

G2 POWER STEERING

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G2-1

■ HYDRAULIC POWER STEERING

1 POWER STEERING SYSTEM

1-1 FUNCTION CHECK

1-1-1 HYDRAULIC PRESSURE CHECK

(1) Check of hydraulic pressure generated in the vane pump(RHD 2WD vehicles)

1. Insert an oil temperature gauge into the reserve tank to measure the oil temperature.

SPECIFIED VALUE: 80°C

2. Close the pressure gauge valve at idle speed and measure the hydraulic pressure generated in the vane pump Ay.

CAUTION

- If the valve is closed at length during measurements, the oil temperature will excessively go up, affecting the vane pump. Therefore do not close the valve exceeding 10 sec.

SPECIFIED VALUE: $6.15 \pm 0.25 \text{MPa} \{62.7 \pm 2.54 \text{kgf/cm}^2\}$

3. If the hydraulic pressure is low, the vane pump Ay shall be replaced.

(2) Check the hydraulic pressure generated in the steering gear Ay.(RHD 2WD vehicles)

1. Wide open the pressure gauge valve at idle speed.
2. Measure the hydraulic pressure generated when the steering wheel is turned all the way to either right or left.

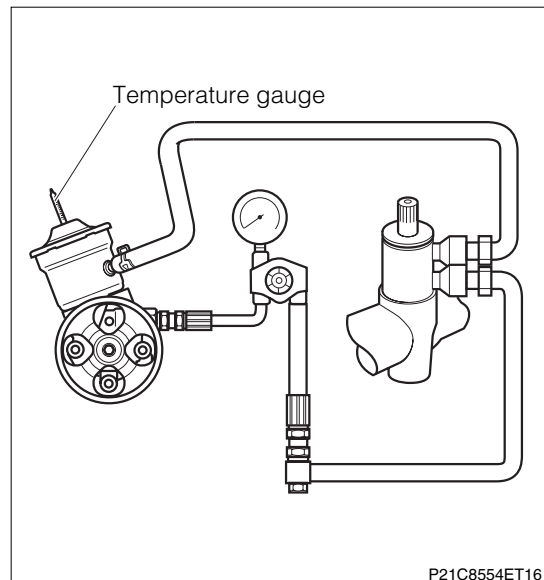
SPECIFIED VALUE: $6.15 \pm 0.25 \text{MPa} \{62.7 \pm 2.54 \text{kgf/cm}^2\}$

3. Low hydraulic pressure indicates fluid leak within the steering gear, in this case overhaul is required.

1-1-2 CHECK THE IDLE SPEED CONTROL UNIT.

(1) Check of oil pressure sensor Ay (RHD 2WD vehicles)

1. Disconnect the connector of the vehicle harness from the power steering oil pressure switch of the vane pump Ay.



2. Check continuity between the terminal of the sensor Ay and the body earth while the engine is running.

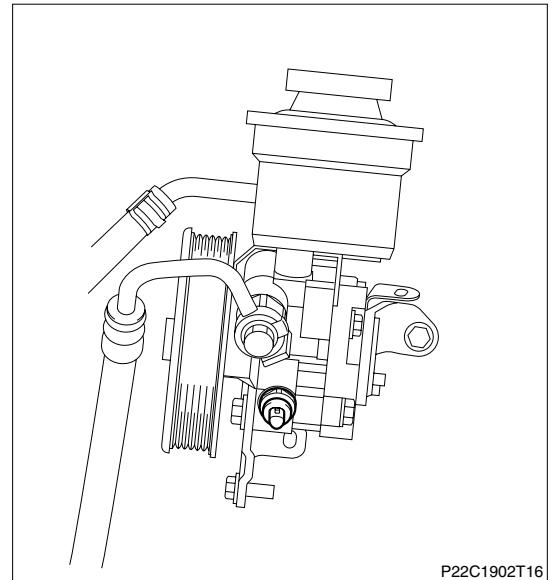
(1) When the steering wheel is at the straight ahead position.

SPECIFIED VALUE: During idling, no conductivity should exist between the switch terminal and body earth.

(2) When the steering wheel is turned all the way to the right or left.

SPECIFIED VALUE: During idling, conductivity should exist between the switch terminal and body earth.

3. If the switch is faulty, check the hydraulic pressure of the vane pump Ay. If the vane pump Ay is functioning properly, replace the power steering oil pressure switch. If the vane pump Ay is faulty, replace it.



P22C1902T16

(2) Replacement of oil pressure sensor Ay (RHD 2WD vehicles)

CAUTION

- Prior to the operations, be sure to completely remove sands and mud that have adhered to the external of the vane pump Ay to prevent admission of any foreign matters.
- The vane pump Ay is a precision hydraulic instrument. Therefore, care must be exercised as to the environment so that no foreign matters, such as dirt, dust and iron powder, may be entered.
- Keep all the components free from contamination. Wash your hands clean before starting work activities.
- Perform the operations with bare hands or by wearing vinyl gloves. Do not use working gloves nor cloth to prevent admission of lint.

1. Drain the power steering fluid.

Refer to TERIOS SERVICE MANUAL

2. Disconnect the negative terminal of the battery.

3. Disconnect the connector of the power steering oil pressure switch, and remove the power steering oil pressure switch.

