

DAIHATSU

F73,F78

STEERING

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R7SR00001-00000

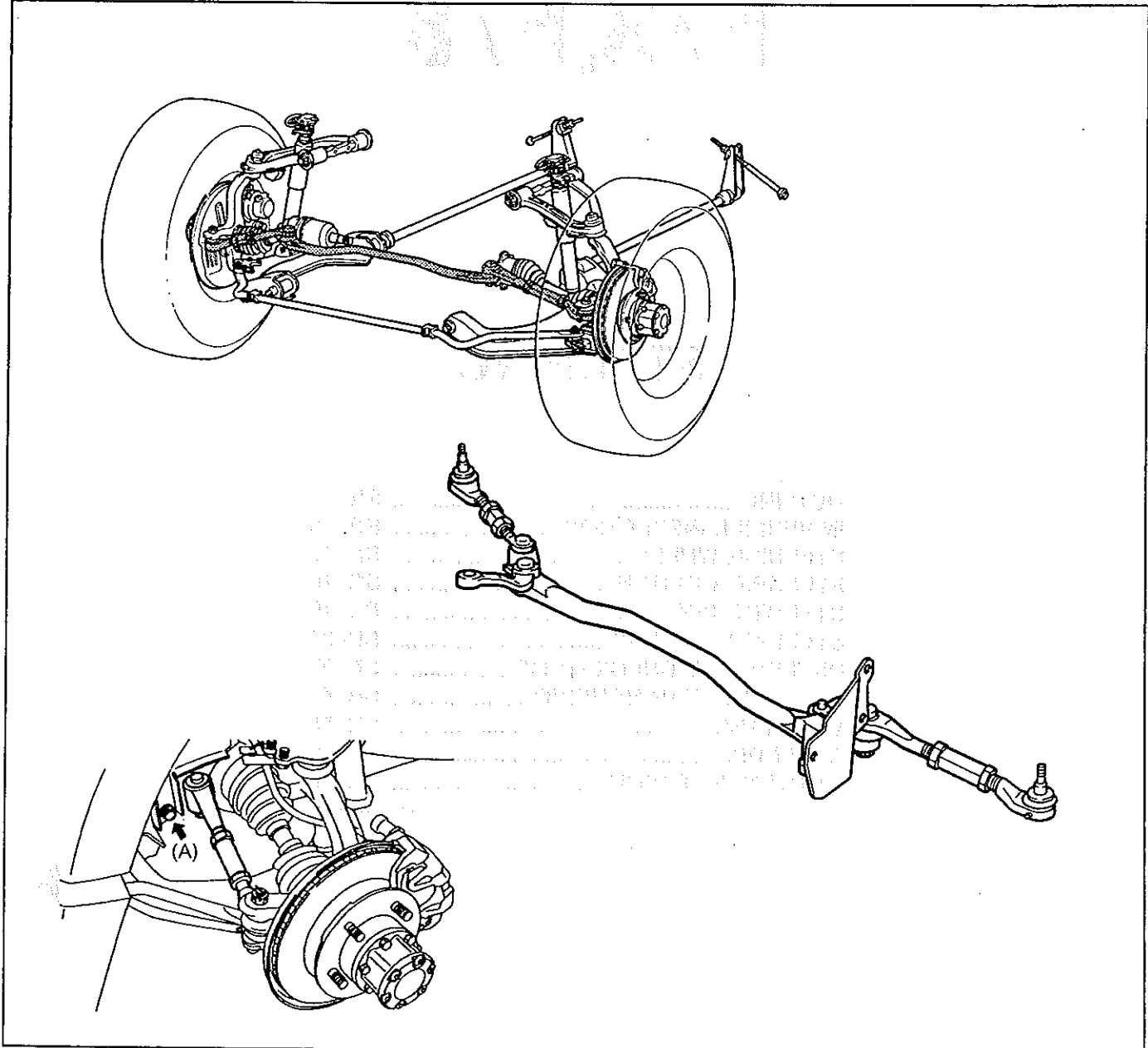
SR

SR-2

OUTLINE

STEERING LINKAGE

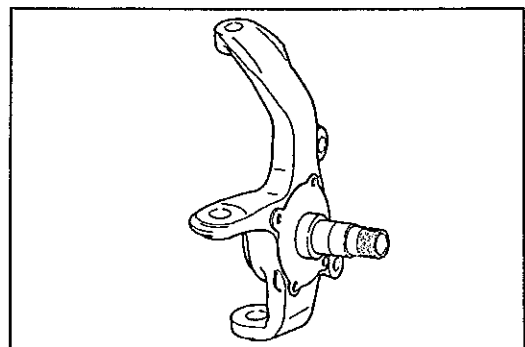
In line with the change in the front suspension, a new steering linkage has been employed. Furthermore, the stopper bolt (A) has been provided at the frame so as to restrict the turning angle of the tire.



R7SR00002-99999

STEERING KNUCKLE

In line with the change in the front suspension, a new steering knuckle has been employed.

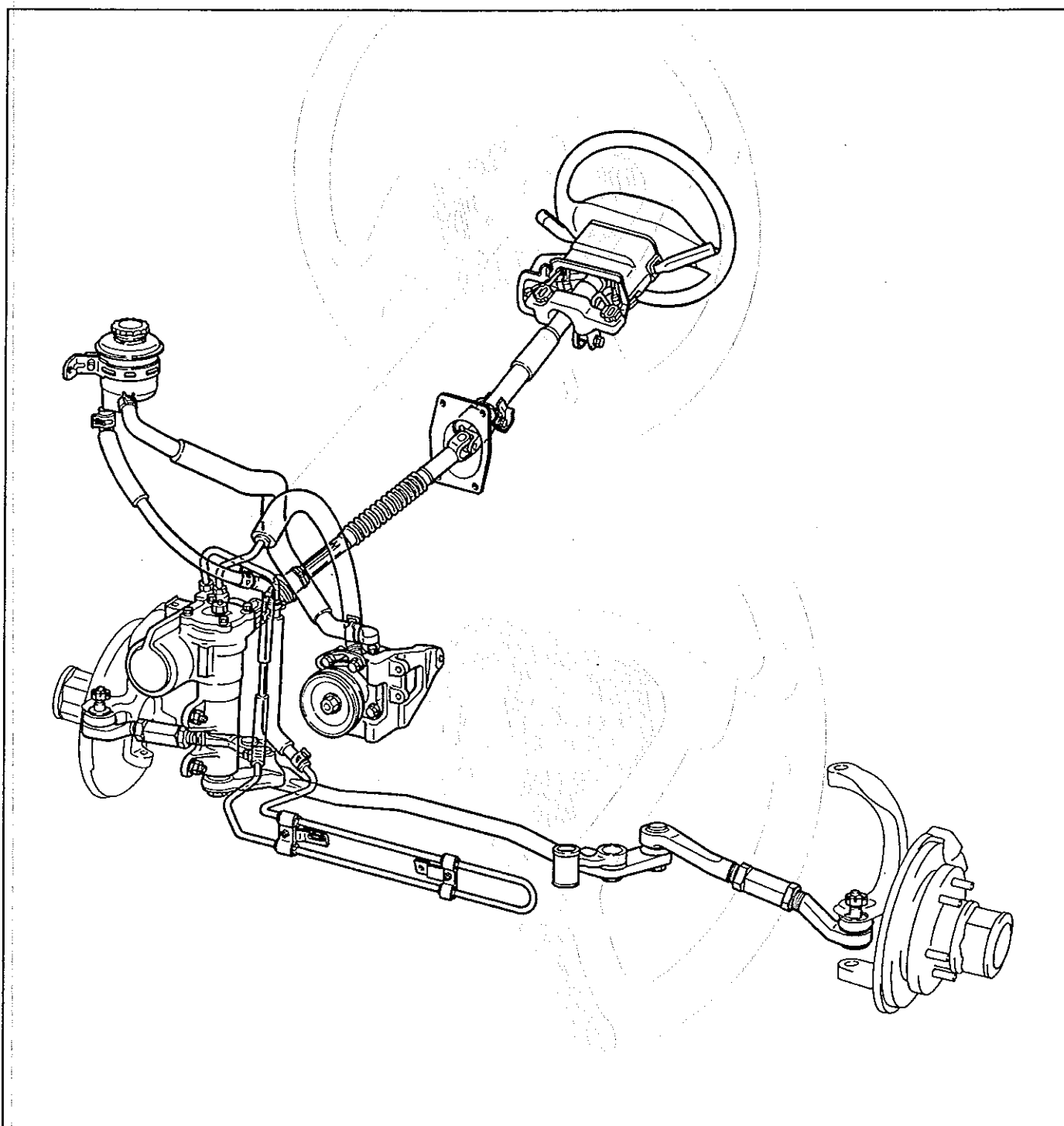


R7SR00003-99999

The steering mechanism employs an engine speed-responding type hydraulic power steering on all models as standard equipment. As a result, the steering effort has been reduced under a stationary condition as well as during low-speed running. At the same time, a good steering performance during high-speed running has been achieved.

For optimized driving posture, a tilt mechanism has been employed. Also, the steering wheel with an energy-absorption mechanism has been adopted.

Moreover, for improved steering characteristics, the vane pump characteristics and gear characteristics have been changed.



SR-4

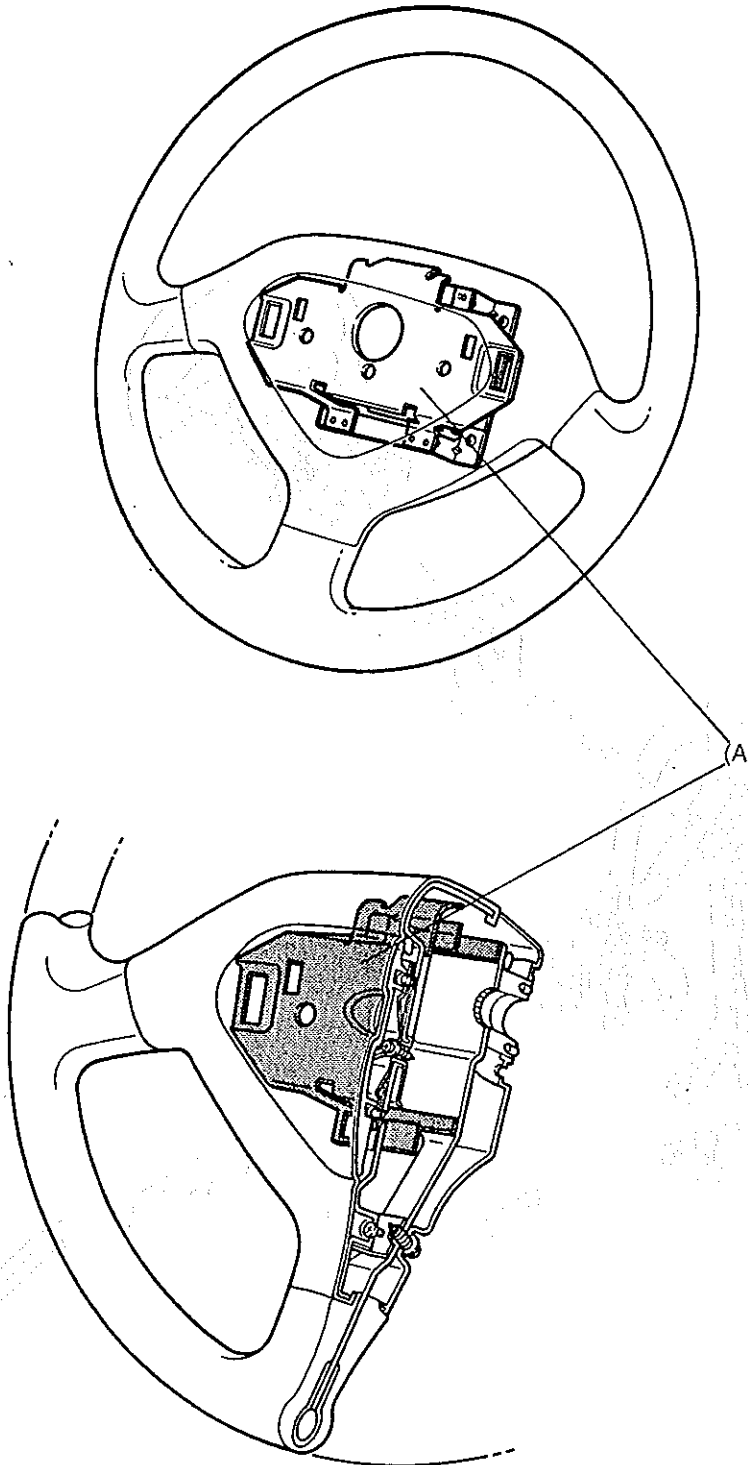
STEERING WHEEL WITH ENERGY-ABSORPTION MECHANISM

The energy-absorption mechanism has been provided inside the steering wheel assembly.

The energy-absorption pad (A) consists of a steel sheet.

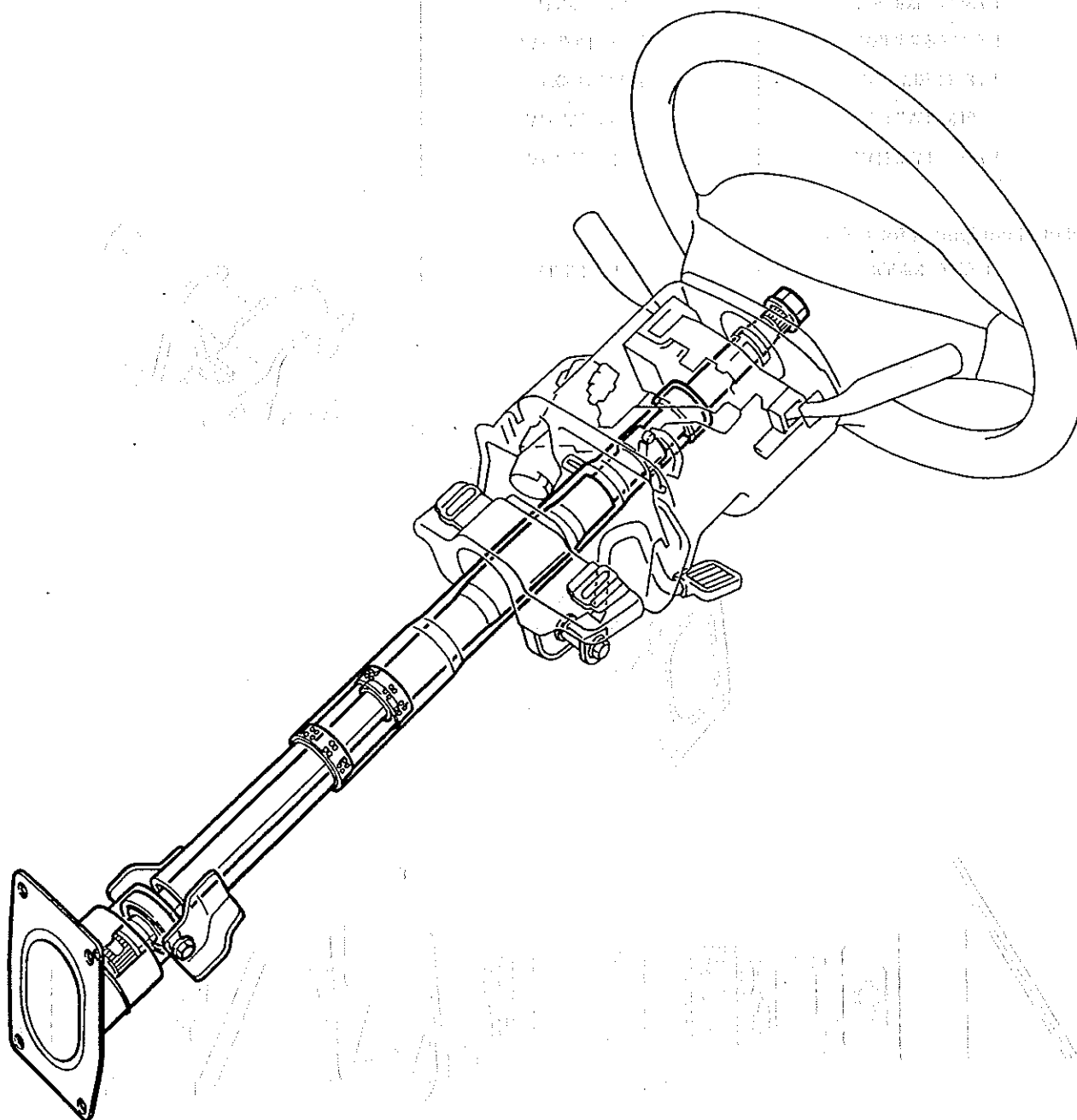
This steel sheet has been so shaped and constructed that the steel sheet will deform plastically when the pad section is subjected to impacts. As a result, shocks applied to the driver will be reduced.

The steering wheel (made of urethane) with an energy-absorption mechanism is mounted.



STEERING COLUMN

The steering column employs an impact-absorption mechanism. The steering column tube and steering main shaft have the impact-absorption construction, respectively. Also, a tilt mechanism has been adopted.



SR-6

STEERING COLUMN

The connection between the steering column tube and the steering column lower tube employs a ball type impact-absorption construction (A).

If a great impact is applied from the steering gear box side, the balls move while rolling. This movement of the balls make grooves. Therefore, the column tube is contracted.

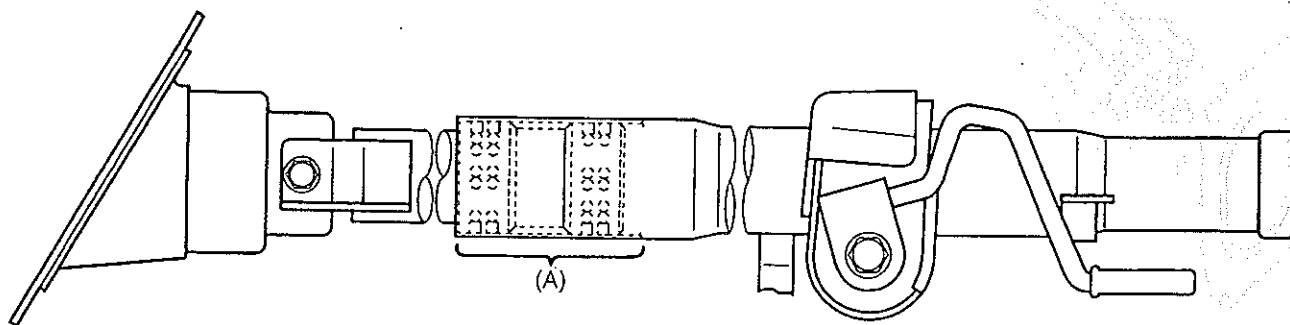
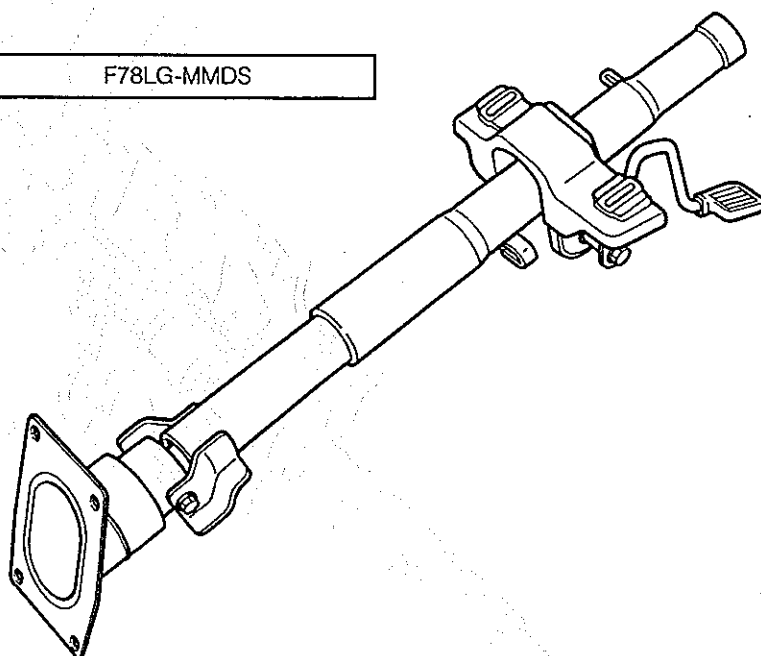
Consequently, the resistance produced at this time absorbs the energy of the impact.

S.T.D

F73LG-MMHSW	F73RG-MMHTW
F73RG-MMHSW	F78LG-BMHTW
F78LG-BMHSW	F78LG-BMXTW
F78RG-BMHSW	F78RG-BMHTW
F73LG-MMHTW	F78RG-BMXTW

Optional equipment for G.C.C

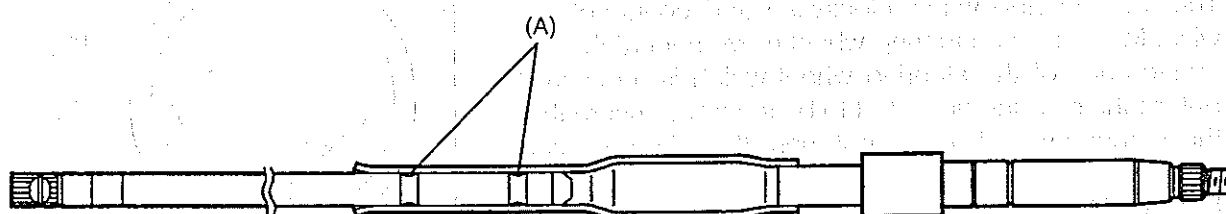
F73LG-MMDS	F78LG-MMDS
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STEERING MAIN SHAFT

The steering main shaft is an impact-absorption construction where the shafts divided in two parts are secured by resin pins (A).

If a great impact is applied from the steering gear box side, the resin pins (A) are broken and the main shaft is contracted, thus absorbing the energy of the impact.



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TILT STEERING

The tilt steering has been provided as standard equipment on the following five models; as optional equipment except for them.

S.T.D

F78LG-BMXT	F78RG-BMXTQ
F78LG-BMXTW	F78RG-BMXTW
F78RG-BMXT	—

Optional equipment

F73LG-MMHSW	F73LG-MMHT	F78LG-BMHTW
F73RG-MMHSW	F73LG-MMHTW	F78RG-BMHT
F78LG-BMHSW	F73RG-MMHTQ	F78RG-BMHTQ
F78RG-BMHSQ	F73RG-MMHTW	F78RG-BMHTW
F78RG-BMHSW	F78LG-BMHT	

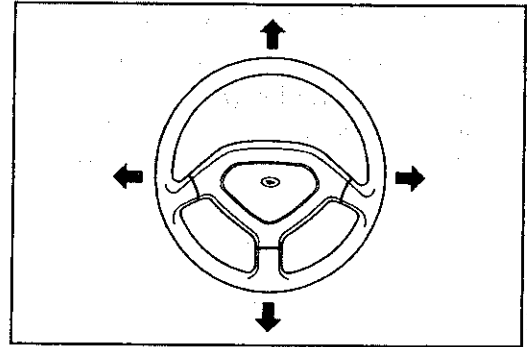
R7SR00009-00000

IN-VEHICLE INSPECTION

1. Check of steering wheel

Move the steering wheel in an axial direction and/or in a perpendicular direction so as to ensure no looseness and/or excessive play is present.

If any looseness and/or excessive play is present, check the steering wheel for improper installing condition. Repair any defective parts.



R7SR00010-99999

2. Check of steering wheel for free play

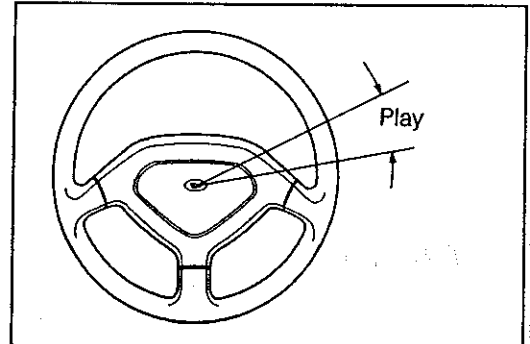
(1) Set the steering wheel to a straight-ahead state.

(2) Turn the steering wheel clockwise and counterclockwise. Measure the steering wheel movement at the circumference of the steering wheel which is registered before the steering tires start to be steered. Ensure that this steering wheel play is not more than the specified value.

Specified Value: 30 mm

If not, check each joint section for excessive play. If the joints are satisfactory, replace the steering gear box.

If the joint sections exhibit defects, such as excessive play, replace the defective parts.



R7SR00011-99999

3. Check of steering gear box fluid level

(1) Remove the fluid level check plug of the steering gear box.

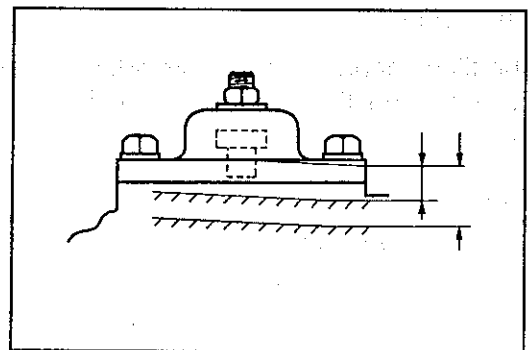
(2) Check the fluid level by inserting a clean screwdriver, etc. from the check hole. Ensure that the height from the fluid level to the upper edge of the check hole conforms to the specified value.

Specified Level: 13 - 23 mm

If not, ensure that the steering gear box exhibits no fluid leakage. Replenish the specified fluid to the upper level.

Specified Fluid: Gear oil API GL-3, SAE90

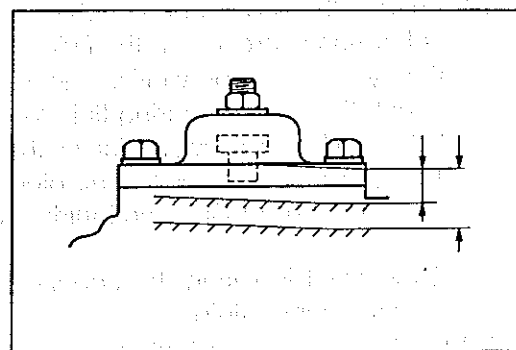
If any fluid leakage is present, replace the steering gear box.



R7SR00012-99999

- (3) Clean the plug and plug hole. Furthermore, apply Three Bond 1216 to the threaded portion of the plug. Tighten the plug to the specified torque.

Tightening Torque: 2.9 - 4.9 N·m
(0.3 - 0.5 kgf-m, 2.2 - 3.6 ft-lb)



R7SR00013-99999

4. Check of steering linkage and gear housing

- (1) Ensure that the steering linkage exhibits no excessive play and/or looseness.

If any excessive play and/or looseness is present, check and/or repair the defective parts.

- (2) Ensure that the dust seals exhibits no damage.

Replace any defective dust seal.

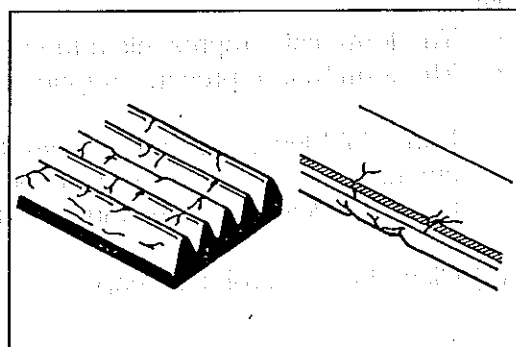
- (3) Ensure that the steering gear housing exhibits no fluid leakage.

