

# General Description

## LUBRICATION

### 1. General Description

#### A: SPECIFICATION

- Non-turbo model

Lubrication method				Forced lubrication	
Oil pump	Pump type				
	Number of teeth	Inner rotor		11	
		Outer rotor		12	
	Outer rotor diameter x Thickness			mm (in) 77 x 12 (3.03 x 0.47)	
	Performance (Oil temperature 120°C (248°F))	600 rpm	Discharge pressure	kPa (kgf/cm <sup>2</sup> , psi) 30 (0.3, 4.3)	
			Discharge rate	L (US qt, Imp qt)/min 6.0 (6.3, 5.3) or more	
		6,000 rpm	Discharge pressure	kPa (kgf/cm <sup>2</sup> , psi) 260 (2.7, 37.7)	
			Discharge rate	L (US qt, Imp qt)/min 47 (49.7, 41.4) or more	
	Relief valve working pressure (2-step relief)	1st opening pressure		kPa (kgf/cm <sup>2</sup> , psi) 150 (1.5, 21.7)	
		Main opening pressure		kPa (kgf/cm <sup>2</sup> , psi) 570 (5.8, 82.6)	
Oil filter	Filter type				
	Filtration area	cm <sup>2</sup> (sq in)	Outer diameter: 68 mm (2.68 in) (black)	1,100 (171)	
			Outer diameter: 67.4 mm (2.65 in) (blue)	867 (134.3)	
	By-pass valve opening pressure				
	Outer diameter x Width	mm (in)	Outer diameter: 68 mm (2.68 in) (black)	68 x 85 (2.68 x 3.35)	
			Outer diameter: 67.4 mm (2.65 in) (blue)	67.4 x 87.1 (2.65 x 3.43)	
	Installation screw specifications				
Oil pressure switch	Type				
	Operating voltage				
	Warning light operating pressure			kPa (kgf/cm <sup>2</sup> , psi) 14.7 (0.1, 2.1)	
	Proof pressure			kPa (kgf/cm <sup>2</sup> , psi) 981 (10, 142.2)	
Engine oil	Total capacity (at overhaul)			L (US qt, Imp qt) 5.7 (6.0, 5.0)	
	When replacing engine oil and oil filter			L (US qt, Imp qt) 4.8 (5.1, 4.2)	
	When replacing engine oil only			L (US qt, Imp qt) 4.6 (4.9, 4.0)	

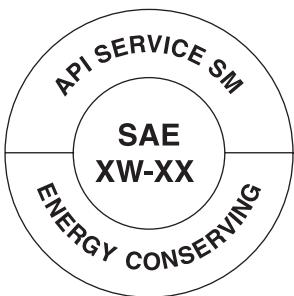
### Specified oil:

#### CAUTION:

- Use 0W-20 (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.

#### NOTE:

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

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

# General Description

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- Turbo model

Lubrication method				Forced lubrication	
Oil pump	Pump type			Trochoid type	
	Number of teeth	Inner rotor		11	
		Outer rotor		12	
	Outer rotor diameter × Thickness			mm (in) 77 × 14 (3.03 × 0.55)	
	Performance (Oil temperature 120°C (248°F))	600 rpm	Discharge pressure	kPa (kgf/cm <sup>2</sup> , psi) 35 (0.4, 5.1)	
			Discharge rate	L (US qt, Imp qt)/min 7.4 (7.8, 6.5) or more	
		6,000 rpm	Discharge pressure	kPa (kgf/cm <sup>2</sup> , psi) 321 (3.3, 46.6)	
			Discharge rate	L (US qt, Imp qt)/min 59 (62.4, 51.9) or more	
	Relief valve working pressure			kPa (kgf/cm <sup>2</sup> , psi) 700 (7.1, 102)	
Oil filter	Filter type			Full-flow filter type	
	Filtration area	cm <sup>2</sup> (sq in)	Outer diameter: 68 mm (2.68 in) (black)	1,100 (171)	
			Outer diameter: 67.4 mm (2.65 in) (blue)	867 (134.3)	
	By-pass valve opening pressure			kPa (kgf/cm <sup>2</sup> , psi) 160 (1.6, 23.2)	
	Outer diameter × Width	mm (in)	Outer diameter: 68 mm (2.68 in) (black)	68 × 85 (2.68 × 3.35)	
			Outer diameter: 67.4 mm (2.65 in) (blue)	67.4 × 87.1 (2.65 × 3.43)	
	Installation screw specifications			M 20 × 1.5	
Oil pressure switch	Type			Immersed contact point type	
	Operating voltage			12 V	
	Warning light operating pressure			kPa (kgf/cm <sup>2</sup> , psi) 14.7 (0.1, 2.1)	
	Proof pressure			kPa (kgf/cm <sup>2</sup> , psi) 981 (10, 142.2)	
Engine oil	Total capacity (at overhaul)			L (US qt, Imp qt) 6.0 (6.3, 5.3)	
	When replacing engine oil and oil filter			L (US qt, Imp qt) 5.1 (5.4, 4.5)	
	When replacing engine oil only			L (US qt, Imp qt) 4.9 (5.2, 4.3)	

