

# General Description

## POWER ASSISTED SYSTEM (POWER STEERING)

### 1. General Description

#### A: SPECIFICATION

Whole system	Minimum turning radius		m (ft)	5.7 (18.7)
	Steering angle	Inner wheel		37.0°±1.5°
		Outer wheel		32.0°±1.5
	Steering wheel diameter		mm (in)	375 (14.76)
	Lock to lock turn			3.44
Gearbox	Type			Rack and Pinion, Integral
	Backlash			0 (automatic adjusting)
	Valve (power steering system)			Rotary valve
Pump (Power steering system)	Type			Vane pump
	Oil tank			Installed on body
	Specific output		cm <sup>3</sup> (cu in)/rev.	9.6 (0.586)
	Relief pressure		kPa (kg/cm <sup>2</sup> , psi)	8,800 — 9,400 (90 — 96, 1,276 — 1,363)
	Hydraulic fluid control			Engine speed sensitive
	Hydraulic fluid		L (US qt, Imp qt)	1,000 rpm: 7.0 (7.4, 6.2) 3,000 rpm: 6.0 (6.3, 5.3)
	RPM range		rpm	500 — 8,600
	Direction of rotation			Clockwise
Hydraulic oil (Power steering system)	Capacity	Oil tank		0.2 (0.2, 0.2)
		Whole system		0.9 (1.0, 0.8)

Steering wheel	Free play		mm (in)	17 (0.67)
Steering shaft	Clearance between the steering wheel and column cover		mm (in)	3.0 (0.12)
Steering gearbox (Power steering system)	Sliding resistance		N (kgf, lb)	343 (35, 77) or less Difference between right and left sliding resistance: 20% or less
	Rack shaft play in the radial direction	Right-turn steering	mm (in)	0.4 (0.016) or less
		Left-turn steering	mm (in)	Play in the vertical direction: 0.6 (0.024) or less Play in the horizontal direction: 0.4 (0.016) or less
	Input shaft play	In radial direction	mm (in)	0.26 (0.0102) or less
		In axial direction	mm (in)	Without play
	Rotational resistance		N (kgf, lb)	Maximum allowable value: 13 (1.3, 2.9) or less Difference between right and left sliding resistance: 20% or less
Oil pump (Power steering system)	Pulley shaft	Radial play	mm (in)	0.2 (0.008) or less
		Axial play	mm (in)	0.6 (0.024) or less
	Pulley	Ditch deflection	mm (in)	1.0 (0.039) or less
		Rotational resistance	N (kgf, lb)	9.22 (0.94, 2.07) or less
	Regular pressure (unloaded)		kPa (kg/cm <sup>2</sup> , psi)	981 (10, 142) or less
Steering wheel effort (Power steering system)	At standstill with engine idling on paved road		N (kgf, lb)	29.4 (3.0, 6.6) or less
	At standstill with engine stalled on paved road		N (kgf, lb)	294.2 (30, 66.2) or less

