

General Description

POWER ASSISTED SYSTEM (POWER STEERING)

1. General Description

A: SPECIFICATION

| Model | | | STI model | Except for STI model |
|--|---|--------------|--|--|
| Whole system | Minimum turning radius m (ft) | | 5.5 (18) | |
| | Steering angle | Inner wheel | 36.6°±1.5° | |
| | | Outer wheel | 32.2°±1.5° | |
| | Steering wheel diameter mm (in) | | 375 (14.76) | |
| | Lock-to-lock revolution number | | 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) | |
| | Relief pressure kPa (kgf/cm ² , psi) | | 8,300 — 9,000 (85 — 92, 1,203 — 1,305) | 8,100 — 8,800 (83 — 90, 1,174 — 1,276) |
| | | | Engine speed sensitive | |
| | Hydraulic fluid control | | | |
| | Hydraulic fluid L (US qt, Imp qt) | | 1,000 rpm: 7.5 (7.9, 6.6) 3,000 rpm: 7.3 (7.7, 6.4) | 1,000 rpm: 6.3 (6.7, 5.5) 3,000 rpm: 5.9 (6.2, 5.2) |
| | | | | |
| | RPM range rpm | | 680 — 9,600 | |
| 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) | 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) | 0.12 (0.005) or less |
| | | Left-turn steering mm (in) | Horizontal direction: 0.15 (0.006) or less Vertical direction: 0.3 (0.012) or less |
| | Input shaft play | In radial direction mm (in) | 0.26 (0.01) or less |
| | | In axial direction mm (in) | Without play |
| | Rotational resistance | N (kgf, lbf) | Maximum allowable value: 13.7 (1.40, 3.08) or less Difference between right and left sliding resistance: 24% |
| 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) | 34 (3.5, 7.6) or less |
| | At standstill with engine stalled on paved road | N (kgf, lbf) | 294.2 (30, 66.1) or less |

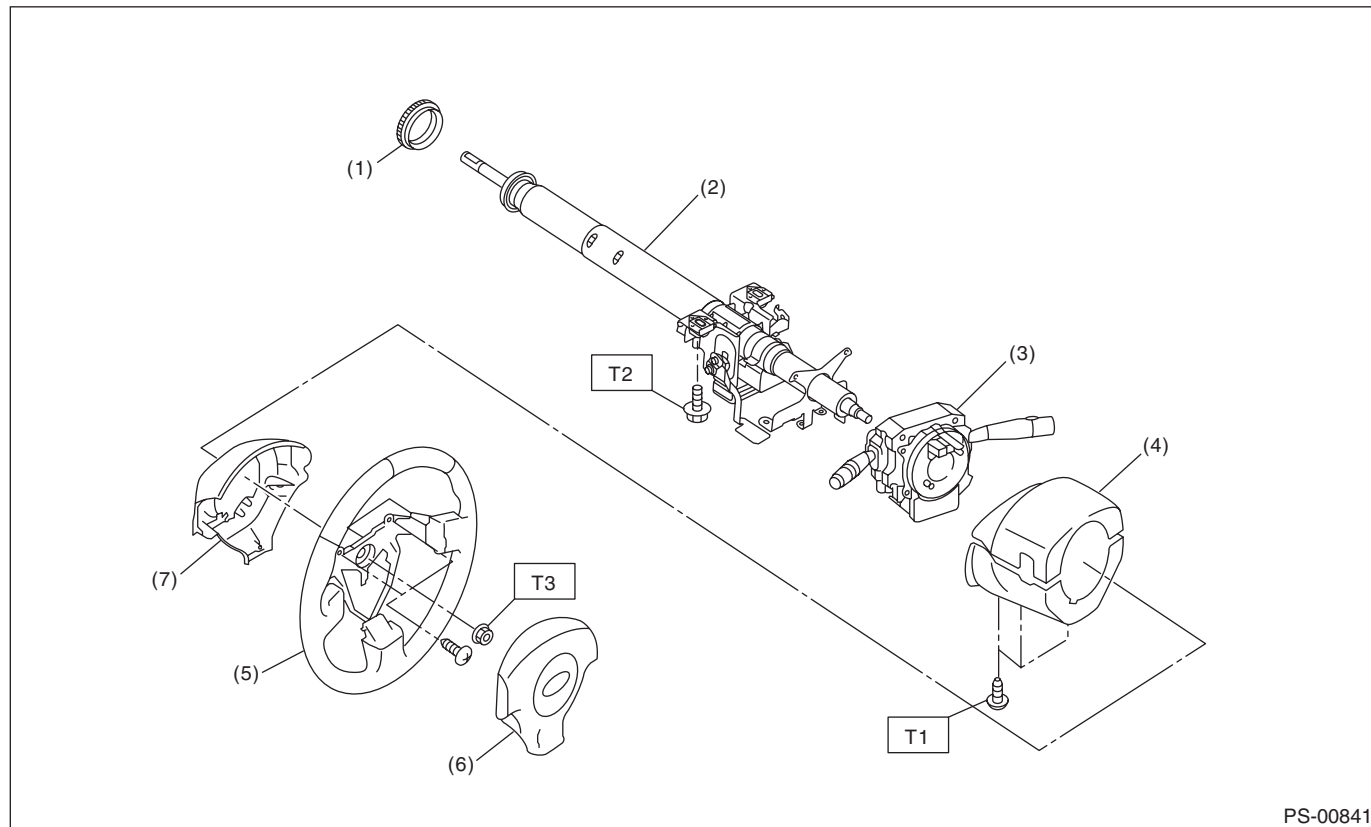
| |
|----------------------------------|
| Recommended power steering fluid |
| SUBARU ATF or DEXRON III |