If any fluid leakage is present, replace the steering gear housing.

R7SR00014-00000

5. Check of power steering vane pump drive belt

- (1) Visually check the belt for separation of the adhesive rubber above and below the core, core separation of the rib from the belt side, severed core, separation of the adhesive rubber, cracks or separation of the ribs, torn or worn ribs or cracks in the inner ridges of the ribs. If necessary, replace the drive belt.

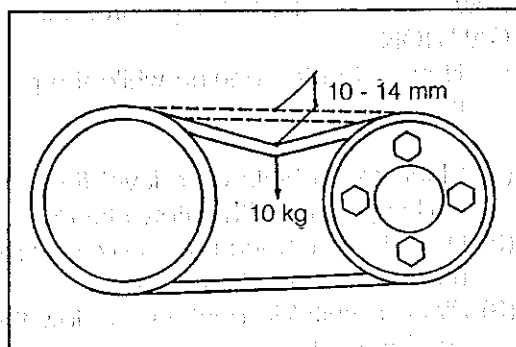


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6. Check the amount of drive belt deflection when the midpoint of the drive belt between the vane pump pulley and the crankshaft pulley is pushed with a force of 98 N (10 kgf).

Specified Belt Deflection: 10 - 14 mm (at inspection)
8 - 10 mm (New)

If the amount of belt deflection does not conform to the specified value, adjust the drive belt tension.



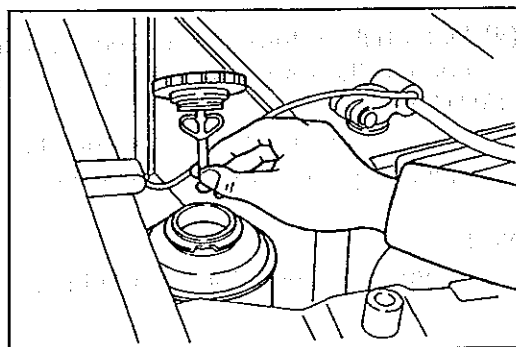
R7SR00016-99999

7. Check of power steering fluid

- (1) Open the reservoir tank cap.

- (2) Ensure that the power steering fluid viscosity is not low abnormally.

If the viscosity is low abnormally, change the power steering fluid.



R7SR00017-99999

SR-10

- (3) Ensure that no aeration, whitish cloudy state or discoloration is present in the fluid.

If any aeration or whitish cloudy state is observed, check the power steering fluid level.

If the fluid level is low, replenish the power steering fluid.

Then, proceed to perform air bleeding.

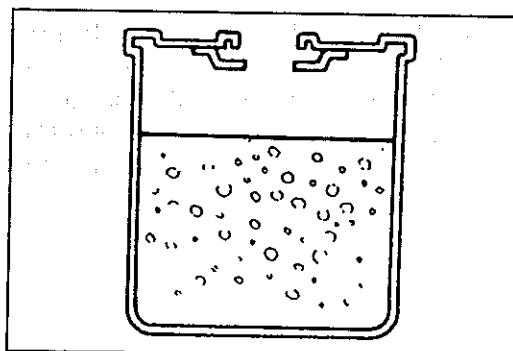
Specified Power Steering Fluid: ATF DEXRON® II

If the level is within the specified range, change the power steering fluid.

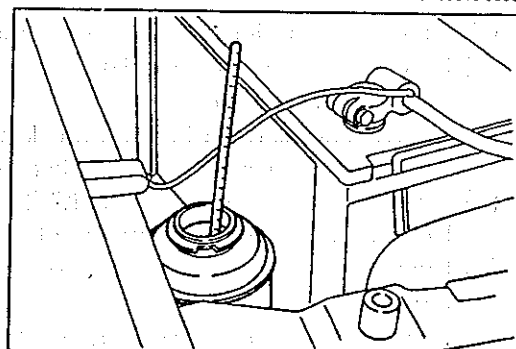
- (4) Close the reservoir tank cap.

8. Check of power steering fluid level

- (1) Open the reservoir tank cap.
- (2) Measure the power steering fluid temperature.
- (3) When the power steering fluid temperature is within the range of 0 to 40°C or 40 - 80°C, check to see if the fluid level is within the specified range corresponding to the measured temperature condition.



R7SR00018-99999



R7SR00019-99999

NOTE:

- The term "cold" represents a range of 0 - 40°C.
- The term "hot" represents a range of 40 - 80°C.

If the fluid level is low, replenish the specified power steering fluid up to the upper level.

Specified Power Steering Fluid: ATF DEXRON® II

- (4) Close the reservoir tank cap.

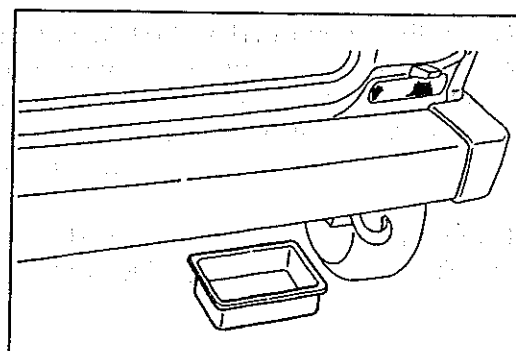
R7SR00020-00000

9. Power steering fluid change procedure

CAUTION:

- Never start the engine while the power steering fluid is being drained.

- (1) Place the vehicle on a level floor. Jack up the vehicle and support it with safety stands.
- (2) Detach the engine undercover by removing the engine undercover attaching bolts.
- (3) Place a suitable container below the return hose connecting section.



R7SR00021-99999

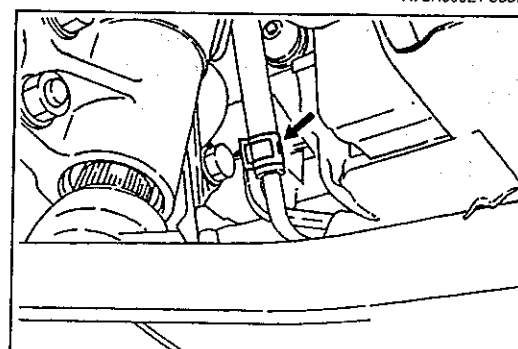
- (4) Detach the return hose clamp. Drain the fluid by disconnecting the return hose from the return pipe.

CAUTION:

- When disconnecting the return hose, special caution must be paid as to the flowing fluid.

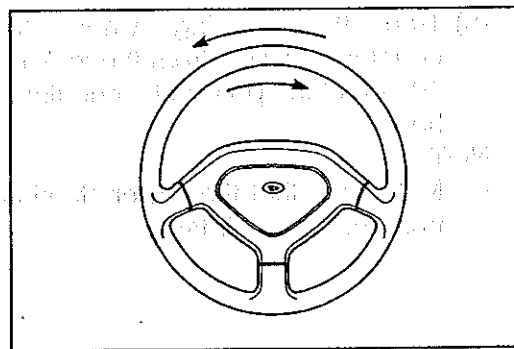
NOTE:

- Be very careful not to deform the return pipe.



R7SR00022-99999

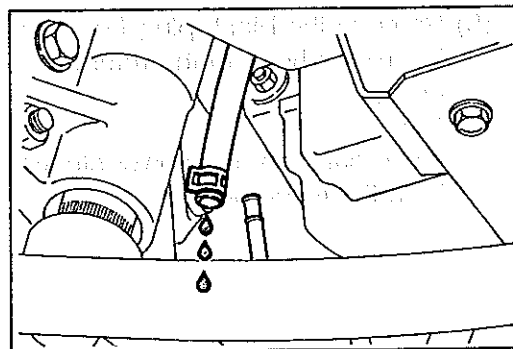
- (5) Turn the steering wheel fully clockwise or counterclockwise from the lock to the lock several times so as to drain the fluid inside the steering gear box.



R7SR00023-99999

NOTE:

- When the steering wheel is turned fully from the lock to the lock, be certain to hold the steering wheel for four to five seconds at the fully turned state.
- Make sure that the fluid no longer flows from the return hose.



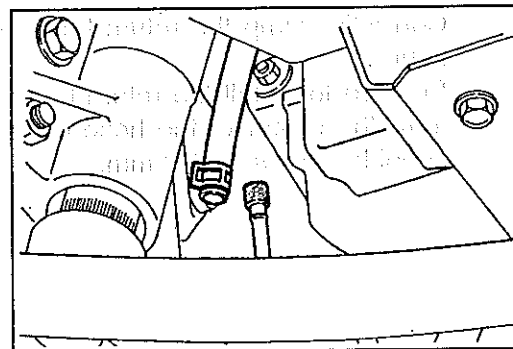
R7SR00024-99999

- (6) Pour the power steering fluid into the reservoir tank, until the fluid starts to flow from the return pipe. When the fluid starts flowing from the return pipe, install a blank plug to the return pipe.

NOTE:

- Make sure that the power steering fluid will not run out from the reservoir tank.
- When the fluid starts flowing from the return pipe, allow about 100 cc of fluid to flow out so that the old fluid may be drained completely.

Specified Power Steering Fluid: ATF DEXRON® II

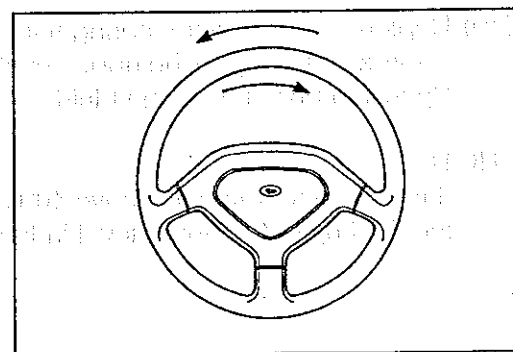


R7SR00025-99999

- (7) While replenishing the power steering fluid to the reservoir tank approximately up to the upper level in the COLD range, keep turning the steering wheel fully clockwise and counterclockwise from the lock to the lock.

NOTE:

- Make sure that the power steering fluid will not run out from the reservoir tank.
- When the steering wheel is turned fully from the lock to the lock, be certain to hold the steering wheel for four to five seconds at the fully turned state.
- Turn the steering wheel as quickly as possible. Do not stop the steering wheel midway nor turn the steering wheel reversely.

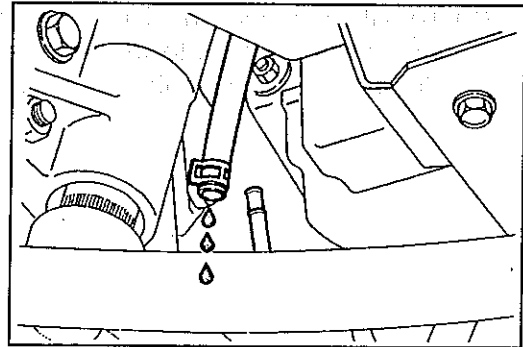


R7SR00026-99999

- (8) Turn the steering wheel fully clockwise and counterclockwise from the lock to the lock, until about 100 cc of the power steering fluid flows from the return hose.

NOTE:

- Make sure that the power steering fluid will not run out from the reservoir tank.

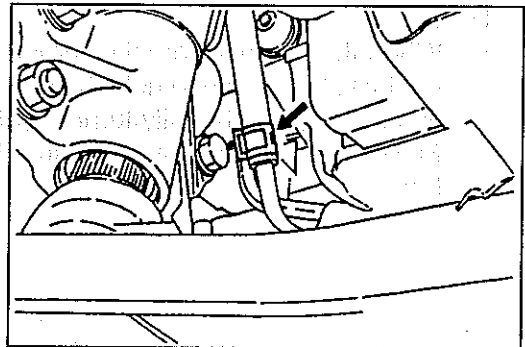


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- (9) Remove the blank plug from the return pipe. Connect the return hose to the return pipe and install the hose clamp.

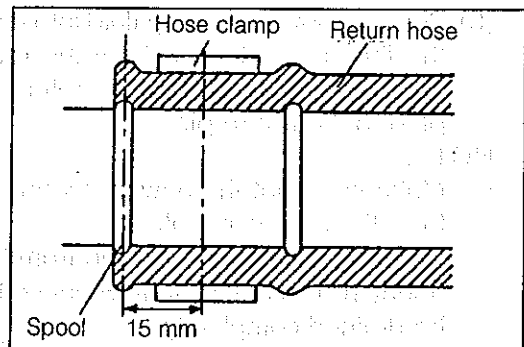
NOTE:

- Make sure that the power steering fluid will not run out from the reservoir tank.



R7SR00028-99999

- Correctly clamp the return hose as shown in the right figure.
- Be sure to install the return hose so that the distance from the center of the hose clamp to the edge of the spool becomes 15 ± 2 mm.

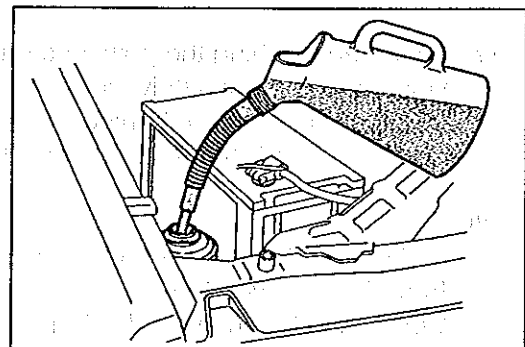


R7SR00029-99999

- (10) Replenish the power steering fluid to the reservoir tank approximately up to the upper level in the COLD range. Specified Power Steering Fluid: ATF DEXRON® II

NOTE:

- If the oil temperature is above 40°C, fill the power-steering fluid up to the upper level in the HOT level.



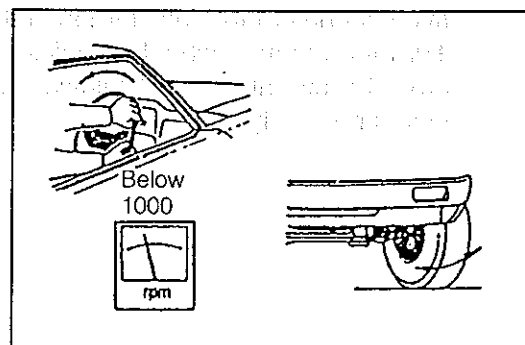
R7SR00030-99999

- (11) Start the engine. Keep running the engine at the idle speed.

- (12) Turn the steering wheel fully either to the right or to the left. Hold the steering wheel for two to three seconds at the fully turned state. Then, turn the steering wheel in the opposite direction and hold it for two to three seconds.

NOTE:

- Make sure that the power steering fluid will not run out from the reservoir tank.

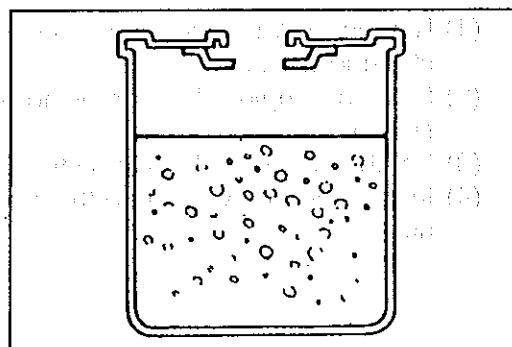


R7SR00031-99999

(13) Repeat the operations described in the step (12) onward three or four times.

(14) Ensure that no aeration or whitish cloudy state is present at the power steering fluid in the reservoir tank.

If any aeration and/or whitish cloudy state is observed, stop the engine. Wait for about ten minutes. Again, repeat the operations described in (4) onward.



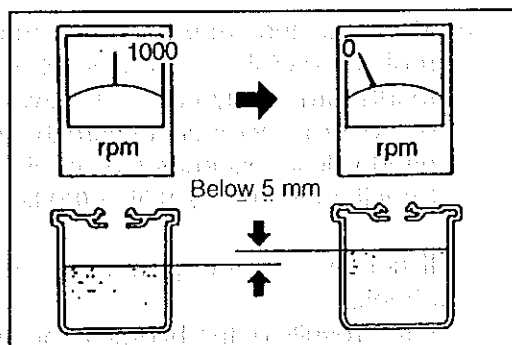
R7SR00032-99999

(15) Ensure that the difference in fluid level between the time when the engine is stopped and the time when the engine is kept running at the idle speed will not exceeds the specified value.

Specified Value: 5 mm

If the difference in fluid level exceeds the specified value, again perform air bleeding.

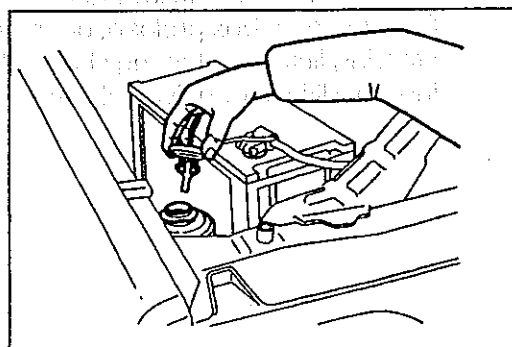
If the difference in fluid level fails to become within the specified value persistently, check the hydraulic pressure.



R7SR00033-99999

(16) Check the fluid level.

(17) Start the engine. Ensure that no fluid leakage is present.



R7SR00034-99999

(18) Perform the following inspection.

① Ensure that no whitish cloudy state is present in the power-steering fluid when the engine revolution speed is raised quickly.

② Ensure that the steering wheel can be turned smoothly without emanating abnormal noise.

③ Ensure that the oil level will not change more than 5 mm during the engine starting period or when the steering wheel is being turned.

④ Ensure that no abnormal noise is emanated when turning the steering wheel (when the front wheels are being turned) during the running.

If any abnormality is present, perform air bleeding again.

10. Check of power steering turning effort

NOTE:

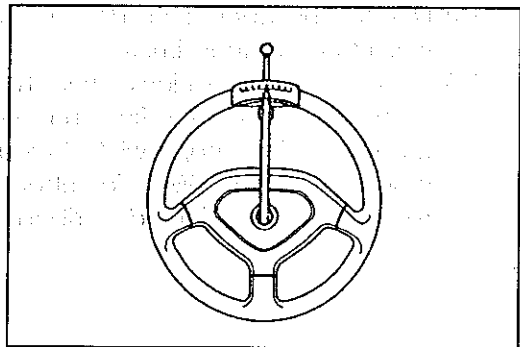
Before this power steering turning effort is checked, the following requirements must be satisfied in advance.

- The vehicle is mounted with the tires whose use has been approved.
- The tire size and tire manufacturer are the same on all four tires.
- All of the tires are inflated accurately to the specified pressure.

R7SR00035-00000

SR-14

- (1) Remove the steering wheel cover assembly from the steering wheel.
- (2) Start the engine. Keep running the engine at the idle speed.
- (3) Set the steering wheel to a straight-ahead condition.
- (4) Install a torque wrench to the steering wheel attaching nut.



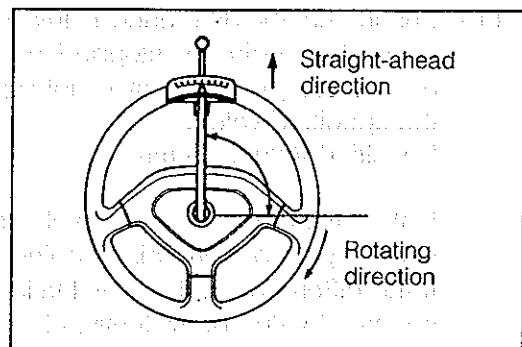
R7SR00036-99999

- (5) Measure the maximum steering torque which is registered while the steering wheel is being turned one-fourth turn slowly in the clockwise direction by means of the torque wrench. Ensure that this maximum turning effort will not exceeds the specified value.
Specified Value: 7.8 N·m (80 kgf-cm, 5.8 ft-lb)

If not, perform the power steering hydraulic pressure check.

If the results of the hydraulic pressure check are satisfactory, check the following items given below:

Steering gear box preload, operating conditions of each steering linkage, steering shaft ball joints and/or operating conditions of universal joints.



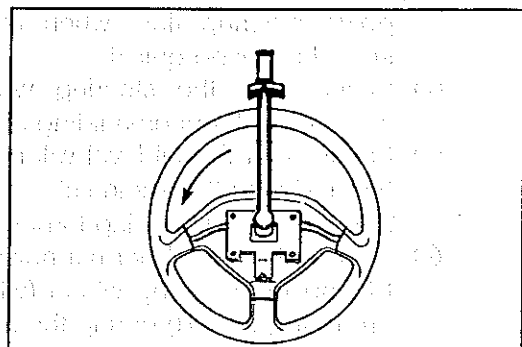
R7SR00037-99999

- (6) Set the steering wheel to a straight-ahead condition.
- (7) Measure the maximum steering torque which is registered while the steering wheel is being turned one-fourth turn slowly in the counterclockwise direction by means of the torque wrench. Ensure that this maximum turning effort will not exceed the specified value.
Specified Value: 7.8 N·m (80 kgf-cm, 5.8 ft-lb)

If not, perform the power steering hydraulic pressure check.

If the results of the hydraulic pressure check are satisfactory, check the following items given below:

Steering gear box preload, operating conditions of each steering linkage, steering shaft ball joints and/or operating conditions of universal joints.

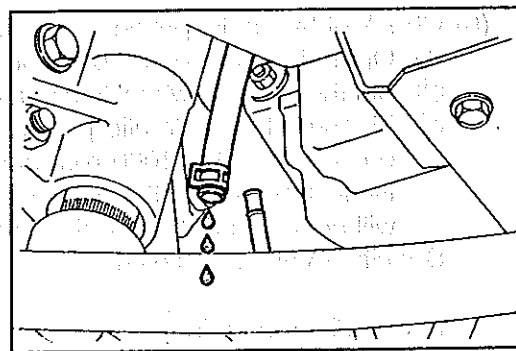


R7SR00038-99999

11. Check of power steering hydraulic pressure

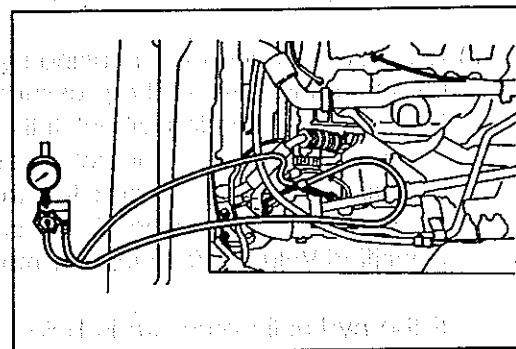
(1) Installation of pressure gauge

- ① Drain the power steering fluid.
- ② Remove the attaching bolts for the air cleaner and air cleaner hose. Also, remove the clutch cable clamp bolts and hose bands. Remove the air cleaner and air hose as an assembly from the vehicle.



R7SR00039-99999

- ③ Detach the pressure tube clamp by removing the clamp screw.
- ④ Disconnect the pressure side tube from the steering gear box.
- ⑤ Connect the pressure gauge midway between the disconnected tube and the steering gear box.



R7SR00040-99999

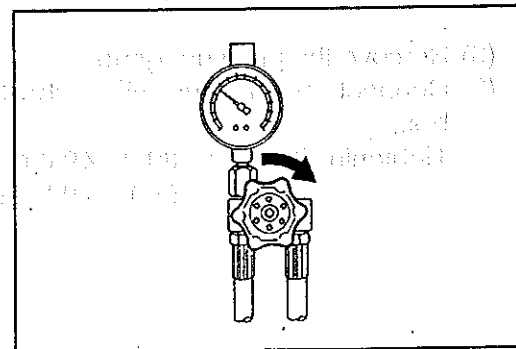
NOTE:

- Connect the pressure gauge in accordance with the pressure gauge manufacturer's instructions.

(2) Fill power steering fluid.

(3) Start the engine.

- (4) With the valve of the pressure gauge closed and while maintaining the line pressure at 40 to 50 kg/cm², warm up the power steering fluid, until its temperature reaches 80°C.



R7SR00041-99999

(5) Check of vane pump hydraulic pressure

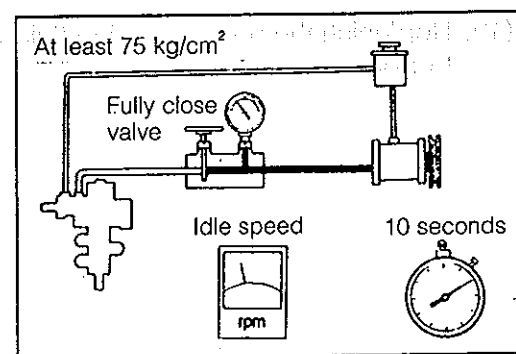
Close the valve of the pressure gauge temporarily and fully. Ensure that the pressure exceeds the specified pressure.

Specified Pressure: 75 kg/cm² or more

CAUTION:

- The valve of the pressure gauge must not be kept closed for more than 10 seconds.

If the vane pump fails to deliver the specified pressure, replace the vane pump.



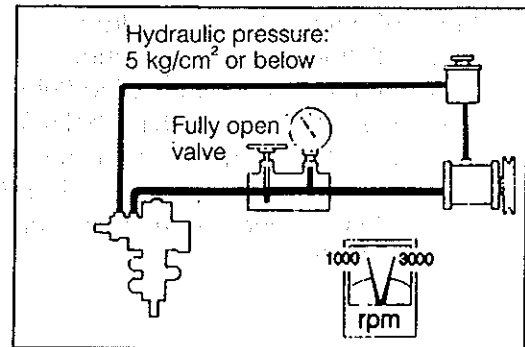
R7SR00042-99999

SR-16

- (6) Check of hydraulic pressure under unloaded state
- ① Open the valve of the pressure gauge fully.
 - ② Set the steering wheel to a straight-ahead condition.
 - ③ Measure the hydraulic pressure at times when the engine speed is 1000 rpm and 3000 rpm, respectively. Ensure that the difference in these pressures will not exceed the specified value.

Specified Value: 5 kg/cm²

If the difference in pressure exceeds the specified value, replace the vane pump.

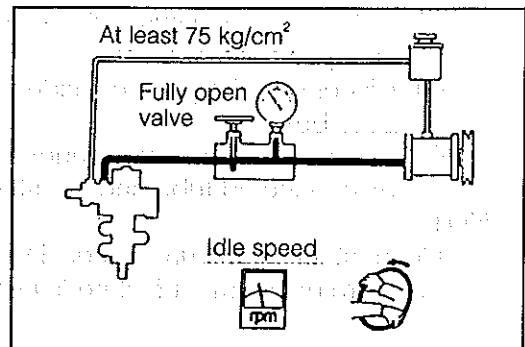


R7SR00043-99999

- (7) Check of steering gear housing hydraulic pressure
- ① Open the valve of the pressure gauge fully.
 - ② Turn the steering wheel fully either clockwise or counterclockwise and hold the steering wheel at the fully turned state. Ensure that the hydraulic pressure under this state exceeds the specified value.

Specified Value: 75 kg/cm² or more

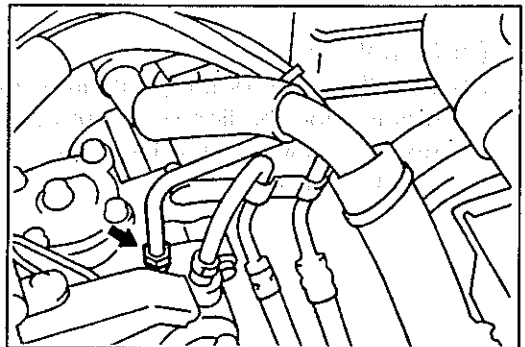
If the hydraulic pressure is below the specified value, replace the steering gear box.



