



SI B11 03 08  
Engine

July 2018  
Technical Service

## CRANKCASE VENTILATION SYSTEM DIAGNOSIS AND MEASUREMENT

New information provided by this revision is preceded by this symbol  .

This Service Information bulletin replaces SI B11 03 08 dated July 2017

### What's New:

- BXX engine specifications diagnostic tips updated
- Basic diagnostic tips updated


### MODEL

All
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### INFORMATION

All current BMW engines incorporate a pressure-controlled crankcase ventilation system. The crankcase ventilation systems use various different crankcase ventilation valves, depending on the engine type. Although the valves all look different, they function similarly, using a spring and diaphragm assembly to control the crankcase pressure. A properly functioning pressure control valve is designed to maintain a slight vacuum (under-pressure) in the crankcase, which assures reliable crankcase venting during all engine operating conditions. Some of the causes and results of a malfunctioning crankcase ventilation system are listed below.

#### Causes of Excessive Overpressure (Pressure)

- Internal engine damage/wear
- Obstruction in the crankcase ventilation system
- Defective pressure control valve(s)
-  Cylinder head cover wastegate vacuum reservoir leakage. The vacuum reservoir can also be filled with engine oil indicating an internal leak.

#### Results of Excessive Overpressure

- Damage to the engine oil seals
- Increased engine oil consumption (can be misdiagnosed as a defective turbocharger)
- Excessive engine oil in the intake system
- Excessive engine oil in the charged intake tubes or the intercooler on turbocharged engines (can be misdiagnosed as a defective turbocharger)
- Engine oil dip stick is dislodged from the guide tube (if equipped)

#### Cause of Excessive Under-pressure (Vacuum)

- Defective pressure control valve
- Defective vacuum pump
- **UPDATE!** Cylinder head cover wastegate vacuum reservoir leakage. The vacuum reservoir can also be filled with engine oil indicating an internal leak.

### Results of Excessive Under-pressure

- Damage to the engine oil seals
- Increased engine oil consumption
- Excessive engine oil in the intake system
- Rough engine idling or engine misfire
- Whistling or howling noise from the engine (can be misdiagnosed as a defective turbocharger)
- Increased mixture adaptation values

### N63R, N63, N63T, N74, S63 and S63T Equipped Vehicles

The crankcase ventilation system utilized in these engines cannot be measured with consistency because the system does not incorporate a regulating valve (spring with diaphragm). The crankcase pressure is regulated by an orifice in the crankcase ventilation tubes, and the vacuum will vary with crankcase pressure changes. Checking the operation of this unregulated system can only be performed by visually inspecting for loose connections or cracks in the system components. Generally active leakages will have an oily residue surrounding that affected area. The use of a smoke machine may also be helpful when trying to locate leakages in this system.

#### **UPDATE!** BXX Engines Only:

Depending on the customers driving profile, the crankcase ventilation pressure can vary when measured due to a normal shift in the Variable Valve Lift (VVT) adaptations.

If the VVT adaptations are cleared or the vehicle has been programmed recently then the crankcase pressure will also be adjusted because the adaptations in general have been cleared. Over time, the crankcase pressure will change as the vehicle re-adapts to the customer driving profile. This is a not failure when the crankcase pressure is found at the minimum or maximum limits. Do not clear any adaptations or program the vehicle for this reason.

Attached to this Service Information bulletin is a procedure for measuring the crankcase ventilation system, using the ISID and IMIB diagnostic equipment.

Engine Variant	Specification (mBar)
	Min - Max
<b>UPDATE!</b> B38T & XB2H	15.0 - 25.0
<b>UPDATE!</b> B46	15.0 - 27.0
<b>UPDATE!</b> B48 & XB1H	15.0 - 29.0
<b>UPDATE!</b> B58	20.0 - 52.0

#### **UPDATE!** All Other Engines

Specification and actual readings from the vehicle may vary by up to  $\pm 10\%$ , but not more than 5.0 mBar. Various measuring tools may provide results that are not within specification. All measurements below were recorded using the IMIB. See the attachment for IMIB connection hints.