4. Secure the power steering oil pressure switch, and connect the connector of the power steering oil pressure switch.

TIGHTENING TORQUE: $21.0 \pm 4.0 \text{ N} \cdot \text{m} \{210 \pm 39 \text{ kgf} \cdot \text{cm}\}$

5. Connect the negative terminal of the battery.

6. Fill power steering fluid, and perform air bleeding.

Refer to TERIOS SERVICE MANUAL

2 STEERING GEAR

2-1 REMOVAL AND INSTALLATION

2-1-1 OPERATION BEFORE REMOVAL (RHD 2WD VEHICLES)

1. Drain the power steering fluid.
Refer to TERIOS SERVICE MANUAL

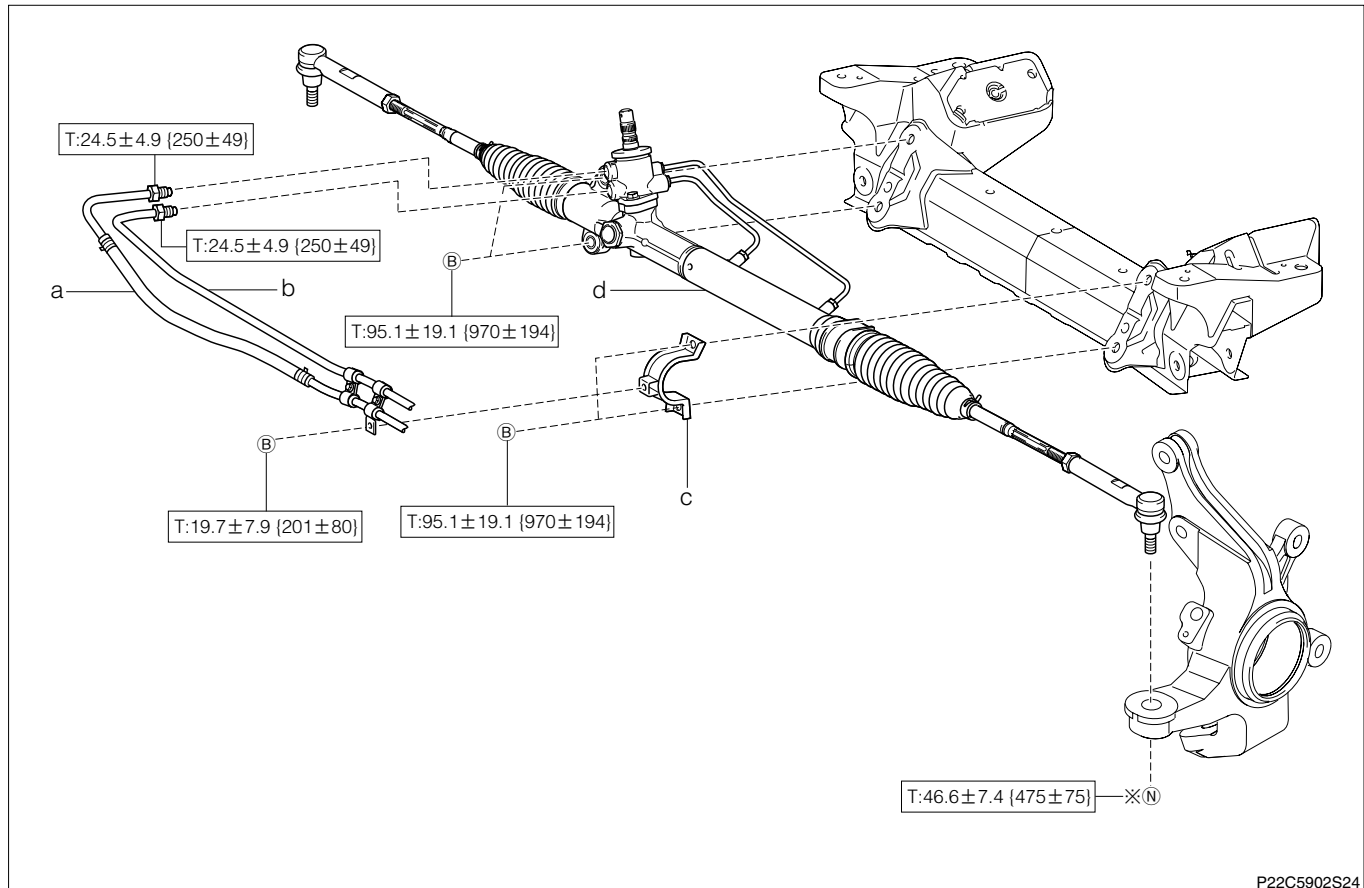
2. Lift up the vehicle.
3. Remove the engine under cover.
Refer to Page I2-1.