R7SR00044-99999

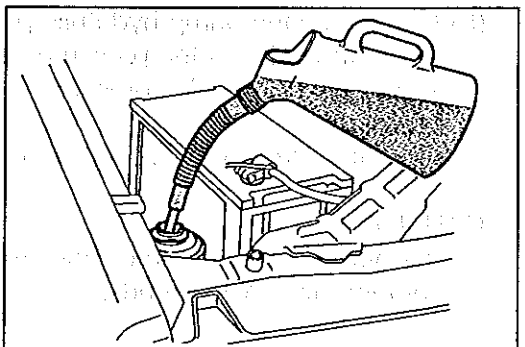
- (8) Remove the pressure gauge.
(9) Connect the pressure side tube to the steering gear box.

Tightening Torque: 39.2 - 49.0 N·m
(4.0 - 5.0 kgf·m, 28.9 - 36.2 ft·lb)



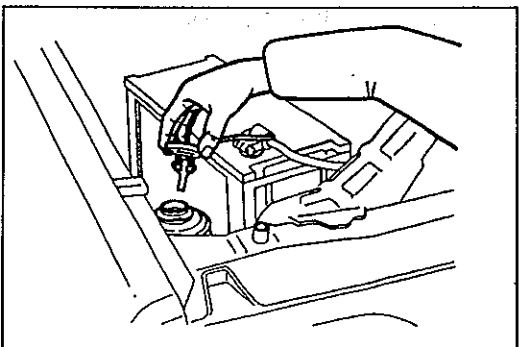
R7SR00045-99999

- (10) Replenish the power steering fluid to the reservoir tank.
Perform air bleeding.



R7SR00046-99999

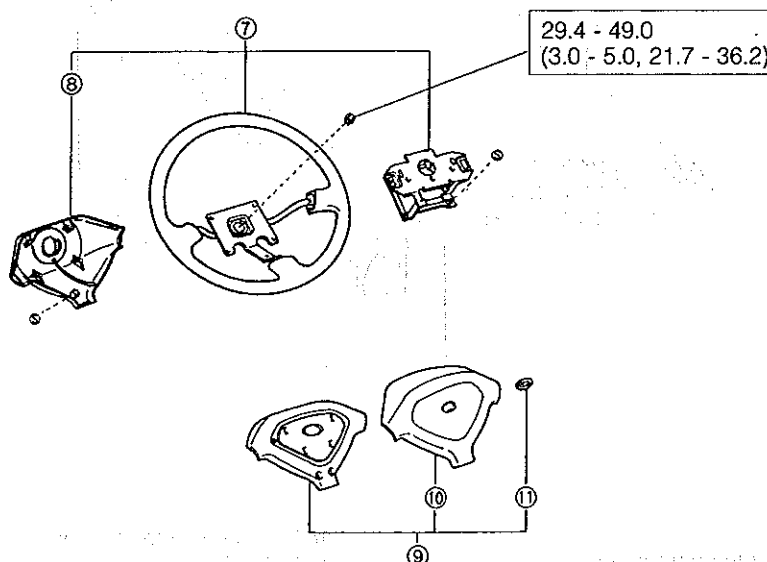
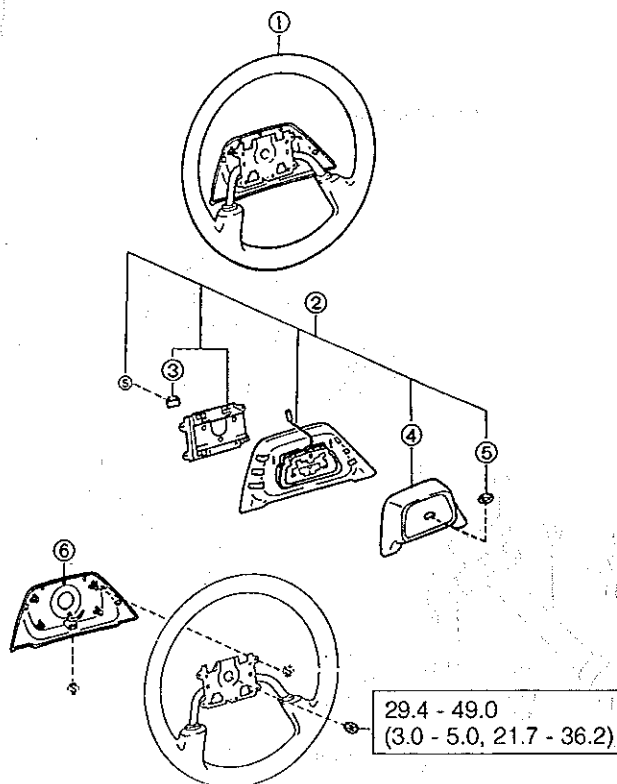
- (11) Check the fluid level.
(12) Start the engine. Ensure that no fluid leakage is present.



R7SR00047-99999

STEERING WHEEL COMPONENTS

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



2 spork

- ① Steering wheel
- ② Pad subassembly steering wheel
- ③ Spring steering wheel pad set
- ④ Pad steering wheel
- ⑤ Ornament steering wheel No. 1
- ⑥ Cover subassembly steering wheel

3 spork

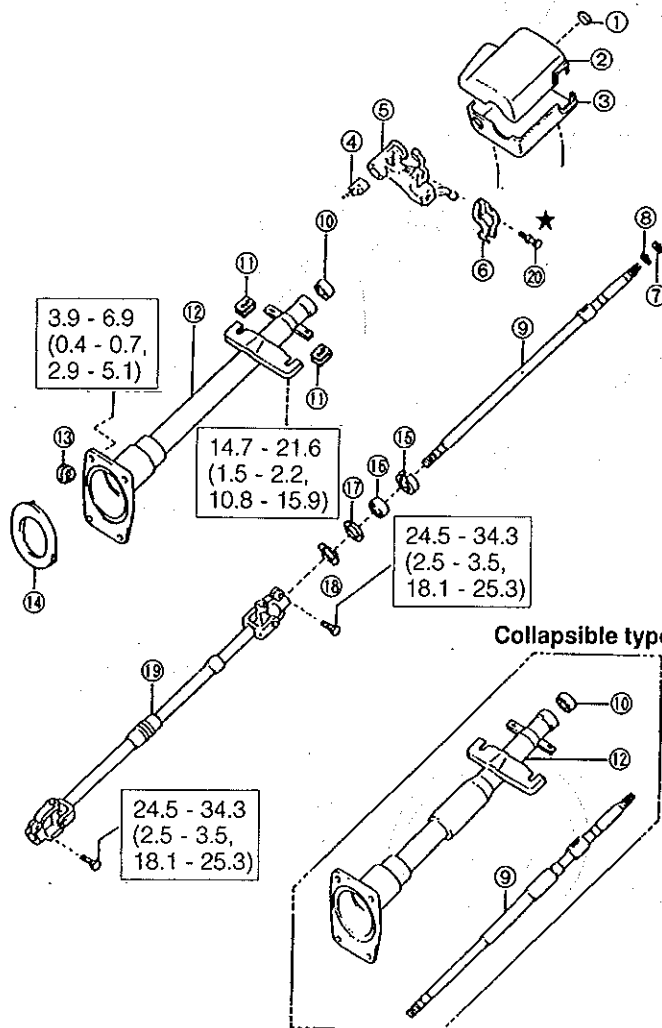
- ⑦ Wheel subassembly steering
- ⑧ Cover subassembly steering wheel
- ⑨ Pad subassembly steering wheel
- ⑩ Pad steering wheel
- ⑪ Ornament steering wheel No. 1

SR-18

STEERING COLUMN COMPONENTS

□ : Tightening torque
Unit : N·m (kgf·m, ft·lb)
★ : Non-reusable parts

Standard type



Collapsible type

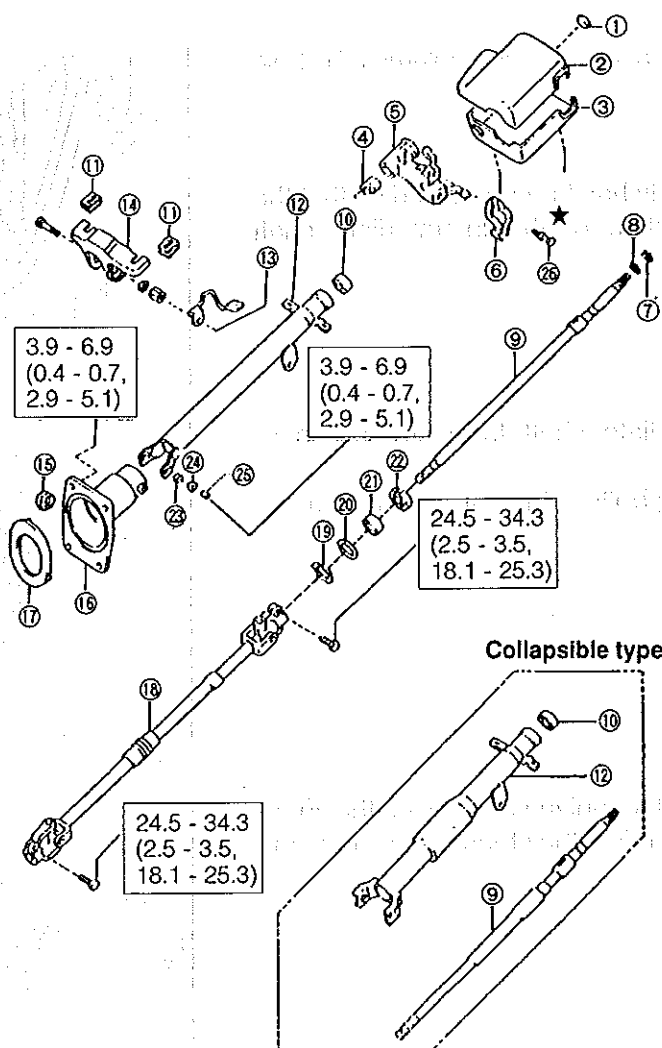
- ① Grommet
- ② Steering column upper cover
- ③ Steering column lower cover
- ④ Ignition switch assembly
- ⑤ Steering column upper bracket
- ⑥ Steering column housing
- ⑦ Snap ring
- ⑧ Snap ring
- ⑨ Steering main shaft subassembly
- ⑩ Radial ball bearing
- ⑪ Steering column upper attachment plate

- ⑫ Steering column tube subassembly
- ⑬ Hole plug
- ⑭ Steering column hole cover shield
- ⑮ Steering shaft thrust stopper subassembly
- ⑯ Radial ball bearing
- ⑰ Washer
- ⑱ Hole snap ring
- ⑲ Steering intermediate shaft
- ⑳ Steering lock set bolt
- ㉑
- ㉒

STEERING COLUMN COMPONENTS

□ : Tightening torque
Unit : N·m (kgf·m, ft·lb)
★ : Non-reusable parts

Tilt steering type



- ① Grommet
- ② Steering column upper cover
- ③ Steering column lower cover
- ④ Ignition switch assembly
- ⑤ Steering column upper bracket
- ⑥ Steering column housing
- ⑦ Snap ring
- ⑧ Snap ring
- ⑨ Steering main shaft subassembly
- ⑩ Radial ball bearing
- ⑪ Steering column upper attachment plate
- ⑫ Steering column tube subassembly
- ⑬ Steering tilt lever

- ⑭ Tilt steering support subassembly
- ⑮ Hole plug
- ⑯ Steering column hole cover
- ⑰ Steering column hole cover shield
- ⑱ Steering intermediate shaft
- ⑲ Hole snap ring
- ⑳ Washer
- ㉑ Radial ball bearing
- ㉒ Steering shaft thrust stopper subassembly
- ㉓ Bush
- ㉔ Bush
- ㉕ Collar
- ㉖ Steering lock set bolt

SR-20

REMOVAL

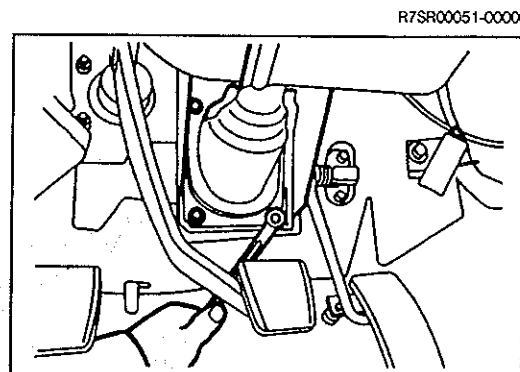
1. Remove the instrument panel finish lower panel.
2. Remove the steering wheel
3. Remove the instrument panel finish panel 1.
4. Remove the instrument panel reinforcement subassembly.
5. Remove the air duct assembly No. 1.
6. Disconnect the connector of the turn signal switch.
7. Disconnect the connector from the ignition switch.
8. Disconnect the connector of the key reminder switch (if so equipped).
9. Remove the attaching bolts at the steering column tube hole cover side.
10. Remove the air cleaner.

NOTE:

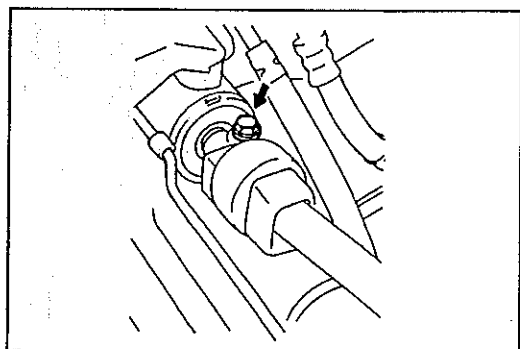
- The air cleaner assembly has been removed so that the disconnection/reconnection of the intermediate shaft may be performed easily.

11. Disconnection of intermediate shaft from steering gear housing

- (1) Remove the connecting bolts at the universal joint of the intermediate shaft.

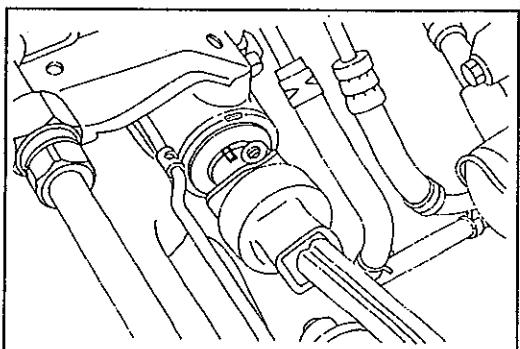


R7SR00051-00000



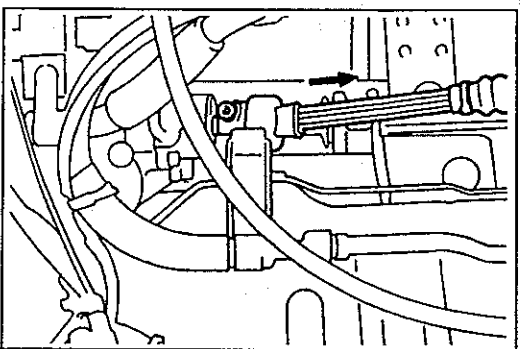
R7SR00052-99999

- (2) Put mating marks on the universal joint of the intermediate shaft and the shaft at the steering gear housing side.



R7SR00053-99999

- (3) Disconnect the intermediate shaft from the steering gear housing by contracting the intermediate shaft.



R7SR00054-99999

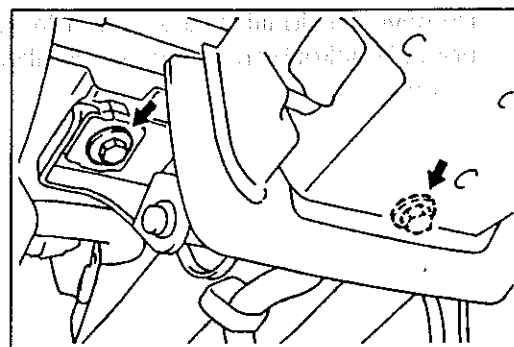
R7SR00055-99999

12. Detach the wiring harness which is clamped to the steering column.

13. Remove the steering column attaching bolts.

NOTE:

- Be very careful not to drop the steering column.
- Care must be exercised not to soil the seat.

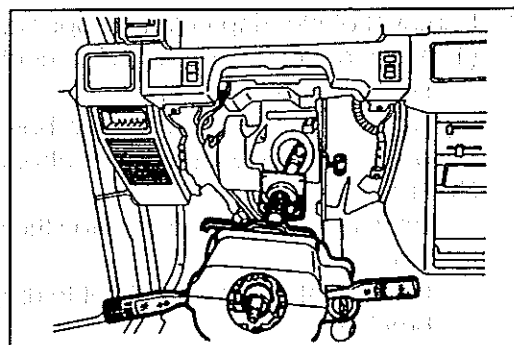


R7SR00056-99999

14. Remove the steering column assembly together with the intermediate shaft from the vehicle.

NOTE:

- Care must be exercised so that the spline connecting section of the intermediate shaft may not be disconnected.



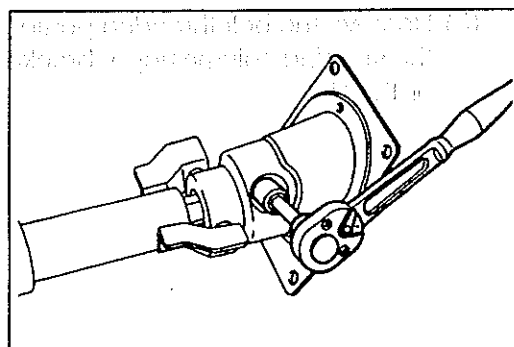
R7SR00057-99999

15. Remove the hole plug. Remove the bolts which connect the steering shaft to the intermediate shaft.

16. Pull out the intermediate shaft from the steering shaft.

NOTE:

- Be sure to put a mating mark on both the steering shaft and intermediate shaft so that the assembling position may be known readily.



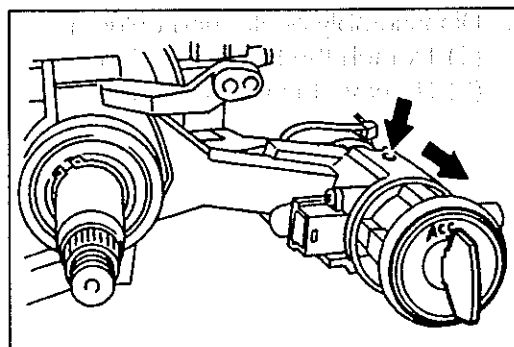
R7SR00058-99999

17. Remove the six attaching screws of the steering column cover. Remove the steering column cover from the steering column.

18. Remove the attaching screws of the turn signal lamp switch assembly. Remove the turn signal lamp switch assembly from the steering column.

19. Removal of ignition key cylinder

- (1) Insert the ignition key and set it to the "ACC" position.
- (2) While retaining the cylinder lock section with a suitable rod through the cylinder upper hole, pull out the key cylinder from the steering column upper bracket.



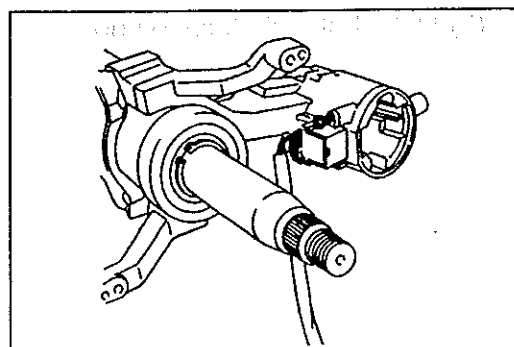
R7SR00059-99999

20. Detach the key reminder switch cord coat clamp.

(Key reminder switch-equipped vehicle only)

21. Remove the attaching screw of the key reminder switch. Remove the key reminder switch from the pawl section of the steering column upper bracket by turning the switch clockwise. In this way, remove the key reminder switch from the steering column upper bracket.

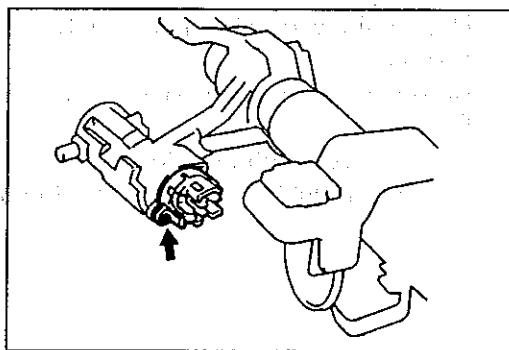
(Key reminder switch-equipped vehicle only)



R7SR00060-99999

SR-22

22. Remove the ignition key switch from the steering column upper bracket by removing the ignition key switch attaching screw.

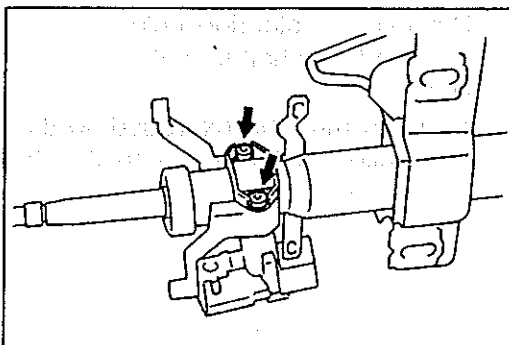


R7SR00061-99999

23. Removal of steering column upper bracket
- (1) Make a recessed mark at the center of the steering lock set bolt with a punch.
 - (2) Remove the head of the set bolt by drilling the center of the set bolt with a drill of about 17 mm diameter.

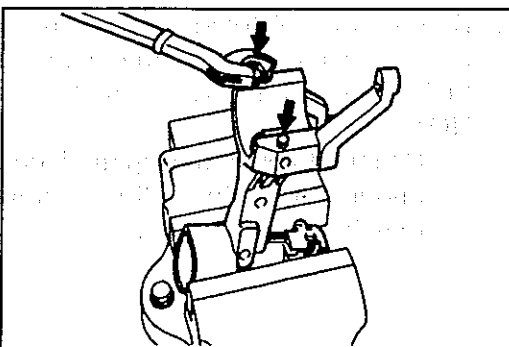
NOTE:

- Be very careful not to damage the steering column housing.
- Care must be exercised not to drop the steering column bracket.



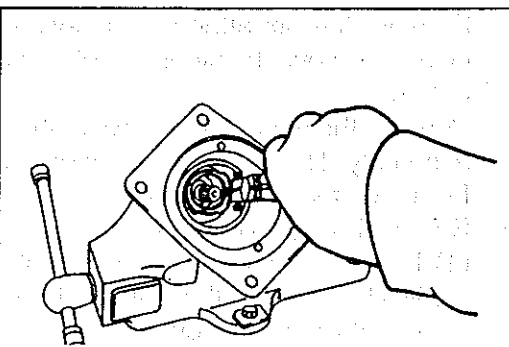
R7SR00062-99999

- (3) Remove the bolt threaded portion which is remaining at the steering column upper bracket, using a pipe wrench or the like.



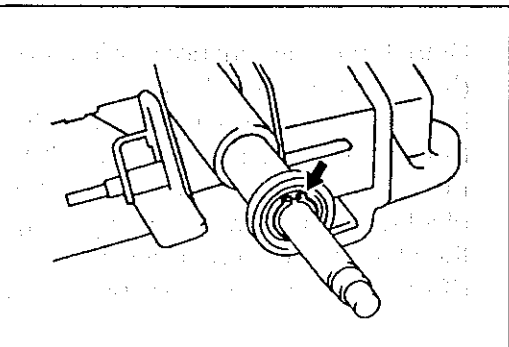
R7SR00063-99999

24. Disassembly of steering column
- (1) Detach the hole snap ring.
 - (2) Remove the washer plate.



R7SR00064-99999

- (3) Detach the shaft snap ring.

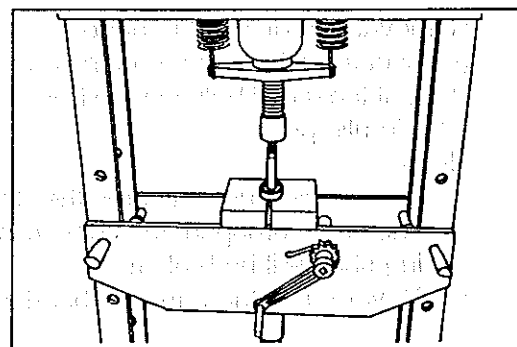


R7SR00065-99999

- (4) Remove the steering shaft from the steering column tube, using a press. (Standard type only)

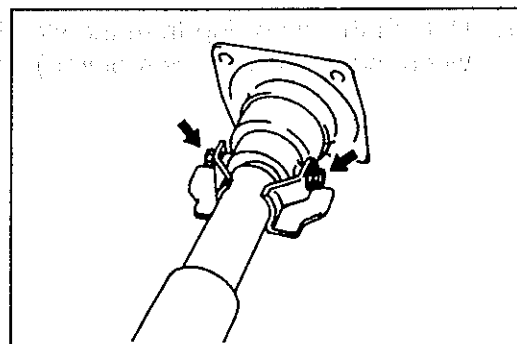
NOTE:

- When applying load to the steering shaft with a press, apply the load gradually, making sure that no impact may be applied to the steering shaft. Failure to observe this caution will lead to breakage of the center connecting section of the steering shaft.
- Be very careful not to drop the steering shaft.



R7SR00066-99999

- (5) Remove the attaching bolts of the steering column hole cover. Remove the steering shaft together with the steering column hole cover. (Tilt steering type only)

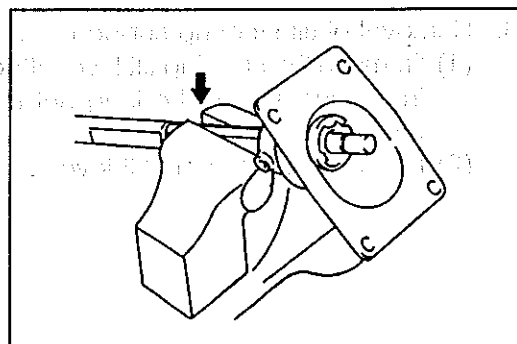


R7SR00067-99999

- (6) Clamp the steering shaft lower shaft in a vice. (Tilt steering type only)

NOTE:

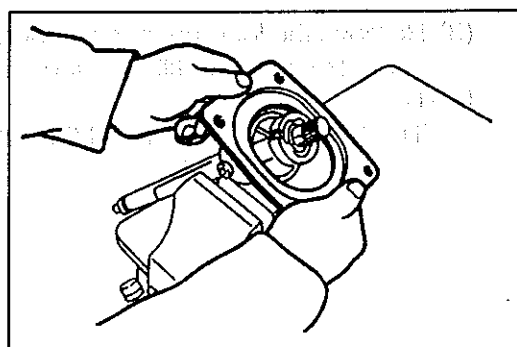
- Be sure to clamp the lower shaft only in a vice. Never clamp the upper shaft (hollow shaft) in a vice.



