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Service Information Bulletin

SUBJECT	DATE
SPN 4374/FMI 0, 1, 3, 4 – GHG14	January 2013

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	GHG14 DD Platform	SPN 4374/FMI 0 – GHG14	Updated diagnostics.
		SPN 4374/FMI 1 – GHG14	
		SPN 4374/FMI 3 – GHG14	
		SPN 4374/FMI 4 – GHG14	



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2 SPN 4374/FMI 0 – GHG14

This diagnostic is typically Under Pressurized Diesel Exhaust Fluid (DEF) System.

Table 1.

SPN 4374/FMI 0	
Description	This diagnostic is typically an under pressurized DEF system
Monitored Parameter	DEF pump speed vs. DEF Pressure
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	Continuous until resolved
Dash Lamps	MIL, CEL
Engine Reaction	Derate 25%
Verification	SCR ADS Self Check

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

NOTE: SPN 520328 FMI 7 or SPN 520327 FMI 4 may also set as a result of this fault.

1. Connect DDDL/DDRS 7.08 SP2 or newer version.
2. Turn the ignition ON (key ON, engine OFF).
3. Check for multiple codes.
 - a. If other faults are active, including SPN 4334/FMI 3, 4, or SPN 4374/FMI 3, 4, troubleshoot the other faults first.
 - b. If only SPN 4374/FMI 0 is present, Go to step 4.
4. Turn the ignition OFF (key OFF, engine OFF).
5. Inspect the DEF dosing unit, DEF pump, Aftertreatment Control Module (ACM2.1), and Chassis/ATS harness wiring and connectors for damage, wire chafing, bent, spread or corroded pins. Check 47-pin connector pins 29, 30, 31, 35, 36, 37, and 38.

Table 2.

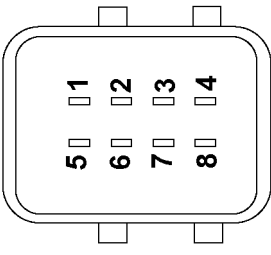
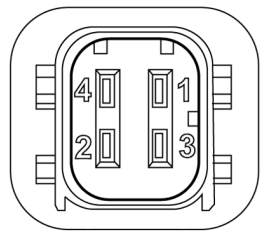
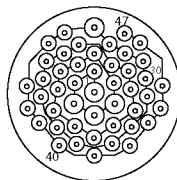
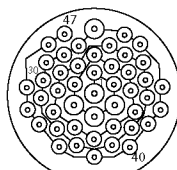
Dosing Unit			
8-Pin	Circuit	ACM2.1 - Pin	Connector
1	Dosing Unit Low Side	28	
2	Dosing Unit High Side	33	
3	Heating Low Side	22	
4	Heating Supply	3	
5	Sensor Supply 5V	84	
6	Not Used	Not Used	
7	Sensor Ground	99	
8	DEF Pressure Signal	100	

Table 3.

DEF Pump Connector			
4-Pin	Circuit	ACM2.1 - Pin	Connector
1	RPM Pump Feedback	95	
2	Pump Supply	1	
3	Pump RPM Control	20	
4	Pump GND	31	



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- a. If damage is found, repair as necessary. Go to step 12.
 - b. If no pin damage is found, Go to step 6.
6. Using DEF test strip A0005850202, check for diesel fuel or oil contamination of the DEF fluid. Do the test strips indicate contamination?
- a. Yes; refer to Original Equipment Manufacturer (OEM) appropriate manual for DEF tank cleaning/flushing procedure.
 - b. No; Go to step 7.
7. Visually check all DEF lines for physical damage (kinks, cracks, leaks, disconnects).
- a. If damage is found, repair as necessary. Go to step 12.
 - b. If no damage is found, Go to step 8.

