

General Description

LUBRICATION

1. General Description

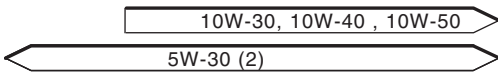
A: SPECIFICATION

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		Specification	mm (in)	0.04 — 0.14 (0.0016 — 0.0055)
	Side clearance between inner rotor and pump case		Specification	mm (in)	0.02 — 0.07 (0.0008 — 0.0028)
	Case clearance between outer rotor and pump case		Specification	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) (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 (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:

Oil corresponding to either of the following standards.

- **For API standard, oil with SM “Energy Conserving” logo**
- **For ILSAC standard, oil with 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-02329							

(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

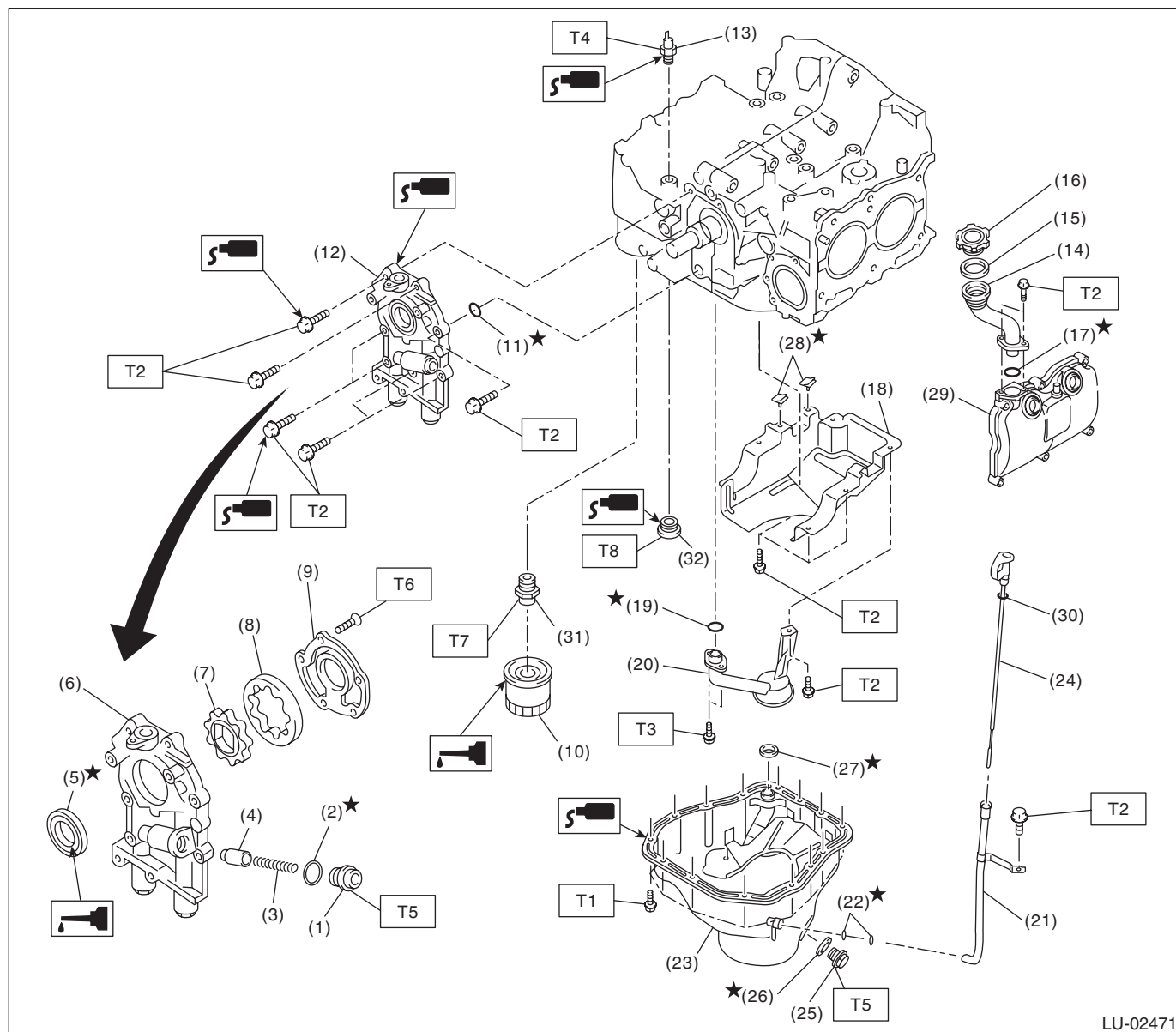
SAE viscosity No.: 30, 40, 10W-50, 20W-40, 20W-50

General Description

LUBRICATION

B: COMPONENT

- Non-turbo model



LU-02471

- | | | |
|--------------------------|----------------------------|---------------------------|
| (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)