R7SR00068-99999

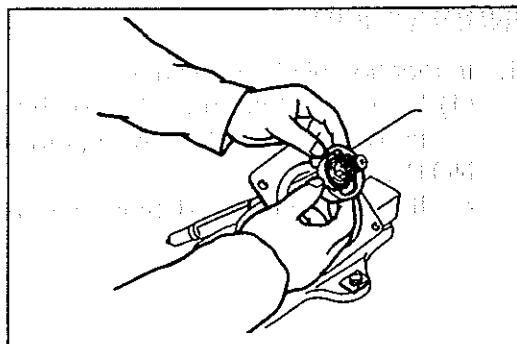
- (7) Remove the steering column hole cover from the steering shaft while prying and lowering the cover. (Tilt steering type only)

- (8) Remove the steering shaft from the vice. Remove the steering column hole cover. (Tilt steering type only)



R7SR00069-99999

25. Remove the steering shaft thrust stopper from the radial ball bearing.



R7SR00070-99999

SR-24

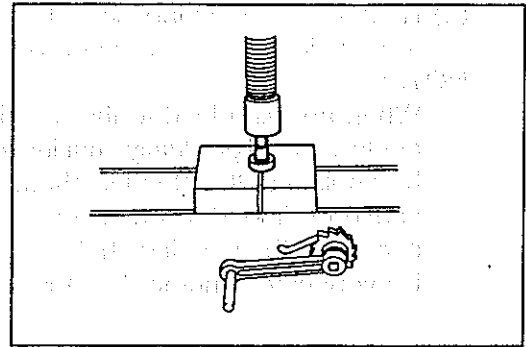
26. Removal of radial ball bearing

(Only cases where such operation is required)

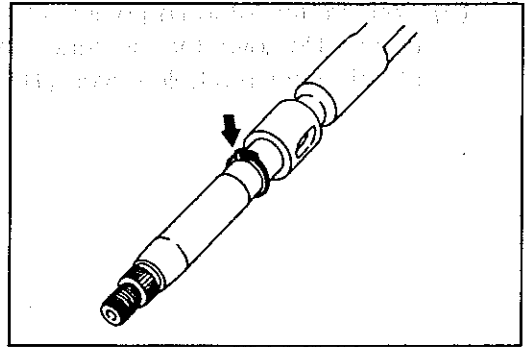
Pull out the radial ball bearing from the steering shaft, using a hydraulic press.

NOTE:

- Be very careful not to drop the steering shaft. If the shaft should be dropped, the connecting section of the steering shaft will be broken.
- Never reuse the removed bearing.

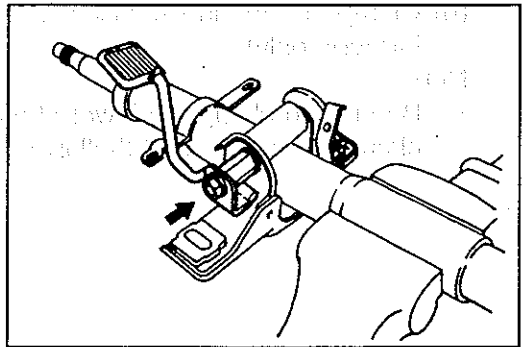


27. Detach the snap ring from the steering shaft. (Only cases where such operation is required)



28. Removal of tilt steering support

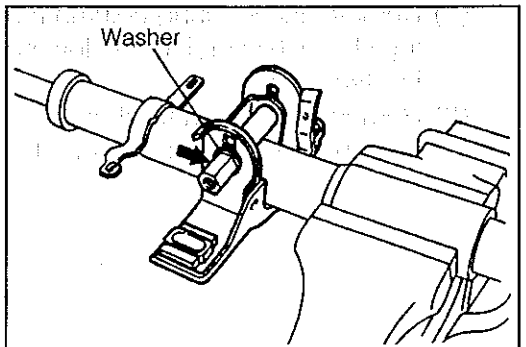
- (1) Remove the steering tilt lever attaching nut, while applying a spanner to the long nut to prevent the nut from turning.
- (2) Remove the steering tilt lever.



- (3) Remove the long nut and washer. Pull out the attaching shaft. Remove the tilt steering support.

NOTE:

- The long nut is a left-hand threaded nut.



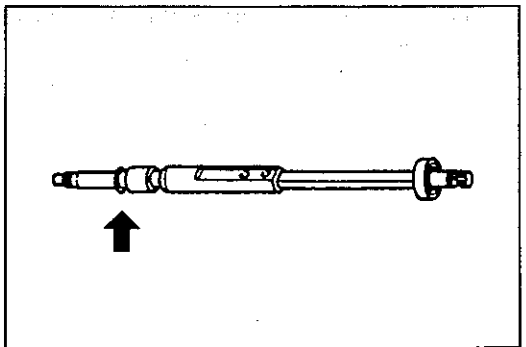
INSPECTION

1. Inspection of steering shaft

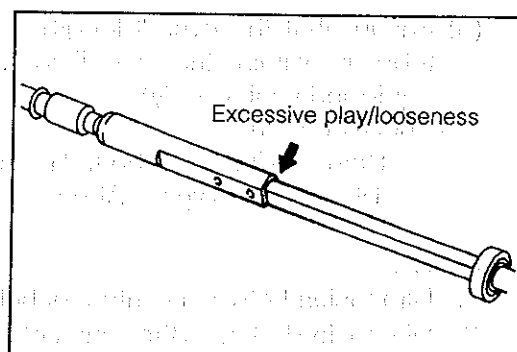
- (1) Ensure that each section of the steering shaft exhibits no damage, such as wear, cracks and deformation.

NOTE:

- If the snap ring is damaged, remove the snap ring.

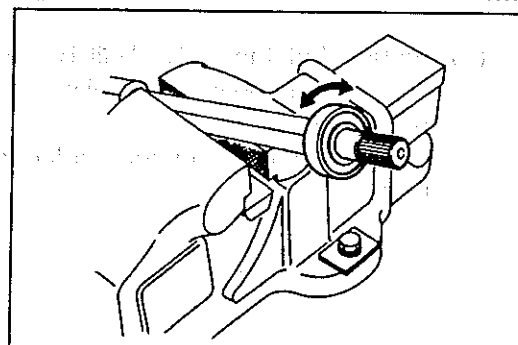


- (2) Ensure that no excessive play or looseness is present at the connecting section between the upper and lower sections of the steering shaft.
(Tilt steering-equipped vehicle only)



R7SR00076-99999

- (3) Ensure that the radial ball bearing of the steering shaft exhibits no defect, such as abnormal binding.
If any defect is present, replace the radial ball bearing.

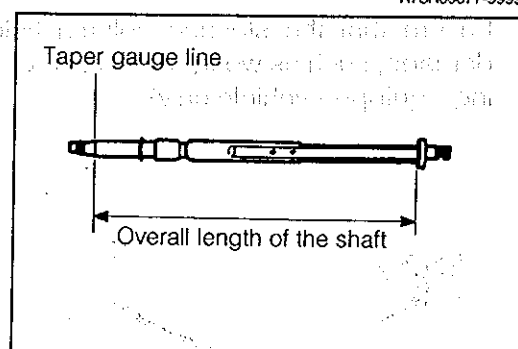


R7SR00077-99999

- (4) Ensure that the overall length of the steering shaft is within the specified value.

(Tilt steering-equipped vehicle only)

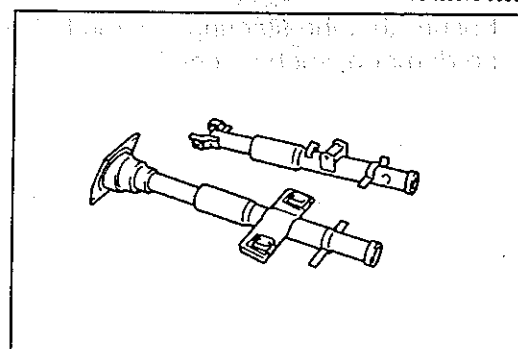
Specified Value: About 559.5 mm



R7SR00078-99999

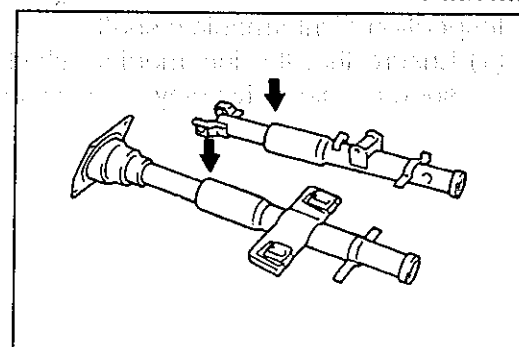
2. Steering column tube

- (1) Ensure that the steering column tube exhibits no damage, such as deformation, wear and cracks.



R7SR00079-99999

- (2) Ensure that no excessive play or looseness is present at the connecting section between the upper and lower sections of the steering column tube.
(Tilt steering-equipped vehicle only.)



R7SR00080-99999

SR-26

- (3) Ensure that the overall length of the steering column tube is within the specified value. (Tilt steering-equipped vehicle only)

Specified Value:

Standard Type: About 313 mm^{*1}

Tilt Steering Type: About 559 mm^{*2}

NOTE:

*1 Dimension between centers of bolt holes

*2 Dimension between the center of the hole at column hole cover and the bearing end section

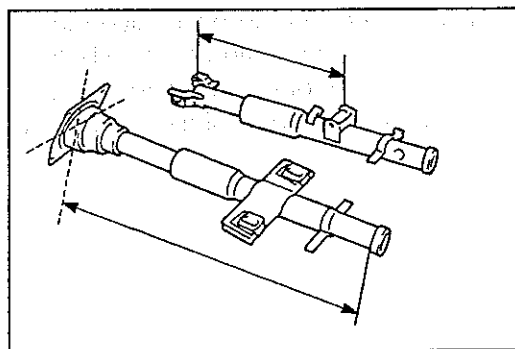
- (4) Ensure that the radial ball bearing assembled in the steering column tube exhibits no defect, such as abnormal binding.
If any defect is present, replace the steering column tube.

3. Ensure that the steering column hole cover exhibits no damage, such as wear, cracks and deformation. (Tilt steering-equipped vehicle only)

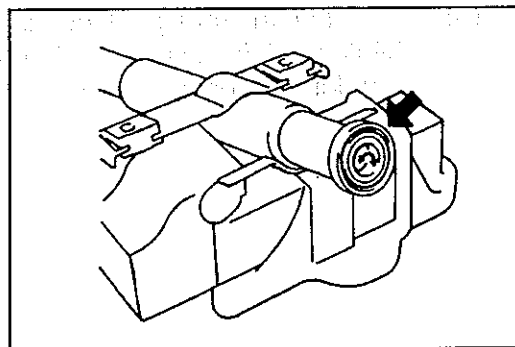
4. Ensure that the steering column hole cover shield exhibits no damage, such as cracks.

5. Inspection of intermediate shaft

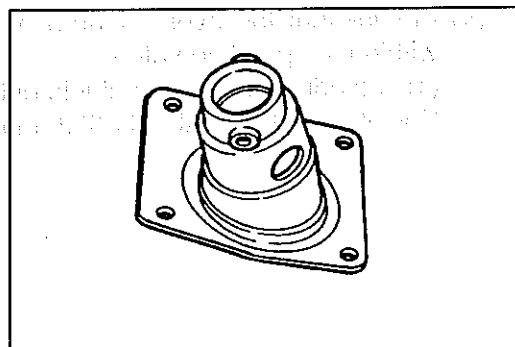
- (1) Ensure that the intermediate shaft exhibits no defect, such as excessive play at the spline section.



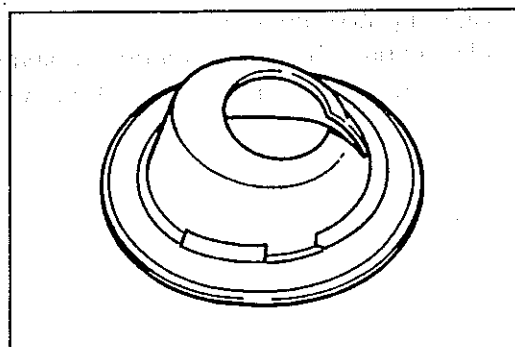
R7SR00081-99999



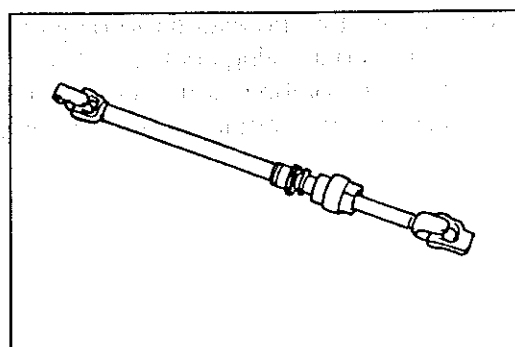
R7SR00082-99999



R7SR00083-99999

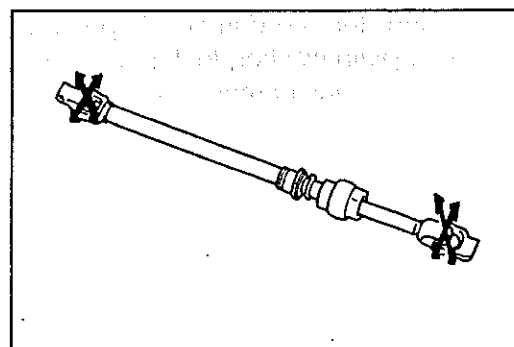


R7SR00084-99999



R7SR00085-99999

- (2) Ensure that the intermediate shaft exhibits no defect, such as excessive play at the joint section of the universal joint.



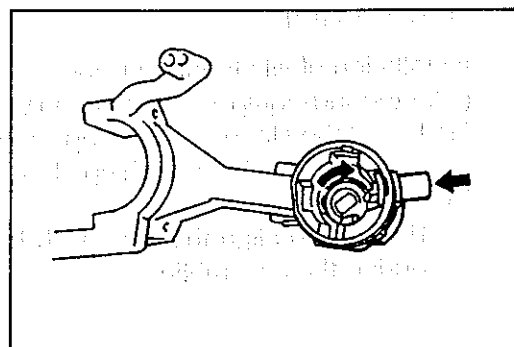
R7SR00086-99999

6. Inspection of steering column upper bracket

- (1) While holding the pushbutton, turn the cam inside the steering column upper bracket, using a standard screwdriver, until the cam assumes the positional relationship as indicated in the right figure.

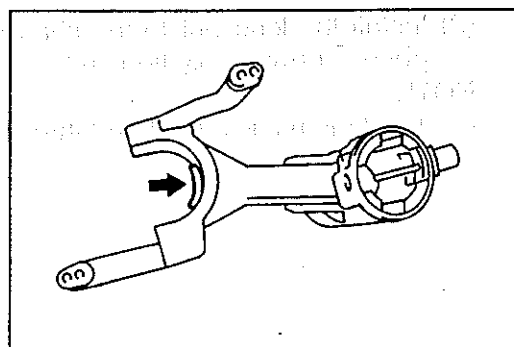
NOTE:

- Do not pull out the cam.



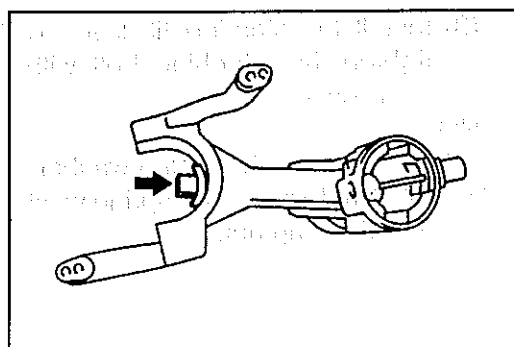
R7SR00087-99999

- (2) Ensure that the pawl of the steering lock is not protruded under the condition (1).



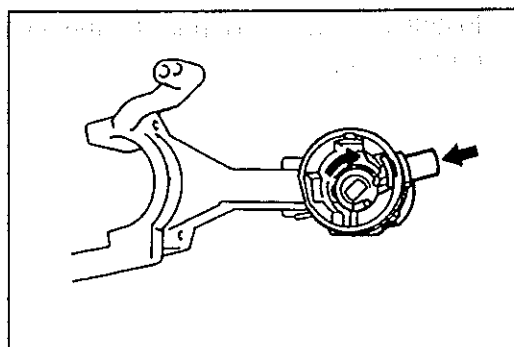
R7SR00088-99999

- (3) Under the condition (1), push the pushbutton. Ensure that the pawl for steering shaft lock jumps out.



R7SR00089-99999

- (4) Return the steering column upper bracket to the condition (1).



R7SR00090-99999

SR-28

7. Ensure that no damage is present at the tilt steering support, plain washer, lock nut and steering tilt lever. Replace any damaged part.

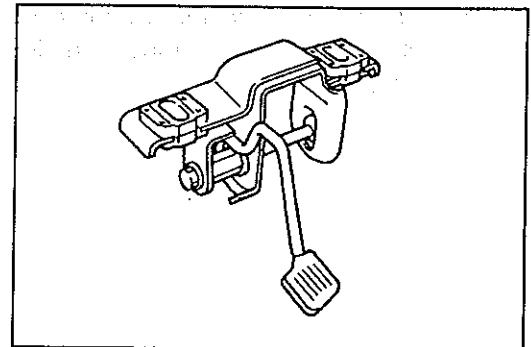
INSTALLATION

1. Installation of tilt steering support
(Tilt steering-equipped vehicle only)

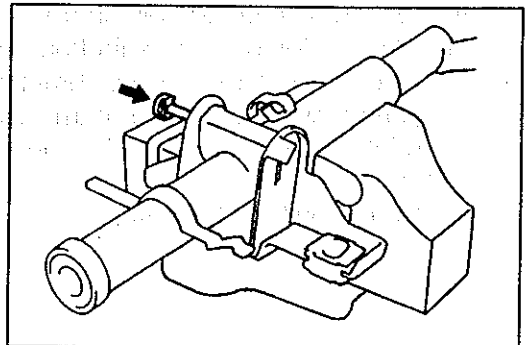
(1) Install the steering shaft support to the steering column tube through the attaching shaft.

NOTE:

- Be sure to align the shaft with the column tube groove during the assembling.



R7SR00091-99999

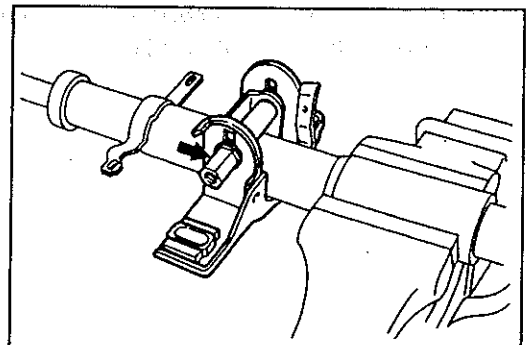


R7SR00092-99999

(2) Install the long nut to the shaft with the washer interposed. Temporarily tighten the long nut.

NOTE:

- The long nut is a left-hand threaded nut.

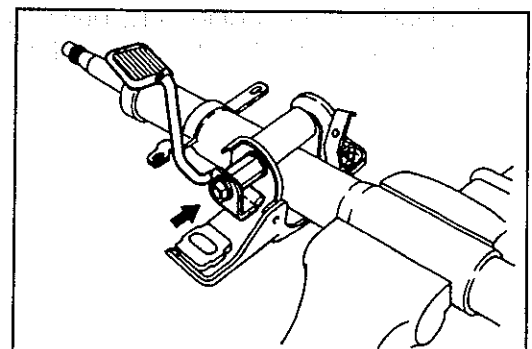


R7SR00093-99999

(3) Install the steering tilt lever to the shaft. Temporarily tighten the attaching bolt with a new spring washer interposed.

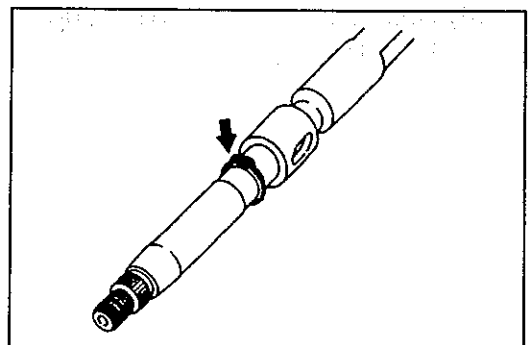
NOTE:

- Never reuse the spring washer.
- Be sure to insert the spring washer between the tilt lever and the long nut.



R7SR00094-99999

2. Install a new snap ring to the steering shaft (if it was removed.)



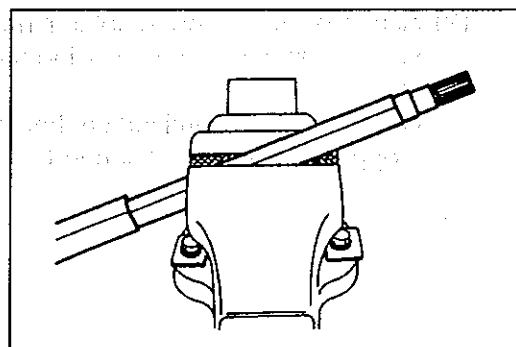
R7SR00095-99999

3. Assembling of radial ball bearing (Only when it was removed)

(1) Clamp the steering shaft lower shaft in a vice or the like.

NOTE:

- Never clamp the steering shaft upper shaft.



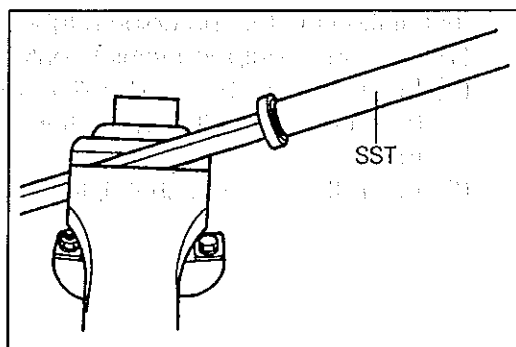
R7SR00096-99999

(2) Press a new radial ball bearing into the steering shaft, using the handle section of the following SST.

SST: 09648-87201-000

NOTE:

- When pressing the radial ball bearing, be sure to drive the inner race. Never apply force to the outer race and bearing cover, etc.

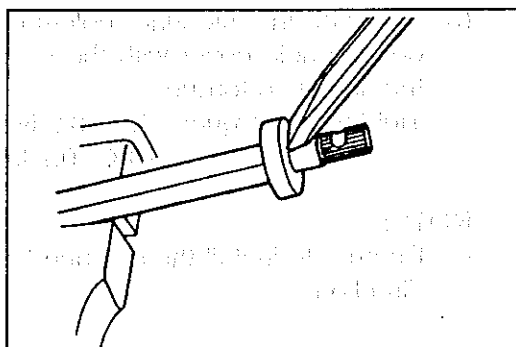


R7SR00097-99999

(3) To prevent the steering shaft radial ball bearing from dropping, lightly prevent the steering shaft from turning with a chisel. At this time, be careful not to deform the steering shaft.

NOTE:

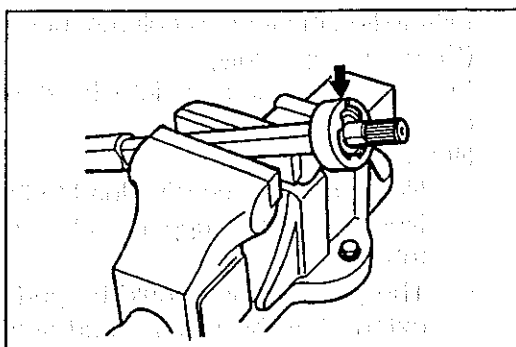
- Be very careful not to bent the steering shaft.



R7SR00098-99999

4. Install the steering shaft thrust stopper to the radial ball bearing.

5. Apply a thin film of Sunper[®] 150 to the steering shaft thrust stopper surface.



R7SR00099-99999

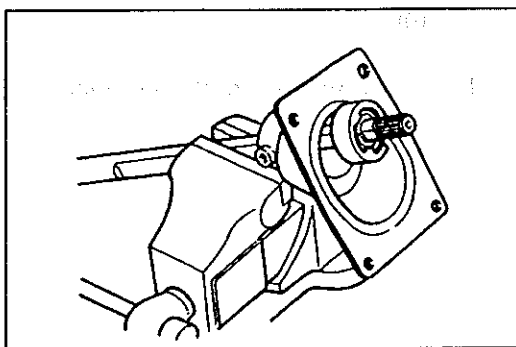
6. Installation of steering column hole cover

(Tilt steering-equipped vehicle only)

(1) With the steering column hole cover passed through the steering shaft, clamp the steering shaft lower shaft in a vice.

NOTE:

- Never clamp the steering shaft upper shaft (hollow shaft) in a vice.



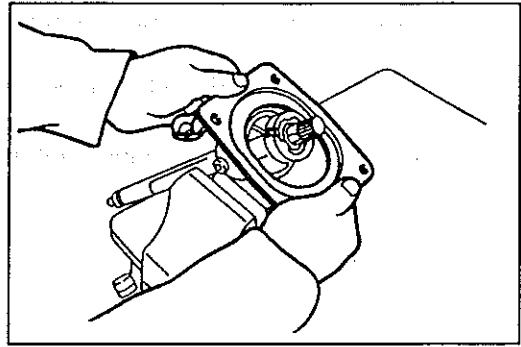
R7SR00100-99999

SR-30

- (2) Assemble the steering column hole cover to the steering shaft thrust stopper by pulling the cover.

NOTE:

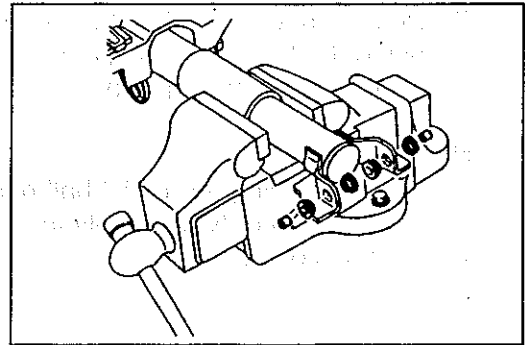
- Care must be exercised so that the steering shaft thrust stopper may not be detached.



R7SR00101-99999

7. Installation of steering column tube
(Tilt steering-equipped vehicle only)

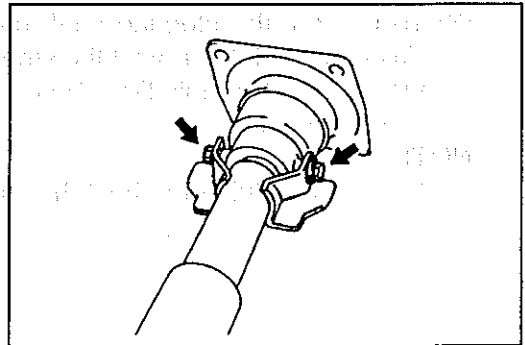
- (1) Install the bushes and collars on the steering column hole cover installation section of the steering column tube.
- (2) Insert the steering shaft into the steering column tube.



R7SR00102-99999

- (3) Connect the steering column tube to the steering column hole cover with the bolts. Tighten the bolts to the specified torque.

Tightening Torque: 3.9 - 6.9 N·m
(0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)



R7SR00103-99999

NOTE:

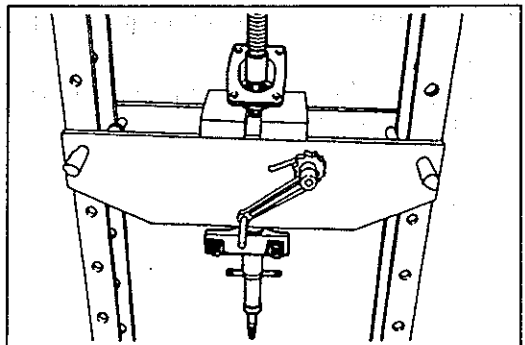
- Be sure to install the steering hole cover in the correct direction.

8. Installation of steering column tube
(Standard type only)

Press the steering shaft into the steering column by means of a hydraulic press.