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B: COMPONENT

1. STEERING WHEEL AND COLUMN



- | | |
|-----------------------------|--------------------------------|
| (1) Bushing | (5) Steering wheel |
| (2) Steering shaft | (6) Airbag module |
| (3) Steering roll connector | (7) Steering wheel lower cover |
| (4) Column cover | |

Tightening torque: N·m (kgf-m, ft-lb)

T1: 1.2 (0.12, 0.9)

T2: 20 (2.0, 14.8)

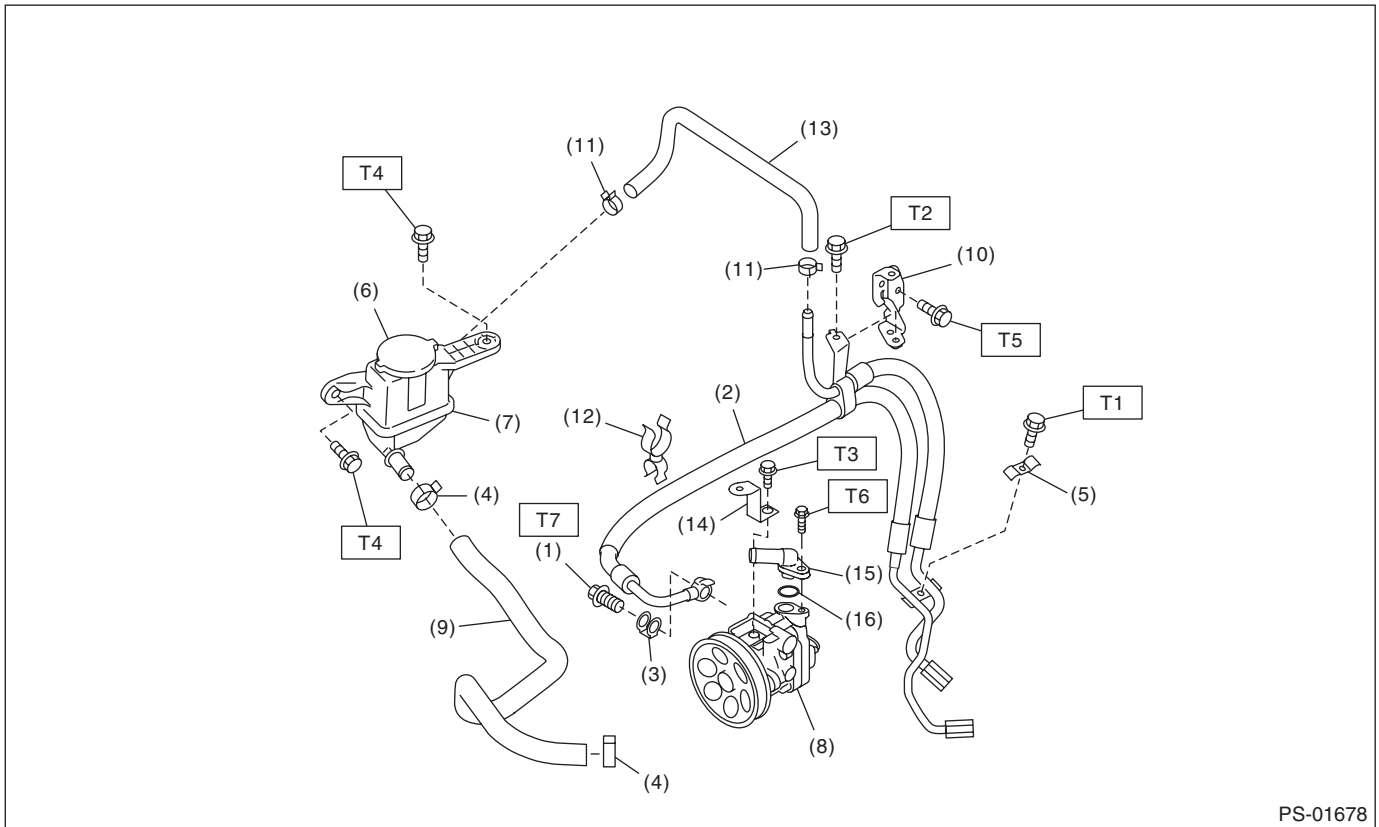
T3: 39 (4.0, 28.8)

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2. POWER ASSISTED SYSTEM

- Hose and tank



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- | | |
|--------------------|-------------------------|
| (1) Eyebolt | (9) Suction hose |
| (2) Hose | (10) Hose bracket |
| (3) Eyebolt gasket | (11) Clip |
| (4) Clip | (12) Clip |
| (5) Clamp E | (13) Return hose |
| (6) Cap | (14) Belt cover bracket |
| (7) Reservoir tank | (15) Suction connector |
| (8) Oil pump | (16) O-ring |

Tightening torque: N·m (kgf·m, ft·lb)

T1: 7.5 (0.76, 5.5)

T2: 10 (1.0, 7.4)

T3: 11 (1.1, 8.1)

T4: 13 (1.3, 9.6)

T5: 18 (1.8, 13.3)

