



Fluids and sealers that are described in this Operating Fluids manual are recommended by BMW.

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1.0 General Information

Use of engine oil that meets the specifications for a vehicle is important for the operation and service life of an engine.

Engine oil requirements will depend on the engine design, operating conditions, oil change intervals and, in the case of diesel engines, the fuel grade.

A modern engine oil provides more than just a lubrication function. The following qualities are required:

Good Wear Protection and Friction Reduction

Frictional losses will lead to a reduction of engine power and efficiency. An appropriate engine oil will minimize frictional losses. Excessive wear can lead to a reduction in service life (e.g. wear of bearings, piston rings, cam lobes) or to mechanical failure.

Limited Tendency to Produce Combustion Residue

During engine operation, a limited amount of oil enters the combustion chamber, where it is burned. Combustion residues or deposits, which build up in the combustion chamber, lead to unwanted increases in compression and promote surface ignition ("pinging"). An appropriate engine oil will help prevent such a condition.

Favorable Viscosity Temperature Behavior

Viscosity is the tendency of oil to resist flowing. Engine oil, when cold, should be thin enough so that the engine can be cranked over. Hot oil should be thick enough to maintain proper lubrication.

Anti-Foaming

The oil is forcefully mixed with air during engine operation. Heavy foaming will lead to impaired lubrication and reduction in oil flow rate. To prevent foaming, antifoaming additives are mixed with the oil.

Good Corrosion Inhibition

The engine oil must prevent corrosion on engine components under all circumstances. Corrosion and rust inhibitors are added to displace water and acids from metal surfaces so that oil coats them.

Mixing Ability/Compatibility

It must be possible to mix all engine oils with each other, even synthetic with mineral oils, without causing any incompatibility problems. A further requirement is the compatibility with all materials contacted by oil, in particular oil seals, hoses and paint.

Good Thermal Conductivity/Good Cooling Property

Engine oil makes an important contribution to the cooling of an engine. It must transfer heat from friction surfaces, and combustion heat away from affected areas. The oil absorbed heat is carried back to the oil pan where it is transferred to the surrounding air.

Good Dispersant/Detergent Qualities

To limit or slow down the formation of combustion deposits and acidic components, together with abrasive particles and dirt from the intake air, good engine oils contain a detergent additive. Deposits of carbon and dirt are loosened and suspended in the oil, being drained away at the next oil change.

Oxidation Inhibitors and Aging Stability

Oxidation can be described as the oxygen absorption of hydrocarbons formed in the oil. The results of oxidation have a negative impact on viscosity causing corrosion on certain metals and the formation of sludge. Inhibitors are added to prevent oxidation from occurring. A good engine oil must maintain its stability during the required oil change intervals.

Good Lubricating Oil Must:

1. Lubricate moving parts to minimize wear.
2. Lubricate moving parts to minimize loss from friction.
3. Remove heat from engine parts by acting as a cooling agent.
4. Absorb shocks between bearings and other engine parts, reducing engine noise and extending engine life.
5. Form a good seal between piston rings and cylinder walls.
6. Act as a cleaning agent.

2.0 Grading Of Oils

Viscosity Number

A method of classifying an oil by number, based on its resistance to flow at a high temperature.

These numbers are usually prefixed by SAE which is the abbreviation for the Society of Automotive Engineers.

A lower SAE Number (i.e. SAE 5W) indicates a thinner oil with a higher flow rate, for use at lower temperatures.

A higher SAE Number (i.e. SAE 30) indicates a thicker oil with a slower flow rate, for use at higher temperatures.

Multigrade Oils

A multigrade, or multiviscosity oil has the qualities of a lower number oil at low temperatures and those of a higher number oil at high temperatures. Multigrade oils have numbers such as SAE 5W- 30 and SAE 10W-40. For reliable engine performance in all temperature ranges mineral based engine oil viscosity must be matched to the temperature range at which the vehicle will be operated.

Single Grade Oils

A single grade viscosity oil has a limited temperature/viscosity range compared with multigrade oils. Due to the limited temperature/viscosity range of these oils they are not recommended for use in BMW engines.

Oil Classifications

A method of classifying oil was jointly developed by the SAE, API (American Petroleum Institute), and ASTM (American Society for Testing and Materials). Engine oils are rated according to two engine use categories:

C = Compression Ignition (i.e. CC)

Compression Ignition (C) oils are those that are used for diesel engines. The current service ratings for diesel-engine lubricating oils are: CA, CB, CC, CD, CE, CF and CG. The oils differ in their properties and in the additives they contain.

