

General Description

POWER ASSISTED SYSTEM (POWER STEERING)

1. General Description

A: SPECIFICATION

Model			H4 model	H6 model
Whole system	Minimum turning radius m (ft)		5.6 (18.4)	
	Steering angle	Inner wheel	P225/50R17 tire: 37.4°±1.5° P225/45R18 tire: 37.4°±1.5° P215/50R17 tire: 37.6°±1.5° P205/60R16 tire: 37.6°±1.5° P225/60R17 tire: 38.4°±1.5° P215/70R16 tire: 38.4°±1.5°	
		Outer wheel	P225/50R17 tire: 33.0°±1.5° P225/45R18 tire: 33.0°±1.5° P215/50R17 tire: 33.3°±1.5° P205/60R16 tire: 33.3°±1.5° P225/60R17 tire: 34.1°±1.5° P215/70R16 tire: 34.1°±1.5°	
	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 ³ (cu in)/rev.	8.5 (0.519)	8.5 (0.519)
	Relief pressure	kPa (kgf/cm ² , 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	645 — 9,675
	Direction of rotation		Clockwise	
Hydraulic oil (Power steering system)	Capacity	Oil tank	0.2 (0.2, 0.2)	
	L (US qt, Imp qt)	Whole system	0.7 (0.7, 0.6)	

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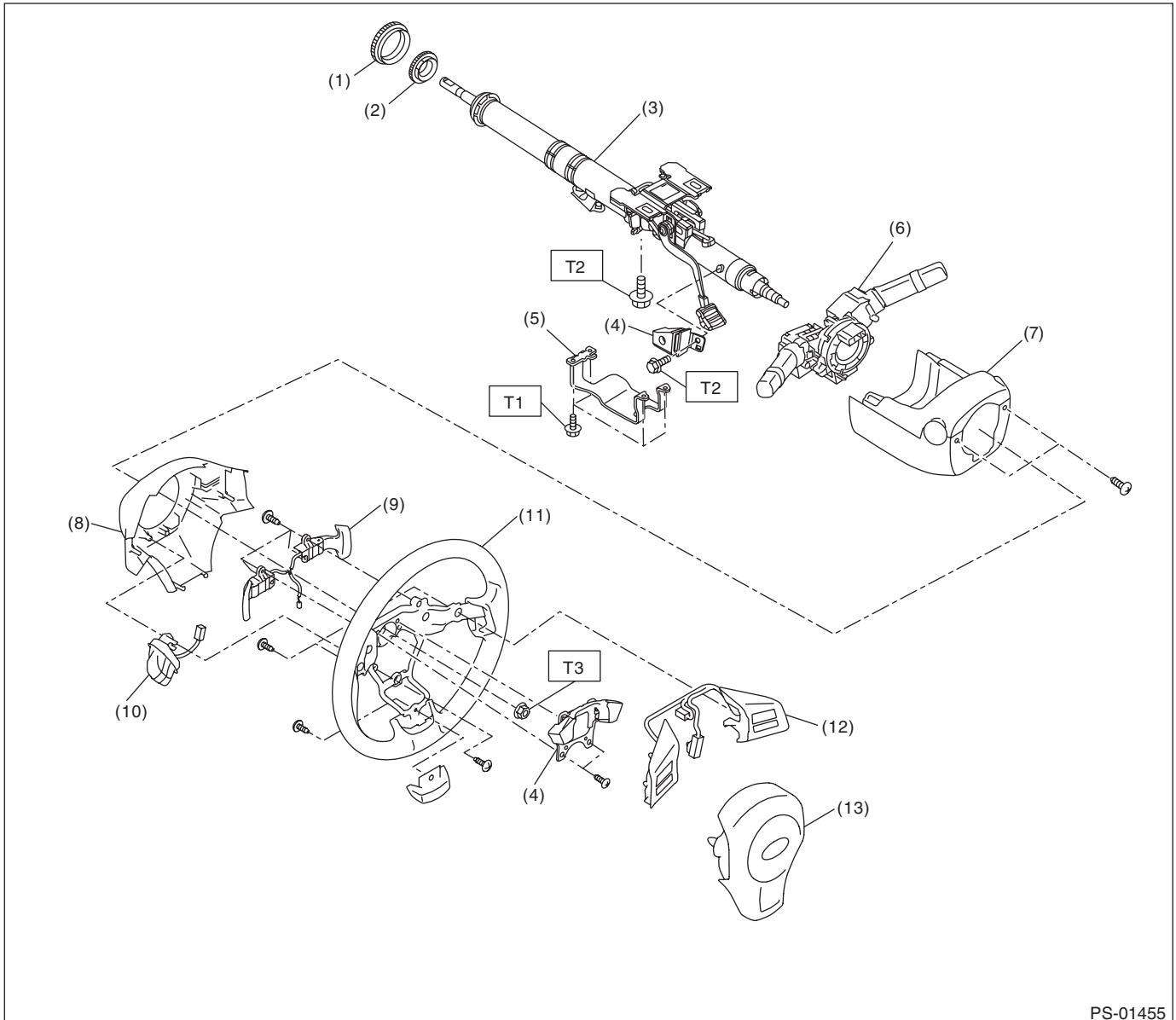
Steering wheel	Free play		mm (in)	17 (0.67)
Steering shaft	Clearance between the steering wheel and column cover		mm (in)	4 — 6 (0.16 — 0.24)
Steering gearbox (Power steering system)	Sliding resistance		N (kgf, lbf)	650 (66.2, 146) or less Difference between right and left sliding resistance: 20%
	Rack 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
	Rotational resistance		N (kgf, lbf)	Maximum allowable value: 30 (3.1, 6.7) 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
		Rotational resistance	N (kgf, lbf)	9.22 (0.94, 2.07) or less
	Regular pressure (Unloaded)		kPa (kgf/cm ² , 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 PS fluid or DEXRON III

