SI M11 07 08
Engine

July 2018
Technical Service

CRANKCASE VENTILATION SYSTEM DIAGNOSIS AND MEASUREMENT

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

This Service Information bulletin replaces SI B11 07 08 **dated July 2017**

What's New:

• BXX engine specifications diagnostic tips updated

• Basic diagnostic tips updated

MODEL

All

INFORMATION

All current MINI 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 (underpressure) 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.

UPDATE! **Causes of Excessive Overpressure (Pressure)**

- Internal engine damage/wear
- Obstruction in the crankcase ventilation system
- Defective pressure control valve
- UPDATE! Cylinder head cover waste gate 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)

UPDATE! **Cause of Excessive Underpressure (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 Underpressure

- 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

Attached to this Service Information bulletin are two procedures:

1. Preparing an engine oil cap for a crankcase pressure measurement
2. Measuring the crankcase ventilation system using the ISID and IMIB diagnostic equipment

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.

Engine Variant	Specification (mBar)
	Min - Max
UPDATE! B36	15.0 – 25.0
UPDATE! B38 & XB2H	15.0 – 27.0
UPDATE! B46	15.0 – 29.0
UPDATE! B48	20.0 – 52.0

All Other Engines

Specification and actual readings from the vehicle may vary by up to ±10%, but not more than 4.0 mBar.

Engine Variant	**Specification (mBar)**
W10	1.0 - 6.0

W11	2.5 - 4.0
N12	22.0
N14	38.0
N16	36.0
N18	36.0

WARRANTY INFORMATION

Not applicable.

Posted: Tuesday, July 17, 2018

ATTACHMENTS

View PDF attachment **M110708_Engine_Oil_Cap_Modification**.

View PDF attachment **M110708_Measuring_Crankcase_Pressure_Using_IMIB**.

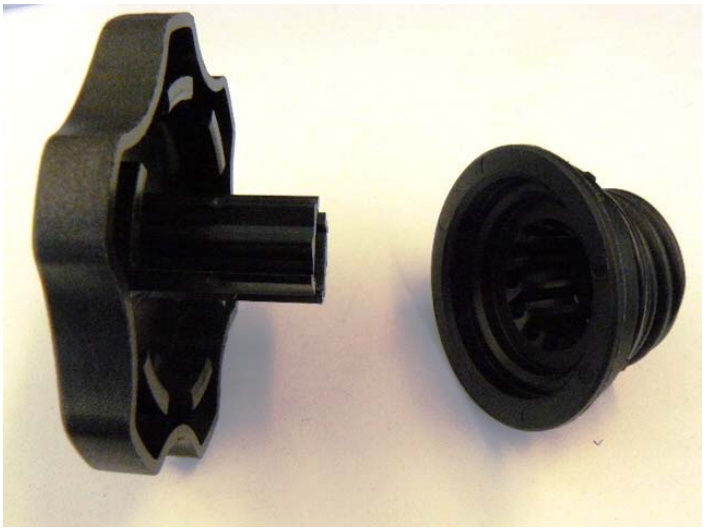
Preparing the Engine Oil Cap for a Crankcase Pressure Measurement

The modifications described in this document are permanent. Modified engine oil caps should never be left on the engine and released to the customer. Once the engine oil cap is modified, it can be used for diagnosing multiple engines of the same variant. Modifications to the engine oil cap are not covered under Warranty.

Select one of the following oil caps for the engine variant required.

- W10 and W11 – P/N 11 12 1 486 686
- N12 and N16 – P/N 11 12 7 542 116
- N14 and N18 – P/N 11 12 7 572 848

W10 and W11 – P/N 11 12 1 486 686



Separate the engine oil cap cover and the threaded section, using a suitable tool.

Drill a hole in the center of the threaded section to accept a 3/16 barb x 1/8 NPTF brass or nylon plumbing fitting.

Remove all loose debris.

Before reassembling the oil cap, the cover will need a 12mm hole drilled in the center.

Reassemble the engine oil cap and threaded insert.

Insert the IMIB low-pressure rubber hose (Siemens P/N A5E01034072) into the oil cap, and push gently over the 3/16 barbed fitting.