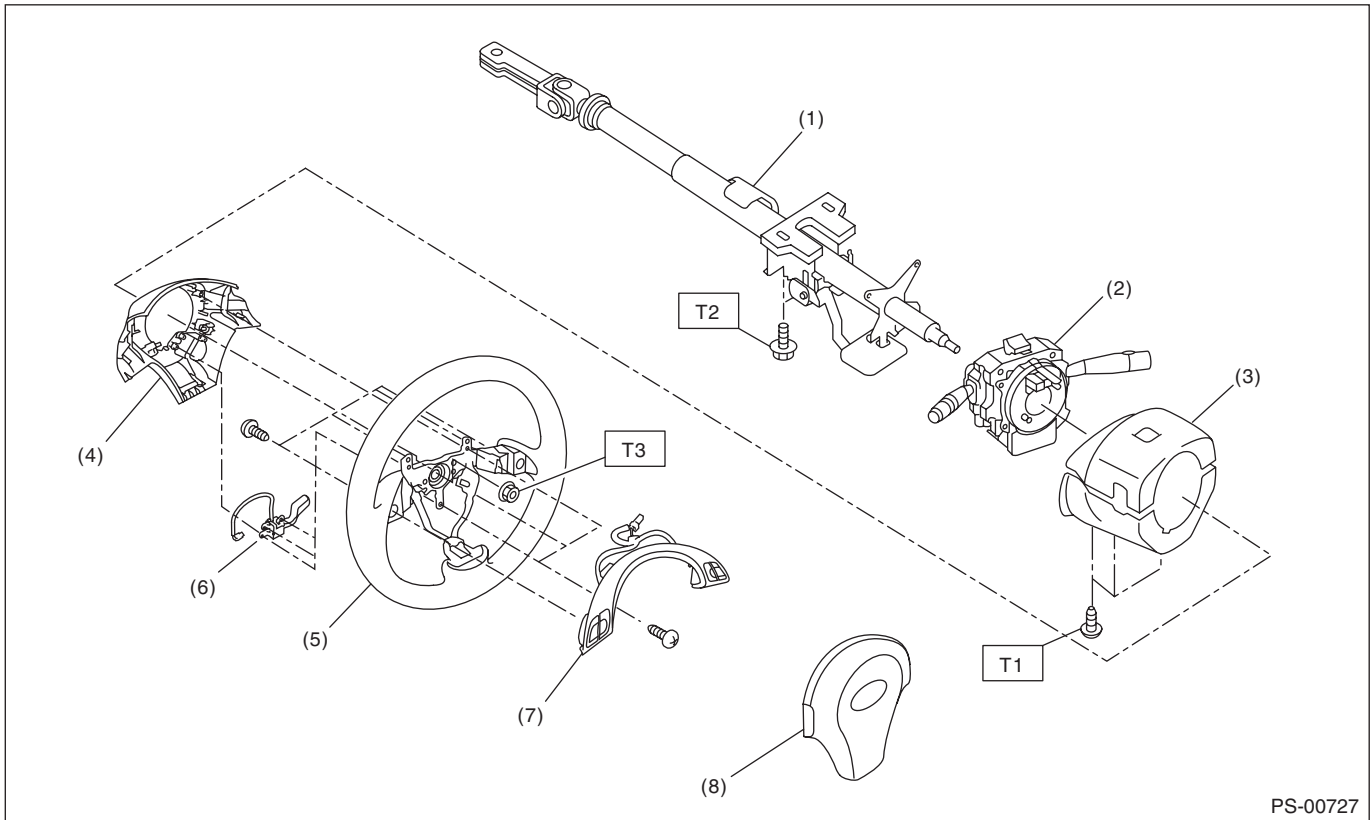
Recommended power steering fluid
SUBARU ATF or ATF DEXRON III

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## B: COMPONENT

### 1. STEERING WHEEL AND COLUMN



- |                                |                           |
|--------------------------------|---------------------------|
| (1) Steering shaft             | (5) Steering wheel        |
| (2) Steering roll connector    | (6) Cruise control switch |
| (3) Column cover               | (7) Satellite switch      |
| (4) Steering wheel lower cover | (8) Airbag module         |

