

General Description

LUBRICATION

1. General Description

A: SPECIFICATION

Lubrication method				Forced lubrication		
Oil pump				Trochoid type		
Number of teeth	Inner rotor		7			
	Outer rotor		8			
Outer rotor diameter × thickness			mm (in) 76 × 30.2 (2.99 × 1.19)			
Performance (Oil temperature 80°C (176°F))	600 rpm	Discharge pressure	kPa (kgf/cm ² , psi) 98 (1.0, 14)			
		Discharge rate	ℓ (US qt, Imp qt)/min. 5.0 (5.3, 4.4) or more			
	6,000 rpm	Discharge pressure	kPa (kgf/cm ² , psi) 392 (4.0, 57)			
		Discharge rate	ℓ (US qt, Imp qt)/min. 82.8 (87.5, 72.9) or more			
		Oil filter				Full-flow filter type
						Filtration area cm ² (sq in) 1,300 (201.5)
						By-pass valve opening pressure kPa (kgf/cm ² , psi) 160 (1.63, 23.2)
						Outer diameter × width mm (in) 80 × 75 (3.15 × 2.95)
						Installation screw specifications M 20 × 1.5
		Oil pressure switch				Immersed contact point type
						Operating voltage — power consumption 12 V — 3.4 W or less
						Warning light operating pressure kPa (kgf/cm ² , psi) 14.7 (0.15, 2.1)
						Proof pressure kPa (kgf/cm ² , psi) 980 (10.0, 142) or more
		Engine oil				Total capacity (at overhaul) ℓ (US qt, Imp qt) 7.8 (8.2, 6.9)
						When replacing engine oil and oil filter ℓ (US qt, Imp qt) 6.5 (6.9, 5.7)
						When replacing engine oil only ℓ (US qt, Imp qt) 6.3 (6.7, 5.5)

Recommended oil:

Oil corresponding to either of the following standards.

- **Those with SM “Energy Conserving” logo in case of API standard.**
- **Those with GF-4 “starburst mark” displayed on top of the container in case of ILSAC standard.**

SAE (1)							
(°C)	-30	-20	-15	0	15	30	40
(°F)	-22	-4	5	32	59	86	104
10W-30, 10W-40, 10W-50							
5W-30 (2), 5W-40							

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

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:

