No.: 14 OEM-02A
21FEB14
Revised 14MAR14

TO: Non-Truck OEMs

FROM: Application Engineering

SUBJECT: **MY2016 Changes to DD Series Engines, Electronics and Aftertreatment Systems**

SUMMARY
As part of the on going regulations of the Clean Air Act, engines produced for Model Year 2016 will be subject to the next level of certification. In order to meet the GHG17 regulations, there are a number of changes to the DD Series engines, electronics and aftertreatment devices. These changes go into effect on January 1, 2016. In addition to regulatory changes, there are a number of changes being implemented to improve fuel economy, warranty, reliability and serviceability.

DETAILS OF ENGINE CHANGES

New Model Numbers

New engine model numbers have been created for all of the MY2016 engine configurations (also known as GHG17). Customer part numbers for engine / ATS systems being ordered currently will not be valid with the introduction of the MY2016 engines. Please contact your Application Engineer to establish new engine configurations and part numbers for MY2016 orders. The new engine models for MY2016 are:

- *Truck – D471928*
- EvoBus - D471938
- Fire Truck - D471940
- Coach / RV - D471941
- MTU Applications - D471942

Power and Torque Ratings & Performance Curve Data Sheets

There is a significant change to the power and torque curves for MY2016. The primary change involves the engine speed at which peak power and peak torque are generated. For MY2016 the peak power speed is lowered to 1625 rpm versus the previous peak power speed of 1800 rpm. The peak torque speed is being lowered from 1240 rpm to 1075 rpm. The main reason for these changes is to promote better fuel economy. Your DETROIT Application Engineer can provide more details on these changes.

Turbocharger
For the MY2016 launch DD13 engines will no longer have a wastegate as part of the turbocharger. OEMs will no longer be required to provide a dedicated air line to the VPOD for wastegate control as the VPOD will no longer be included.

Air Intake Throttle Eliminated
The air intake throttle is no longer a part of the DD13 engine design. The connection point from the CAC piping to the intake has been designed to maintain the same connection geometry and location as the GHG14 engines.

Flywheel Ring Gear – Pitch Change
The pitch of the flywheel ring gear is changing from 3.0 to 3.175. The number of teeth on the ring gear will be reduced from 160 teeth to 150 teeth. As a result, starters will need to be selected with 10 teeth on the pinion (compared to current starters with 11 teeth) and a corresponding pitch.

Fuel Filter Module – Gen 2
The fuel system is being updated to the Gen 2 ACRS fuel system. Changes to the fuel system will result in a new fuel filter part number. The connection points for the fuel inlet and fuel return lines are unchanged from the current locations.

DETAILS OF ELECTRONICS CHANGES

Type II Diagnostic Connector & 500k Baud Rate
The dashboard mounted diagnostic connector is changing to the *Heavy Duty* OBD Type II configuration beginning with MY2016. (*The picture below shows the Heavy Duty style connector. The original release showed the automotive style connector). The new 9-pin connector is backwards compatible with earlier gray, 9-pin diagnostic connectors. Tools developed to work with the new green vehicle connector will work with the previous gray connector.* The baud rate for all engine communications is also changing from 250k to 500k.

Figure 2: Diagnostic Connector (*Heavy Duty* OBD Type II)

Ambient Air Temp Sensor
An ambient air temp (AAT) sensor is required for MY2016 compliance to OBD. This sensor will not be provided with the engine and must be supplied and installed by the OEM. The AAT will need to be wired back to the CPC via pins 3/15 (signal) and 3/2 (return). There are two existing DDC part numbers for Ambient Air Temp sensors: 23515250 and 23518328. Both of these AAT sensors are available through the Canton Parts Distribution Center. The preferred mounting location would be at the underside of the driver's side mirror. Alternative mounting locations could be approved upon review. Contact your DETROIT Application Engineer for additional details.

Vehicle Identification Number
The OEMs production process must include assigning a 17-digit Vehicle Identification Number (VIN) as defined by FMVSS 115, Part 565 and required by the National Highway Traffic Safety Administration. The 17-digit VIN must include a check-sum digit in position 9. It is also a requirement of OBD that the VIN be programmed into the engine electronic control modules.

DETAILS OF AFTERTREATMENT CHANGES

Soot Sensor
The implementation of a Soot Sensor is being added to all 1-Box ATS configurations for MY2016. Vehicle installations utilizing a 2-box ATS are required to have the soot sensor in place for MY2015.