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

**T1: 1.2 (0.12, 0.89)**

**T2: 20 (2.0, 14.8)**

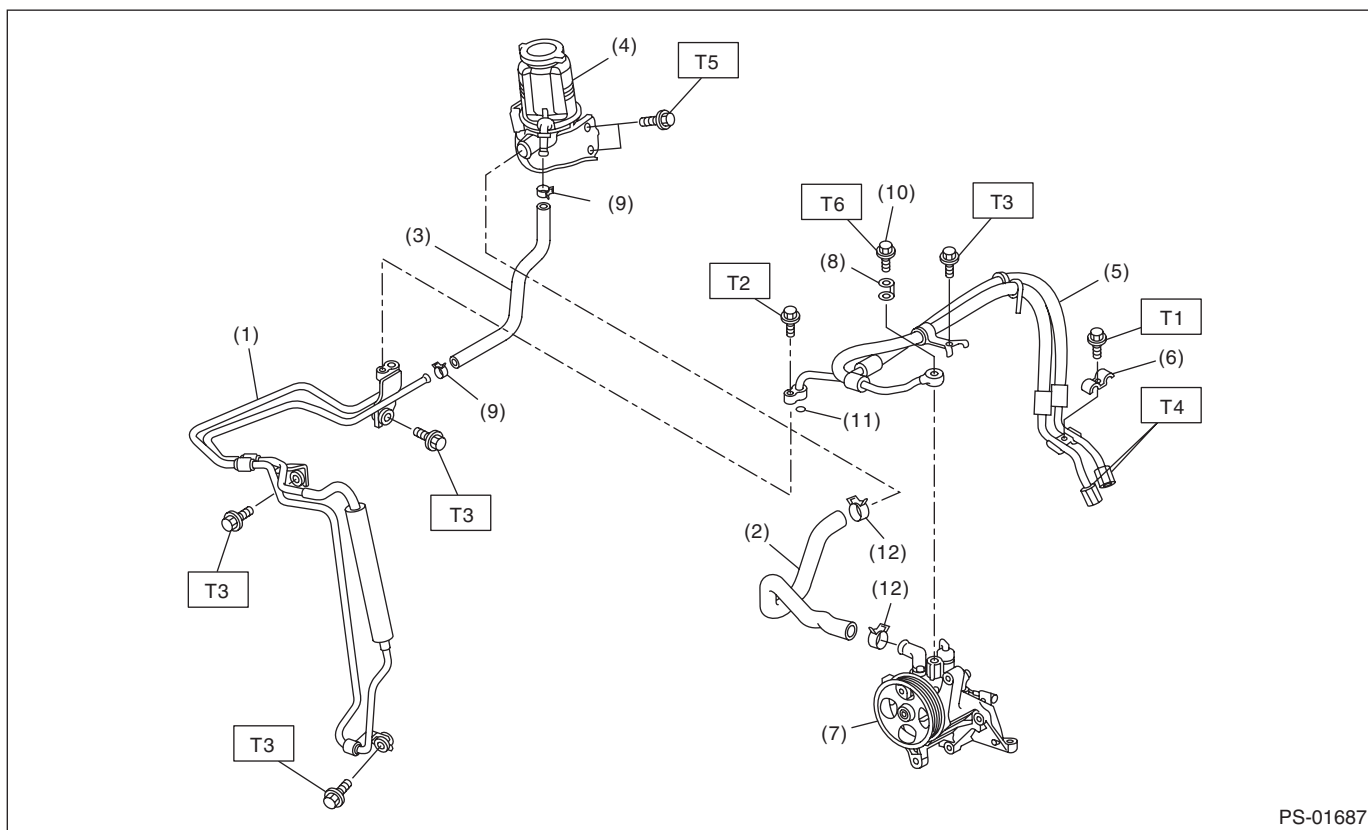
**T3: 39 (4.0, 28.8)**

# General Description

## POWER ASSISTED SYSTEM (POWER STEERING)

### 2. POWER ASSISTED SYSTEM

- Hose and tank



PS-01687

- |                     |                        |
|---------------------|------------------------|
| (1) Oil cooler pipe | (8) Eyebolt gasket     |
| (2) Suction hose    | (9) Clip               |
| (3) Return hose     | (10) Eyebolt           |
| (4) Reservoir tank  | (11) O-ring            |
| (5) Hose            | (12) Clip hose suction |
| (6) Clamp E         |                        |
| (7) Oil pump        |                        |

