

# General Description

## POWER ASSISTED SYSTEM (POWER STEERING)

### 1. General Description

#### A: SPECIFICATION

Model			H4 non-turbo model	H6, H4 turbo model
Whole system	Minimum turning radius m (ft)		5.6 (18.4)	
	Steering angle	Inner wheel	225/50R17 tire: $37.4^{\circ} \pm 1.5^{\circ}$ 225/45R18 tire: $37.4^{\circ} \pm 1.5^{\circ}$ 215/50R17 tire: $37.6^{\circ} \pm 1.5^{\circ}$ 205/60R16 tire: $37.6^{\circ} \pm 1.5^{\circ}$ 225/60R17 tire: $38.4^{\circ} \pm 1.5^{\circ}$ 215/70R16 tire: $38.4^{\circ} \pm 1.5^{\circ}$	
		Outer wheel	225/50R17 tire: $33.0^{\circ} \pm 1.5^{\circ}$ 225/45R18 tire: $33.0^{\circ} \pm 1.5^{\circ}$ 215/50R17 tire: $33.3^{\circ} \pm 1.5^{\circ}$ 205/60R16 tire: $33.3^{\circ} \pm 1.5^{\circ}$ 225/60R17 tire: $34.1^{\circ} \pm 1.5^{\circ}$ 215/70R16 tire: $34.1^{\circ} \pm 1.5^{\circ}$	
	Steering wheel diameter mm (in)		375 (14.76)	
	Lock-to-lock revolution number		OUTBACK: 3.2 Except for OUTBACK: 2.8	
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.	8.5 (0.519)	8.5 (0.519)
	Relief pressure	kPa (kgf/cm <sup>2</sup> , psi)	8,300 — 9,000 (85 — 92, 1,203 — 1,305)	8,900 — 9,600 (91 — 98, 1,290 — 1,392)
	Hydraulic fluid control		Engine speed sensitive	
	Hydraulic fluid	ℓ (US qt, Imp qt)	1,000 rpm: 6.5 (6.9, 5.7) 3,000 rpm: 5.3 (5.6, 4.7)	1,000 rpm: 6.8 (7.2, 6) 3,000 rpm: 5.8 (6.1, 5.1)
	RPM range	rpm	500 — 9,600	670 — 9,869
	Direction of rotation		Clockwise	
Hydraulic oil (Power steering system)	Capacity ℓ (US qt, Imp qt)	Oil tank	0.2 (0.2, 0.2)	
		Whole system	0.7 (0.7, 0.6)	

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Steering wheel	Free play		mm (in)	17 (0.67)
Steering shaft	Clearance between the steering wheel and column cover		mm (in)	2 — 4 (0.08 — 0.16)
Steering gear-box (Power steering system)	Sliding resistance		N (kgf, lbf)	314 (32, 71) or less Difference between right and left sliding resistance: 20%
	Rack shaft play in the radial direction	Right-turn steering	mm (in)	Horizontal play: 0.6 (0.024) or less Vertical play: 0.4 (0.016) or less
		Left-turn steering	mm (in)	0.4 (0.016) or less
	Input shaft play	In radial direction	mm (in)	0.18 (0.0071) or less
		In axial direction	mm (in)	0.27 (0.0106) or less
	Rotation resistance		N (kgf, lbf)	Maximum allowable value: 13 (1.3, 2.9) or less Difference between right and left sliding resistance: 20%
Oil pump (Power steering system)	Pulley shaft	Radial play	mm (in)	0.2 (0.008) or less
		Axial play	mm (in)	0.9 (0.035) or less
	Pulley	Ditch deflection	mm (in)	1.0 (0.039) or less
		Rotation resistance	N (kgf, lbf)	9.22 (0.94, 2.07) or less
	Regular pressure (Unloaded)		kPa (kgf/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, lbf)	29.4 (3.0, 6.6) or less
	At standstill with engine stalled on paved road		N (kgf, lbf)	294.2 (30, 66.2) or less