S = Spark Ignition (i.e. SE)

Spark Ignition (S) oils are those that are used for gasoline engines. The current service ratings for gasoline-engine lubricating oils are: SA, SB, SC, SD, SE, SF, SG, SH, SJ and SL. These oils differ in their properties and in the additives they contain.

Another method of classifying minimum performance standards for gasoline-fueled engine oils has been developed through ILSAC (International Lubrication Standardization Approval Committee). Oils that meet ILSAC GF-1 performance standards must have a “starburst” certification mark displayed on the print of the oil product packaging.

3.0 Engine Oil Change Intervals

With the introduction of the 1999 Model Year vehicles BMW has introduced an extended oil change interval of approximately 15,000 miles (depending on engine operating conditions) on most models.

To coincide with the increased oil change interval, BMW introduced “BMW High Performance Synthetic Oil” which is recommended for use on all 1999 Model Year vehicles (except E36 318ti, 323is/iC, 328is/iC, M3, M Roadster and M Coupe models) whenever a service is necessary.

Note: If it is necessary to top up the engine oil between oil changes use of synthetic low viscosity engine oils which conform to the API classification SL or higher is recommended.

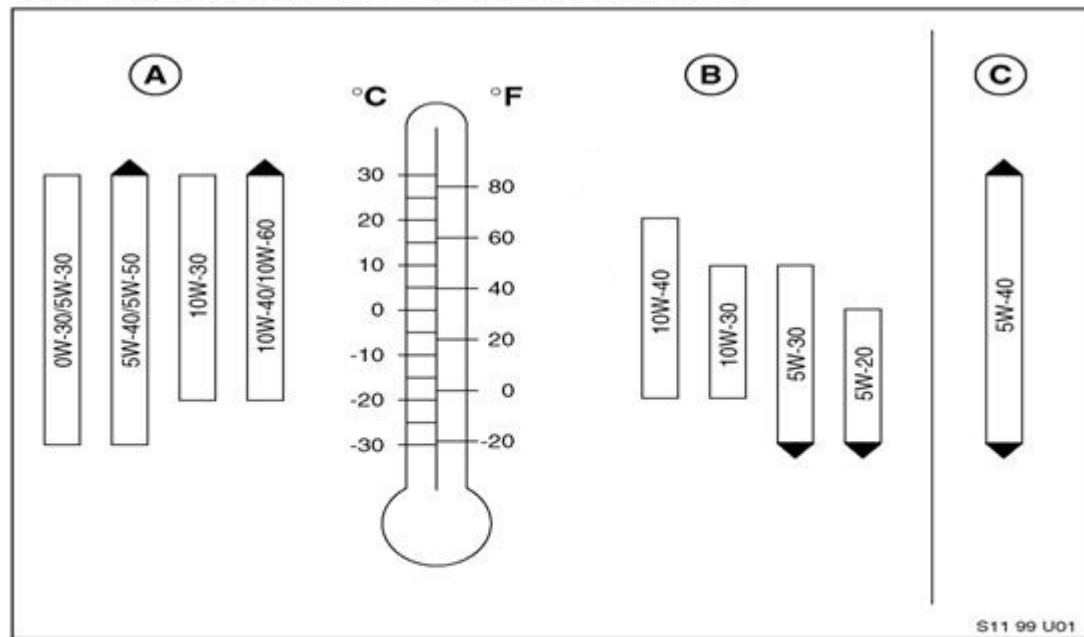
Additional information can be obtained from the BMW website (www.bmwusa.com) and toll free number (1-800-831-1117).

BMW High Performance Synthetic Engine Oil may also be used on Model Year 1999 E36 (3-Series and M models) as well as Model Year 1998 and earlier BMW models.

The oil change intervals should not be extended due to the greater durability of a fully synthetic engine oil. The engine oil and filter should always be changed as per the vehicle’s Service Interval Indicator when the “Oil Service” or the “Inspection” display appears regardless of the type of oil being used.

BMW mineral-based High Performance engine oil is also offered for model year 1998 and earlier BMW models. For reliable engine performance in all temperature ranges mineral-based engine oil viscosity must be matched to the temperature range at which the vehicle will be operated. See Engine Oil Temperature/Viscosity Table below.