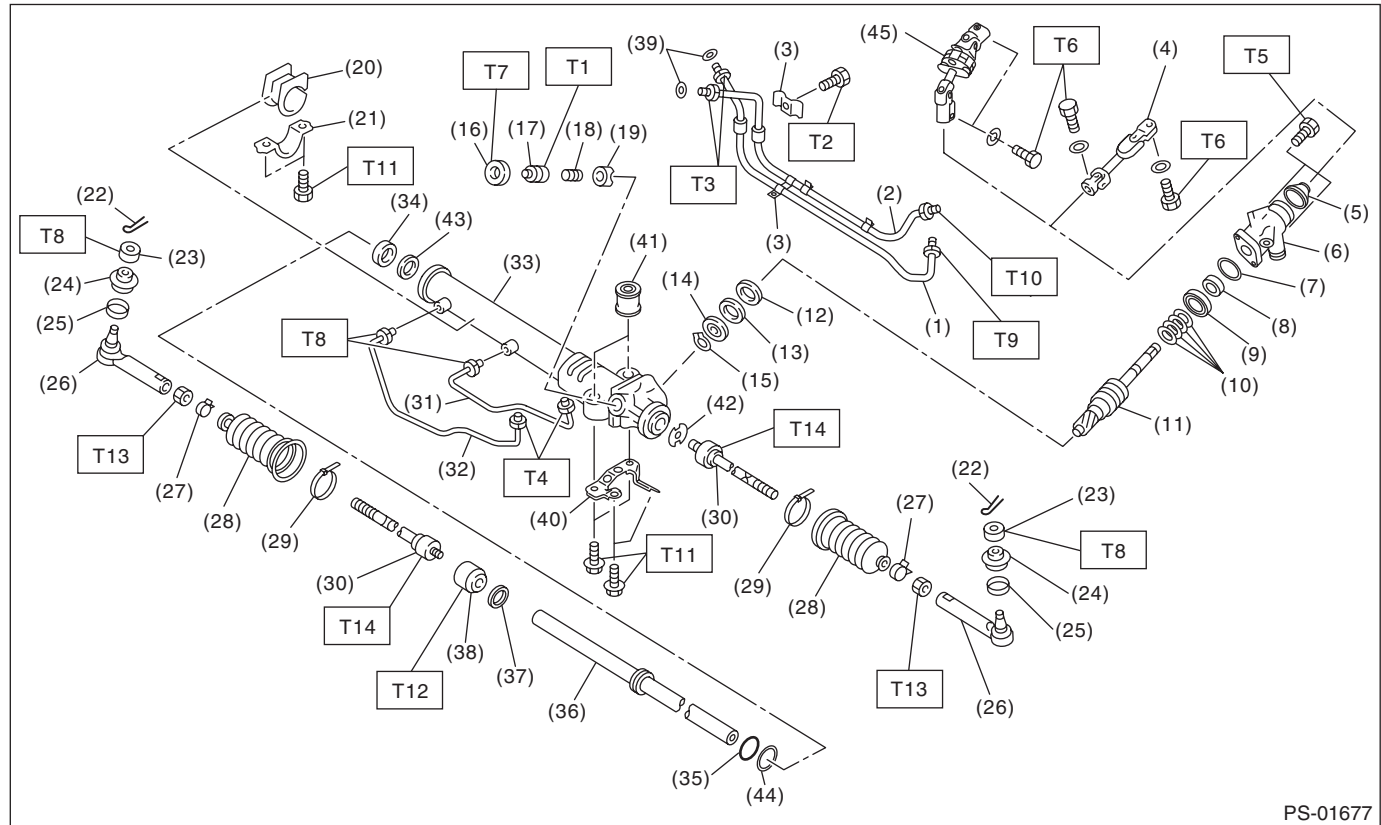
T6: 21 (2.1, 15.5)

T7: 40 (4.1, 29.5)

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• Gearbox



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| | | |
|---------------------------------|-----------------------|---|
| (1) Feed pipe | (21) Clamp | (41) Bushing |
| (2) Return pipe | (22) Cotter pin | (42) Lock washer |
| (3) Clamp plate | (23) Castle nut | (43) Back-up ring |
| (4) Universal joint (STI model) | (24) Dust cover | (44) O-ring |
| (5) Dust seal | (25) Clip | (45) Universal joint (except for STI model) |
| (6) Valve housing | (26) Tie-rod end | |
| (7) O-ring | (27) Clip | |
| (8) Oil seal | (28) Boot | |
| (9) Bushing | (29) Band | |
| (10) Seal ring | (30) Tie-rod | |
| (11) Pinion & valve ASSY | (31) Pipe B | |
| (12) Oil seal | (32) Pipe A | |
| (13) Back-up washer | (33) Steering body | |
| (14) Ball bearing | (34) Oil seal | |
| (15) Snap ring | (35) Piston seal ring | |
| (16) Lock nut | (36) Rack | |
| (17) Adjusting screw | (37) Oil seal | |
| (18) Spring | (38) Holder | |
| (19) Sleeve | (39) O-ring | |
| (20) Adapter | (40) Stiffener | |

Tightening torque: N·m (kgf·m, ft·lb)

T1: Tighten to 5.9 (0.6, 4.4), and loosen by 20 degrees.

