

# **DAIHATSU**

# **ROCKY**

## **STEERING**

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WRU90-SR001

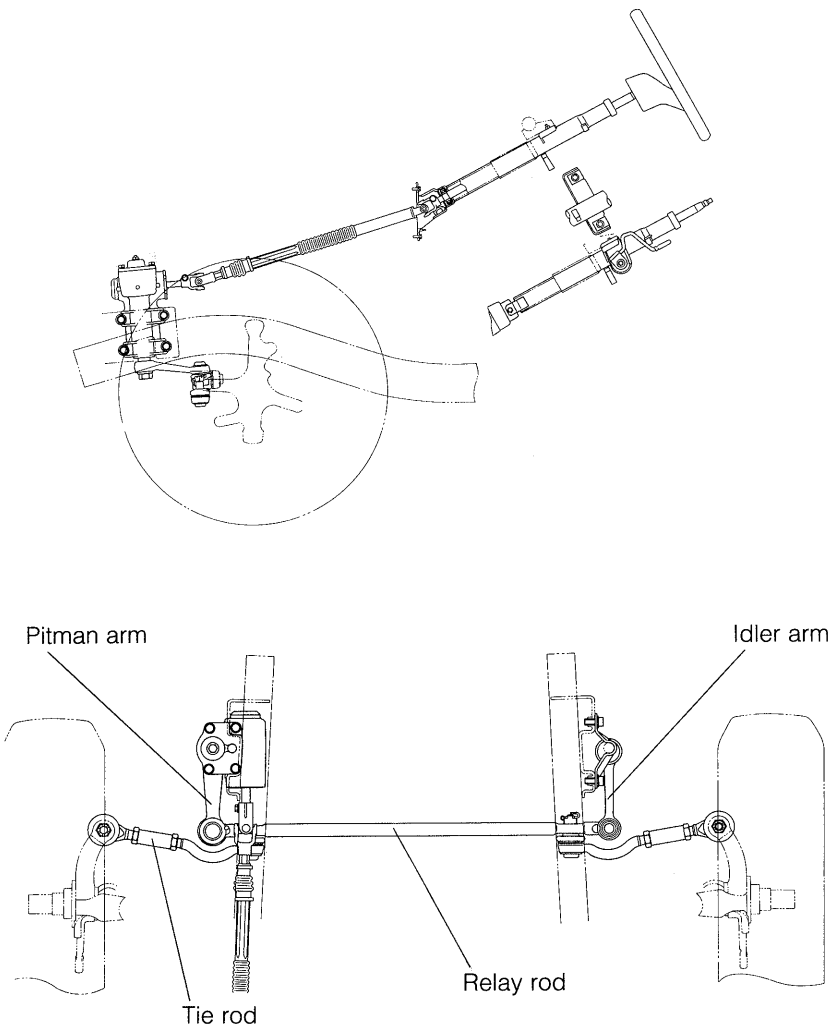
**SR**

OUTLINE OF STEERING SYSTEM

The steering gear box employs a recirculating ball type. Furthermore, the power steering is available as optional equipment.

The steering column employs an impact absorption type. Furthermore, a tilt steering is available as optional equipment.

The steering linkage consists of a pitman arm, a relay rod, an idler arm and tie rods.



WRU92-SR406

Steering specifications

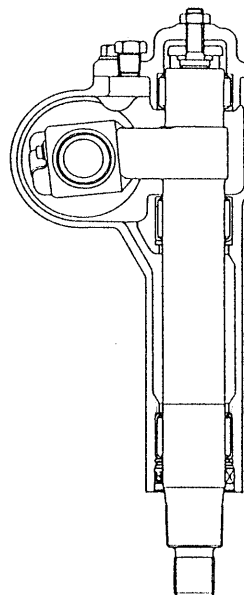
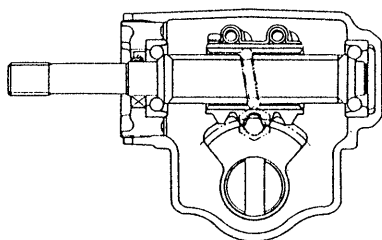
Item		Specifications
Turning angle degrees	Inner	27°05' +0°
	Outer	23°55'
Minimum turning radius m (ft)		5.8 (18.4)

WRU92-SR428

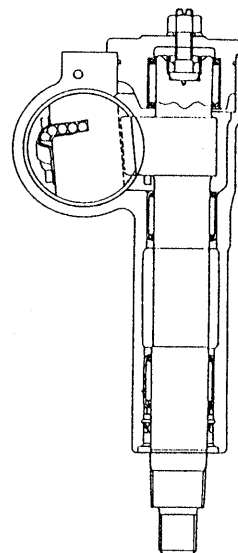
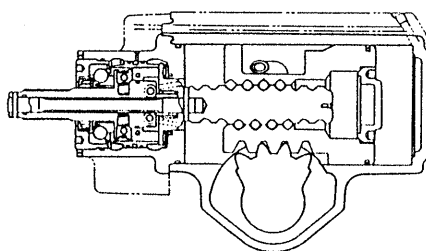
## STEERING GEAR BOX

As regards the steering gear box, the manual steering (recirculating ball type) is standard, where as the power steering (integral type) is optional.

**Manual type**



**Power steering**



WRU90-SR004

### Steering gear box specifications

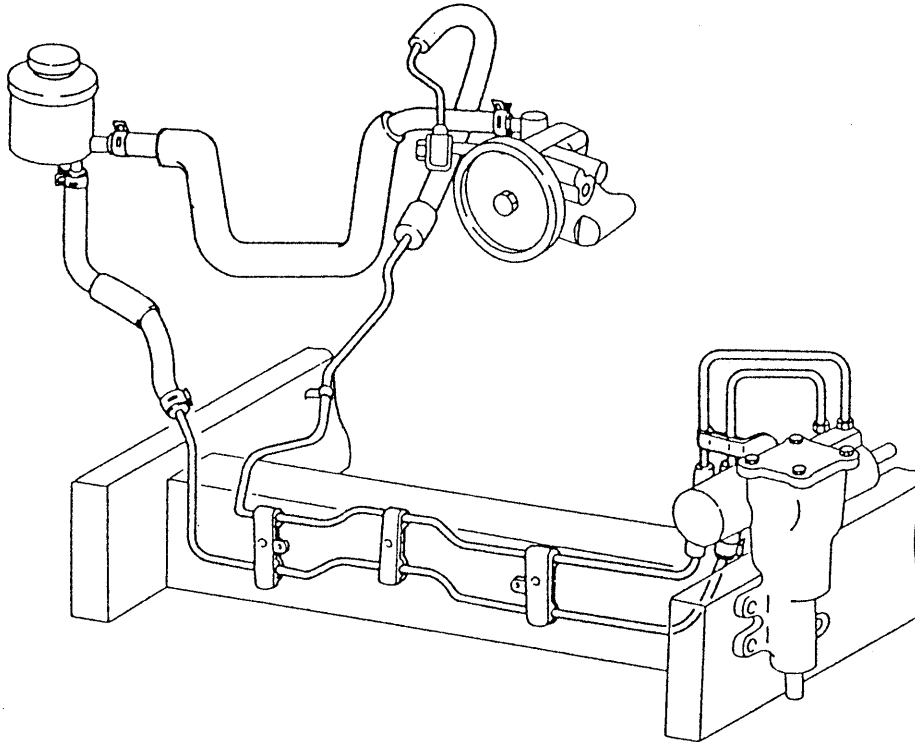
	Manual type		Power steering	
Type	Recirculating ball type		Integral type	
Gear ratio	24 – 28		19.8	
Oil capacity	Upper limit	480 cc	—	
	Lower limit	460 cc		

WRU90-SR005

## STEERING

### POWER STEERING

The power steering consists of the following components: A vane pump which generates hydraulic pressure, an integral type gear box which detects a force being applied to the steering system, controls the hydraulic pressure and converts the hydraulic pressure to a mechanical power, an oil reservoir which stores hydraulic fluid, and those hoses, pipes, etc. linking these components.



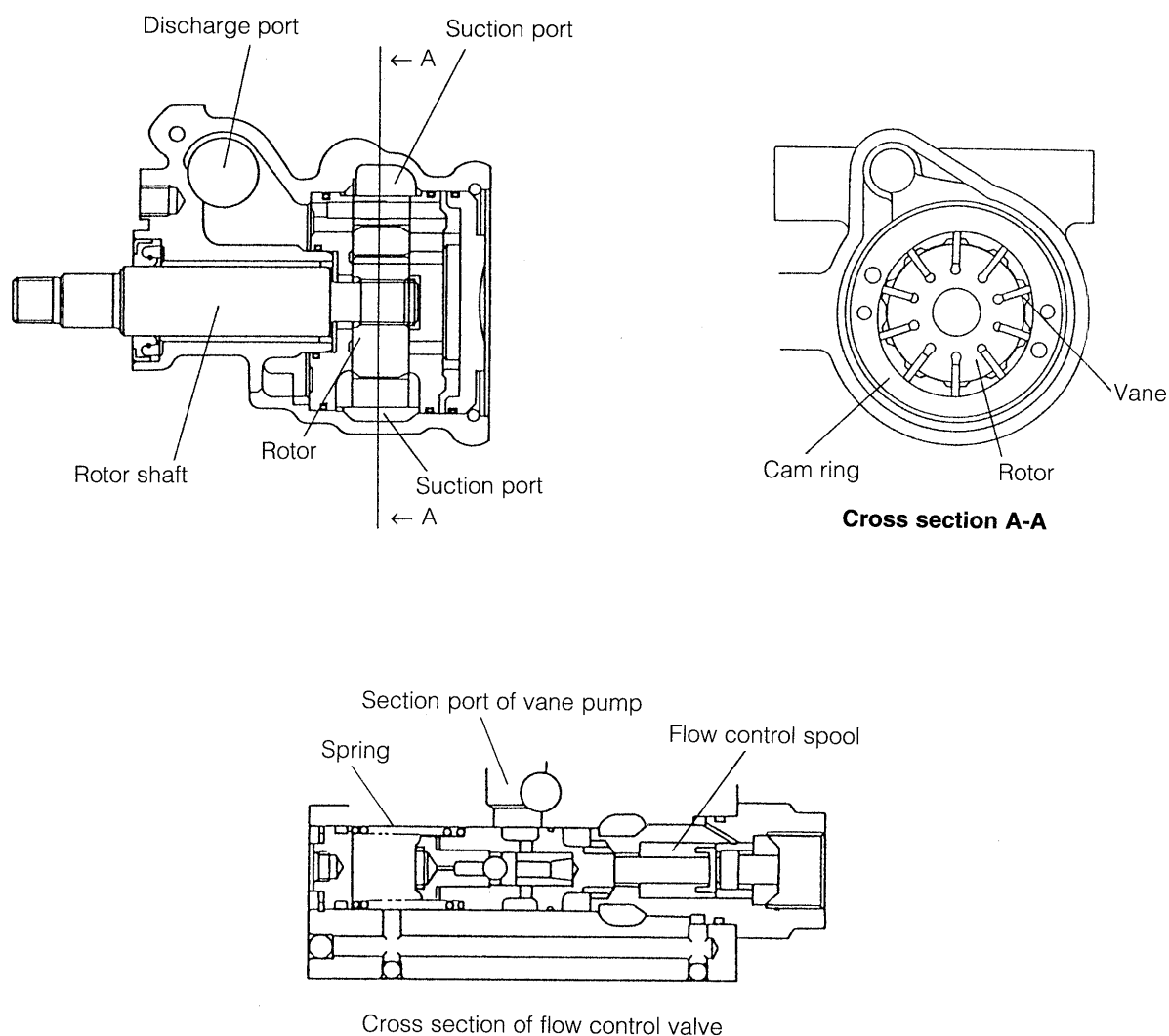
**NOTE:**

- The illustration shows the vehicle without the rear ABS. (See page SR-80.)

WRU90-SR006

## VANE PUMP

The vane pump consists of a cam ring, a pump rotor, vanes and so forth. A flow control valve which controls the fluid flow rate according to the revolution speed is incorporated at the rear section of the pump.



WRU90-SR007

### Vane pump specifications

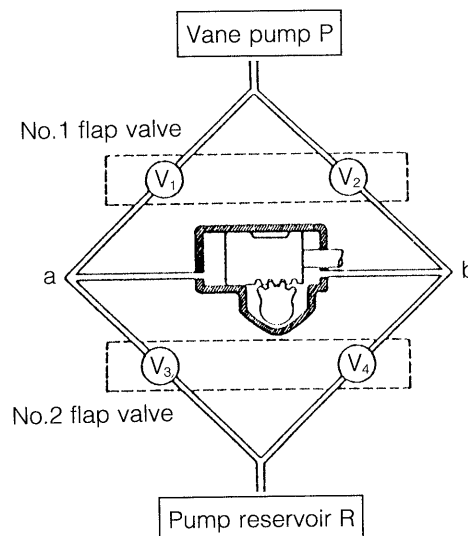
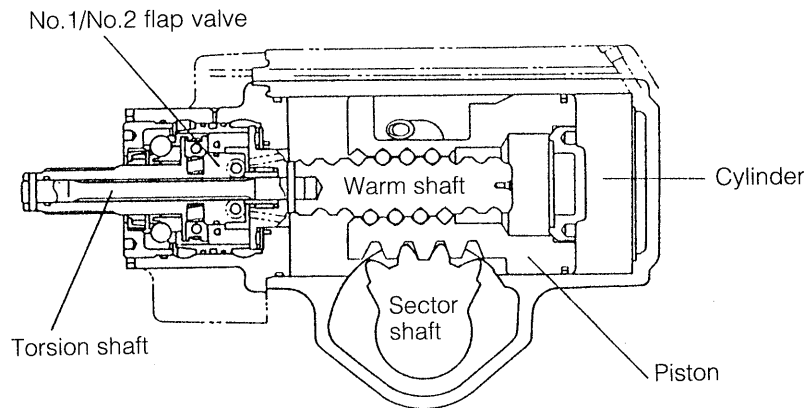
Revolution speed used	(rpm)	500 - 7000
Control discharge rate	(liter/min)	7.5 [at 1000 rpm]
Relief set pressure	(kg/cm <sup>2</sup> )	60 - 70 [at 500 rpm]
Fluid		Power steering fluid
Ambient temperature	(°C)	-40 - 120

WRU90-SR008

## POWER STEERING GEAR BOX

### Operation principle

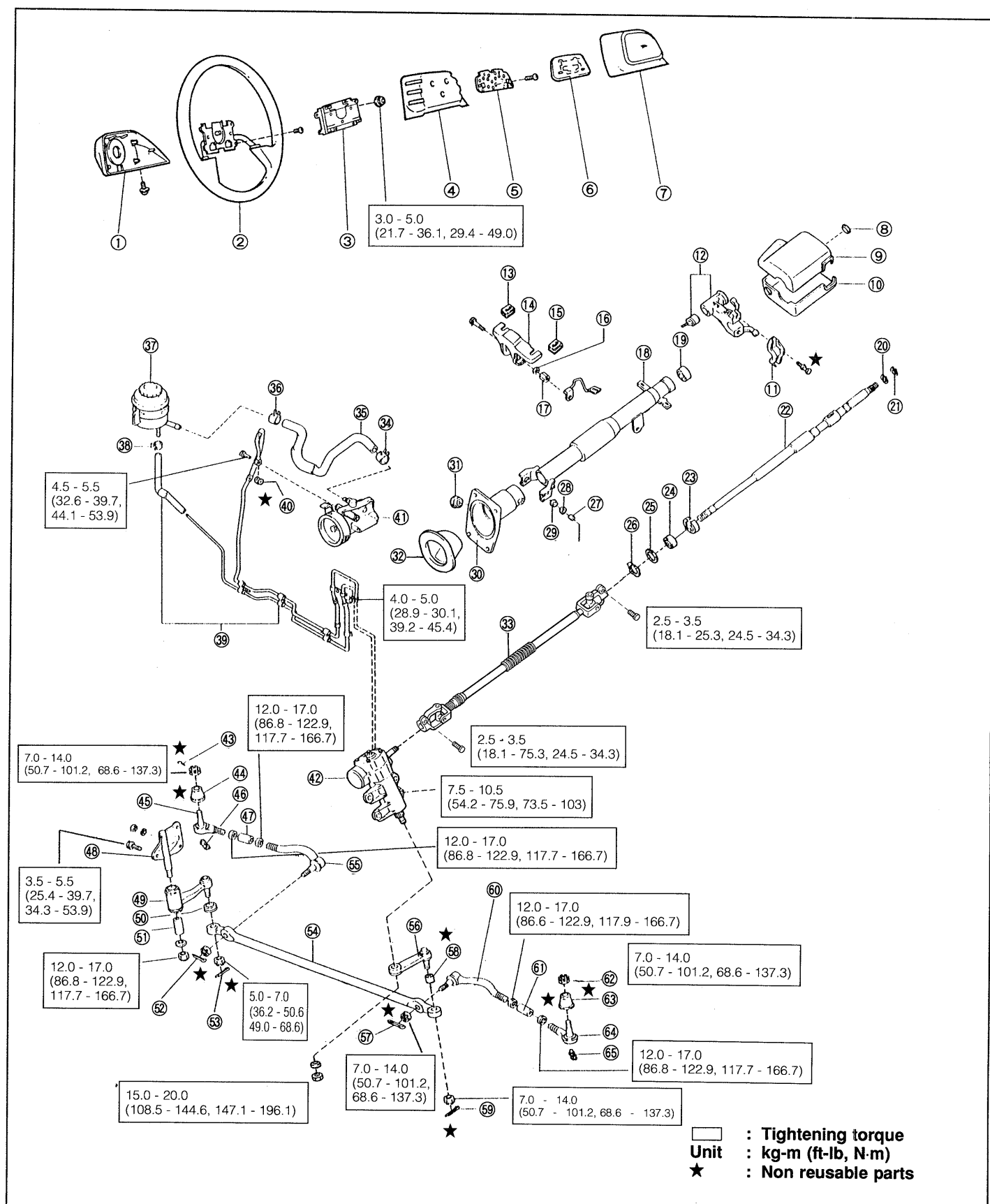
1. The  $V_1$  and  $V_2$  of the No. 1 flap valve are direction controlling valves, which switch the oil passage to either P-a-R or R-b-P, according to the movement of the steering wheel.  
The  $V_3$  and  $V_4$  of the No. 2 flap valve are pressure controlling valves, which determines pressures at the points "a" and "b" according to steering.
2. When the steering wheel is in the neutral position, all those valves of  $V_1$ ,  $V_2$ ,  $V_3$  and  $V_4$  are open and there is no difference in pressure between the points "a" and "b".
3. When the steering wheel is turned to the right, the  $V_1$  closes,  $V_2$  and  $V_3$  open and  $V_4$  almost closes. The hydraulic pressure at the point "b" (in the cylinder) increases. Then the piston is pushed to the left in the figure, thus assisting the driver's steering effort.  
The greater the steering effort, the smaller the opening of the  $V_4$ , thus increasing the pressure at the pint "b".
4. When the steering wheel is turned to the left, the power steering operation is reverse to that of (3).



## COMPONENTS

## NOTE:

- This illustration below typically indicates those components of power steering-equipped model.