4. Remove the disc wheels (Front).
Refer to TERIOS SERVICE MANUAL

5. Detach the steering intermediate shaft Ay from the power steering gear Ay.
Refer to TERIOS SERVICE MANUAL

2-1-2 REMOVAL AND INSTALLATION PROCEDURES(RHD 2WD VEHICLES)

(1) Components



P22C5902S24

※:Non-reusable parts

Unit: N·m{kgf·cm}

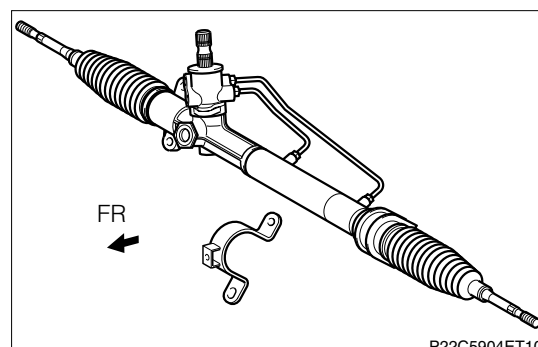
(2) Removal and installation procedures

- ▲ 1 a Tube Ay, return
- ▲ 2 b Hose, pressure feed
- ▲ 3 c Bracket, steering rack housing
- ▼ ▲ 4 d Gear Ay, power steering

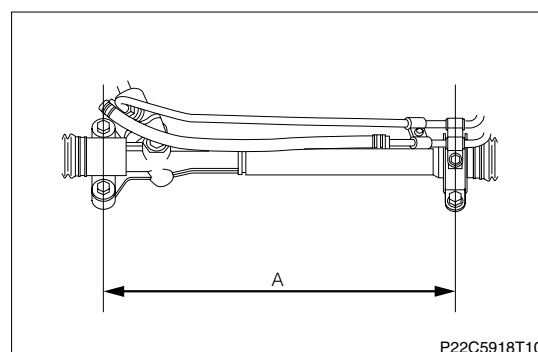
2-1-3 POINTS OF INSTALLATION(RHD 2WD VEHICLES)

(1) Gear Ay, power steering, Bracket, steering rack housing

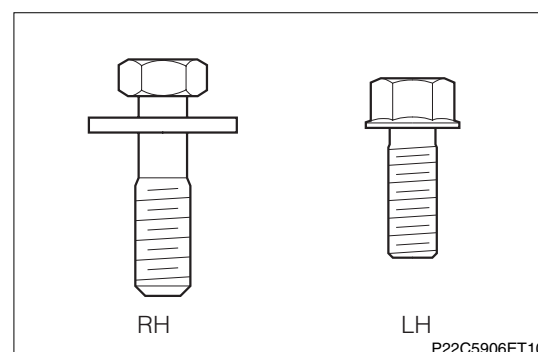
1. Insert the power steering gear Ay to the FR suspension member Ay from the vehicle front.
2. Install the bracket to the power steering gear Ay in such a way that the pressure hose clamp hole comes to the vehicle front side.

**NOTE**

- If you are not sure where to install the LH bracket, use the installation hole on the power steering rack housing S/A as reference and perform the installation in such a way that the dimension A in the right figure becomes 500 ± 1 mm.



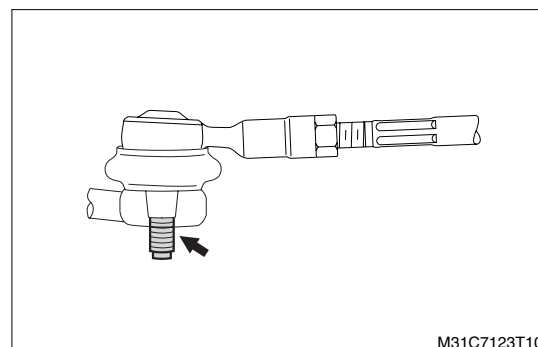
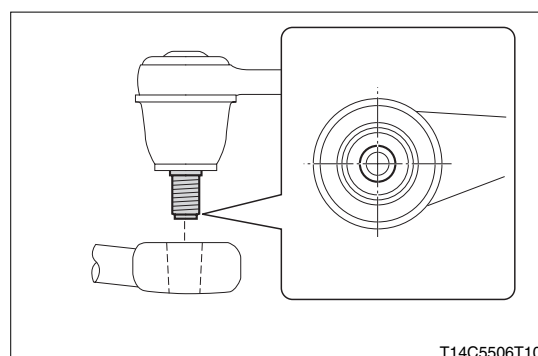
3. Ensure that the shapes of the bolts which attach the power steering are different, and then attach the gear Ay.



4. After placing the ball joint section of the steering tie-rod end S/A RH/LH close to the center (as indicated in the figure), attach it to the steering knuckle.

CAUTION

- During the installation, make sure that no lubricant, such as grease, is adhered to the threaded portion of the tie-rod end S/A. If any lubricant is adhered, be certain to wipe it off.



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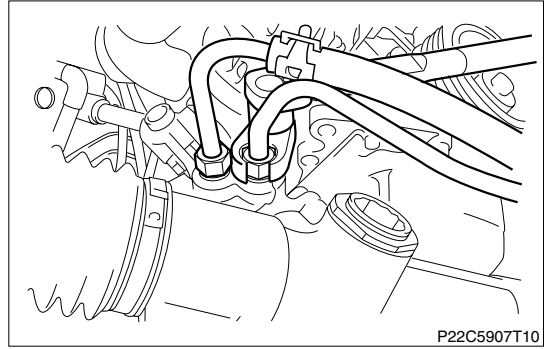
(2) Hose, pressure feed. Tube Ay, return

1. Detach the radiator No.2 hose from the clamp.
2. Tighten the hose and the tube Ay to the power steering gear Ay, using a crow foot wrench.

