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Service Information Bulletin

SUBJECT	DATE
SPN 3364 (ACM)(EPA10)	October 2015

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084 DDC-SVC-MAN-S084	DD Platform	SPN 3364/ FMI 1, 2 & 17 - EPA10	Updated diagnostic procedures

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2 SPN 3364/FMI 1 - EPA10

Diesel Exhaust Fluid Quality Final Warning

Table 1.

SPN 3364/FMI 1	
Description	Improper Diesel Exhaust Fluid (DEF) Quality Final Warning
Monitored Parameter	DEF Quality
Typical Enabling Conditions	DEF Refill event detected
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 hours
Dash Lamps	MIL, CEL, DEF Lamp Flash
Engine Reaction	None
Verification	Parked Regeneration

1. Connect DiagnosticLink ®.
2. Using refractometer from DEF Test Kit W060589001900, measure DEF percentage. Is DEF percentage between 28 and 36%?
   a. Yes; Go to step 3.
   b. No; refer to appropriate manual for DEF tank cleaning/flushing procedure, then Go to step 12.
3. Turn ignition ON (key ON, engine OFF).
4. Compare DEF pressure to ambient air pressure (baro) and DEF air pressure. Is DEF pressure within 29.6 kPa (4.3 psi) of ambient air pressure (baro) and DEF air pressure?
   a. Yes; Go to step 5.
   b. No; replace the DEF pressure sensor. Refer to section "Removal of the Diesel Exhasut then Go to step 12.
5. Visually check all DEF supply and air lines for physical damage (kinks, cracks, leaks, disconnects). Is any damage found?
   a. Yes; repair as necessary; Go to step 12.
   b. No; Go to step 6.
6. Perform a DEF quantity test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 108 and 132 mL (3.65 and 4.46 oz)?
   a. Yes; Go to step 12.
   b. No; Go to step 7.
7. Remove DEF air pressure and temperature sensors.
8. Remove the DEF inlet delivery line and DEF air supply line from metering unit.
9. Remove DEF nozzle from the Aftertreatment Device (ATD) box.
10. Flush warm water into DEF air pressure and temperature sensor cavities in the DEF metering unit until water flows from the DEF inlet and DEF nozzle. Reinstall sensors and perform the DEF quantity test service routine. Is the dispensed DEF fluid level between 102 and 138 mL (3.45 to 4.66 oz)?
    a. Yes; Go to step 12.
    b. No; repeat flushing procedure. Go to step 11.
11. Perform a DEF quantity test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 102 and 138mL (3.45 to 4.66 oz)?
    a. Yes; Go to step 12.
    b. No; replace DEF Metering Unit. Refer to section "Removal of the Diesel Exhaust Fluid Metering Unit". Go to step 12.
12. Connect DiagnosticLink ®. Monitor (chart) the following parameters:
    - ASL102 Engine Speed
    - AS018 Selective Catalyst Reduction (SCR) Inlet Temperature

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- AS019 SCR Outlet Temperature
- AS035 SCR Inlet NOx Sensor
- AS036 SCR Outlet NOx Sensor
- AS101 NOx Conversion Efficiency

WARNING: ENGINE EXHAUST

To avoid injury from inhaling engine exhaust, always operate the engine in a well-ventilated area. Engine exhaust is toxic.

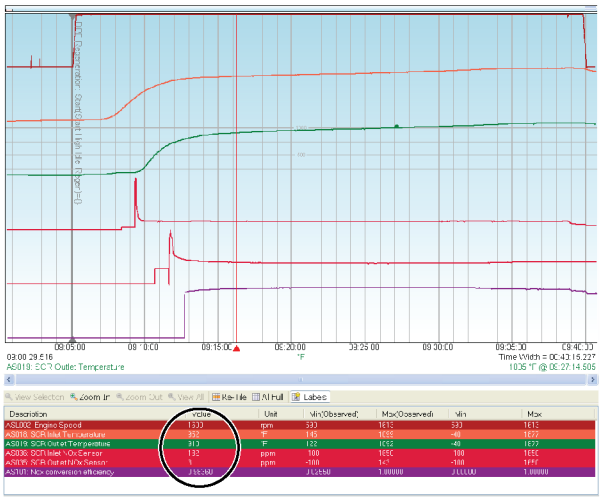
WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

13. Start engine and perform a parked regeneration. Retain the log file. Does the NOx conversion efficiency rise and stay above 70% (0.70) during the regeneration?