BMW Engine Oil Temperature/Viscosity Table



A/B: Brand name oils approved per API or ACEA (CCMC)

A = Diesel engines

B = Spark-ignition engines

C: BMW High Performance Synthetic Oil

C = Valid for spark-ignition and diesel engines

Other Oil Changes For Cars Without Service Indicator:

Model Year(s)	Mileage
1980 and later	7,500
1975 thru 1979	6,500

1974 or earlier 4,000
Including oil filter. However, at least twice annually, preferably before and after the winter season.

Under severe driving conditions it is recommended to increase the number of oil services.

4.0 Condition Based Service

Condition Based Service measures, monitors, and determines the required maintenance of several service items independent from each other. This technology prompts the customer to bring the vehicle for service whenever one of the CBS items requires maintenance or replacement. CBS strikes a compromise between too frequent maintenance and too rigid service intervals that call for the replacement of service items which may still have substantial remaining useful life. CBS also details the recommended, due, and overdue required maintenance during and after the BMW Vehicle Maintenance Program Agreement. Thus, CBS allows BMW customers to experience a technology that makes service more convenient, transparent and structured.

Refer to applicable New Vehicle Preparation and Maintenance Requirements Service Information Bulletins in TIS.

5.0 Engine Oil Additives

The use of engine oil additives is not recommended and not necessary on BMW engines. Instead, use of BMW High Performance Synthetic Oil in 1999 model year and later BMW models is recommended and use of either BMW High Performance Synthetic Oil, BMW High Performance Mineral Oil or one of today's highly advanced brand name lubricating oils conforming to API classification SH or higher in 1998 and earlier BMW models is recommended.

Today's modern oils and fluids for engines are already formulated by the manufacturer and/or BMW NA with sophisticated additive packages designed to reduce sludge build-up, keep contaminants in suspension and maintain viscosity of the oil. Additional additives can compromise the manufacturer's or BMW NA's developed formulation.

BMW NA does not endorse or recommend the use of engine oil beyond the additives already included in the operating fluid manufacturer's additive package.

The use of engine crankcase flushing detergent chemicals and/or automated crankcase flushing machines is not a BMW recommended procedure.

Since the inclusion of such additional additives may lead to component damage or compromise the longevity or function of BMW components, warranty coverage may be affected on any component where the failure is caused by inappropriate oil or operating fluids or the use of add-on additives.

6.0 Break-In Instructions

During the break-in period of a new engine or parts of a reconditioned engine (new bearings, crankshaft, pistons, etc.) BMW engines do not require special break-in oils.

A multiple grade engine oil that conforms with BMW specifications can be used for this purpose.

7.0 NG6 Front and Rear Radial Seal Sealant

When replacing the front or rear radial crankshaft seals on new generation 6 cylinder engines, use of a special Loctite® sealant is recommended to fill the seal grooves at the bedplate seam. Follow the appropriate repair instruction in TIS:

RA 11 14 005 – Front radial crankshaft seal replacement

RA 11 14 151 – Replacing crankshaft radial seal (rear)

All special tools required to perform these repairs have been sent out through the automatic tool shipment program and are listed in S.I. Bulletin 04 01 06.

Recommended Materials:

P/N 83 19 7 536 051 - Loctite® 128357 sealant compound\

P/N 83 19 7 515 683 - Loctite® 171000 primer

P/N 83 19 7 515 684 - Stamp

8.0 Lubricant For Oxygen Sensor

Application of Bostik NEVER-SEEZ® (Part No. NSBT-16) to threads of oxygen sensor is recommended.

9.0 Oil Consumption

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

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 complaints received prior to 6,000 miles cannot be considered.

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. The additional engine oil consumption of a turbocharged engine, as compared to a normally aspirated engine, is normal and not a defect.

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, M62, etc.), N63, N63TU and N74 engines	1 liter per 750 miles
All BMW Motorsport engines ("S" engines)	2.5 liters per 1,000 miles

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. Submit a PuMA case for assistance.

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 (stop-and-go traffic); fuels with high olefin content; sulfur and certain aromatic fractions; and very high ambient temperatures are the most influential factors causing premature oil aging and consecutive 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.

Engine Oil Viscosity/Quality

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

Engine Speed and Load

If vehicle operating conditions are severe, oil consumption will be higher than normal. Extreme load or continuous high engine speed 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 of engine oil more frequently. For vehicles with N63 and N63T engines, refer to SI B11 01 13 for additional details.

