

66.2 SPN 102/FMI 18 – GHG14

Intake Manifold Pressure Too Low

SPN 102/FMI 18

Description	This Fault Code Sets When the Intake Manifold Pressure is Lower Than Expected While The Engine is Under a Load
Monitored Parameter	Intake Manifold Pressure
Typical Enabling Conditions	Engine Coolant Temperature greater than 65°C (149°F)
Monitor Sequence	None
Execution Frequency	Continuous When Enabling Conditions Met
Typical Duration	15 Seconds
Dash Lamps	MIL, CEL
Engine Reaction	None
	Engine Coolant Greater than 65 °C (149°F)
Verification	Drive at Steady Highway Speed With Loaded Trailer
	Engine rpm Greater than 1130 for a Minimum of Five Minutes

Check as follows:

1. ☐ Connect DiagnosticLink®.
2. ☐ Turn the ignition ON (key ON, engine OFF).
3. ☐ Check for multiple fault codes. Are there any intake manifold pressure circuit, air system or aftertreatment fault codes present?
 1. ☐ Yes; diagnose the other fault codes first.
 2. ☐ No; Go to step 4.
4. ☐ Check the Motor Control Module (MCM) software level. Is the MCM software level 4.1.0.47 ZGS 2 or greater?
 1. ☐ Yes; Go to step 5.
 2. ☐ No; update the MCM software using the latest server information. Verify repair.
5. ☐ Remove and inspect the air filter. Is the air filter excessively dirty or restricted?
 1. ☐ Yes; replace the air filter. Verify repair.
 2. ☐ No; Go to step 6.
6. ☐ Visually inspect the air intake system for leaks or damaged components. Are there any damaged hoses, clamps or components?
 1. ☐ Yes; repair as necessary. Verify repair.
 2. ☐ No; Go to step 7.



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:

ENGINE EXHAUST

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

7. ☐ Start and run the engine at idle.



WARNING:

PERSONAL INJURY

To avoid injury when working on or near an operating engine, wear protective clothing, eye protection, and hearing protection.

8. ☐ Visually inspect the exhaust manifold and turbocharger for leaks or damage. Are there any leaks or damage present?
 1. ☐ Yes; repair as necessary.
 2. ☐ No; Go to step 9.
9. ☐ Stop the engine.
10. ☐ Turn the ignition ON (key ON, engine OFF).
11. ☐ Compare the barometric pressure reading in DiagnosticLink to the local barometric pressure for your area. Is the reading within .07 bar (1 psi)?
 1. ☐ Yes; Go to step 12.
 2. ☐ No; replace the MCM.
12. ☐ Using DiagnosticLink, compare the intake manifold pressure reading to the barometric pressure reading. Are the readings within .10 bar (1.5 psi) of each other?
 1. ☐ Yes; Go to step 15.
 2. ☐ No; Go to step 13.
13. ☐ Turn the ignition OFF.
14. ☐ Disconnect and inspect the intake manifold pressure sensor electrical connector. Is there corrosion, fretting, or damage present?
 1. ☐ Yes; replace the electrical connector and intake manifold pressure sensor. Verify repair.
 2. ☐ No; replace the intake manifold pressure sensor. Verify repair.
15. ☐ Pressure test the Charge Air Cooler (CAC). Refer to Original Equipment Manufacturer (OEM) literature for CAC testing procedures. Does the CAC pass the pressure test?
 1. ☐ Yes; Go to step 16.
 2. ☐ No; replace the CAC. Refer to OEM literature for CAC removal and installation procedures. Verify repair.
16. ☐ Is the vehicle equipped with a DD15 AT or DD13 engine?
 1. ☐ Yes; Go to step 17.

2. ☐ No; Go to step 42.
17. ☐ Inspect the turbocharger wastegate linkage. Is the wastegate link damaged?
 1. ☐ Yes; for DD13: Inspect the wastegate actuator and determine if the turbocharger and/or the wastegate needs to be replaced. Verify repair. Refer to section "Removal of the GHG14 DD13 Turbocharger Wastegate Actuator"
Refer to section "Inspection of the GHG14 DD13 Turbocharger Wastegate Actuator"
Refer to section "Installation and Adjustment of the GHG14 DD13 Turbocharger Wastegate Actuator"
For DD15 AT: Refer to section "Removal of the GHG14 DD15 Asymmetrical Turbocharger" . Verify repair.
 2. ☐ No; Go to step 19.
18. ☐ Check for air leaks at the wastegate actuator and airline. Are there any air leaks present?
 1. ☐ Repair the air leaks as necessary. Verify repair.
 2. ☐ No; Go to step 19.

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**WARNING:****PERSONAL INJURY**

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19. ☐ Start and run the engine until the vehicle air pressure reaches 827 kPa (120 psi). Does the vehicle air supply reach 827 kPa (120 psi)?
 1. ☐ Yes; Go to step 20.
 2. ☐ No; correct the low vehicle air pressure concern.
20. ☐ Stop the engine.
21. ☐ Turn the ignition ON (key ON, engine OFF).
22. ☐ Use Diagnostic link to activate the turbo control wastegate in the I/O tab. Command the turbo control to 90%. Does the wastegate actuator move?
 1. ☐ Yes; Go to step 42.
 2. ☐ No; Go to step 23.
23. ☐ Drain the vehicle air tanks until the air pressure is zero psi. Refer to Original Equipment Manufacturers (OEM) literature for air tank draining procedures.
24. ☐ Remove the plastic air supply line to the wastegate solenoid inlet port.



