



This Service Information bulletin supersedes SI B12 28 07 **dated November 2009.**

MODEL

E82 and E88 (1 Series) All models with N54 engine	E90, E92 and E93 (3 Series) All models with N54 engine	E60 and E61 (5 Series) All models with N54 engine	E71 X6 xDrive35i
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INFORMATION

The customer complains that the engine management system has entered the engine failsafe mode and that the turbocharger boost is reduced. One or both of the following faults are stored in the DME memory:

- 3100 Boost-pressure control, deactivation - Boost-pressure buildup prohibited
- 30FE Turbocharger, charge-air pressure too high
- 30FF Turbocharger, charge-air pressure too low - Charge-air pressure too low.

Note: If a defective high pressure fuel pump or additional faults are found in the DME memory (e.g., fuel pressure, crank sensor, cam sensor, knock sensor, etc.), then those faults will be the primary focus of the diagnosis, using the test plans provided for those faults. FC 3100 is only a result of the component fault.

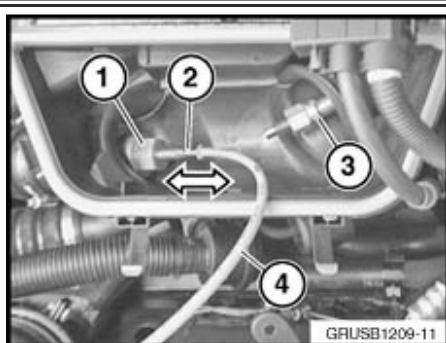
If FC 3100, 30FE, and/or 30FF are the **only** faults stored in the memory, then those faults must be the primary focus of the troubleshooting. These faults are stored due to an incorrect turbocharger boost level, possibly caused by one of the following items:

Troubleshooting Hints:

- Air path disruption caused by an aftermarket air filter, air filter housing, induction tubes, pop-off (blow-off) valves, exhaust systems, performance catalytic convertors, increased turbocharger boost caused by “piggy back modules”, or tuner software, etc. Refer to [B12 10 08](#) and [B12 20 08](#) for more details.
- Leaks or restrictions in the induction system, loose clamps, cracked pipes, or housings. First determine whether the vehicle has a condition where the induction system could be leaking. What are the adaptation values? Are they positive or negative values? In cases where the adaptations indicate a lean condition (positive value), a smoke machine is a helpful tool in determining whether the induction system has a leak.

IMPORTANT NOTE:

The VACUTEC® Smoke Machine 625-522B-BMW can be purchased via the BMW Equipment Program. Orders for the new machine can be placed by calling 1 888 222 7997. Included with the new VACUTEC® smoke machine are various caps and adaptors to help connect the applicator hose to the vehicle. It is always suggested to not disturb the system before testing; try to disturb the system as little as possible when connecting the smoke machine. This smoke machine utilizes an UltraTraceUV® smoke solution. The smoke solution incorporates an ultraviolet dye, which helps pinpoint the leak with an ultraviolet residue surrounding the leak area. Determining the source of the leak is made easy when the included Hi-Density True UV LED light is used. In the case of the N54 engine, it would be helpful to use the sealing plugs **found in the Turbocharger Diagnostic Tool P/N 81 29 0 426 464 kit.**

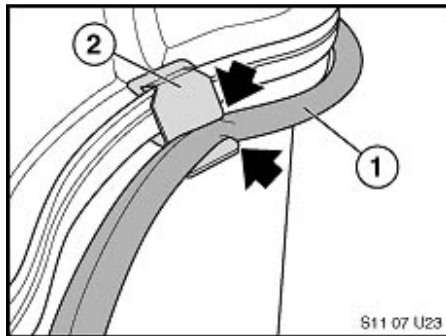


1. Sealing plug bank 1
2. Union nut
3. Sealing plug bank 2
4. Smoke machine application hose

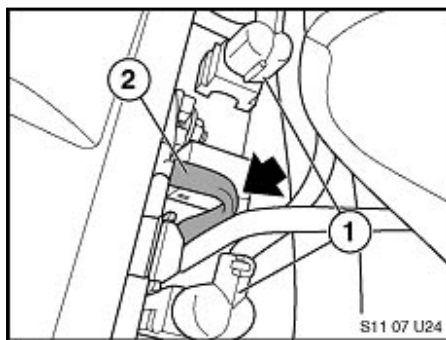
Note:

The smoke machine hose must be adapted to the sealing plug with another small piece of rubber hose with an approximate outside diameter of 7-8mm.

- Leaks or restrictions in the exhaust system; visual inspection; and/or use of the smoke machine as described above is helpful. Especially important when the catalyst conversion faults (29F4/29F5) are stored in conjunction with 3100/30FF.
- Performing a quick inspection of all vacuum hoses is very important; a slightly collapsed vacuum hose could lead to intermittent boost faults, or boost faults occurring only under heavy acceleration demands.