- |  |                                   |
|--|-----------------------------------|
| ① Steering wheel cover                       | ④④ Clip                           |
| ② Steering wheel sub assembly                | ④⑤ Oil reservoir-to-pump hose     |
| ③ Energy absorbing pad                       | ④⑥ Clip                           |
| ④ Steering wheel lower cover                 | ④⑦ Oil reservoir assembly         |
| ⑤ Horn bottom contact plate                  | ④⑧ Clip                           |
| ⑥ Horn bottom contact plate No.2             | ④⑨ Pressure feed tube assembly    |
| ⑦ Horn pad sub assembly                      | ④⑩ Gasket                         |
| ⑧ Grommet                                    | ④⑪ Vane pump assembly             |
| ⑨ Steering column upper cover                | ④⑫ Steering gear housing assembly |
| ⑩ Steering column lower cover                | ④⑬ Cotter pin                     |
| ⑪ Steering column housing                    | ④⑭ Steering link joint dust seal  |
| ⑫ Steering column upper w/switch bracket     | ④⑮ Tie rod end sub assembly, R.H. |
| ⑬ Steering column upper attachment plate     | ④⑯ Fitting grease                 |
| ⑭ Tilt steering support sub assembly         | ④⑰ Tie rod adjusting tube         |
| ⑮ Steering column upper attachment plate     | ④⑱ Idler arm support pin          |
| ⑯ Washer                                     | ④⑲ Steering idler arm assembly    |
| ⑰ Bolt                                       | ④⑳ Dust seal                      |
| ⑱ Steering column tube sub assembly          | ④㉑ Collar                         |
| ⑲ Radial ball bearing                        | ④㉒ Cotter pin                     |
| ⑳ Snap ring                                  | ④㉓ Cotter pin                     |
| ㉑ Snap ring                                  | ④㉔ Steering relay rod             |
| ㉒ Steering main shaft sub assembly           | ④㉕ Tie rod assembly, R.H.         |
| ㉓ Steering shaft thrust stopper sub assembly | ④㉖ Pitman arm sub assembly        |
| ㉔ Radial ball bearing                        | ④㉗ Cotter pin                     |
| ㉕ Washer                                     | ④㉘ Steering link joint seal       |
| ㉖ Snap ring                                  | ④㉙ Cotter pin                     |
| ㉗ Collar                                     | ④㉚ Tie rod assembly, L.H.         |
| ㉘ Bush                                       | ④㉛ Tie rod adjusting tube         |
| ㉙ Bush                                       | ④㉜ Cotter pin                     |
| ㉚ Steering column hole cover                 | ④㉝ Steering link joint dust seal  |
| ㉛ Hole plug                                  | ④㉞ Tie rod end sub assembly, L.H. |
| ㉜ Steering column hole cover shield          | ④㉟ Grease fitting                 |
| ㉝ Steering intermediate shaft                |                                   |

**NOTE:**

- The illustration shows the vehicle without the rear ABS. (See page SR-80.)



## TROUBLESHOOTING

Symptom	Possible causes	Checking points
Hard steering Hard steering persists even after being jacked up.	<ul style="list-style-type: none"> <li>Faulty steering gear</li> <li>Preload improperly adjusted</li> <li>Faulty ball joint</li> </ul>	<ul style="list-style-type: none"> <li>Check steering gear.</li> <li>Check steering linkage.</li> </ul>
Steering effort becomes lighter after being jacked up.	<ul style="list-style-type: none"> <li>Tire size</li> <li>Front wheels improperly aligned</li> </ul>	<ul style="list-style-type: none"> <li>Check front alignment and tire size.</li> <li>Check tire air pressure.</li> </ul>
Excessive play	<ul style="list-style-type: none"> <li>Steering wheel improperly installed</li> <li>Faulty steering linkage</li> <li>Suspension improperly installed</li> <li>Faulty steering gear</li> <li>Bush worn</li> </ul>	<ul style="list-style-type: none"> <li>Check steering wheel.</li> <li>Check steering linkage.</li> <li>Check suspension.</li> <li>Check steering gear.</li> <li>Check steering linkage bush.</li> </ul>
Abnormal noise	<ul style="list-style-type: none"> <li>Faulty steering shaft</li> <li>Faulty steering gear</li> <li>Faulty steering linkage</li> </ul>	<ul style="list-style-type: none"> <li>Check steering shaft.</li> <li>Check steering gear.</li> <li>Check steering linkage.</li> <li>Check ball joint rattle.</li> </ul>

WRU90-SR012

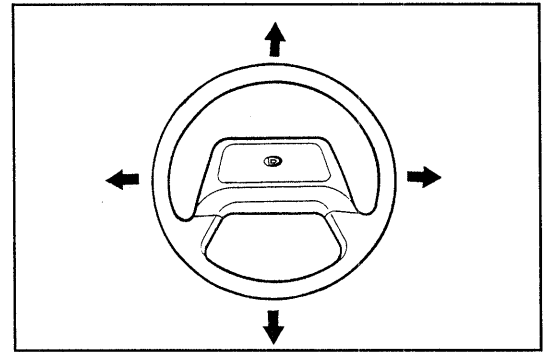
## IN-VEHICLE INSPECTION

### (Except power steering-equipped models)

#### 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.



WRU90-SR013

#### 2. Check of steering wheel for free play

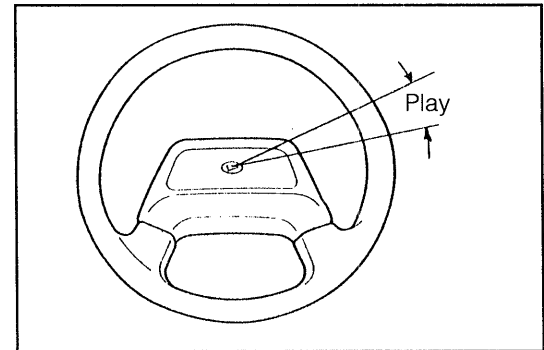
(1) Set the steering wheel to a straight-ahead state.

(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 (1.18 inches)**

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.



WRU90-SR014

#### 3. Check of steering gear box fluid level

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

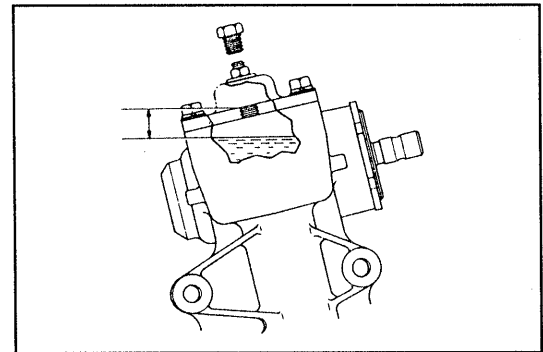
(2) Check the fluid level by inserting a clean screwdriver, etc. from the check hole. Ensure that the height from the fluid level to the upper edge of the check hole conforms to the specified value.

**Specified Level: 13 - 23 mm (0.51 - 0.91 inch)**

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.

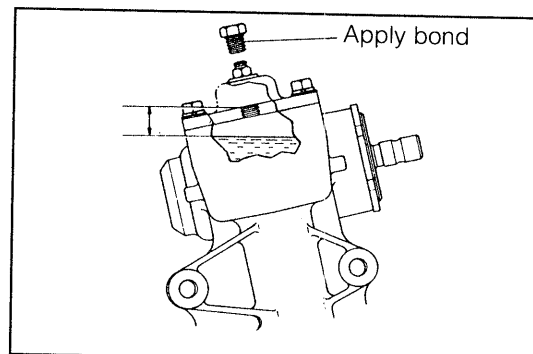


WRU90-SR015

- (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.

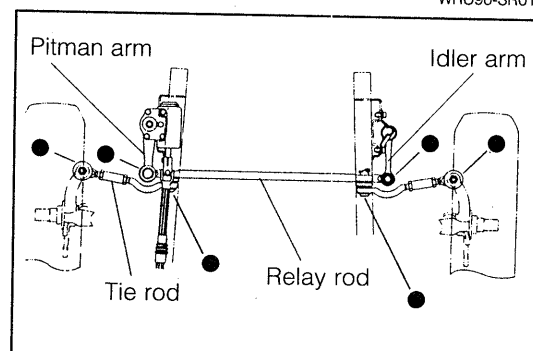
## Tightening Torque:

0.2 - 0.4 kgf-m (1.4 - 2.9 ft-lb, 2.0 - 3.9 N-m)



WRU90-SR016

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.  
(Points bearing a "●" mark in the right figure.)  
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.

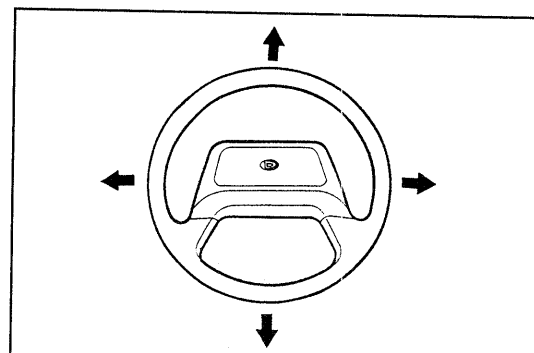


WRU92-SR408

## (Power steering-equipped models)

1. Check of steering wheel
 

Move the steering wheel in an axial direction and/or in a perpendicular direction so as to ensure that no looseness and/or excessive play is present.  
If any looseness and/or excessive play is present, check the steering gear for improper installing condition. Repair any defective parts.

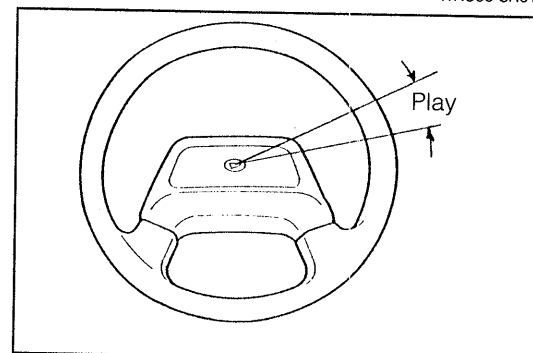


WRU90-SR018

2. Check of steering wheel 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 (1.18 inches)**

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.

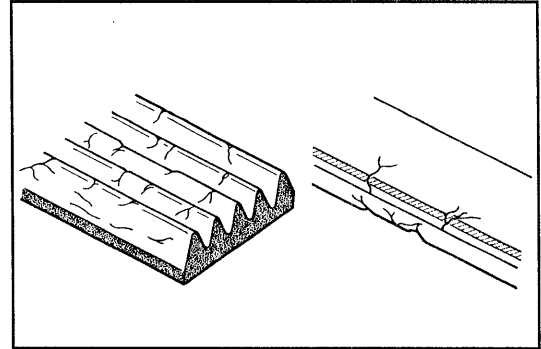


WRU90-SR019

## STEERING

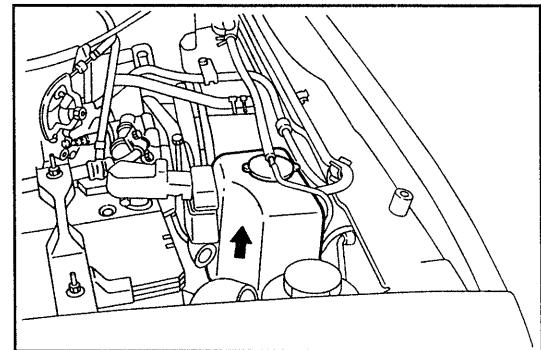
### 3. Check of power steering vane pump drive belt

- (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. (See page SR-81 to SR-90.)



WRU90-SR020

- (2) Remove the radiator reserve tank by raising it. Put the reservoir tank on the radiator.



WRU90-SR021

- (3) 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 22 lb (10 kgf).

#### Specified Belt Deflection:

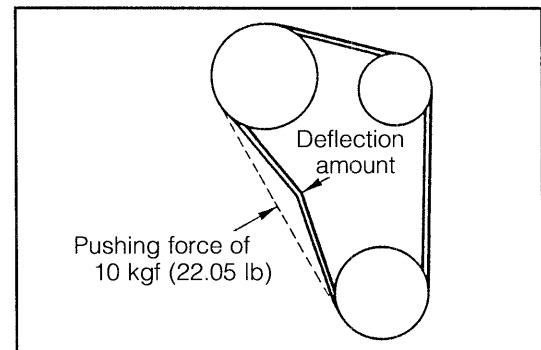
9 - 11 mm (0.35 - 0.43 inch)

[When a force of 10 kgf (22 lb) is applied.]

#### Reference:

Belt Tension: 50 - 75 kgf (110.25 - 165.38 lb)

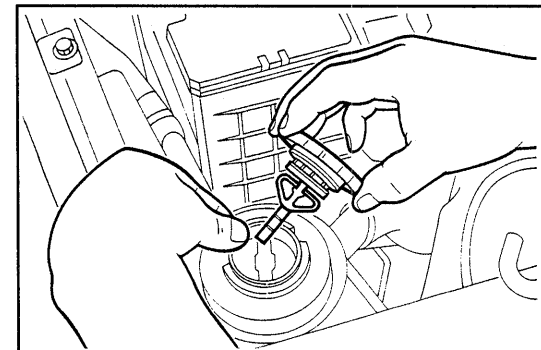
If the amount of belt deflection does not conform to the specified value, adjust the drive belt tension.  
(See page SR-89 to SR-90.)



WRU90-SR022

### 4. 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.



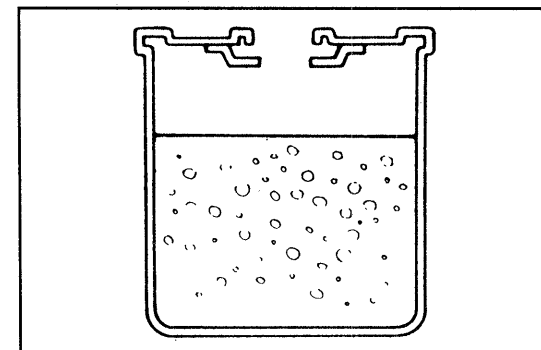
WRU90-SR023

- (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**

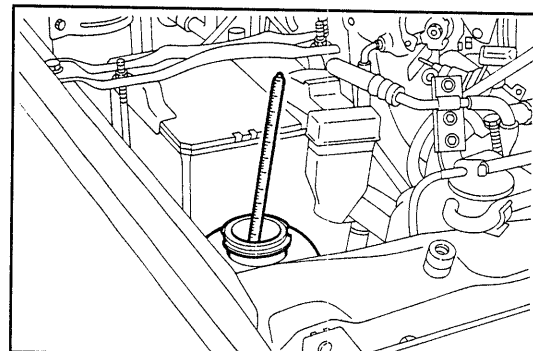
If the level is within the specified range, change the power steering fluid.

- (4) Close the reservoir tank cap.



WRU90-SR024

5. Check of power steering fluid level
  - (1) Open the reservoir tank cap.
  - (2) Measure the power steering fluid temperature.



WRU90-SR025

- (3) When the power steering fluid temperature is within the range of 0 to 40 °C (32 - 104 °F) or 40 - 80 °C (104 - 176 °F), check to see if the fluid level is within the specified range corresponding to the measured temperature condition.

**NOTE:**

- The term "cold" represents a range of 0 - 40 °C (32 - 104 °F).
- The term "hot" represents a range of 40 - 80 °C (104 - 176 °F).

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.

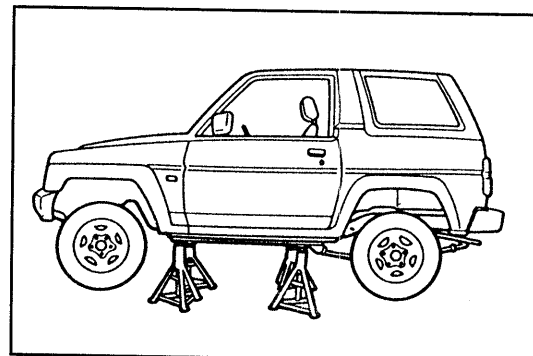
WRU90-SR026

6. Power steering fluid change procedure

**CAUTION:**

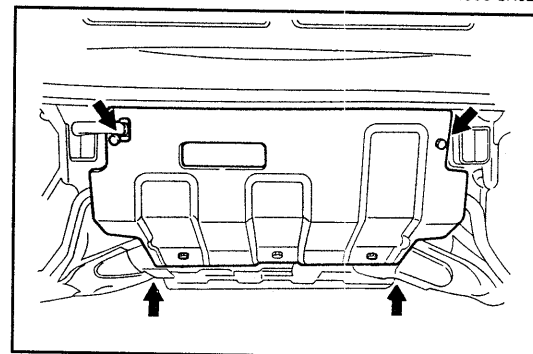
- Never start the engine while the power steering fluid is being drained.

- (1) Place the vehicle on a level floor. Jack up the vehicle and support it with safety stands. (See GI section.)



WRU90-SR028

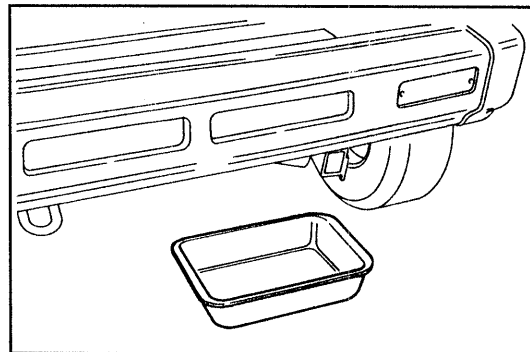
- (2) Detach the engine undercover by removing the engine undercover attaching bolts.



WRU90-SR029

## STEERING

- (3) Place a suitable container below the return hose connecting section.



WRU90-SR030

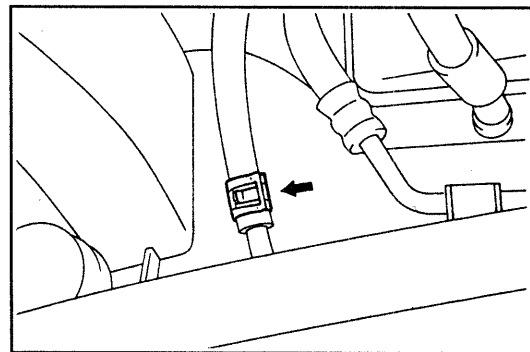
- (4) Detach the return hose clamp. Drain the fluid by disconnecting the return hose from the return pipe.

**CAUTION:**

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

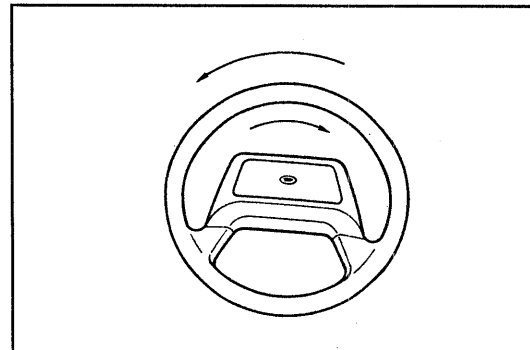
**NOTE:**

- Be very careful not to deform the return pipe.



WRU90-SR031

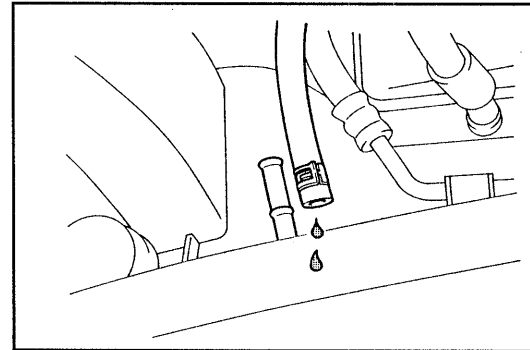
- (5) Turn the steering wheel fully clockwise or counterclockwise from the lock to the lock several times so as to drain the fluid inside the steering gear box.



WRU90-SR032

**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.

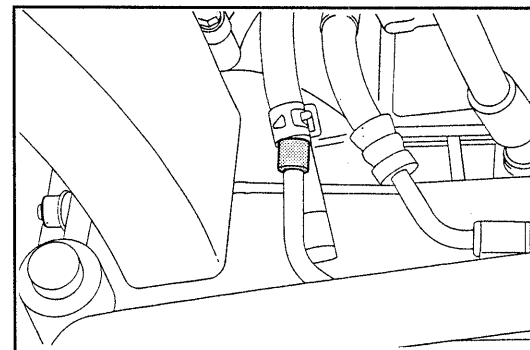


WRU90-SR033

- (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 (6.1 cub inch) of fluid to flow out so that the old fluid may be drained completely.



WRU90-SR034

Specified Power Steering Fluid: ATF DEXRON® II

- (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.

- (8) Turn the steering wheel fully clockwise or counterclockwise from the lock to the lock, until about 100 cc (6.1 cub inch) 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.
- (9) Remove the blank plug from the return pipe. Connect the return hose to the return pipe and install the new hose clamp.

**NOTE:**

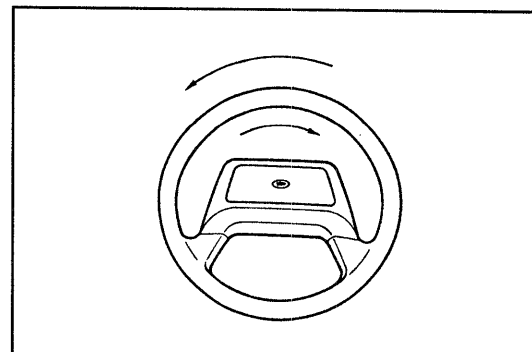
- Make sure that the power steering fluid will not run out from the reservoir tank.