Attached to this Service Information bulletin is a procedure for measuring the crankcase ventilation system, using the ISID and IMIB diagnostic equipment

Engine Variant	Specification (mBar)
M42, M44, M52, M52TU, S52, M54, M60, M62, M62TU, M73	16.0
M57Y	0.0 +- 1.0
S54	0.0 +- 1.0
S62	0.0 +- 1.0
S65	0.0 +- 2.0
S85	0.0 +- 1.0
S55	49.0
N47T	0.0 +- 3.0
N57T	0.0 +- 3.0
N20 and N26	35.0
N52	30.0
N51 and N52K	33.0
N52T	21.0
N54	17.0
N54T	14.0
N55	50.0 +/- 8.0
N62	22.0
N62TU	40.0
N73	30.0

## WARRANTY INFORMATION

Not applicable.

Posted: Tuesday, July 17, 2018

## ATTACHMENTS

View PDF attachment [B110308 Attachment](#).

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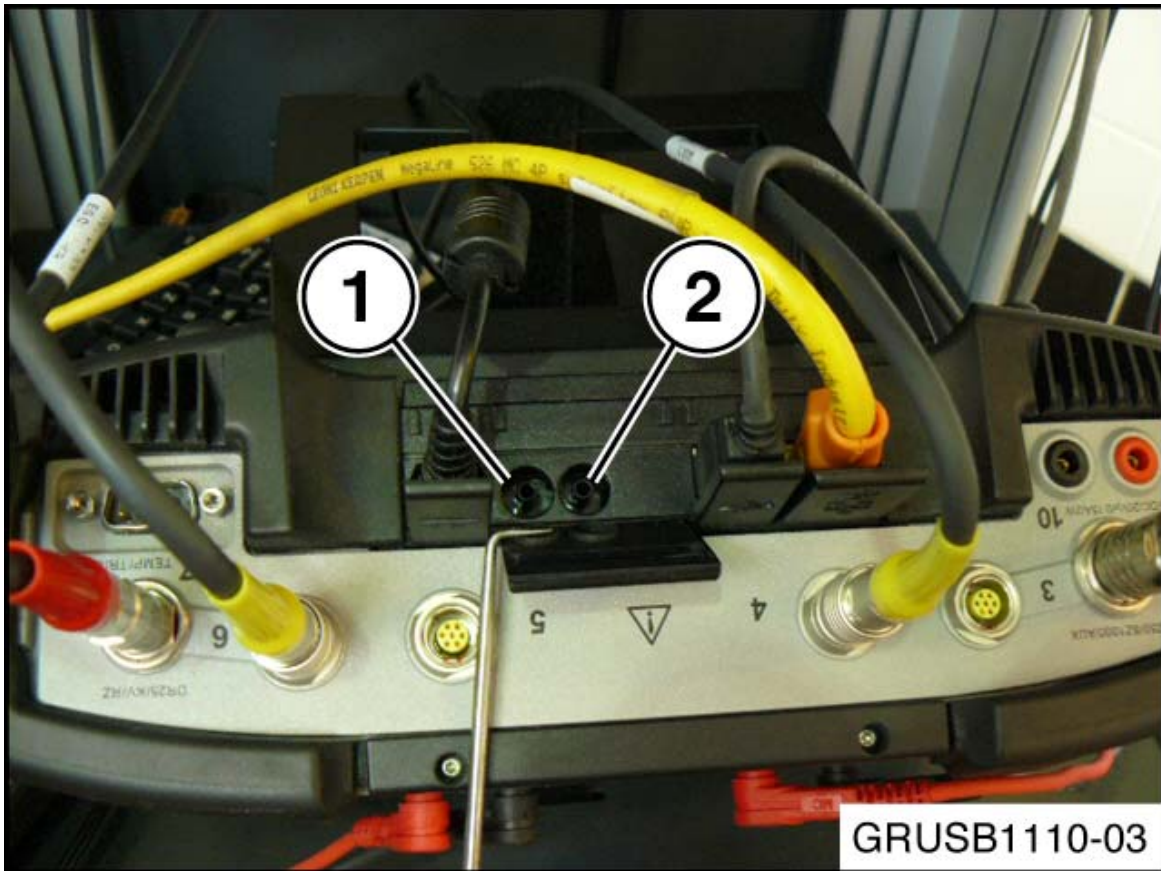
## Measuring Crankcase Pressure Using the IMIB Low-pressure Sensor Function

