1. General Description

A: SPECIFICATION

1. STI MODEL

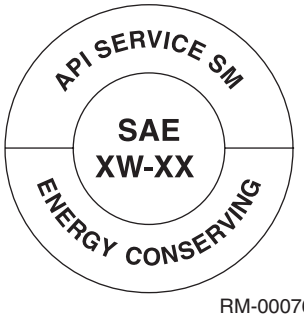
Lubrication method					Forced lubrication
Oil pump	Pump type				Trochoid type
	Number of teeth	Inner rotor			9
		Outer rotor			10
	Outer rotor diameter × thickness mm (in)				78 × 11 (3.07 × 0.43)
	Tip clearance between inner and outer rotors mm (in)			Standard	0.04 — 0.14 (0.0016 — 0.0055)
	Case clearance between outer rotor and pump case mm (in)			Standard	0.10 — 0.175 (0.0039 — 0.0069)
	Side clearance between inner rotor and pump case mm (in)			Standard	0.02 — 0.07 (0.0008 — 0.0028)
	Relief valve spring	Free length mm (in)			73.7 (2.902)
		Installed length mm (in)			54.7 (2.154)
		Load when installed N (kgf, lbf)			93.1 (9.49, 20.93)
	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.		6.4 (6.8, 5.6) or more
		6,000 rpm	Discharge pressure kPa (kg/cm^2, psi)		392 (4.0, 56.8)
			Discharge rate L (US qt, Imp qt)/min.		63.0 (66.6, 55.4) or more
	Relief valve working pressure kPa (kg/cm^2, psi)				538 (5.5, 78)
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 (at 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)

2. EXCEPT FOR STI MODEL

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		mm (in)	Standard	0.04 — 0.14 (0.0016 — 0.0055)
	Case clearance between outer rotor and pump case		mm (in)	Standard	0.10 — 0.175 (0.0039 — 0.0069)
	Side clearance between inner rotor and pump case		mm (in)	Standard	0.02 — 0.07 (0.0008 — 0.0028)
	Relief valve spring	Free length		mm (in)	73.7 (2.902)
		Installed length		mm (in)	54.7 (2.154)
		Load when installed		N (kgf, lbf)	93.1 (9.49, 20.93)
	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 (at 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)

Specified oil:

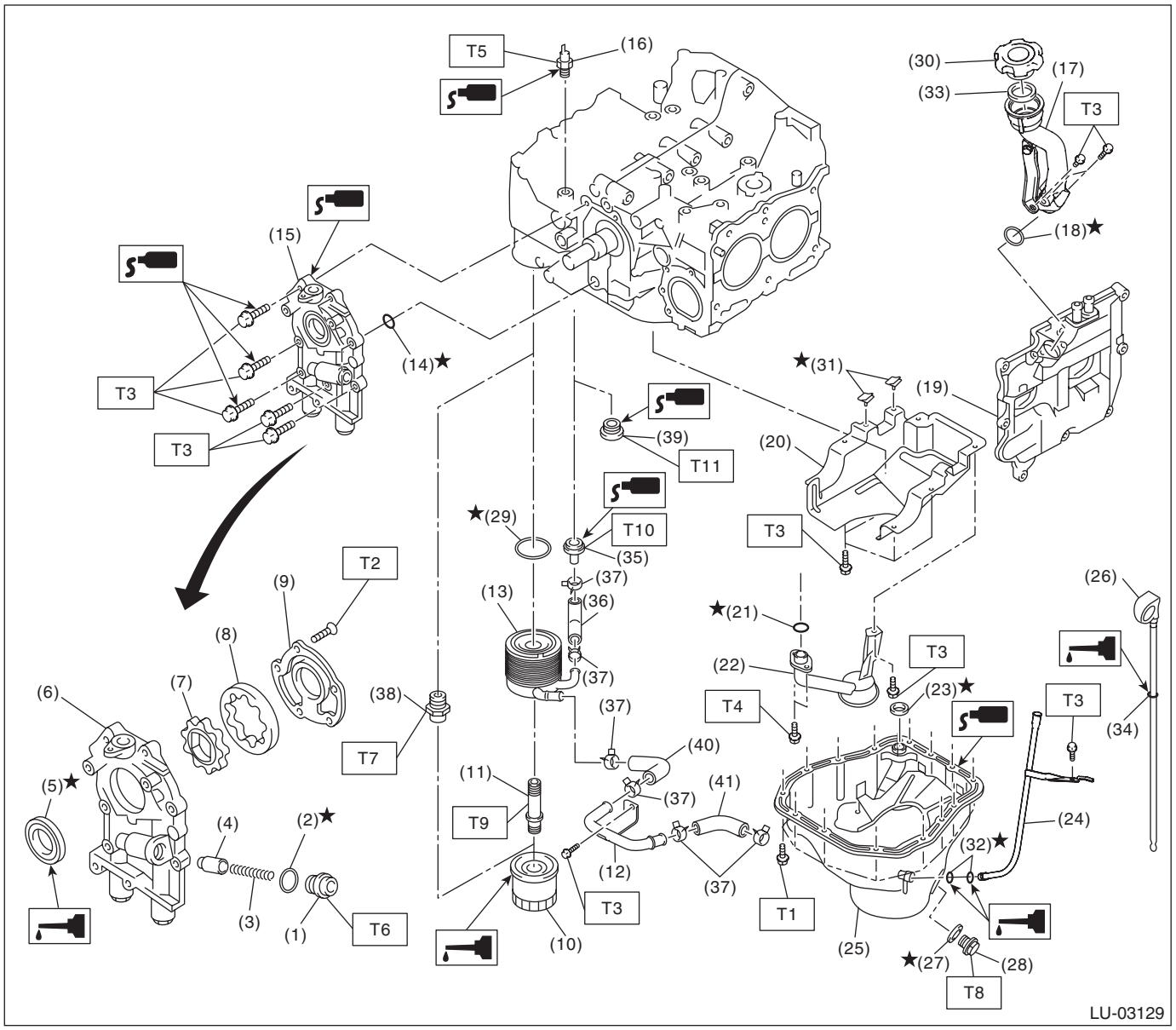
CAUTION:
- **Use 5W-30 (synthetic oil).**
- **It is acceptable to fill an engine with oil of another brand when replacing the oil, but make sure to use the following engine oil specified by Subaru.**

