine Control Module (ECM), Aftertreatment Control Module (ACM), Electrical System Version 4 Diagnostic Trouble Codes (DTC) Model Year 2013 - 2017 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <a href="#">1-60</a>                                                                                                                                                  |
| <a href="#">61-120</a>                                                                                                                                                |
| <a href="#">121-180</a>                                                                                                                                               |
| <a href="#">181-240</a>                                                                                                                                               |
| <a href="#">241-253</a>                                                                                                                                               |



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[KC-859 Mack Fault Codes DTCs 2013 - 2017 pg 241-253](#)

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[KC-859 Mack Fault Codes DTCs 2013 - 2017 pg 121-180](#)

[KC-859 Mack Fault Codes DTCs 2013 - 2017 pg 61-120](#)

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