- 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  $15 \pm 2$  mm ( $0.59 \pm 0.078$  inch).

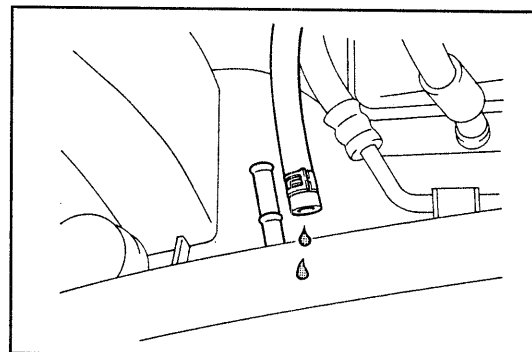
- (10) Replenish the power steering fluid to the reservoir tank approximately up to the upper level in the COLD range.  
Specified Power Steering Fluid: ATF DEXRON® II

**NOTE:**

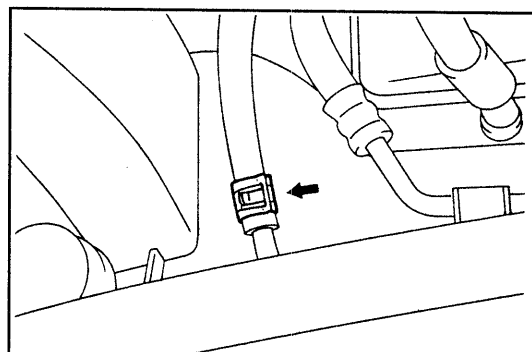
- If the oil temperature is above 40 °C (104 °F), fill the power-steering fluid up to the upper level in the HOT level.



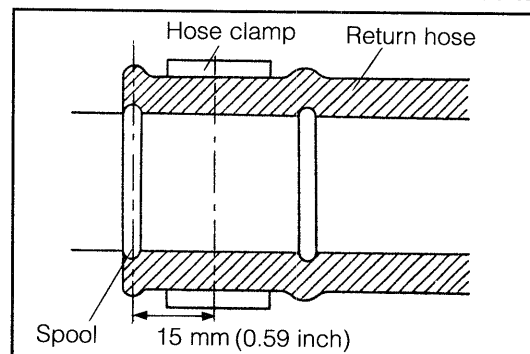
WRU90-SR035



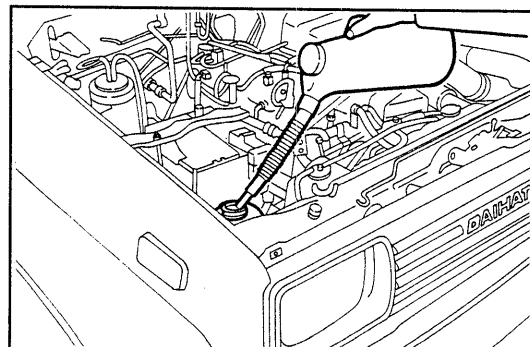
WRU90-SR036



WRU90-SR037



WRU90-SR038



WRU90-SR039

## STEERING

- (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.

- (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 (11) onward.

- (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 (0.2 inch)**

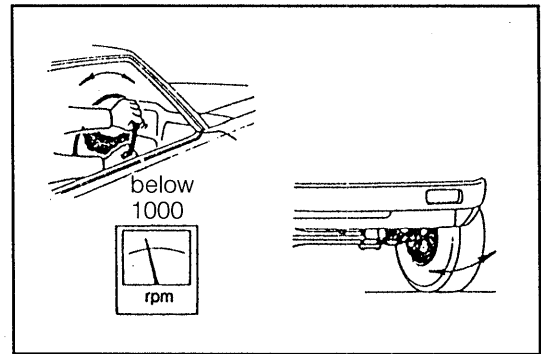
If the difference in fluid level exceeds the specified value, again perform air bleeding.

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

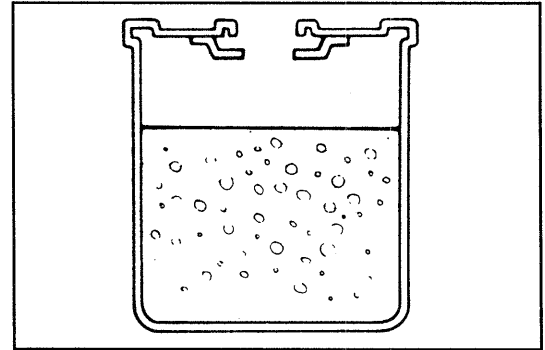
- (16) Check the fluid level.  
(See page SR-13.)
- (17) Start the engine. Ensure that no fluid leakage is present.

- (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 (0.2 inch) 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.

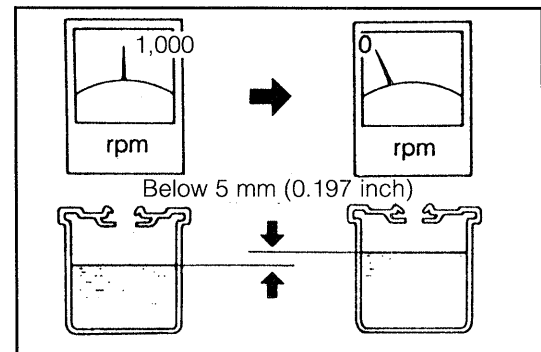
If any abnormality is present, perform air bleeding again.



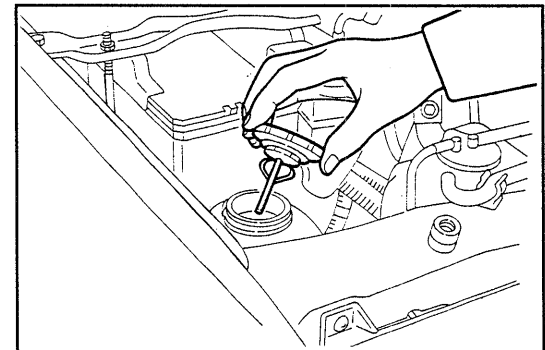
WRU90-SR040



WRU90-SR400



WRU90-SR041



WRU90-SR042



## 7. Check of power steering turning effort

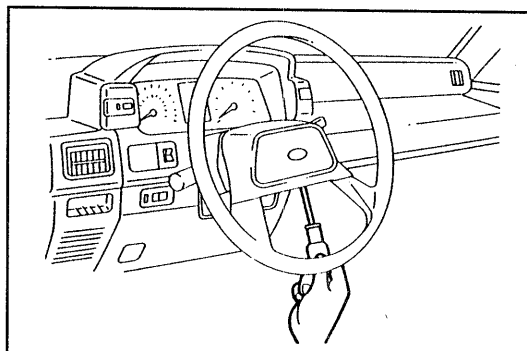
### NOTE:

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.

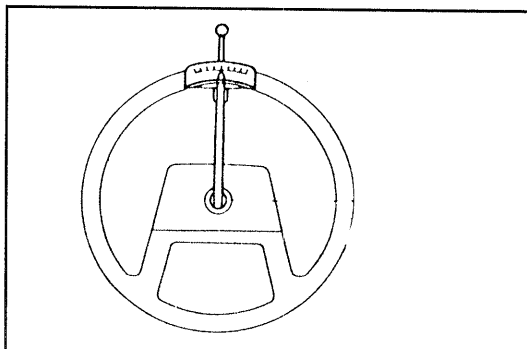
WRU90-SR043

- (1) Remove the steering wheel cover assembly from the steering wheel.  
(See page SR-23.)



WRU90-SR044

- (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.



WRU90-SR045

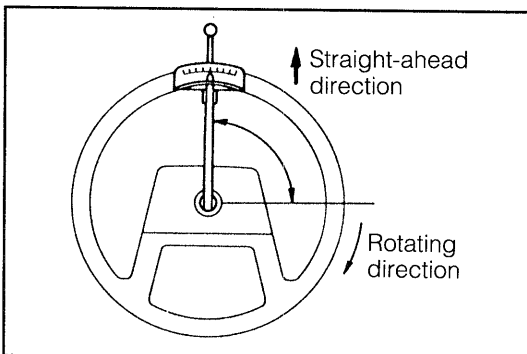
- (5) Measure the maximum steering torque which is registered while the steering wheel is being turned one-fourth turn slowly in the clockwise direction by means of the torque wrench. Ensure that this maximum turning effort will not exceeds the specified value.

**Specified Value: 80 kgf-cm (5.8 ft-lb, 7.8 N-m)**

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.



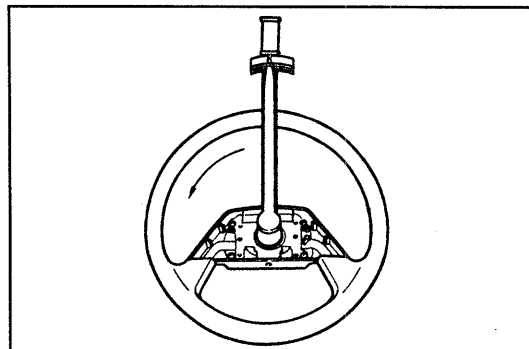
WRU90-SR046

- (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: 80 kgf-cm (5.8 ft-lb, 7.8 N·m)

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.

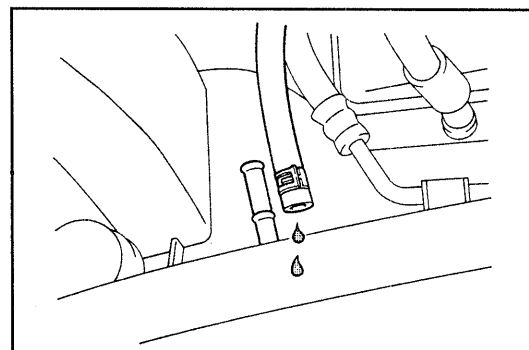


WRU90-SR047

## 8. Check of power steering hydraulic pressure

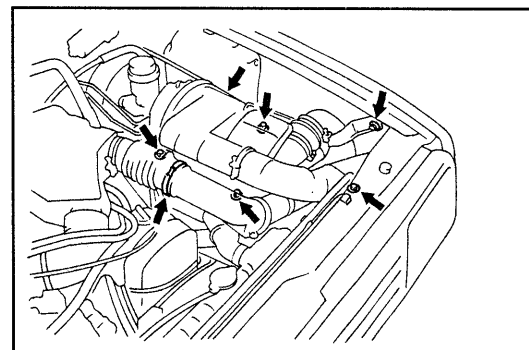
### (1) Installation of pressure gauge

- ① Drain the power steering fluid.  
(See page SR-13 to SR-14.)



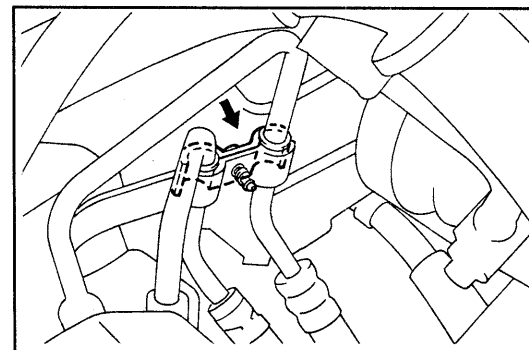
WRU90-SR048

- 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.  
(For further details, see the Engine section.)



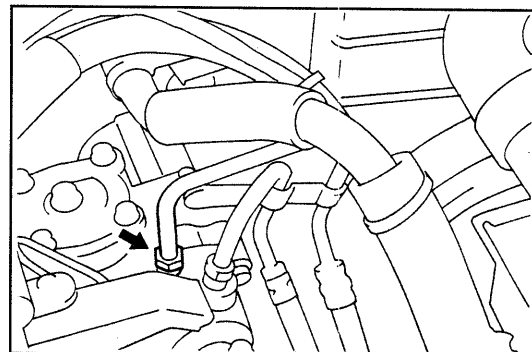
WRU90-SR049

- ③ Detach the pressure tube clamp by removing the clamp screw.



WRU90-SR050

- ④ Disconnect the pressure side tube from the steering gear box.

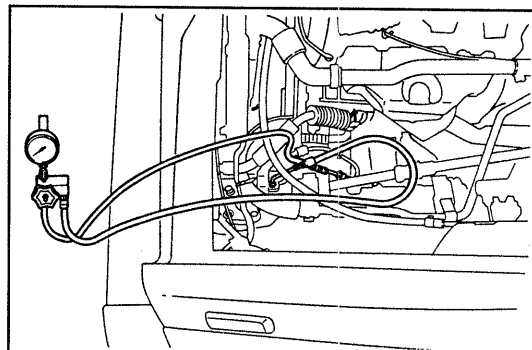


WRU90-SR051

- ⑤ Connect the pressure gauge midway between the disconnected tube and the steering gear box.

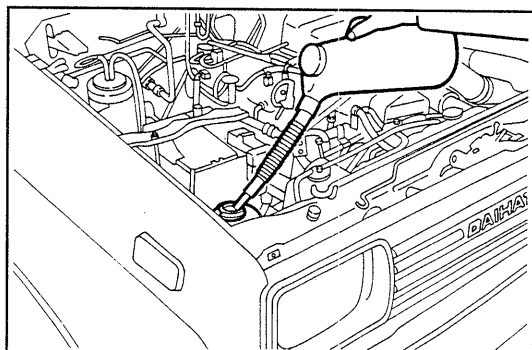
**NOTE:**

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



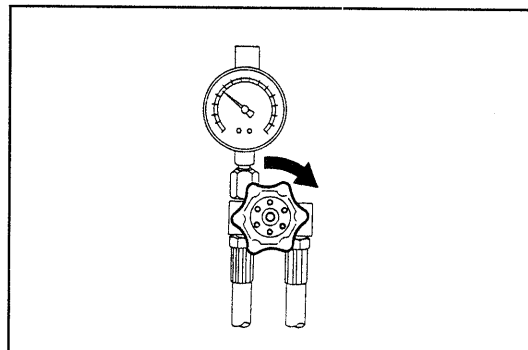
WRU90-SR052

- (2) Fill power steering fluid.  
(See page SR-14 to SR-16.)



WRU90-SR053

- (3) Start the engine.
- (4) With the valve of the pressure gauge closed and while maintaining the line pressure at 40 to 50 kg/cm<sup>2</sup> (569 - 711 psi), warm up the power steering fluid, until its temperature reaches 80 °C (176 °F).



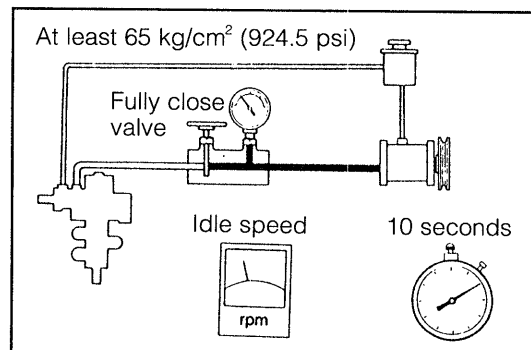
WRU90-SR054

- (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: 65 kg/cm<sup>2</sup> (924.5 psi) 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.



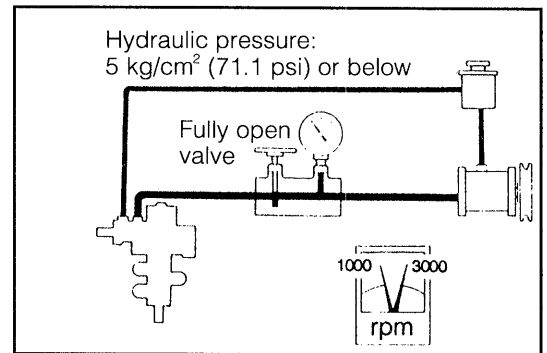
WRU90-SR055

# STEERING

- (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/cm<sup>2</sup> (71.1 psi)

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

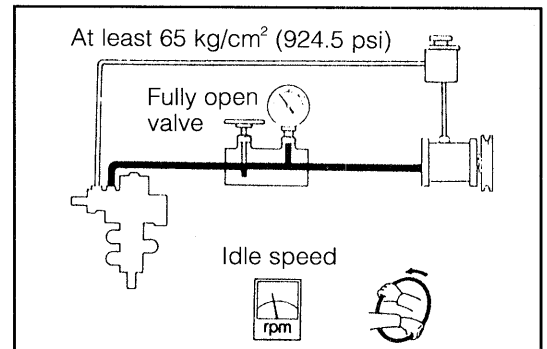


WRU90-SR056

- (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:** 65 kg/cm<sup>2</sup> (924.5 psi) or more

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



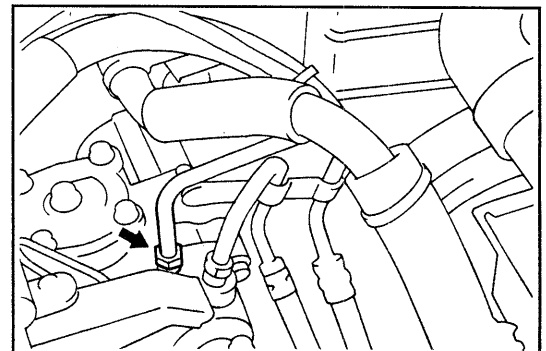
WRU90-SR057

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

(See page SR-78.)

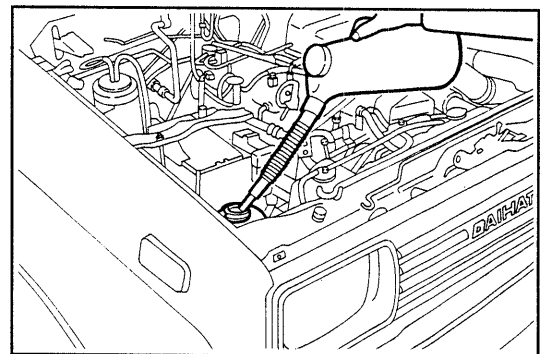
**Tightening Torque:**

4.5 - 5.5 kgf-m (32.5 - 39.8 ft-lb, 44.1 - 53.9 N-m)



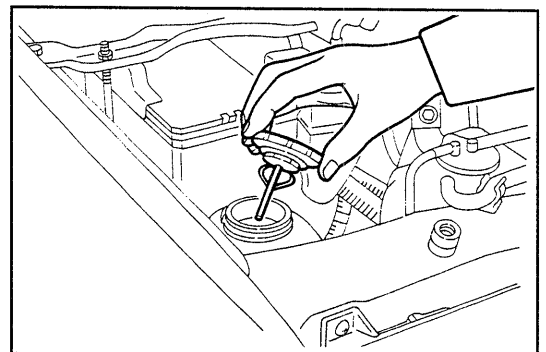
WRU90-SR058

- (10) Replenish the power steering fluid to the reservoir tank. Perform air bleeding. For the air bleeding procedure, refer to page SR-16, step (11) to step (18).



WRU90-SR059

- (11) Check the fluid level.  
(See page SR-13.)  
(12) Start the engine. Ensure that no fluid leakage is present.



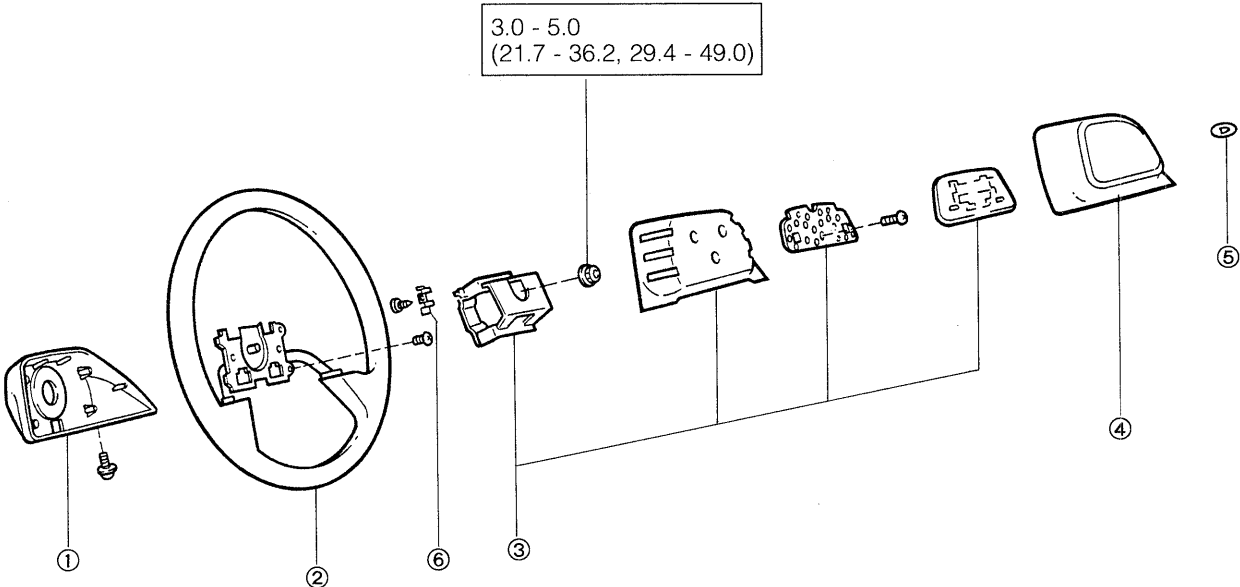
WRU90-SR060

**Inspection of idle-up VSV**


1. When turning the steering wheel, ensure that air continuity exists.
2. When the steering wheel is set to a straight-ahead position, ensure that no air continuity exists.  
If not, replace the vane pump.

