

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:

It is acceptable to fill an engine with oil of another brand when replacing the oil, but make sure to use an oil with an API standard and SAE viscosity number specified by Subaru.

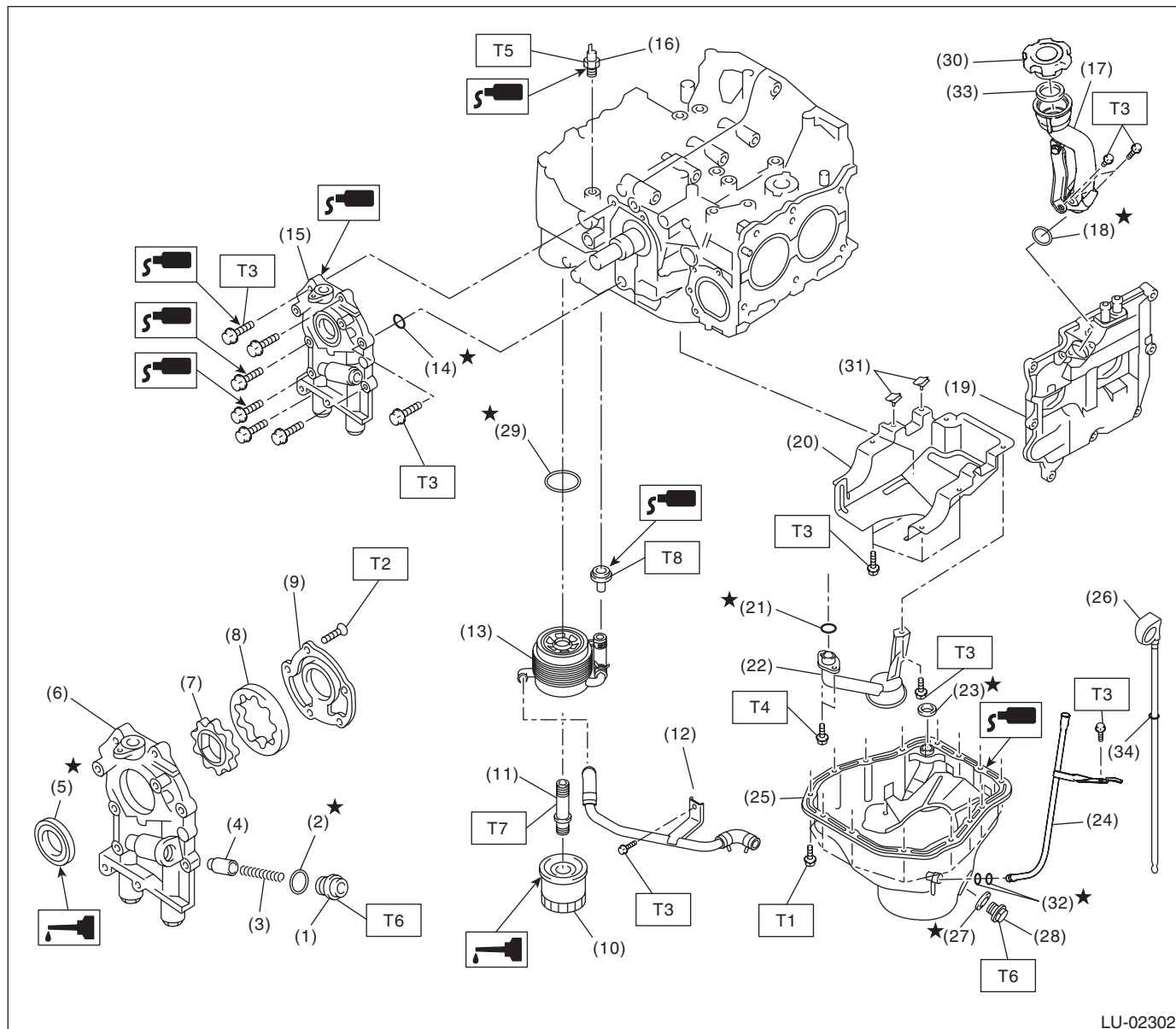
NOTE:

If the vehicle is used in regions with 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

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B: COMPONENT



LU-02302

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|---------------------------|----------------------------|
| (1) Plug | (16) Oil pressure switch |
| (2) Gasket | (17) Oil filler duct |
| (3) Relief valve spring | (18) O-ring |
| (4) Relief valve | (19) Rocker cover |
| (5) Oil seal | (20) Baffle plate |
| (6) Oil pump case | (21) O-ring |
| (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) Gasket |
| (15) Oil pump ASSY | (30) Oil filler cap |

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|-------------|
| (31) Seal |
| (32) O-ring |
| (33) Gasket |
| (34) O-ring |

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

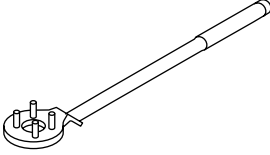
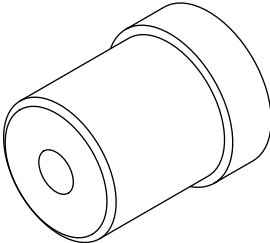
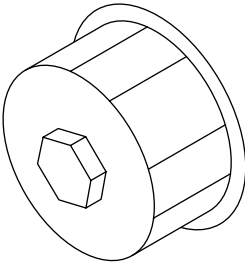
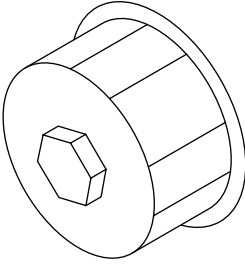
- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- Remove contamination including dirt and corrosion before removal, installation or disassembly.
- Keep the disassembled parts in order and protect them from dust and dirt.
- Before removal,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