NOTE

- If tightening is performed while extending the overall length, using a torque wrench in combination with the SST and a tool, determine the torque wrench reading using the calculation formula.

Refer to Page A1-10.



P22C5907T10

2-1-4 OPERATION AFTER INSTALLATION(RHD 2WD VEHICLES)

1. Attach the steering intermediate shaft Ay to the power steering gear Ay.

Refer to TERIOS SERVICE MANUAL

2. Install the disc wheels (Front).

Refer to TERIOS SERVICE MANUAL

3. Attach the engine under cover.

Refer to Page I2-1.

4. Lift down the vehicle.

5. Perform air bleeding after filling the power steering fluid.

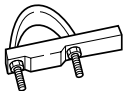
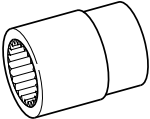
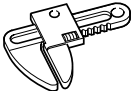
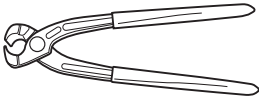
Refer to TERIOS SERVICE MANUAL

6. Check the steering gear Ay for operation.

7. Check and adjust the front wheel alignment.

Refer to Page C1-1.

2-2 DISASSEMBLING AND ASSEMBLING**2-2-1 ARTICLES TO BE PREPARED(RHD 2WD VEHICLES)****SST**

Shape	Part No.	Part name
	09612-00012-000 (09612-00011-000)	Stand, rack & pinion steering rack housing
	09616-00010-000	Socket, steering pinion bearing adjusting
	09922-10010-000	Wrench, steering rack end
	09648-97202-000	Pliers B, drive shaft boots band

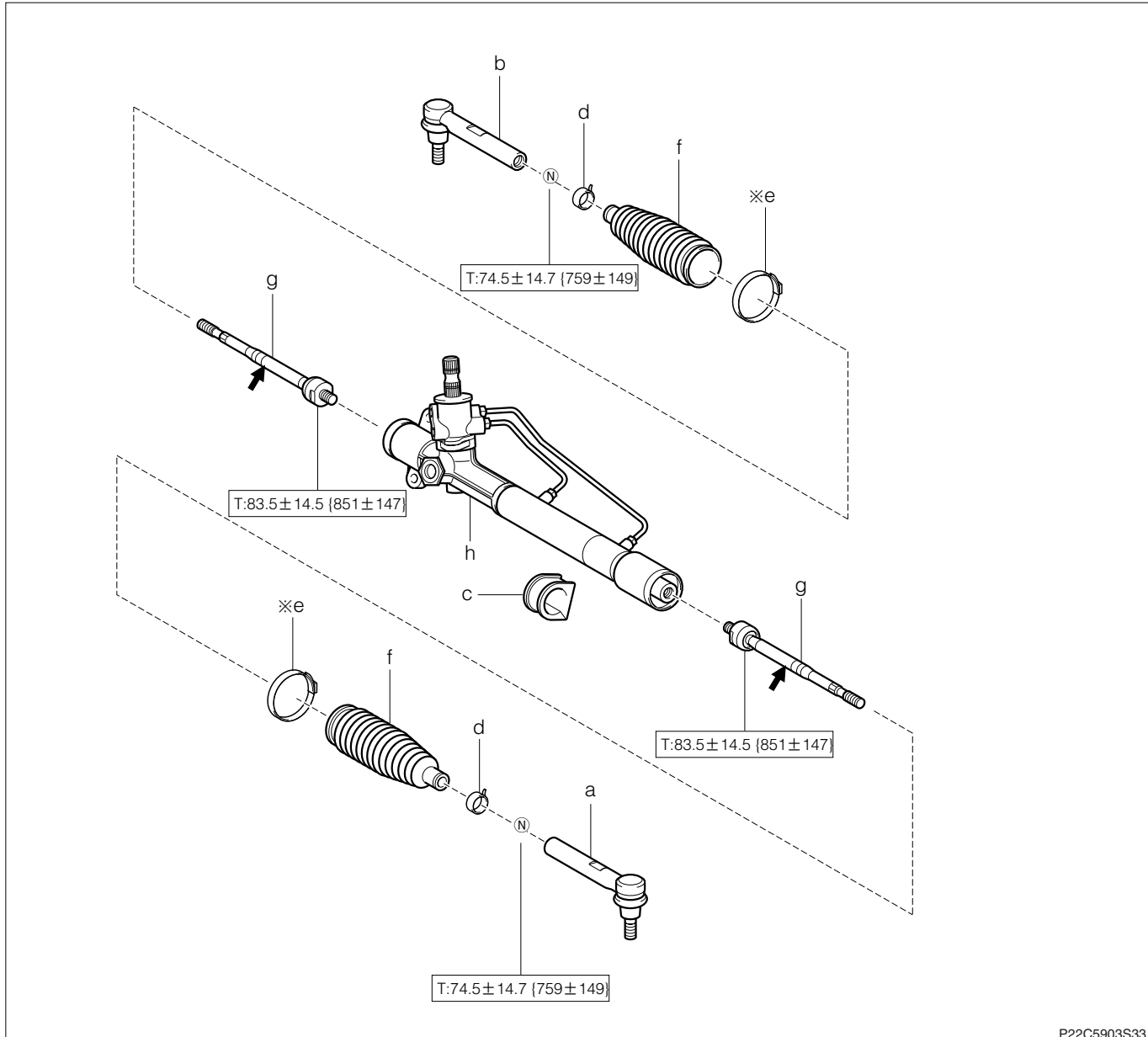
Lubricant,adhesive,others

ATF Dexron®II,Brake grease,Wire,Protective tape

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2-2-2 DISASSEMBLY AND ASSEMBLY PROCEDURES(RHD 2WD VEHICLES)