Engine oil standard		SAE viscosity No.
 RM-00076 Those with the API standard SM "Energy Conserving" or SN "Resource Conserving" logo.	or	 RM-00002 Those with the ILSAC standard GF-4 or GF-5 "starburst mark" displayed on top of the container.	5W-30 (synthetic oil)

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

B: COMPONENT

1. OIL PUMP AND OIL PAN

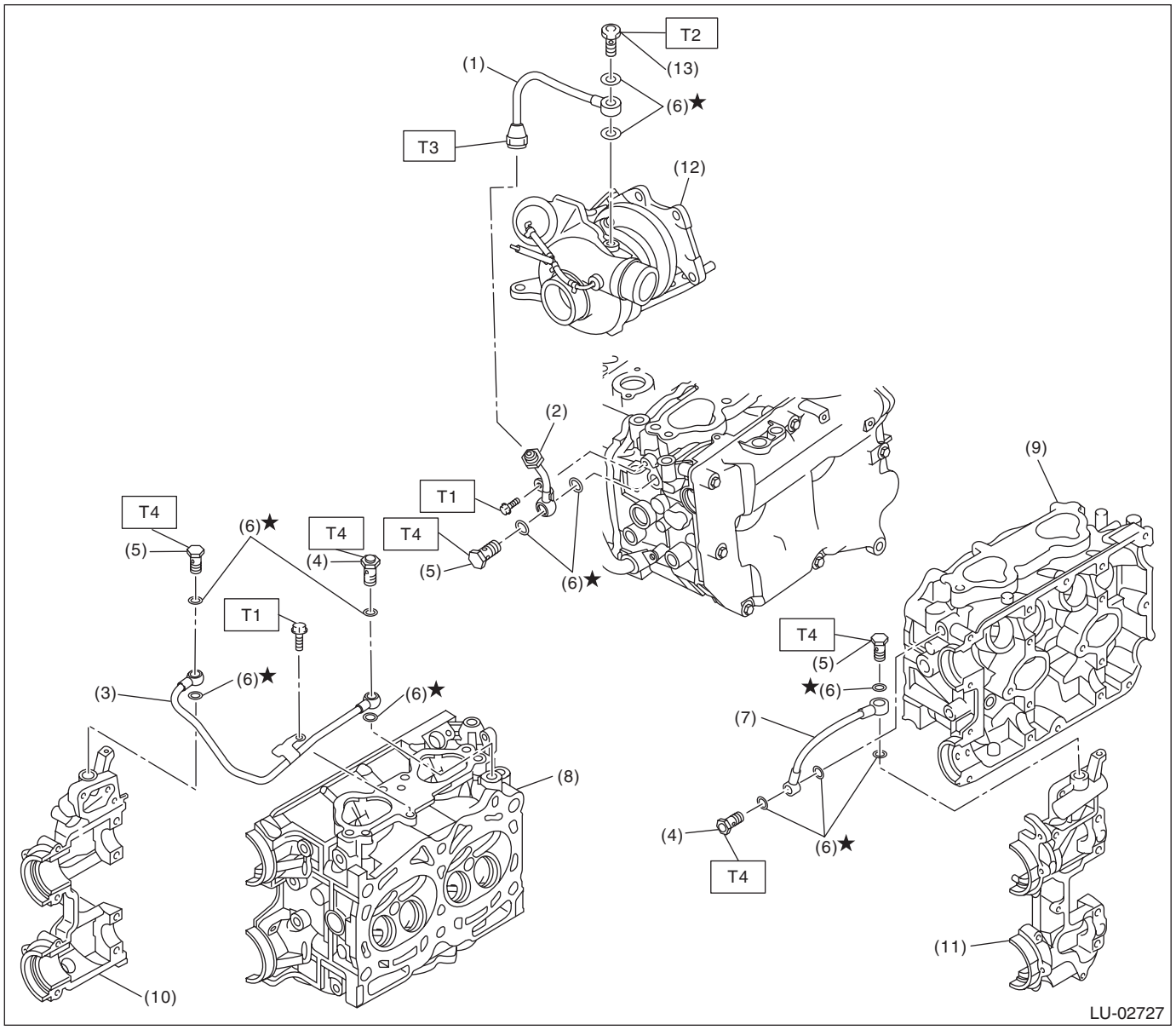


(1) Plug
(2) Gasket
(3) Relief valve spring
(4) Relief valve
(5) Front oil seal
(6) Oil pump case
(7) Inner rotor
(8) Outer rotor
(9) Oil pump cover
(10) Oil filter
(11) Oil cooler connector (model with oil cooler)
(12) Oil cooler pipe (model with oil cooler)
(13) Oil cooler (model with oil cooler)
(14) O-ring
(15) Oil pump ASSY
(16) Oil pressure switch
(17) Oil filler duct
(18) O-ring
(19) Rocker cover
(20) Baffle plate
(21) O-ring
(22) Oil strainer
(23) Gasket
(24) Oil level gauge guide
(25) Oil pan
(26) Oil level gauge
(27) Drain plug gasket
(28) Drain plug
(29) Gasket (model with oil cooler)
(30) Oil filler cap
(31) Seal
(32) O-ring
(33) Gasket
(34) O-ring
(35) Nipple (model with oil cooler)
(36) Oil cooler hose A (model with oil cooler)
(37) Clip (model with oil cooler)
(38) Oil filter connector (model without oil cooler)
(39) Plug (model without oil cooler)
(40) Oil cooler hose B (model with oil cooler)
(41) Oil cooler hose C (model with oil cooler)

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: 46.5 (4.7, 34.3)
T9: 54 (5.5, 39.8)
T10: 69 (7.0, 50.9)
T11: 70 (7.1, 51.6)

2. OIL PIPE



(1)	Oil inlet pipe	(8)	Cylinder head RH
(2)	Turbocharger oil pipe	(9)	Cylinder head LH
(3)	Oil pipe RH	(10)	Front camshaft cap RH
(4)	Union bolt with filter (with protrusion)	(11)	Front camshaft cap LH
(5)	Union bolt without filter (without protrusion)	(12)	Turbocharger
