

2014 Volkswagen Tiguan

Quick Reference Specification Book

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DTC CHART

Engine Codes CCTA

Fuel and Air Mixture, Additional Emissions Regulations

DTC	Error Message	Malfunction Criteria and Threshold Value
P000A	Intake Camshaft Position Slow Response	Signal change > 8° CRK for > 2.9 s and adjustment angle < 2.5° CRK
P0010	Intake Camshaft Position Actuator Circuit Open Bank 1	Signal voltage, > 4.7 - 5.4 V
P0011	Intake Camshaft Position Timing - Over-Advanced	Signal change > 8° CRK for > 2.9 s and adjustment angle < 2.5° CRK
P0016	Crankshaft Position – Camshaft Position Correlation	<ul style="list-style-type: none"> • Permissible deviation < -11° Rev or • Permissible deviation > 11° Rev
P0030	HO2S Heater Control Circuit Bank 1 Sensor 1	Heater voltage 4.70 - 5.40 V
P0031	HO2S Heater Control Circuit Low Bank 1 Sensor 1	Heater voltage < 0 to 3.26 V
P0032	HO2S Heater Control Circuit High Bank 1 Sensor 1	Signal current > 5.50 A
P0036	HO2S Heater Control Circuit Bank 1 Sensor 2	Heater voltage, 4.50 - 5.50 V
P0037	HO2S Heater Control Circuit Low Bank 1 Sensor 2	Heater voltage < 3.00 V
P0038	HO2S Heater Control Circuit High Bank 1 Sensor 2	Heater current, > 2.70 - 5.50 A
P0042	HO2S Heater Control Circuit Bank 1 Sensor 3	Heater voltage 2.34 to 3.59 V
P0043	HO2S Heater Control Circuit Low Bank 1 Sensor 3	Heater voltage < 2.34 V
P0044	HO2S Heater Control Circuit High Bank 1 Sensor 3	Heater voltage > 3.59 V
P0068	MAF vs Throttle Position Correlation	Plausibility with fuel system <ul style="list-style-type: none"> • Load calculation < -22% Plausibility with fuel system • Load calculation > 22%

DTC	Error Message	Malfunction Criteria and Threshold Value
P0070	Ambient Air Temperature Sensor Circuit	Ambient air temperature < -50° C
P0071	Ambient Air Temperature Sensor Range/Performance	<ul style="list-style-type: none"> • Difference in value between ECT and AAT at engine start (depending on engine off time) > 25 K and • Difference in value between AAT and IAT at engine start (depending on engine off time) > 25 K
P0072	Ambient Air Temperature Sensor Circuit Low	Ambient air temperature > 77° C
P0087	Fuel Rail/System Pressure - Too Low	<ul style="list-style-type: none"> • Fuel trim activity 0.90 - 1.15 [-] • Pressure controller activity > 2 MPa • Difference between target and actual pressure > -16.4
P0100	Mass Air Flow Circuit Fault	MAF sensor signal 0 μs
P0101	Mass Air Flow Circuit Range/Performance	Mass air flow vs. <ul style="list-style-type: none"> • Upper threshold model > 60 - 800 kg/h • lower threshold model < 0 to 400 kg/h • Load calculation > 18% • Fuel system < -18%
P0102	Mass or Volume Air Flow Circuit Low Input	MAF sensor signal < 66 μs
P0103	Mass or Volume Air Flow Circuit High Input	MAF sensor signal > 4500 μs
P0106	Manifold Absolute Pressure/Barometric Pressure Circuit Range/Performance	<ul style="list-style-type: none"> • Difference of boost pressure signal vs altitude sensor signal > 230 hPa or • Difference of boost pressure signal vs altitude sensor signal < -130 hPa
P0111	Intake Air Temperature Sensor 1 Circuit Range/Performance	<ul style="list-style-type: none"> • Difference in value IAT - ECT @ engine start (depending on engine off time) > 25 °C • Difference in value IAT - AAT @ engine start > 25 °C (depending on engine off time)