T2: 9 (0.9, 6.6)

T3: 15 (1.5, 11.1)

T4: 17 (1.7, 12.5)

T5: 20 (2.0, 14.8)

T6: 24 (2.4, 17.7)

T7: 25 (2.5, 18.4)

T8: 27 (2.8, 19.9)

T9: 37 (3.8, 27.3)

T10: 29 (3.0, 21.4)

T11: 60 (6.1, 44.3)

T12: 70 (7.1, 51.6)

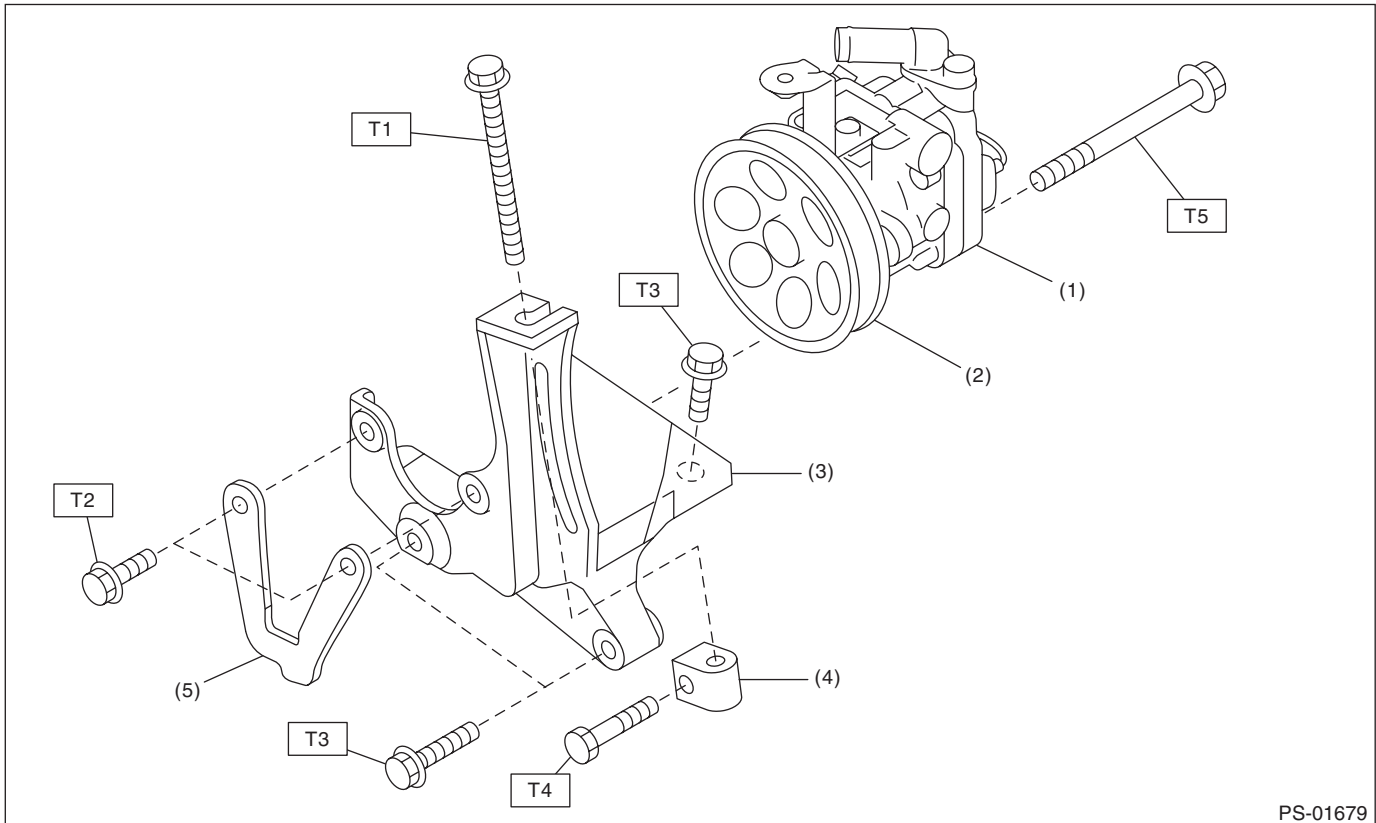
T13: 85 (8.7, 62.7)

