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Service Information Bulletin

SUBJECT	DATE
SPN 723/FMI 8 & 11 – ALL YEARS	October 2013

Additions, Revisions, or Updates

Publication Number / Title	Platform	Section Title	Change
DDC-SVC-MAN-0084	DD Platform	SPN 723/FMI 8 – ALL YEARS	Voltage values were changed in the procedure as well as new continuity tests.
		SPN 723/FMI 11 – ALL YEARS	



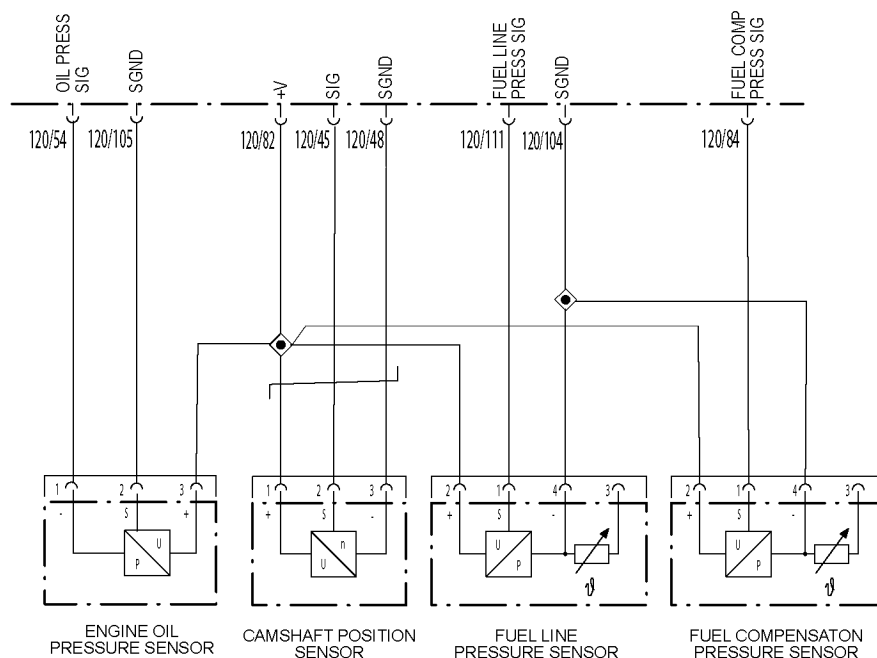
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2 SPN 723/FMI 8 - ALL YEARS

This diagnostic is typically Camshaft Position (CMP) Sensor Time Out.

Table 1.

SPN 723/FMI 8	
Description	Camshaft Position Sensor Time Out
Monitored Parameter	Camshaft Position Sensor
Typical Enabling Conditions	Engine Idle
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	10 Seconds
Dash Lamps	MIL, CEL
Engine Reaction	Derate 25%
Verification	Engine Idle (1 minute)



d150009

Check as follows:

1. Use DDDL to insure that cranking speed is over 150 rpm. Is cranking speed over 150 rpm?
 - a. Yes; Go to step 2.
 - b. No; determine the cause of low crank speed.
2. Turn the ignition OFF.
3. Disconnect the Camshaft Position (CMP) sensor electrical harness connector.
4. Inspect the CMP sensor and harness connectors for signs of damage; bent, spread, broken, unseated (pushed out) or corroded pins, signs of moisture indicating seal damage and signs of wire damage near the connector.
 - a. If signs of damage are present, repair as necessary.
 - b. If no signs of damage are present, Go to step 5.
5. Turn on the ignition ON (key ON, engine OFF).
6. Measure the voltage between pins 1 and 3 on the harness side of the CMP sensor.