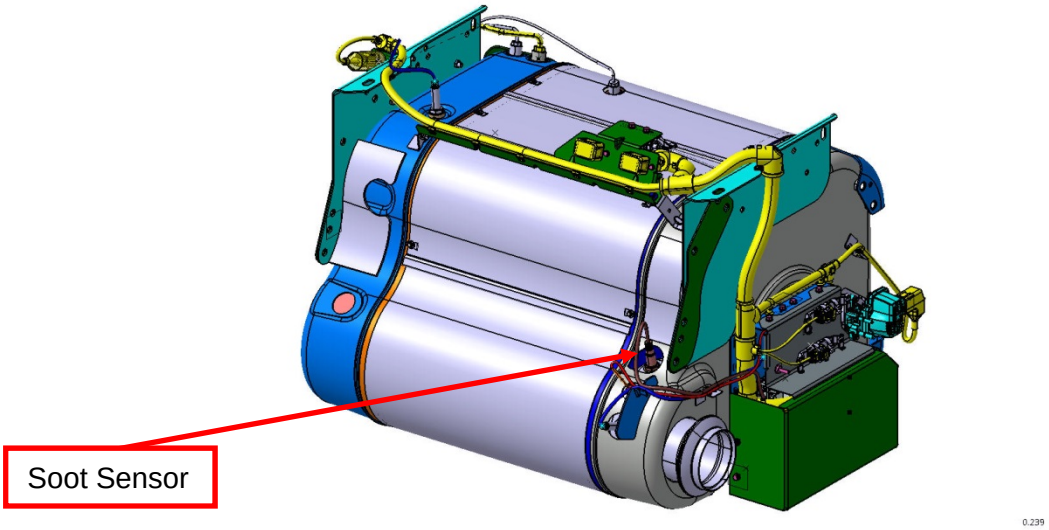

Figure 3: Soot Sensor shown on 1-Box ATS

ATS Mounted ACM – 1-Box ATS
The ACM will be mounted directly on the 1-Box ATS beginning in MY2016. As a result, the wiring harness has also been simplified. OEMs will now only be required to connect the engine harness to two 18-pin connectors, shown below on top of the ATS, in place of the current 47-way connector. Contact your DETROIT Application Engineer for the pin-outs of the two 18-way connectors.

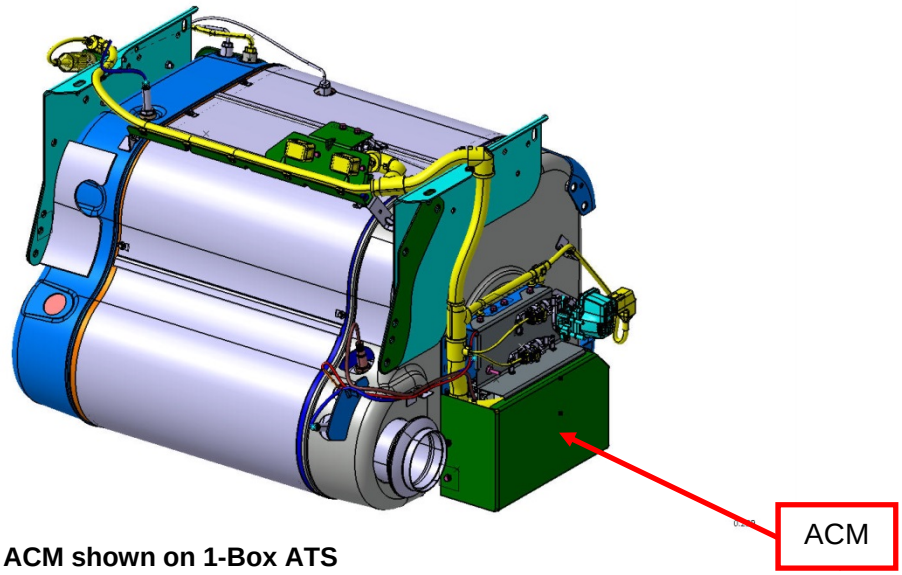

Figure 4: ATS Mounted ACM shown on 1-Box ATS

DEF Quality Sensor

A DEF Quality Sensor (DQS) is required for MY2016. The preferred method would be to utilize the SSI header with the integrated DQS as part of the header assembly. The wiring harness for the header assembly will also need to be modified to communicate this sensor back to the ACM.