DTC	Error Message	Malfunction Criteria and Threshold Value
P0112	Intake Air Temperature Sensor 1 Circuit Low Input	Intake air temperature > 141° C
P0113	Intake Air Temperature Sensor 1 Circuit High Input	Intake air temperature < -46° C
P0116	Engine Coolant Temperature Sensor 1 Circuit Range/Performance	<ul style="list-style-type: none"> • No change on signal < 2 K or • Signal in range > 89° C with no change on signal 1.5° K
P0117	Engine Coolant Temperature Sensor 1 Circuit Low Input	Engine coolant temperature > 140° C
P0118	Engine Coolant Temperature Sensor 1 Circuit High Input	Engine coolant temperature < -40° C
P0121	Accelerator Pedal Position Sensor / Accelerator Pedal Position Sensor 2 Circuit Range/Performance	<ul style="list-style-type: none"> • TPS 1 - TPS 2 > 5.10 - 6.30% • Actual TPS 1 calculated value > actual TPS 2 calculated value • TPS 1 calculated value > 9.00%
P0122	Accelerator Pedal Position Sensor / Accelerator Pedal Position Sensor 2 Circuit Low Input	Signal voltage < 0.20 V
P0123	Accelerator Pedal Position Sensor / Accelerator Pedal Position Sensor 2 Circuit High Input	Signal voltage > 4.81 V
P0130	HO2S Circuit Bank 1 Sensor 1	O2S ceramic temperature < 640° C
P0131	HO2S Circuit, Bank 1 Sensor 1 Low Voltage	VM > 1.75 V
		UN > 1.50 V
		IA or IP > 0.30 V
P0132	HO2S Circuit, Bank 1 Sensor 1 High Voltage	VM > 3.25 V
		UN > 4.40 V
		IA or IP > 7 V

DTC	Error Message	Malfunction Criteria and Threshold Value
P0133	HO2S Circuit Slow Response Bank 1 Sensor 1	Signal dynamic slope check <ul style="list-style-type: none"> • O2S signal front vs. modeled O2S signal ratio < 0.35 and > 0.01 • Lower value of both counters for area ratios L to R and R to L ≥ 5 times Oscillation check <ul style="list-style-type: none"> • Lambda amplitude signal > 20% • Cycles > 8 • Time lambda > lambda amplitude 400 m s Delay check <ul style="list-style-type: none"> • Delay modeled lambda signal minus measured signal > 460 m s • Cycles > 12
P0135	HO2S Heater Circuit Bank 1 Sensor 1	<ul style="list-style-type: none"> • Heater duty cycle, >100% • O2S ceramic temperature < 715° C • Time after O2S heater on 40 s
P0136	HO2S Circuit Bank 1 Sensor 2 Malfunction	<ul style="list-style-type: none"> • Delta voltage one step at heater switching > 2.00 V • Number of checks ≥ 4
P0137	HO2S Circuit Low Voltage Bank 1 Sensor 2	Cold condition <ul style="list-style-type: none"> • Signal voltage < 0.06 V for time > 3 Sec. Warm condition <ul style="list-style-type: none"> • Signal voltage < 0.01 V • Reaction at closed loop enrichment - no reaction
P0138	HO2S Circuit High Voltage Bank 1 Sensor 2	Signal voltage > 1.08 V for > 5 Sec.
P0139	HO2S Circuit Slow Response Bank 1 Sensor 2	<ul style="list-style-type: none"> • EWMA filtered transient time at fuel cutoff > 0.0 s • In voltage range of 201 - 401 mV • Number of checks, ≥ 3