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B: COMPONENT

1. STEERING WHEEL AND COLUMN



PS-01455

- | | |
|-----------------------------|--------------------------------|
| (1) Bushing | (8) Steering wheel lower cover |
| (2) Insulator (CVT model) | (9) Paddle shift |
| (3) Steering shaft | (10) Steering switch |
| (4) Dynamic damper | (11) Steering wheel |
| (5) Knee protector | (12) Switch |
| (6) Steering roll connector | (13) Airbag module |
| (7) Column cover | |

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

T1: 3.4 (0.35, 2.5)

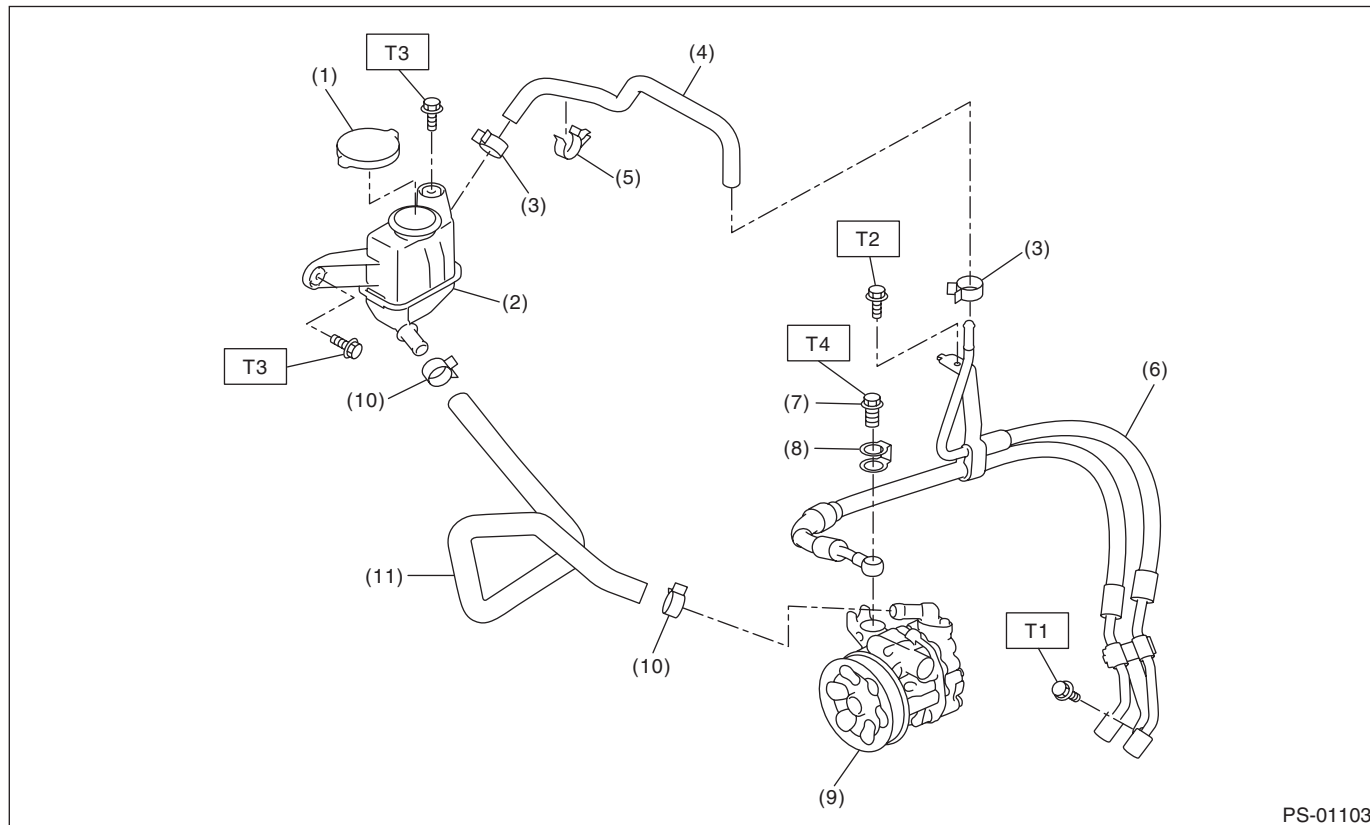
T2: 20 (2.04, 14.8)