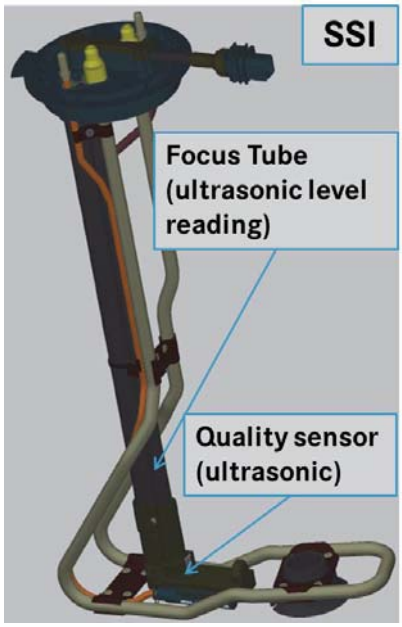

Figure 5: SSI DEF Header with Integrated DQS

Complete DEF Tank Assemblies

A possible alternative to OEMs purchasing an SSI Header assembly with the DQS would be to purchase a complete DEF Tank and Header Assembly from the Redford Consolidation Center (RCC). There are 3 sizes of DEF tanks that have been developed for on-highway use – 6

gallon, 13 gallon and 23 gallon. The details of sourcing these tank assemblies has not yet been finalized. Contact your DETROIT Application Engineer for additional details.

New ATS P/Ns
The *production* part numbers for aftertreatment devices for MY2016 installations are also new.

- 1-Box, Front Inlet / Axial Outlet - A 002 490 18 92
- 1-Box, Top Inlet / Inboard Outlet - A 002 490 15 92
- 2-Box, 2HH (Horizontal DPF / Horizontal SCR) - A 002 490 11 92 & A 680 490 95 36
- 2-Box, 2V2 (Vertical DPF / Vertical SCR) – A 002 490 10 92

Please contact Jaime Frazier from the Redford Consolidation Center to coordinate the transition from GHG14 to GHG17 aftertreatment devices for production. Contact you DETROIT Application Engineer regarding part numbers and timing of ATS units for pilot installations prior to the GHG17 start of production. If other aftertreatment configurations are desired, contact your DETROIT Application Engineer for alternate available configurations.

PRODUCTION TIMING
The production start for MY2016 engines is tentatively scheduled for December, 2015. All engines built on or after this date will be configured and certified as MY2016. No MY2015 certified engines will be built once this change-over has been implemented. Final production of MY2015 engines will take place in November, 2015. The last date that we would accept purchase orders for MY2015 engines is approximately October 10, 2015. Corresponding purchase orders for aftertreatment devices would need to be submitted no later than September 28, 2015. OEM Purchasing should contact Detroit Diesel Sales to begin discussions on the transition from MY2015 to MY2016 and the coordination of the change-over to new part numbers for engines and ATS.

VALIDATION TESTING, SCHEDULE AND DOCUMENTATION REQUIREMENTS
All installations of MY2016 DD Series engines will require a complete Vehicle Sign-Off (VSO). In addition to the standard VSO requirements, an OBD Mileage Accumulation test will also be required. The mileage requirements will vary by application and duty cycle. Contact your DETROIT Application Engineer to define the specific test plan for your application. OEMs will need to have the required Vehicle Sign-Off documentation completed and approved no later than 30 days prior to the shipment of MY2016 certified engines and ATS. Contact your DETROIT Application Engineer to review the VSO milestones and to establish an agreed upon project schedule for each chassis or installation.

ACCESS TO DETAILED INFORMATION
For detailed information regarding the installation of Detroit Diesel engines, please refer to the GHG17 Engineering Installation Bulletins (EIBs), DDEC Electronic Controls Application & Installation Manual (publication number TBD), and the GHG17 Engine Performance Curves. These documents, when published in mid-2014, will be located in the secure access area of DDCSN, accessed through AccessFreightliner.com. For more detailed questions, or additional information, please contact your DETROIT Application Engineer.

Revision Log			
Author	Rev. #	Rev. Date	Description of Revisions
B. Chaput	14 OEM-02	21FEB14	Initial release.
	14 OEM-02A	14MAR14	Added Truck Model number (page 1); revised diagnostic connector to Heavy Duty OBD II type (page 2); revised graphic illustrating Soot Sensor location (page 3); revised production ATS part numbers and text (page 5).