Preparing ISID and IMIB for Low-pressure Measurement:

1. Select "Activities".
2. Select "Measuring Devices".
3. Select "Measuring Device".
4. Select "OK".
5. Select the appropriate IMIB when the Connection Manager screen is shown.
6. Select "Set Up Connection".
7. When the multimeter screen is shown, select "Low Pressure 1".
8. Connect the pressure measurement hose, P/N A5E0134072, to the left port on the IMIB (1). Two measurement hoses were shipped with the IMIB to every center. See the illustration below. Refer to SI B04 35 09 for more information regarding the equipment shipped to all centers with the IMIB.

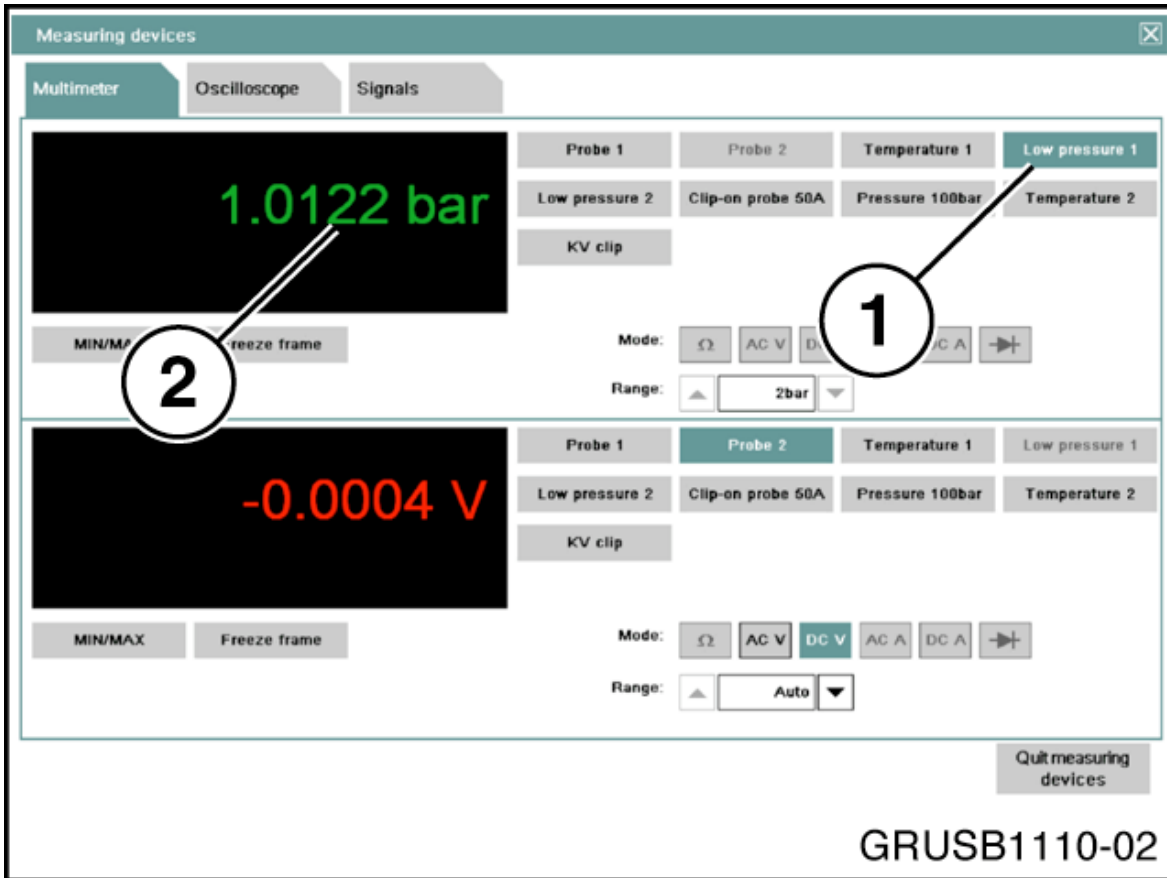
Port 1 = (1)