N12 and N16 P/N 11 12 7 542 116 or N14 and N18 P/N 11 12 7 572 848

Note: The modification procedure is the same for both of the caps specified above. The caps differ slightly in height and cannot be interchanged.

Drill a hole in the center on the engine oil cap to accept a 3/16 barb x 1/8 NPTF brass or nylon plumbing fitting.

Insert the IMIB low-pressure rubber hose (Siemens P/N A5E01034072) into the modified oil cap, and push gently over the 3/16 barbed fitting.

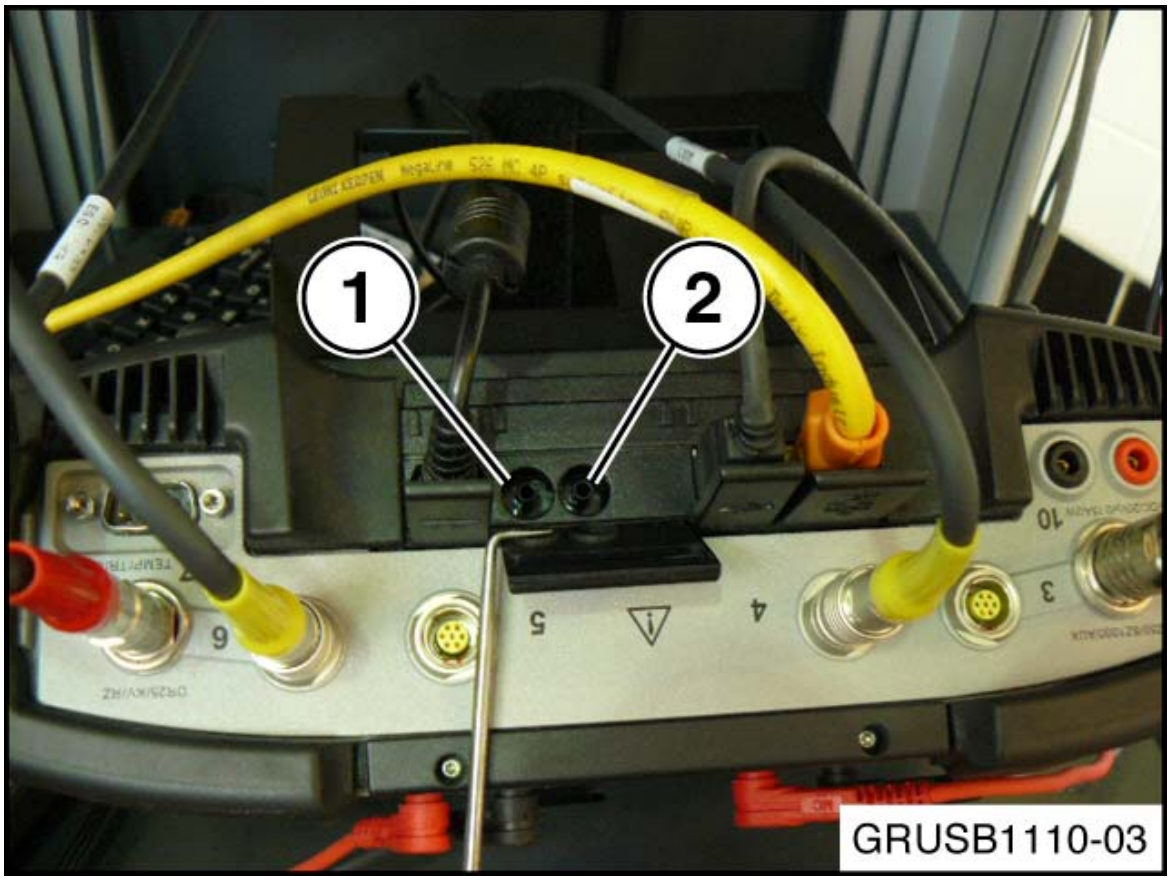
Refer to the table located in SI M11 07 08 for specifications and measurement procedure.

