

# GENERAL DESCRIPTION

## LUBRICATION

### 1. General Description

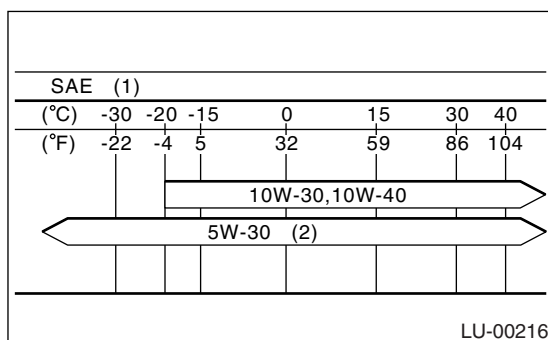
#### A: SPECIFICATIONS

Lubrication method			Forced lubrication
Oil pump	Pump type		Trochoid type
	Number of teeth	Inner rotor	9
		Outer rotor	10
	Outer rotor diameter × thickness		78 × 10 mm (3.07 × 0.39 in)
	Tip clearance between inner and outer rotor	STANDARD	0.04 — 0.14 mm (0.0016 — 0.0055 in)
		LIMIT	0.18 mm (0.0071 in)
	Side clearance between inner rotor and pump case	STANDARD	0.02 — 0.07 mm (0.0008 — 0.0028 in)
		LIMIT	0.12 mm (0.0047 in)
	Case clearance between outer rotor and pump case	STANDARD	0.10 — 0.175 mm (0.0039 — 0.0069 in)
		LIMIT	0.20 mm (0.0079 in)
	Capacity at 80°C (176°F)	600 rpm	Discharge pressure
Discharge quantity			4.6 ℓ (4.9 US qt, 4.0 Imp qt)/min.
5,000 rpm		Discharge pressure	294 kPa (3.0 kg/cm <sup>2</sup> , 43 psi)
		Discharge quantity	47.0 ℓ (49.7 US qt, 41.4 Imp qt)/min.
Relief valve operation pressure			588 kPa (6.0 kg/cm <sup>2</sup> , 85 psi)
Oil filter	Type		Full-flow filter type
	Filtration area		800 cm <sup>2</sup> (124 sq in)
	By-pass valve opening pressure		160 kPa (1.63 kg/cm <sup>2</sup> , 23.2 psi)
	Outer diameter × width		68 × 65 mm (2.68 × 2.56 in)
	Oil filter to engine thread size		M 20 × 1.5
Oil pressure switch	Type		Immersed contact point type
	Working voltage — wattage		12 V — 3.4 W or less
	Warning light activation pressure		14.7 kPa (0.15 kg/cm <sup>2</sup> , 2.1 psi)
	Proof pressure		More than 981 kPa (10 kg/cm <sup>2</sup> , 142 psi)
Oil capacity (at replacement)			4.0 ℓ (4.2 US qt, 3.5 Imp qt)

#### Recommended oil:

**API classification SL with the words “Energy Conserving” (if the oil with SL grade cannot be obtained, it is okay to use SJ grade oil).**

**ILSAC GF-3 or the equivalent which is indicated on the container with the new API certification mark (Star burst mark).**



- (1) SAE Viscosity No. and Applicable Temperature  
 (2) PREFERRED

The proper viscosity helps vehicle get good cold and hot starting by reducing viscous friction and thus increasing cranking speed.

#### CAUTION:

**When replenishing oil, it does not matter if the oil to be added is a different brand from that in the engine; however, use oil having the API classification and SAE viscosity No. designated by SUBARU.**

#### NOTE:

If the vehicle is used in areas with very high temperatures or for other heavy duty applications, the fol-