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   a. Yes; clear faults and Go to step 17.
   b. No; Go to step 14.

14. Disconnect the DEF doser electrical connector.

NOTE: Disregard SPN 3361/FMI 5 which will set with valve unplugged.

15. Turn the ignition ON (key ON, engine OFF).
16. Perform a low temperature Aftertreatment Device (ATD) check using DiagnosticLink to check for a drifted temperature sensor. Refer to section "EPA10 Perform Performance Check - Low Temperature ATD". Are the inlet NOx sensor and outlet NOx sensor readings within 50 Parts Per Million (PPM) of each other?
   a. Yes, Go to step 17.
   b. No, replace the SCR inlet NOx sensor. Go to step 18.

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WARNING: ENGINE EXHAUST

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WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

17. Start the engine and perform a complete parked regeneration. The regen will burn off any DEF deposits in the aftertreatment. Verify repairs.
18. Perform a low temperature Aftertreatment Device (ATD) check using DiagnosticLink to check for a drifted temperature sensor. Refer to section "EPA10 Perform Performance Check - Low Temperature ATD". Are the inlet NOx sensor and outlet NOx sensor readings within 50 Parts Per Million (PPM) of each other?
    a. Yes, clear faults and release vehicle.
    b. No, replace the SCR outlet NOx sensor. Verify repairs.

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3 SPN 3364/FMI 2 - EPA10

Improper Diesel Exhaust Fluid Quality

Table 2.

SPN 3364/FMI 2	
Description	Improper Diesel Exhaust Fluid (DEF) Quality
Monitored Parameter	DEF Quality
Typical Enabling Conditions	DEF Refill event detected
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 hours
Dash Lamps	MIL, CEL
Engine Reaction	25% Derate
Verification	Parked Regeneration

Check as follows:

1. Connect DiagnosticLink ®.
2. Is the Aftertreatment Control Module (ACM) software level 8.6.104 with fuel map ZGS 002 or higher?
   a. Yes; Go to step 3.
   b. No; update device software, then Go to step 3.
3. Using the refractometer from DEF test kit W060589001900, measure DEF percentage. Is DEF percentage between 28 and 36%?
   a. Yes; Go to step 4.
   b. No; refer to appropriate manual for DEF tank cleaning/flushing procedure, then Go to step 12.
4. Turn ignition ON (key ON, engine OFF).
5. Compare DEF pressure to ambient air pressure (baro) and DEF air pressure. Is DEF pressure within 28 kPa (4.3 psi) of ambient air pressure (baro) and DEF air pressure?
   a. Yes; Go to step 6.
   b. No; replace the DEF pressure sensor. Refer to section "Removal of the Diesel Exhaust Fluid Pressure Sensor". Go to step 12.
6. Visually check all DEF supply and air lines for physical damage (kinks, cracks, leaks, disconnects). Is any damage found?
   a. Yes; repair as necessary; Go to step 12.
   b. No; Go to step 7.
7. Remove DEF air pressure and temperature sensors.
8. Remove the DEF inlet delivery line and DEF air supply line from metering unit.
9. Remove DEF nozzle from the Aftertreatment Device (ATD) box.
10. Flush warm water into DEF air pressure and temperature sensor cavities in the DEF metering until water flows from the DEF inlet and DEF nozzle. Reinstall sensors and perform the DEF quantity test service routine. Is the dispensed DEF fluid level between 102 and 138 mL (3.45 to 4.66 oz)?
    a. Yes; Go to step 12.
    b. No; repeat flushing procedure. Go to step 11.
11. Perform a DEF quantity test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 102 and 138mL (3.45 to 4.66 oz)?
    a. Yes; Go to step 12.
    b. No; replace DEF Metering Unit. Refer to section "Removal of the Diesel Exhaust Fluid Metering Unit". Go to step 12.
12. Connect DiagnosticLink®. Monitor (chart) the following parameters:
    • ASL102 Engine Speed