T14: 93 (9.5, 68.6)

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3. OIL PUMP



PS-01679

- (1) Oil pump
- (2) Pulley
- (3) Bracket
- (4) Belt tension nut
- (5) Washer plate

Tightening torque: N·m (kgf·m, ft·lb)

T1: 8 (0.8, 5.9)

T2: 16 (1.6, 11.8)

T3: 22 (2.2, 16.2)

T4: 25 (2.5, 18.4)

T5: 48 (4.9, 35.4)

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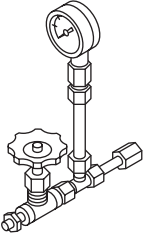
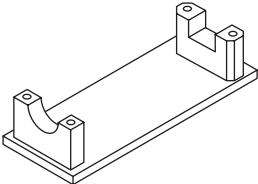
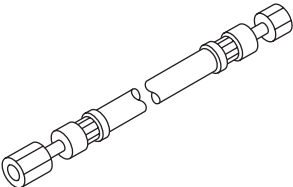
POWER ASSISTED SYSTEM (POWER STEERING)

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 SUBARU genuine power steering fluid, grease etc. or 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.

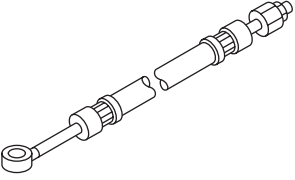
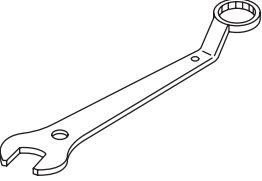
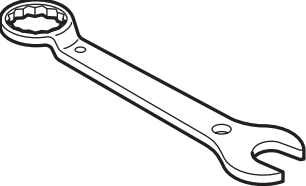
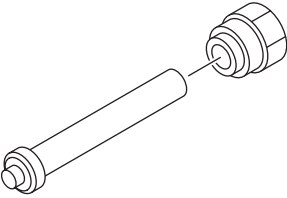
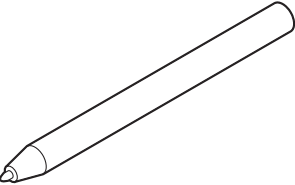
D: PREPARATION TOOL

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">• Used when inspecting characteristic of gear-box assembly and disassembling it.• Used together with BOSS D (34199AG000). |
|  ST34099AC010 | 34099AC010 | ADAPTER HOSE A | Used together with PRESSURE GAUGE (925711000). |

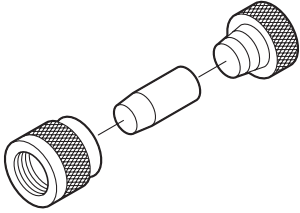
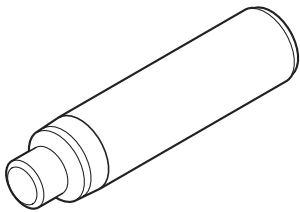
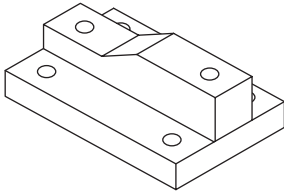
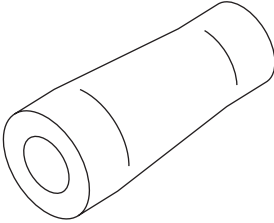
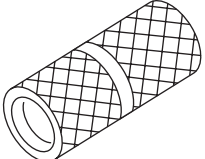
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|---|-------------|----------------|---|
|  ST34099AC020 | 34099AC020 | ADAPTER HOSE B | Used together with PRESSURE GAUGE (925711000). |
|  ST-926230000 | 926230000 | SPANNER | For the lock nut when adjusting backlash of gearbox. |
|  ST34099PA100 | 34099PA100 | SPANNER | Used when measuring the rotating resistance of gearbox assembly. |
|  ST-926420000 | 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. |
|  ST34099FA060 | 34099FA060 | PUNCH HOLDER | Used for crimping. |