DTC	Error Message	Malfunction Criteria and Threshold Value
P013A	HO2S Circuit Slow Response Rich to Lean Bank 1 Sensor 3	<ul style="list-style-type: none"> EWMA filtered max differential transient time at fuel cutoff ≥ 0.65 s Number of checks ≥ 1
P013B	HO2S Circuit Slow Transient Time Lean to Rich Bank 1 Sensor 2	<ul style="list-style-type: none"> EWMA filtered max differential transient time at fuel cutoff ≥ 1.50 s Number of checks ≥ 1
P013E	HO2S Circuit Check of Delay Time Rich to Lean Bank 1 Sensor 2	<ul style="list-style-type: none"> Arithmetic filtered max differential delay time at lean to rich transition = n.a. or <ul style="list-style-type: none"> EWMA filtered max differential delay time at lean to rich transition > 1.0 [s] and number of checks ≥ 3.00 [-]
P013F	HO2S Circuit Check of Delay Time Lean to Rich Bank 1 Sensor 2	<ul style="list-style-type: none"> Arithmetic filtered max differential delay time at lean to rich transition = n.a. or <ul style="list-style-type: none"> EWMA filtered max differential delay time at lean to rich transition > 1.5 [s] and number of checks ≥ 3.00 [-]
P0140	HO2S Circuit No Activity Detected Bank 1 Sensor 2	Signal voltage <ul style="list-style-type: none"> Signal voltage .40 - .60 V for > 3 Sec Internal resistance <ul style="list-style-type: none"> > 40000 ohm
P0141	HO2S Heater Circuit Bank 1 Sensor 2	Heater resistance, 702 - 5250 Ω
P0142	HO2S Sensor Circuit Bank 1 Sensor 3	<ul style="list-style-type: none"> Delta voltage one step at heater > 2.0 V Number of checks, 4
P0143	HO2S Sensor Circuit Low Voltage Bank 1 Sensor 3	Cold/Warm condition <ul style="list-style-type: none"> Signal voltage < 0.06 V for > 3 s
P0144	HO2S Sensor Circuit High Voltage Bank 1 Sensor 3	Signal voltage > 1.08 V for > 5 s
P0145	HO2S Sensor Circuit Slow Response Bank 1 Sensor 3	<ul style="list-style-type: none"> EWMA filtered transient time at fuel cutoff > 1.2 s In voltage range of 201.2 - 401.4 mV Number of checks, 3

DTC	Error Message	Malfunction Criteria and Threshold Value
P0146	HO2S Sensor Circuit No Activity Detected Bank 1 Sensor 3	<ul style="list-style-type: none"> • Signal voltage 0.40 - 0.60 V for > 3 s • Internal resistance > 40000 Ohm
P0147	HO2S Sensor Heater Circuit Bank 1 Sensor 3	Heater (ECM internal) resistance 792 - 4560 ohm
P0169	Electronic Throttle Control Module Function Monitoring: Injection Time	<ul style="list-style-type: none"> • Comparison with fuel quantity = incorrect • Internal check failed
P0171	System Too Lean Bank 1	At idle <ul style="list-style-type: none"> • Adaptive value > 5.02% At part load <ul style="list-style-type: none"> • Adaptive value > 21%
P0172	System Too Rich Bank 1	At idle <ul style="list-style-type: none"> • Adaptive value < 5.02% At part load <ul style="list-style-type: none"> • Adaptive value < -21%
P0190	Fuel High Pressure Sensor Circuit Open or Short to Battery Voltage	Signal voltage > 4.8 V
P0191	Fuel High Pressure Sensor Circuit Range / Performance	Actual pressure > 20.6 MPa
P0192	Fuel High Pressure Sensor Circuit Short to ground	Signal voltage < 0.2 V
P0201	Injector Circuit Open - Cylinder 1	<ul style="list-style-type: none"> • Low side signal current < 2.1 A • Internal logic failure
P0202	Injector Circuit Open - Cylinder 2	<ul style="list-style-type: none"> • Low side signal current < 2.1 A • Internal logic failure
P0203	Injector Circuit Open - Cylinder 3	<ul style="list-style-type: none"> • Low side signal current < 2.1 A • Internal logic failure
P0204	Injector Circuit Open - Cylinder 4	<ul style="list-style-type: none"> • Low side signal current < 2.1 A • Internal logic failure
P0221	Accelerator Pedal Position Sensor 1/Accelerator Pedal Position Sensor 2 Circuit Range/Performance	<ul style="list-style-type: none"> • TPS 1 - TPS 2 > 6.30% and • Actual TPS 2 calculated value > actual TPS 1 calculated value • TPS 2 calculated value > 9.00%