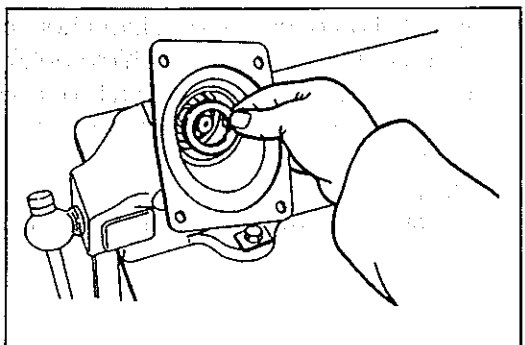
NOTE:

- Never apply excessive load to the steering shaft.
- Never hold the upper section of the steering column tube.
- The press-fitting should be performed only to such an extent that the washer and snap ring now can be installed. Do not press the steering shaft further beyond this.



R7SR00104-99999

9. Insert the washer at the steering column hole side.

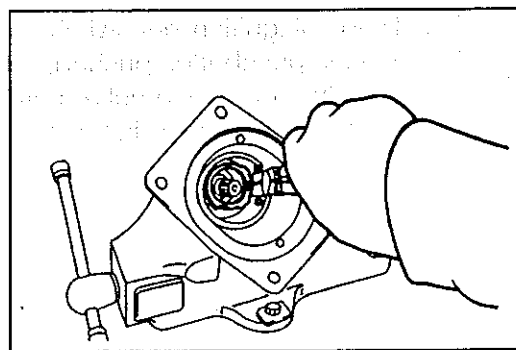


R7SR00105-99999

10. Attach a new snap ring.

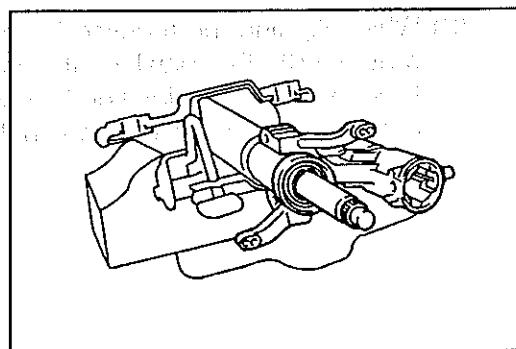
NOTE:

- Make sure that the snap ring is fitted in the snap ring groove of the steering column tube or steering column hole cover.



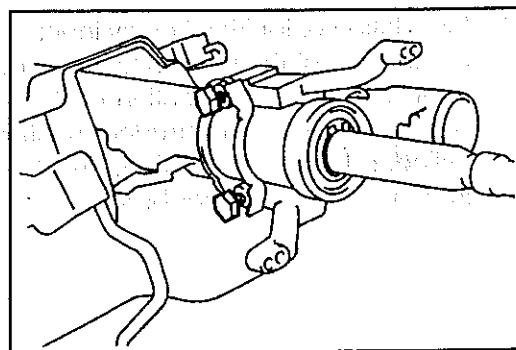
R7SR00106-99999

11. Install the new shaft snap ring.
12. Install the steering column upper bracket to the steering column tube, while aligning it with the hole of the pawl for steering column tube locking use.



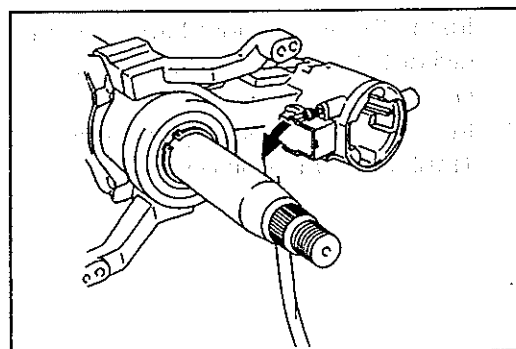
R7SR00107-99999

13. Install the steering column housing. Connect the steering column upper bracket with the steering column by attaching a new bolt.
14. Tighten the attaching bolts evenly, until the hexagonal section of the bolts are broken.



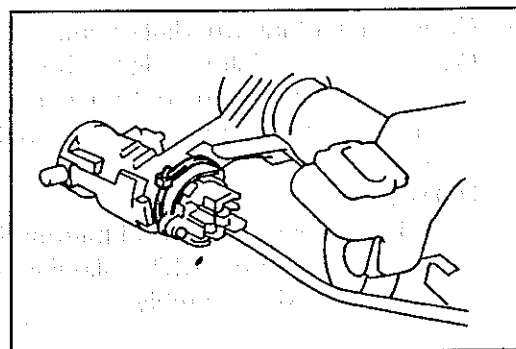
R7SR00108-99999

15. Installation of key reminder switch
(Key reminder switch equipped vehicle only)
- (1) Insert the key reminder switch into the installation section of the steering column upper bracket. Hook the key reminder switch to the pawl of the steering column upper bracket.
- (2) Tighten the attaching screw.



R7SR00109-99999

- (3) Install the harness to the steering column upper bracket with a clamp band.

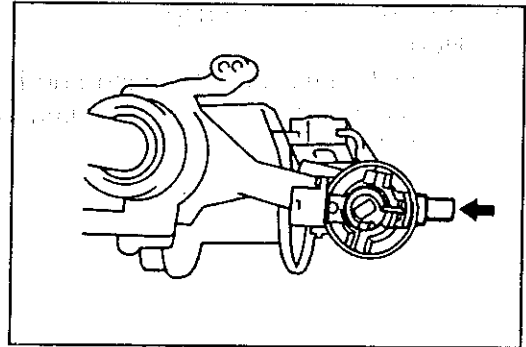


R7SR00110-99999

SR-32

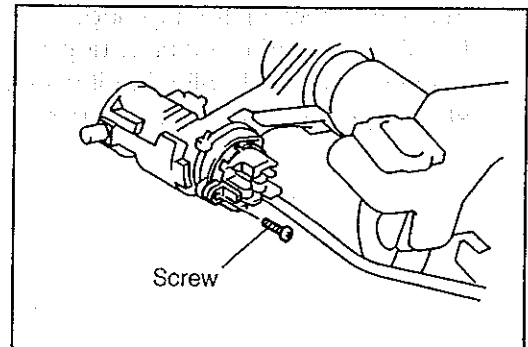
16. Installation of ignition key switch

- (1) With the pushbutton pushed, turn the shaft of the steering column upper bracket until the shaft assumes the position as indicated in the right figure.



R7SR00111-99999

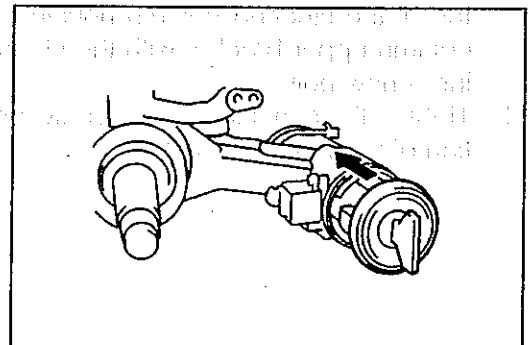
- (2) While aligning the recessed section of the ignition key switch with the pawl of the steering column upper bracket, insert the ignition key switch into the steering column upper bracket. Tighten the attaching screw.



R7SR00112-99999

17. Installation of ignition key cylinder

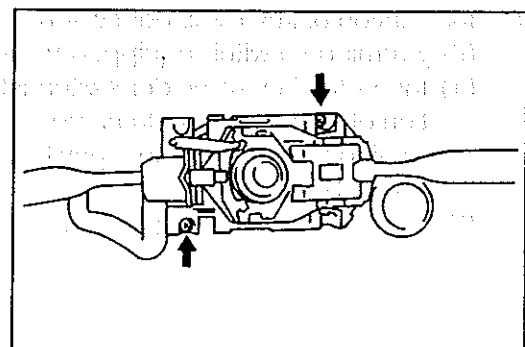
Set the key of the ignition key cylinder to the ACC position. Align the recessed section of the steering column upper bracket with the protruded section of the ignition key cylinder. Under this setting, insert the ignition key cylinder into the steering upper bracket.



R7SR00113-99999

18. Install the turn signal lamp switch assembly (combination switch) to the steering column. Tighten the attaching screws.

19. Install the steering column cover to the steering column. Tighten the attaching screws.



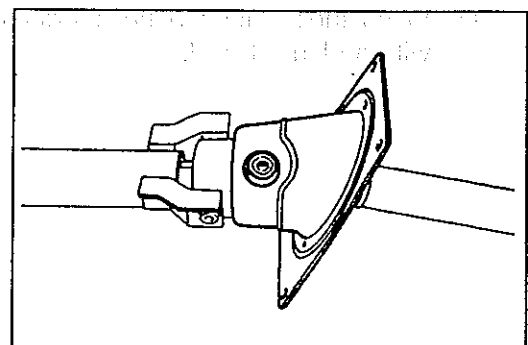
R7SR00114-99999

20. Connection of intermediate shaft

- (1) Connect the intermediate shaft to the steering shaft in such a way that the cut-out section of the steering shaft may be aligned with the bolt hole of the intermediate shaft.

NOTE:

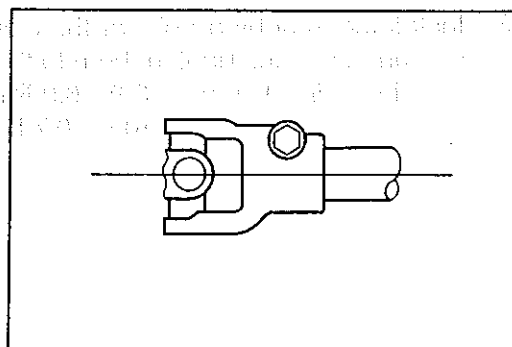
- If the steering shaft and intermediate shaft are reused, assemble them, while aligning the mating mark put during the disassembly.



R7SR00115-99999

NOTE:

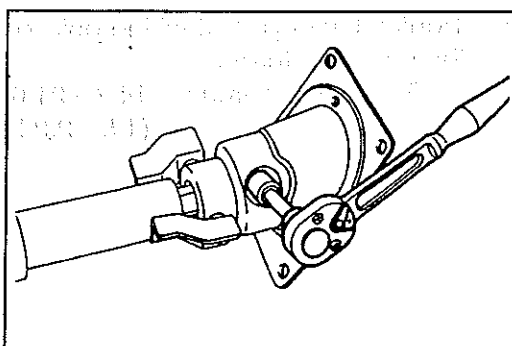
- Be sure to positively connect the universal joint to the serration section as far as it will go, until the serration section of the steering shaft becomes invisible from the universal joint edge surface of the intermediate shaft.



R7SR00116-99999

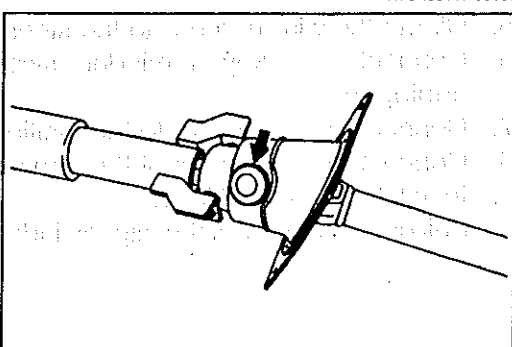
- (2) Insert the attaching bolts and tighten them to the specified torque.

Tightening Torque: 24.5 - 34.3 N·m
(2.5 - 3.5 kgf-m, 18.1 - 25.3 ft-lb)



R7SR00117-99999

- (3) Install the hole plug.

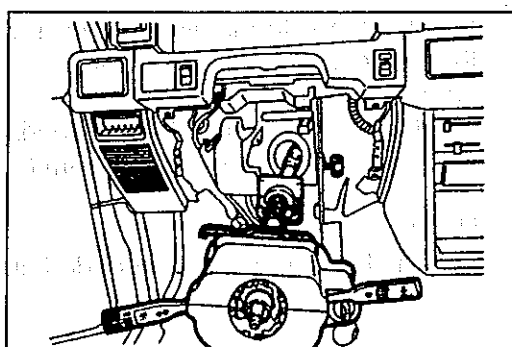


R7SR00118-99999

21. Insert the steering column assembly together with the intermediate shaft.

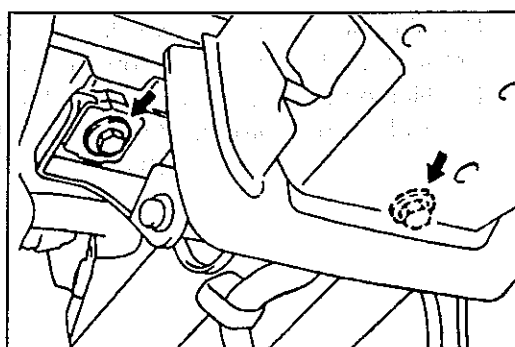
NOTE:

- Care must be exercised so that the intermediate shaft may not interfere with other parts.



R7SR00119-99999

22. Install the steering column to the upper installation section. Temporarily tighten the attaching bolts.

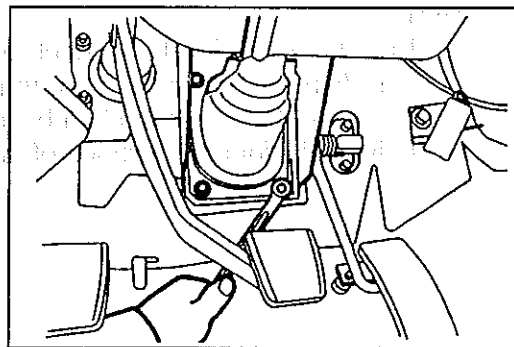


R7SR00120-99999

SR-34

23. Install the attaching bolts at the column cover side of the steering column. Tighten them to the specified torque.

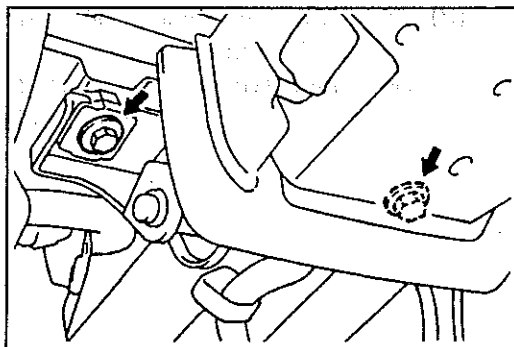
Tightening Torque: 3.9 - 6.9 N·m
(0.4 - 0.7 kgf-m, 2.9 - 5.1 ft-lb)



R7SR00121-99999

24. Tighten the upper attaching bolts of the steering column to the specified torque.

Tightening Torque: 14.7 - 21.6 N·m
(1.5 - 2.2 kgf-m, 10.8 - 15.9 ft-lb)



R7SR00122-99999

25. Clamp the wire harness to the steering column.
26. Connect the key reminder switch connector (if so equipped).
27. Connect the connector to the ignition switch.
28. Connect the connector of the turn signal switch.
29. Install the air duct No. 1.
30. Pull out the center of the clip, as indicated in the right figure.

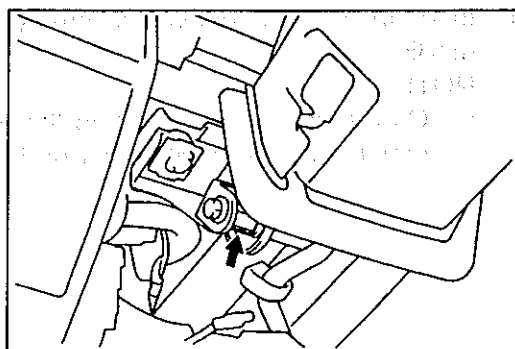
R7SR00123-00000

31. Install the clip to the air duct No. 1. Push down the shaft at the clip central section until it becomes flush with the clip surface. Then, lock the clip.

32. Tighten the long nut of the tilt steering support.
Tightening Torque: 12.7 N·m (1.3 kgf-m, 9.4 ft-lb)

NOTE:

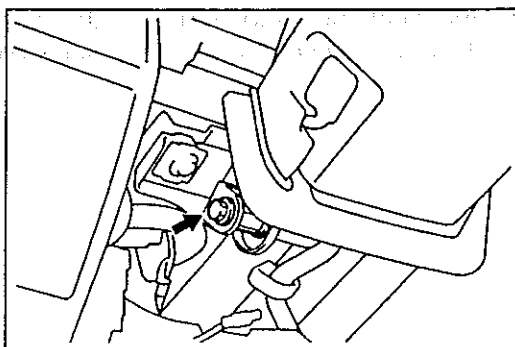
- The long nut is a left-threaded nut.



R7SR00124-99999

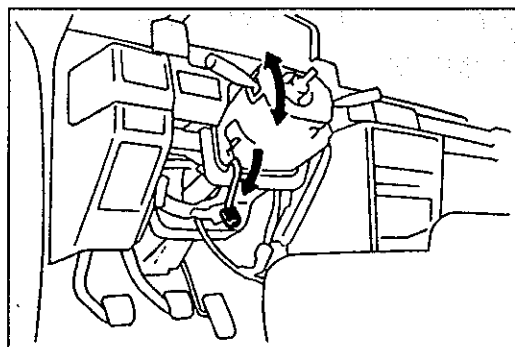
33. Set the tilt steering lever to the upper position. While preventing the lever from turning with the long nut, tighten the tilt steering lever attaching bolt to the specified torque.

Tightening Torque: 29.4 - 49.0 N·m
(3.0 - 4.5 kgf-m, 21.7 - 36.2 ft-lb)



R7SR00125-99999

34. Ensure that the steering column is secured.
If not, adjust the tightening torque, as instructed in the step 34.
35. Lower the tilt steering lever. Ensure that the steering tilt function operates properly.
If not, loosen the tilt steering lever attaching bolt while preventing the long nut from turning. Adjust the tightening torque of the long nut and repeat the operations from the step 34.

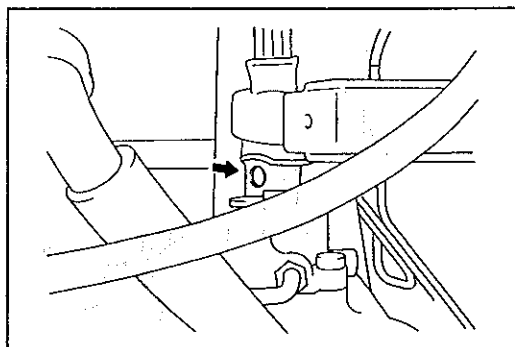


R7SR00126-99999

36. Install the instrument panel reinforcement subassembly.
37. Install the instrument panel finish panel No. 1.
38. Connect the intermediate shaft to the steering gear housing, while aligning the cut-out section of the steering gear housing shaft with the bolt hole of the intermediate shaft.

NOTE:

- If the steering shaft and intermediate shaft are reused, assemble them, while aligning the mating mark put during the disassembly.

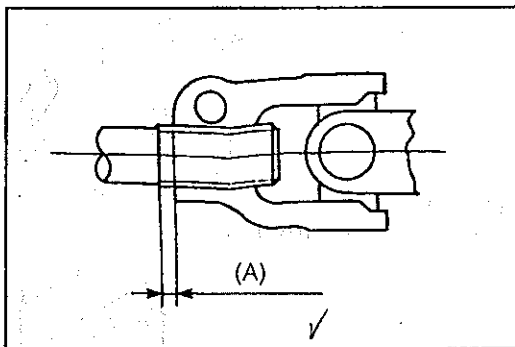


R7SR00127-99999

NOTE:

- Be sure to positively connect the universal joint to the serration section as far as it will go, until the serration section of the shaft at the steering gear box side becomes invisible from the universal joint edge surface of the intermediate shaft.

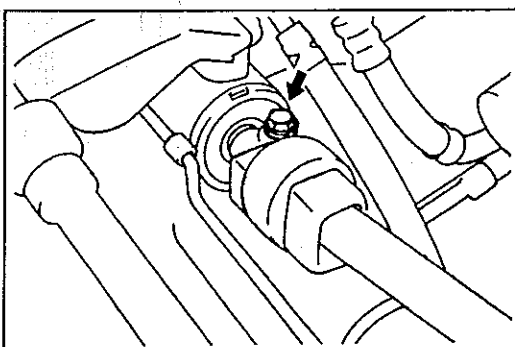
Specified Value (A): 0 - 3 mm



R7SR00128-99999

39. Tighten the bolts which connect the intermediate shaft to the steering gear housing to the specified torque.

Tightening Torque: 24.5 - 34.3 N·m
(2.5 - 3.5 kgf-m, 18.1 - 25.3 ft-lb)



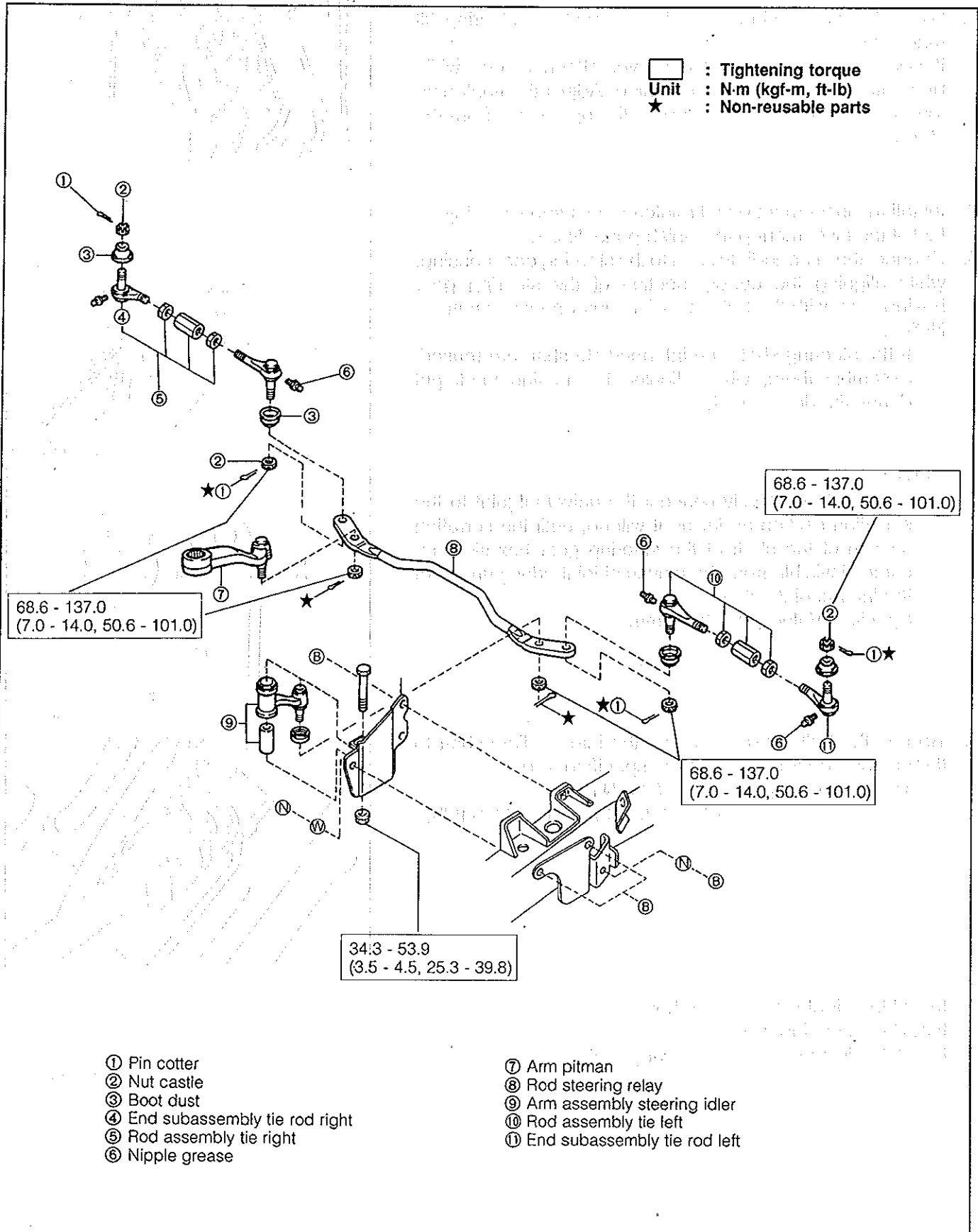
R7SR00129-99999

40. Install the air cleaner and air hose.
41. Install the steering wheel.
42. Install the instrument panel lower panel.

R7SR00130-00000

SR-36

STEERING LINKAGE COMPONENTS



PRELIMINARY CHECK ITEMS

- Ensure that the all tire have the same, designated size and that they are made by the same manufacture.
Designated Tire: 215R15 100Q, 255/70R15 108Q, 6.00-16-6 (LIBLUG), 6.00-16-4 (SAND), 215/80R15 100Q and H78-15

NOTE:

- The tire inflation pressure should be checked under the unloaded state and when the tires are cold.

R7SR00132-00000

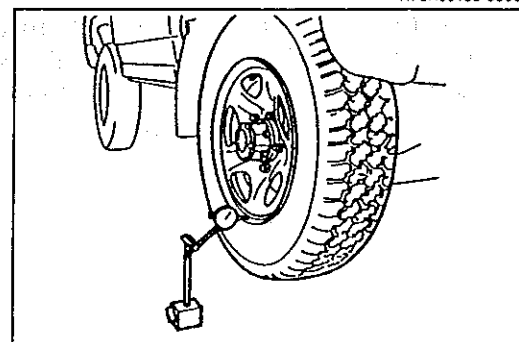
Unit: kPa (kgf/cm²)

			European and France	General	Australian	G.C.C
215R15 100Q (H78-15 100P for spare tyre)	Unloaded	Front	200 (2.0)	200 (2.0)	200 (2.0)	—
		Rear	180 (1.8)	180 (1.8)	180 (1.8)	—
	Loaded	Front	200 (2.0)	200 (2.0)	200 (2.0)	—
		Rear	180 (1.8)	180 (1.8)	180 (1.8)	—
255/70R15 108Q	Unloaded	Front	200 (2.0)	200 (2.0)	200 (2.0)	—
		Rear	180 (1.8)	180 (1.8)	180 (1.8)	—
	Loaded	Front	200 (2.0)	200 (2.0)	200 (2.0)	—
		Rear	180 (1.8)	180 (1.8)	180 (1.8)	—
6.00-16-6 (LIBLUG)	Unloaded	Front	—	180 (1.8)	—	—
		Rear	—	240 (2.4)	—	—
	Loaded	Front	—	180 (1.8)	—	—
		Rear	—	325 (3.25)	—	—
6.00-16-4 (SAND)	Unloaded (ON ROAD)	Front	—	—	—	160 (1.6)
		Rear	—	—	—	210 (2.1)
	Loaded (ON SAND)	Front	—	—	—	110 (1.1)
		Rear	—	—	—	130 (1.3)
215/80R15 100Q	Unloaded	Front	—	—	—	200 (2.0)
		Rear	—	—	—	180 (1.8)
	Loaded	Front	—	—	—	200 (2.0)
		Rear	—	—	—	180 (1.8)
Tire air inflation pressure caution label affixing position			Lower part of front door striker at driver's seat side		Inside of glove compartment	Lower part of front door striker at driver's seat side

R7SR00133-00000

- Check the disc wheel for runout, using a dial gauge.
Allowable Limit: Not to exceed 1.5 mm

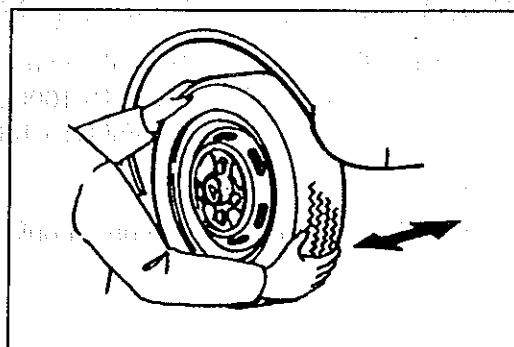
- Check the tire for runout, using a dial gauge.
Radial Runout: Not to exceed 1.4 mm
Lateral Runout: Not to exceed 2.0 mm



R7SR00134-99999

SR-38

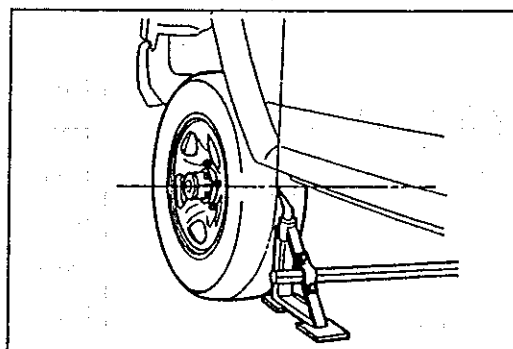
2. Check the suspension-related sections for bolt and nut tightness.
3. Check that no excessive clearance on the ball joint on while rocking the vehicle body.