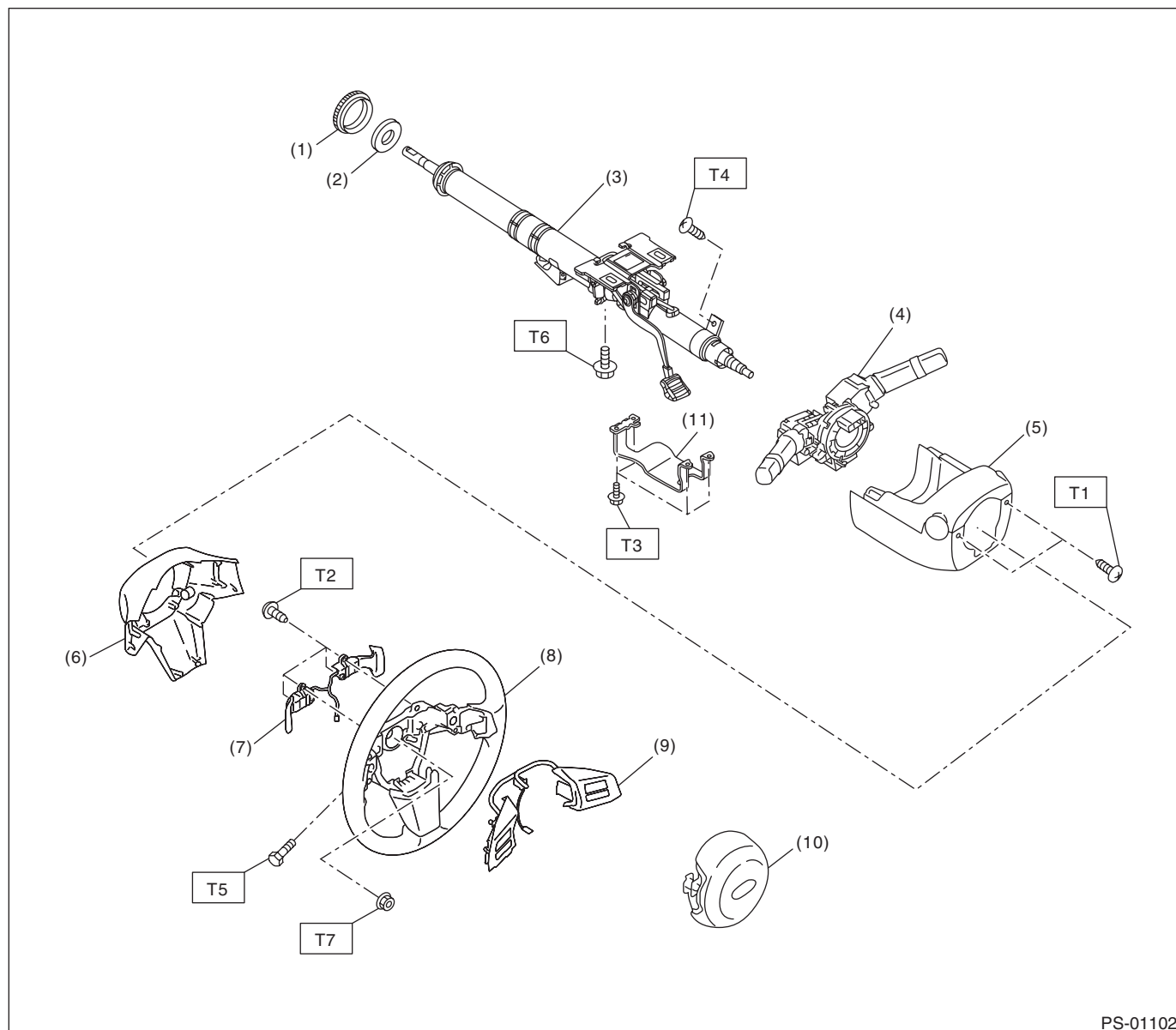
Recommended power steering fluid	SUBARU ATF or DEXRON III
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## POWER ASSISTED SYSTEM (POWER STEERING)

### B: COMPONENT

#### 1. STEERING WHEEL AND COLUMN



PS-01102

- |                                |                     |
|--------------------------------|---------------------|
| (1) Bushing                    | (7) Paddle shift    |
| (2) Insulator (CVT model)      | (8) Steering wheel  |
| (3) Steering shaft             | (9) Switch          |
| (4) Steering roll connector    | (10) Airbag module  |
| (5) Column cover               | (11) Knee protector |
| (6) Steering wheel lower cover |                     |

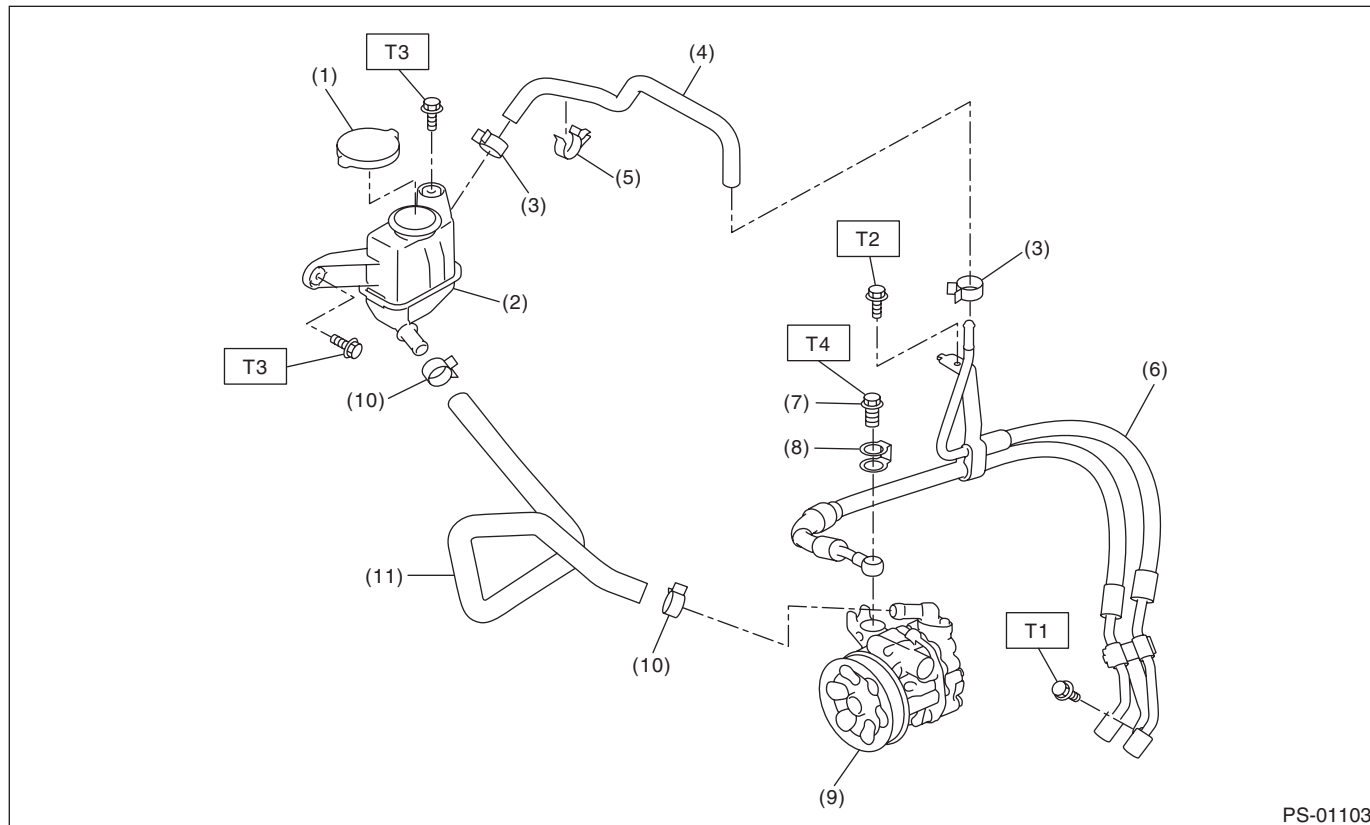
#### **Tightening torque: N·m (kgf-m, ft-lb)**