DTC	Error Message	Malfunction Criteria and Threshold Value
P0222	Accelerator Pedal Position Sensor / Accelerator Pedal Position Sensor 2 Circuit Short to Ground	Signal voltage < 0.20 V
P0223	Accelerator Pedal Position Sensor / Accelerator Pedal Position Sensor 2 Circuit Short to Battery Voltage	Signal voltage > 4.81 V
P0234	Turbocharger Overboost Condition	Difference of set value boost pressure vs altitude sensor signal > 260 - 1275 hPa
P0236	Turbocharger Boost Sensor Circuit Range/Performance	Difference of boost pressure signal vs. altitude sensor signal > 230 hPa or < -130 hPa
P0237	Turbocharger Boost Sensor Circuit Short to Ground	Signal voltage < 0.20 V
P0238	Turbocharger Boost Sensor Circuit High	Signal voltage > 4.88 V
P0243	Turbocharger Wastegate Solenoid Circuit Open	Signal voltage > 5.6 - 4.4 V
P0245	Turbocharger Wastegate Solenoid Circuit Short to Ground	Signal voltage < 3.25 - 2.15 V
P0246	Turbocharger Wastegate Solenoid Circuit Short to Battery Voltage	Signal current > 2.2 - 4 A
P025A	Fuel Pump Module Control Circuit Open	Signal voltage > 4.40 - 5.60 V
P025C	Fuel Pump Module Control Circuit Low	Signal voltage 2.15 - 3.25 V
P025D	Fuel Pump Module Control Circuit High	Signal current > 1.10 A
P0261	Cylinder 1 Injector Circuit Low	Signal current < 2.1 A
P0262	Cylinder 1 Injector Circuit High	Signal current > 14.70 A
P0264	Cylinder 2 Injector Circuit Low	Signal current < 2.1 A
P0265	Cylinder 2 Injector Circuit High	Signal current > 14.70 A
P0267	Cylinder 3 Injector Circuit Low	Signal current < 2.1 A
P0268	Cylinder 3 Injector Circuit High	Signal current > 14.70 A
P0270	Cylinder 4 Injector Circuit Low	Signal current < 2.1 A
P0271	Cylinder 4 Injector Circuit High	Signal current > 14.70 A

DTC	Error Message	Malfunction Criteria and Threshold Value
P0299	Turbocharger Underboost	Difference of set boost pressure vs actual boost pressure value > 150 hPa
P2008	Intake Manifold Runner Control Circuit Open	Signal voltage 4.70 - 5.40 V
P2009	Intake Manifold Runner Control Circuit Low	Signal voltage 0.0 - 3.26 V
P2010	Intake Manifold Runner Control Circuit High	Signal current > 2.20 A
P2014	Intake Manifold Runner Position Sensor Circuit	Signal voltage > 4.75 V
P2015	Intake Manifold Runner Position Sensor Circuit Range/ Performance	<ul style="list-style-type: none"> • Deviation runner flap target position vs actual position > 25% • Actual position 0 to 100%
P2016	Intake Manifold Runner Position Sensor Circuit Low	Signal voltage < 0.25 V
P2088	A Camshaft Position Actuator Control Circuit Low	Signal voltage 0.0 - 3.25 V
P2089	A Camshaft Position Actuator Control Circuit High	Signal current > 2.2 A
P2096	Post Catalyst Fuel Trim System Too Lean	I-portion of 2nd lambda control loop < 0.040
P2097	Post Catalyst Fuel Trim System Too Rich	I-portion of 2nd lambda control loop > 0.040
P3081	Engine Temperature Too Low	Difference reference model temperature vs ECT > 10° K

Ignition System

DTC	Error Message	Malfunction Criteria and Threshold Value
P0300	Random Misfire Detected	<ul style="list-style-type: none"> • Emission threshold 1st interval Misfire Rate (MR), > 2.65% • Catalyst damage misfire rate (MR), > 3% - 20%
P0301	Cylinder 1 Misfire Detected	<ul style="list-style-type: none"> • Emission threshold 1st interval Misfire Rate (MR), > 2.65% • Catalyst damage misfire rate (MR), > 3% - 20%