WRU90-SR402

STEERING WHEEL  
COMPONENTS



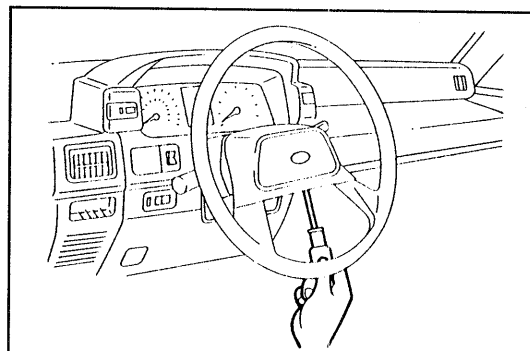
- ① Steering wheel cover
- ② Steering wheel S/A
- ③ Horn pad subassembly
- ④ Steering wheel pad
- ⑤ Steering wheel ornament No. 1
- ⑥ Steering wheel pad set spring

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

## STEERING WHEEL

### REMOVAL

1. Disconnect the battery ground cable terminal from the negative (-) terminal of the battery.
2. Remove the horn pad assembly attaching screw.

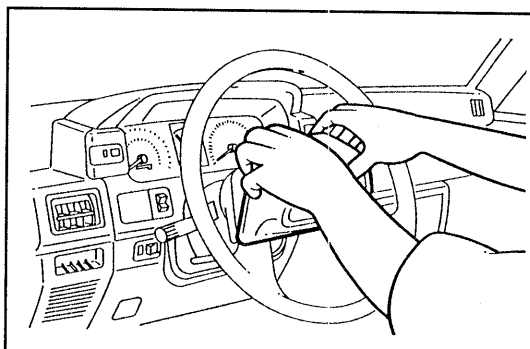


WRU90-SR062

3. Remove the horn pad assembly by pulling it out.

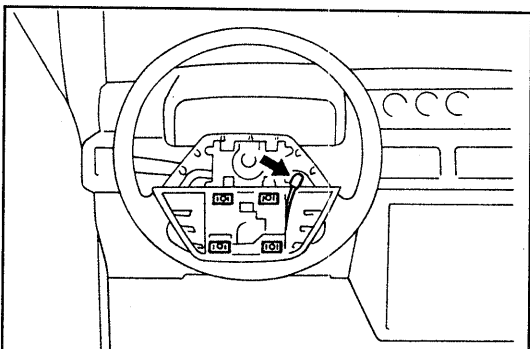
**NOTE:**

- Be very careful not to damage the horn wire during the removal.



WRU90-SR063

4. Disconnect the horn connector.

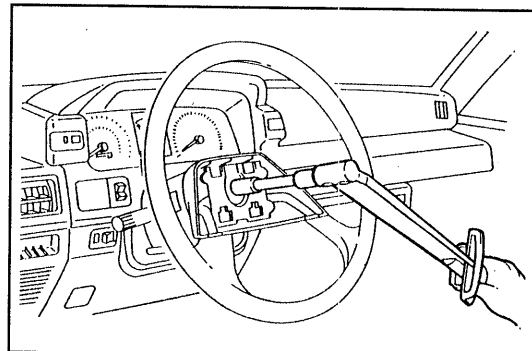


WRU90-SR064

5. Loosen the steering wheel mounting nut.

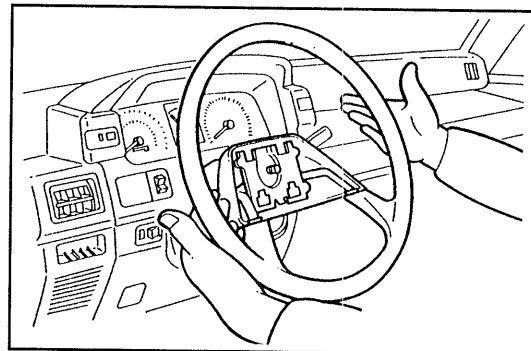
**NOTE:**

Just loosen the nut by four to five helical ridges; do not remove it.



WRU90-SR065

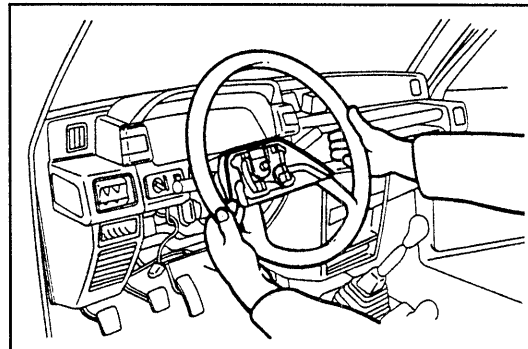
6. Pull the steering wheel with both hands to disconnect it from the steering shaft.



WRU90-SR066

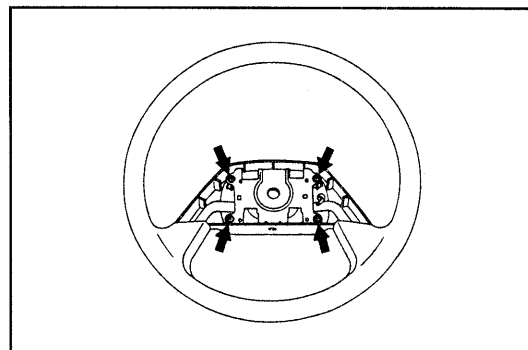
## STEERING

7. Remove the steering wheel attaching nut. Remove the steering wheel from the steering shaft.



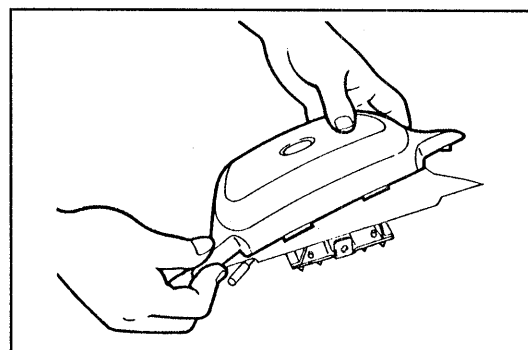
WRU90-SR067

8. Detach the steering wheel cover from the steering wheel by removing the attaching screw.



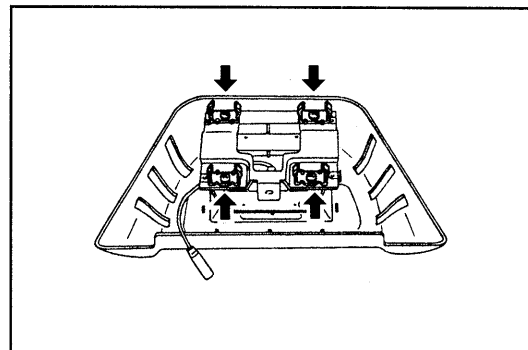
WRU90-SR068

9. Disassembly of horn pad assembly
  - (1) Remove the steering wheel pad from the steering wheel lower cover.



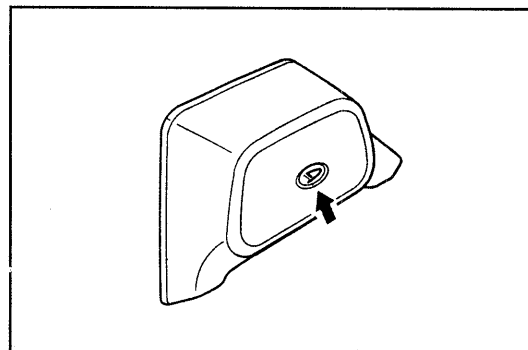
WRU90-SR069

- (2) Detach the steering wheel pad set spring from the steering wheel lower cover.



WRU90-SR070

- (3) Remove the ornament from the steering wheel pad, as required.

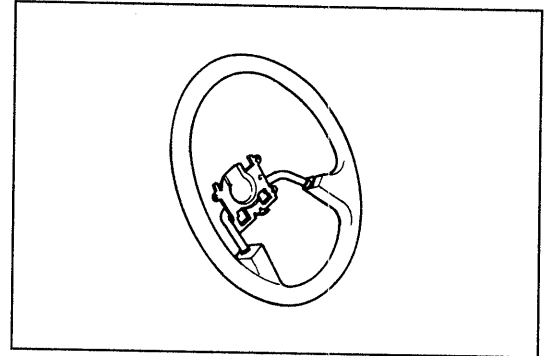


WRU90-SR071

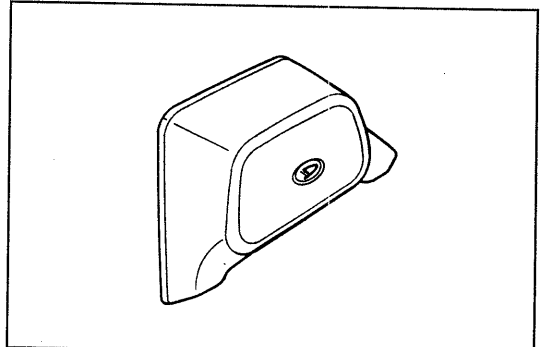


**INSPECTION**

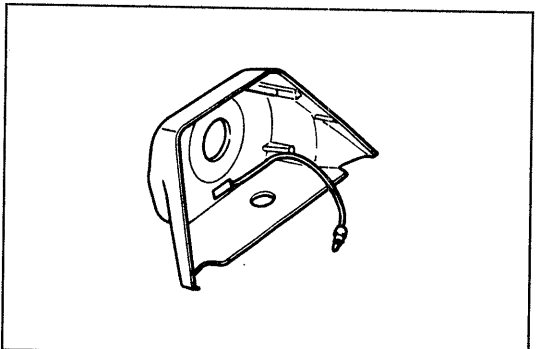
1. Ensure that the steering wheel exhibits no damage, such as cracks and/or wear.  
Replace the steering wheel if any defect is present.
2. Ensure that the steering wheel pad exhibits no damage, such as cracks.  
Replace the steering wheel pad if any defect is present.
3. Check of steering wheel cover
  - (1) Ensure that the steering wheel cover exhibits no damage, such as cracks and/or wear at the terminal contact surface.  
Replace the steering wheel cover if any defect is present.
  - (2) Ensure that continuity exists between the steering wheel cover terminal contact surface and the terminal.  
If no continuity exists, replace the steering wheel cover.
4. Check of horn pad sub assembly
  - (1) Ensure that continuity exists between the horn button contact plate and the connector terminal.  
If no continuity exists, replace the steering wheel lower cover.



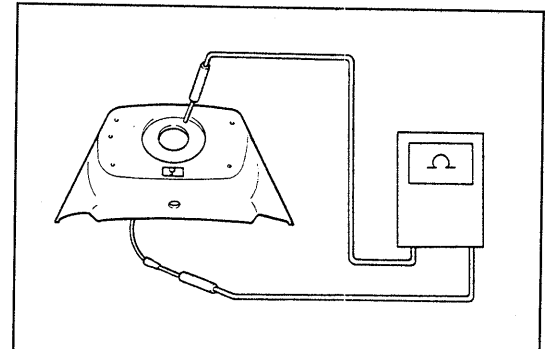
WRU92-SR409



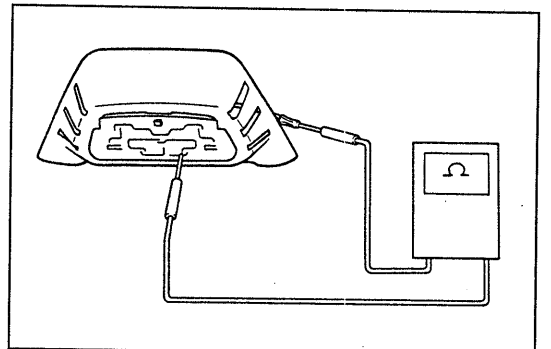
WRU90-SR073



WRU90-SR074



WRU90-SR075



WRU90-SR076

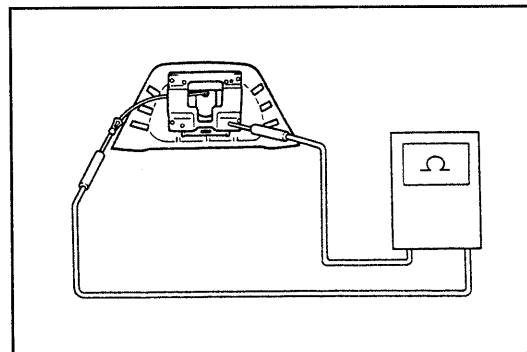
## STEERING

- (2) Ensure that no continuity exists between the connector terminal and the steering wheel lower cover.

### NOTE:

- Do not push the horn button contact plate.

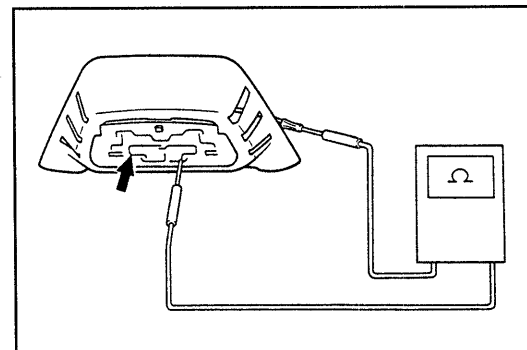
If continuity exists, replace the steering wheel pad sub-assembly.



WRU90-SR077

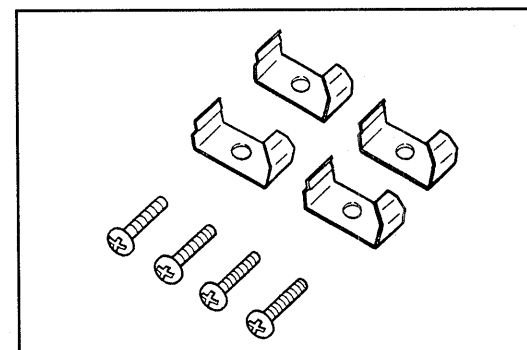
- (3) Ensure that continuity exists between the connector terminal and the steering wheel lower cover when the horn button contact plate is pushed.

If no continuity exists, replace the steering wheel pad subassembly.



WRU90-SR078

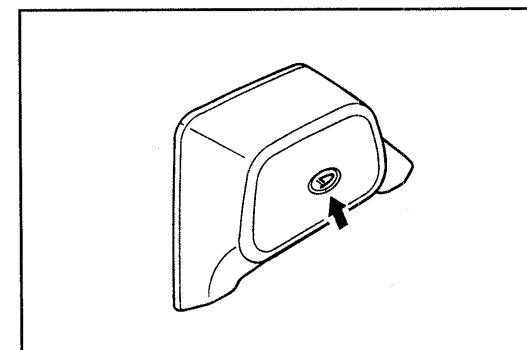
5. Check of steering wheel pad set spring  
Ensure that the steering wheel pad set spring exhibits no damage, such as wear, cracks and deformation.  
Replace the steering wheel pad set spring if any defect is present.



WRU90-SR079

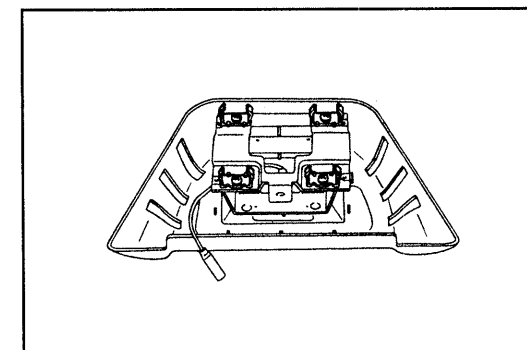
## INSTALLATION

1. Assembly of horn pad assembly
  - (1) Affix the ornament on the steering wheel pad by means of two-faced adhesive tape.



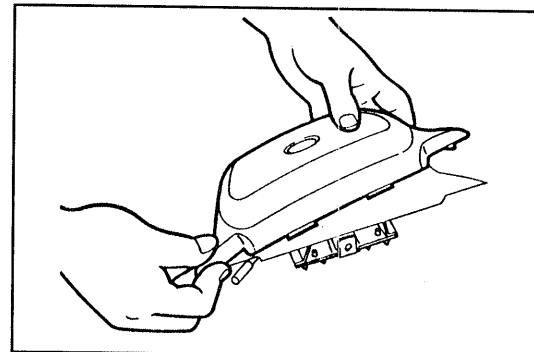
WRU90-SR080

- (2) Install the steering wheel pad set spring to the steering wheel lower cover.



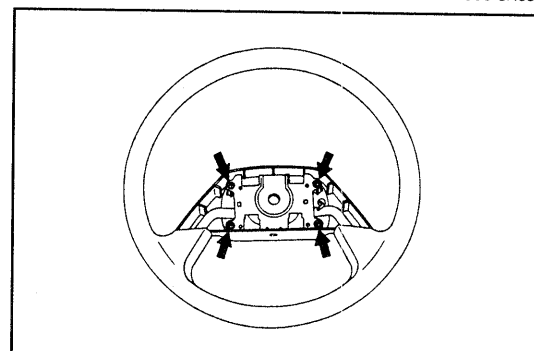
WRU90-SR081

- (3) Install the steering wheel pad to the steering wheel lower cover.



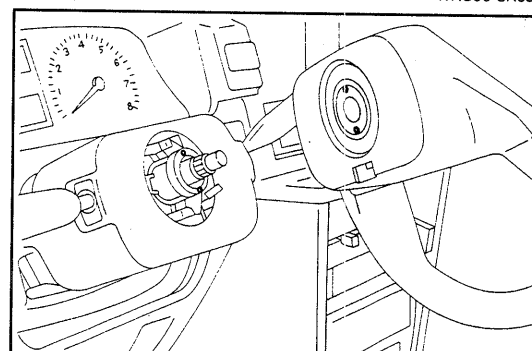
WRU90-SR082

2. Install the steering wheel cover on the steering wheel.



WRU90-SR083

3. Install the steering wheel in such a way that the steering wheel is assembled in the correct direction when it is set to a straight-ahead position and the protruded section of the turn signal cancelling cam is aligned with the steering wheel hole.

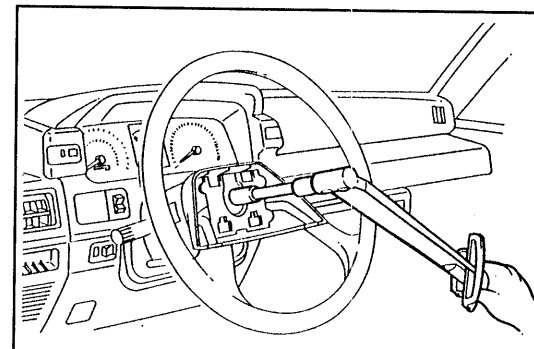


WRU90-SR084

4. Install a new steering wheel attaching nut. Tighten the attaching nut to the specified torque.

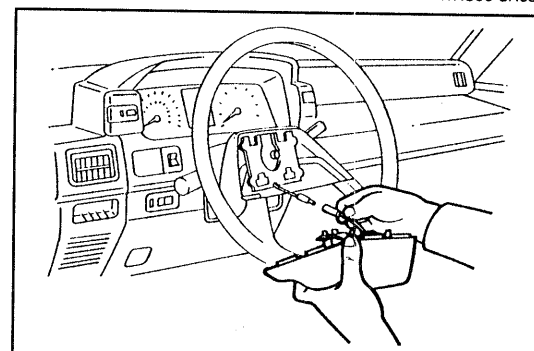
**Tightening Torque:**

3.0 - 5.0 kgf-m (21.7 - 36.2 ft-lb, 29.4 - 49.0 N-m)



WRU90-SR085

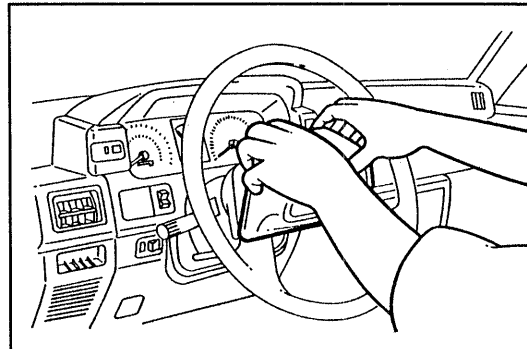
5. Connect the connector for horn use.