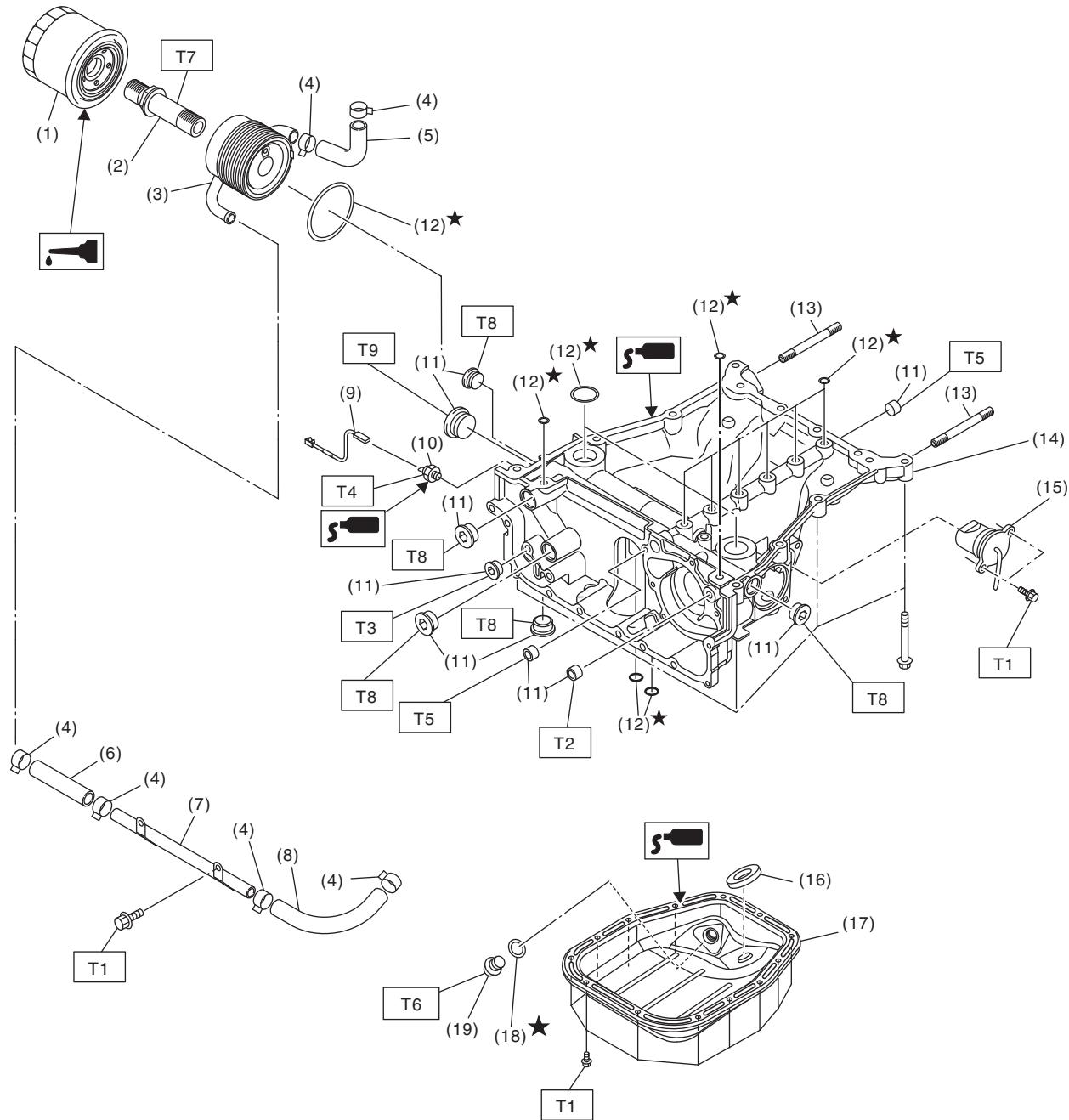
- The proper viscosity oil helps the engine maintain its ideal temperature, and cranking speed increased by reducing viscosity friction in hot condition.
- If the vehicle is used in regions of high temperatures or in other severe environments, use oil with the viscosities shown below.

API standard: SM or SL

SAE viscosity No.: 30, 40, 10W-50, 20W-40, 20W-50

B: COMPONENT

1. OIL PAN UPPER, OIL COOLER, AND OIL FILTER



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(1) Oil filter	(11) PLUG
(2) Oil cooler connector	(12) O-ring
(3) Oil cooler	(13) Stud bolt
(4) Clamp	(14) Oil pan upper
(5) Water hose	(15) Oil level switch
(6) Water hose	(16) Oil pan magnet
(7) Engine oil cooler water pipe	(17) Oil pan lower
(8) Water hose	(18) Gasket
(9) Oil pressure switch harness	(19) Drain plug
(10) Oil pressure switch	

