

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) 78 × 10 (3.07 × 0.47)	
	Tip clearance between inner and outer rotors		mm (in) 0.04 — 0.14 (0.0016 — 0.0055)	
	Side clearance between inner rotor and pump case		mm (in) 0.02 — 0.07 (0.0008 — 0.0028)	
	Case clearance between outer rotor and pump case		Standard mm (in) 0.10 — 0.175 (0.0039 — 0.0069)	
	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)	800 (124)
			Outer diameter: 65 mm (2.56 in)	470 (72.9)
	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)	68 × 65 (2.68 × 2.56)
			Outer diameter: 65 mm (2.56 in)	65 × 74.4 (2.56 × 2.93)
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 (Overhaul)		ℓ (US qt, Imp qt) 5.0 (5.3, 4.4)	
	When replacing engine oil and oil filter		ℓ (US qt, Imp qt) 4.3 (4.5, 3.8)	
	When replacing engine oil only		ℓ (US qt, Imp qt) 4.0 (4.2, 3.5)	

Recommended oil:

Those with an API standard SM “Energy Conserving” logo.

ILSAC standard GF-4 “Star burst mark” label on the container

SAE (1)							
(°C)	-30	-20	-15	0	15	30	40
(°F)	-22	-4	5	32	59	86	104

LU-02203

- (1) SAE viscosity No. and applicable temperature
- (2) Recommended

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

CAUTION:

When replacing oil, it does not matter if the oil to be added is a different brand from that in the engine; however, use oil with SUBARU designated API standard and SAE viscosity numbers.

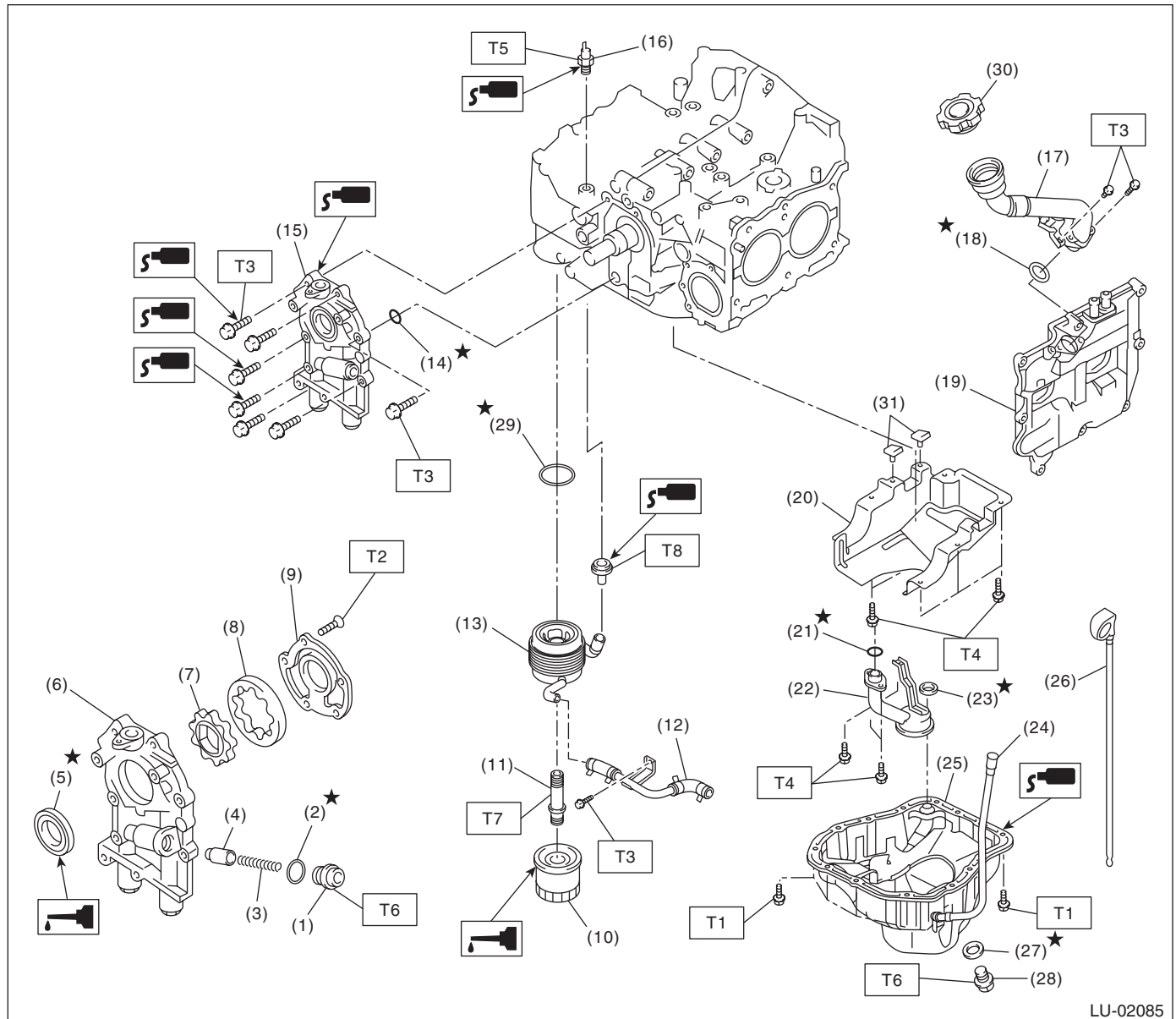
NOTE:

If the vehicle is used in regions of high temperatures or in other severe environments, use oil with the viscosities shown below. API standard: SM or SL
 SAE viscosity No.: 30, 40, 10W-50, 20W-40, 20W-50

General Description

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B: COMPONENT



LU-02085

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

Tightening torque: N·m (kgf·m, ft·lb)

- | | |
|------------|------------------------|
| T1: | 5 (0.5, 3.6) |
| T2: | 5.4 (0.55, 4.0) |
| T3: | 6.4 (0.65, 4.7) |
| T4: | 10 (1.0, 7.0) |
| T5: | 25 (2.5, 18.4) |
| T6: | 44 (4.5, 32.5) |
| T7: | 54 (5.5, 40) |
| T8: | 69 (7.0, 50) |

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C: CAUTION

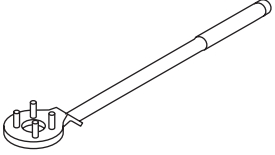
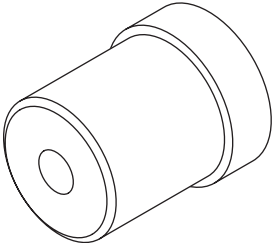
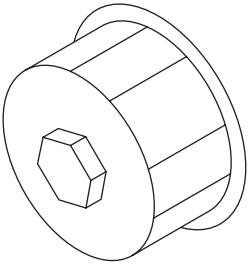
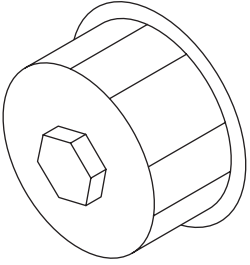
- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal, 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.

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D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST-499977100</p>	499977100	CRANK PULLEY WRENCH	Used for stopping rotation of crank pulley when removing and tightening crank pulley bolt.
 <p style="text-align: center;">ST-499587100</p>	499587100	OIL SEAL INSTALLER	Used for installing oil seal into oil pump.
 <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))