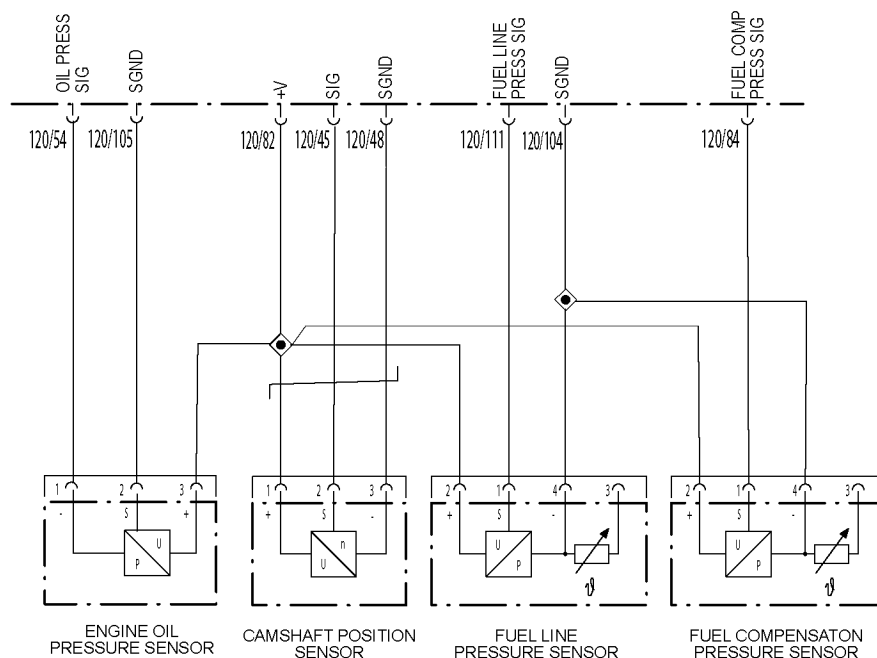
- a. If the voltage is between 4.5 and 5.5 volts, Go to step 8.
 - b. If the voltage is not between 4.5 and 5.5 volts, Go to step 7.
7. Measure the voltage between pin 1 of the CMP sensor harness connector and battery ground.
 - a. If the voltage is between 4.5 and 5.5 volts, repair the wire between pin 3 of the CMP harness connector and pin 48 of the Motor Control Module (MCM) 120-pin connector.
 - b. If the voltage is not between 4.5 and 5.5 volts, repair the wire between pin 1 of the CMP harness connector and pin 82 of the Motor Control Module (MCM) 120-pin connector.
8. Turn the ignition OFF.
9. Disconnect the MCM 120-pin connector.
10. Inspect the MCM 120-pin module and harness connectors for signs of damage; bent, spread, broken, unseated (pushed out) or corroded pins, signs of moisture indicating seal damage and signs of wire damage near the connector.
 - a. If signs of damage are present, repair as necessary.
 - b. If no signs of damage are present, Go to step 11.
11. Measure the resistance between pin 2 of the CMP harness connector and pin 45 of the MCM 120-pin connector.
 - a. If resistance is less than 5 ohms, Go to step 12.
 - b. If resistance is greater than 5 ohms, repair the wire between pin 2 of the CMP harness connector and pin 45 of the MCM 120-pin connector.
12. Measure the resistance between pin 2 of the CMP harness connector and battery ground.
 - a. If resistance is greater than 10K ohms, Go to step 13.
 - b. If resistance is less than 10K ohms, repair the shorted wire between pin 2 of the CMP harness connector and pin 45 of the MCM 120-pin connector.
13. Measure the resistance between pins 1 and 2 of the CMP harness connector.
 - a. If resistance is greater than 10K ohms, Go to step 14.
 - b. If resistance is less than 10K ohms, repair the shorted wire between pins 1 and 2 of the CMP harness connector and pins 82 and 45 of the MCM 120-pin connector.
14. Measure the resistance between pins 2 and 3 of the CMP harness connector.
 - a. If resistance is greater than 10K ohms, Go to step 15.
 - b. If resistance is less than 10K ohms, repair the shorted wire between pins 2 and 3 of the CMP harness connector and pins 45 and 48 of the MCM 120-pin connector.
15. Has the engine had any gear train, camshaft, or flywheel repairs made?
 - a. Yes; verify proper gear train timing and proper flywheel installation. Refer to section "Camshaft Timing Verification".
 - b. No; Go to step 16.
16. Remove the CMP sensor and inspect for damage. Is there damage to the sensor?
 - a. Yes; inspect the tone wheel on the intake cam for damage. Check gear train for excessive lash or damage. If damage is found, repair as necessary, and replace the CMP sensor. Refer to section "Removal of the Camshaft Position Sensor".
 - b. No; replace the camshaft position sensor. Refer to section "Removal of the Camshaft Position Sensor".