WRU90-SR086

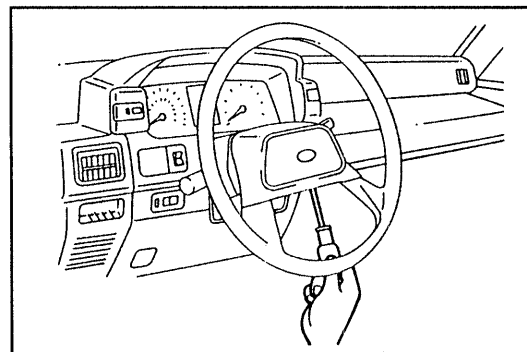
## STEERING

6. Push the steering wheel pad set spring of the horn pad assembly into position, while aligning it with the steering wheel attaching section.



WRU90-SR087

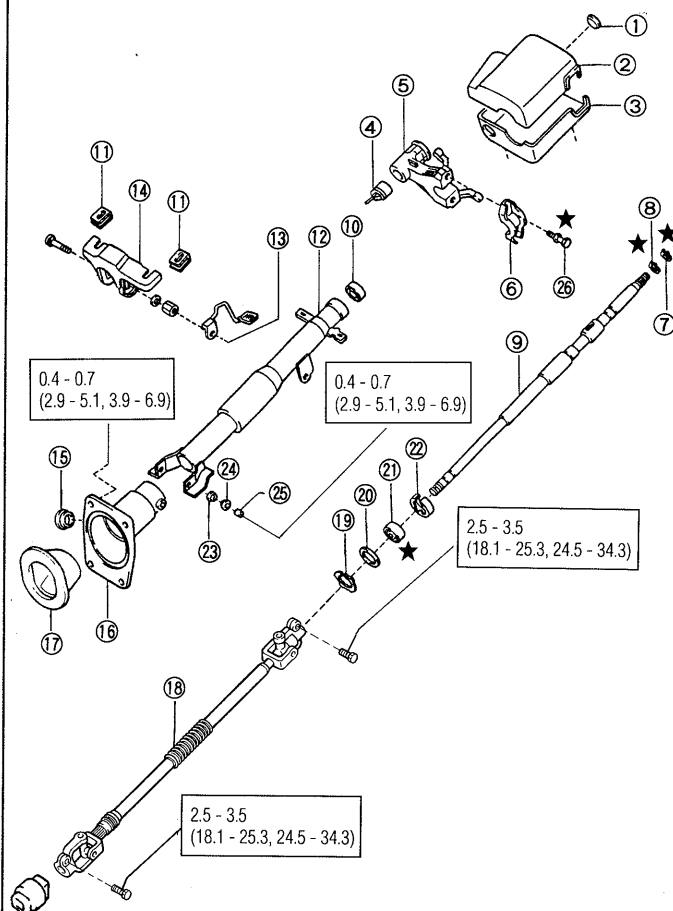
7. Install the horn pad assembly attaching screw.
8. Connect the battery ground cable terminal to the negative (-) terminal of the battery.
9. Perform the re-setting of the clock, radio and so forth, as required.
10. Perform the in vehicle inspection.



WRU90-SR088

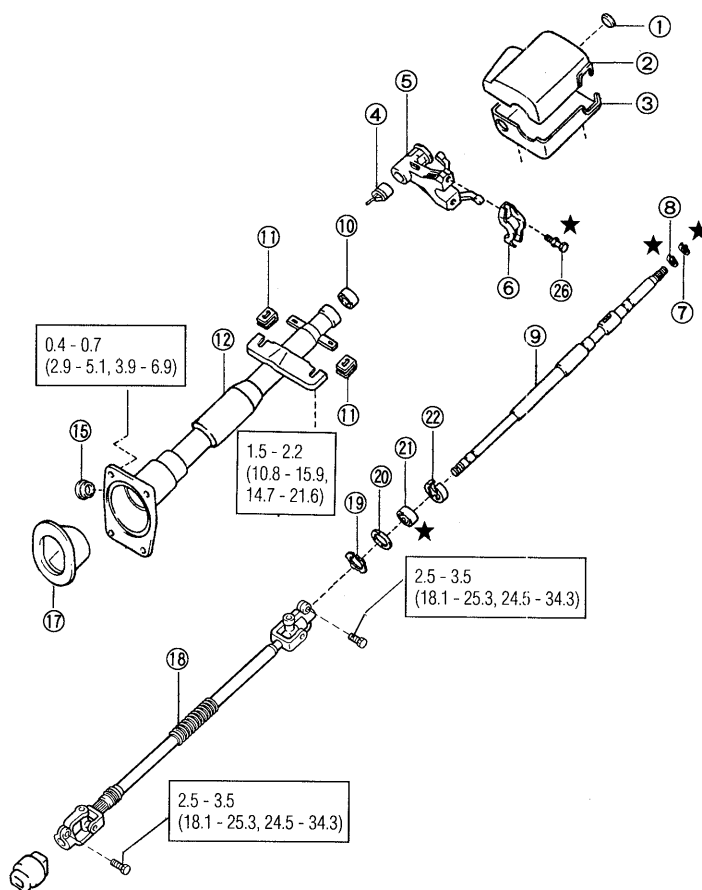
# STEERING COLUMN COMPONENTS

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 sub assembly
- ⑩ Radial ball bearing
- ⑪ Steering column upper attachment plate
- ⑫ Steering column tube sub assembly
- ⑬ Steering tilt lever
- ⑭ Tilt steering support sub assembly

Standard type

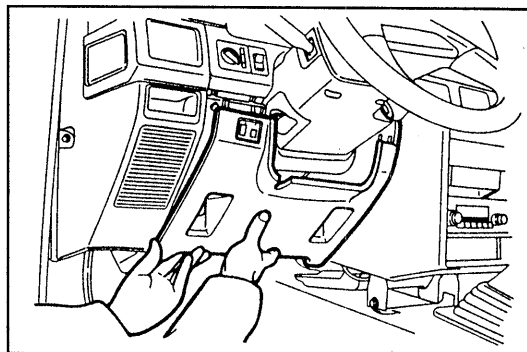


- ⑮ Hole plug
- ⑯ Steering column hole cover
- ⑰ Steering column hole cover shield
- ⑱ Steering intermediate shaft
- ⑲ Hole snap ring
- ⑳ Washer
- ㉑ Radial ball bearing
- ㉒ Steering shaft thrust stopper sub assembly
- ㉓ Bush
- ㉔ Bush
- ㉕ Collar
- ㉖ Steering lock set bolt
- ㉗ Dust boot

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

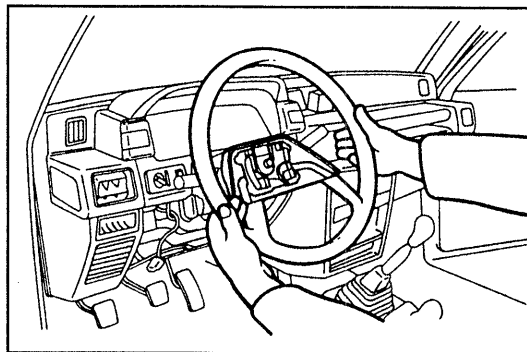
## REMOVAL

1. Remove the instrument panel lower panel.  
(As for the removal procedure of the instrument panel lower panel, see the Body section.)



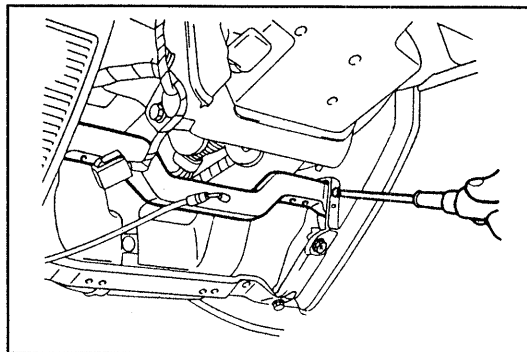
WRU90-SR090

2. Remove the steering wheel.  
(See page SR-23.)



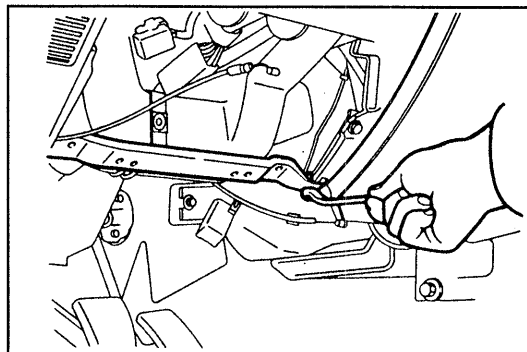
WRU90-SR091

3. Remove the instrument panel finish panel No. 1.



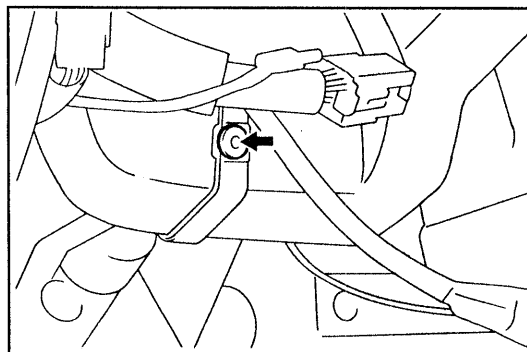
WRU90-SR092

4. Remove the instrument panel reinforcement subassembly.



WRU90-SR093

5. Removal of air duct assembly No.1  
(1) Push the center of the clip by the forward end of a Phillips screwdriver or the like.



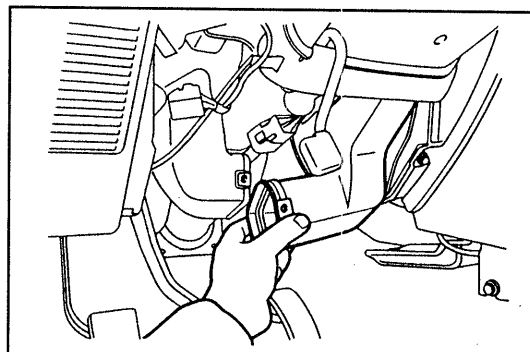
WRU90-SR094

(2) Detach the clip from the duct.



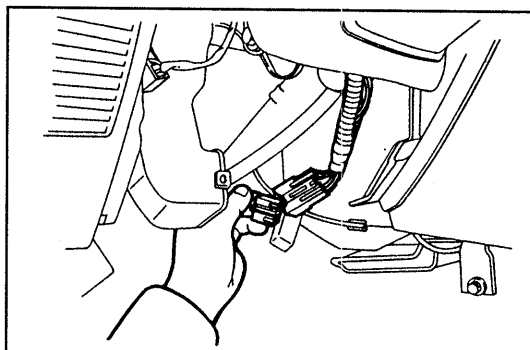
WRU90-SR095

(3) Remove the air duct assembly No.1.



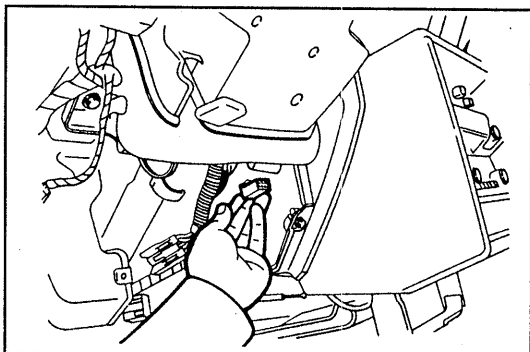
WRU90-SR096

6. Disconnect the connector of the turn signal switch.



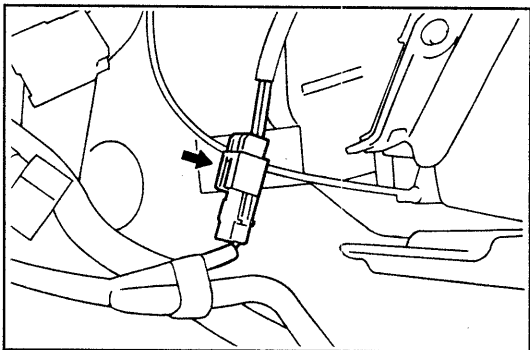
WRU90-SR097

7. Disconnect the connector from the ignition switch.



WRU90-SR098

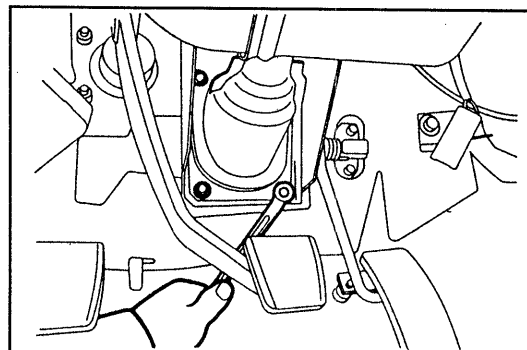
8. Disconnect the connector of the key reminder switch (if so equipped).



WRU90-SR099

## STEERING

9. Remove the attaching bolts at the steering column tube hole cover side.



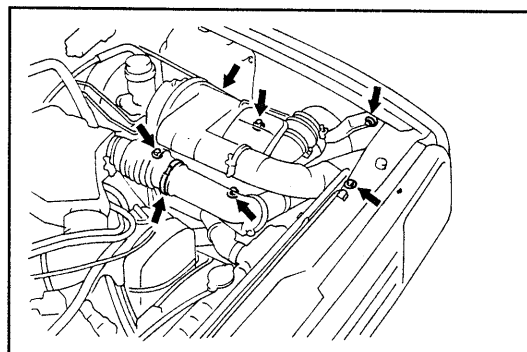
WRU90-SR100

10. Removal of air cleaner

**NOTE:**

- For details, refer to the Engine section.
- The air cleaner assembly has been removed so that the disconnection/reconnection of the intermediate shaft may be performed easily.

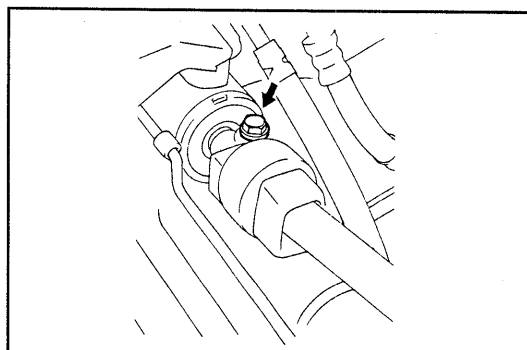
- (1) Remove the attaching bolts of the air cleaner and air hoses.
- (2) Loosen the hose band.
- (3) Remove the air cleaner and air hose as an assembly from the vehicle.



WRU90-SR101

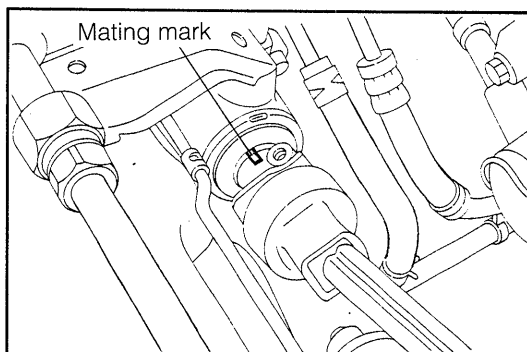
11. Disconnection of intermediate shaft from steering gear housing

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



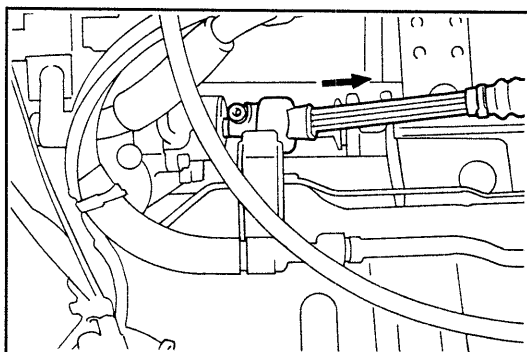
WRU90-SR102

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



WRU90-SR103

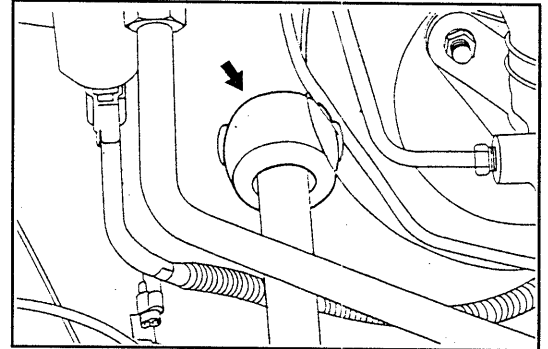
- (3) Disconnect the intermediate shaft from the steering gear housing by contracting the intermediate shaft.



WRU90-SR105

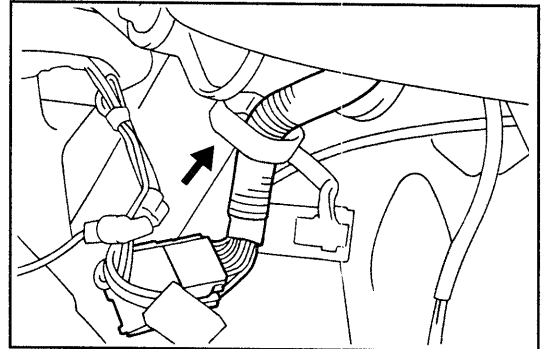


12. Keep the steering column hole cover shield stored inside the vehicle interior.



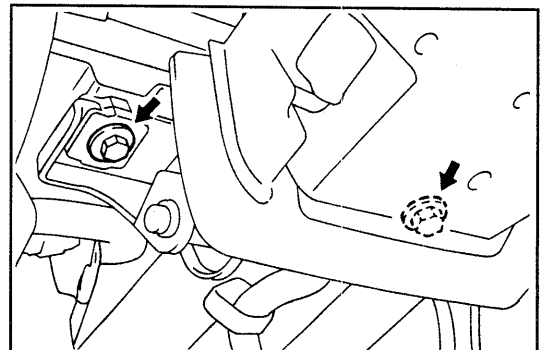
WRU90-SR106

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



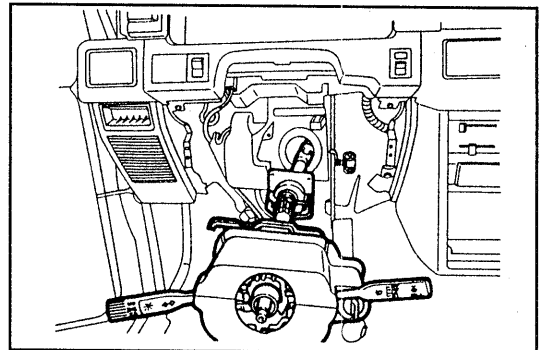
WRU90-SR107

14. 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.



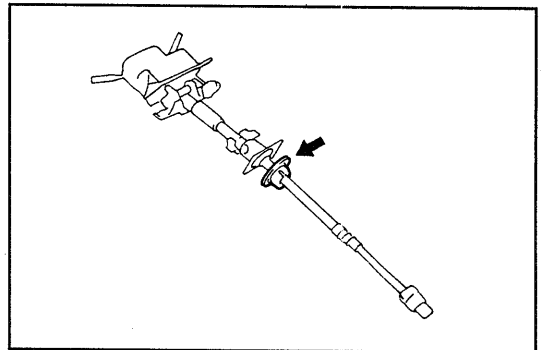
WRU90-SR108

15. 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.



