

General Description

LUBRICATION

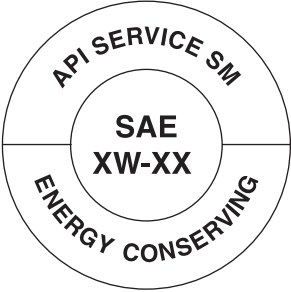

1. General Description

A: SPECIFICATION

| Lubrication method | | | | | Forced lubrication | | | | |
|--|--|--|---------------------|--------------------------------|--------------------------------|--------------------------------|-----------------------|---------------------------|--|
| Oil pump | Pump type | | | | Trochoid type | | | | |
| | Number of teeth | | Inner rotor | | 9 | | | | |
| | | | Outer rotor | | 10 | | | | |
| | Outer rotor diameter × thickness | | | | mm (in) | | 76 × 10 (2.99 × 0.39) | | |
| | Tip clearance between inner and outer rotors | | | mm (in) | Standard | 0.04 — 0.14 (0.0016 — 0.0055) | | | |
| | Side clearance between inner rotor and pump case | | | mm (in) | Standard | 0.02 — 0.07 (0.0008 — 0.0028) | | | |
| | Case clearance between outer rotor and pump case | | | mm (in) | Standard | 0.10 — 0.175 (0.0039 — 0.0069) | | | |
| | Relief valve spring | | Free length | | mm (in) | | 73.7 (2.902) | | |
| | | | Installed length | | mm (in) | | 54.7 (2.154) | | |
| | | | Load when installed | | N (kgf, lbf) | | 93.1 (9.49, 20.93) | | |
| | Performance (Oil temperature 80°C (176°F)) | | 600 rpm | Discharge pressure | | kPa (kg/cm ² , psi) | | 98 (1.0, 14) | |
| | | | | Discharge rate | | ℓ (US qt, Imp qt)/min. | | 4.6 (4.9, 4.0) or more | |
| | | | 5,000 rpm | Discharge pressure | | kPa (kg/cm ² , psi) | | 294 (3.0, 43) | |
| | | | | Discharge rate | | ℓ (US qt, Imp qt)/min. | | 47.0 (49.7, 41.4) or more | |
| | Relief valve working pressure | | | | kPa (kg/cm ² , psi) | | 588 (6.0, 85) | | |
| | Oil filter | Filter type | | | | Full-flow filter type | | | |
| Filtration area cm ² (sq in) | | Outer diameter: 68 mm (2.68 in) (Black) | | 800 (124) | | | | | |
| | | Outer diameter: 67.4 mm (2.65 in) (Blue) | | 555 (86) | | | | | |
| By-pass valve opening pressure | | | | kPa (kg/cm ² , psi) | | 160 (1.63, 23.2) | | | |
| Outer diameter × width mm (in) | | Outer diameter: 68 mm (2.68 in) (Black) | | 68 × 65 (2.68 × 2.56) | | | | | |
| | | Outer diameter: 67.4 mm (2.65 in) (Blue) | | 67.4 × 65.3 (2.65 × 2.57) | | | | | |
| Installation screw specifications | | | | M 20 × 1.5 | | | | | |
| Oil pressure switch | Type | | | | Immersed contact point type | | | | |
| | Operating voltage — power consumption | | | | 12 V — 3.4 W or less | | | | |
| | Warning light operating pressure | | | | kPa (kg/cm ² , psi) | | 14.7 (0.15, 2.1) | | |
| | Proof pressure | | | | kPa (kg/cm ² , psi) | | 981 (10, 142) or more | | |
| Engine oil | Total capacity (at overhaul) | | | | ℓ (US qt, Imp qt) | | 5.0 (5.3, 4.4) | | |
| | When replacing engine oil and oil filter | | | | ℓ (US qt, Imp qt) | | 4.2 (4.4, 3.7) | | |
| | When replacing engine oil only | | | | ℓ (US qt, Imp qt) | | 4.0 (4.2, 3.5) | | |

Recommended oil:

CAUTION:
It is acceptable to fill an engine with oil of another brand when replacing the oil, but make sure to use following oil specified by Subaru.