DTC	Error Message	Malfunction Criteria and Threshold Value
P0302	Cylinder 2 Misfire Detected	<ul style="list-style-type: none"> Emission threshold 1st interval Misfire Rate (MR), > 2.65% Catalyst damage misfire rate (MR), > 3% - 20%
P0303	Cylinder 3 Misfire Detected	<ul style="list-style-type: none"> Emission threshold 1st interval Misfire Rate (MR), > 2.65% Catalyst damage misfire rate (MR), > 3% - 20%
P0304	Cylinder 4 Misfire Detected	<ul style="list-style-type: none"> Emission threshold 1st interval Misfire Rate (MR), > 2.65% Catalyst damage misfire rate (MR), > 3% - 20%
P0321	Engine Speed Input Circuit Performance	<ul style="list-style-type: none"> Comparison of counted teeth vs. reference = incorrect Monitoring reference gap failure
P0322	Engine Speed Input Circuit No Signal	<ul style="list-style-type: none"> Camshaft signal > 3 Engine speed, no signal
P0324	Knock Control System Error	<ul style="list-style-type: none"> Signal fault counter (combustion) > 24.00 or Signal fault counter (measuring window) > 2.00
P0327	Knock Sensor 1 Circuit Low	<ul style="list-style-type: none"> Lower threshold < -70 V or for signal range check Lower threshold < 0 - 1.60 V
P0328	Knock Sensor 1 Circuit High	<ul style="list-style-type: none"> Upper threshold > 1.00 V or for signal range check > 15 - 115.87 V
P0340	Camshaft Position Sensor Circuit	<ul style="list-style-type: none"> Cam adaption values out of range > 20 °KW < -20 °KW Difference of adapted and actual values > 9° KW
P0341	Camshaft Position Sensor Circuit Performance	<ul style="list-style-type: none"> Signal pattern incorrect Defect counter 12 [-]
P0342	Camshaft Position Sensor Circuit Low	<ul style="list-style-type: none"> Signal voltage low Crankshaft signals = 8
P0343	Camshaft Position Sensor Circuit High	<ul style="list-style-type: none"> Signal voltage high Crankshaft signals = 8

DTC	Error Message	Malfunction Criteria and Threshold Value
P0351	Ignition Coil A Primary Circuit	<ul style="list-style-type: none"> • Signal current 0.25 to 2.0 mA • Internal check failed
P0352	Ignition Coil B Primary Circuit	<ul style="list-style-type: none"> • Signal current 0.25 to -2.0 mA • Internal check failed
P0353	Ignition Coil C Primary Circuit	<ul style="list-style-type: none"> • Signal current 0.25 to -2.0 mA • Internal check failed
P0354	Ignition Coil D Primary Circuit	<ul style="list-style-type: none"> • Signal current 0.25 to -2.0 mA • Internal check failed

Additional Exhaust Regulation

DTC	Error Message	Malfunction Criteria and Threshold Value
P0420	Catalyst System Efficiency Below Threshold	<p>Front:</p> <ul style="list-style-type: none"> • Oxygen storage capacity (OSC) vs OSC of borderline catalyst < 1.00 • Front catalyst < 1.50 • Main catalyst < 1.00 <p>Main:</p> <ul style="list-style-type: none"> • Oxygen storage capacity (OSC) vs OSC of borderline catalyst < 0.40 • Front catalyst < .90 • While value for front catalyst < 2.00
P0441	Evaporative Emission System Incorrect Purge Flow	Deviation < 8% lambda controller and 35% idle controller
P0442	Evaporative Emission System Leak Detected Small Leak	Time for pressure drop < 1.6 - 1.8 s
P0444	Evaporative Emission System Purge Control Valve Circuit Open	Signal voltage > 4.70 - 5.40 V
P0447	Evaporative Emission System Vent Control Circuit Open	Signal voltage > 4.70 - 5.40 V
P0448	Evaporative Emission System Vent Control Circuit Shorted to B+ or ground	<ul style="list-style-type: none"> • Short to B+ - Signal current > 2.2 - 4.0 A • Short to Ground - Signal voltage < 2.74 - 3.26 V

DTC	Error Message	Malfunction Criteria and Threshold Value
P0455	Evaporative Emission System Leak Detected Gross Leak/ No Flow	Time for pressure drop < 1.0 Sec.
P0456	Evaporative Emission System Leak Detected Very Small Leak	Time for pressure drop < 4.5 - 6.0 Sec.
P0458	Evaporative Emission System Purge Control Valve Circuit Low	Signal voltage 0.0 - 3.26 V
P0459	Evaporative Emission System Purge Control Valve Circuit High	Signal current > 2.20 A

Speed and Idle Control

DTC	Error Message	Malfunction Criteria and Threshold Value
P050A	Cold Start Idle Air Control System Performance	Out of range low: • Engine speed deviation < -80 RPM Out of range low: • Engine speed deviation > 80 RPM
P050B	Cold Start Ignition Timing Performance	Difference between commanded spark timing vs. actual value > 20%
P0501	Vehicle Speed Sensor Range/ Performance	VSS signal < 6 MPH
P0503	Vehicle Speed Sensor Intermittent/Erratic/High	Vehicle speed > 180 MPH
P0506	Idle Air Control System - RPM Lower Than Expected	Integrated engine speed deviation > 2000 RPM OR engine speed deviation > 80 RPM
P0507	Idle Air Control System - RPM Higher Than Expected	Idle speed Deviation < -80 RPM
P052A	Cold Start Camshaft Position Timing Over-Advanced	Difference between target and actual position > 6° CRK
P053F	Cold Start Fuel Pressure Performance	• Difference between target pressure vs actual pressure: > 1.50 MPa or • < -1.50 MPa

