# 1 10 07-14

# Service Information Bulletin

| SUBJECT | DATE |
|---|---|
| SPN 5016/FMI 3, 4 (ACM) (EPA10) | October 2014 |

**Additions, Revisions, or Updates**

| Publication Number / Title | Platform | Section Title | Change |
|---|---|---|---|
| DDC-SVC-MAN-0084 | DD Platform | SPN 5016/FMI 3,4 (ACM)(EPA10) | This is an updated section for schematic pin-outs and wiring checks. |

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# 2 SPN 5016/FMI 3 - EPA10

Coolant Valve Supply Voltage Failed High

**Table 1.**

| SPN 5016/FMI 3 | |
|---|---|
| Description | High Side Digital Output Circuit Shorted to Power |
| Monitored Parameter | High Side Digital Output |
| Typical Enabling Conditions | Always on |
| Monitor Sequence | None |
| Execution Frequency | Continuous when enabling conditions met |
| Typical Duration | 2 Seconds |
| Dash Lamps | MIL, CEL |
| Engine Reaction | None |
| Verification | Key Cycle |

**NOTE:** The supply voltage circuit is networked internal of the Aftertreatment Control Module (ACM). This circuit supplies voltage to the Coolant Valve, Purge-in-Process indicator (if equipped), and the Inlet NOx sensor. A short to power on any one of those circuits will set this fault code.


 