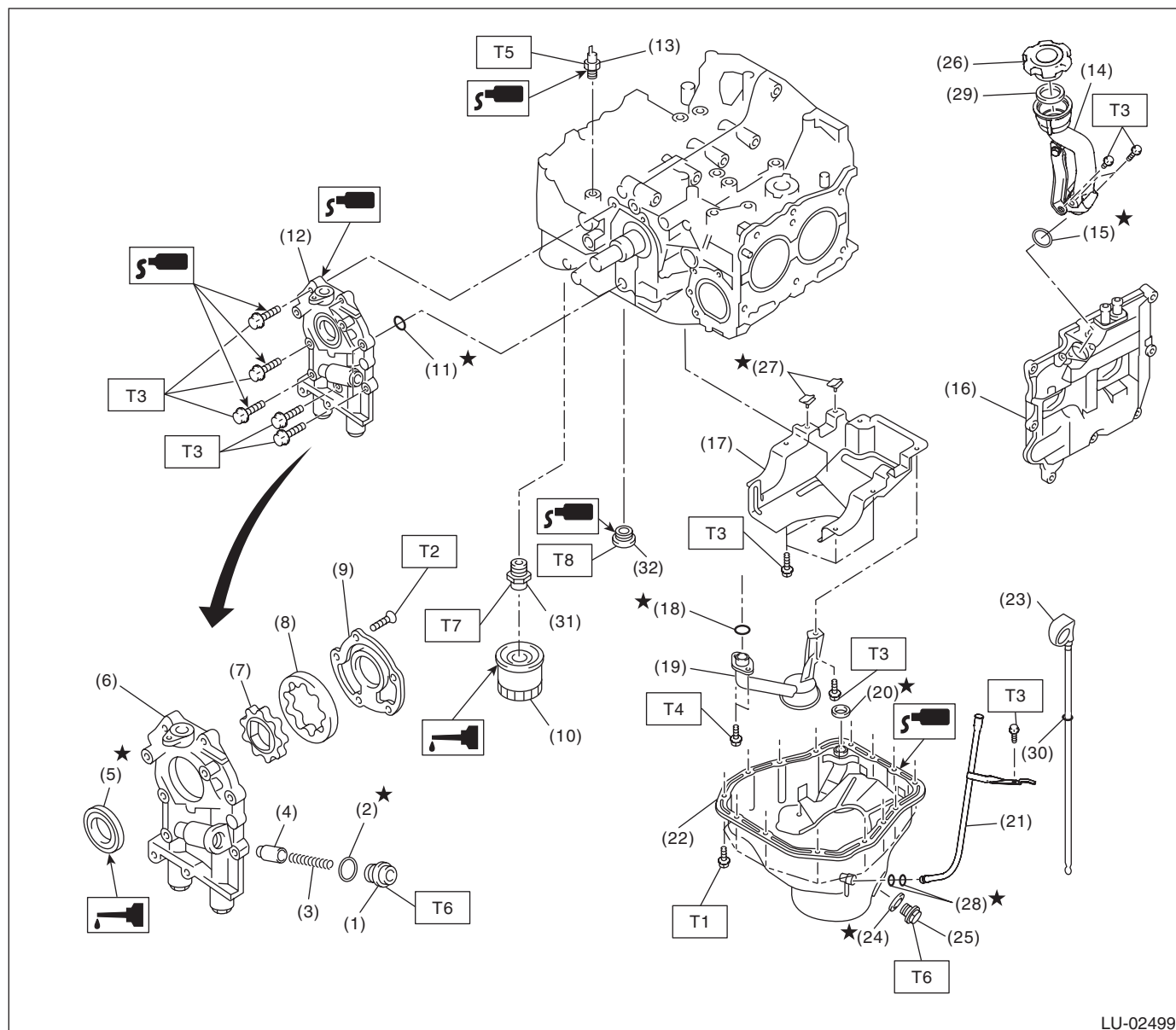
T6: 5.4 (0.6, 4.0)

T7: 45 (4.6, 33.2)

T8: 70 (7.1, 51.6)

LU(H4SO)-4

• Turbo model



LU-02499

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

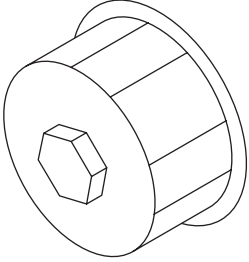
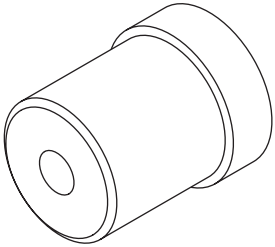
Tightening torque: N·m (kgf-m, ft-lb)

- T1: 5 (0.5, 3.7)**
T2: 5.4 (0.6, 4.0)
T3: 6.4 (0.7, 4.7)
T4: 10 (1.0, 7.0)
T5: 25 (2.5, 18.4)
T6: 44 (4.5, 32.5)
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.

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.