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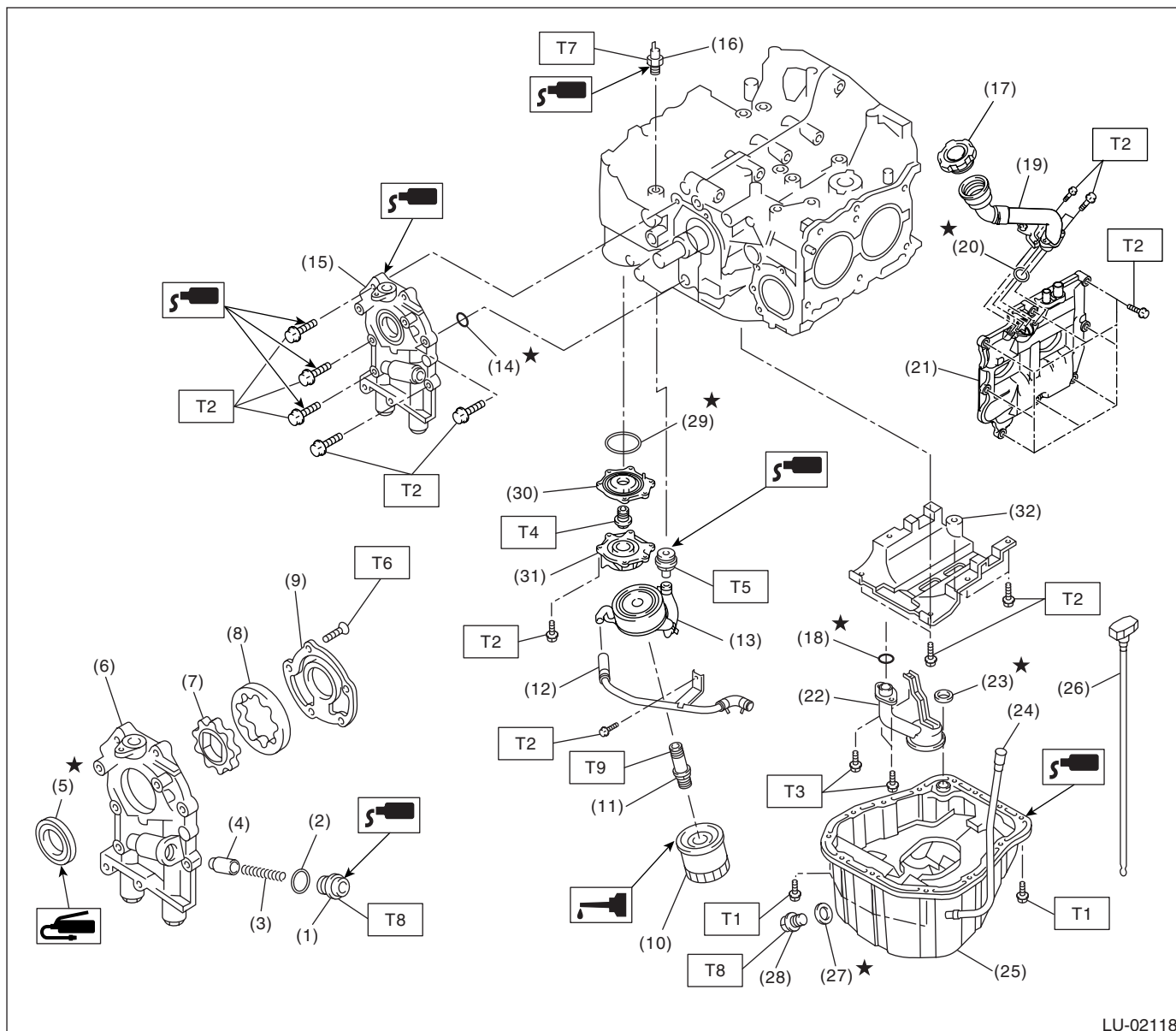
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lowing viscosity oils may be used: API  
classification: SL or SJ or SH  
SAE Viscosity No.: 30, 40, 10W-50, 20W-40, 20W-  
50.

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## B: COMPONENT



LU-02118

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

### Tightening torque: N-m (kgf-m, ft-lb)

**T1: 5 (0.5, 3.6)**

**T2: 6.4 (0.65, 4.7)**

**T3: 10 (1.0, 7.0)**

**T4: 45 (4.6, 33.2)**

**T5: 69 (7.0, 50.9)**

**T6: 5.4 (0.55, 4.0)**

**T7: 25 (2.5, 18.1)**

**T8: 44 (4.5, 32.5)**

**T9: 54 (5.5, 40)**

**LU(H4DOTC)-4**

## **C: CAUTION**

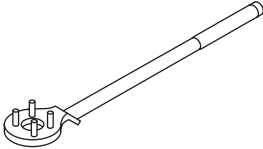
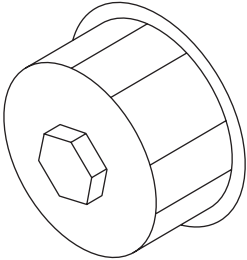
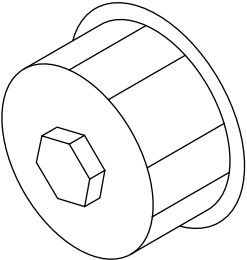
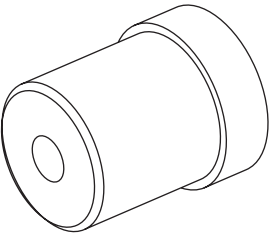
- Wear working clothing, including a cap, protective goggles, and protective shoes during operation.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust or dirt.
- Before removal, installation or disassembly, be sure to clarify the failure. Avoid unnecessary removal, installation, disassembly, and replacement.
- Be careful not to burn your hands, because each part in the vehicle is hot after running.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or safety stands at the specified points.
- Before disconnecting electrical connectors of sensors or units, be sure to disconnect the ground cable from battery.

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## D: PREPARATION TOOL

### 1. SPECIAL TOOLS

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-499977100</p>	49 9977100	CRANKSHAFT PULLEY WRENCH	Used for stopping rotation of crankshaft pulley when loosening and tightening crankshaft pulley bolt.
 <p style="text-align: center;">ST18332AA000</p>	18332AA000	OIL FILTER WRENCH	Used for removing and installing oil filter. (Outer diameter: 68 mm (2.68 in))
 <p style="text-align: center;">ST18332AA010</p>	18332AA010	OIL FILTER WRENCH	Used for removing and installing oil filter. (Outer diameter: 65 mm (2.56 in))
 <p style="text-align: center;">ST-499587100</p>	499587100	OIL SEAL INSTALLER	Used for installing oil seal to oil pump.