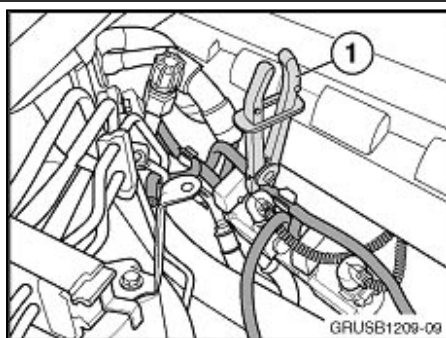


1. Restricted vacuum hose
2. Retaining clip



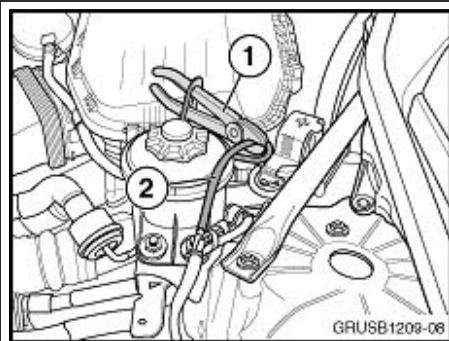
1. Vacuum solenoids
2. Kinked or restricted vacuum supply hose

- Using a vacuum gauge and boost gauge can be very helpful in diagnosing a vehicle with intermittent boost faults. Although the problem may not be present long enough to set a boost fault, the gauges may show a hint of a deteriorating boost level that could ultimately lead to an effective repair. Connecting the vacuum gauge at the vacuum actuator on one or both banks (using two gauges) with a “tee” connection will determine the integrity of the vacuum supply (compare values to the attachment). It is important to block the vacuum bridge located between the two vacuum solenoids to isolate the vacuum control for each bank. If one solenoid or vacuum hose leading to a solenoid is defective, the system will still operate with this bridge intact. Removing this bridge may cause the fault to reoccur more frequently if the vacuum control is compromised. Erratic operation of the vacuum gauge is a hint that a control problem is present; comparing the gauge movement to the other bank or another vehicle will help determine whether a problem is present.
- Connecting a boost gauge at one of the two pop-off (blow off) valve’s vacuum supply lines can be very effective in measuring boost. Both pop-off valves must stay in operation during testing; use a vacuum “T” fitting to connect a boost gauge. Attached to this bulletin is a vacuum and boost specification chart that can be used to troubleshoot the system while driving.



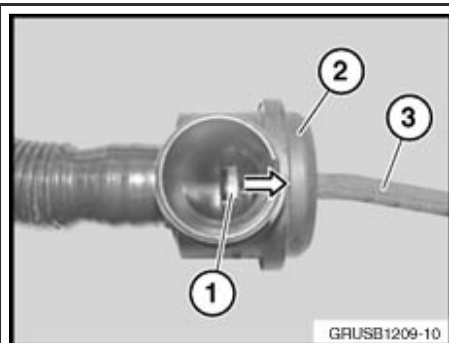
1. Suitable tool used to block vacuum bridge between the solenoids

- Isolating or disconnecting the vacuum supply to the exhaust flap may also eliminate a leakage or a defective vacuum solenoid. This can be done very easily by blocking the hose located near the right front strut tower.



- Suitable tool used to block supply hose
- Vacuum supply hose for exhaust flap solenoid

- Checking the operation of the pop-off (blow-off) valves.
 - Visually inspect the vacuum hose from the intake manifold to both pop-off valves for leaks, restrictions, etc.
 - Remove the pop-off valves.
 - To check function of the pop-off valves, it is necessary to activate them with vacuum. Turbocharger Diagnostic Tool P/N 81 29 0 426 464 should be used to supply the 500 mbar of vacuum.
 - The pop-off valve plunger should move to the fully open position and maintain this position when the 500 mbar of vacuum are applied. If the plunger does not react properly, the valve must be replaced.



- Pop-off valve plunger direction of movement
- Pop-off valve
- Vacuum hose to Turbocharger Diagnostic Tool P/N 81 29 0 426 464

- The Turbocharger Diagnostic Tool P/N 81 29 0 426 464 can only be operated in conjunction with the DIS Plus or GT1 with MIB. Refer to [SI B04 04 07](#) (Turbo Diagnostic Tool) and Repair Instruction RA 11 61 730 (Checking diagnosis unit for overpressure and vacuum pressure) for additional details.
- If the turbochargers are removed from the vehicle for inspection, it is necessary to inspect the actuator and waste gate wear, using the measurement described in Repair Instruction RA 11 65 580 Replacing vacuum unit (wastegate valve) (N54).
- Do not replace the turbochargers. This replacement requires a TeileClearing PuMA case. In some cases, TC may require additional measurements and photos to describe the suspected problem.

WARRANTY INFORMATION

This Service Information bulletin provides technical, diagnostic and/or repair process information only.

If a warranty claim includes this process, submit with the regular claim procedures that apply.

Please refer to the Warranty Policy and Procedures Manual regarding add-ons, proper support, documentation, claims submission and archiving requirements as applicable.

ATTACHMENTS

View PDF attachment [B122807 Vacuum and Boost Values](#).