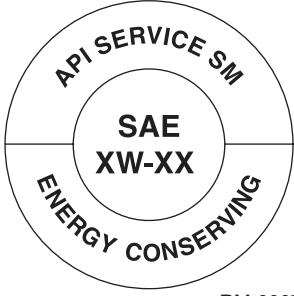
### **Specified oil:**

#### **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.
- Do not use 0W-20 for turbo model. If used for turbo model, it may lead to trouble.

#### **NOTE:**

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

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

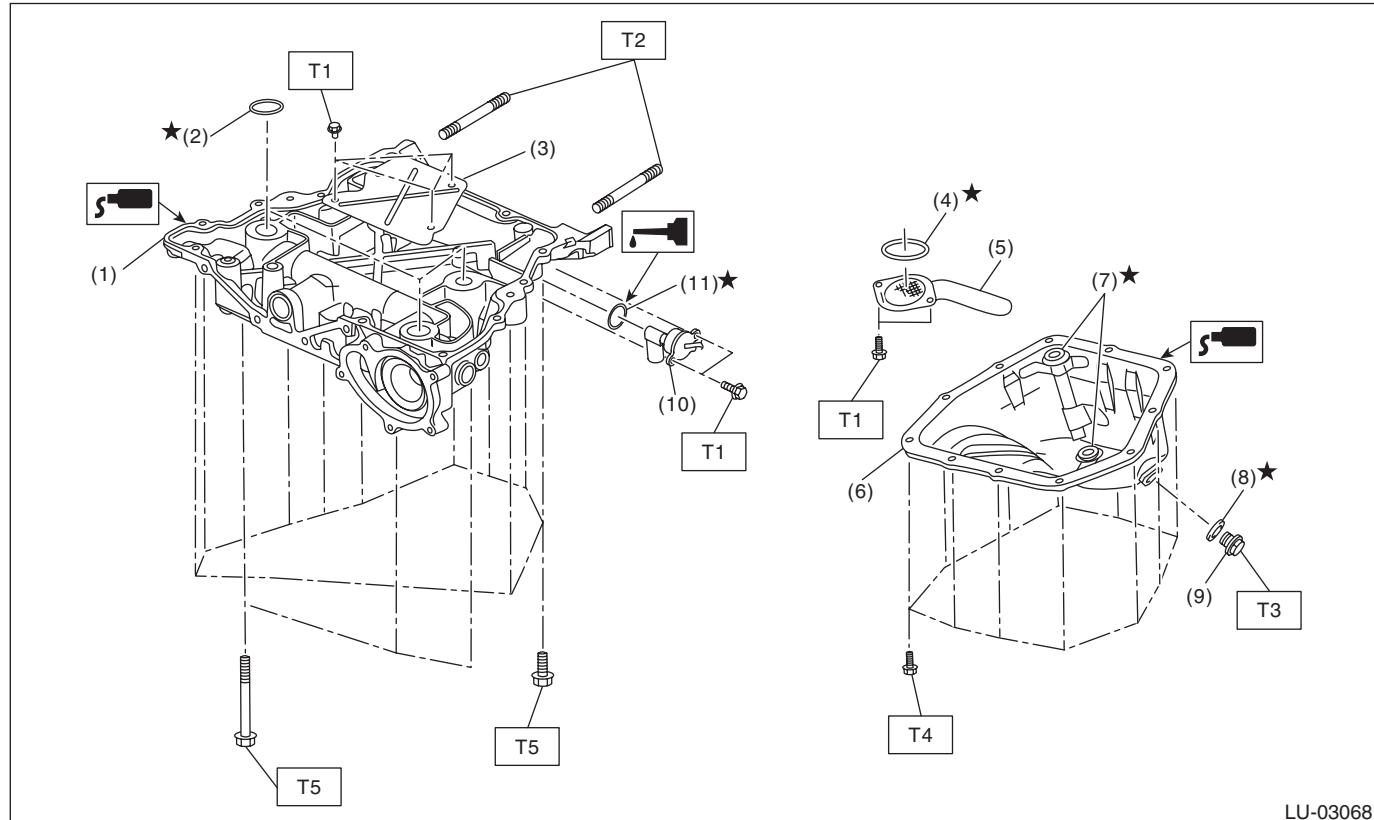
## General Description

## LUBRICATION

## B: COMPONENT

## 1. OIL PAN AND STRAINER

- Non-turbo model