- |            |                        |
|------------|------------------------|
| <b>T1:</b> | <b>1.2 (0.12, 0.9)</b> |
| <b>T2:</b> | <b>1.7 (0.17, 1.3)</b> |
| <b>T3:</b> | <b>3.4 (0.35, 2.5)</b> |
| <b>T4:</b> | <b>3.5 (0.36, 2.6)</b> |
| <b>T5:</b> | <b>10 (1.02, 7.4)</b>  |
| <b>T6:</b> | <b>20 (2.04, 14.8)</b> |
| <b>T7:</b> | <b>39 (3.98, 28.8)</b> |

# General Description

POWER ASSISTED SYSTEM (POWER STEERING)

## 2. HOSE AND TANK



- (1) Cap
- (2) Reservoir tank
- (3) Clip
- (4) Return hose
- (5) Clip
- (6) Hose ASSY

- (7) Eye bolt
- (8) Eye bolt gasket
- (9) Oil pump
- (10) Clip
- (11) Suction hose

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

**T1: 7.5 (0.76, 5.5)**

**T2: 10 (1.02, 7.4)**

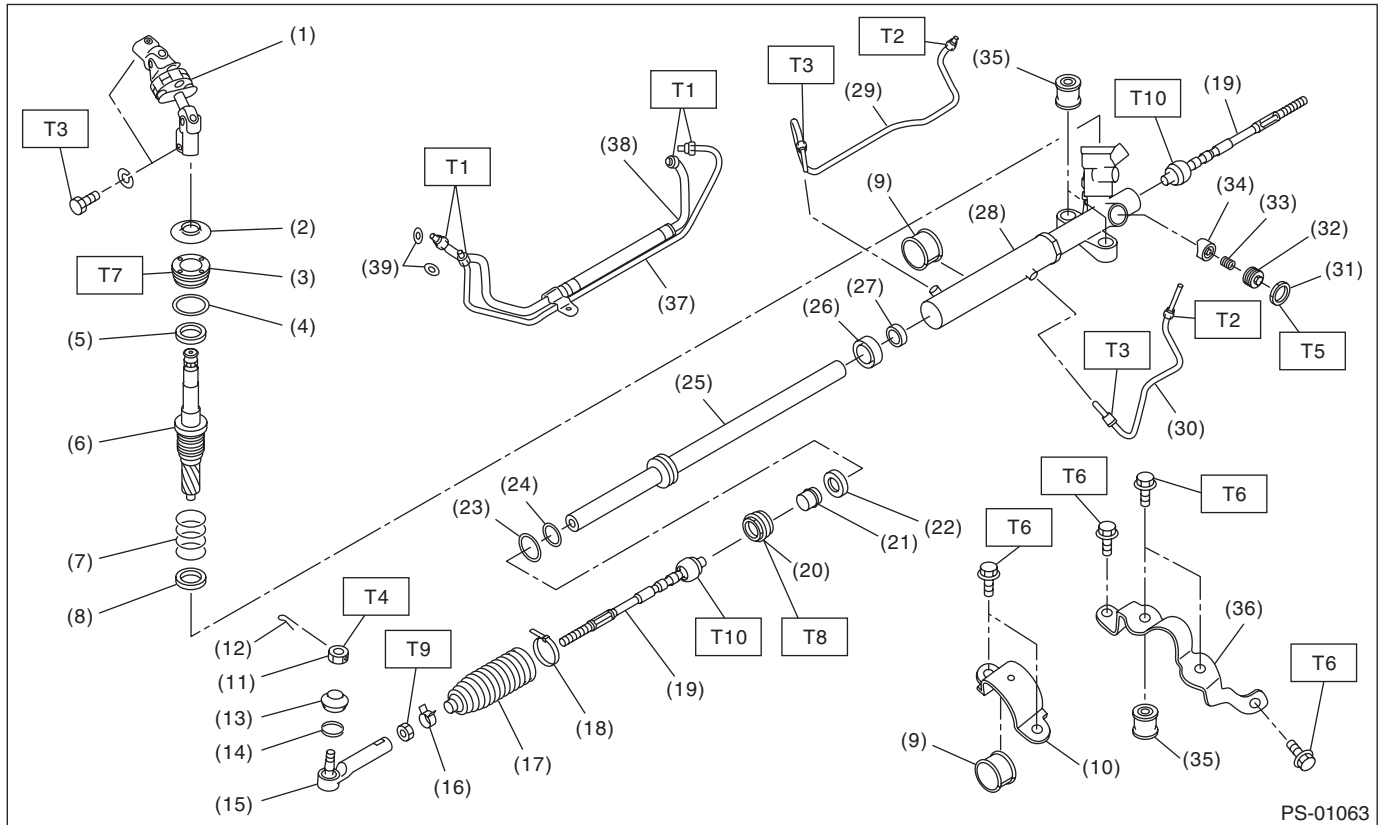
**T3: 13 (1.33, 9.6)**

**T4: 40 (4.08, 29.5)**

# General Description

## POWER ASSISTED SYSTEM (POWER STEERING)

### 3. STEERING GEARBOX



- |                     |                      |
|---------------------|----------------------|
| (1) Universal joint | (19) Tie-rod         |
| (2) Dust cover      | (20) Holder          |
| (3) Plug            | (21) Bushing         |