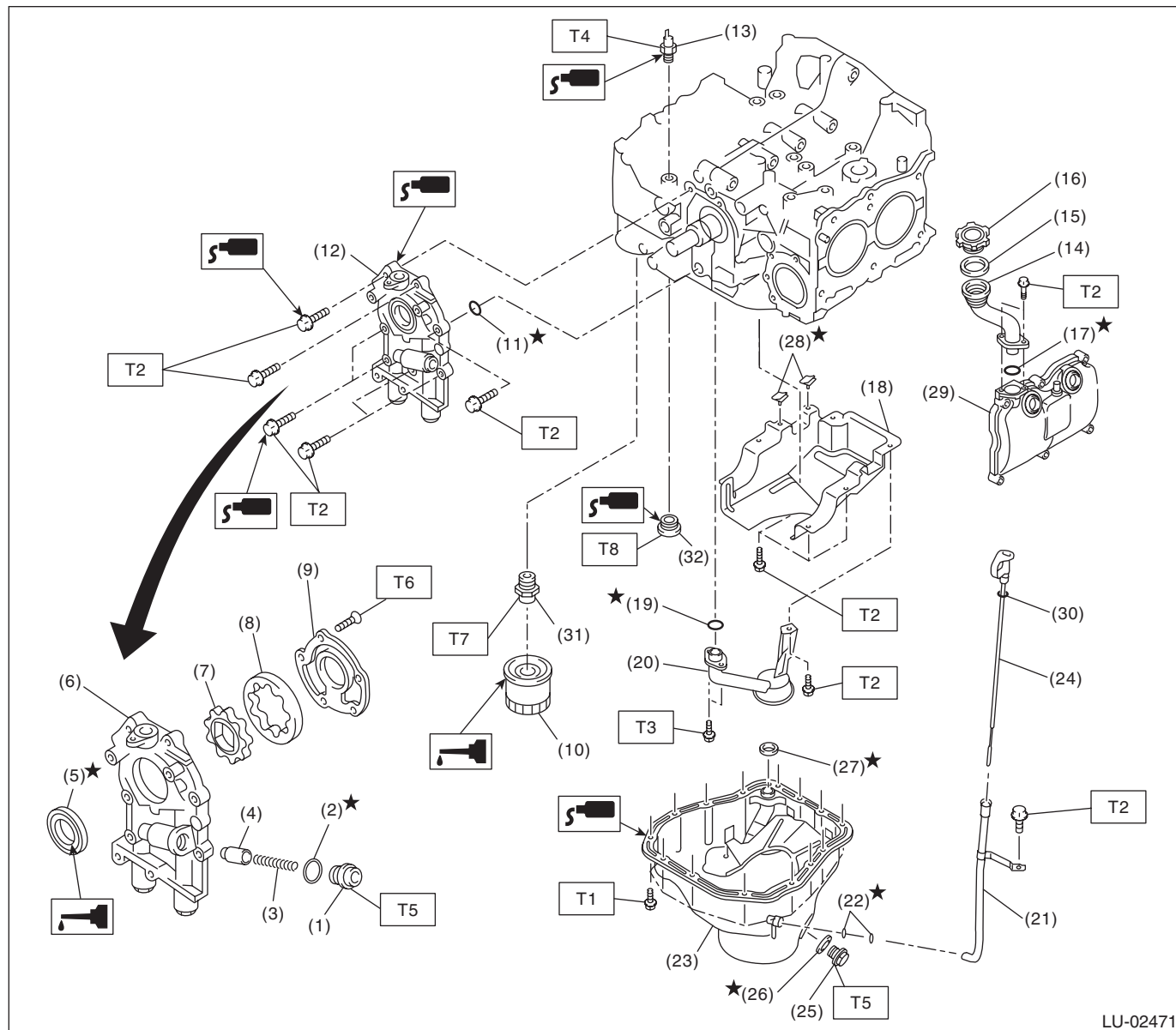
| Engine oil standard | | SAE viscosity No. |
|--|--|-----------------------|
| <div><div><p>RM-00076</p><p>For API standard, oil with SM "Energy Conserving" or SN "Resource Conserving" logo.</p></div><div>or</div><div><p>RM-00002</p><p>Those with the ILSAC standard GF-4 or GF-5 "starburst mark" displayed on top of the container.</p></div></div> | | 5W-30 (synthetic oil) |