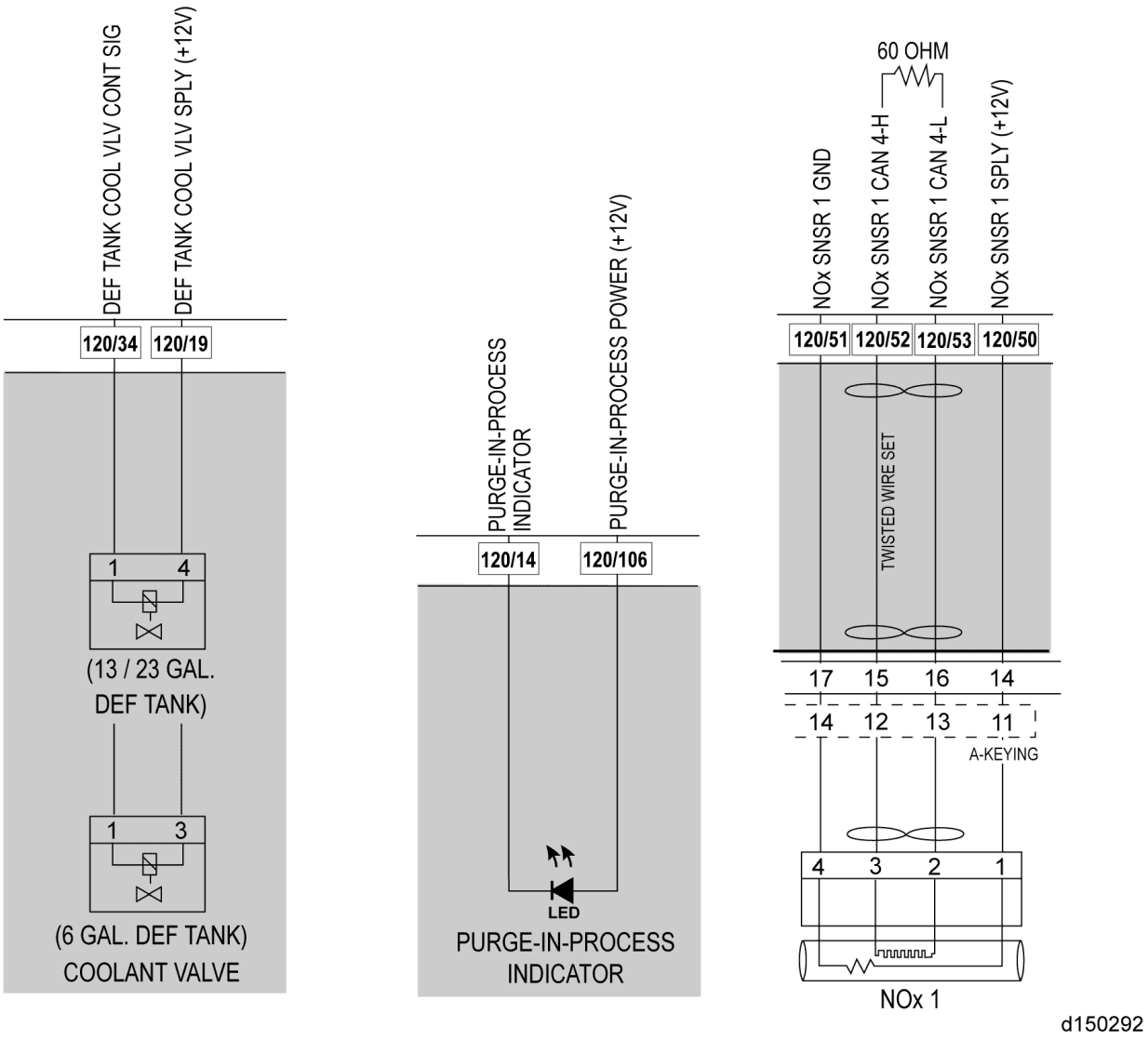


**Table 2.**

| SIGNAL | ACM PIN | COMPONENT |
|---|---|---|
| SCR SUPPLY 12V | 106 | purge-in-process indicator supply (if equipped) |
| SCR SUPPLY 12V | 110 | N/C |
| SCR SUPPLY 12V | 19 | CAN DEF tank 6-5 tank heat coolant valve 2-2 |
| SCR SUPPLY 12V | 50 | Deutsch 47-14 then Nox1 In 4-1 |

Check as follows:

1. Check for multiple codes. Is fault code SPN 3216/FMI 13 or SPN 3490/FMI (any) present along with SPN 5016/FMI 3?
   a. Yes; repair the other fault code first.
   b. No; Go to step 2.
2. Turn the ignition OFF.
3. Disconnect the Aftertreatment Control Module (ACM) 120-pin connector.
4. Inspect the ACM 120-pin harness connector for bent, spread or corroded pins. Is any damage found?
   a. Yes; repair as necessary. Verify repair.

 

b. No; Go to step 5.

**NOTE:** Multiple fault codes will set with the ACM 120-pin connector disconnected. Disregard other fault codes at this time.

5. Turn the ignition ON (key ON, engine OFF) and clear fault codes. Does SPN 5016/FMI 3 become active?
   a. Yes; replace the ACM. Refer to OEM procedures.
   b. No; Go to step 6.
6. Measure the voltage between pin 19 of the 120-pin ACM connector, harness side, and battery ground. Is any voltage present?
   a. Yes; repair the short to power between pin 19 of the 120-pin ACM connector and pin 2 of the DEF coolant valve connector. Verify repair.
   b. No; Go to step 7.
7. Measure the voltage between pin 50 of the 120-pin ACM connector, harness side, and battery ground. Is any voltage present?
   a. Yes; repair the short to power between pin 50 of the 120-pin ACM connector and pin 1 of the NOx inlet sensor connector. Verify repair.
   b. No; Go to step 8.
8. Is the vehicle equipped with a purge-in-process indicator?
   a. Yes; Go to step 9.
   b. No; Go to step 11.
9. Measure the voltage between pin 106 of the 120-pin ACM connector, harness side, and battery ground. Is any voltage present?
   a. Yes; repair the short to power between pin 106 of the 120-pin ACM connector and pin 2 of the DEF Purge-in-Process indicator. Verify repair.
   b. No; Go to step 10.

**NOTE:** ACM Pin 110 is not populated from the factory. The 120-pin ACM connector should be equipped with a cavity plug in the 120-pin connector cavity #110.

10. Inspect connector cavity#110 of the 120-pin ACM connector, harness side. Is a wire populated in cavity #110?
    a. Yes; repair the short to power on pin 110 of the 120-pin ACM connector. Repair connector as needed. Verify repair.
    b. No; replace the ACM. Refer to section "Removal of the Aftertreatment Control Module". Repair the connector as needed. Verify repair.
11. Inspect connector cavity #106 of the 120-pin ACM connector, harness side. Is a wire populated in connector cavity #106?
    a. Yes; repair the short to power on pin 106 of the 120-pin ACM connector. Repair connector as needed. Verify repair.
    b. No; Go to step 12.
12. Inspect connector cavity#110 of the 120-pin ACM connector, harness side. Is a wire populated in cavity #110?
    a. Yes; repair the short to power on pin 110 of the 120-pin ACM connector. Repair connector as needed. Verify repair.
    b. No; replace the ACM. Refer to section "Removal of the Aftertreatment Control Module". Verify repair.