LU-03068

(1)	Oil pan upper	(7)	Oil pan seal ring
(2)	O-ring	(8)	Drain plug gasket
(3)	Baffle plate	(9)	Drain plug
(4)	O-ring	(10)	Oil level switch
(5)	Oil strainer	(11)	O-ring
(6)	Oil pan		

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

**T1: 6.4 (0.7, 4.7)**

**T2:** 10 (1.0, 7.4)

**T3: 41.7 (4.3, 30.8)**

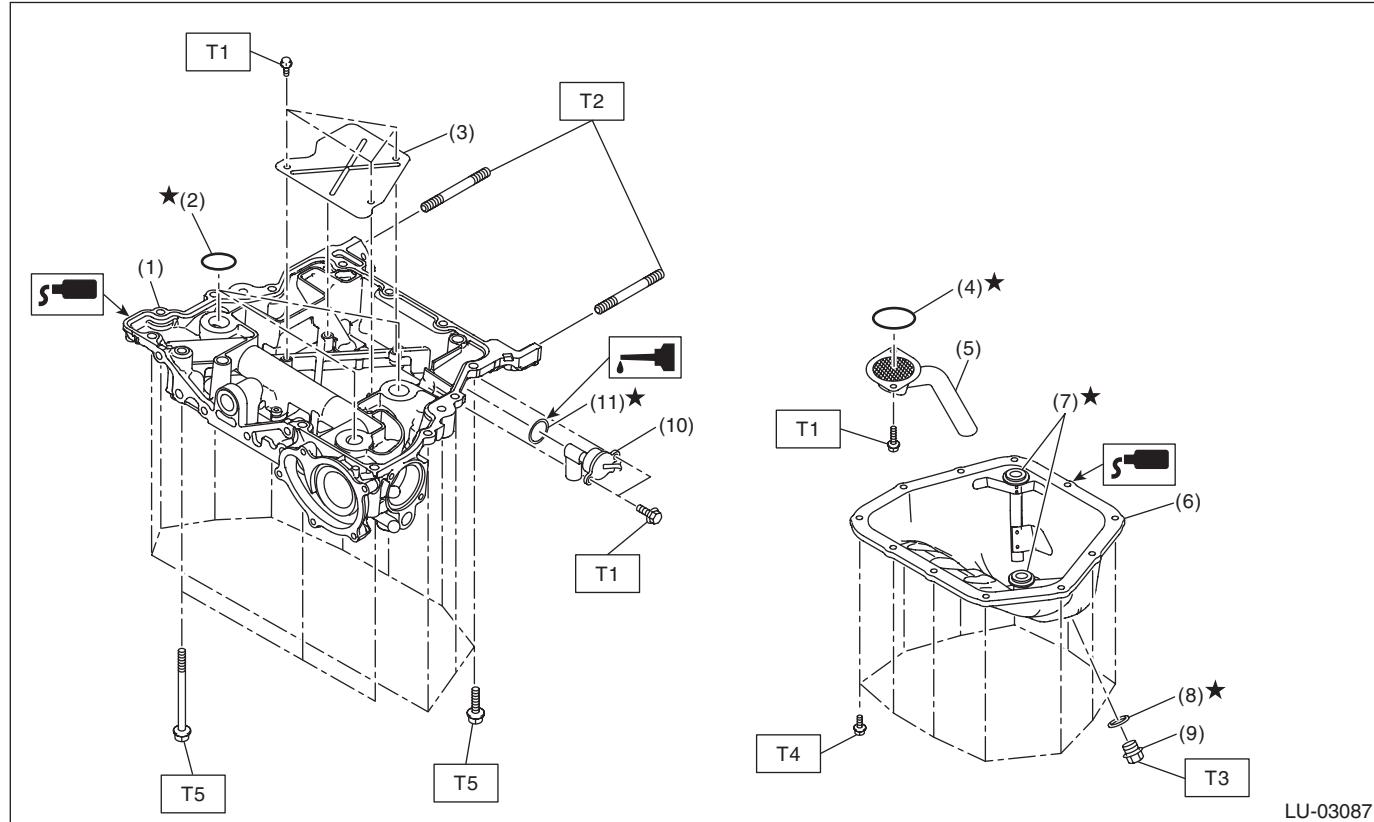
**T4: <Ref. to LU(H4DO)-29, OIL PAN,  
INSTALLATION, Oil Pan and  
Strainer.>**