| (4) O-ring          | (22) Oil seal        |
| (5) Oil seal        | (23) Seal ring       |
| (6) Control valve   | (24) O-ring          |
| (7) Seal ring       | (25) Rack            |
| (8) Oil seal        | (26) Oil seal        |
| (9) Adapter         | (27) Back-up ring    |
| (10) Clamp          | (28) Steering body   |
| (11) Castle nut     | (29) Pipe A          |
| (12) Cotter pin     | (30) Pipe B          |
| (13) Dust seal      | (31) Lock nut        |
| (14) Clip           | (32) Adjusting screw |
| (15) Tie-rod end    | (33) Spring          |
| (16) Clip           | (34) Sleeve          |
| (17) Boot           | (35) Bushing         |
| (18) Band           | (36) Stiffener       |

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**Tightening torque:N·m (kgf-m, ft-lb)****T1: 15 (1.53, 11.1)****T2: 20 (2.04, 14.8)****T3: 24 (2.45, 17.7)****T4: 27 (2.75, 19.9)****T5: 39 (3.98, 28.8)****T6: 60 (6.12, 44.3)****T7: 64 (6.53, 47.2)****T8: 75 (7.65, 55.3)****T9: 85 (8.67, 62.7)****T10: 90 (9.18, 66.4)**

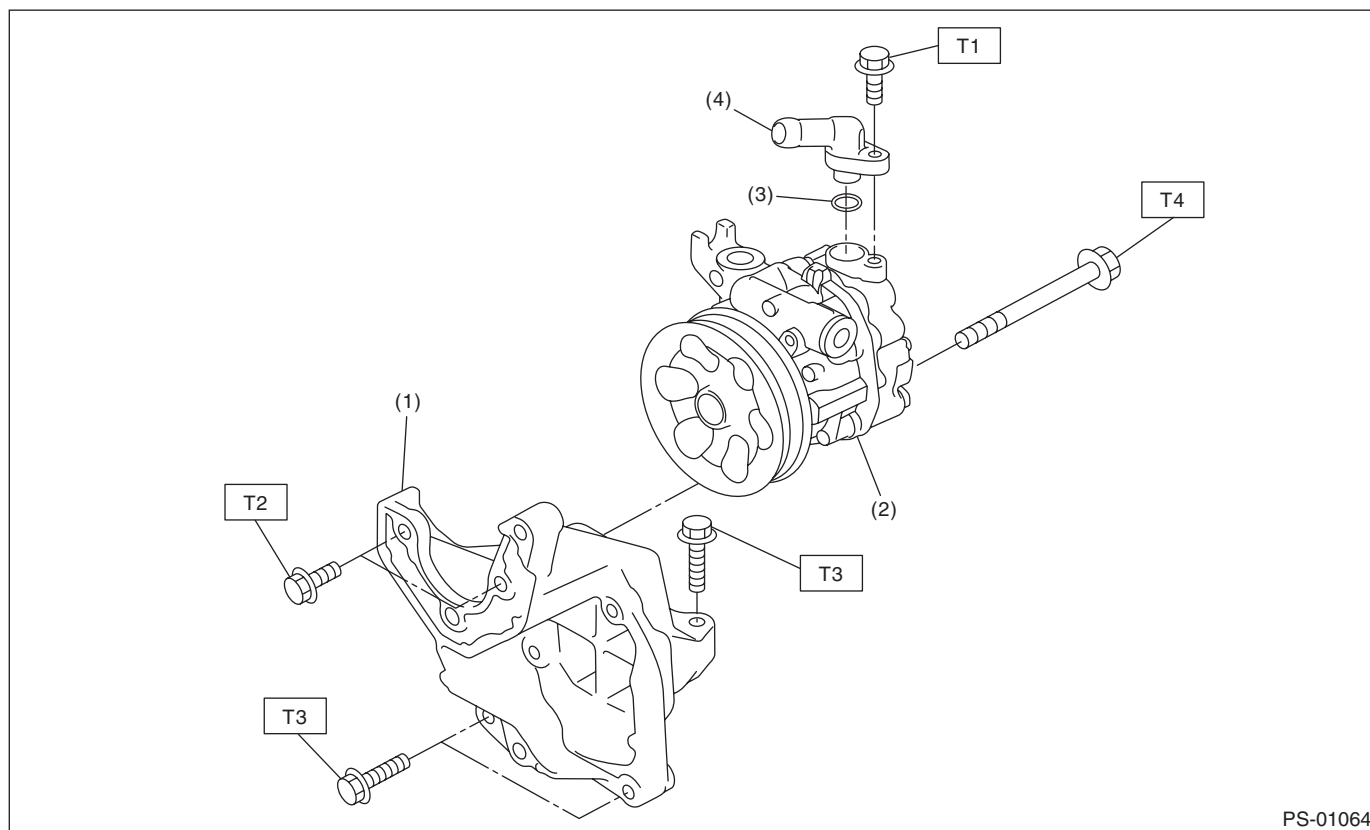
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## General Description