Measuring Crankcase Pressure Using IMIB Low-pressure Sensor Function

Preparing the ISID and IMIB for Low-pressure Measurement:

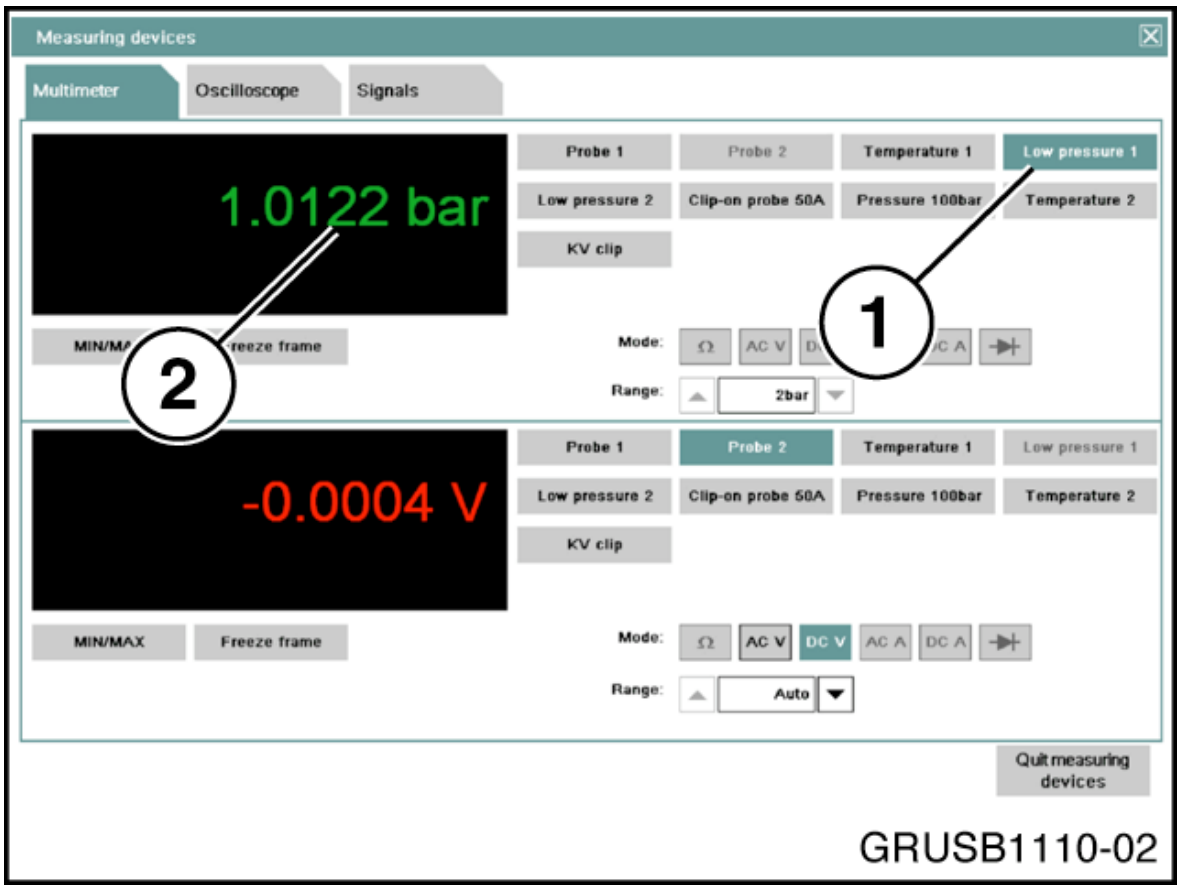
1. Select “Activities”.
2. Select “Measuring Devices”.
3. Select “Measuring Device”.
4. Select “OK”.
5. Select the appropriate IMIB when the Connection Manager screen is shown.
6. Select “Set Up Connection”.
7. When the multimeter screen is shown, select “Low Pressure 1”.
8. Connect pressure measurement 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.



Measurement Connection

Remove the engine oil cap and install the modified oil cap adapter. Connect the IMIB pressure measurement hose P/N A5E0134072.

Refer to the table located in SI M11 07 08 for specifications.