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

***T1: 8 (0.8, 5.9)***

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

***T3: 13 (1.3, 9.6)***

***T4: 15 (1.5, 11.1)***

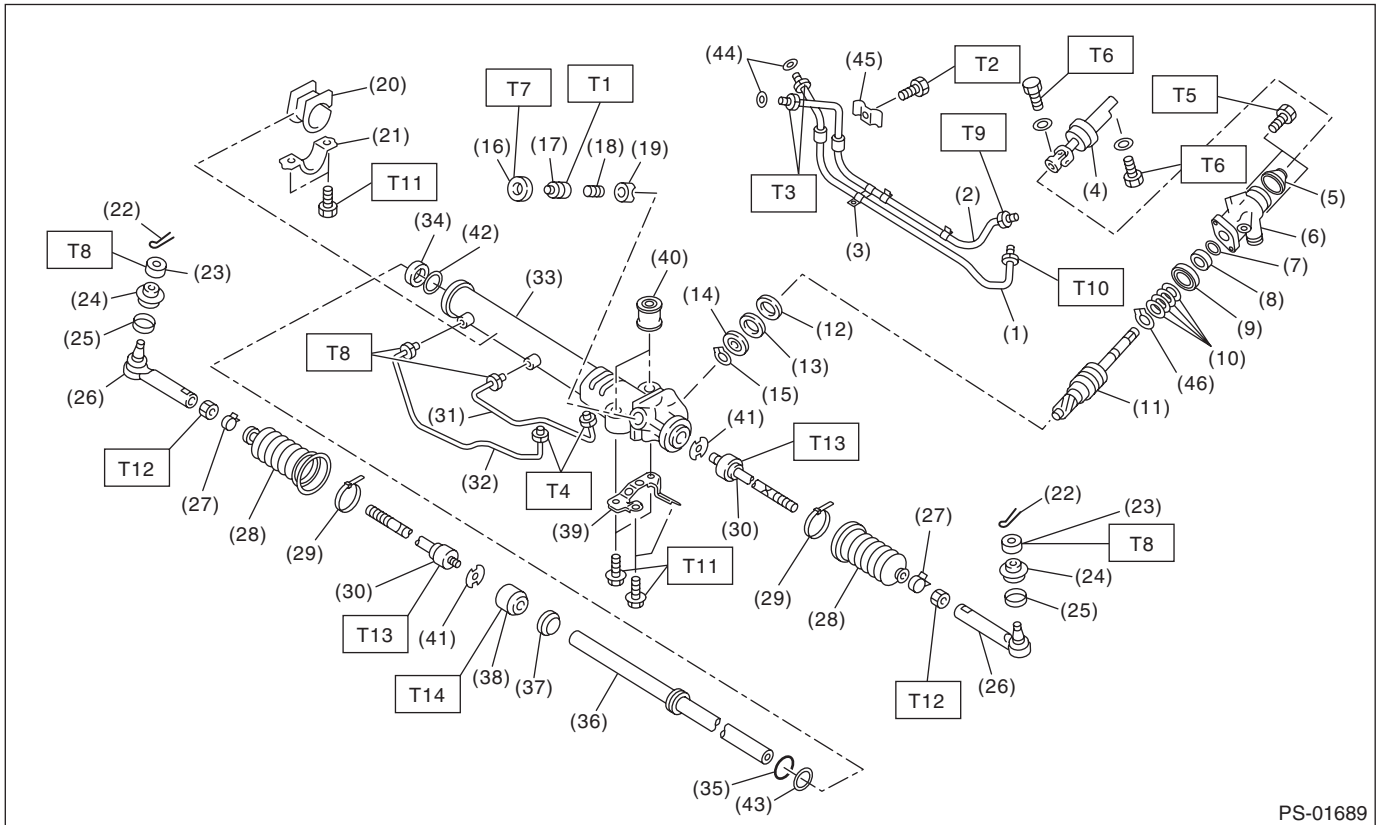
***T5: 33 (3.4, 24.3)***

***T6: 40 (4.1, 29.5)***

# General Description

## POWER ASSISTED SYSTEM (POWER STEERING)

### • Gearbox



PS-01689

- |                          |                       |
|--------------------------|-----------------------|
| (1) Feed pipe            | (22) Cotter pin       |
| (2) Return pipe          | (23) Castle nut       |
| (3) Clip                 | (24) Dust cover       |
| (4) Universal joint      | (25) Clip             |
| (5) Dust seal            | (26) Tie-rod end      |
| (6) Valve housing        | (27) Clip             |
| (7) O-ring               | (28) Boot             |
| (8) Oil seal             | (29) Band             |