R7SR00135-99999

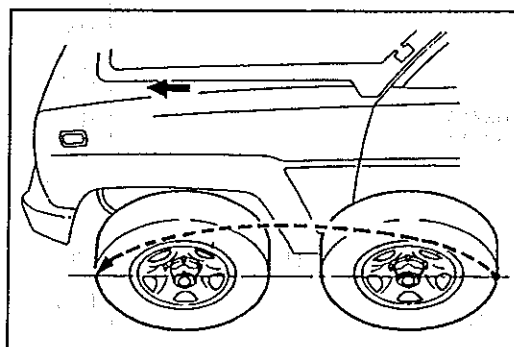
TOE-IN CHECK

1. Move the vehicle forward so that the front wheel becomes straight.
2. Apply a toe-in gauge to the center point of the height that the rear side of each front wheel of the vehicle.
3. Mark the thread center at the rear side of each front tire.



R7SR00136-99999

4. Move the vehicle slowly until the front wheels turn 180 degrees.

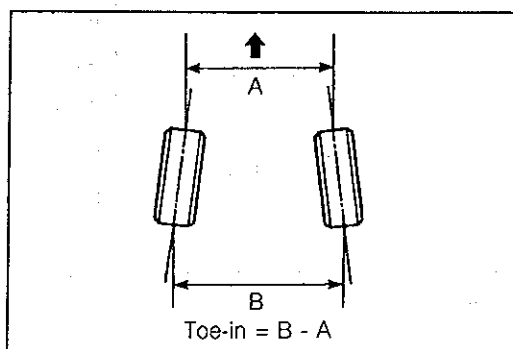


R7SR00137-99999

5. Measure the distance between the marks at the front side of each front wheel.

Determine the toe-in amount by calculating the difference.

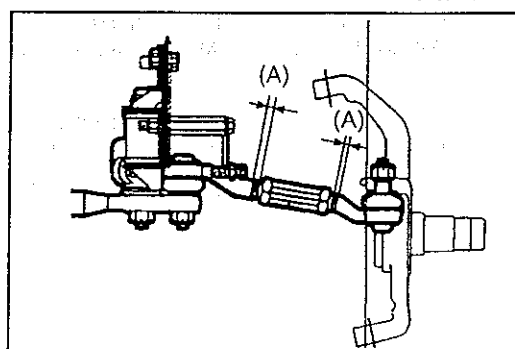
Specified Value: 2 ± 1 mm



R7SR00138-99999

6. If the toe-in amount fails to conform to the specification, adjust the tie-rod length by turning the tie-rod tube the same amount at the right and left sides to the specification (A).

Specified Value: 6^{+3}_{-2} mm

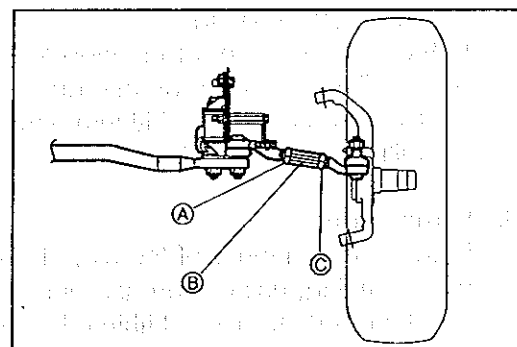


R7SR00139-99999

TIE-ROD ADJUSTING NUT TIGHTENING PROCEDURE

1. Turn the tie-rod by turning the nut A, with a wrench applied to the section B.
2. Tighten the tie-rod by turning the nut C, with a wrench applied to the section B.

Tightening Torque: 118.0 - 167.0 N·m
(12.0 - 17.0 kgf-m,
87.0 - 123.0 ft-lb)



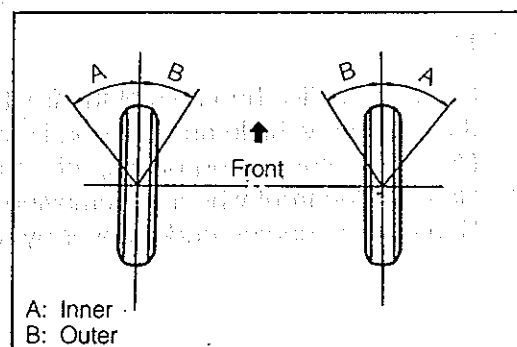
R7SR00140-99999

CHECK OF STEERING WHEEL TURNING ANGLE

1. Place the wheel on the turning radius gauge and check the wheel turning angle.

Specified Value:

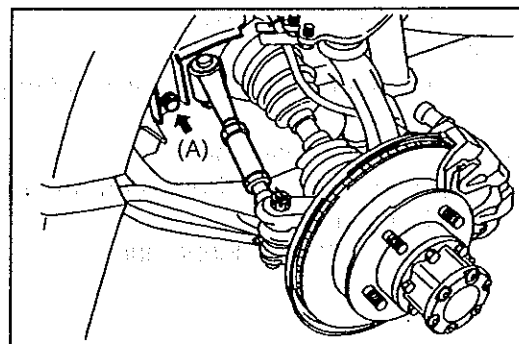
Mounted steering	Inner turning angle (A)	Outer turning angle (B)
Power	32° 20' $\pm$ 3°	28° 35'
Standard	30° 35' $\pm$ 3°	27°



R7SR00141-99999

2. If the measured turning angle fails to conform to the specifications, adjust the wheel turning angle by means of the stopper bolt (A).

Stopper Bolt Lock Nut Tightening Torque:
14.7 - 34.3 N·m (1.5 - 3.5 kgf-m, 10.8 - 25.3 ft-lb)

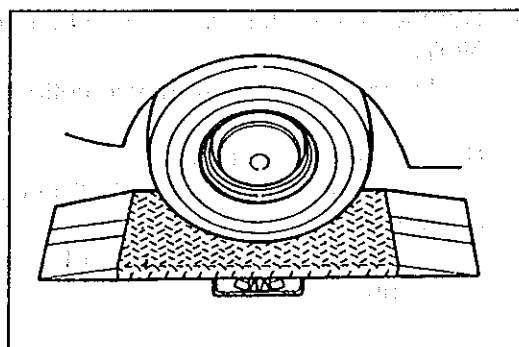


R7SR00142-99999

SIDE SLIP CHECK

1. Check the side slip, using a side slip tester.

Specified Value: Within 3 mm per meter

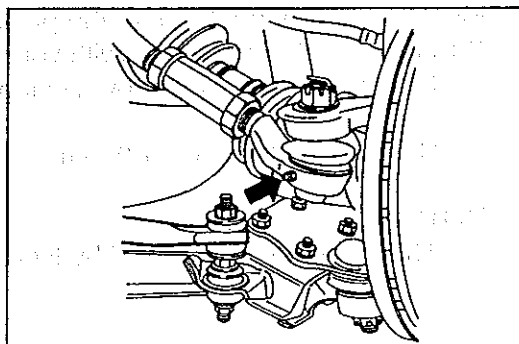


R7SR00143-99999

GREASE LUBRICATION

1.
 - (1) Clean the grease fitting of the tie-rod end.
 - (2) Ensure that the grease fitting of the tie-rod end. Exhibits no damage. If any damage is present, replace the damaged grease fitting.

Specified Grease: Lithium-based MP grease
Filling Amount: 10 grams (New parts is installed)



R7SR00144-99999

SR-40

2. Steering relay rod side

In the same manner of the step 1, Fill the grease from the grease fitting, using a grease gun.

Specified Grease: Lithium-based MP grease

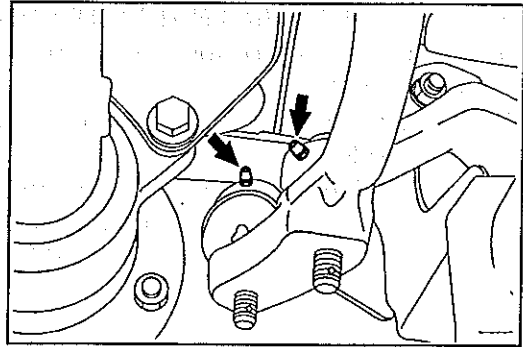
Filling Amount: 15 grams (New parts is installed)

3. Pitman arm

In the same manner of the step 1, Fill the grease from the grease fitting, using a grease gun.

Specified Grease: Lithium-based MP grease

Filling Amount: 15 grams (New parts is installed)



R7SR00145-99999

REMOVAL

1. Slacken the five hub nuts of the front wheel.
2. Jack up the vehicle and support its with safety stands.
(As for the supporting points, refer to FS or RS section.)
3. Remove the front wheel by removing the five hub nuts.
4. Remove the engine ender cover by removing the 11 bolts.

R7SR00146-00000

5. Remove the cotter pin.

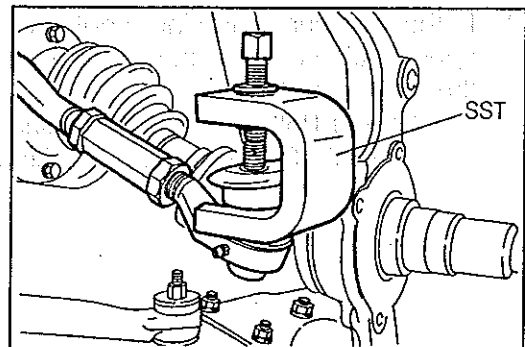
NOTE:

- Do not reuse the removed cotter pin.

6. Remove the castle nut.

7. Separate the tie-rod end from the steering knuckle, using the following SST.

SST: 09611-36020-000



R7SR00147-99999

8. Remove the cotter pins at the steering relay rod side.

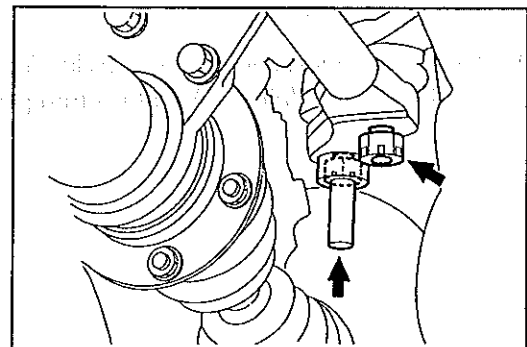
NOTE:

- Do not reuse the removed cotter pins.

9. Slacken the castle nuts.

10. Tap the front end of the stud ball, using the suitable bar and a hammer.

11. Remove the steering relay rod by removing the slackend castle nut.



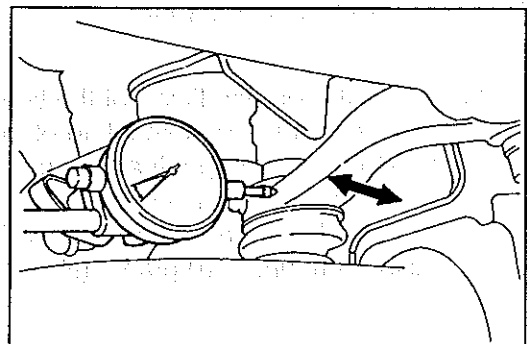
R7SR00148-99999

12. Measurement of backlash of the pitman arm

(1) Hold the steering wheel with your hands to lock them.

(2) Measure the backlash by moving the front end of the pitman arm.

Specified Value: 0 - 1.0 mm



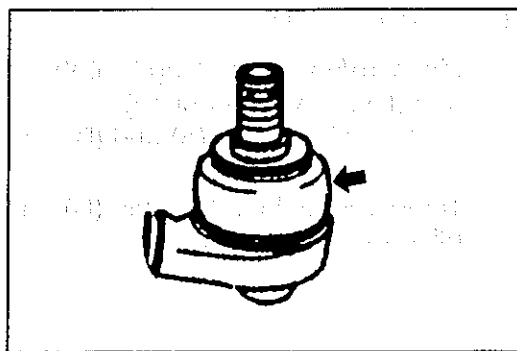
R7SR00149-99999

NOTE:

- This operation is required by two persons.

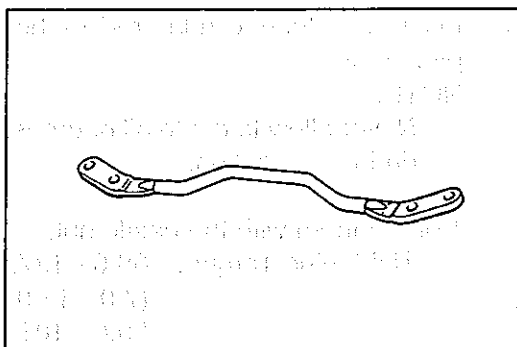
INSPECTION

1. Ensure that no damage is present on the dust cover such as cracks or rupture.



R7SR00150-99999

2. Ensure that no damage is present on the steering relay rod such as cracks or deformation.



R7SR00151-99999

3. Measurement of starting torque of the stud ball

- (1) Fill new lithium-based MP grease from the grease fitting section, until the present grease oozes (Only as required).

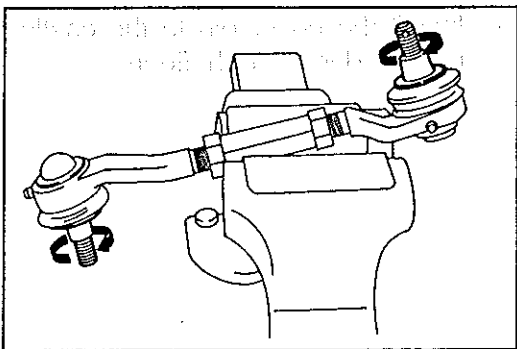
Filling Amount: 15 grams

- (2) Rotate the stud ball several times so as to lubricate around the inside of ball seat.

- (3) Measure the starting torque of the stud ball, using the push-pull gauge or the like.

Specified Value: 1.96 - 4.41 N·m (20 - 40 kgf·cm)

Specified rotational angle: More than 23.5°



R7SR00152-99999

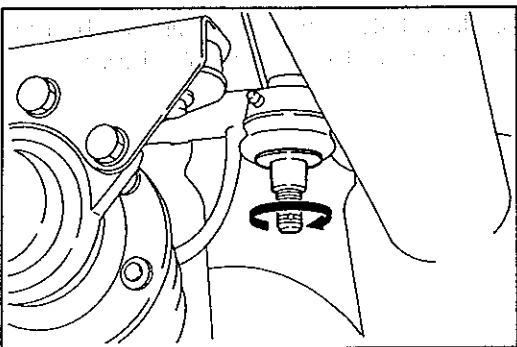
NOTE

- If the starting torque is exceed than specification above, replace the tie-rod end subassembly.

4. In the same manner of above step 3. measure the starting torque of the pitman arm.

Specified Value: 1.96 - 4.4 N·m (20 - 40 kgf·cm)

Specified Rotational Angle: More than 17°



R7SR00153-99999

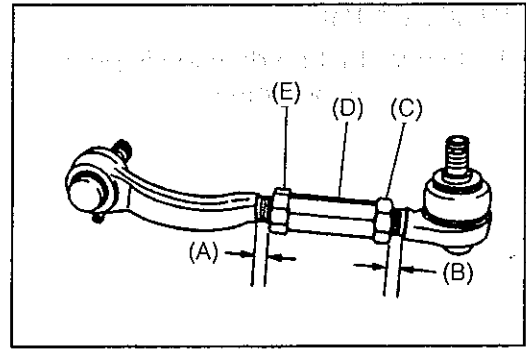
SR-42

INSTALLATION

1. Measure/adjust the length of the tie-rod end between (A) and (B) (Only as required).

Specified Value (A) and (B): 6^{+3}_{-2} mm

2. Temporary tighten the nuts (C) and (E) with a wrench applied to the tube (D).

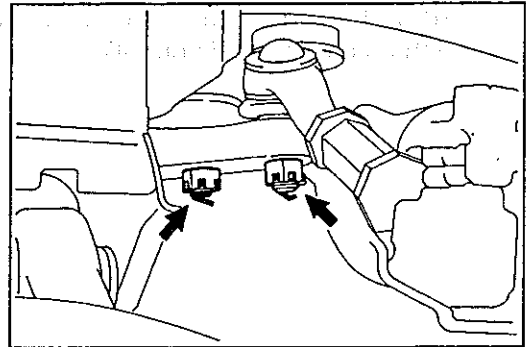


R7SR00154-99999

3. Insert the steering relay rod to the tapered section of the pitman arm.

NOTE:

- Never allow to get to oil or grease to the tapered section during installation.

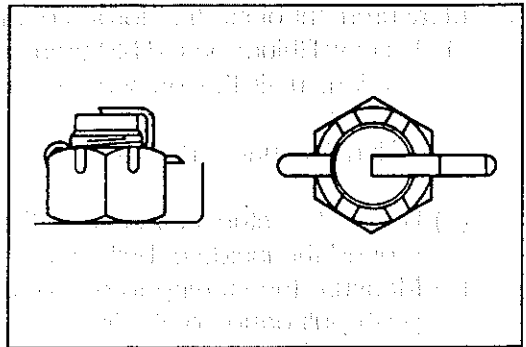


R7SR00155-99999

4. Tighten them with the castle nut.

Tightening Torque: 68.6 - 137.0 N·m
(7.0 - 14.0 kgf-m,
50.6 - 101.0 ft-lb)

5. Install the cotter pin to the castle nut. Bend the legs as indicated in the right figure.

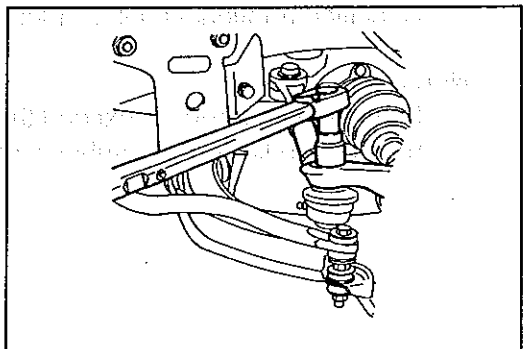


R7SR00156-99999

6. Install the tie-rod end to the steering relay rod and steering knuckle side.

NOTE:

- Never allow to get to oil or grease to the tapered section during installation.

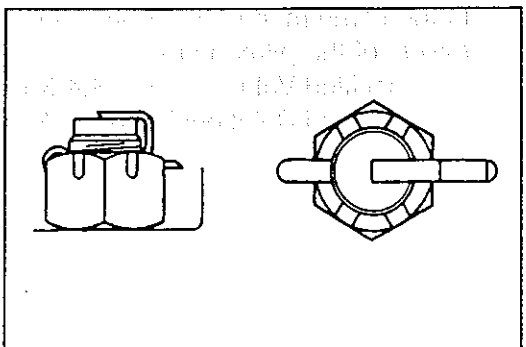


R7SR00157-99999

7. Tighten them with the castle nuts.

Tightening Torque: 68.6 - 137.0 N·m
(7.0 - 14.0 kgf-m,
50.6 - 101.0 ft-lb)

8. Install the new cotter pins to the castle nuts. Bend the legs as indicated in the right figures.



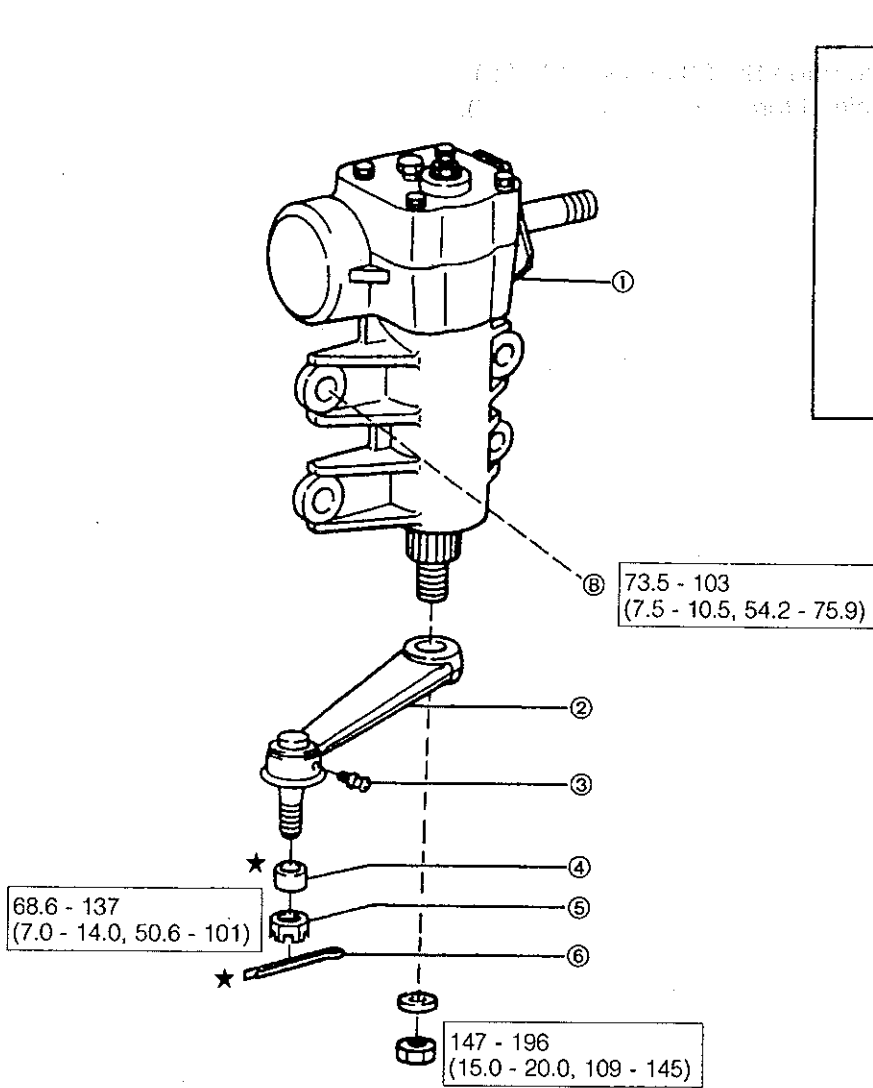
R7SR00158-99999

9. Tighten the engine under cover with the 11 bolts
Tightening Torque: 15.7 - 23.5 N·m (1.6 - 2.4 kgf-m, 11.6 - 17.4 ft-lb)
10. Tighten the front wheel with the five hub nuts.
Tightening Torque: 88.3 - 118.0 N·m (9.0 - 12.0 kgf-m, 65.1 - 87.0 ft-lb)
11. Jack down the vehicle
12. Check the side slip and toe-in (See page SR-38 through SR-39).
13. Tighten the tie-rod end to the specified torque (See page SR-42).

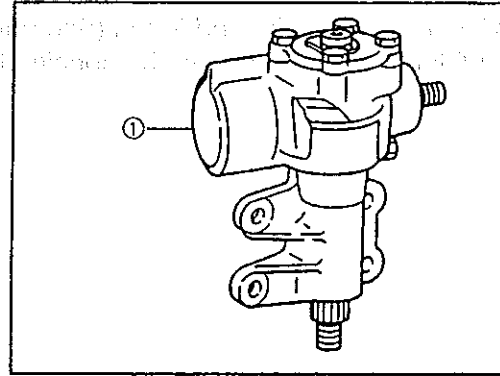
R7SR00159-00000

SR-44

STEERING GEAR HOUSING COMPONENTS



Power steering



□ : Tightening torque
Unit : N·m (kgf-m, ft-lb)
★ : Non-reusable parts

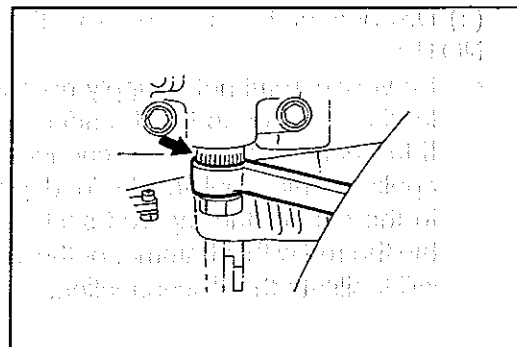
- ① Steering gear housing assembly
- ② Pitman arm subassembly
- ③ Grease fitting

- ④ Steering link joint seal
- ⑤ Castle nut
- ⑥ Cotter pin

IN-VEHICLE INSPECTION

1. Ensure that the connecting section of the pitman arm and steering gear housing exhibits no damage, such as excessive play and looseness.

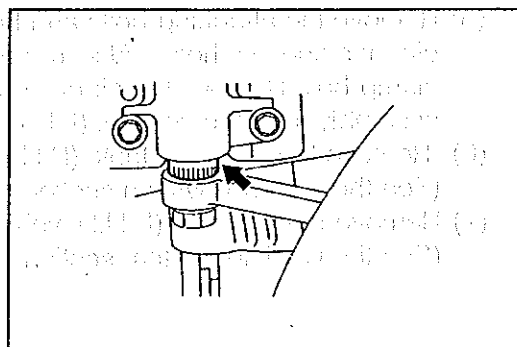
If any damage is present, check the tightening torque of the nuts and perform retightenings, as required and/or replace damaged parts.



R7SR00161-99999

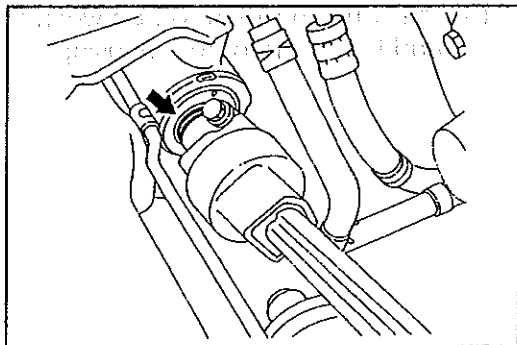
2. Ensure that no excessive play, etc. is present between the steering gear housing and the cross shaft.

If excessive play, etc. is present, replace the steering gear housing assembly.



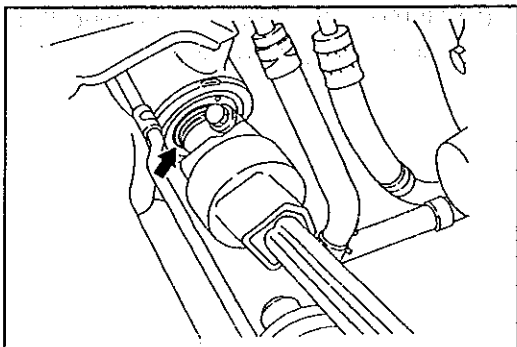
R7SR00162-99999

3. Ensure that the connecting section of the steering shaft of the steering gear housing and the intermediate shaft exhibits no damage, such as excessive play and looseness. If any damage is present, perform retightenings or replace damaged parts.