WRU90-SR109

16. Remove the steering hole cover shield.



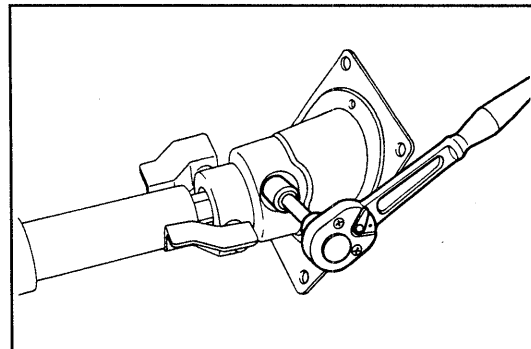
WRU90-SR110

## STEERING

17. Remove the hole plug. Remove the bolts which connect the steering shaft to the intermediate shaft.
18. Pull out the intermediate shaft from the steering shaft.

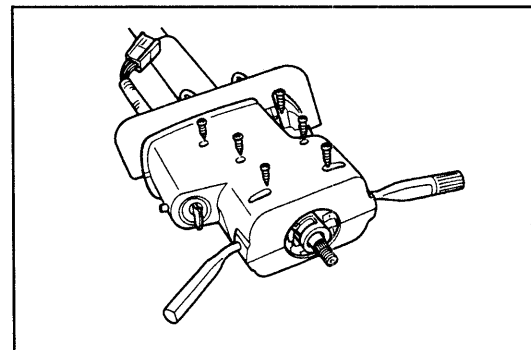
**NOTE:**

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



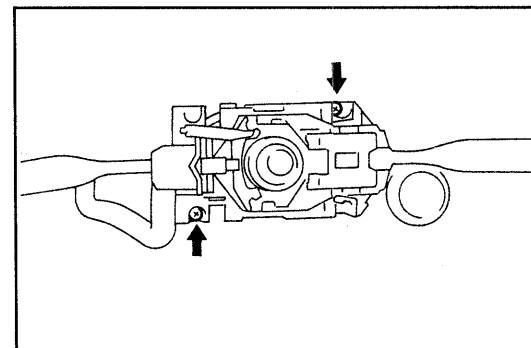
WRU90-SR111

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



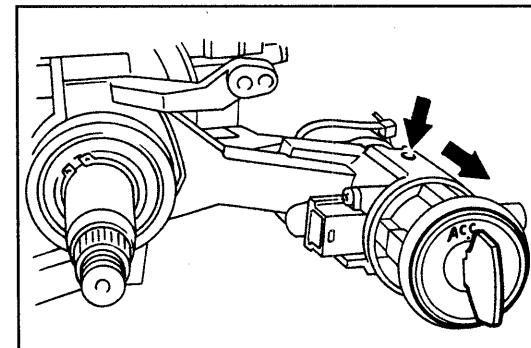
WRU90-SR112

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



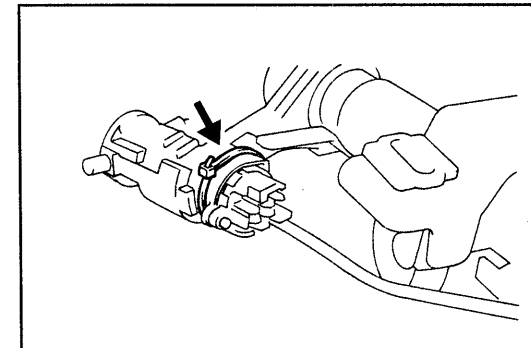
WRU90-SR113

21. 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.



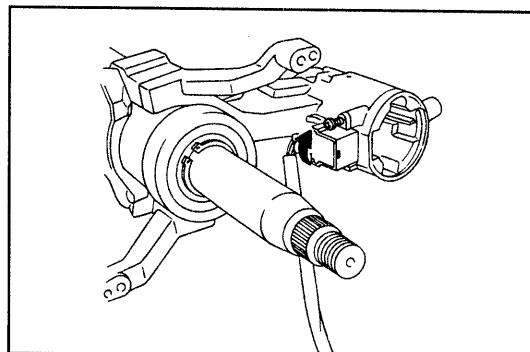
WRU90-SR114

22. Detach the key reminder switch cord coat clamp. (Key reminder switch-equipped vehicle only)



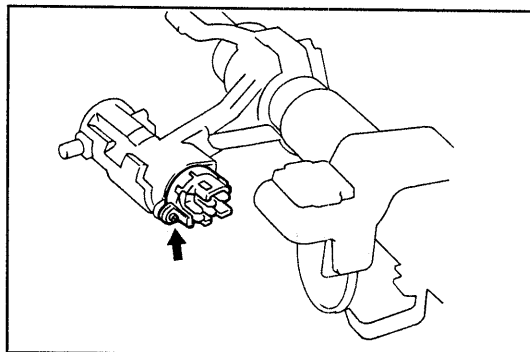
WRU90-SR115

23. 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.  
(Only for key reminder switch equipped vehicle)



WRU90-SR116

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

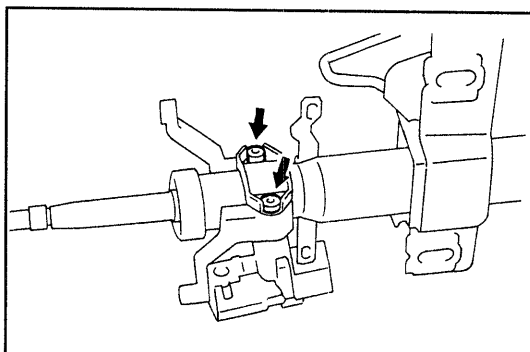


WRU90-SR117

25. 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 (0.67 inch) diameter.

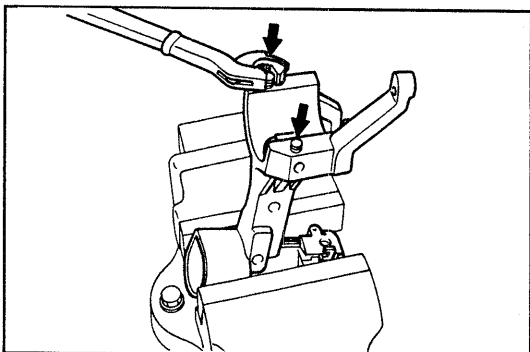
**NOTE:**

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



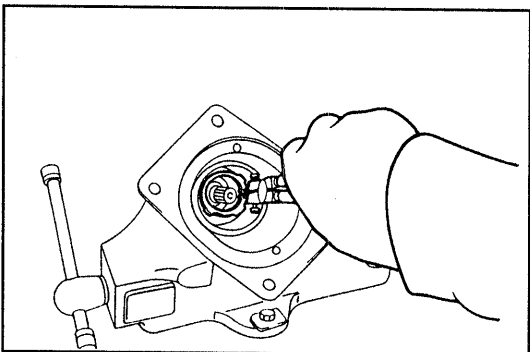
WRU90-SR118

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



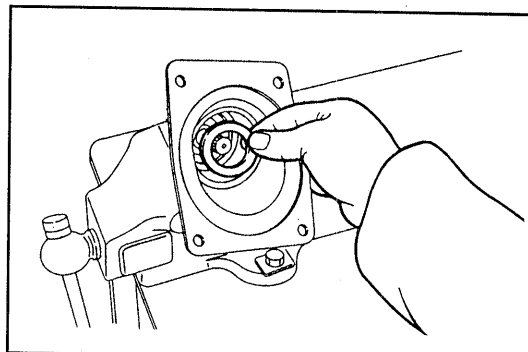
WRU90-SR119

26. Disassembly of steering column
- (1) Detach the hole snap ring.



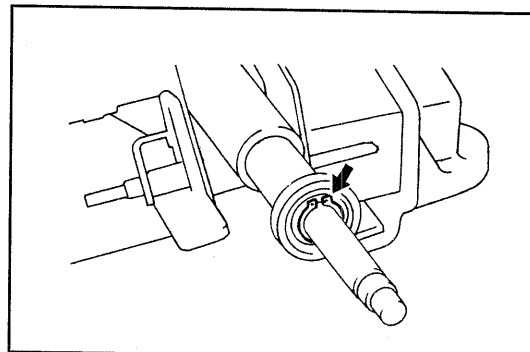
WRU90-SR120

(2) Remove the washer plate.



WRU90-SR121

(3) Detach the shaft snap ring.

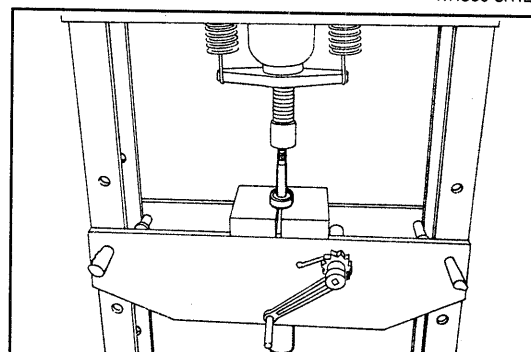


WRU90-SR122

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

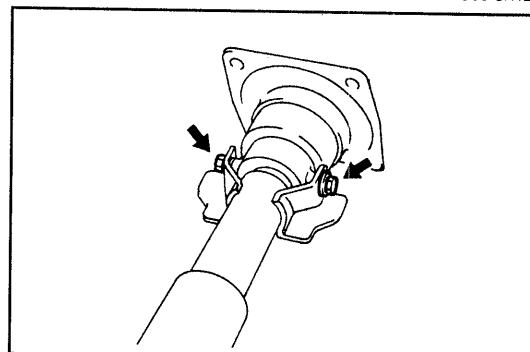
**NOTE:**

- 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.



WRU90-SR123

(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)

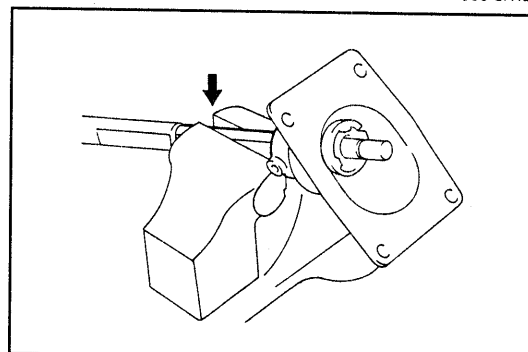


WRU90-SR124

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

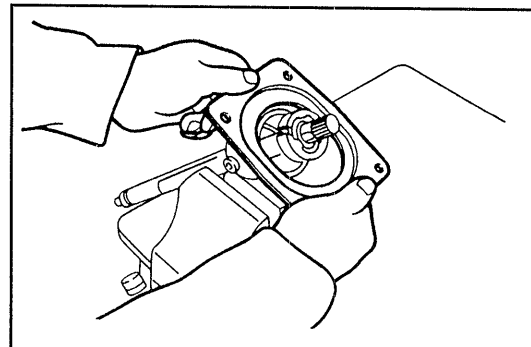
**NOTE:**

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



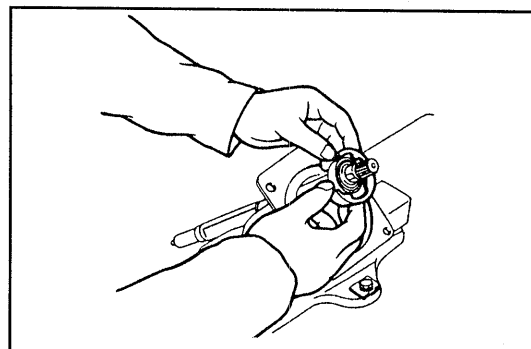
WRU90-SR125

- (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)



WRU90-SR126

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



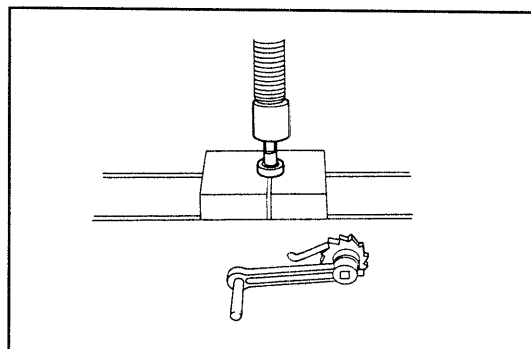
WRU90-SR127

28. Removal of radial ball bearing  
(Only cases where such operation is required. See page SR-38.)

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

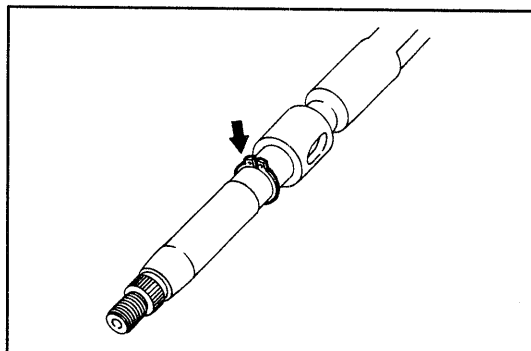
**NOTE:**

- 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.



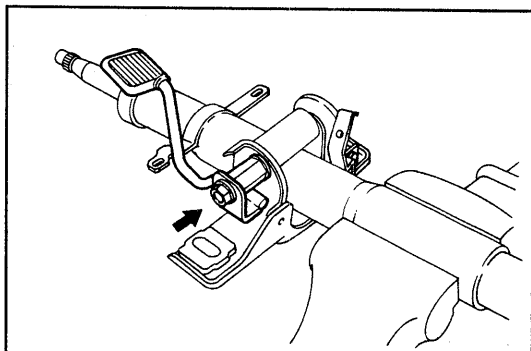
WRU90-SR128

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



WRU90-SR129

30. 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.



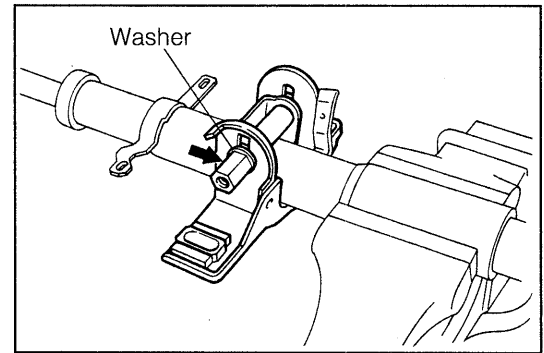
WRU90-SR130

## STEERING

- (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.



WRU90-SR131

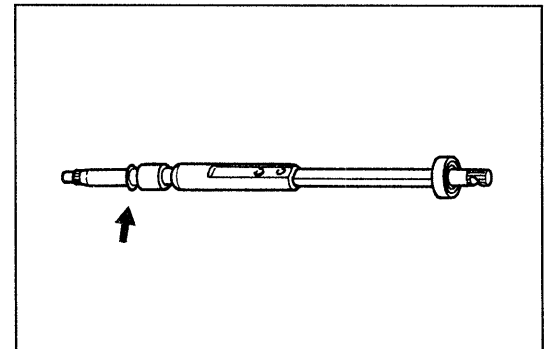
## INSPECTION

### 1. Inspection of steering shaft

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

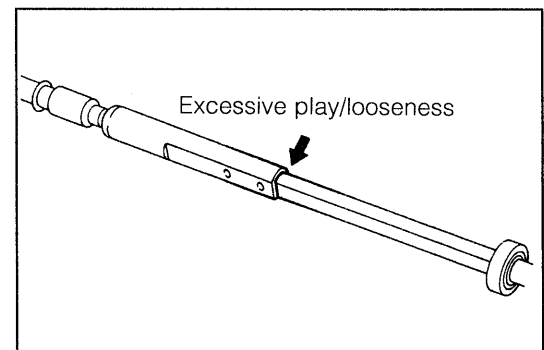
**NOTE:**

- If the snap ring is damaged, remove the snap ring. (See page SR-42.)



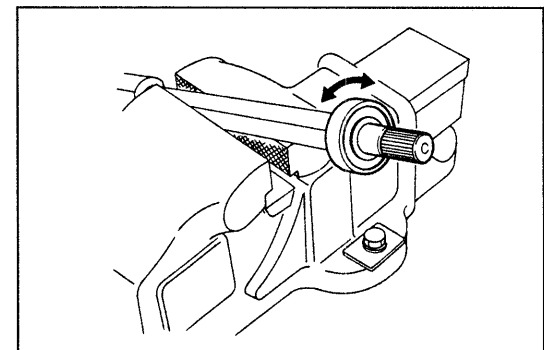
WRU92-SR411

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



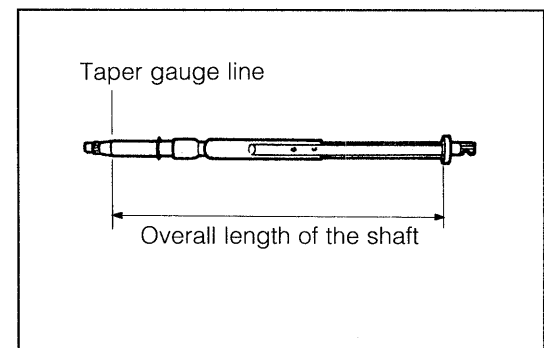
WRU90-SR133

- (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. (See page SR-37.)



WRU90-SR134

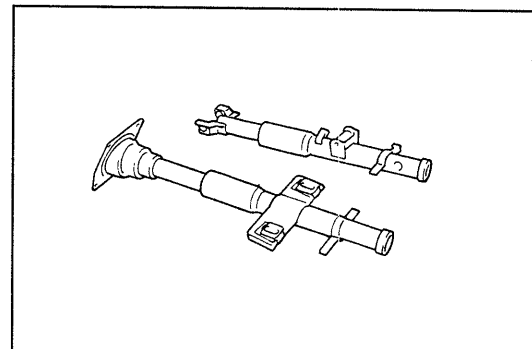
- (4) Ensure that the overall length of the steering shaft is within the specified value.  
**Specified Value: About 545.5 mm (21.48 inches)**



WRU90-SR135

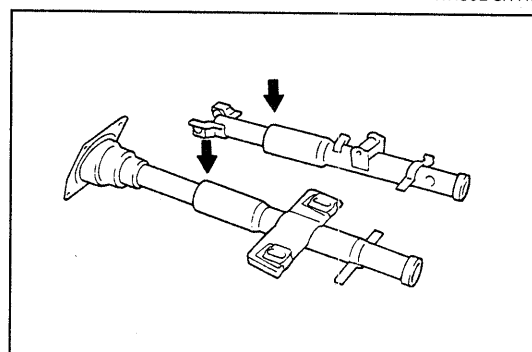
## 2. Steering column tube

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



WRU92-SR412

- (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.



WRU90-SR137

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

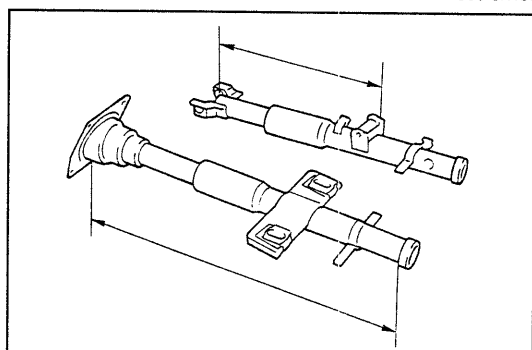
**Specified Value:**

**Standard Type:**

About 313 mm (12.32 inches) <sup>\*1</sup>

**Tilt Steering Type:**

About 559 mm (22.01 inches) <sup>\*2</sup>



WRU90-SR138

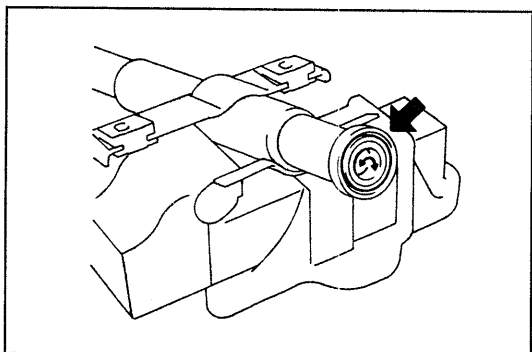
### NOTE:

<sup>\*1</sup> Dimension between the centers of bolt holes

<sup>\*2</sup> Dimension between the center of hole at the column hole cover and the bearing end section

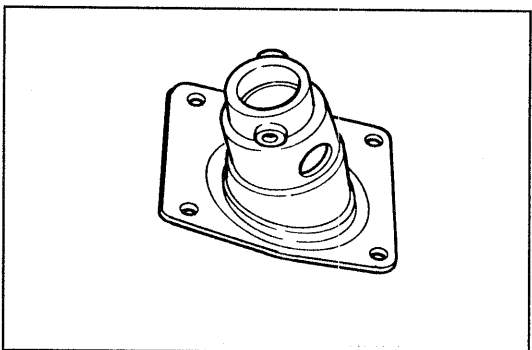
- (4) Ensure that the radial ball bearing assembled in the steering column tube exhibits no defect, such as abnormal binding.