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DD15 AT



d090223

DD13

25. ☐ Connect a suitable gauge that can read up to 1034 kPa (150 psi) to the wastegate solenoid.

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26. ☐ Start and run the engine until the vehicle air pressure reaches 827 kPa (120 psi). Does the gauge read a minimum of 621 kPa (90 psi)?
 1. ☐ Yes; Go to step 27.
 2. ☐ No; determine the cause of the lack of air pressure to the wastegate solenoid. Refer to OEM literature for vehicle air system troubleshooting.
27. ☐ Turn the ignition OFF.
28. ☐ Drain the vehicle air tanks. Refer to Original Equipment Manufacturers (OEM) literature for air tank draining procedures.
29. ☐ Connect the plastic air supply line back to the wastegate solenoid.
30. ☐ Remove the rubber air line at the turbocharger wastegate solenoid.



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DD15 AT



d090225

DD13

31. ☐ Connect a suitable gauge that can read up to 689 kPa (100 psi) and fit a ¼ inch rubber air line to the wastegate solenoid. Secure the rubber air line to the gauge and wastegate solenoid with clamps.

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**WARNING:****ENGINE EXHAUST**

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32. ☐ Start and run the engine until the vehicle air pressure reaches 827 kPa (120 psi).
33. ☐ Stop the engine.
34. ☐ Turn the ignition ON (key ON, engine OFF).
35. ☐ Use DiagnosticLink to activate the turbo control wastegate in the I/O tab. Command the turbo control to 95%. Is the reading on the gauge between 262 and 296 kPa (38 and 43 psi)?
 1. ☐ Yes; Go to step 39.
 2. ☐ No; Go to step 36.
36. ☐ Remove the rubber hose from the wastegate on the turbocharger.



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d090227

DD15 AT

DD13

37. ☐ Use shop air to check for restrictions in the rubber hose. Are there any restrictions present?
 1. ☐ Yes; replace the hose. Verify repair.
 2. ☐ No; Go to step 38.
38. ☐ Disconnect and inspect the wastegate solenoid electrical connector. Is there corrosion, fretting or damage present?
 1. ☐ Yes; repair as necessary. Verify repair.
 2. ☐ No; replace the turbocharger wastegate solenoid.
 For the DD13: Refer to section "Removal of the DD13 Wastegate Solenoid"
 For the DD15: Refer to section "Removal of the DD15 Wastegate Solenoid" . Verify repair.
39. ☐ Is the vehicle equipped with a DD13 engine?
 1. ☐ Yes; Go to step 40.
 2. ☐ No; replace the turbocharger. For DD15 AT: Refer to section "Removal of the GHG14 DD15 Asymmetrical Turbocharger" . Verify repair.
40. ☐ Remove the turbocharger. Refer to section "Removal of the DD13 Turbocharger" .
41. ☐ Remove the two wastegate retaining bolts on the turbocharger and move the wastegate arm. Does the wastegate arm on the turbocharger side move?
 1. ☐ Yes; determine if the turbocharger and/or the wastegate needs to be replaced. Verify repair.
 Refer to section "Removal of the GHG14 DD13 Turbocharger Wastegate Actuator"
 Refer to section "Inspection of the GHG14 DD13 Turbocharger Wastegate Actuator"
 Refer to section "Installation and Adjustment of the GHG14 DD13 Turbocharger Wastegate Actuator"
 2. ☐ No; replace the turbocharger. Refer to section "Installation of the DD13 Turbocharger" . Verify repair.
42. ☐ Disconnect and inspect the turbocharger inlet elbow and outlet pipe. Are there signs of foreign object damage or debris?
 1. ☐ Yes; replace the turbocharger. Refer to section "Removal of the DD13 Turbocharger" . Refer to section "Removal of the DD15 and the DD16 Turbocharger" .
 2. ☐ No; Go to step 43.
43. ☐ Inspect the turbocharger inlet elbow and outlet pipe for signs of fluid contamination. Is oil contamination found?
 1. ☐ Yes; Refer to section "Symptom Diagnostics - Oil Present at the Turbocharger Compressor Housing" .
 2. ☐ No; Go to step 44.
44. ☐ Reinstall the clean air intake pipe to the turbocharger.

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45. ☐ Start and run the engine until the engine coolant temperature is greater than 65°C (149°F).

**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.

46. ☐ Perform a parked regeneration.
- NOTE: Normal DOC pressure is less than 10 kPa (1.5 psi) for a 1-Box™ emissions package and 13 kPa (1.9 psi) for a Two-Box option.
47. ☐ Monitor the Diesel Oxidation Catalyst (DOC) inlet pressure reading. Does the DOC inlet pressure start out high and stay high?
 1. ☐ Yes; Go to step 48.
 2. ☐ No; Go to step 49.
48. ☐ Is the DOC inlet pressure less than 20 kPa (2.9 psi)?
 1. ☐ Yes; perform the DOC face plugging routine. Refer to section "EPA10 and GHG14 Diesel Oxidation Catalyst Face Cleaning" . Verify repair.
 2. ☐ No; replace the DOCs due to the excessive restriction.
49. ☐ Did the DOC inlet pressure start high and then decrease?

1. ☐ Yes; the regeneration cleared the restriction in the DOC/DPF.
2. ☐ No; replace the turbocharger. For DD15 TC and DD16: Refer to section "Removal of the DD15 and the DD16 Turbocharger" . Verify repair.

Printed Fri Jun 19 2020 17:30:35 GMT-0700 (Pacific Daylight Time)

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Last updated on 03-26-2020