NOTE:
The proper viscosity oil helps the engine maintain its ideal temperature, and cranking speed increased by reducing viscosity friction in hot condition.

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B: COMPONENT



- | | | |
|--------------------------|----------------------------|---------------------------|
| (1) Plug | (15) Gasket | (29) Rocker cover |
| (2) Gasket | (16) Oil filler cap | (30) O-ring |
| (3) Relief valve spring | (17) O-ring | (31) Oil filter connector |
| (4) Relief valve | (18) Baffle plate | (32) Plug |
| (5) Front oil seal | (19) O-ring | |
| (6) Oil pump case | (20) Oil strainer | |
| (7) Inner rotor | (21) Oil level gauge guide | |
| (8) Outer rotor | (22) O-ring | |
| (9) Oil pump cover | (23) Oil pan | |
| (10) Oil filter | (24) Oil level gauge | |
| (11) O-ring | (25) Drain plug | |
| (12) Oil pump ASSY | (26) Drain plug gasket | |
| (13) Oil pressure switch | (27) Gasket | |
| (14) Oil filler duct | (28) Seal | |

Tightening torque: N·m (kgf-m, ft-lb)

- | | |
|------------|-----------------------|
| T1: | 5 (0.5, 3.7) |
| T2: | 6.4 (0.7, 4.7) |
| T3: | 10 (1.0, 7.4) |
| T4: | 25 (2.5, 18.4) |
| T5: | 44 (4.5, 32.5) |
| T6: | 5.4 (0.6, 4.0) |
| T7: | 45 (4.6, 33.2) |
| T8: | 70 (7.1, 51.6) |

C: CAUTION

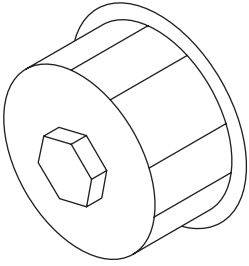
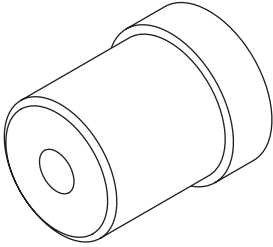
- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly and replacement.
- Vehicle components are extremely hot after driving. Be wary of receiving burns from heated parts.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- If the engine oil is spilt over exhaust pipe or the under cover, wipe it off with cloth to avoid emitting smoke or causing a fire.
- Prepare a container and cloth to prevent scattering of oil when performing work where oil can be spilled. If the oil spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Follow all government and local regulations concerning disposal of refuse when disposing of oil.

General Description

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D: PREPARATION TOOL

1. SPECIAL TOOL

| ILLUSTRATION | TOOL NUMBER | DESCRIPTION | REMARKS |
|---|-------------|-----------------------|---|
|  ST18332AA000 | 18332AA000 | OIL FILTER WRENCH | Used for removing and installing oil filter (Black). (Outer diameter: 68 mm (2.68 in)) |
|  ST-499587100 | 499587100 | OIL SEAL INSTALLER | Used for installing oil seal into oil pump. |

2. GENERAL TOOL

| TOOL NAME | REMARKS |
|--|---|
| Oil filter wrench (65/67 mm 14 Flutes) | Used for removing and installing oil filter (Blue). (Outer diameter: 67.4 mm (2.65 in)) |
| Circuit tester | Used for measuring resistance and voltage. |