Control Module and Output Signals

DTC	Error Message	Malfunction Criteria and Threshold Value
P0606	ECM/PCM Processor	ECM internal check failure or BARO failure (located in the ECM)
P062B	Internal Control Module Fuel Injector Control Performance	Internal logic failure
P0638	Throttle Actuator Control Range/Performance	<ul style="list-style-type: none"> • Time to close to reference point > 0.6 Sec. and • Reference point 2.88% • TPS 1 signal voltage < 0.40; > 0.60 V • TPS 2 signal voltage < 4.20; > 4.60 V • TPS 1 and TPS 2 4.82 - 5.18 V
P0641	Sensor Reference Voltage A Circuit Open	Signal voltage deviation > ± 0.3 V
P0651	Sensor Reference Voltage B Circuit Open	Signal voltage deviation > ± 0.3 V
P0657	Actuator Supply Voltage Circuit Open	Signal voltage > 4.4 - 5.6 V
P0658	Actuator Supply Voltage Circuit Low	Signal voltage < 2.15 - 3.25 V
P0659	Actuator Supply Voltage Circuit High	Signal current > 1.1 A
P0697	Sensor Reference Voltage Circuit Open	Signal voltage deviation > ± 0.3 V
U0001	High Speed CAN Communication Bus	CAN message, no feedback
U0002	High Speed CAN Communication Bus Performance	Global time out failure
U0101	Lost Communication with TCM	Time Out failure. No message received by ECM
U0121	Lost Communication With Anti-Lock Brake System (ABS) Control Module	CAN communication with ABS Time Out - no message
U0146	Lost Communication With Gateway A	Received CAN message no message

DTC	Error Message	Malfunction Criteria and Threshold Value
U0155	Lost Communication With Instrument Panel Cluster (IPC) Control Module	No CAN messages received
U0302	Software Incompatibility with Transmission Control Module	AT vehicle ECM coded as MT vehicle
U0402	Invalid Data Received From Gear Shift Control Module A	Transmission Data implausible message
U0415	CAN Communication With ABS Error	<ul style="list-style-type: none"> • Speed sensor initialization failed • Speed sensor low voltage error failed • Implausible message received
U0422	Invalid Data Received From Body Control Module (IPC)	Ambient temperature value initialization failure
U0423	Invalid Data Received From Instrument Panel Cluster Control Module	Implausible CAN message received OR ambient temperature value = 00
U0447	Lost Communication With Gateway	CAN message implausible
U102E	Fan identification sensor Implausible signal	LIN message incorrect
U102F	Fan identification sensor No Communication	LIN communication time out
U1030	Local data bus Electrical malfunction	LIN communication not active

Fuel and Air Ratios Control Module

DTC	Error Message	Malfunction Criteria and Threshold Value
P117A	Bank 1 Sensor 2 Control Limit Reached	1 portion of 3rd lambda control loop > 0.030 [-]
P12A1	Fuel Rail Pressure Sensor Inappropriately Low	<ul style="list-style-type: none"> • Pressure control activity < -0.05 MPa • Fuel trim activity < 0.80 • Difference between target pressure vs. actual pressure -16.38 to 16.38 MPa