| (9) Bushing              | (30) Tie-rod          |
| (10) Seal ring           | (31) Pipe B           |
| (11) Pinion & valve ASSY | (32) Pipe A           |
| (12) Oil seal            | (33) Steering body    |
| (13) Wave washer         | (34) Oil seal         |
| (14) Ball bearing        | (35) Piston seal ring |
| (15) Snap ring           | (36) Rack             |
| (16) Lock nut            | (37) Oil seal         |
| (17) Adjusting screw     | (38) Holder           |
| (18) Spring              | (39) Stiffener        |
| (19) Sleeve              | (40) Bushing          |
| (20) Adapter             | (41) Lock washer      |
| (21) Clamp               | (42) Back-up ring     |

- |                |
|----------------|
| (43) O-ring    |
| (44) O-ring    |
| (45) Bracket   |
| (46) Snap ring |

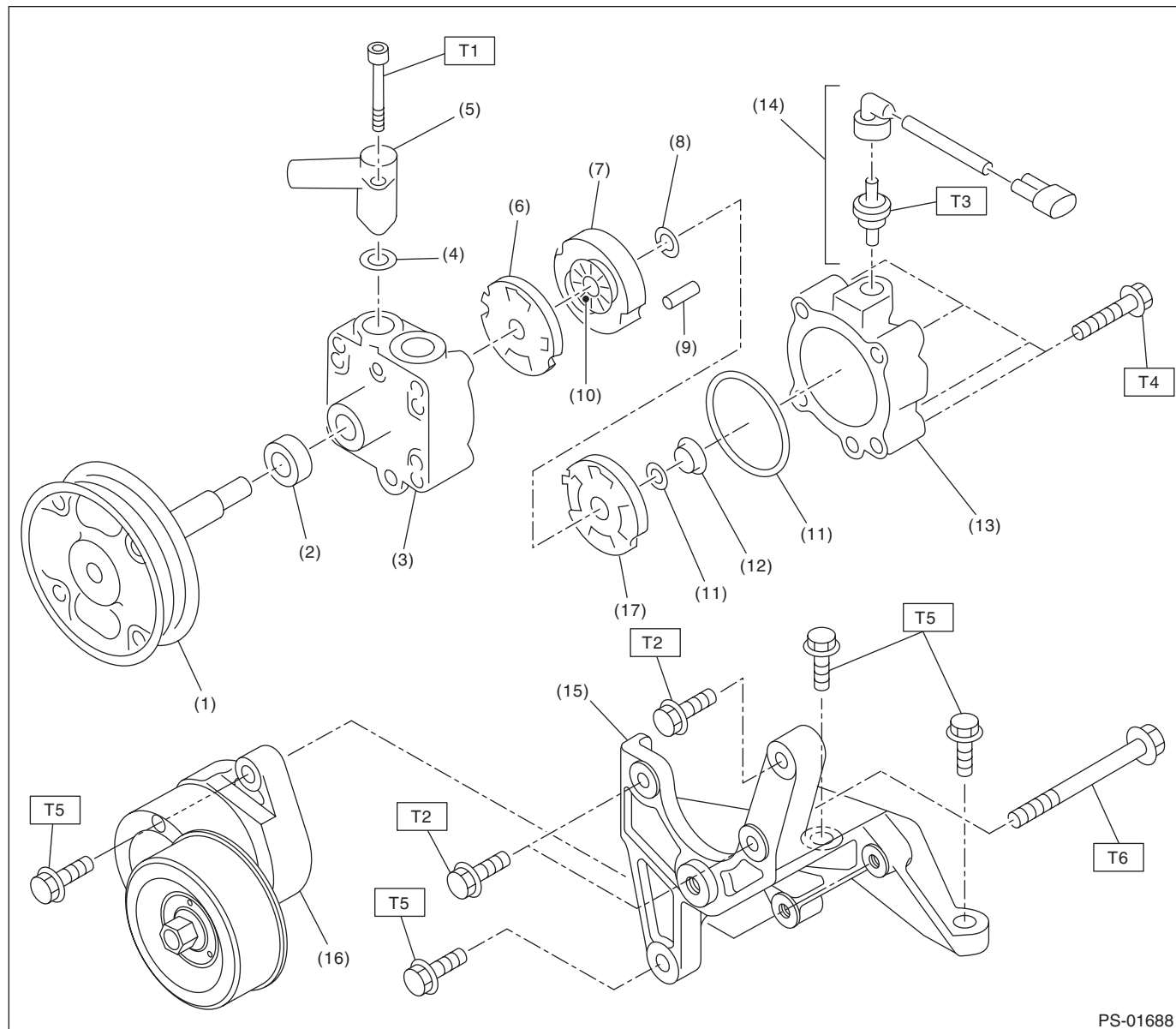
#### **Tightening torque: N·m (kgf·m, ft·lb)**