3 SPN 723/FMI 11 - ALL YEARS

This diagnostic is typically Camshaft Position (CMP) Sensor Failure.

Table 2.

SPN 723/FMI 11	
Description	Camshaft Position Sensor Failure
Monitored Parameter	Camshaft Position Sensor
Typical Enabling Conditions	Engine Idle
Monitor Sequence	None
Execution Frequency	Continuous when enabling conditions met
Typical Duration	2 Seconds
Dash Lamps	MIL
Engine Reaction	
Verification	Engine Idle



d150009

Check as follows:

1. Use DDDL to insure that cranking speed is over 150 rpm. Is cranking speed over 150 rpm?
 - a. Yes; Go to step 2.
 - b. No; determine the cause of low crank speed.
2. Turn the ignition OFF.
3. Disconnect the CMP sensor harness connector.
4. Inspect the CMP sensor and harness connectors for signs of damage; bent, spread, broken, unseated (pushed out) or corroded pins, signs of moisture indicating seal damage and signs of wire damage near the connector.
 - a. If signs of damage are present, repair as necessary.
 - b. If no signs of damage are present, Go to step 5.
5. Turn the ignition ON (key ON, engine OFF).
6. Measure the voltage between pins 1 and 3 on the harness side of the CMP sensor.

- a. If the voltage is between 4.5 and 5.5 volts, Go to step 8.
 - b. If the voltage is not between 4.5 and 5.5 volts, Go to step 7.
7. Measure the voltage between pin 1 of the CMP sensor harness connector and battery ground.
 - a. If the voltage is between 4.5 and 5.5 volts, repair the wire between pin 3 of the CMP harness connector and pin 48 of the Motor Control Module (MCM) 120-pin connector.
 - b. If the voltage is not between 4.5 and 5.5 volts, repair the wire between pin 1 of the CMP harness connector and pin 82 of the Motor Control Module (MCM) 120-pin connector.
8. Turn the ignition OFF.
9. Disconnect the MCM 120-pin connector.
10. Inspect the MCM 120-pin module and harness connectors for signs of damage; bent, spread, broken, unseated (pushed out) or corroded pins, signs of moisture indicating seal damage and signs of wire damage near the connector.
 - a. If signs of damage are present, repair as necessary.
 - b. If no signs of damage are present, Go to step 11.
11. Measure the resistance between pin 2 of the CMP harness connector and pin 45 of the MCM 120-pin connector.
 - a. If resistance is less than 5 ohms, Go to step 12.
 - b. If resistance is greater than 5 ohms, repair the wire between pin 2 of the CMP harness connector and pin 45 of the MCM 120-pin connector.
12. Measure the resistance between pin 2 of the CMP harness connector and battery ground.
 - a. If resistance is greater than 10K ohms, Go to step 13.
 - b. If resistance is less than 10K ohms, repair the shorted wire between pin 2 of the CMP harness connector and pin 45 of the MCM 120-pin connector.
13. Measure the resistance between pins 1 and 2 of the CMP harness connector.
 - a. If resistance is greater than 10K ohms, Go to step 14.
 - b. If resistance is less than 10K ohms, repair the shorted wire between pins 1 and 2 of the CMP harness connector and pins 82 and 45 of the MCM 120-pin connector.
14. Measure the resistance between pins 2 and 3 of the CMP harness connector.
 - a. If resistance is greater than 10K ohms, Go to step 15.
 - b. If resistance is less than 10K ohms, repair the shorted wire between pins 2 and 3 of the CMP harness connector and pins 45 and 48 of the MCM 120-pin connector.
15. Has the engine had any gear train, camshaft, or flywheel repairs made?
 - a. Yes; verify proper gear train timing and proper flywheel installation. Refer to section "Camshaft Timing Verification".
 - b. No; Go to step 16.
16. Remove the CMP sensor and inspect for damage. Is there damage to the sensor?
 - a. Yes; inspect the tone wheel on the intake camshaft for damage. Check gear train for excessive lash or damage. If damage is found, repair as necessary, and replace the camshaft position sensor. Refer to section "Removal of the Camshaft Position Sensor".
 - b. No; replace the camshaft position sensor. Refer to section "Removal of the Camshaft Position Sensor".