T3: 39 (3.98, 28.8)

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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)

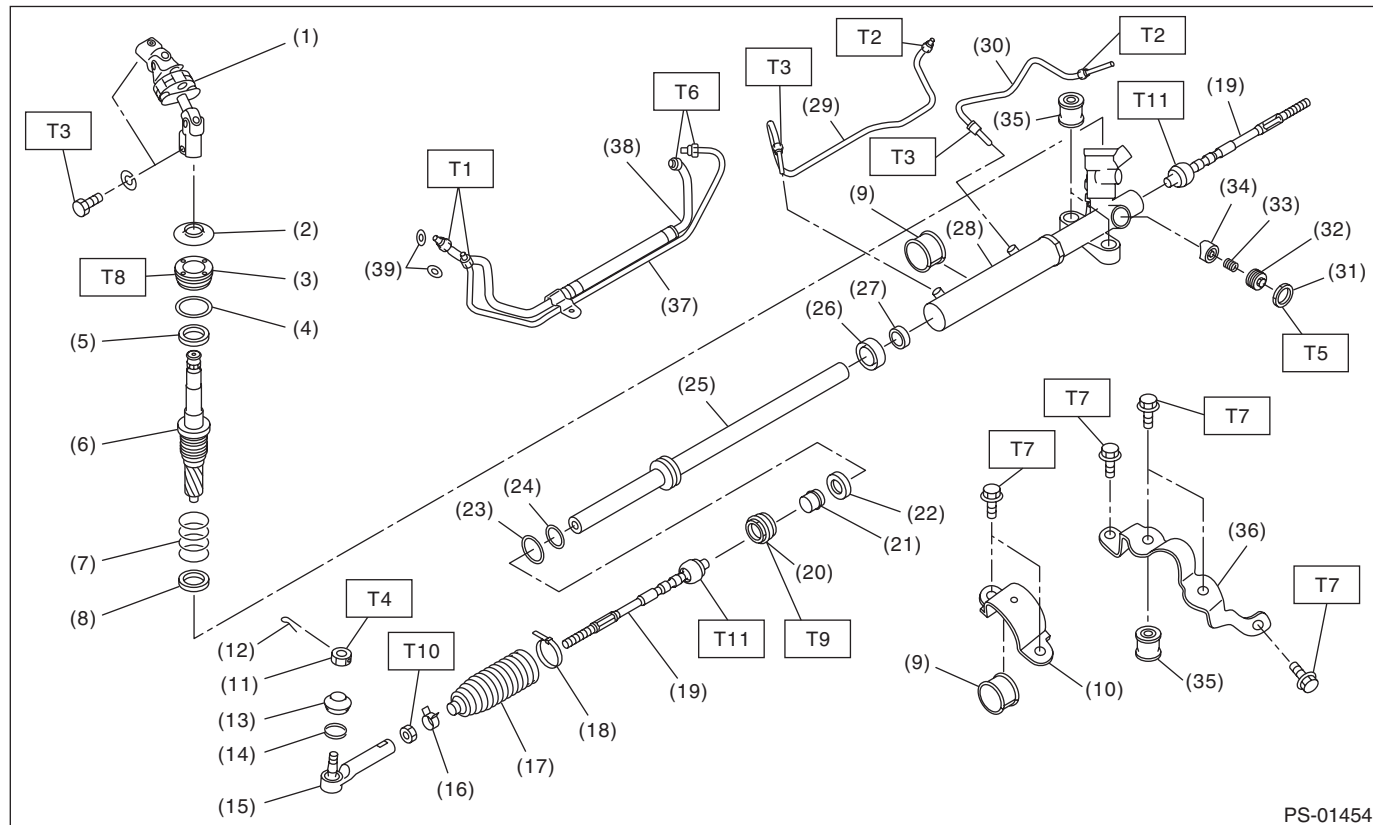
T3: 13 (1.33, 9.6)