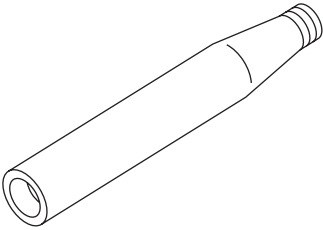
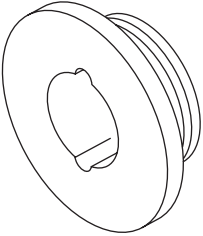
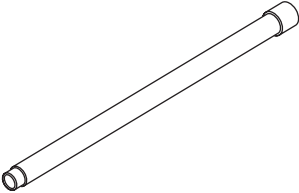
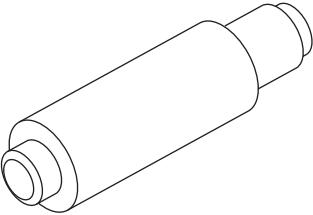
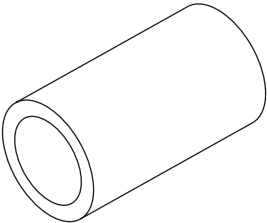
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|---|-------------|---------------------|---|
|  <p style="text-align: center;">ST34199FE040</p> | 34199FE040 | INSTALLER A, B, C | <ul style="list-style-type: none"> Used for installing the oil seal to the rack assembly. INSTALLER A: 34199FE070 INSTALLER B: 34199FE080 INSTALLER C: 34199FE090 |
|  <p style="text-align: center;">ST34199XA030</p> | 34199XA030 | INSTALLER & REMOVER | Used for removing and installing the rack oil seal (outer and inner). |
|  <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). |
|  <p style="text-align: center;">ST34199AG040</p> | 34199AG040 | GUIDE | Used for installing seal ring of rack. |
|  <p style="text-align: center;">ST34199AG070</p> | 34199AG070 | FORMER | Used for forming seal ring of pinion. |

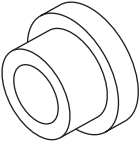
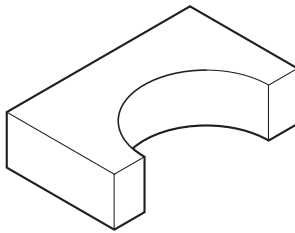
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|  ST34199AG020 | 34199AG020 | GUIDE | Used for installing seal ring of pinion. |
|  ST34199AG060 | 34199AG060 | GUIDE G (26) | <ul style="list-style-type: none"> Used for forming seal ring of rack. Used together with FORMER PISTON (34199AG080). |
|  ST34099PA010 | 34099PA010 | OIL SEAL REMOVER | Used for removing oil seal. |
|  ST34199AG090 | 34199AG090 | INSTALLER & REMOVER | <ul style="list-style-type: none"> Used for installing oil seal of valve housing. Used for installing ball bearing of valve housing. Used for removing oil seal and ball bearing from valve housing. |
|  ST34199AG080 | 34199AG080 | FORMER PISTON | <ul style="list-style-type: none"> Used for forming seal ring of rack. Used together with GUIDE G (26) (34199AG060). |

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|  <p style="text-align: center;">ST34199AG010</p> | 34199AG010 | INSTALLER | Used for pressing-fit oil seal of gearbox cylinder. |
|  <p style="text-align: center;">ST34199FE020</p> | 34199FE020 | BASE | Used for crimping. |