10.0 BMW Engine Oil Part Number Transition

All vehicles with the B38, B46, B48, B58, N20, N26, N47, N54 (E89 only), N55, N57, N63, N63R, N63TU, S55, S63, S63R, S63T, N74 and W20 engines:

The same information is also contained in the applicable ISTA/D engine oil service repair instruction.

All Older Engines (Designations starting without "N" or "B"):

For engine oil filling capacity refer to the TIS Operating Fluids Manual, Group 11, Section 13.0.

For torque specifications refer to the applicable ISTA/D engine oil service repair instruction.

Model Year 2016 and 2017 and Newer Gasoline and Diesel Engine Oil Quick Reference Chart

Gasoline Engines	Oil Viscosity	Part Number	Container Description
B46, B58, N20, N26 B48, B38, B36	0W-20, LL14FE+	83 21 2 365 954	12 x 1 Liter case
N54, N54T, N55, S63TU, S63R, S55, W20, N63TU, N63R, N74	0W-30 LL01FE	83 21 2 365 950	12 x 1 Liter case
	or		
	0W-30 LL01FE	83 21 2 449 994	Tanker Delivery – Liters

Diesel Engines	Oil Viscosity	Part Number	Container Description
N47, N57	0W-30 LL12FE	83 21 2 365 951	12 x 1 Liter case

Model Year 2012 to 2015 Gasoline and Diesel Engine Oil Quick Reference Chart

Gasoline Engines	Oil Viscosity	Part Number	Container Description
N20, N26, N51, N52K, N52T, N54, N54T, N55, S63, S63TU, S55, W20, N63, N63TU, N74, W20, B38, N74	0W-30 LL01FE	83 21 2 365 950	12 x 1 Liter case
	or		
	0W-30 LL01FE	83 21 2 449 994	Tanker Delivery –

			Liters
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Diesel Engines	Oil Viscosity	Part Number	Container Description
N47, N57, M57	0W-30 LL12FE	83 21 2 365 951	12 x 1 Liter case

Model Year 2011 and Older Gasoline and Diesel Engine Oil Quick Reference Chart

The 0W-30 LL01FE engine oil is fully compatible with the older engines and the 5W-30 LL01 engine oil. P/N 83 21 2 405 085 (5W-30 LL01 engine oil) is no longer available.

Use only part number 83 21 2 449 994 (0W-30 LL01FE engine oil) for your all of your future tanker deliveries.

Engines	Oil Viscosity	Old Part Number	New Part Number	Container Description
All BMW Gasoline Engines	5W-30 LL01	07 51 0 017 866	83 21 2 365 946	12 x 1 liter case
	5W-30 LL01	07 51 0 017 954	83 21 2 405 002	209 liter drum
	0W-30 LL01FE	None	83 21 2 449 994	Tanker Delivery – Liters
All BMW Diesel Engines	5W-30 LL04	07 51 0 037 195	83 21 2 365 949	12 x 1 liter case
BMW Motorsport Gasoline Engines (S55, S63, S63TU2)	5W-30 LL01	07 51 0 017 866	83 21 2 365 946	12 x 1 liter case
	5W-30 LL01	07 51 0 017 954	83 21 2 405 002	209 liter drum
	0W-30 LL01FE	None	83 21 2 449 994	Tanker Delivery – Liters

S54, S65 and S85 Motorsport engines:

BMW Motorsport Gasoline Engines (All model years for S54, S65 and S85)	10W-60	07 51 0 009 420	83 21 2 365 944	12 x 1 liter case
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11.0 Engine Oil Capacity

Engine oil capacity quick reference charts for all engines.