T4: 40 (4.08, 29.5)

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3. STEERING GEARBOX



PS-01454

- | | |
|---------------------|----------------------|
| (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 |

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: 45 (4.59, 33.2)

T7: 60 (6.12, 44.3)

T8: 64 (6.53, 47.2)

T9: 75 (7.65, 55.3)

T10: 85 (8.67, 62.7)

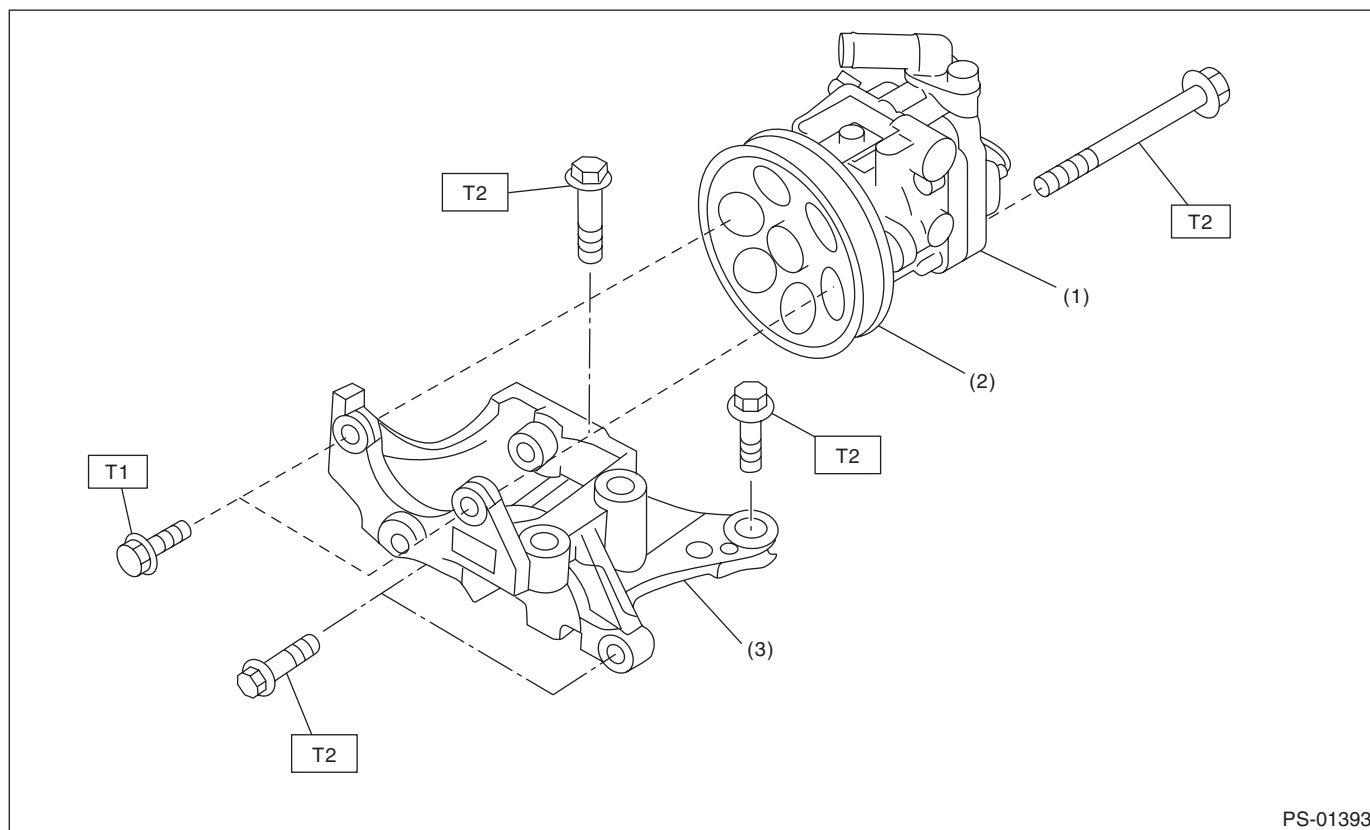
T11: 90 (9.18, 66.4)