POWER ASSISTED SYSTEM (POWER STEERING)

### 4. OIL PUMP

- H4 non-turbo model



- (1) Bracket
- (2) Oil pump
- (3) O-ring
- (4) Joint

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

**T1: 10 (1.02, 7.4)**

**T2: 16 (1.63, 11.8)**

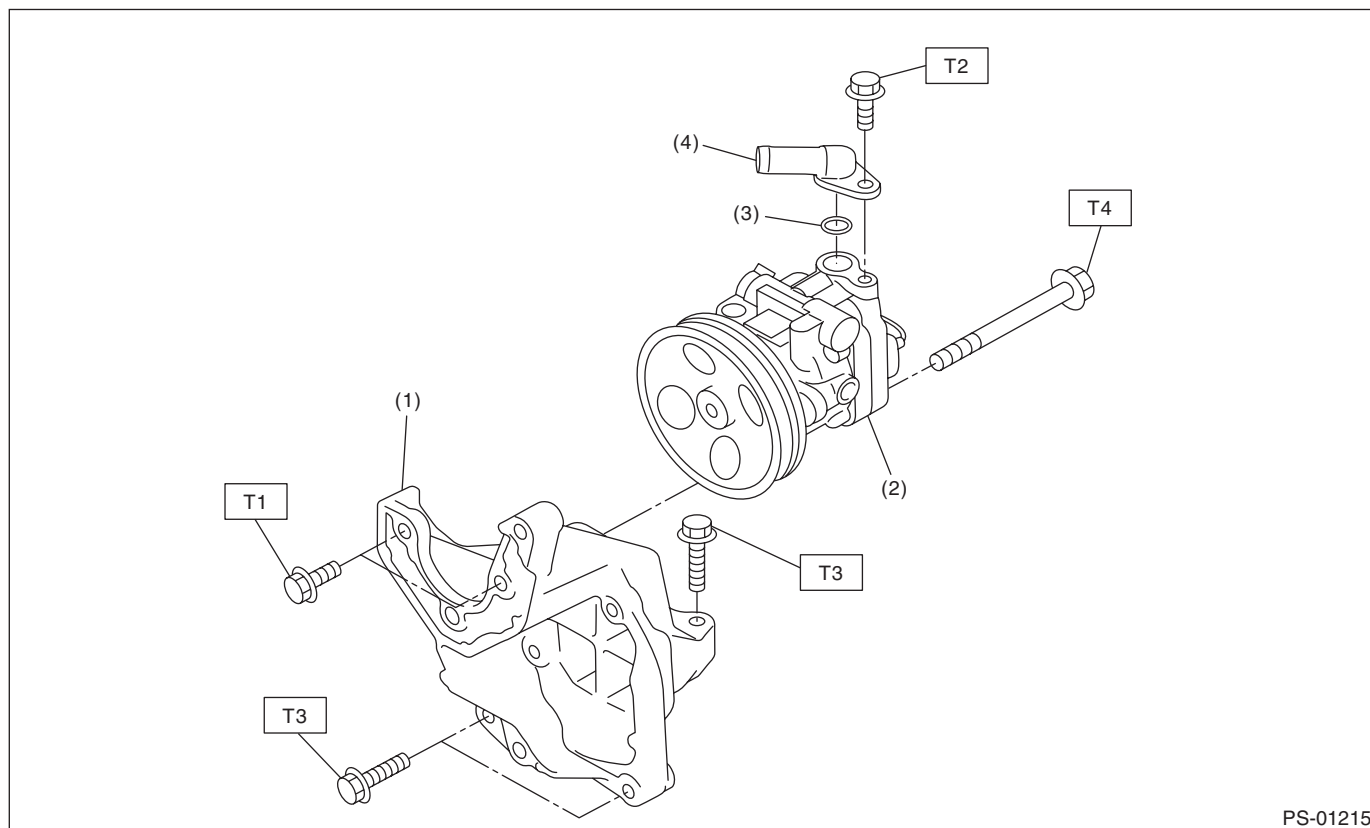
**T3: 22 (2.24, 16.2)**

**T4: 36 (3.67, 26.6)**

## General Description

### POWER ASSISTED SYSTEM (POWER STEERING)

- H4 turbo model



- (1) Bracket
- (2) Oil pump
- (3) O-ring
- (4) Joint

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

***T1: 16 (1.63, 11.8)***

***T2: 21 (2.14, 15.5)***

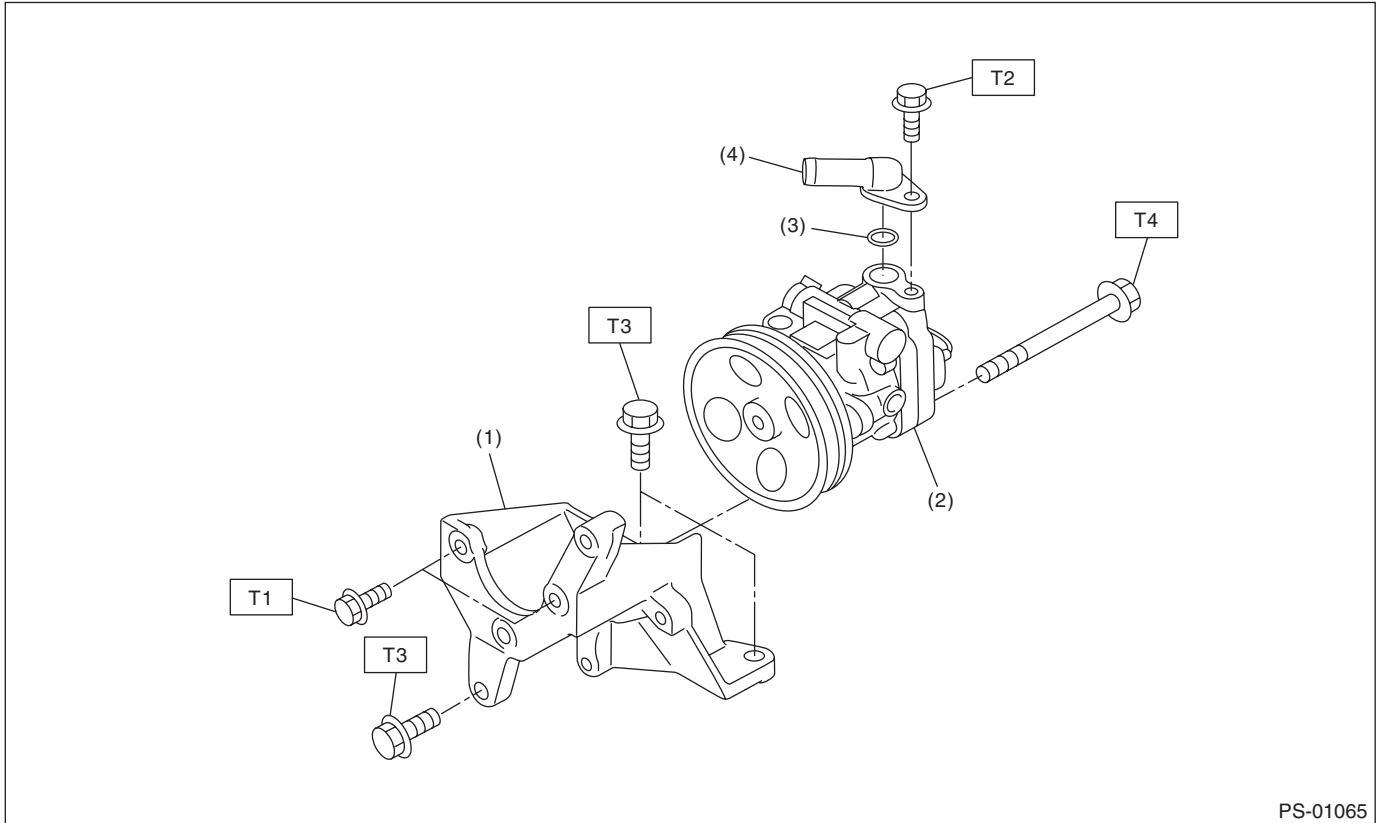
***T3: 22 (2.24, 15.9)***

***T4: 36 (3.67, 26.6)***

## General Description

### POWER ASSISTED SYSTEM (POWER STEERING)

- H6 model



- (1) Bracket
- (2) Oil pump
- (3) O-ring
- (4) Joint

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

***T1: 16 (1.63, 11.8)***

***T2: 21 (2.14, 15.5)***

***T3: 33 (3.36, 24.3)***

***T4: 36 (3.67, 26.6)***

## C: CAUTION

- 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 grease and oil of Subaru genuine or the equivalent products. Do not mix them 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.