(1) Components



P22C5903S33

✕:Non-reusable parts

Unit: N·m{kgf·cm}

➡:Brake grease

(2) Disassembly and assembly procedures

- | | | | |
|-------|--------------------------------------|-------|---------------------------|
| ▼ ▲ 1 | a End S/A, tie rod, No.2 | ▼ ▲ 6 | f Boot, steering rack |
| ▼ ▲ 2 | b End S/A, tie rod, No.1 | ▼ ▲ 7 | g Rod Ay, tie |
| ▼ ▲ 3 | c Grommet, steering rack housing, RH | ▼ ▲ 8 | h Gear Ay, power steering |
| 4 | d Clip | | |
| 5 | e Clamp | | |

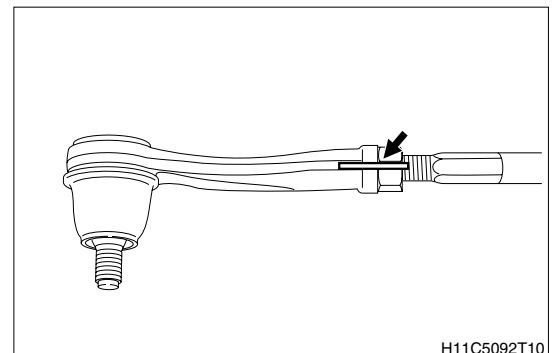
2-2-3 POINTS OF DISASSEMBLY(RHD 2WD VEHICLES)

CAUTION

- Prior to the operations, be sure to completely remove sands and mud that have adhered to the external of the power steering gear Ay to prevent admission of any foreign matters.
- The power steering hydraulic gear Ay is a precision hydraulic instrument. Therefore, care must be exercised as to the environment so that no foreign matters, such as dirt, dust and iron powder, may be entered.
- Keep all the components free from contamination. Wash your hands clean before starting work activities.
- Perform the operations with bare hands or by wearing vinyl gloves. Do not use working gloves nor cloth to prevent admission of lint.
- All the disassembled seals shall be replaced with new ones. Do not clean plastic and rubber parts with thinner.
- Do not reassemble the defective parts, which were used before replacement.

(1) End S/A, tie rod, No.1. End S/A, tie rod, No.2

1. Put match marks on the end S/A and the rod Ay.

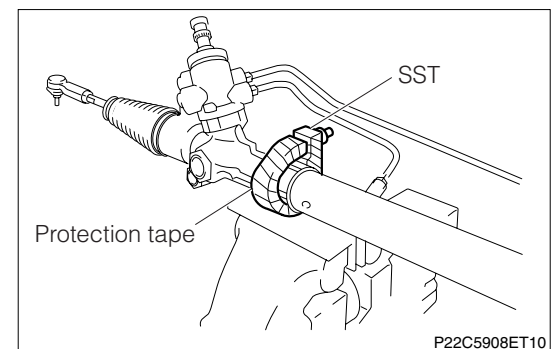


2. Using the SST wrapped with a protection tape, secure the power steering gear Ay in a vice. Then, remove the end S/A.

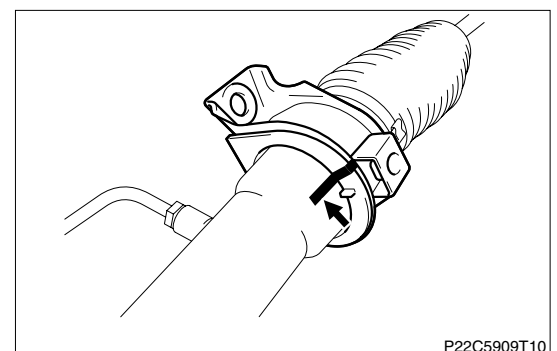
CAUTION

- Do not secure the cylinder section of the power steering gear Ay directly in a vice.

SST: 09612-00012-000

**(2) Grommet, steering rack housing, RH**

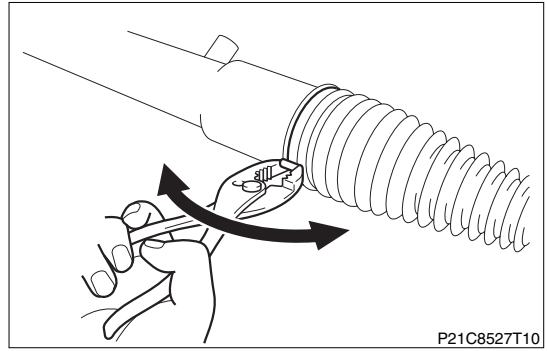
1. Before removing the grommet, put match marks on the power steering rack housing S/A so that the installation position of the grommet can be known easily.