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4. OIL PUMP

- H4 model



(1) Pump - power steering

(3) Bracket

(2) Pulley

Tightening torque: N·m (kgf-m, ft-lb)

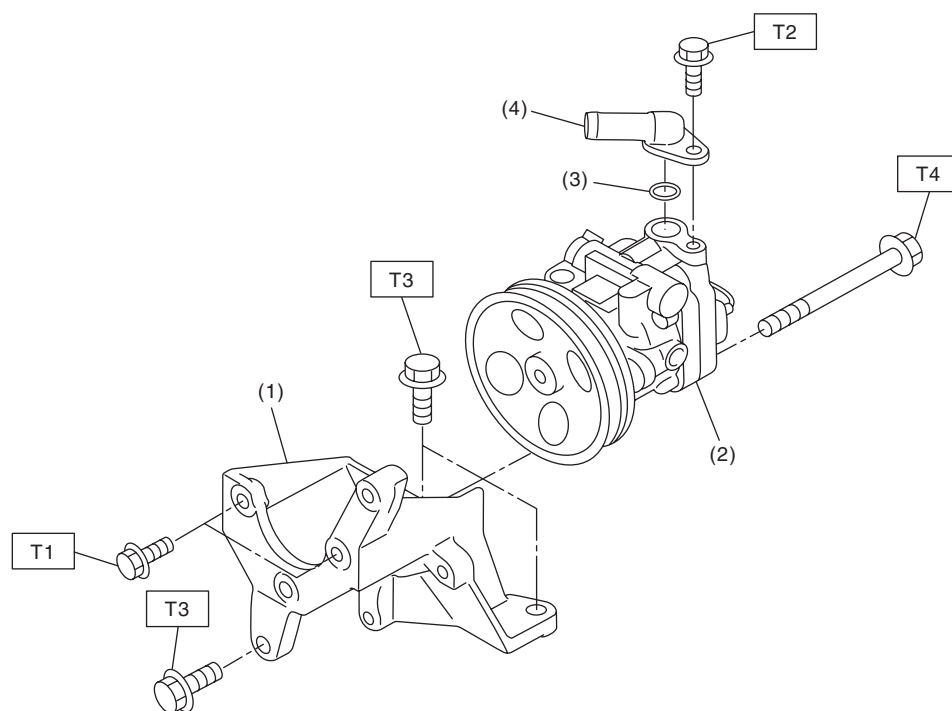
T1: 16 (1.63, 11.8)

T2: 36 (3.67, 26.6)

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- H6 model



PS-01065

- (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)

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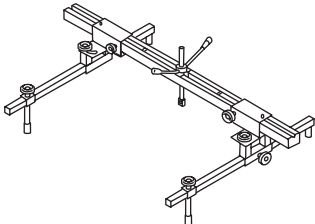
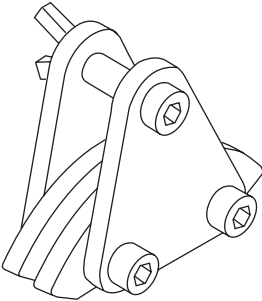
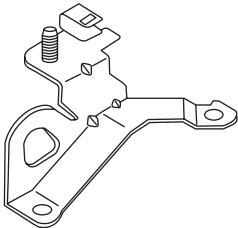
POWER ASSISTED SYSTEM (POWER STEERING)