If any defect is present, replace the steering column tube.



WRU90-SR139

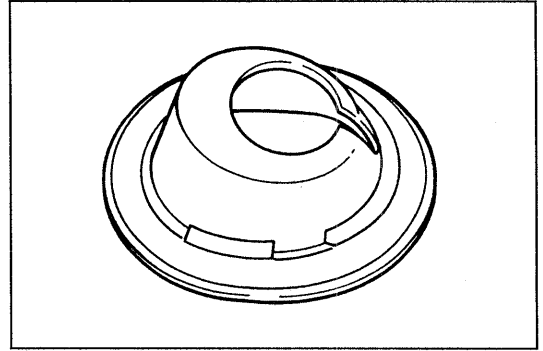
3. Ensure that the steering column hole cover exhibits no damage, such as wear, cracks and/or deformation. (Tilt steering-equipped vehicle only)



WRU92-SR413

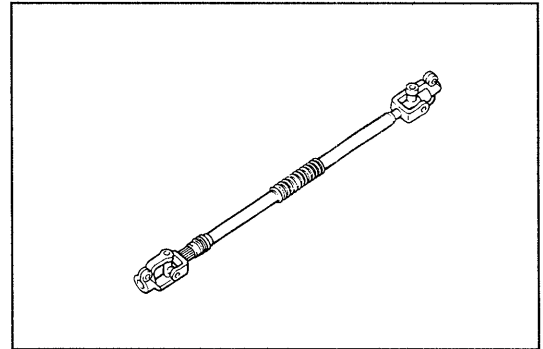
## STEERING

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



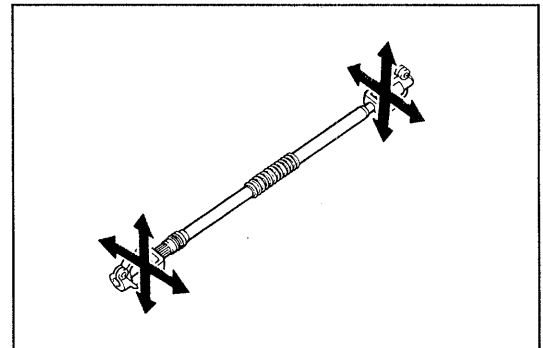
WRU90-SR141

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



WRU92-SR414

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

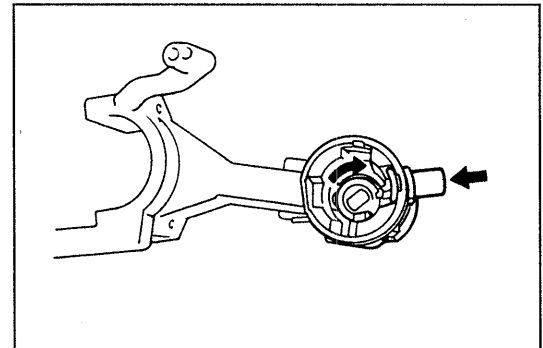


WRU92-SR415

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.

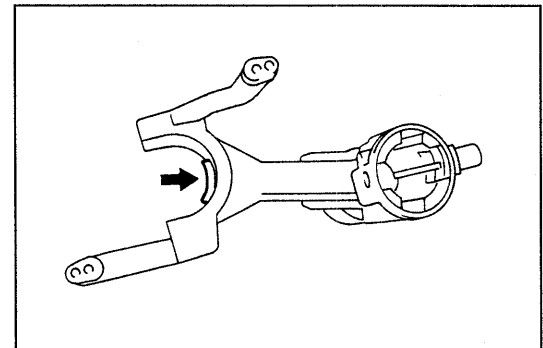
**NOTE:**

- Do not pull out the cam.



WRU90-SR144

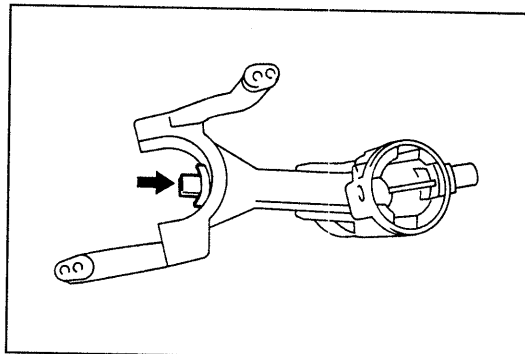
- (2) Ensure that the pawl of the steering lock is not protruded under the condition (1).



WRU90-SR145

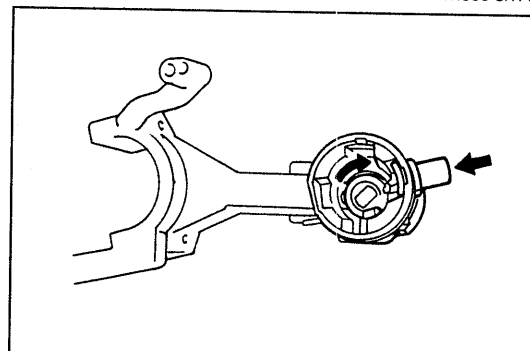


- (3) Under the condition (1), push the pushbutton. Ensure that the pawl for steering shaft lock jumps out.



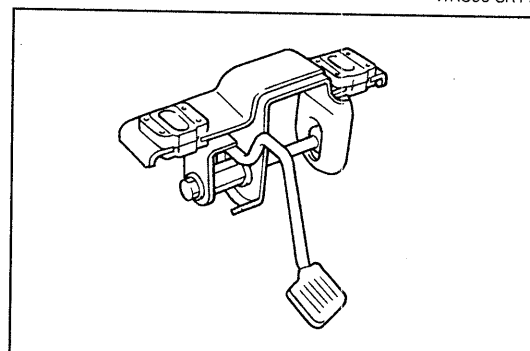
WRU90-SR146

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



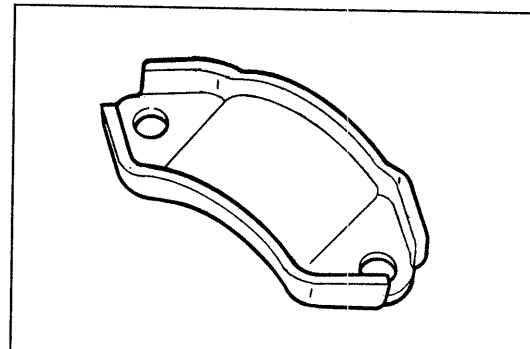
WRU90-SR147

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



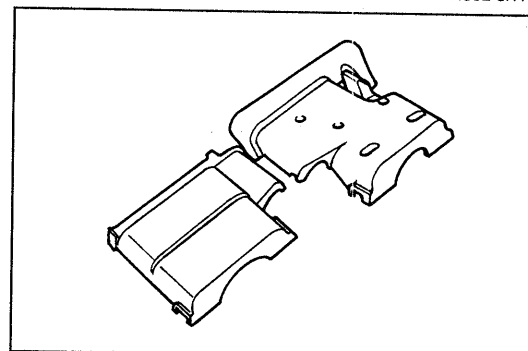
WRU90-SR148

8. Ensure that the steering column housing exhibits no damage, such as cracks and/or deformation.



WRU92-SR416

9. Inspection of steering column cover  
Ensure that the steering column cover exhibits no damage, such as scratch, wear and/or deformation.



WRU90-SR150

# STEERING

10. Perform unit inspection for each switch.  
(Refer to the Body Electrical System section.)

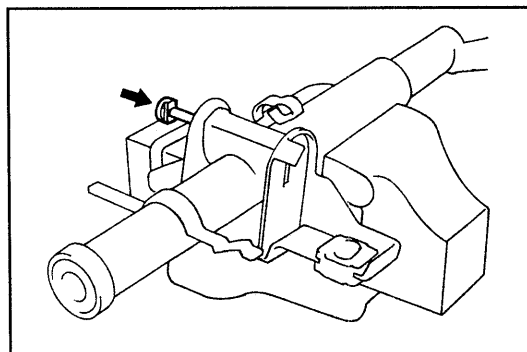
## INSTALLATION

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.

WRU90-SR151

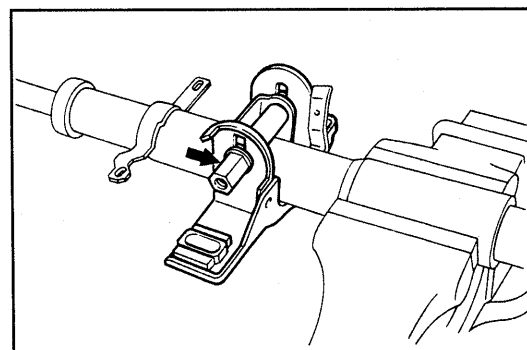


WRU90-SR152

- (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.

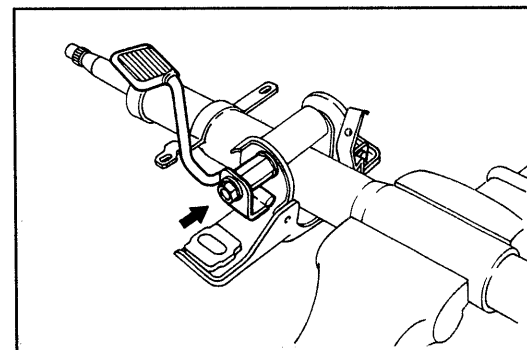


WRU90-SR153

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

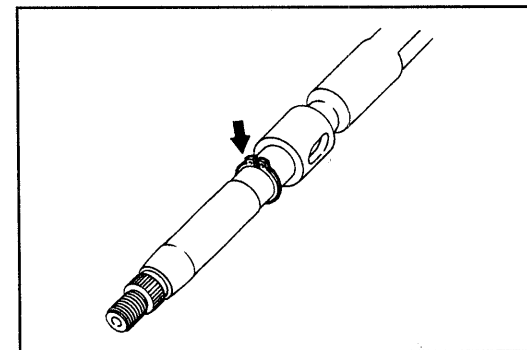
**NOTE:**

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



WRU90-SR154

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



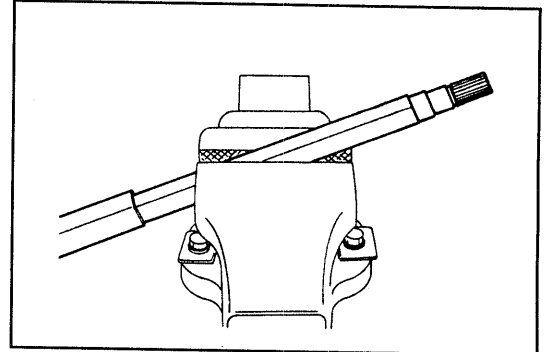
WRU90-SR155

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.

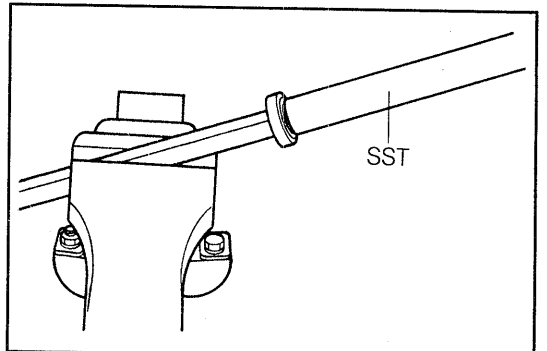


WRU90-SR156

- (2) Press a new radial ball bearing into the steering shaft, using the handle section of the following SST or the like.  
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/or bearing cover, etc.

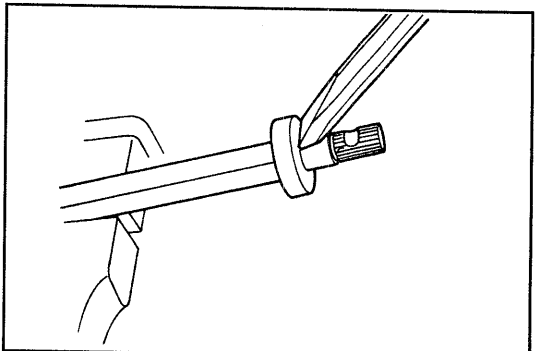


WRU90-SR157

- (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.

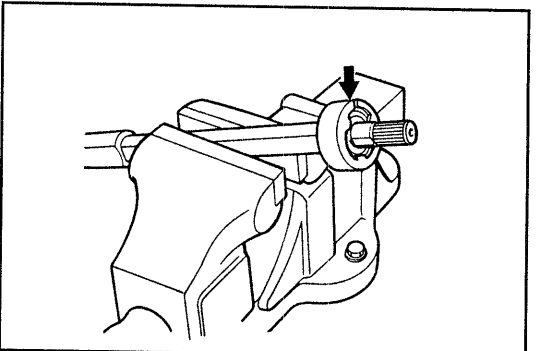
**NOTE:**

- Be very carefull not to bent the steering shaft.



WRU90-SR158

4. Install the steering shaft thrust stopper to the radial ball bearing.
5. Apply a thin film of Sanper® 150 to the steering shaft thrust stopper surface.



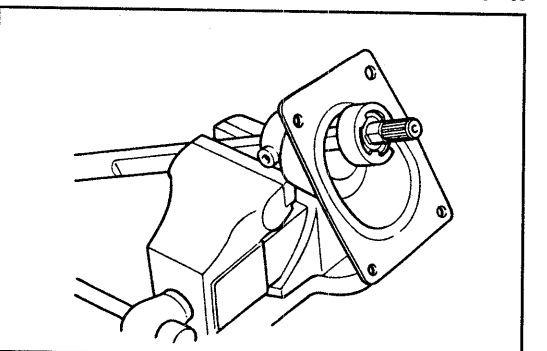
WRU90-SR159

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.



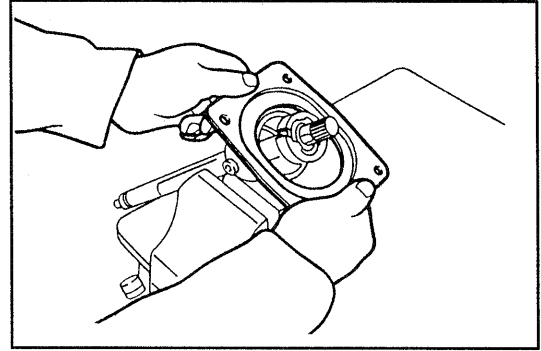
WRU90-SR160

## STEERING

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

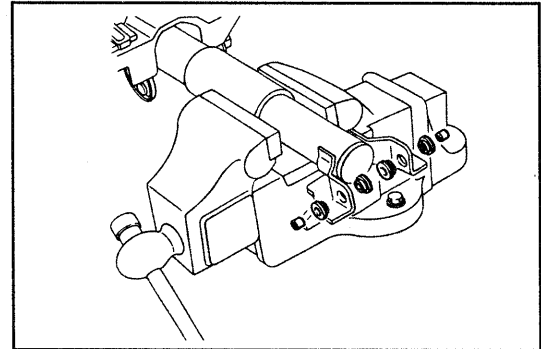
**NOTE:**

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



WRU90-SR161

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.



WRU90-SR162

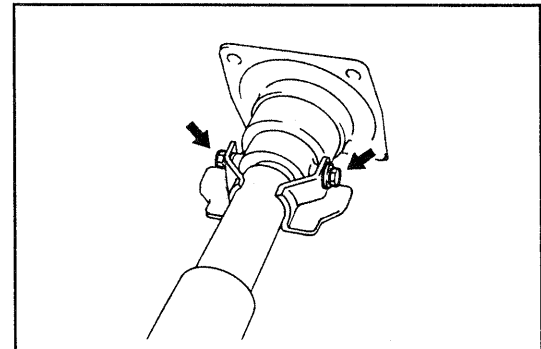
- (3) Connect the steering column tube to the steering column hole cover with the bolts. Tighten the bolts to the specified torque.

**Tightening Torque:**

0.4 - 0.7 kgf-m (2.9 - 5.1 ft-lb, 3.9 - 6.9 N-m)

**NOTE:**

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

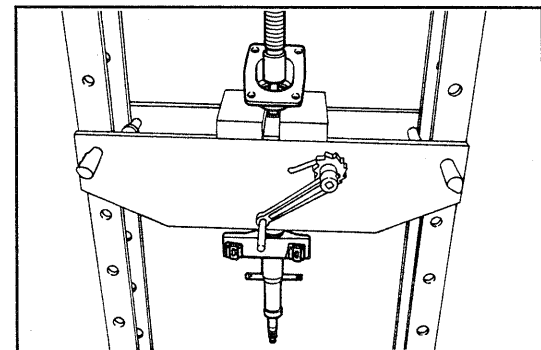


WRU90-SR163

8. Installation of steering column tube  
(Standard type only)
- Press the steering shaft into the steering column by means of a hydraulic press.

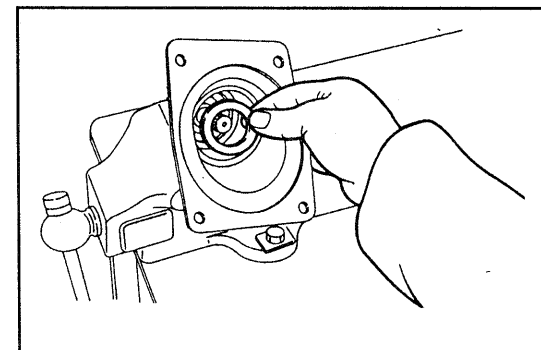
**NOTE:**

- 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 can be installed. Never continue the press-fitting beyond that extent.



WRU90-SR164

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

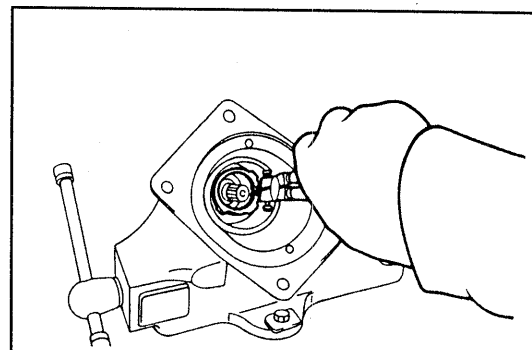


WRU90-SR165

10. Attach a new snap ring.

**NOTE:**

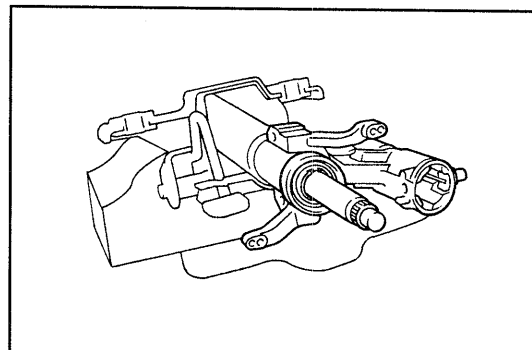
- Make sure that the snap ring is fitted in the snap ring groove of the steering column tube or steering column hole cover.



WRU90-SR166

11. Install the new shaft snap ring

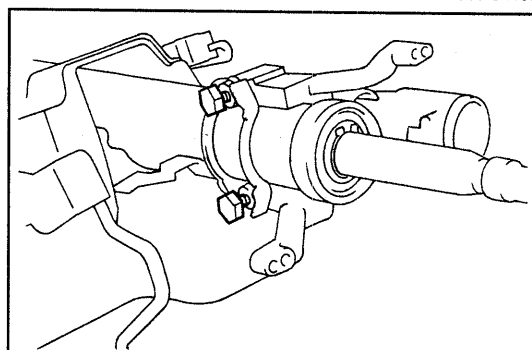
12. Install the steering column upper bracket to the steering column tube, while aligning it with the hole of the pawl for steering column tube locking use.



WRU90-SR167

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.

