SI B11 03 13
Engine

August 2016
Technical Service

ENGINE OIL CONSUMPTION

MODEL

All

UPDATE! INFORMATION

All engines consume a certain amount of engine oil. This is necessary in order to properly lubricate the cylinder walls, pistons, piston rings, valves and if equipped, the turbocharger(s).

In addition, engines with less than 10,000 miles will generally consume additional engine oil because the internal engine components are not fully seated (break-in). Therefore engine oil consumption analysis should be performed after this break in period.

Once a new or remanufactured engine has accumulated 10,000 miles, oil consumption can be considered if there is a drastic change in the engine oil consumption rate (e.g., the engine oil consumption rate triples) under similar driving conditions.

Engines equipped with a turbocharger(s) will consume more engine oil than normally aspirated engines (non-turbocharged). The additional oil that is consumed in a turbocharged engine is mainly due to the turbocharger lubrication requirements. Some of the engine oil normally migrates past the turbocharger turbine bearing seals and will enter the intake tract of the engine. All turbocharged engines also require a complex crankcase ventilation system. The crankcase ventilation system needs to maintain a small vacuum on the crankcase and not allow the crankcase to be pressurized.

Pressurizing the engine crankcase can lead to external engine oil leaks and increased engine oil consumption via the piston rings and valve seals. When the load and the boost level of a turbocharged engine is varied, the path of the crankcase pressure is changed. During the crankcase ventilation path transition, a small amount of engine oil will pass through the crankcase ventilation system and is additionally consumed. Oil residue found in these crankcase ventilation hoses is a normal condition for properly operating turbocharged engine. The additional engine oil consumption of a turbocharged engine, as compared to a normally aspirated engine, is normal and not a defect.

UPDATE! OIL CONSUMPTION SPECIFICATION

Engine type:	Oil Consumption Specification:
All BMW “N” and “B" engines except N63, N63T, N74 and BMW Motorsport engines	1 liter per 1,500 miles

All BMW “M” engines (i.e.M54, N62, etc.), N63, N63TU and N74 engines	1 liter per 750 miles
All BMW Motorsport engines (“S” engines)	2.5 liters per 1,000 miles

UPDATE! DIAGNOSTIC HINTS

When an oil consumption complaint is received, it may be possible to correct it without performing extensive engine repairs. Check the following frequent causes of excessive oil consumption prior to undertaking any engine consumption analysis or repairs.

UPDATE! Proper Maintenance

Has the vehicle received proper maintenance? Certain external conditions (mainly city driving style and/or high engine loads; poor fuel quality; and extreme ambient temperatures), combined with excessively long oil service intervals may accelerate engine oil degradation, which may cause premature wear of the engine components. Continuous city driving and very high ambient temperatures are the most influential factors causing premature oil aging and consequential engine mechanical deterioration.

External Leakage

The engine should be leak-free before starting any engine oil consumption analysis.

Overfilling

If the oil level is too high, oil in the crankcase will be thrown against the cylinder walls and consumed. Check the dipstick markings or electronic measurement (as equipped) to be sure of accuracy. The oil level must not be higher than the upper mark.

UPDATE! Engine Oil Viscosity/Quality

The use of oil with the wrong viscosity rating for the operating conditions can cause high oil consumption. Check the Owner's Manual or SI B11 01 15 to determine the proper viscosity for the conditions.

UPDATE! Engine Speed and Load

If vehicle operating conditions are severe, oil consumption will be higher than normal. Extreme load, continuous high engine speed or long idling times in traffic will result in increased oil consumption.

Crankcase Ventilation

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. One of the results of a malfunctioning crankcase ventilation system can be increased engine oil consumption. Refer to SI B11 03 08 for measuring specifications and procedures.

Turbocharged Engines

Engines that are fitted with a turbocharger(s) will consume more engine oil than naturally aspirated engines (non-turbocharged engines). In this case, a turbocharged engine could require topping up of engine oil more frequently. For vehicles with turbocharged engines, refer to the attachment to help identify a turbocharger with acceptable oil leakage.

B110313_Acceptable_Turbocharger_Oil_Leakage_8_5_2016

MEASURING OIL CONSUMPTION

These measurements should only be considered after all of the points above have been reviewed.

Vehicles with N63TU – Measuring oil level electronically using the Oil Level Test Plan in ISTA/D

Applicable models and I-levels:

- F01 and F02 with the N63T engine, produced from 3/2013 and later with I-Level F001-13-03-501 or higher
- F06, F07, F12 and F13 with the N63T engine, produced from 3/2013 and later with I-Level F010-13-03-501 or higher
- F10 with the N63T engine produced from 7/2013 and later with I-Level F010-13-07-501 or higher
- F15 and F16, all I-Levels

Test plan path:

1. The engine will need to be at operating temperature before starting the test plan.
2. Select “Service Function.”
3. Select “Drive.”
4. Select “Motor Electronics.”
5. Select “Motor Oil.”
6. Select “Oil Level.”
7. Select “Continue.”
8. Follow the steps as directed in the test plan to complete the measurement.

The test plan will identify the actual oil level, and will advise the amount of engine oil needed to correctly fill the engine when conducting an oil consumption test. After topping up the engine oil, perform the test plan one more time to ensure the oil level is correct. The vehicle must be driven 1,000 miles or until the next low engine oil message appears (whichever comes first). The oil level

test plan must be performed again to identify the consumption level in the distance driven.

Vehicles with and without an engine oil dipstick (manual oil consumption measurement):

When a customer complaint of engine oil consumption is received, the engine oil must be drained, measured and the engine oil refilled.

UPDATE! The vehicle must be driven 1,000 miles or until the next low engine oil message appears (whichever comes first). The oil must be drained again and measured to identify the consumption level.

Use the attached oil consumption checklist to document the vehicle information, current engine condition and oil consumption results. Work through the checklist to set up the oil consumption test. If part one exceeds the allowable oil consumption for that engine variant then proceed to part 2 to complete the diagnosis.

BMW_Oil_Consumption_Checklist_8_5_2016

UPDATE! N63, N63TU, N63R, S63, S63TU, S63R AND N74 CUSTOMER INFORMATION

Provide the attached brochure to the customer when topping up the engine oil.

B110313_Oil_Consumption_Customer_Brochure_8_5_2016

WARRANTY INFORMATION

Not Applicable.

ATTACHMENTS

View PDF attachment **B110313_Acceptable_Turbocharger_Oil_Leakage_8_5_2016**.

View PDF attachment **B110313_Oil_Consumption_Customer_Brochure_8_5_2016 (2)**.

View PDF attachment **BMW_Oil_Consumption_Checklist_8_5_16 (2)**.