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- AS018 Selective Catalyst Reduction (SCR) Inlet Temperature
- AS019 SCR Outlet Temperature
- AS035 SCR Inlet NOx Sensor
- AS036 SCR Outlet NOx Sensor
- AS101 NOx Conversion Efficiency

WARNING: ENGINE EXHAUST

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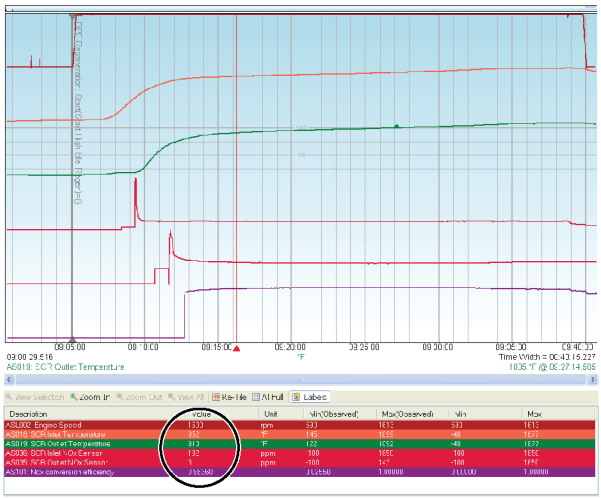
WARNING: PERSONAL INJURY

To avoid injury before starting and running the engine, ensure the vehicle is parked on a level surface, parking brake is set, and the wheels are blocked.

WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

13. Start engine and perform a parked regeneration. Retain the log file. Does the NOx conversion efficiency rise and stay above 70% (0.70) during the regeneration?



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   a. Yes; clear faults and Go to step 17.
   b. No; Go to step 14.

14. Disconnect the DEF doser electrical connector.

NOTE: Disregard SPN 3361/FMI 5 which will set with valve unplugged.

15. Turn the ignition ON (key ON, engine OFF).
16. Perform a low temperature Aftertreatment Device (ATD) check using DiagnosticLink to check for a drifted temperature sensor. Refer to section "EPA10 Perform Performance Check - Low Temperature ATD". Are the inlet NOx sensor and outlet NOx sensor readings within 50 Parts Per Million (PPM) of each other?
   a. Yes, Go to step 17.

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b. No, replace the SCR inlet NOx sensor. Go to step 18.



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WARNING: HOT EXHAUST

During parked regeneration the exhaust gases will be extremely HOT and could cause a fire if directed at combustible materials. The vehicle must be parked outside.

17. Start the engine and perform a complete parked regeneration. The regen will burn off any DEF deposits in the aftertreatment. Verify repairs.
18. Perform a low temperature Aftertreatment Device (ATD) check using DiagnosticLink to check for a drifted temperature sensor. Refer to section "EPA10 Perform Performance Check - Low Temperature ATD". Are the inlet NOx sensor and outlet NOx sensor readings within 50 Parts Per Million (PPM) of each other?
    a. Yes, clear faults and release vehicle.
    b. No, replace the SCR outlet NOx sensor. Verify repairs.

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4 SPN 3364/FMI 17 - EPA10

Improper Diesel Exhaust Fluid Quality Warning

Table 3.