**T5: <Ref. to LU(H4DO)-37, OIL PAN  
UPPER, INSTALLATION, Oil  
Pan and Strainer. >**

# General Description

## LUBRICATION

- Turbo model



(1) Oil pan upper	(7) Oil pan seal ring
(2) O-ring	(8) Drain plug gasket
(3) Baffle plate	(9) Drain plug
(4) O-ring	(10) Oil level switch
(5) Oil strainer	(11) O-ring
(6) Oil pan	

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

**T1: 6.4 (0.7, 4.7)**

**T2: 10 (1.0, 7.4)**

**T3: 41.7 (4.3, 30.8)**

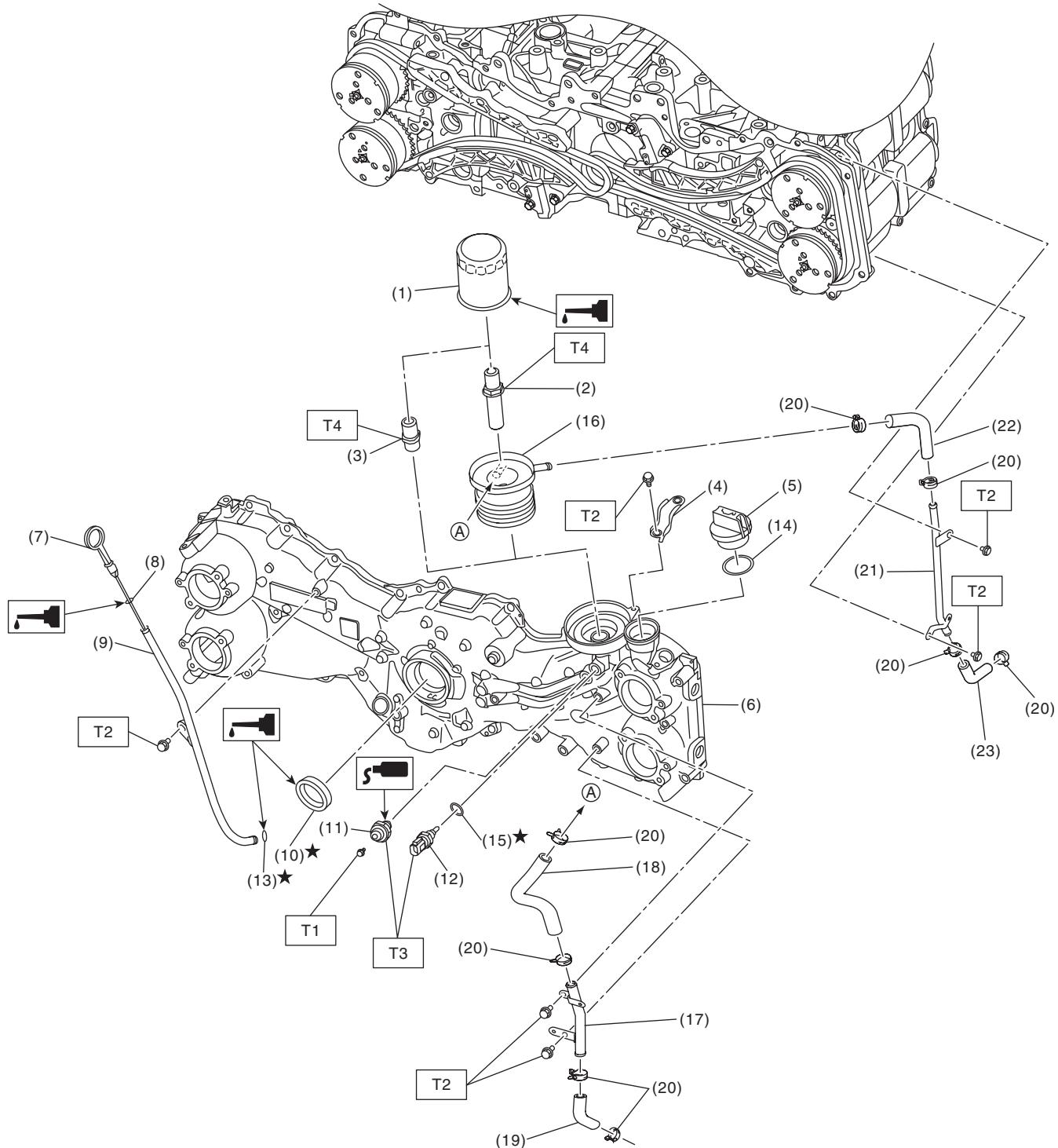
**T4: <Ref. to LU(H4DO)-29, OIL PAN, INSTALLATION, Oil Pan and Strainer.>**