Port 2 = (2)



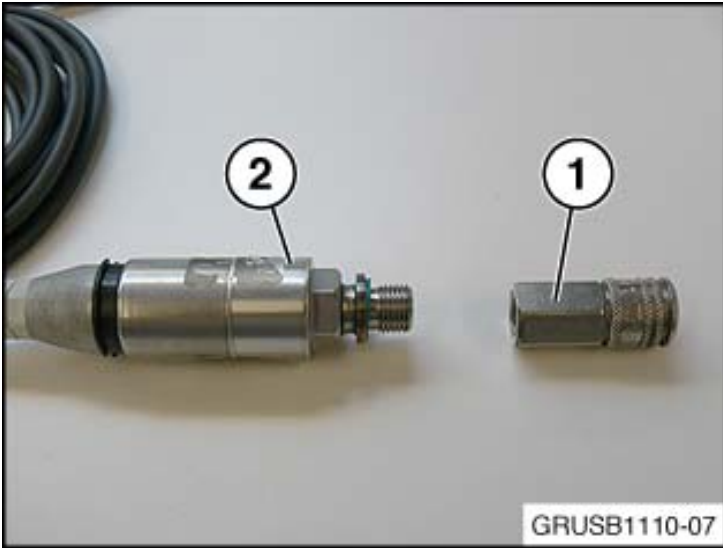
9. Low pressure 1 (1) should be highlighted in green. Observe and record the current ambient pressure (2).

**Note: The illustration is only an example of what will be seen on the screen. This is based on center elevation and weather patterns. This value must be recorded each time the pressure test is conducted.**



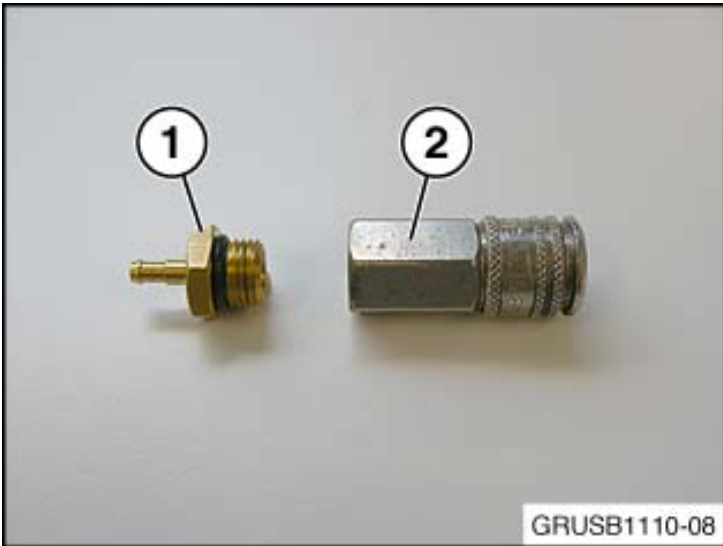
Diagnostic Tool Adapter P/N 81 29 2 158 850.

The adapter will be used to adapt the 2G quick disconnect equipment during low-pressure measurements (up to 3 bar; see the user's guide), and is attached to the IMIB using the low-pressure rubber hose (Siemens P/N A5E01034072), supplied with the IMIB. For additional information, refer to Service Information B04 15 10.



Option 1:

Remove the quick disconnect coupler (1) from the 2G equipment 25 bar pressure transducer (2).



Install the Diagnostic Tool Adapter, P/N 81 29 2 158 850 (1), on to the quick disconnect coupler (2).



Remove the engine oil cap and install the special pressure tester adapter, P/N 83 30 0 496 326 (1). Connect the quick disconnect coupler (2) onto the pressure tester adaptor. Connect the IMIB pressure measurement hose, P/N A5E0134072 (3).

Refer to the table located on SIB 11 08 03 for specifications.

### Alternative Measurement/Connection Solution



Remove the oil cap adaptor from the existing Slack Tube Manometer.



Remove the engine oil cap and install the oil cap adaptor (1). Connect the IMIB pressure measurement hose, P/N A5E0134072 (2).

Refer to the table located on SIB 11 08 03 for specifications.