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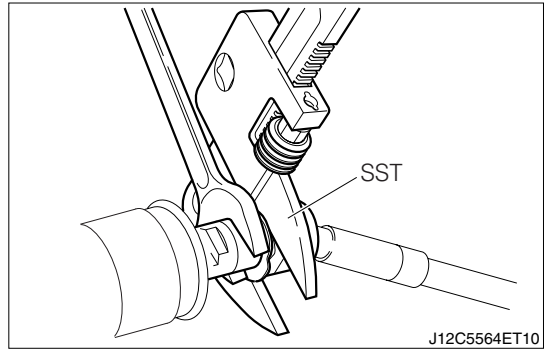
(3) Boot, steering rack

1. Remove the clamp, and remove the boot.



(4) Rod S/A, tie

1. Remove the rod S/A, using the SST.
SST: 09922-10010-000



2-2-4 INSPECTION(RHD 2WD VEHICLES)

(1) Tube, RH/LH turn pressure

1. Check the following parts. Replace any faulty part.
 - (1) Scratch and damage of tube.

(2) Grommet, steering rack housing, RH

1. Check the following parts. Replace any faulty part.
 - (1) Grommet for cracks and damage.

(3) End S/A, tie rod

1. Check the following parts. Replace any faulty part.
 - (1) Dust boot of end S/A for rupture and ball joint for unsmooth operation.

(4) Boot, steering rack

1. Check the following parts. Replace any faulty part.
 - (1) Boot for cracks, damage and aging.

(5) Rod Ay, tie

1. Check the following parts. Replace any faulty part.
 - (1) Ball of rod S/A for excessive play and unsmooth operation.
 - (2) Rod S/A for foreign matter and grease for discoloration.
 - (3) Tie-rod section of rod S/A for bending and cracks.

(6) Housing S/A, power steering rack

1. Check the following parts. Replace any faulty part.
 - (1) Housing S/A for cracks and damage.
 - (2) Harmful scores in groove where large-diameter boot is assembled.
 - (3) Damage to the bore of the cylinder and damage/deformation to the external of the cylinder.
 - (4) Damage and foreign material deposit on the seat surface of each port.
 - (5) Unsmooth operation of radial ball bearing inside housing S/A.

2-2-5 POINTS OF ASSEMBLY(RHD 2WD VEHICLES)

(1) Rod Ay, tie

1. Tighten the rod S/A to the specified torque, using the SST.

CAUTION

- While tightening, be very careful not to twist the power steering rack S/A.

SST: 09922-10010-000

NOTE

- When tightening is made by extending the overall length by combining the torque wrench with the SST, tools, etc., obtain the reading of the torque wrench by the calculation formula.

Refer to Page A1-10.

2. Insert a wire or the like into the vent hole of the rod Ay to see if the vent hole is clogged with grease.

NOTE

- The vent hole of the rod Ay equalizes the pressure in the right and left steering rack boot. For this reason, if the vent hole is blocked, the pressure in the steering rack boot may vary when the steering wheel is turned. As a result, it may cause the steering rack boot to be deformed or broken.

(2) Boot, steering rack

1. Apply brake grease to the tie rod Ay.

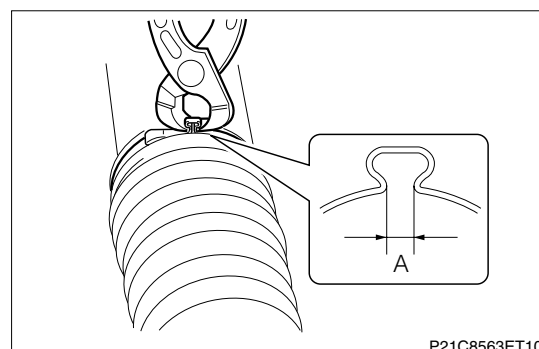
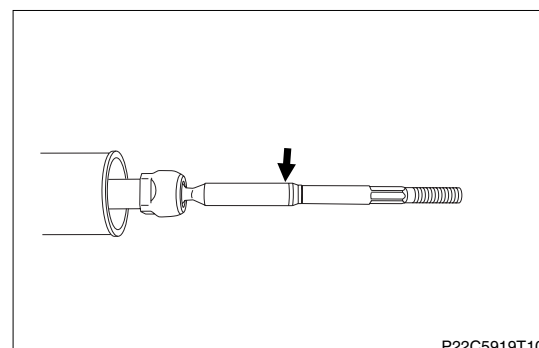
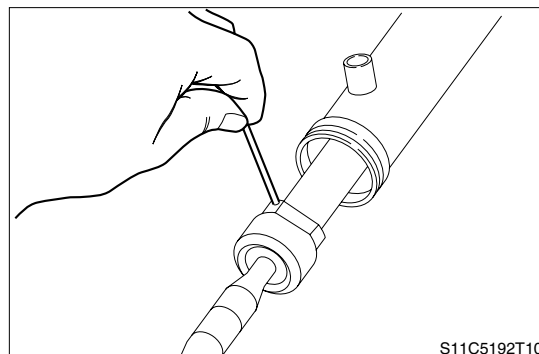
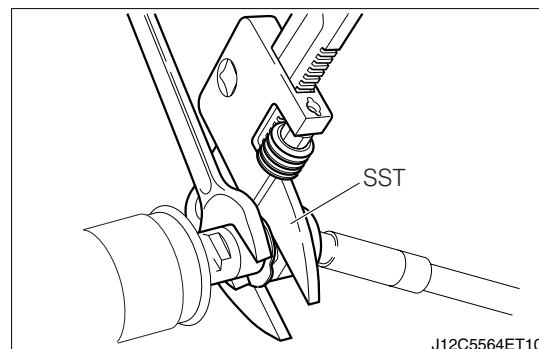
LUBRICANT: Brake grease