 

# 3 SPN 5016/FMI 4 - EPA10

High Side Digital Output 4 Circuit Failed Low

**Table 3.**

| SPN 5016/FMI 4 | |
|---|---|
| Description | High Side Digital Output Circuit Shorted Low |
| Monitored Parameter | High Side Digital Output |
| Typical Enabling Conditions | Always on |
| Monitor Sequence | None |
| Execution Frequency | Continuous when enabling conditions met |
| Typical Duration | 2 Seconds |
| Dash Lamps | MIL, CEL |
| Engine Reaction | None |
| Verification | Key Cycle |

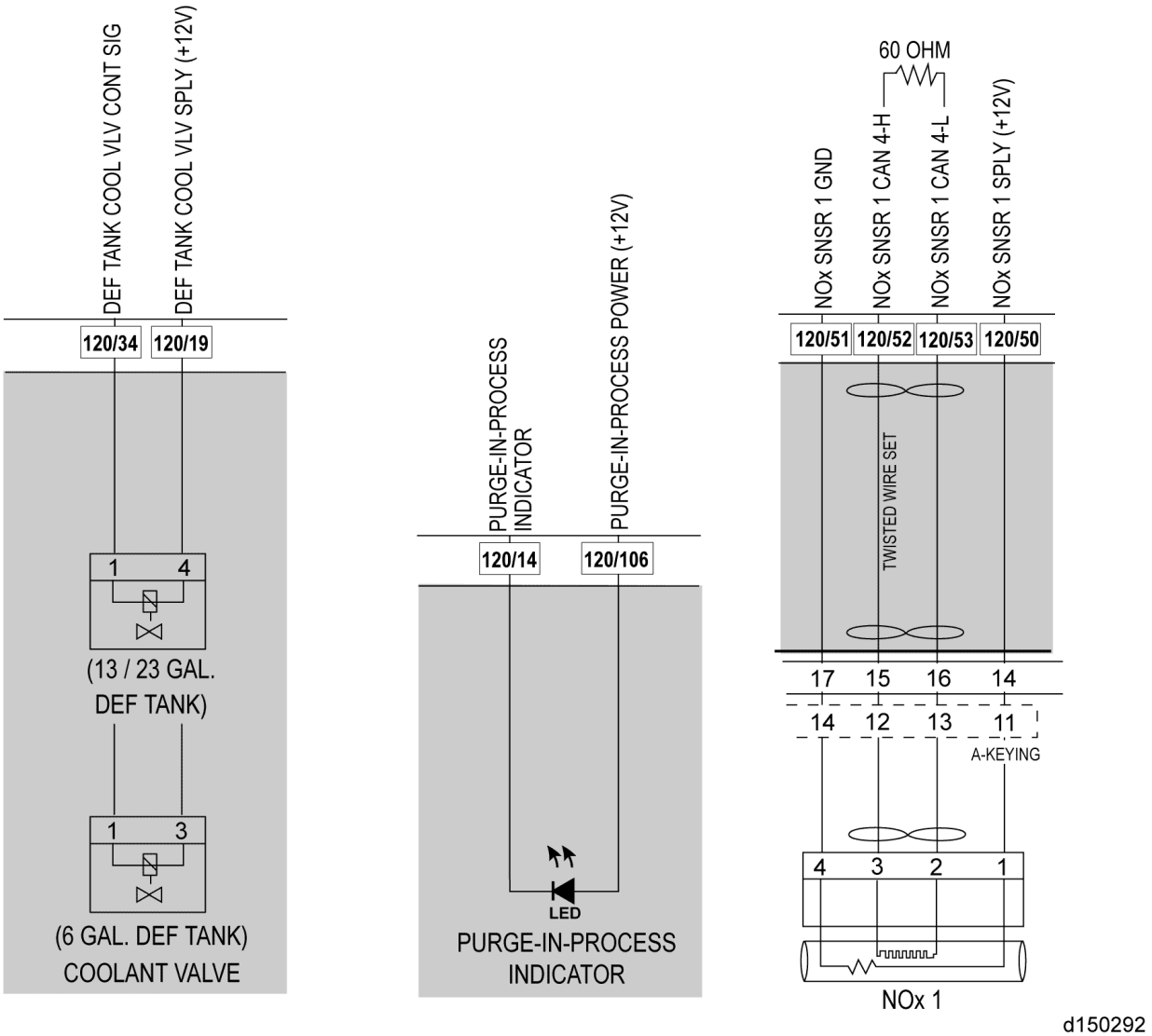


 

**Table 4.**

| SIGNAL | ACM PIN | COMPONENT |
|---|---|---|
| SCR SUPPLY 12V | 106 | purge-in-process indicator supply (if equipped) |
| SCR SUPPLY 12V | 110 | N/C |
| SCR SUPPLY 12V | 19 | CAN DEF tank 6-5 tank heat coolant valve 2-2 |
| SCR SUPPLY 12V | 50 | Deutsch 47-14 then Nox1 In 4-1 |

**NOTE:**

The supply voltage circuit is networked internal of the Aftertreatment Control Module (ACM). This circuit supplies voltage to the Coolant Valve, Purge-in-Process indicator (if equipped), and the Inlet NOx sensor. A short on any one of those circuits will set this fault code.