8. Remove DEF pressure line from DEF doser unit. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Lines". Insert line into DEF-safe container. Run Selective Catalytic Reduction Airless Dosing System – SCR ADS Self-Check Routine. Check for flow from DEF pressure line.
 - a. If DEF flow is found, reinstall line and Go to step 9.
 - b. If no flow is found, Go to step 10.
9. Remove DEF return line from DEF doser unit. Connect a line from DEF doser unit return fitting into DEF-safe container. Run ADS Self-Check Routine. Check for flow from DEF doser unit.
 - a. If DEF flow is found, reinstall line and Go to step 10.
 - b. If no flow is found, replace DEF doser unit inlet screen. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Dosing Unit Inlet Screen". Go to step 12.
10. Remove DEF pressure and suction lines from DEF pump. Inspect line for restriction.
 - a. If line restriction is found, replace line. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Lines". Go to step 11.
 - b. If no restriction is found, reinstall lines. Go to step 12.
11. Inspect suction filter (screen) in DEF pump.
 - a. a. If restriction is found, replace suction filter. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Pump Module Filter Screen". Go to step 12.
 - b. If no restriction is found, replace Pressure Relief Valve (PRV). Refer to section "Removal of the Diesel Exhaust Fluid Pump Pressure Relief Valve". Go to step 12.
12. Perform SCR ADS Self-Check Routine to prime the system. Did SCR ADS Self-Check Routine complete successfully?
 - a. Yes; clear codes and release vehicle.
 - b. No; Go to step 13.
13. Remove DEF tank header and inspect DEF supply filter. Refer to section "Removal of the GHG14 13 and 23 Gallon Diesel Exhaust Fluid Tank Header Unit".
 - a. If debris is found, replace DEF tank header. Go to step 14.
 - b. If no restriction is found, Go to step 14.
14. Perform Selective Catalytic Reduction Airless Dosing System - SCR ADS Self-Check Routine. Did the SCR ADS test pass?
 - a. Yes; clear codes and release vehicle.
 - b. No; Go to step 15.
15. Replace Dosing Unit. Perform SCR ADS Self-Check Routine to prime the system. Did SCR ADS Self-Check Routine complete successfully?
 - a. Yes, verify repairs and release vehicle.
 - b. No; Contact Customer Support Center at (800) 445-1980 for further instruction.

3 SPN 4374/FMI 1 – GHG14

This diagnostic is typically Over Pressurized Diesel Exhaust Fluid (DEF) System.

Table 4.

SPN 4374/FMI 1	
Description	Over pressurized DEF system
Monitored Parameter	DEF pump speed vs. DEF Pressure
Typical Enabling Conditions	DEF pump enabled OR on-off-cycle request
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 minutes
Dash Lamps	MIL, CEL
Engine Reaction	None
Verification	SCR ADS Self-check

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

1. Connect DDDL/DDRS 7.08 SP2 or newer version.
2. Turn the ignition ON (key ON, engine OFF).
3. Check for multiple codes.
 - a. If other faults are active in addition to SPN 4334/FMI 3 or 4, or SPN 4374/FMI 3 or 4, troubleshoot the other faults first.
 - b. If only SPN 4374/FMI 1 is present, Go to step 4.
4. Turn the ignition OFF (key OFF, engine OFF).
5. Inspect the DEF dosing unit, DEF pump, and Chassis/ATS harness wiring and connectors for damage, wire chafing, bent, spread or corroded pins. Check 47-pin connector pins 29, 30, 31, 35, 36, 37, and 38.

Table 5.