R7SR00163-99999

4. Ensure that no damage, such as excessive play, is present between the steering gear housing and the steering shaft. If any damage is present, replace the steering gear housing assembly.

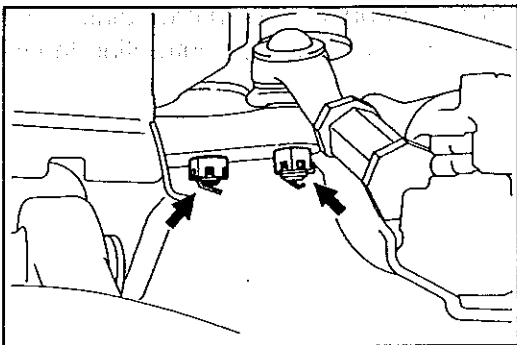


R7SR00164-99999

5. Check of total preload of steering gear housing
 - (1) Jack up the vehicle and support it with safety stands.
 - (2) Pull out the cotter pin from the nut which connects the relay rod with the pitman arm.
 - (3) Loosen the castle nut.

NOTE:

- The castle nut should be loosened two or three threads.



R7SR00165-99999

SR-46

- (4) Disconnect the relay rod from the pitman arm.

NOTE:

- Be very careful not to apply excessive load, which may lead to damage to the threaded portion and castle nut.
- If the parts will not be disconnected even when load is applied, while applying the load, put a suitable metal rod to the side of the tapered section of the relay rod and tap the rod with a hammer or the like to give impact. This will facilitate the disconnection.

R7SR00166-00000

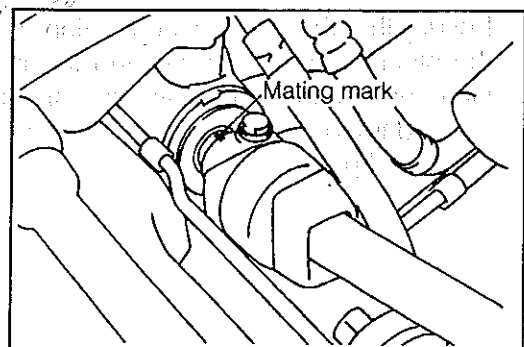
- (5) Remove the attaching bolts and hose bands for the air cleaner and air hose. Also remove the clutch cable clamp bolt. Remove the air cleaner and air hose as an assembly from the vehicle. (L.H.D. vehicle only)

- (6) Remove the reservoir tank. (R.H.D. vehicle only)
(See the Cooling System section.)

- (7) Remove the radiator. (R.H.D. vehicle only)
(See the Cooling System section.)

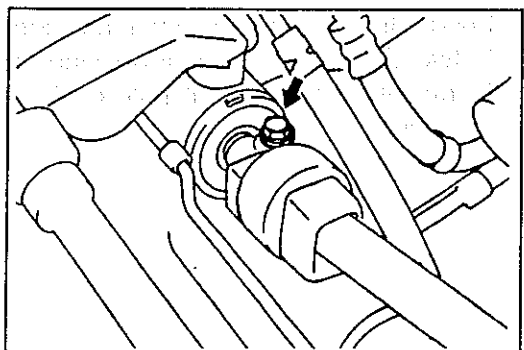
- (8) Put a mating mark on between the intermediate shaft and the steering gear housing.

R7SR00167-00000



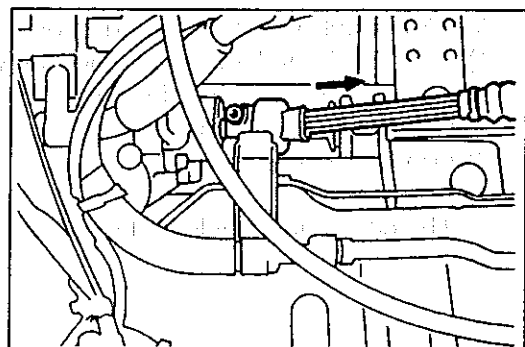
R7SR00168-99999

- (9) Remove the bolts connecting the intermediate shaft to the steering gear housing.



R7SR00169-99999

- (10) Disconnect the intermediate shaft from the steering gear housing by contracting the intermediate shaft.



R7SR00170-99999

- (11) Install the following SST to the steering shaft with small-sized torque wrench. Locate the center (center of gear meshing) of the rotation of the cross shaft by turning the steering shaft. Turn the steering shaft in such a way that the cross shaft assumes the center position. Keep the steering shaft in this position.
SST: 09616-00010-000

NOTE:

- At this time, the pitman arm becomes virtually parallel with the chassis.

- (12) Install a small-sized torque wrench to the SST. Turn the SST slowly about 90 degrees clockwise and counterclockwise. Ensure that the maximum torque during this operation is within the specified value.

Specified Pre-load

Standard Steering: 0.7 - 0.98 N·m
(7 - 10 kgf-cm,
6.1 - 8.7 inch-lb)

Power Steering: 0.6 - 0.9 N·m
(6 - 9.5 kgf-cm, 5.2 - 8.2 inch-lb)

If the maximum torque does not conform to the specified value, loosen the lock nut of the cross shaft adjusting screw. Then, adjust the preload to the specified value by means of the cross shaft adjusting screw. Tighten the lock nut to the specified torque.

Tightening Torque: 19.6 - 34.3 N·m
(2.0 - 3.5 kgf-m, 14.5 - 25.3 ft-lb)

NOTE:

- When tightening the lock nut, prevent the adjusting screw from turning.

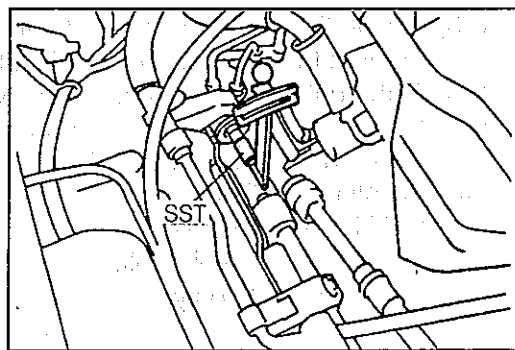
- (13) Remove the SST.

- (14) Connect the intermediate shaft in such a way that the shaft cut-out section of the steering gear housing may be aligned with the bolt hole or in such a way that the mating marks put during the removal may be aligned. Tighten the attaching bolts to the specified torque.

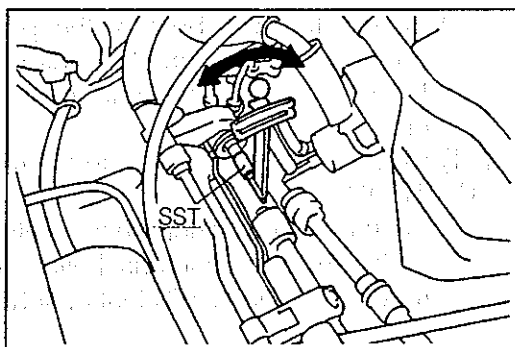
Tightening Torque: 24.5 - 34.3 N·m
(2.5 - 3.5 kgf-m, 18.1 - 25.3 ft-lb)

NOTE:

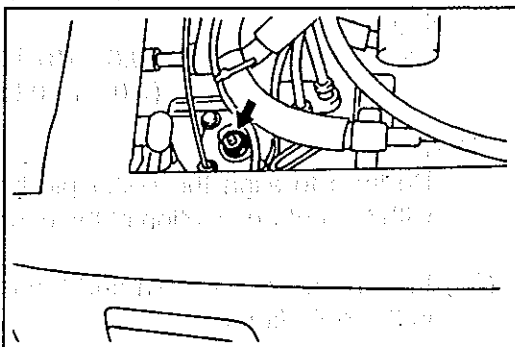
- Ensure that the steering wheel is installed in the correct direction.
- Be sure to positively connect the universal joint to the serration section as far as it will go, until the serration section of the steering shaft becomes invisible from the edge surface of the intermediate shaft.



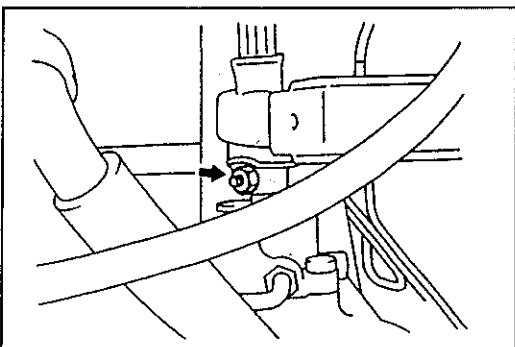
R7SR00171-99999



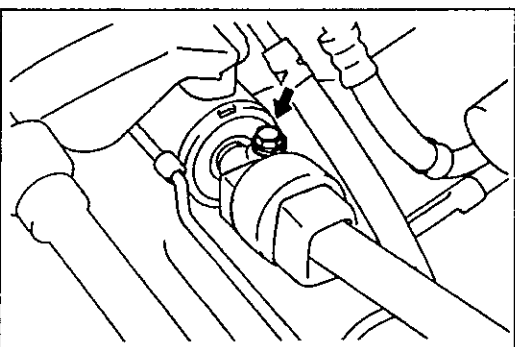
R7SR00172-99999



R7SR00173-99999



R7SR00174-99999



R7SR00175-99999

SR-48

- (15) Install the air cleaner and air hose to the vehicle.
Tighten the attaching bolts. (L.H.D. vehicle only)
- (16) Tighten the hose clamp. (L.H.D. vehicle only)
- (17) Install the clutch cable to the air cleaner by means of the clamp bolt. (L.H.D. vehicle only)
- (18) Install the radiator.
(R.H.D. vehicle only)
- (19) Install the reservoir tank.
(R.H.D. vehicle only)

- (20) Ensure that the boot of the pitman arm exhibits no damage, such as cracks and/or rupture.
If any damage is present, replace the boot with a new one.

- (21) Connect the pitman arm to the relay rod.

CAUTION:

- Ensure that no oil nor grease gets to the tapered section and/or threaded portions. Failure to observe this caution may cause the insufficient of tight.

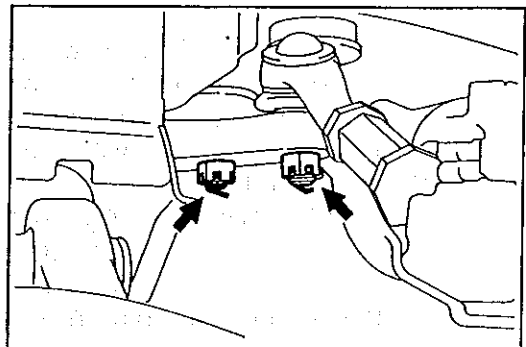
- (22) Install the castle nut and tighten it to the specified torque.

Tightening Torque: 68.6 - 137 N·m
(7.0 - 14.0 kgf-m, 50.6 - 101 ft-lb)

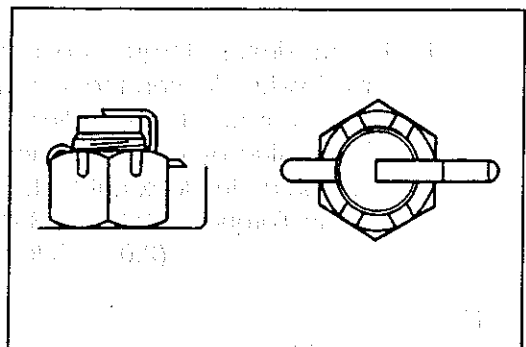
NOTE:

- Be sure to align the cotter pin hole of the pitman arm with the cut-out section of the castle nut after tightening.

- (23) Install a new cotter pin and bend its legs as indicated in the right figure.



R7SR00176-00000



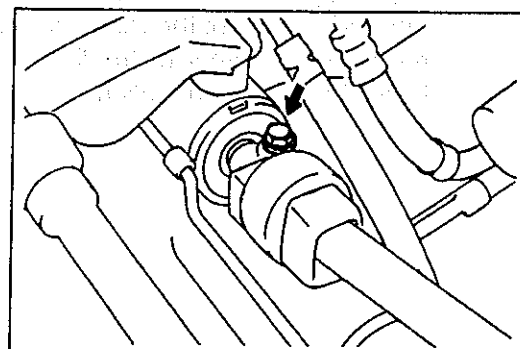
R7SR00178-99999

REMOVAL

1. Remove the air cleaner and air hose attaching bolts, hose bands and clutch cable clamp bolt. Remove the air cleaner and air hoses together from the vehicle.
2. Remove the reservoir tank. (R.H.D. vehicle only)
3. Remove the radiator. (R.H.D. vehicle only)
4. Remove the steering relay rod.

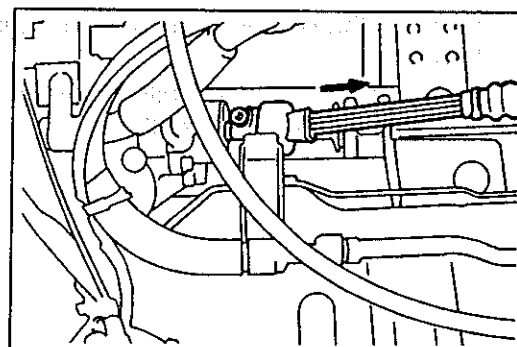
R7SR00179-00000

5. Remove the bolts connecting the intermediate shaft to the steering gear housing.



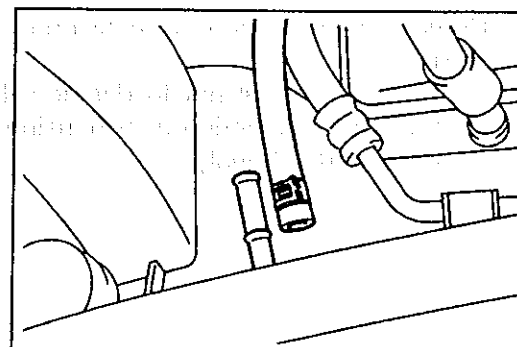
R7SR00180-99999

6. Disconnect the intermediate shaft from the steering gear housing by contracting the intermediate shaft.



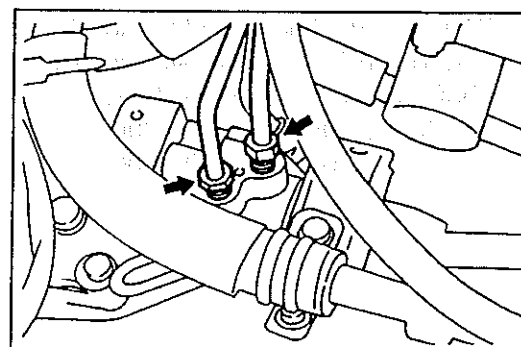
R7SR00181-99999

7. Draining of power steering oil
(Power steering-equipped vehicle only)
(As for the draining procedure, see page SR-10.)



R7SR00182-99999

8. Removal of pressure feed tube clamp
Detach the clamp by removing the screw.
(Power steering-equipped vehicle only)
9. Remove the pressure feed tube clamp bracket from the steering gear housing.
(Power steering-equipped vehicle only)
10. Remove the pressure feed tubes from the power steering gear housing.
(Power steering-equipped vehicle only)



R7SR00183-99999

SR-50

11. Remove the cotter pin.
12. Loosen the castle nut.

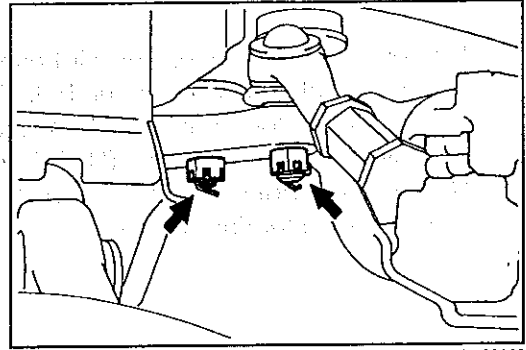
NOTE:

- Loosen the castle nut two or three threads.

13. Disconnect the pitman arm from the relay rod.

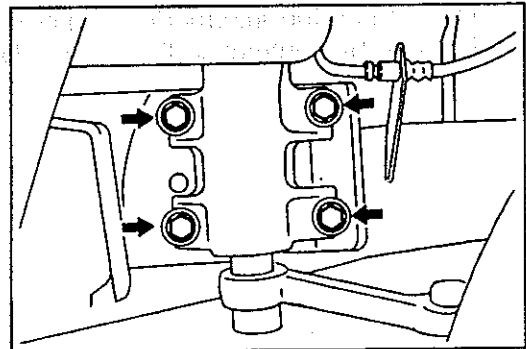
NOTE:

- Be careful not to apply excessive load during the removal.
- If the parts will not be disconnected even if the load is applied, put a suitable metal rod against the side of the tapered section of the relay rod and lightly tap the metal rod with a hammer or the like to give impact. This will facilitate the disconnection.



R7SR00184-99999

14. Remove the pitman arm attaching nut to the steering gear housing.
15. Loosen the attaching bolts and nuts for the steering gear housing evenly. Remove them.

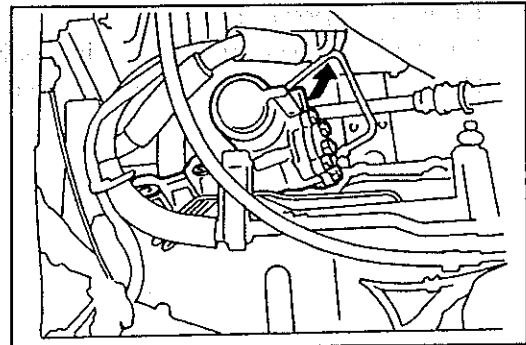


R7SR00185-99999

16. Remove the steering gear housing from the vehicle.

NOTE:

- Be very careful not to damage the brake pipe. Also, prevent the steering gear housing from interfering with other parts strongly.

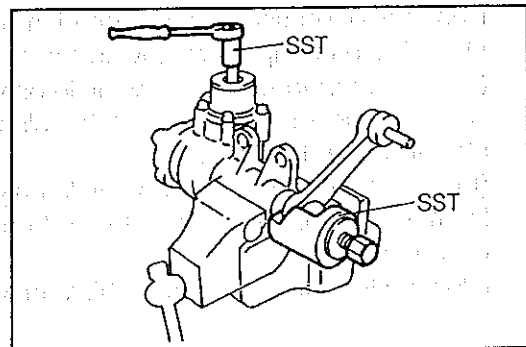


R7SR00186-99999

17. While preventing the steering shaft from turning with the SST given below, remove the pitman arm from the cross shaft, using the following SST.

SSTs: 09616-00010-000

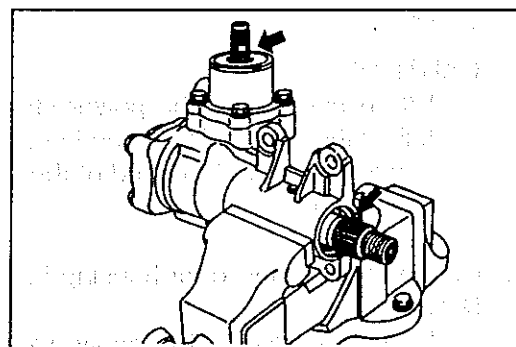
09610-87301-000



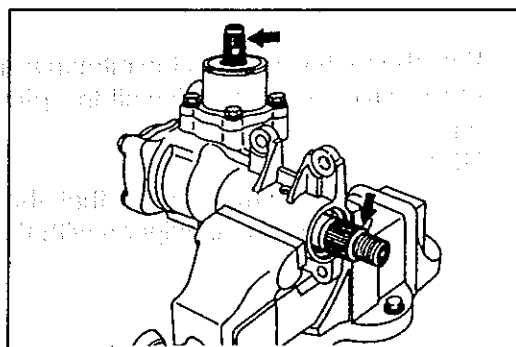
R7SR00187-99999

INSPECTION

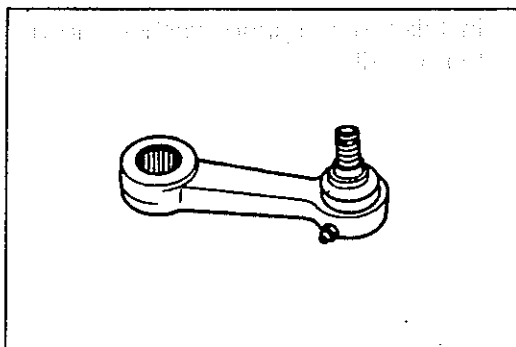
1. Ensure that no abnormal play is present between the cross shaft and the housing.
If abnormal play is present, replace the steering gear housing assembly.
2. Ensure that no excessive play is present between the steering shaft and the housing.
If excessive play is present, replace the steering gear housing.
3. Ensure that the steering gear housing assembly exhibits no damage, such as cracks and oil leakage.
If any damage is present, replace the steering gear housing assembly.
4. Ensure that no damage, such as cracks, wear and deformation, is present at the threaded portion and spline section of the steering gear housing assembly.
If any damage is present, replace the steering gear housing assembly.
5. Ensure that the pitman arm exhibits no damage, such as cracks and/or deformation.
6. Ensure that the ball joint section of the pitman arm exhibits no excessive play.
7. Ensure that no damage is present at the steering link joint seal of the pitman arm ball joint section.
If damage is present, replace the joint seal.



R7SR00188-99999

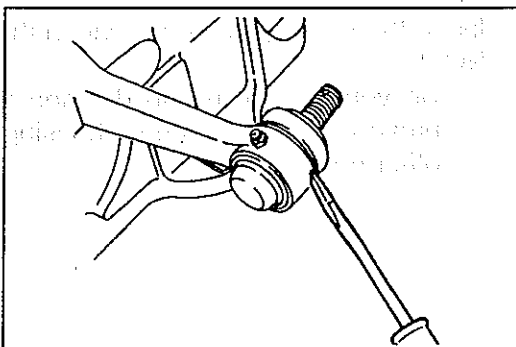


R7SR00189-99999



R7SR00190-99999

8. Replacement of steering link joint seal
(Only cases where such operation is necessary)
 - (1) Remove the steering link joint seal from the pitman arm with a chisel or the like.
 - (2) Remove the old grease.
 - (3) Install a new steering joint seal to the pitman arm.

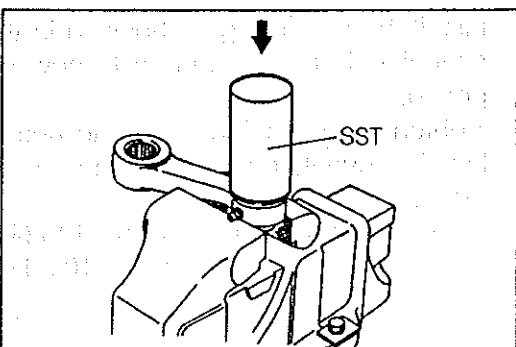


R7SR00191-99999

- (4) Install the following SST on the steering joint seal. Press the steering joint seal to the pitman arm by lightly tapping the SST with a hammer.
SST: 09608-87613-000

NOTE:

- Care must be exercised so that the steering joint seal may not be press-fitted in a tilted state.



R7SR00192-99999

SR-52

ASSEMBLY

CAUTION:

- When connecting the power steering tube, be sure to follow the connecting procedure. Failure to observe this caution may lead to bend of the power steering tube or oil leakage.

- Clamp the steering gear housing in a vice or the like.

NOTE:

- Be very careful not to apply excessive load during the assembly.

- With the mating mark of the pitman arm (A) aligned with that of the cross shaft (B), install the pitman arm to the cross shaft.

NOTE:

- At this time, make sure that the mating mark at the pitman arm side is aligned with that at the gear side.

- Install a new spring washer and a nut to the cross shaft temporarily.

- Insert the steering gear housing in the vehicle.

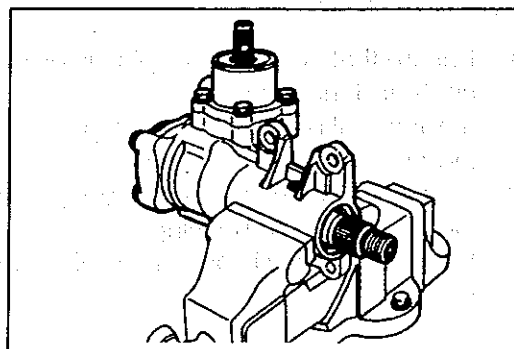
NOTE:

- Be very careful not to damage the brake pipe. Also, prevent the steering gear housing from interfering with other parts strongly.

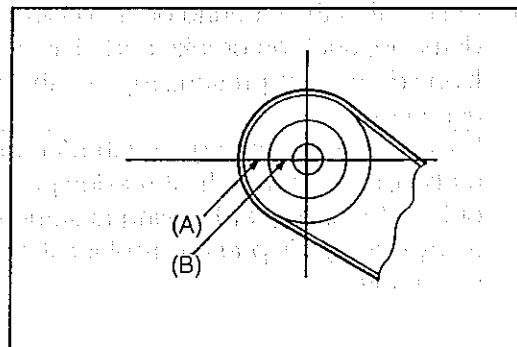
- Install the steering gear housing in the vehicle. Install the attaching bolts and nuts with new spring washers interposed.

- Tighten the attaching bolts and nuts of the steering gear housing evenly over two or three stages to the specified torque.

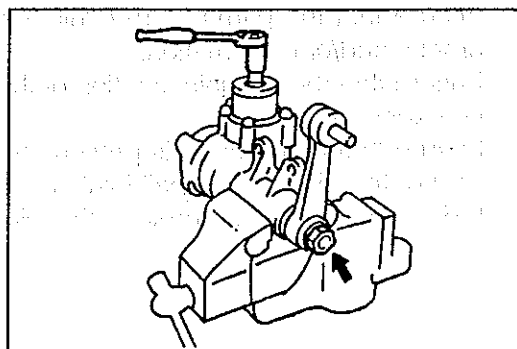
Tightening Torque: 73.5 - 103 N·m
(7.5 - 10.5 kgf-m, 54.2 - 75.9 ft-lb)



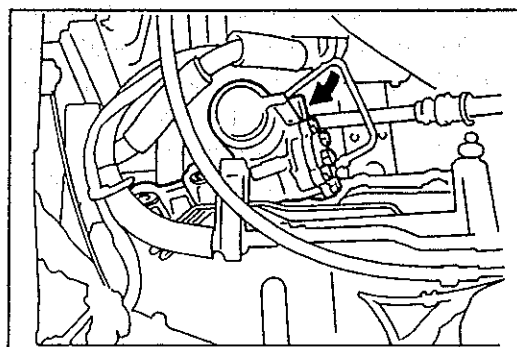
R7SR00193-99999



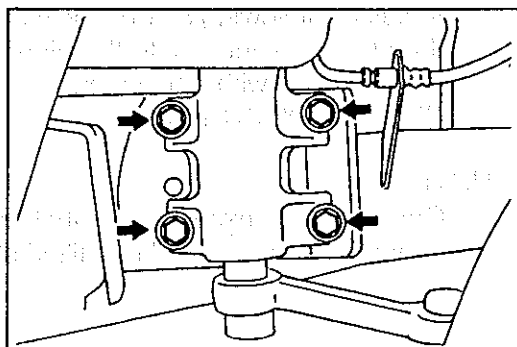
R7SR00194-99999



R7SR00195-99999



R7SR00196-99999



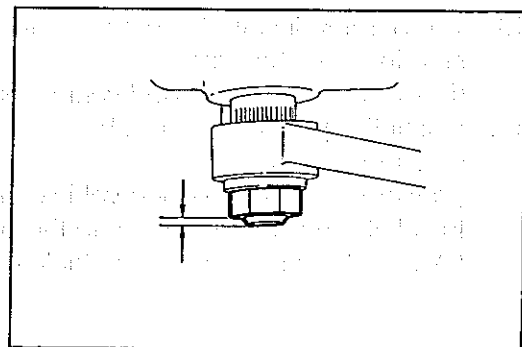
R7SR00197-99999

7. Tighten the pitman arm attaching nut to the specified torque.

Tightening Torque: 147 - 196 N·m
(15 - 20 kgf-m, 109 - 145 ft-lb)

8. After the pitman arm attaching nut has been tightened, ensure that the shaft is protruding from the nut edge surface by the specified amount given below.