- |             |                         |
|-------------|-------------------------|
| <b>T1:</b>  | <b>5.9 (0.6, 4.4)</b>   |
| <b>T2:</b>  | <b>9 (0.9, 6.6)</b>     |
| <b>T3:</b>  | <b>15 (1.5, 11.1)</b>   |
| <b>T4:</b>  | <b>17 (1.7, 12.5)</b>   |
| <b>T5:</b>  | <b>20 (2.0, 14.8)</b>   |
| <b>T6:</b>  | <b>24 (2.4, 17.7)</b>   |
| <b>T7:</b>  | <b>25 (2.5, 18.1)</b>   |
| <b>T8:</b>  | <b>27 (2.8, 19.9)</b>   |
| <b>T9:</b>  | <b>29 (3.0, 21.4)</b>   |
| <b>T10:</b> | <b>37 (3.8, 27.3)</b>   |
| <b>T11:</b> | <b>60 (6.1, 44.3)</b>   |
| <b>T12:</b> | <b>85 (8.7, 62.7)</b>   |
| <b>T13:</b> | <b>128 (13.1, 94.4)</b> |
| <b>T14:</b> | <b>79 (8.1, 58.3)</b>   |

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## POWER ASSISTED SYSTEM (POWER STEERING)

### 3. OIL PUMP



PS-01688

- |                       |                           |
|-----------------------|---------------------------|
| (1) Pulley            | (10) Rotor                |
| (2) Oil seal          | (11) O-ring               |
| (3) Front casing      | (12) Back-up ring         |
| (4) O-ring            | (13) Rear body            |
| (5) Suction connector | (14) Pressure switch ASSY |
| (6) Side plate front  | (15) Bracket              |
| (7) Cam ring          | (16) Belt tensioner       |
| (8) Snap ring         | (17) Side plate rear      |
| (9) Straight pin      |                           |

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

***T1: 3.73 (0.38, 2.75)***

***T2: 15.7 (1.6, 11.6)***

***T3: 19.6 (2.0, 14.5)***

***T4: 27.5 (2.8, 20.3)***

***T5: 33 (3.4, 24.3)***

***T6: 36.8 (3.8, 27.1)***

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POWER ASSISTED SYSTEM (POWER STEERING)

## C: CAUTION

Please clearly understand and adhere to the following general precautions. They must be strictly followed to avoid any injury to the person doing the work or people in the area.

### 1. OPERATION

- Wear appropriate work clothing, including a cap, protective goggles and protective shoes when performing any work.
- 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.
- Use SUBARU genuine power steering fluid, grease etc. or the equivalent. Do not mix fluid, grease etc. of different grades or manufacturers.
- Be sure to tighten fasteners including bolts and nuts to the specified torque.
- Place shop jacks or rigid racks at the specified points.
- Before securing a part on a vise, place cushioning material such as wooden blocks, aluminum plate or cloth between the part and the vise.

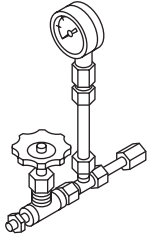
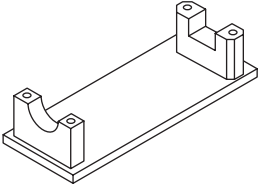
### 2. OIL

When handling oil, follow the rules below to prevent unexpected accidents.

