



SIB 11 02 20

2020-12-08

ENGINE REPLACEMENT AND ENGINE REPAIRS

This Service Information Bulletin (Revision 2) replaces SI B11 02 20 **dated September 2020**.

What's New (Specific text highlighted):

- SIB title changed
- Reusing or transferring components from the old engine to the new engine
- Vehicles using two turbochargers and vacuum operated wastegates
- Warranty

MODEL

INFORMATION

New and remanufactured replacement engine assemblies are **NOT pre-filled** with engine oil.

After replacing an engine with a new or remanufactured engine assembly, the engine oil level must be verified as outlined in the procedure below first, before starting the engine for the first time.

If the new or remanufactured replacement engine is started to determine electronically if the engine is filled with the appropriate amount of engine oil, damage to the replacement engine can occur immediately.

The engine may have some residual engine oil from assembly, but this is **not enough** engine oil to properly lubricate the engine to measure the engine oil level electronically when it is started for the first time.

Furthermore, the electronic engine oil measurement is only operational when the engine is running at its full operating temperature. Checking the engine oil without the engine running at operating temperature will lead to an incorrect or incomplete measurement.

After replacing the engine or making engine repairs that require the replacement or removal of the following components, you must perform a short oil pump and oil supply circuit priming procedure. Refer to the appropriate section below.

- Engine bearings
- VANOS gears
- Camshafts
- Bed plate resealing
- Engine oil pump
- Engine oil filter housing
- Cylinder head
- Engine oil cooler
- Anything that interrupts the engine oil supply circuit of the engine

Reusing or transferring components from the old engine to the new engine:

Always inspect and clean as needed when reusing or transferring components. If required, use a borescope to look inside. Contaminated engine parts (metal particles, fuel, water, antifreeze, etc.) can lead to subsequent engine or component failure and will not be covered by Warranty.

All vehicles using two turbos and vacuum operated wastegates:

When disassembling the vacuum supply system always ensure the hoses and components are marked or labeled so that reassembly is performed correctly. Always refer to the applicable repair instruction to ensure the vacuum hoses are connected to the correct bank turbocharger wastegate actuator or EPDW.

If the hoses are not connected correctly subsequent engine damage can occur. Engine or component failure related to incorrectly connected vacuum hoses will not be covered by Warranty.

PROCEDURE

Engine Replacement:

The following procedure applies to all engines equipped with an electronic engine oil level sensor, with or without an engine oil dipstick.

This procedure is used when the high-pressure fuel system pressure is already depleted from complete engine replacement.

1. After installation of the replacement engine and before starting the engine for the first time, remove the engine oil drain plug. Drain any residual engine oil from the crankcase.
2. Reinstall and torque the engine oil drain plug (with a new seal ring) per the applicable repair instruction.
3. Remove the oil filter housing cover and verify the oil filter is present. Reinstall the oil filter housing cover and torque it to the proper specification noted in the applicable repair instruction.
4. Fill the engine with the proper type and amount of engine oil, as specified in the applicable repair instruction.
5. Manually rotate the engine 2 revolutions in the **clockwise** direction with the appropriate wrench or a ratchet with socket. **Never rotate the engine counterclockwise.**
6. Connect a battery charger to the vehicle.
7. Remove the electric fuel pump fuse. Refer to the applicable wiring diagram using the VIN of the vehicle in ISTA.
8. Crank the engine for 10 seconds.
9. After 10 seconds have elapsed, stop the starter, and allow the starter to cool for 20 seconds.
10. Repeat steps 8 and 9 two additional times.
11. Reinstall the electric fuel pump fuse and start the engine. Verify proper engine operation.
12. After the engine has reached operating temperature, check the engine oil electronically or with the dipstick, and top up the engine oil as needed.

Cylinder Head Replacement or Valvetrain Repairs:

This procedure is used when the cylinder head is removed and installed or replaced. This also applies to valvetrain repairs where the valvetrain is disassembled from the cylinder head. This would include-

- Camshafts
- Eccentric shafts
- Intermediate levers
- Roller drag levers
- Valve springs
- Valves

The following procedure applies to all engines equipped with an electronic engine oil level sensor, with or without an engine oil dipstick.

This procedure is used when the high-pressure fuel system pressure is already depleted from complete engine replacement.