2. Pass the steering rack boot band through the power steering rack housing Ay. Then, install the boot.

3. Attach the clamp, using the SST.

SST: 09648-97202-000

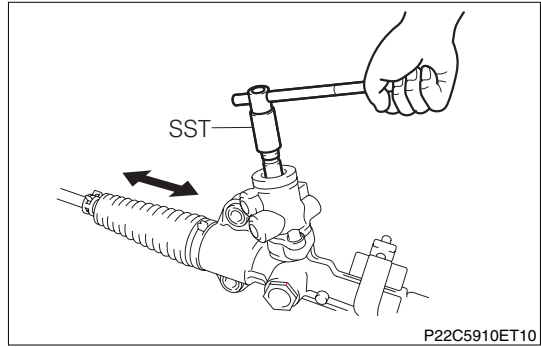
SPECIFIED VALUE: 3 mm or less



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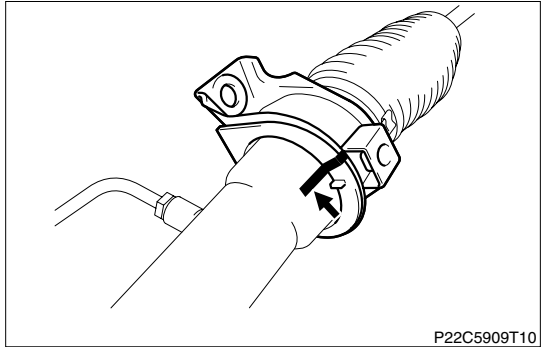
- Turn the power steering control valve S/A, using the SST. At this time, ensure that the boot compresses and extends smoothly.

SST: 09616-00010-000



(3) Grommet, steering rack housing, RH

- Install the grommet, while referring to the match marks that have been put during the disassembling.



(4) End S/A, tie rod, No.1. End S/A, tie rod, No.2

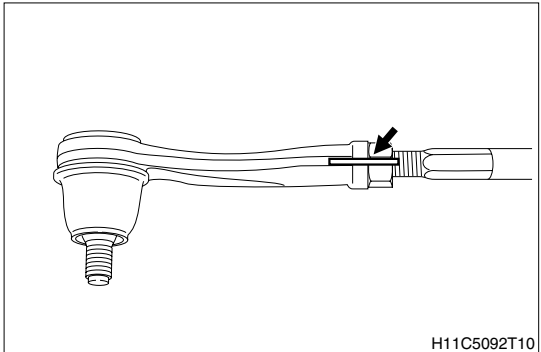
- Temporarily install the end S/A, while referring to the match marks that have been put during the removal.

CAUTION

- While tightening, be very careful not to twist the end S/A.
- After the power steering gear Ay is mounted on the vehicle, securely tighten the nut of the end S/A at the time of the front wheel alignment adjustment.

- Remove the SST for securing the power steering rack housing Ay.