Series	Engine	Capacity: Quarts (Liters)	Torque Specs: Drain Plug	Torque Specs: Oil Filter Cap (O-ring gasket lightly oiled)
F87	N55	6.9 (6.5)	25Nm	25Nm
F07 without AWD	N63	9.5 (9.0)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F07 with AWD	N63	9.5 (9.0)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F06,F07 without AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F06,F07 with AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 without AWD	N63	9.5 (9.0)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 with AWD	N63	10.0 (9.5)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 without AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 with AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F15,F16	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
G12 without AWD	N63R	10.5 (10.0)	20Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
G12 with AWD	N63R	10.5 (10.0)	20Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
F80,F82,F83,	S55	6.9 (6.5)	25Nm: Aluminum sump 20Nm: Magnesium sump	25Nm
F06M,F10M,F12M,F13M,	S63T	9.0 (8.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
F85,F86	S63R	10.0 (9.5)	20Nm	Initial torque: 40Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
F22,F23,F30, F32,F33,F34,F36 without AWD	N26	5.3 (5.0)	8Nm	25Nm
F22, F23, F30,F32,F33,F34,F36 with AWD	N26	5.1 (4.8)	25Nm	25Nm
F25	N47T	5.5 (5.2)	25Nm	25Nm
F30,F31without AWD	N47T	5.5 (5.2)	25Nm	25Nm
F30,F31with AWD	N47T	5.5 (5.2)	25Nm	25Nm
F01,F02	N57	7.5 (7.0)	25Nm	25Nm
F02,F10 without AWD	N57T	6.9 (6.5)	25Nm	25Nm
F02,F10 with AWD	N57T	6.9 (6.5)	25Nm	25Nm
F15	N57T	6.9 (6.5)	25Nm	25Nm

Series	Engine	Capacity: Quarts (Liters)	Torque Specs: Drain Plug	Torque Specs: Oil Filter Cap (O-ring gasket lightly oiled)
F87	N55	6.9 (6.5)	25Nm	25Nm
F07 without AWD	N63	9.5 (9.0)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F07 with AWD	N63	9.5 (9.0)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F06,F07 without AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F06,F07 with AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 without AWD	N63	9.5 (9.0)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 with AWD	N63	10.0 (9.5)	40Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 without AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F10,F12,F13 with AWD	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
F15,F16	N63T	10.0 (9.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm / Cap drain plug: 10Nm
G12 without AWD	N63R	10.5 (10.0)	20Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
G12 with AWD	N63R	10.5 (10.0)	20Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
F80,F82,F83,	S55	6.9 (6.5)	25Nm: Aluminum sump 20Nm: Magnesium sump	25Nm
F06M,F10M,F12M,F13M,	S63T	9.0 (8.5)	25Nm	Initial torque: 30Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
F85,F86	S63R	10.0 (9.5)	20Nm	Initial torque: 40Nm / Release torque through 180 degree turn counter clockwise / Final torque: 40Nm
F22,F23,F30, F32,F33,F34,F36 without AWD	N26	5.3 (5.0)	8Nm	25Nm
F22, F23, F30,F32,F33,F34,F36 with AWD	N26	5.1 (4.8)	25Nm	25Nm
F25	N47T	5.5 (5.2)	25Nm	25Nm
F30,F31without AWD	N47T	5.5 (5.2)	25Nm	25Nm
F30,F31with AWD	N47T	5.5 (5.2)	25Nm	25Nm
F01,F02	N57	7.5 (7.0)	25Nm	25Nm
F02,F10 without AWD	N57T	6.9 (6.5)	25Nm	25Nm
F02,F10 with AWD	N57T	6.9 (6.5)	25Nm	25Nm
F15	N57T	6.9 (6.5)	25Nm	25Nm

Engine oil capacities for current BMW automobiles

Oil Capacities in U.S. quarts (liters)	Series	M50/52/54/56	M60/62	S50/52/54	S62					
	E36/M3/Z3	6.9 (6.5)			6.9 (6.5)					
	M Z3			S52 - 6.3 (6.0) S54 - 5.25 (5.0)						
	E38		8.0 (7.5)							
	E39/M5	6.9 (6.5)	8.0 (7.5)		6.9 (6.5)					
	E46	RWD - 6.9 (6.5) AWD - 8.0 (7.5)		S54 - 5.25 (5.0)						
	E52				8.0 (7.5)					
	E52 ALPINA		8.0 (7.5)							
	E53	8.0 (7.5)	8.5 (8.0)							
	E60	6.9 (6.5)								
	E83	6.5 (6.2)								
	E85	6.9 (6.5)		5.8 (5.5)						
	E86			5.8 (5.5)						
	Series	M10	M20	M21	M30	M42/44	M70/S70	M73	S14	S38
E24/M6				6.0 (5.75)					6.0 (5.75)	
E28/M5		4.50 (4.25)	6.0 (5.7)	6.0 (5.75)					6.0 (5.75)	
E30/M3	4.25 (4.0)	4.50 (4.25)			5.25 (5.0)			4.65 (4.40)		
E31						8.0 (7.5)	8.5 (8.0)			
E32				6.0 (5.75)		8.0 (7.5)				
E34/M5		4.50 (4.25)		6.0 (5.75)					6.0 (5.75)	