DTC	Error Message	Malfunction Criteria and Threshold Value
P12A2	Fuel Rail Pressure Sensor Inappropriately High	<ul style="list-style-type: none"> • Pressure control activity > -0.05 mPa • Fuel trim activity > 1.65 • Difference between target pressure vs. actual pressure -16.38 to 16.38 mPa
P12A4	Fuel Rail Pump Control Valve Stuck Closed	<ul style="list-style-type: none"> • Fuel trim activity .90 to 1.15 • Pressure control activity < -6.0 mPa • System Deviation < 16.38 MPa
P13EA	Cold Start Ignition Timing Performance Off Idle	Difference between commanded spark timing vs. actual value > 40%
P150A	Engine Off Timer Performance	Difference between engine off time and ECM after run time < -12 s or > 12 s.
P2101	Throttle Actuator A Control Motor Circuit Range/ Performance	<ul style="list-style-type: none"> • Duty cycle > 80% and • Deviation throttle valve angles vs. calculated value > 4.00 - 50.0% • ECM power stage, no failure
P2106	Throttle Actuator Control System Forced Limited Power	Internal check failed
P2122	APP Sensor 1/APP Sensor 2 Circuit D Low Input	Signal voltage < 0.61 V
P2123	APP Sensor 1/APP Sensor 2 Circuit D High Input	Signal voltage > 4.79 V
P2127	APP Sensor 1/APP Sensor 2 Circuit E Low Input	Signal voltage < 0.27 V
P2128	APP Sensor 1/APP Sensor 2 Circuit E High Input	Signal voltage > 2.43 V
P2138	APP Sensor 1/APP Sensor 2 Circuit D/E Voltage Correlation	Signal voltage: Difference between signal APP1 and APP2 > 0.17 - 0.70 V
P2146	Fuel Injector Group A Supply Voltage Circuit Open	<ul style="list-style-type: none"> • Signal current < 2.60 A or • Signal current > 14.90 A
P2149	Fuel Injector Group B Supply Voltage Circuit Open	<ul style="list-style-type: none"> • Signal current < 2.60 A or • Signal current > 14.90 A

DTC	Error Message	Malfunction Criteria and Threshold Value
P2177	System too lean @ part load	• Adaptive value > 28%
P2178	System Too Rich Off Idle	• Adaptive value < -21%
P2181	Cooling System Performance	Cooling system temperature too low after a sufficient air mass flow integral < 74 - 84° C
P2184	Engine Coolant Temperature Sensor 2 Circuit Low	Engine Coolant Temperature outlet > 141° C
P2185	Engine Coolant Temperature Sensor 2 Circuit High	Engine Coolant Temperature outlet < - 43° C
P2187	System Too Lean At Idle	• Adaptive value > 5.02%
P2188	System Too Rich At Idle	• Adaptive value < -5.02%
P2195	HO2S Sensor Signal Out of Range Lean Bank 1 Sensor 1	Delta lambda of 2nd lambda control loop > 0.080
P2196	HO2S Sensor Signal Out of Range Rich Bank 1 Sensor 1	Delta lambda of 2nd lambda control loop < -0.080
P2231	HO2S Sensor Bank 1 Sensor 1 Signal Circuit Shorted to Heater Circuit	Delta O2S signal front > 190 uA
P2237	HO2S Sensor Positive Current Control Circuit Open Bank 1 Sensor 1	• O2S signal front 1.49 - 1.51 V • Delta lambda controller > 0.10
P2243	HO2S Sensor Reference Voltage Circuit Open Bank 1 Sensor 1	• O2S signal front > 3.25 V and Internal resistance > 1000 Ohm • O2S signal front < 0.30 V and Internal resistance > 1000 Ohm
P2251	HO2S Sensor Negative Current Control Circuit Open Bank 1 Sensor 1	• O2S signal front <1.47 to 1.53 V and internal resistance > 1000 Ohms
P2257	Air Pump Relay Short to Ground (PZEV)	Signal voltage < 3.00 V
P2270	HO2S Sensor Signal Stuck Lean Bank 1 Sensor 2	• O2S signal rear < -2.00 mV • Enrichment after stuck lean 27.9%
P2271	HO2S Sensor Signal Stuck Rich Bank 1 Sensor 2	• Sensor voltage ≥ 0.15 V • After oxygen mass flow > 3000 mg • Number of checks ≥ 1

DTC	Error Message	Malfunction Criteria and Threshold Value
P2274	HO2S Sensor Signal Stuck Lean Bank 1 Sensor 3	<ul style="list-style-type: none"> • O2S rear signal not oscillating at reference < 0.62 to 0.65 V • Enrichment after stuck lean 27.9%
P2275	HO2S Sensor Signal Stuck Rich Bank 1 Sensor 3	<ul style="list-style-type: none"> • O2S sensor voltage ≥ 0.15 V • After oxygen mass flow (fuel cutoff) > 4500 mg • Number of checks ≥ 1
P2279	Intake Air System Leak	Threshold to detect a defective system > 1.33 - 1.60
P2293	Fuel Pressure Regulator 2 Performance	<ul style="list-style-type: none"> • Difference between target pressure vs actual pressure: > 1.50 MPa or • < -1.50 MPa
P2294	Fuel Pressure Regulator 2 Control Circuit	<ul style="list-style-type: none"> • Signal voltage 1.40 - 3.20 V or • Signal pattern incorrect
P2295	Fuel Pressure Regulator 2 Control Circuit Low	Signal voltage < 1.40 - 3.20 V
P2296	Fuel Pressure Regulator 2 Control Circuit High	Signal voltage > 3.20 V