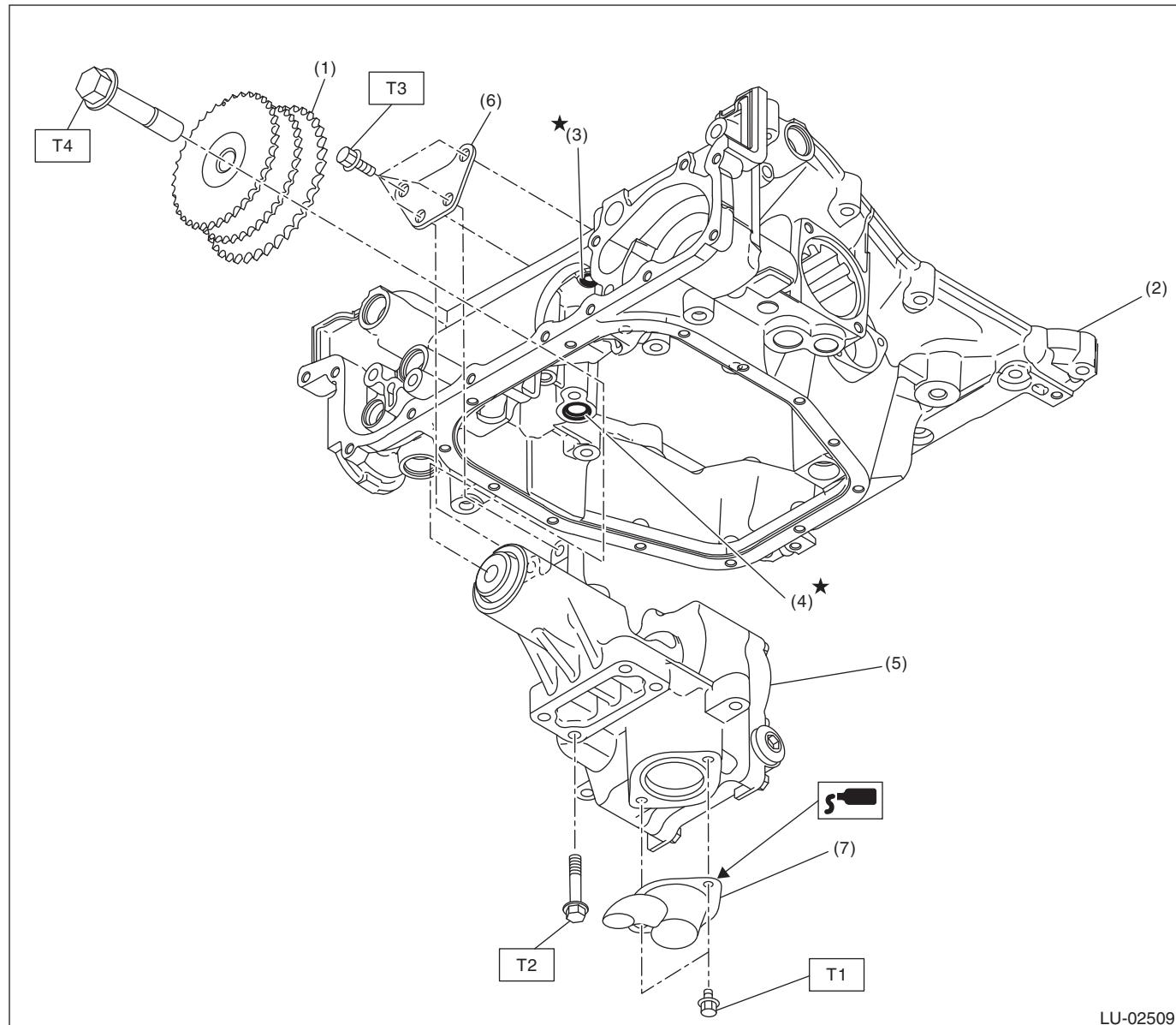
Tightening torque:N·m (kgf·m, ft-lb)

<i>T1:</i> 6.4 (0.7, 4.7)
<i>T2:</i> 17 (1.7, 12.5)
<i>T3:</i> 23 (2.3, 17.0)
<i>T4:</i> 25 (2.5, 18.4)
<i>T5:</i> 34 (3.5, 25.1)
<i>T6:</i> 44 (4.5, 32.5)
<i>T7:</i> 54 (5.5, 39.8)
<i>T8:</i> 60 (6.1, 44.3)
<i>T9:</i> 90 (9.2, 66.4)

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2. OIL PUMP



LU-02509

- (1) Idler sprocket
- (2) Oil pan upper
- (3) O-ring
- (4) O-ring

- (5) Oil pump
- (6) Stiffener
- (7) Strainer

Tightening torque: N·m (kgf·m, ft·lb)

T1: 6.4 (0.7, 4.7)
T2: 13 (1.3, 9.6)
T3: 24 (2.4, 17.7)
T4: 120 (12.2, 88.5)

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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.
- Before applying liquid gasket, completely remove the old liquid gasket and degrease it.
- 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 fuels 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.

D: PREPARATION TOOL

1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST18332AA020	18332AA020	OIL FILTER WRENCH	Used for removing and installing oil filter.

2. GENERAL TOOL

TOOL NAME	REMARKS
Circuit tester	Used for measuring resistance and voltage.