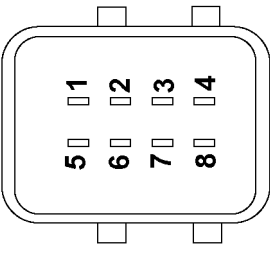
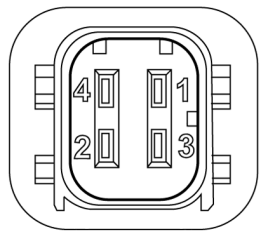
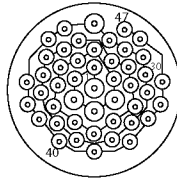
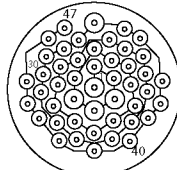
Dosing Unit			
8-Pin	Circuit	ACM2.1 - Pin	Connector
1	Dosing Unit Low Side	28	
2	Dosing Unit High Side	33	
3	Heating Low Side	22	
4	Heating Supply	3	
5	Sensor Supply 5V	84	
6	Not Used	Not Used	
7	Sensor Ground	99	
8	DEF Pressure Signal	100	

Table 6.

DEF Pump Connector			
4-Pin	Circuit	ACM2.1 - Pin	Connector
1	RPM Pump Feedback	95	
2	Pump Supply	1	
3	Pump RPM Control	20	
4	Pump GND	31	



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- a. If damage is found, repair as necessary. Go to step 7.
 - b. If no pin damage is found, Go to step 6.
6. Remove DEF return line from DEF dosing unit. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Lines". Run a line from DEF doser unit into a DEF-safe container.
 7. Clear codes.
 8. Perform Selective Catalytic Reduction Airless Dosing System (SCR ADS) Self-Check Routine. Did the SCR ADS test pass with DEF pump speed and DEF pressure values in normal range with flow from Dosing Unit return line into a DEF-safe container?
 - a. Yes; Install DEF return line on dosing Unit. Go to step 9.
 - b. No; Replace doser unit. Refer to section "Removal of the Diesel Exhaust Fluid Metering Unit". Rerun ADS Self-Check Routine to validate repairs.

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9. Remove DEF return line from DEF tank. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Lines". Run return line from doser unit into a DEF-safe container.
 10. Perform Selective Catalytic Reduction Airless Dosing System (SCR ADS) Self-Check Routine. Did the SCR ADS test pass?
 - a. No; Replace DEF return line. Install and secure system. Rerun ADS Self-Check Routine to verify repairs.
 - b. Yes; Remove and inspect DEF tank Header. Refer to OEM procedures.

4 SPN 4374/FMI 3 – GHG14

This diagnostic is typically Diesel Exhaust Fluid (DEF) Pump Speed Signal Above Measurement Range.

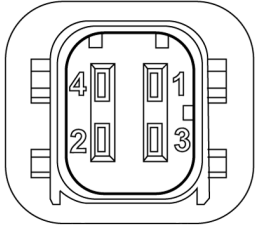
Table 7.

SPN 4374/FMI 3	
Description	DEF pump speed signal above measurement range
Monitored Parameter	DEF pump speed frequency
Typical Enabling Conditions	DEF pump enabled OR on-off-cycle request
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 minutes
Dash Lamps	MIL, CEL
Engine Reaction	Derate 10%
Verification	SCR ADS Self-check

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

1. Connect DDDL/DDRS 7.08 SP2 or newer version.
2. Turn the ignition ON (key ON, engine OFF). Are other codes present?
 - a. Yes; Repair other codes first.
 - b. No; Go to step 3.
3. Turn the ignition OFF (key oFF, engine OFF).
4. Inspect the DEF pump harness wiring and connector for damage, wire chafing, bent, spread or corroded pins.
 - a. If damage is found, repair as necessary. Go to step 7.
 - b. If no pin damage is found, Go to step 5.

Table 8.

DEF Pump Connector			
4-Pin	Circuit	ACM2.1 - Pin	Connector
1	RPM Pump Feedback	95	
2	Pump Supply	1	
3	Pump RPM Control	20	
4	Pump GND	31	

5. Perform Selective Catalytic Reduction Airless Dosing System (SCR ADS) Self-Check Routine. Did the SCR ADS test pass with DEF pump speed and DEF pressure values in normal range?
 - a. Yes; clear codes and release vehicle.
 - b. No; replace the DEF pump. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Pump Module". Go to step 6.
6. Turn ignition ON (key ON, engine OFF).
7. Verify repairs by running Selective Catalytic Reduction Airless Dosing System – SCR ADS Self-Check Routine. Does ADS Self-Check Routine pass?
 - a. Yes; clear codes and release vehicle.
 - b. No; Turn OFF ignition. Install a test ACM2.1. Go to step 8.
8. Rerun ADS Self-Check Routine to verify repairs. Does test pass with no codes?
 - a. Yes; Replace ACM2.1. Verify repairs by running SCR ADS Self-Check Routine.
 - b. No; Contact Detroit™ Customer Support Center at (800) 445-1980.