1. If the engine oil was drained, torque the engine oil drain plug (with new seal ring per the applicable repair instruction), ensure the proper type and amount of engine oil is used when refilling the engine.
2. If you are unsure, remove the oil filter housing cover and verify the oil filter is present. Reinstall the oil filter housing cover and torque it to the proper specification noted in the applicable repair instruction.
3. Manually rotate the engine 2 revolutions in the **clockwise** direction with the appropriate wrench or a ratchet with socket. **Never rotate the engine counterclockwise.**
4. Connect a battery charger to the vehicle.
5. Remove the electric fuel pump fuse. Refer to the applicable wiring diagram using the VIN number of the vehicle in ISTA.
6. Crank the engine for 10 seconds.
7. After 10 seconds have elapsed, stop the starter, and allow the starter to cool for 20 seconds.
8. Repeat steps 6 and 7 two additional times.
9. Reinstall the electric fuel pump fuse and start the engine. Verify proper engine operation.
10. After the engine has reached operating temperature, check the engine oil electronically or with the dipstick, and top up the engine oil as needed.

Engine Repairs:

This procedure is used when the engine oil supply circuit is interrupted during a repair. This applies to-

- VANOS gears
- Timing chain tensioner
- Bed plate resealing
- Engine oil pump
- Engine oil filter housing
- Engine oil cooler
- Any engine repair that interrupts the engine oil supply circuit of the engine

This procedure is used when the high-pressure fuel system pressure may not be depleted after minor engine repairs. The fuel injection system needs to be disabled by removing the fuel injector electrical connectors.

1. If the engine oil was drained, torque the engine oil drain plug (with new seal ring per the applicable repair instruction), ensure the proper type and amount of engine oil is used when refilling the engine.
2. If you are unsure, remove the oil filter housing cover and verify the oil filter is present. Reinstall the oil filter housing cover and torque it to the proper specification noted in the applicable repair instruction.

3. Connect a battery charger to the vehicle.
4. Remove all fuel injector electrical connectors to disable fuel injection.
5. Crank the engine for 10 seconds.
6. After 10 seconds have elapsed, stop the starter, and allow the starter to cool for 20 seconds.
7. Repeat steps 5 and 6 two additional times.
8. Reinstall the fuel injector electrical connectors, reassemble the vehicle and verify proper engine operation.
9. After the engine has reached operating temperature, check the engine oil electronically or with the dipstick, and top up the engine oil as needed.

Replacement Components Requiring 1,200 Mile Service

Certain BMW vehicles have specific components that require a “running-in” fluid replacement service after the first 1,200 miles of vehicle operation, refer to [SI B00 06 10](#) for more information.

WARRANTY INFORMATION

Claimable in conjunction with an applicable repair that is covered under the terms of a BMW Limited Warranty or BMW program coverage that applies and is active.

Defect Code:	Refer to AIR	Claim with the defect code that applies to the engine replacement or component repair that required this necessary work procedure to be performed
Labor Operation	Description (Associated work)	
Labor Allowance		
11 00 896	Engine oil priming procedure (Performing any of the repair procedures listed above that includes the engine oil pump and oil supply circuit priming procedure after engine replacement, cylinder head replacement or other applicable engine repairs)	
Refer to AIR		
Or:		
11 99 000	Work time for the engine oil priming procedure (See below) (Performing any of the repair procedures listed above that includes the engine oil pump and oil supply circuit priming procedure after engine replacement, cylinder head replacement or other applicable engine repairs)	
5 FRU		

Refer to AIR for the corresponding flat rate unit (FRU) allowance (See below).

Work Time Labor Operation 11 99 000

At the AIR start screen, use the Search for vehicle with vehicle identification number option (enter a minimum of the last 7 digits of the VIN).

In the AIR application, select Flat Rate Units from the top menu bar, enter **flat rate labor operation code 1100896 (without spaces)** in the search field, hit enter or the search icon to confirm that labor operation 11 00 896 applies and is available and then obtain the corresponding FRU allowance information.

If flat rate labor operation **11 00 896 is not found**, submit and claim for job/repair work time labor operation 11 99 000 for the FRU allowance as described above instead.

If other required work was also performed under labor operation 11 99 000, claim labor operation 11 99 000 one time only for all the job/repair WT FRU that was needed and itemize the total FRU amount claimed on the repair order and in claim comment section.

As applicable to your center, please refer to **SI B01 01 20** or **B01 07 20** for claiming your diagnosis work time, job/repair work time (WT), RO/Claim WT and/or repair explanation procedures.

QUESTIONS REGARDING THIS BULLETIN

Technical inquiries	Submit feedback at the top of this bulletin
Warranty inquiries	Submit an IDS ticket to the Warranty Department or use the chat available in the Warranty Documentation Portal
Parts inquiries	Submit an IDS ticket to the Parts Department