- Prepare container and waste cloths when performing work which oil could possibly spill. If oil spills, wipe it off immediately to prevent from penetrating into floor or flowing outside, for environmental protection.
- Follow all government and local regulations concerning waste disposal.

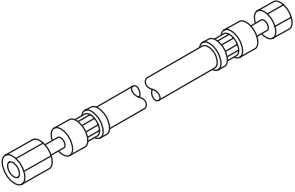
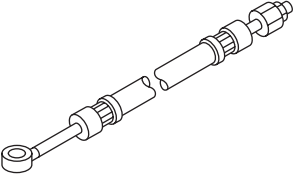
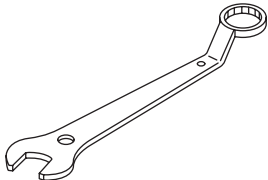
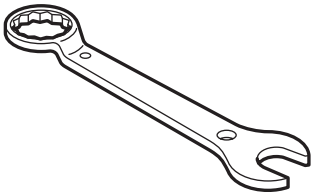
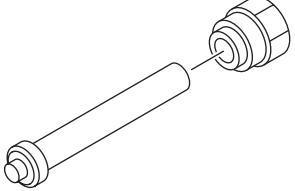
## D: PREPARATION TOOL

### 1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST-925711000	925711000	PRESSURE GAUGE	Used for measuring oil pressure.
 ST-926200000	926200000	STAND	<ul style="list-style-type: none"><li>• Used when inspecting characteristic of gear-box assembly and disassembling it.</li><li>• Used together with BOSS D (34199AG000).</li></ul>

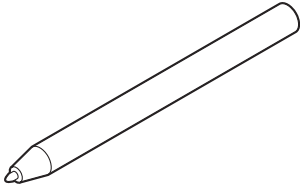
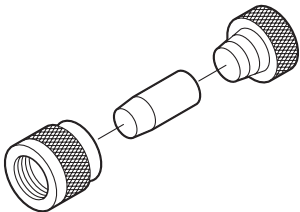
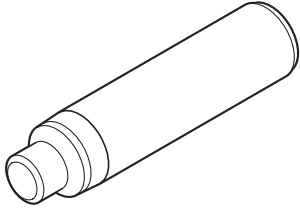
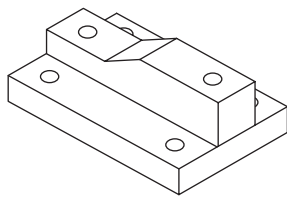
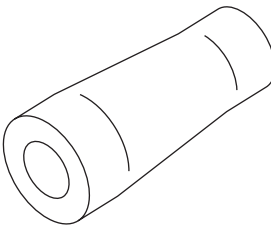
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST34099AC010</p>	34099AC010	ADAPTER HOSE A	Used together with PRESSURE GAUGE (925711000).
 <p style="text-align: center;">ST34099AC020</p>	34099AC020	ADAPTER HOSE B	Used together with PRESSURE GAUGE (925711000).
 <p style="text-align: center;">ST-926230000</p>	926230000	SPANNER	For the lock nut when adjusting backlash of gearbox.
 <p style="text-align: center;">ST34099PA100</p>	34099PA100	SPANNER	Used when measuring the rotational resistance of gearbox assembly.
 <p style="text-align: center;">ST-926420000</p>	926420000	PLUG	When fluid leaks from pinion side of gearbox assembly, remove pipe B from valve housing, attach this tool and check fluid leaking points.