5 SPN 4374/FMI 4 - GHG14

This diagnostic is typically Diesel Exhaust Fluid (DEF) Pump Speed Signal Below Measurement Range.

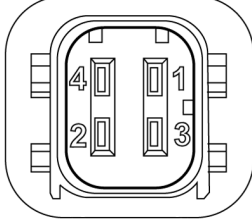
Table 9.

SPN 4374/FMI 4	
Description	DEF pump speed signal below measurement range
Monitored Parameter	DEF pump speed vs. DEF Pressure
Typical Enabling Conditions	DEF pump enabled OR on-off-cycle request
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 minutes
Dash Lamps	MIL, CEL
Engine Reaction	Derate 10%
Verification	SCR ADS Self-check

NOTE: Retain a log file if Detroit™ Customer Assistance is required.

1. Connect DDDL/DDRS 7.08 SP2 or newer version.
2. Turn the ignition ON (key ON, engine OFF). Are other codes present?
 - a. Yes; Repair other codes first.
 - b. No; Go to step 3.
3. Turn the ignition OFF (key OFF, engine OFF).
4. Inspect DEF pump harness wiring and connector for damage, wire chafing, bent, spread or corroded pins.
 - a. If damage is found, repair as necessary. Go to step 11.
 - b. If no damage is found, Go to step 5.
5. Disconnect ACM2.1 120-pin connector.
6. Check resistance between DEF pump connector pin 1 and ACM connector pin 95. Is resistance less than five ohms?

Table 10.

DEF Pump Connector			
4-Pin	Circuit	ACM2.1 - Pin	Connector
1	RPM Pump Feedback	95	
2	Pump Supply	1	
3	Pump RPM Control	20	
4	Pump GND	31	

- a. Yes; Go to step 7.
 - b. No; repair open in wire between DEF pump connector pin 1 and ACM2.1 connector pin 95. Go to step 11.
7. Check resistance between DEF pump connector pin 1 and battery ground. Is resistance greater than 10K ohms?
 - a. Yes; Go to step 8.
 - b. No; repair short in wire between DEF pump connector pin 1 and chassis ground. Go to step 11.
 8. Check resistance between DEF pump connector pins 1 and 2. Is the resistance greater than 10K ohms?
 - a. Yes; Go to step 9.
 - b. No; repair short in wire between DEF pump connector pins 1 and pin 2. Go to step 11.
 9. Check resistance between DEF pump connector pins 1 and 3. Is the resistance greater than 10K ohms?
 - a. Yes; Go to step 10.
 - b. No; repair short in wire between DEF pump connector pins 1 and pin 3. Go to step 11.
 10. Check resistance between DEF pump connector pins 1 and 4. Is the resistance greater than 10K ohms?
 - a. Yes; install a test ACM2.1. Go to step 11.
 - b. No; repair short in wire between DEF pump connector pins 1 and pin 4. Go to step 11.
 11. Reconnect ACM2.1 and DEF pump electrical connectors.
 12. Turn the ignition ON (key ON, engine OFF). Does fault return?
 - a. Yes; replace the DEF Pump. Refer to section "Removal of the GHG14 Diesel Exhaust Fluid Pump Module".
Verify repairs by running Selective Catalytic Reduction Airless Dosing System – SCR ADS Self-Check Routine.
 - b. No; turn OFF ignition. Replace ACM2.1.