Check as follows:

1. Check for multiple codes. Is fault code SPN 3216/FMI 13 or SPN 3490/FMI (any) present along with SPN 5016/FMI 4?
    a. Yes; repair the other fault code first.
    b. No; Go to step 2.
2. Turn the ignition OFF. Go to step 3.
3. Disconnect the Diesel Exhaust Fluid (DEF) coolant valve (header). Refer to OEM procedures.
4. Inspect the DEF coolant valve (header) and harness connector for bent, spread or corroded pins. Is any damage found?
    a. Yes; repair as necessary. Verify repair.
    b. No; Go to step 5.

**NOTE:** Disregard the additional faults set with components disconnected.

5. Turn the ignition ON (key ON, engine OFF) and clear fault codes, does the fault become active?
    a. Yes, Go to step 6.
    b. No; replace the DEF tank coolant valve. Refer to OEM procedures. Verify repair.
6. Turn the ignition OFF. Go to step 7.
7. Disconnect the inlet NOx sensor.
8. Inspect the inlet NOx sensor and harness connector for bent, spread or corroded pins. Is any damage found?
    a. Yes; repair as necessary. Verify repair.
    b. No; Go to step 9.

**NOTE:** Disregard the additional faults set with components disconnected.

9. Turn the ignition ON (key ON, engine OFF) and clear fault codes. Does the fault become active?
    a. Yes; Go to step 10.
    b. No; replace the inlet NOx sensor. Refer to section "Removal of the GHG14 Selective Catalytic Reduction Inlet NOx Sensor". Verify repair.
10. Turn the ignition OFF. Go to step 11.
11. Is the vehicle equipped with a Purge-in-Process indicator?
    a. Yes; Go to step 12.
    b. No; Go to step 15.
12. Disconnect the DEF Purge-in-Process indicator. Refer to Original Equipment Manufacturer (OEM) procedures.
13. Inspect the DEF Purge-in Process indicator and harness connector for bent, spread or corroded pins. Is any damage found?
    a. Yes; repair as necessary. Verify repair.
    b. No; Go to step 14.


 

**NOTE:** Disregard the additional faults set with components disconnected.

14. Turn the ignition ON (key ON, engine OFF) and clear fault codes. Does the fault become active?
    a. Yes; Go to step 15.
    b. No; replace the DEF Purge-in-Process indicator. Refer to OEM procedures. Verify repair.
15. Turn the ignition OFF.
16. Disconnect the Aftertreatment Control Module (ACM) 120-pin connector.
17. Inspect the ACM 120-pin and harness connector for bent, spread or corroded pins. Is any damage found?
    a. Yes; repair as necessary. Verify repair.
    b. No; Go to step 18.
18. Turn the ignition ON (key ON, engine OFF) and clear fault codes. Does the fault become active?
    a. Yes; replace the ACM. Refer to OEM procedures. Verify repair.
    b. No; Go to step 19.
19. Turn the ignition OFF.
20. Measure resistance between pin 19 of the 120-pin ACM connector, harness side, and battery ground. Is the resistance greater than 10K ohms?
    a. Yes; Go to step 21.
    b. No; repair the short to ground between pin 50 of the 120-pin ACM connector and pin 1 of the NOx inlet sensor connector. Verify repair.
21. Measure resistance between pin 50 of the 120-pin ACM connector, harness side, and battery ground. Is the resistance greater than 10K ohms?
    a. Yes; Go to step 22.
    b. No; repair the short to ground between pin 50 of the 120-pin ACM connector and pin 1 of the NOx inlet sensor connector. Verify repair.

**NOTE:** ACM Pin 106 is not populated from the factory if not equipped with a DEF purge-in-process indicator lamp. The 120-pin ACM connector should be equipped with a cavity plug in the 120-pin connector cavity #106 if the vehicle does not have the DEF purge-in-process indicator.

22. Measure resistance between pin 106 of the 120-pin ACM connector, harness side, and battery ground. Is the resistance greater than 10K ohms?
    a. Yes; Go to step 23.
    b. No; repair the short to ground on pin 106 of the 120-pin ACM connector. Verify repair.

**NOTE:** ACM Pin 110 is not populated from the factory. The 120-pin ACM connector should be equipped with a cavity plug in the 120-pin connector cavity #110.

23. Inspect connector cavity#110 of the 120-pin ACM connector, harness side. Is a wire populated in cavity #110?
    a. Yes; repair the short to ground on pin 110 of the 120-pin ACM connector. Repair connector as needed. Verify repair.
    b. No; repair replace the ACM. Refer to section "Removal of the Aftertreatment Control Module". Verify repair.

 