C: CAUTION

- Wear appropriate work clothing, including a helmet, 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.
- If the steering wheel and steering angle sensor are removed, perform the 0 point setting mode for the steering angle sensor. <Ref. to VDC-20, ADJUSTMENT, VDC Control Module and Hydraulic Control Unit (VDCCM&H/U).>

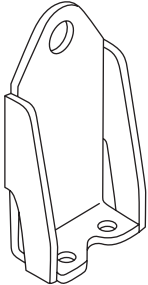
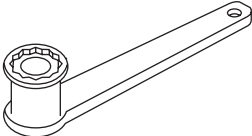
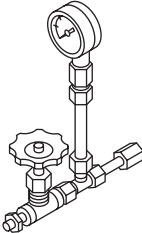
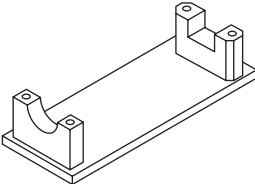
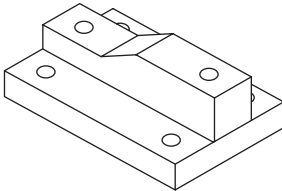
D: PREPARATION TOOL

1. SPECIAL TOOL

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

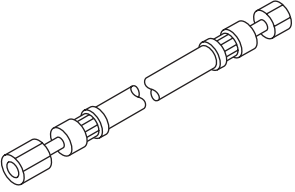
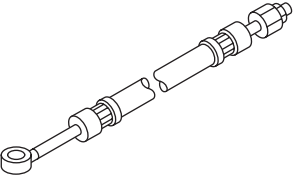
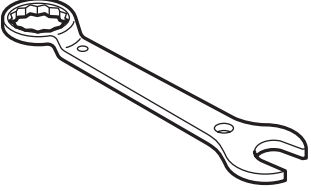
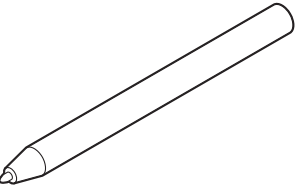
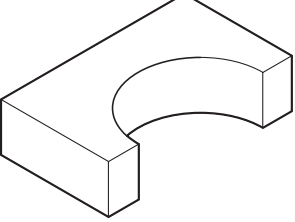
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST18360AA020</p>	18360AA020	HANGER	<ul style="list-style-type: none"> Used for hanging power unit. For H6 model.
 <p style="text-align: center;">ST34199AJ060</p>	34199AJ060	SPECIAL TOOL CPS	Used for adjusting the backlash of gearbox. (Lock nut side)
 <p style="text-align: center;">ST-925711000</p>	925711000	PRESSURE GAUGE	Used for measuring oil pressure.
 <p style="text-align: center;">ST-926200000</p>	926200000	STAND	<ul style="list-style-type: none"> Used when inspecting characteristic of gear-box assembly and disassembling it. Used together with BOSS D (34199AG000).
 <p style="text-align: center;">ST34199AG000</p>	34199AG000	BOSS D	<ul style="list-style-type: none"> Used when inspecting characteristic of gear-box assembly and disassembling it. Used together with STAND (926200000).