Ignition System

DTC	Error Message	Malfunction Criteria and Threshold Value
P2300	Ignition Coil A Primary Control Circuit Low	Signal current > 24.0 mA
P2301	Ignition Coil A Primary Control Circuit High	Signal current > 5.1 - 7.0 mA
P2303	Ignition Coil B Primary Control Circuit Low	Signal current > 24.0 mA
P2304	Ignition Coil B Primary Control Circuit High	Signal current > 5.1 - 7.0 mA
P2306	Ignition Coil C Primary Control Circuit Low	Signal current > 24.0 mA
P2307	Ignition Coil C Primary Control Circuit High	Signal voltage > 5.1 - 7.0 mA
P2309	Ignition Coil D Primary Control Circuit Low	Signal current > 24.0 mA

DTC	Error Message	Malfunction Criteria and Threshold Value
P2310	Ignition Coil D Primary Control Circuit High	Signal voltage > 5.1 - 7.0 mA

Additional Emissions Regulations

DTC	Error Message	Malfunction Criteria and Threshold Value
P240A	Evaporative Emission System Leak Detection Pump Heater Control Circuit/Open	Signal voltage > 4.70 - 5.40 V
P240B	Evaporative Emission System Leak Detection Pump Heater Control Circuit Low	Signal voltage < 2.74 - 3.26 V
P240C	Evaporative Emission System Leak Detection Pump Heater Control Circuit High	Signal current > 2.2 - 4.0 A
P2400	Evaporative Emission System Leak Detection Pump Control Circuit Open	Signal voltage > 4.4 - 5.6 V
P2401	Evaporative Emission System Leak Detection Pump Control Circuit Short to Ground	Signal voltage < 2.15 to 3.25 V
P2402	Evaporative Emission System Leak Detection Pump Control Circuit Short to Battery Voltage	Signal current > 3.0 A
P2403	Evaporative Emission System Leak Detection Pump Sense Circuit Open	Low signal voltage > 0.5 s
P2404	Evaporative Emission System Leak Detection Pump Sense Circuit Range/Performance	<ul style="list-style-type: none"> • High signal voltage > 12 Sec. • Number of checks = 30 • Cumulative time of high signal voltage during pumping > 10 Sec.

DTC	Error Message	Malfunction Criteria and Threshold Value
P2407	Evaporative Emission System Leak Detection Pump Sense Circuit Intermittent/Erratic	<ul style="list-style-type: none"> • Fluctuation of EVAP pump current during reference measurement engine off > 2mA • Or drop of EVAP pump current during pump phase of 3 sec > 6mA • Fluctuation of EVAP pump current during reference measurement engine on > 2mA • Or drop of EVAP pump current during pump phase of 3 sec > 6mA
P2414	HO2S Sensor Exhaust Sample Error Bank 1, Sensor 1	Threshold 1: <ul style="list-style-type: none"> • Signal voltage 3.10 to 4.81 V Threshold 2: <ul style="list-style-type: none"> • O2S signal 2.5 - 3.2 V
P2450	Evaporative Emission System Switching Valve Performance/ Stuck Open	<ul style="list-style-type: none"> • Engine off EVAP pump current difference between reference measurement to idle < 3mA • Engine on EVAP pump current difference between reference measurement to idle > 3mA
P2568	Direct Ozone Reduction Catalyst Temperature Sensor Circuit Range/Performance	<ul style="list-style-type: none"> • ID check failure • Temperature sensor functional check failure
P2569	Direct Ozone Reduction Catalyst Temperature Sensor Circuit Low	Electrical error via LIN failure (grounded)
P2570	Direct Ozone Reduction Catalyst Temperature Sensor Circuit High	Electrical error via LIN failure (short to battery, open circuit)
P2626	HO2S Sensor Pumping Current Trim Circuit/Open Bank 1 Sensor 1	O2S voltage signal front > 4.81 V

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