Specified Amount: Less than 3.9 mm



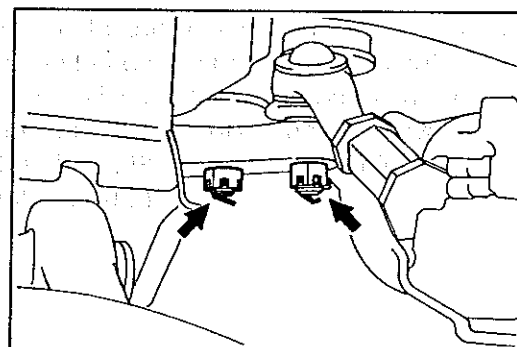
R7SR00198-99999

9. Connect the relay rod to the Pitman arm, and tighten the castle nut to the specified torque:

Tightening Torque: 68.6 - 137 N·m
(7.0 - 14 kgf-m, 50.6 - 101 ft-lb)

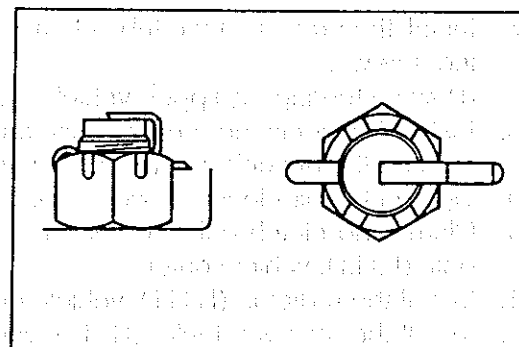
NOTE:

- At this time, align the recess in the castle nut with the hole in the Pitman arm ball joint.



R7SR00199-99999

10. Install the cotter pin to the castle nut. Bend the legs as indicated in the right figure.

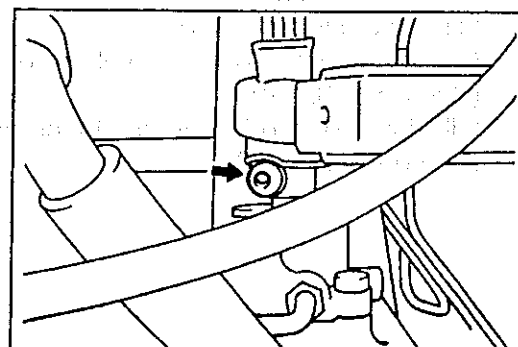


R7SR00200-99999

11. Connect the intermediate shaft onto the steering shaft in such a way that the cut-out section of the steering shaft may be aligned with the bolt hole of the intermediate shaft or in such a way that the mating marks put during the removal may be aligned.

NOTE:

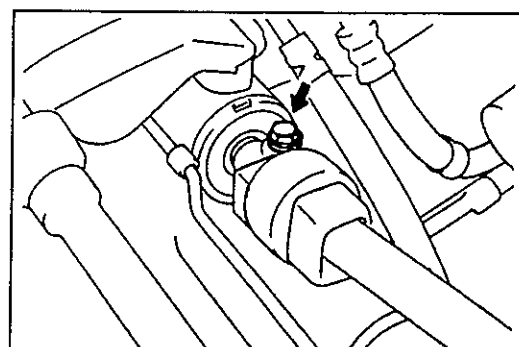
- Ensure that the tires are set to a straight-ahead condition and that the steering wheel assumes the normal straight-ahead position.
- Be sure to positively connect the universal joint to the serration section as far as it will go, until the serration section of the steering shaft becomes invisible from the edge surface of the intermediate shaft.



R7SR00201-99999

12. Insert the connecting bolts of the intermediate shaft and tighten them to the specified torque.

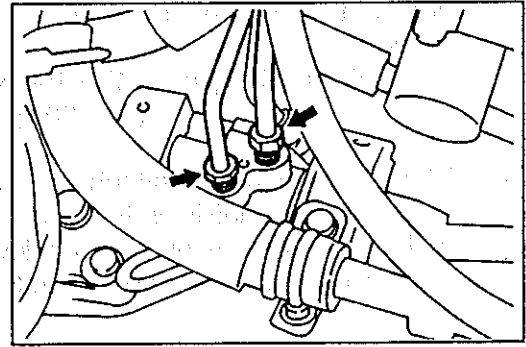
Tightening Torque: 24.5 - 34.3 N·m
(2.5 - 3.5 kgf-m, 18.1 - 25.3 ft-lb)



R7SR00202-99999

SR-54

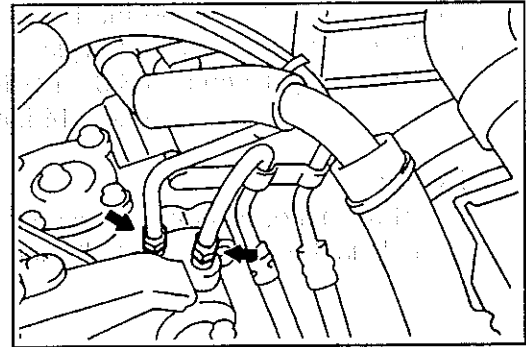
13. Temporarily install the pressure feed tubes to the power steering gear housing.
(Power steering-equipped vehicle only)
14. Install the pressure feed tube clamp bracket to the power steering gear housing.
(Power steering-equipped vehicle only)
15. Install the rubber grommets to the pressure feed tubes.
(Power steering-equipped vehicle only)



R7SR00203-99999

16. Tighten the flare nuts which attach the pressure feed tubes to the pressure feed tube bracket, until the installed rubber grommet section contacts with the pressure feed tube.
(Power steering-equipped vehicle only)

Tightening Torque: 39.2 - 49.0 N·m
(4.0 - 5.0 kgf-m, 28.9 - 36.2 ft-lb)

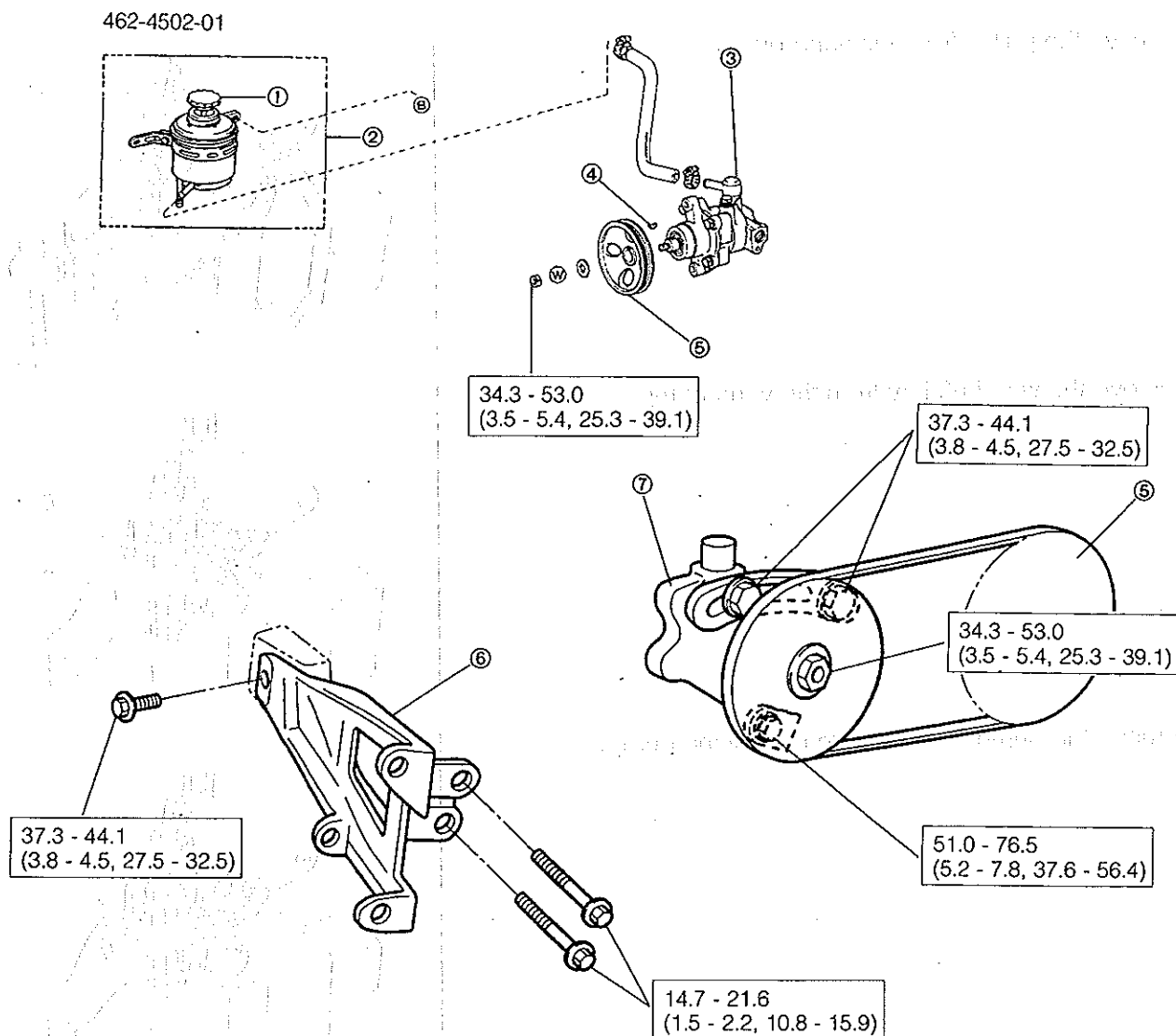


R7SR00204-99999

17. Install the pressure feed tube clamp and tighten the attaching screws.
(Power steering-equipped vehicle only)
18. Install the air cleaner and air hose assembly to the vehicle.
Tighten the attaching bolts. (L.H.D. vehicle only)
19. Tighten the air cleaner hose band. (L.H.D. vehicle only)
20. Clamp the clutch cable to the air cleaner with the clamp bolt. (L.H.D. vehicle only)
21. Install the radiator. (R.H.D. vehicle only)
22. Install the reservoir tank. (R.H.D. vehicle only)
23. Install the steering relay rod.
24. Fill power steering fluid.
(Power steering-equipped vehicle only)
(See page SR-12.)
25. Fill lithium-based MP grease to the pitman arm.
(See page SR-41.)

R7SR00205-00000

VANE PUMP COMPONENTS



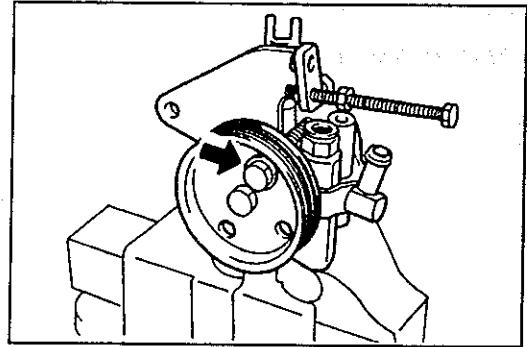
- ① Cap subassembly reservoir
- ② Reservoir assembly oil
- ③ Pump assembly vane
- ④ Key woodruff

- ⑤ Pulley
- ⑥ Bracket pump
- ⑦ Pulley assembly power steering idle

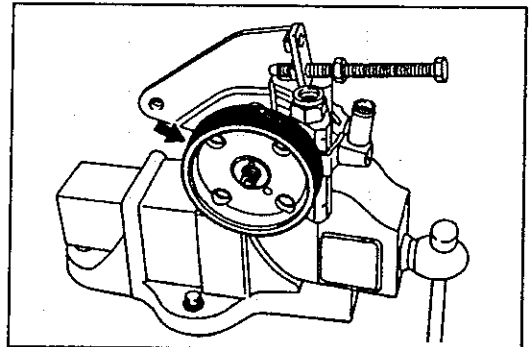
SR-56

REMOVAL

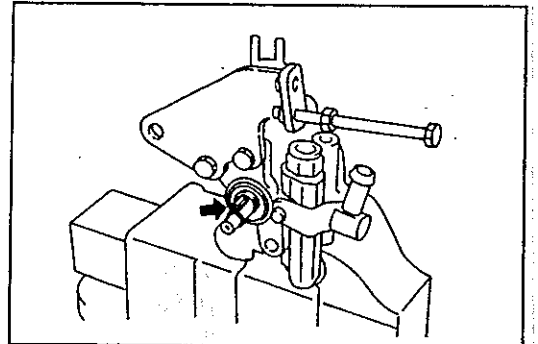
1. Remove the vane pump from the vehicle.
2. Remove the set bolt, while preventing the vane pump pulley from turning by inserting a suitable bolt to the pulley, as indicated in the right figure.



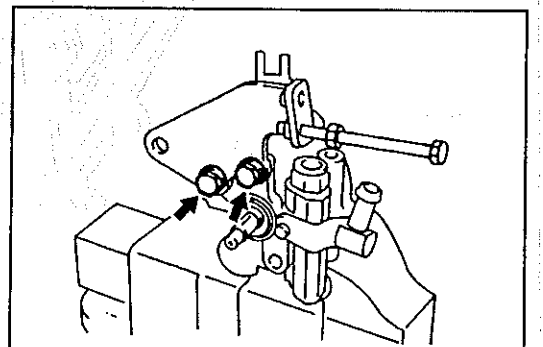
3. Remove the pulley from the vane pump.



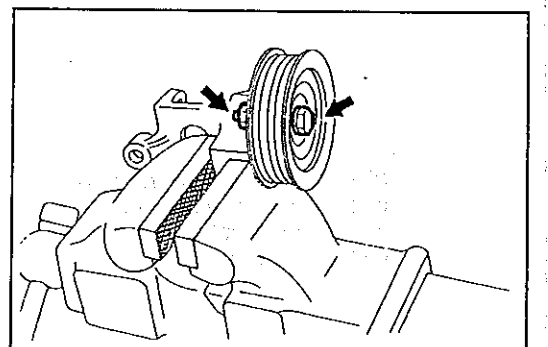
4. Remove the woodruff key from the vane pump.



5. Remove the pump front stay from the vane pump.

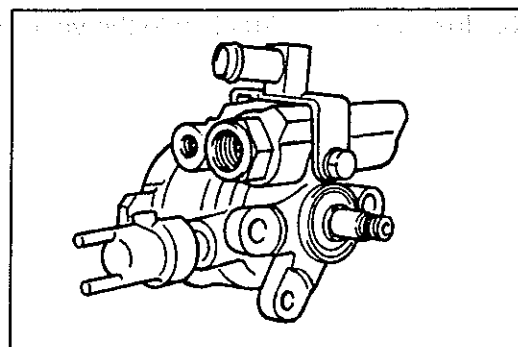


6. Remove the idle pulley from the vane pump bracket.



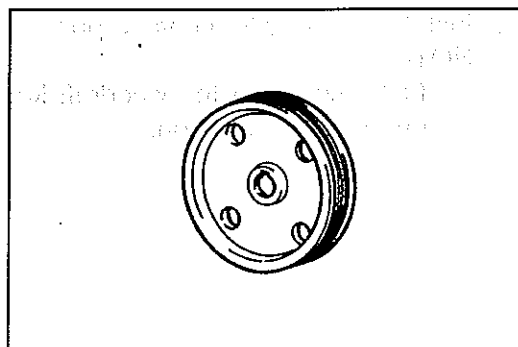
INSPECTIONS

1. Ensure that the vane pump exhibits no damage, such as deformation, breakage and oil leakage.



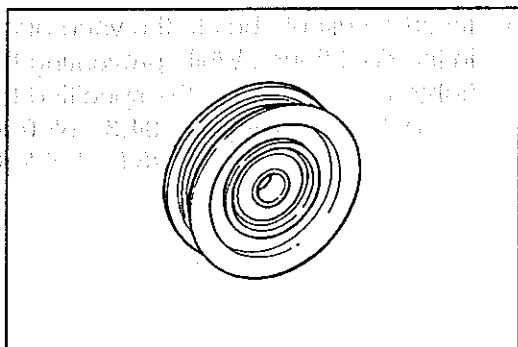
R7SR00211-99999

2. Ensure that the vane pump pulley exhibits no damage, such as deformation and cracks.



R7SR00212-99999

3. Ensure that the idle pulley exhibits no damage, such as deformation and cracks. Ensure that the bearing can rotate smoothly.
If not, replace the idle pulley.

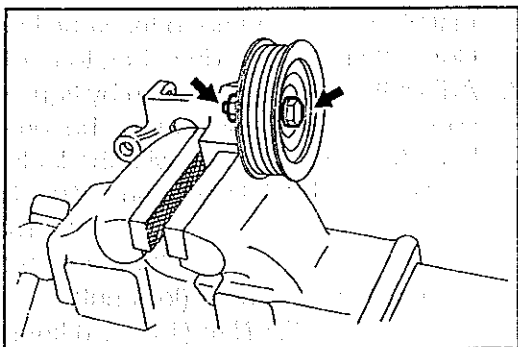


R7SR00213-99999

INSTALLATION

1. Install the idle pulley to the vane pump bracket with the bolts and nuts. Tighten the attaching bolts and nuts to the specified torque.

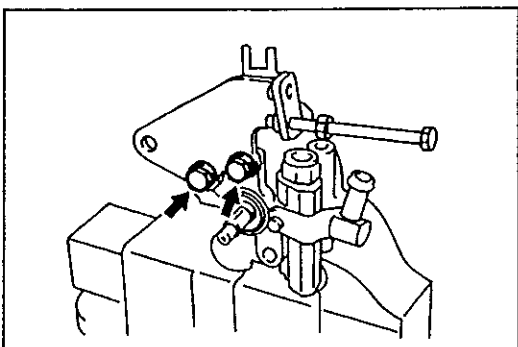
Tightening Torque: 34.3 - 49.0 N·m
(3.5 - 5.0 kgf-m, 25.3 - 36.2 ft-lb)



R7SR00214-99999

2. Install the pump front stay to the vane pump with the attaching bolts.

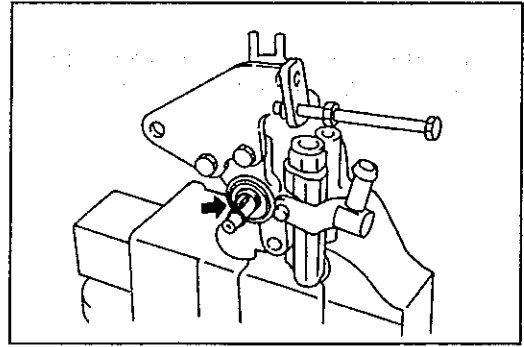
Tightening Torque: 34.3 - 49.0 N·m
(3.5 - 5.0 kgf-m, 25.3 - 36.2 ft-lb)



R7SR00215-99999

SR-58

3. Install the woodruff key to the vane pump.

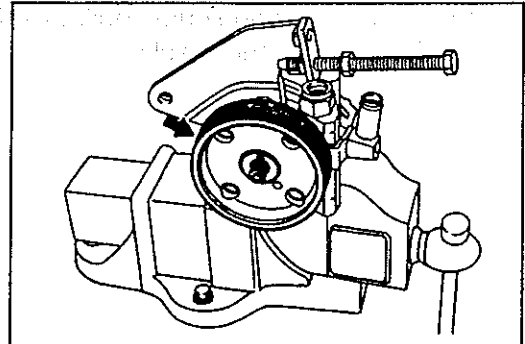


R7SR00216-99999

4. Install the pulley to the vane pump.

NOTE:

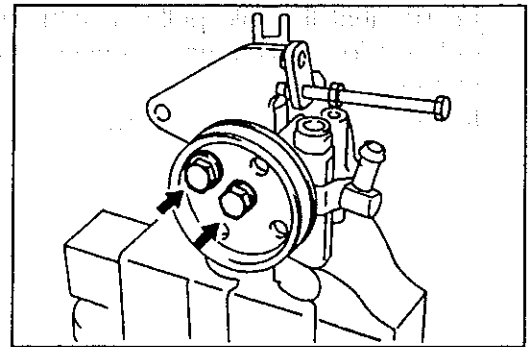
- Make sure that the woodruff key will not be displaced during the installation.



R7SR00217-99999

5. Insert a suitable bolt to the vane pump pulley as indicated in the right figure. While preventing the pulley from turning, tighten the set bolt to the specified torque.

Tightening Torque: 34.3 - 53.0 N·m
(3.5 - 5.4 kgf-m, 25.3 - 39.1 ft-lb)



R7SR00218-99999

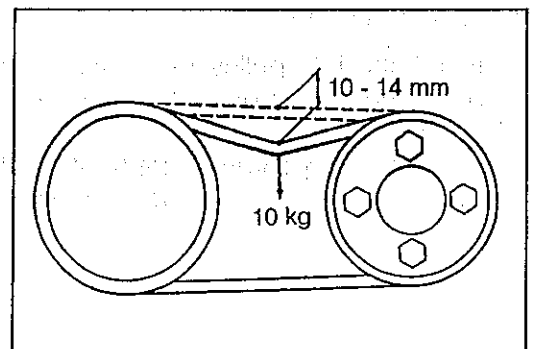
6. Install the vane pump to the vehicle.
7. Correctly install the drive belt to each pulley.
8. Adjust the drive belt tension by tightening the adjusting bolt so that the belt tension may become the specified value. Lock the adjusting bolt with the lock nut.

Specified Belt Deflection: 10 - 14 mm (at inspection)
8 - 10 mm (New)

[When a force of 10 kgf is applied]

Tightening Torque (lock nut):

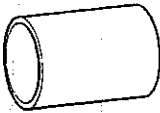
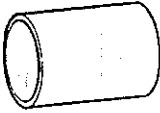
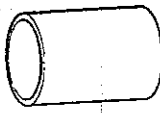
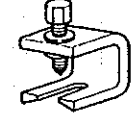
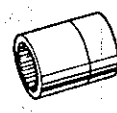
9.8 - 15.7 N·m (1.0 - 1.6 kgf-m, 7.2 - 11.6 ft-lb)



R7SR00219-99999

APPENDIX

SST

Shape	Parts No.	Parts Name
	09608-87611-000	Lower arm dust cover & tie rod end dust cover replacer
	09608-87613-000	Pitman arm, tie rod end dust cover & hub cap replacer
	09608-87614-000	Idler arm dust cover replacer
	09611-36020-000	Tie rod end puller
	09616-00010-000	Steering pinion bearing adjusting socket
	09950-20017-000	Universal puller

R7SR00220-99999

SERVICE SPECIFICATION

Steering wheel free play		0 - 30 mm
Steering gear box oil level (Except power steering equipped model)		13 - 23 mm from upper side of steering gear box hole
Drive belt tension (When 10 kgf (22 lb) applied)	Inspection	10 - 14 mm
	New	8 - 10 mm
Maximum steering torque (Only for power steering equipped model)		7.8 N·m (80 kgf-cm, 5.8 ft-lb)
Vane pump hydraulic pressure Difference of hydraulic pressure		65 kg/cm ² (924.5 psi) or more 5 kg/cm ² (71.1 psi) at 1000 and 3000 rpm

R7SR00221-00000

SR-60

TIGHTENING TORQUE

Tightening component	N·m	kgf·m	ft·lb
Steering gear housing × Oil filler plug (Except power steering equipped model)	2.9 - 4.9	0.3 - 0.5	2.2 - 3.6
Steering gear box × Pressure tubes (Only power steering equipped model)	39.2 - 49.0	4.0 - 5.0	28.9 - 36.2
Steering wheel × Steering shaft	29.4 - 49.0	3.0 - 5.0	21.7 - 36.2
Steering shaft × Intermediate shaft	24.5 - 34.3	2.5 - 3.5	18.1 - 25.3
Steering hole cover × Floor panel	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Steering column tube × Brace (Instrument panel)	14.7 - 21.6	1.5 - 2.2	10.8 - 15.9
Steering column tube × Steering hole cover (Tilt steering equipped model only)	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Steering support × long nut (Tilt steering equipped model only)	12.7	1.3	9.4
Steering lever × long nut (Tilt steering equipped model only)	29.4 - 49.0 24.5 - 34.3	3.0 - 4.5 2.5 - 3.5	21.7 - 36.2 18.1 - 25.3
Steering relay rod × Tie rod	68.6 - 137	7.0 - 14.0	50.6 - 101
Idler arm support pin × Frame	34.3 - 53.9	3.5 - 5.5	25.4 - 39.8
Idler arm support pin × Idler arm assembly	108 - 167	12.0 - 17.0	87 - 123
Idler arm × Relay rod	49.0 - 68.6	5.0 - 7.0	36.2 - 50.6
Pitman arm × Relay rod	68.6 - 137	7.0 - 14.0	50.6 - 101
Tie rod × Steering knuckles	68.6 - 137	7.0 - 14.0	68.6 - 137
Wheel hub nuts	88.3 - 118	9.0 - 12.0	65.1 - 87.0
Steering gear housing × Frame	73.5 - 103	7.5 - 10.5	54.2 - 75.9
Steering gear housing × Pitman arm	147-196	15.0 - 20.0	109 - 145
Cross shaft adjust screw × Lock nut	19.6 - 34.3	2.0 - 3.5	14.5 - 25.3
Intermediate shaft × Steering gear housing	24.5 - 34.3	2.5 - 3.5	18.1 - 25.3
Idle pulley × Vane pump bracket	34.3 - 49.0	3.5 - 5.0	25.3 - 36.2
Vane pump × Pump front stay	34.3 - 49.0	3.5 - 5.0	25.3 - 36.2
Vane pump × Pulley	34.3 - 53.0	3.5 - 5.4	25.3 - 39.1
Vane pump bracket × Engine M8 M10	9.8 - 15.7 34.3 - 44.1	1.0 - 1.6 3.5 - 4.5	7.2 - 11.6 25.3 - 32.5
Pump front stay × Tube support bracket	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Tube support bracket × Clamp	3.9 - 6.9	0.4 - 0.7	2.9 - 5.1
Vane pump × Union bolt	44.1 - 53.9	4.5 - 5.5	32.5 - 39.8
Tube support bracket × Tube support bracket	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Drive belt tension adjust bolt × Lock nut	9.8 - 15.7	1.0 - 1.6	7.2 - 11.6
Vane pump front stay × Adjusting strut	34.3 - 44.1	3.5 - 4.5	25.3 - 32.5
Adjusting strut × Adjusting bar	68.6 - 88.3	7.0 - 9.0	50.6 - 65.1
Vane pump × Vane pump bracket	49.0 - 68.6	5.0 - 7.0	36.2 - 50.6