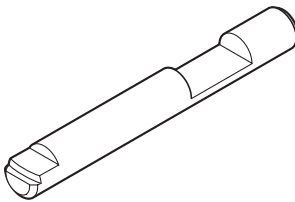
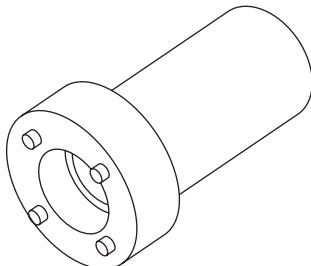
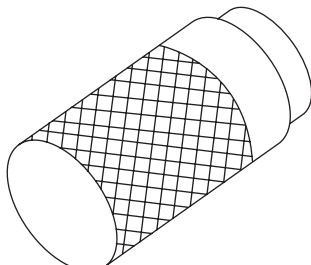
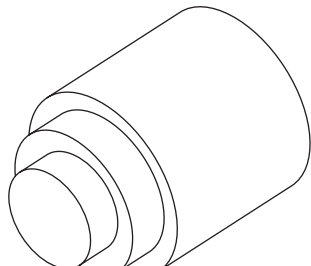
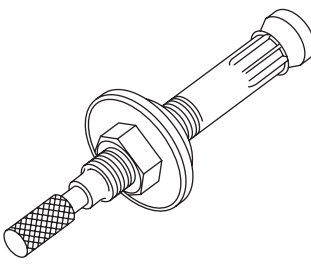
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p>ST34099AC010</p>	34099AC010	ADAPTER HOSE A	Used together with PRESSURE GAUGE (925711000).
 <p>ST34099AC020</p>	34099AC020	ADAPTER HOSE B	Used together with PRESSURE GAUGE (925711000).
 <p>ST34099PA100</p>	34099PA100	SPANNER	Used when measuring the rotational resistance of gearbox assembly.
 <p>ST34099FA060</p>	34099FA060	PUNCH HOLDER	Used for crimping.
 <p>ST34199FE020</p>	34199FE020	BASE	Used for crimping.

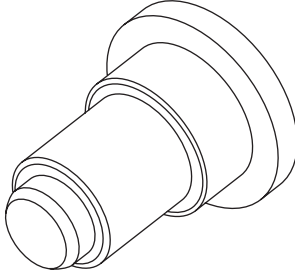
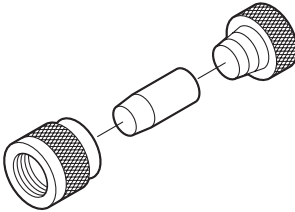
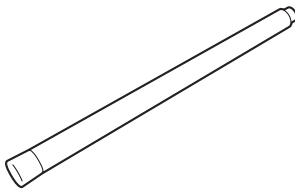
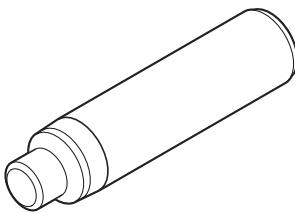
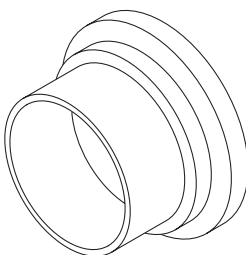
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 <p style="text-align: center;">ST34099FA080</p>	34099FA080	PUNCH	Used for removing crimps.
 <p style="text-align: center;">ST34199AE090</p>	34199AE090	PLUG WRENCH	Used for removing the plug.
 <p style="text-align: center;">ST34199AE100</p>	34199AE100	OIL SEAL PLUG REMOVER	Used for removing the oil seal plug.
 <p style="text-align: center;">ST34199AE110</p>	34199AE110	OIL SEAL PLUG INSTALLER	Used for installing the oil seal plug.
 <p style="text-align: center;">ST34199AE120</p>	34199AE120	GEARBOX OIL SEAL REMOVER	Used for removing the gearbox oil seal.

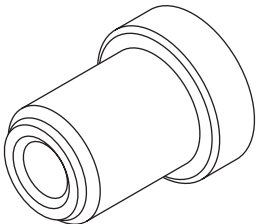
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ILLUSTRATION	TOOL NUMBER	DESCRIPTION	REMARKS
 ST34199AE130	34199AE130	GEARBOX OIL SEAL INSTALLER	Used for installing the gearbox oil seal.
 ST34199FE040	34199FE040	INSTALLER A, B, C	<ul style="list-style-type: none"> • Used for installing the oil seal to the rack assembly. • INSTALLER A: 34199FE070 • INSTALLER B: 34199FE080 • INSTALLER C: 34199FE090
 ST34199FE010	34199FE010	REMOVER	Used for removing the back-up ring and oil seal.
 ST34199FE000	34199FE000	INSTALLER & REMOVER	Used for removing and installing the rack oil seal (outer and inner).
 ST34199FE050	34199FE050	GUIDE	Used for installing the rack and seal into housing assembly.

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 <p style="text-align: center;">ST34199FE060</p>	34199FE060	INSTALLER	Used for installing the rack oil seal (outer).

2. GENERAL TOOL

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