SPN 3364/FMI 17	
Description	Improper Diesel Exhaust Fluid (DEF) Quality
Monitored Parameter	DEF Quality
Typical Enabling Conditions	DEF Refill event detected
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 hours
Dash Lamps	MIL, CEL
Engine Reaction	25% Derate
Verification	Parked Regeneration

Check as follows:

1. Connect DiagnosticLink ®.
2. Is the Aftertreatment Control Module (ACM) software level 8.6.104 with fuel map ZGS 002 or higher?
   a. Yes; Go to step 3.
   b. No; update device software, then Go to step 3.
3. Using refractometer from DEF test kit W060589001900, measure DEF percentage. Is DEF percentage between 28 and 36%?
   a. Yes; Go to step 4.
   b. No; refer to appropriate manual for DEF tank cleaning/flushing procedure, then Go to step 12.
4. Turn ignition ON (key ON, engine OFF).
5. Compare DEF pressure to ambient air pressure (baro) and DEF air pressure. Is DEF pressure within 29.6 kPa (4.3 psi) of ambient air pressure (baro) and DEF air pressure?
   a. Yes; Go to step 6.
   b. No; replace the DEF Pressure Sensor. Refer to section "Removal of the Diesel Exhaust Fluid Pressure Sensor". Go to step 12.
6. Visually check all DEF supply and air lines for physical damage (kinks, cracks, leaks, disconnects). Is any damage found?
   a. Yes; repair as necessary; Go to step 12.
   b. No; Go to step 7.
7. Remove DEF air pressure and temperature sensors.
8. Remove the DEF inlet delivery line and DEF air supply line from metering unit.
9. Remove DEF nozzle from the Aftertreatment Device (ATD) box.
10. Flush warm water into DEF air pressure and temperature sensor cavities in the DEF metering unit until water flows from the DEF inlet and DEF nozzle. Reinstall sensors and perform the DEF quantity test service routine. Is the dispensed DEF fluid level between 102 and 138 mL (3.45 to 4.66 oz)?
    a. Yes; Go to step 12.
    b. No; repeat flushing procedure. Go to step 11.
11. Perform a DEF quantity test service routine and record the amount of DEF fluid level dispensed. Is the dispensed DEF fluid level between 102 and 138mL (3.45 to 4.66 oz)?
    a. Yes: Go to step 12.
    b. No; replace DEF Metering Unit. Refer to section "Removal of the Diesel Exhaust Fluid Metering Unit". Go to step 12.
12. Connect DiagnosticLink ®. Monitor (chart) the following parameters:
    • ASL102 Engine Speed

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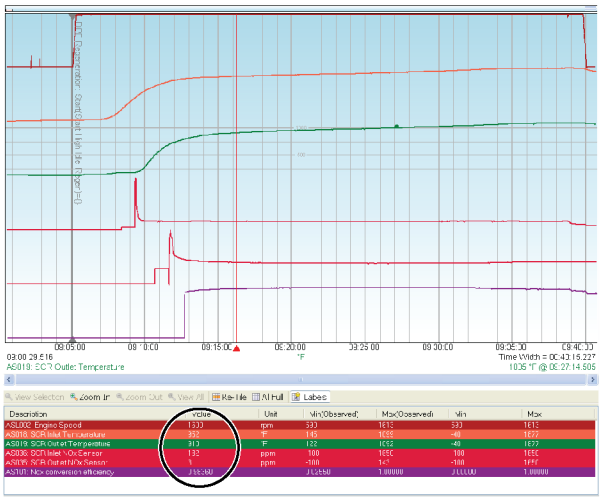
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13. Start engine and perform a parked regeneration. Retain the log file. Does the NOx conversion efficiency rise and stay above 70% (0.70) during the regeneration?



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   a. Yes; clear faults and Go to step 17.
   b. No; Go to step 14.

14. Disconnect the DEF doser electrical connector.

NOTE: Disregard SPN 3361/FMI 5 that sets with DEF metering unit dosing valve unplugged.

15. Turn the ignition ON (key ON, engine OFF).
16. Perform a low temperature Aftertreatment Device (ATD) check using DiagnosticLink to check for a drifted temperature sensor. Refer to section "EPA10 Perform Performance Check - Low Temperature ATD". Are the inlet NOx sensor and outlet NOx sensor readings within 50 Parts Per Million (PPM) of each other?
   a. Yes, Go to step 17.

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b. No, replace the SCR inlet NOx sensor. Go to step 18.



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    a. Yes, clear faults and release vehicle.
    b. No, replace the SCR outlet NOx sensor. Verify repairs.

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