SST: 09612-00012-000



3 VANE PUMP

CAUTION

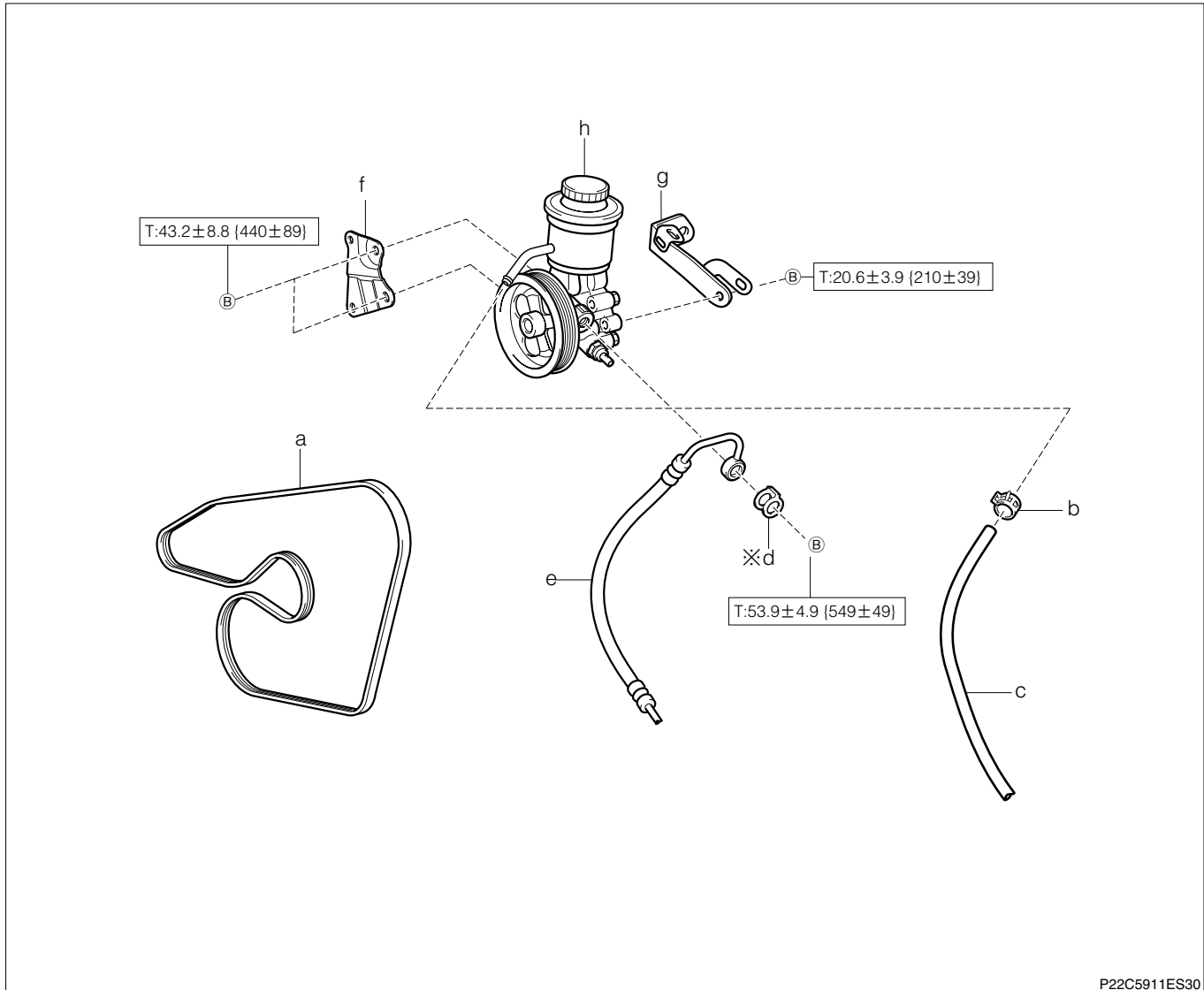
- Prior to the operations, be sure to completely remove sands and mud that have adhered to the external of the vane pump Ay to prevent admission of any foreign matters.
- The vane pump Ay is a precision hydraulic instrument. Therefore, care must be exercised not to contaminate the environment and not to allow admission of foreign matters, such as dirt, dust and iron powder.
- Keep all the components free from contamination. Wash your hands clean before starting work activities.
- Perform the operations with bare hands or by wearing vinyl gloves. Do not use working gloves nor cloth to prevent admission of lint.

G2-13

3-1 REMOVAL AND INSTALLATION

3-1-1 REMOVAL AND INSTALLATION PROCEDURES(RHD 2WD VEHICLES)

(1) Components



※:Non-reusable parts

Unit: N·m{kgf·cm}

(2) Removal and installation procedures

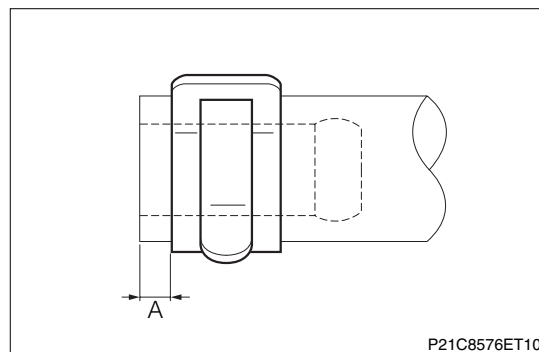
- | | | | |
|-----|-----------------------|---|------------------|
| 1 | a Belt, V ribbed | 6 | f Bracket, pump |
| 2 | b Clip | 7 | g Stay, pump, RR |
| ▲ 3 | c Tube Ay, return | 8 | h Pump Ay, vane |
| 4 | d Gasket | | |
| 5 | e Hose, pressure feed | | |

3-1-2 POINTS OF INSTALLATION(RHD 2WD VEHICLES)

(1) Tube Ay, return (Tank side)

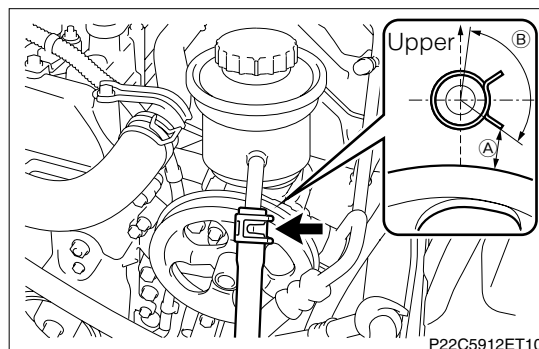
1. Insert the tube Ay as far as the R stop.

2. Install the clip in such a way that the dimension A becomes $4 \pm 1\text{mm}$.



P21C8576ET10

3. Attach the clip so that it is within range ②, and the clearance ① between the clip and the pulley is 14mm or more.



P22C5912ET10