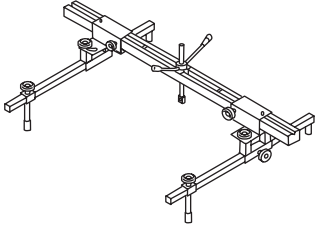
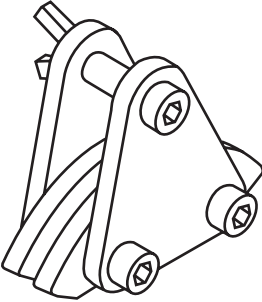
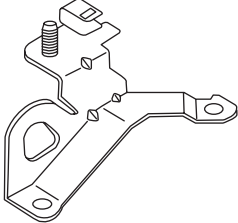
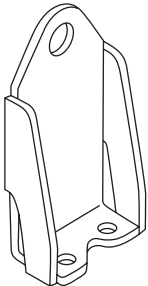


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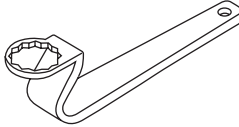
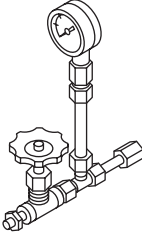
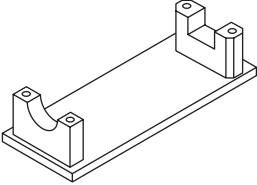
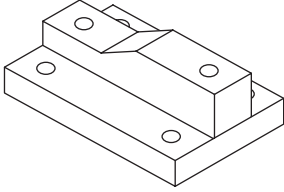
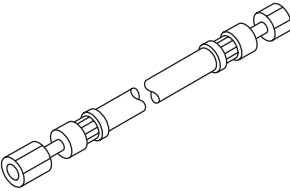
### D: PREPARATION TOOL

#### 1. SPECIAL TOOL

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST99099AJ000</p>	99099AJ000	ENGINE HANGER	<ul style="list-style-type: none"> <li>Used for hanging power unit.</li> <li>Used together with CHAIN BALANCER (99099AJ010).</li> </ul>
 <p>ST99099AJ010</p>	99099AJ010	CHAIN BALANCER	<ul style="list-style-type: none"> <li>Used for hanging power unit.</li> <li>Used together with ENGINE HANGER (99099AJ000).</li> </ul>
 <p>ST10004AA180</p>	10004AA180 (SUBARU genuine part)	HANGER CP ENGINE RR	<ul style="list-style-type: none"> <li>Used for hanging power unit.</li> <li>For H4 non-turbo model.</li> <li>SUBARU genuine part</li> </ul>
 <p>ST18360AA020</p>	18360AA020	HANGER	<ul style="list-style-type: none"> <li>Used for hanging power unit.</li> <li>For H6 model.</li> </ul>

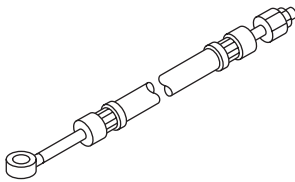
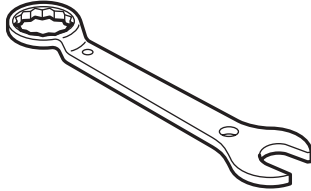
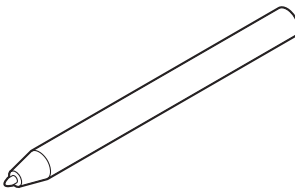
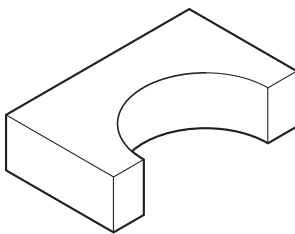
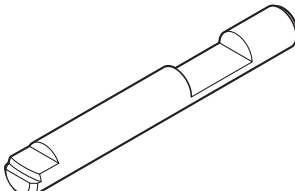
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## POWER ASSISTED SYSTEM (POWER STEERING)

ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST34199AJ000</p>	34199AJ000	SPECIAL TOOL CPS LHD	Used for adjusting the backlash of gearbox. (Lock nut side)
 <p>ST-925711000</p>	925711000	PRESSURE GAUGE	Used for measuring oil pressure.
 <p>ST-926200000</p>	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>
 <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>ST34099AC010</p>	34099AC010	ADAPTER HOSE A	Used together with PRESSURE GAUGE (925711000).