**T5: <Ref. to LU(H4DO)-37, OIL PAN UPPER, INSTALLATION, Oil Pan and Strainer.>**

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### 2. OIL FILTER AND OIL LEVEL GAUGE



LU-03086

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(1) Oil filter	(11) Oil pressure switch	(21) Side engine oil cooler pipe (turbo model)
(2) Oil cooler connector (turbo model)	(12) Engine oil temperature sensor	(22) Side engine oil cooler hose A (turbo model)
(3) Oil pump union (non-turbo model)	(13) O-ring	(23) Side engine oil cooler hose B (turbo model)
(4) Generator code stay (non-turbo model)	(14) O-ring	
(5) Oil filler cap	(15) Gasket	<b>Tightening torque: N·m (kgf·m, ft-lb)</b>
(6) Chain cover	(16) Oil cooler (turbo model)	<b>T1: 1.5 (0.2, 1.1)</b>
(7) Oil level gauge	(17) Front engine oil cooler pipe (turbo model)	<b>T2: 6.4 (0.7, 4.7)</b>
(8) O-ring	(18) Front engine oil cooler hose A (turbo model)	<b>T3: 18 (1.8, 13.3)</b>
(9) Oil level gauge guide	(19) Front engine oil cooler hose B (turbo model)	<b>T4: 45 (4.6, 33.2)</b>
(10) Front oil seal	(20) Clip (turbo model)	

## C: CAUTION

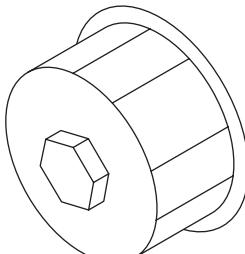
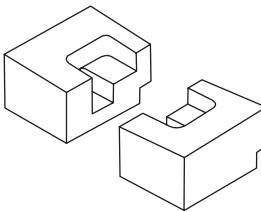
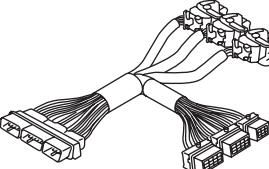
- Prior to starting work, pay special attention to the following:
  1. Always wear work clothes, a safety cap, protective shoes. Additionally, wear a helmet, protective goggles, etc. if necessary.
  2. Protect the vehicle using a seat cover, fender cover, etc.
  3. Prepare the service tools, clean cloth, 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.

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### 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))
 ST18632AA020	18632AA020	STAND ASSY	Used for removing and installing oil pan. (Turbo model)
 ST18460AA030	18460AA030 (Newly adopted tool)	CHECK BOARD	Used for inspecting the oil level switch. (Turbo model)

#### 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.