(6)	Gasket	(13)	Union bolt without filter (with protrusion)
(7)	Oil pipe LH		

Tightening torque: N·m (kgf-m, ft-lb)

T1: 6.4 (0.7, 4.7)

T2: 16 (1.6, 11.8)

T3: 20 (2.0, 14.8)

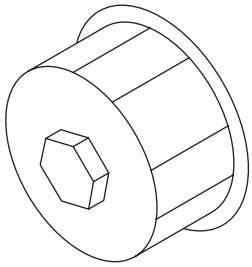
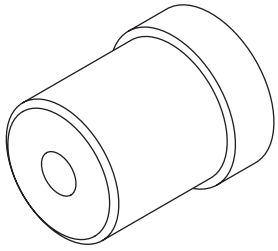
T4: 29 (3.0, 21.4)

C: CAUTION

- Prior to starting work, pay special attention to the following:
  1. Always wear work clothes, a work cap, and protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
  2. Protect the vehicle using a seat cover, fender cover, etc.
  3. Prepare the service tools, clean cloth, containers to catch grease and oil, etc.
- Prepare a container and cloth when performing work which oil possibly spills. If oil spills, wipe it off immediately to prevent from penetrating into floor or flowing out for environmental protection.
- Vehicle components are extremely hot immediately after driving. Be wary of receiving burns from heated parts.
- When performing a repair, identify the cause of trouble and avoid unnecessary removal, disassembly and replacement.
- Before disconnecting connectors of sensors or units, be sure to disconnect the ground cable from battery.
- Always use the jack-up point when the shop jacks or rigid racks are used to support the vehicle.
- Remove contamination including dirt and corrosion before removal, installation, disassembly or assembly.
- Keep the removed parts in order and protect them from dust and dirt.
- All removed parts, if to be reused, should be reinstalled in the original positions with attention to the correct directions, etc.
- Bolts, nuts and washers should be replaced with new parts as required.
- Be sure to tighten the fasteners including bolts and nuts to the specified torque.
- 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.
- 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.