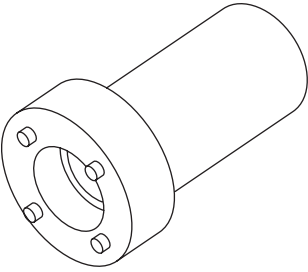
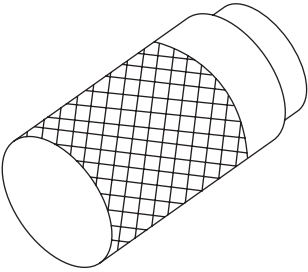
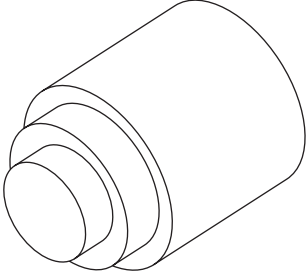
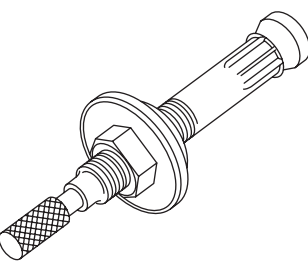
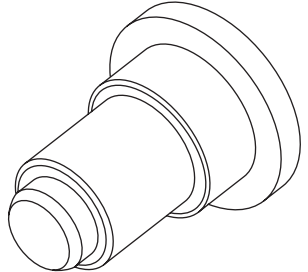
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST34099AC020</p>	34099AC020	ADAPTER HOSE B	Used together with PRESSURE GAUGE (925711000).
 <p style="text-align: center;">ST34099PA100</p>	34099PA100	SPANNER	Used when measuring the rotating resistance of gearbox assembly.
 <p style="text-align: center;">ST34099FA060</p>	34099FA060	PUNCH HOLDER	Used for crimping.
 <p style="text-align: center;">ST34199FE020</p>	34199FE020	BASE	Used for crimping.
 <p style="text-align: center;">ST34099FA080</p>	34099FA080	PUNCH	Used for removing crimps.

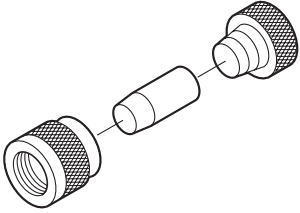
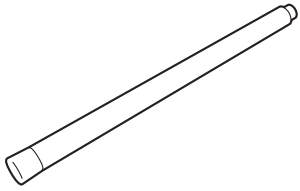
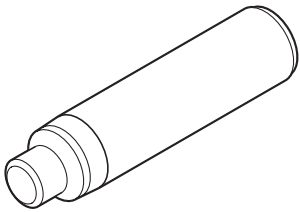
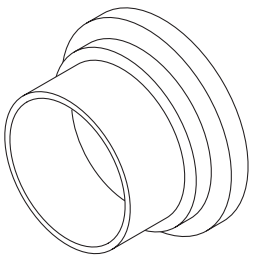
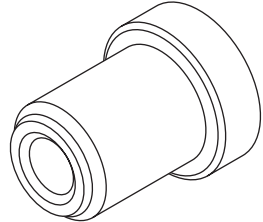
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST34199AE090</p>	34199AE090	PLUG WRENCH	Used for removing the plug.
 <p>ST34199AE100</p>	34199AE100	OIL SEAL PLUG REMOVER	Used for removing the oil seal plug.
 <p>ST34199AE110</p>	34199AE110	OIL SEAL PLUG INSTALLER	Used for installing the oil seal plug.
 <p>ST34199AE120</p>	34199AE120	GEARBOX OIL SEAL REMOVER	Used for removing the gearbox oil seal.
 <p>ST34199AE130</p>	34199AE130	GEARBOX OIL SEAL INSTALLER	Used for installing the gearbox oil seal.

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 <p style="text-align: center;">ST34199FE040</p>	34199FE040	INSTALLER A, B, C	<ul style="list-style-type: none"> <li>Used for installing the oil seal to the rack assembly.</li> <li>INSTALLER A: 34199FE070</li> <li>INSTALLER B: 34199FE080</li> <li>INSTALLER C: 34199FE090</li> </ul>
 <p style="text-align: center;">ST34199FE010</p>	34199FE010	REMOVER	Used for removing the back-up ring and oil seal.
 <p style="text-align: center;">ST34199FE000</p>	34199FE000	INSTALLER & REMOVER	Used for removing and installing the rack oil seal (outer and inner).
 <p style="text-align: center;">ST34199FE050</p>	34199FE050	GUIDE	Used for installing the rack and seal into housing assembly.
 <p style="text-align: center;">ST34199FE060</p>	34199FE060	INSTALLER	Used for installing the rack oil seal (outer).

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### 2. GENERAL TOOL

TOOL NAME	REMARKS
Chain sling	<ul style="list-style-type: none"><li>• Used for hanging power unit.</li><li>• Diameter: 6 mm (0.24 in) or 6.3 mm (0.25 in)</li><li>• Length: 0.8 — 1 m (2.6 — 3.3 ft)</li><li>• Chain inner width: 8.5 mm (0.33 in) or more</li><li>• Chain external width: 23.5 mm (0.93 in) or less</li><li>• Load capacity: 1.2 t (2646 lb) or more</li></ul>
Shackle	<ul style="list-style-type: none"><li>• Two units used for hanging power unit.</li><li>• Attached to both end of chain sling and connected to engine hook.</li><li>• Load capacity: 250 kg (551 lb) or more</li></ul>
Sling belt	<ul style="list-style-type: none"><li>• Used to remove and install the cradle.</li><li>• Width: 35 — 40 mm (1.38 — 1.57 in)</li><li>• Length: 2 m (6.6 ft)</li><li>• Load capacity: 1 t (2205 lb) or more</li></ul>
Shackle	<ul style="list-style-type: none"><li>• Used to remove and install the cradle.</li><li>• Load capacity: 500 kg (1103 lb) or more</li></ul>
Steering wheel puller	Used for removing the steering wheel.