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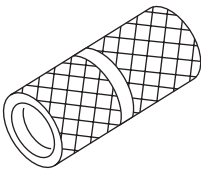
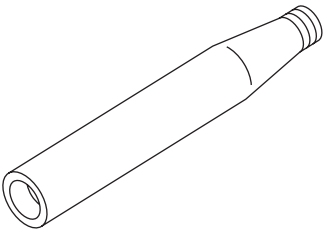
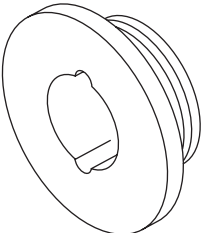
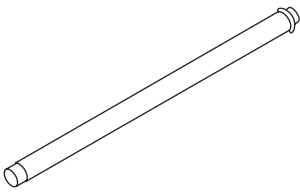
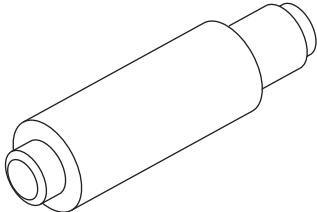
## POWER ASSISTED SYSTEM (POWER STEERING)

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST34099FA060</p>	34099FA060	PUNCH HOLDER	Used for crimping.
 <p>ST34199FE040</p>	34199FE040	INSTALLER A, B, C	Used for installing the oil seal to the rack assembly.
 <p>ST34199XA030</p>	34199XA030	INSTALLER & REMOVER 44	Used for removing and installing the rack oil seal (outer and inner).
 <p>ST34199AG000</p>	34199AG000	BOSS D	<ul style="list-style-type: none"> <li>Used when inspecting characteristic of gear-box assembly and disassembling it.</li> <li>Used together with STAND (926200000).</li> </ul>
 <p>ST34199XA010</p>	34199XA010	GUIDE 44	Used for installing seal ring of rack.



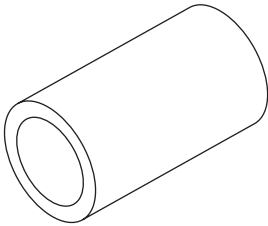
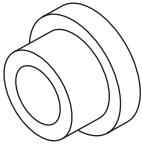
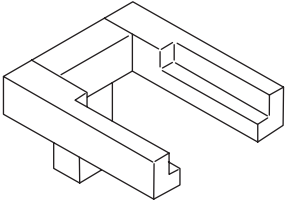
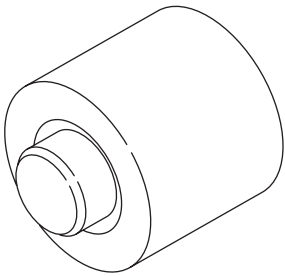
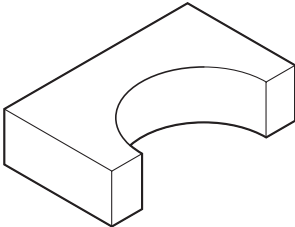
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST34199AG070	34199AG070	FORMER	Used for forming seal ring of pinion.
 ST34199AG020	34199AG020	GUIDE	Used for installing seal ring of pinion.
 ST34199AG060	34199AG060	GUIDE G (26)	<ul style="list-style-type: none"> <li>• Used for forming seal ring of rack.</li> <li>• Used with FORMER PISTON (34199XA020).</li> </ul>
 ST34199XA060	34199XA060	OIL SEAL REMOVER	Used for removing oil seal.
 ST34199AG090	34199AG090	INSTALLER & REMOVER	<ul style="list-style-type: none"> <li>• Used for installing oil seal of valve housing.</li> <li>• Used for installing ball bearing of valve housing.</li> <li>• Used for removing oil seal and ball bearing from valve housing.</li> </ul>

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 <p>ST34199XA020</p>	34199XA020	FORMER PISTON 44	<ul style="list-style-type: none"> <li>Used for forming seal ring of rack.</li> <li>Used together with GUIDE G (26) (34199AG060).</li> </ul>
 <p>ST34199XA000</p>	34199XA000	INSTALLER 44	Used for pressing-fit oil seal of gearbox cylinder.
 <p>ST34199AE020</p>	34199AE020	ATTACHMENT	Used for removing oil pump.
 <p>ST34199AE030</p>	34199AE030	INSTALLER	Used for installing the oil seal to the oil pump.
 <p>ST34199XA050</p>	34199XA050	BASE	Used for crimping.