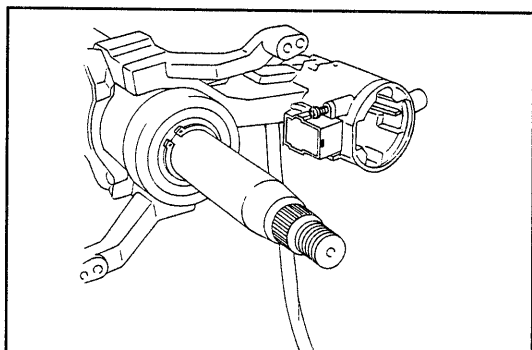


WRU90-SR168

15. Installation of key reminder switch (only for key reminder switch equipped vehicle)

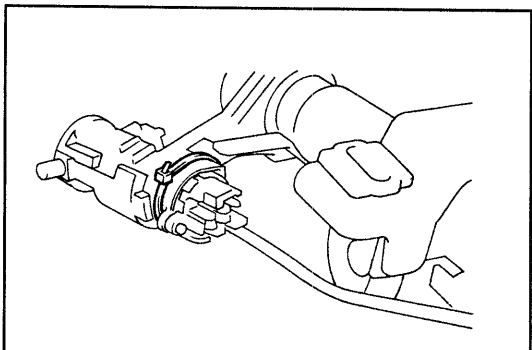
- (1) Insert the key reminder switch into the installation section of the steering column upper bracket. Hook the key reminder switch to the pawl of the steering column upper bracket.

- (2) Tighten the attaching screw.



WRU90-SR169

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

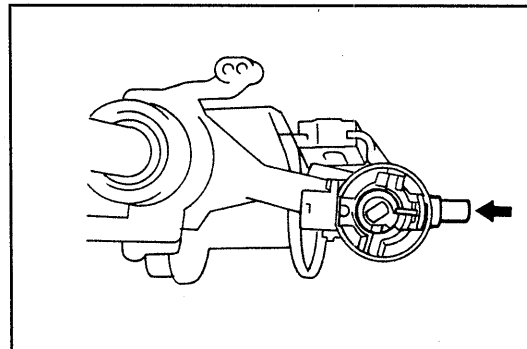


WRU90-SR170

## STEERING

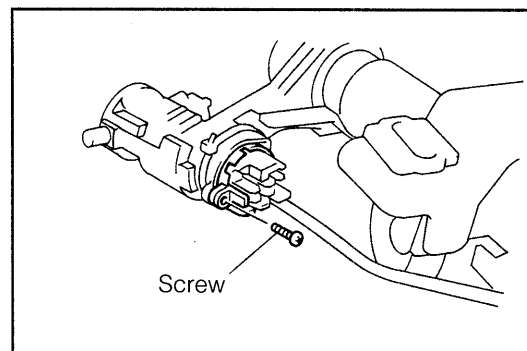
### 16. Installation of ignition key switch

- (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.



WRU90-SR171

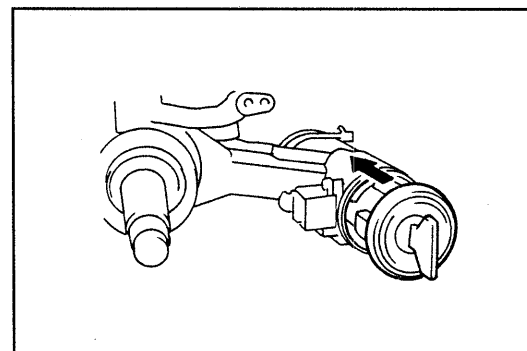
- (2) While aligning the recessed section of the ignition key switch with the pawl of the steering column upper bracket, insert the ignition key switch into the steering column upper bracket. Tighten the attaching screw.



WRU90-SR172

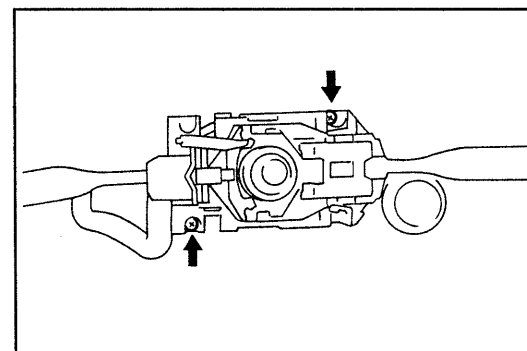
### 17. Installation of ignition key cylinder

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.



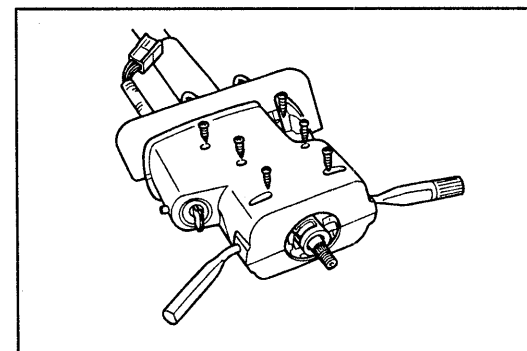
WRU90-SR173

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



WRU90-SR174

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



WRU90-SR175

## 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:

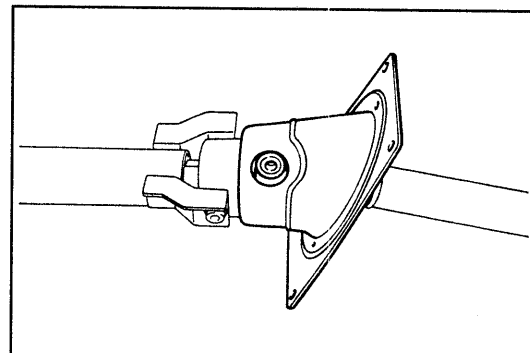
- Be sure to positively connect the universal joint to the serration section as far as it will go, until the serration section of the steering shaft becomes invisible from the universal joint edge surface of the intermediate shaft.
- If the steering shaft and intermediate shaft are reused, align the mating mark which was put during the disassembly when these parts are assembled.

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

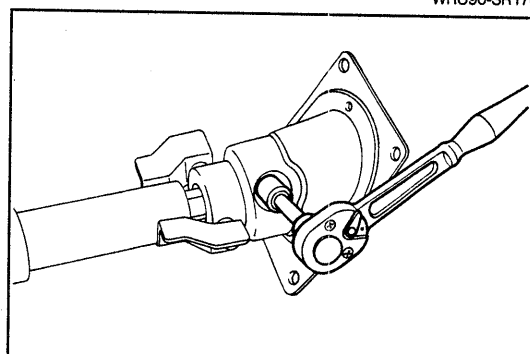
### Tightening Torque:

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

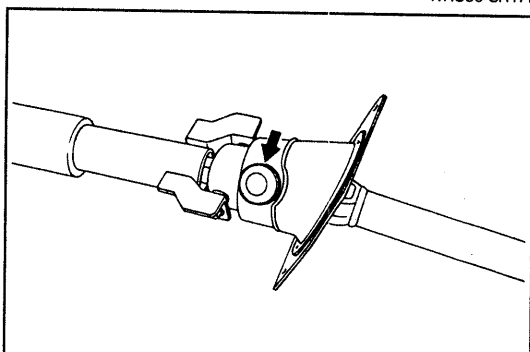
- (3) Install the hole plug.



WRU90-SR176



WRU90-SR177

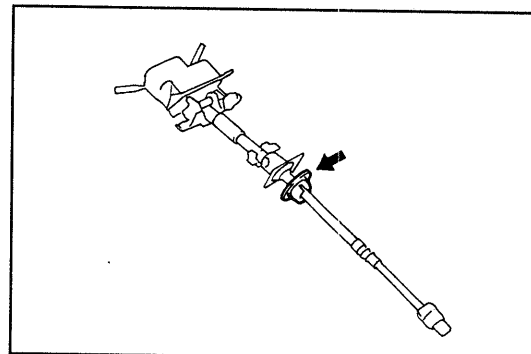


WRU90-SR178

21. Insert the steering column hole cover shield into the intermediate shaft.

### NOTE:

- Install the steering column hole cover shield in such a way that its cut-out section may face toward the lower side of the vehicle.

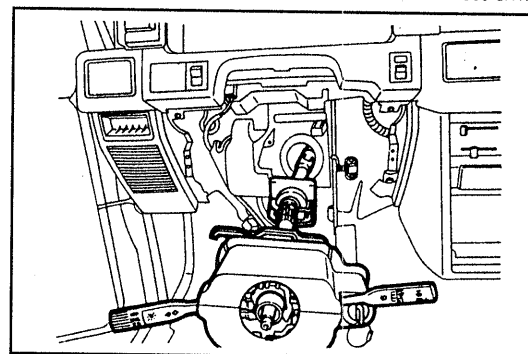


WRU90-SR179

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

### NOTE:

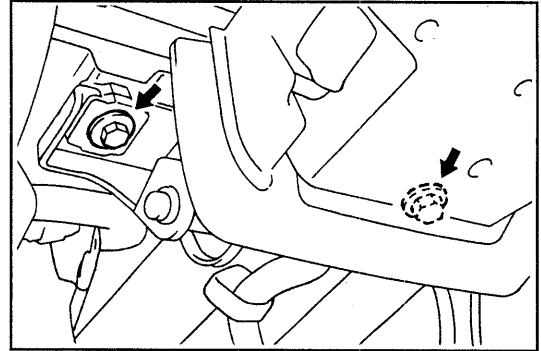
- Care must be exercised so that the intermediate shaft may not interfere with other parts.



WRU90-SR180

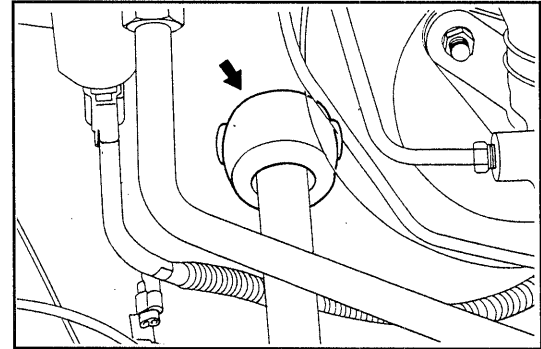
## STEERING

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



WRU90-SR181

24. Install the steering column cover shield as indicated in the right figure.

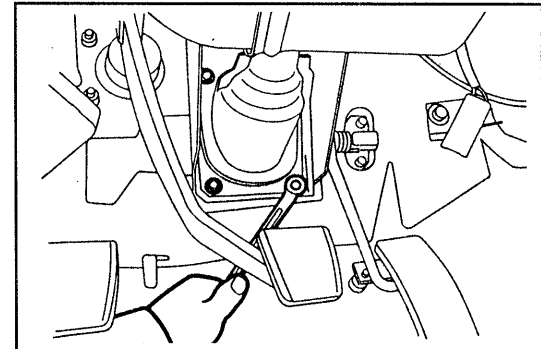


WRU90-SR182

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

**Tightening Torque:**

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

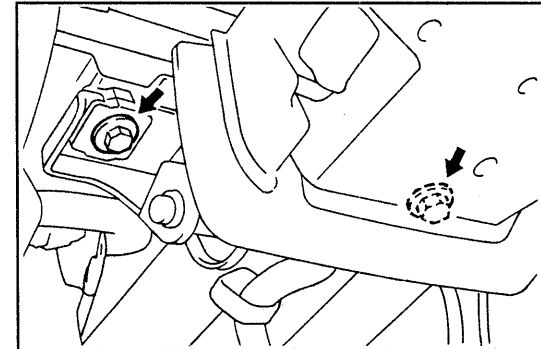


WRU90-SR183

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

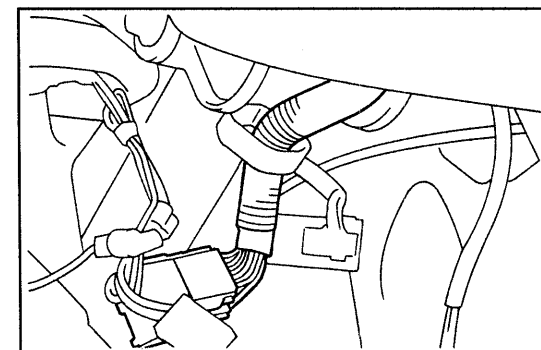
**Tightening Torque:**

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



WRU90-SR184

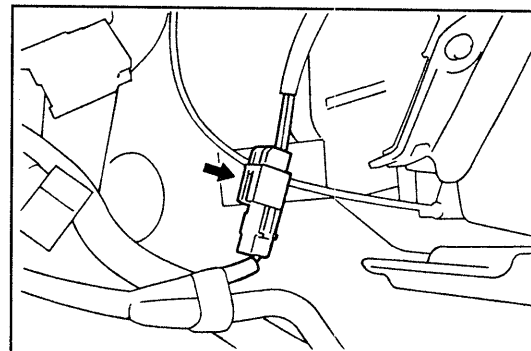
27. Clamp the wire harness to the steering column.



WRU90-SR185

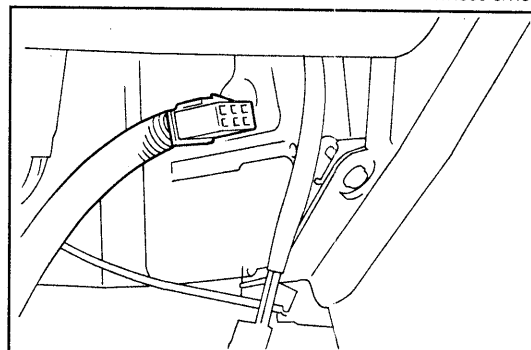


28. Connect the key reminder switch connector (if so equipped).



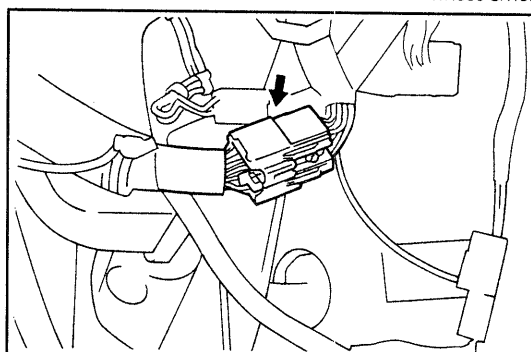
WRU90-SR186

29. Connect the connector to the ignition switch.



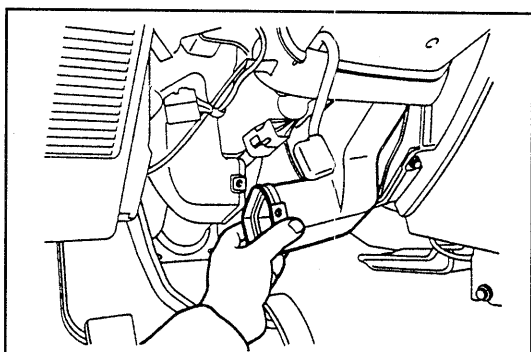
WRU90-SR187

30. Connect the connector of the turn signal switch.



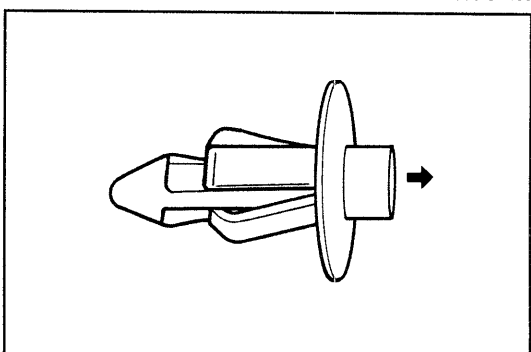
WRU90-SR188

31. Install the air duct assembly No. 1.



WRU90-SR189

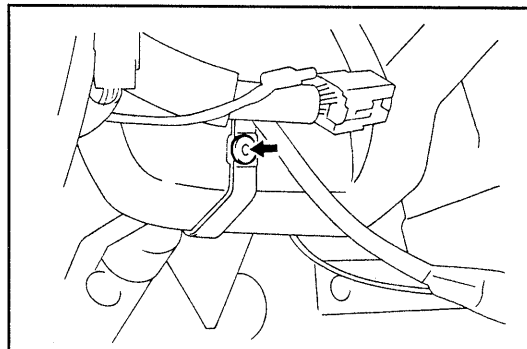
32. Pull out the center of the clip, as indicated in the right figure.



WRU90-SR190

## STEERING

33. 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.

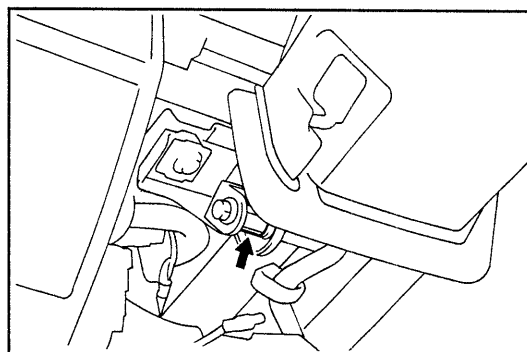


WRU90-SR191

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

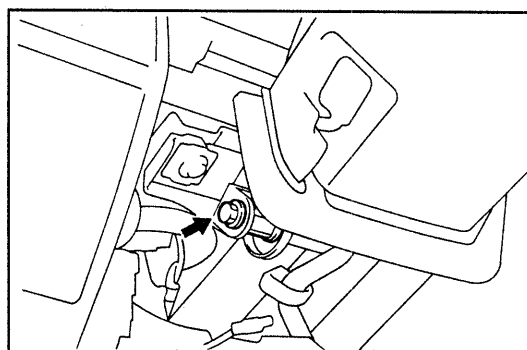
**NOTE:**

- The long nut is a left-threaded nut.



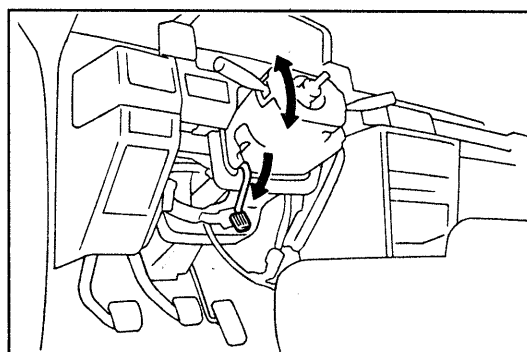
WRU90-SR192

35. 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:  
3.0 - 4.5 kgf-m (21.7 - 36.2 ft-lb, 29.4 - 49.0 N-m)



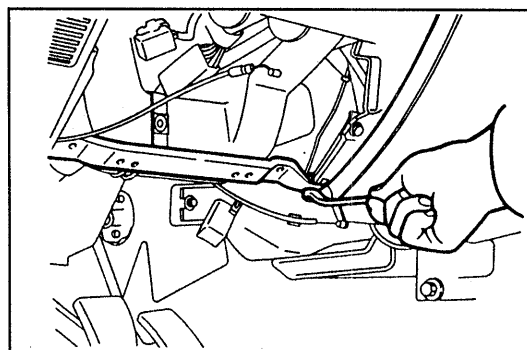
WRU90-SR193

36. Ensure that the steering column is secured.  
If not, adjust the tightening torque, as instructed in the step 34.
37. 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.



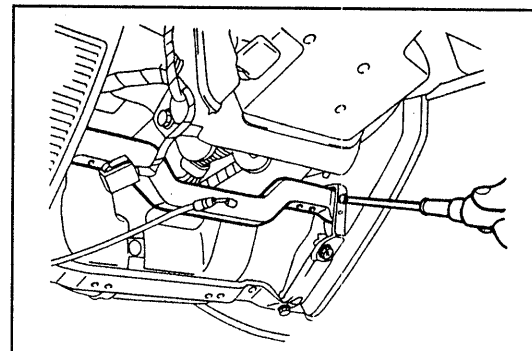
WRU90-SR194

38. Install the instrument panel reinforcement sub-assembly.  
(For details, refer to the Body section.)



WRU90-SR195

39. Install the instrument panel finish panel No. 1.  
(For details, refer to the Body section.)

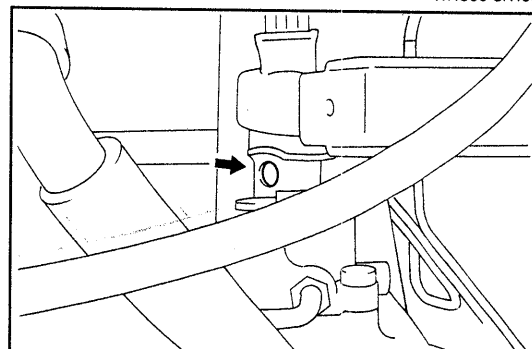


WRU90-SR196

40. Connect the intermediate shaft to the steering gear housing, while aligning the cut-out section of the steering gear hosing shaft with the bolt hole of the intermediate shaft.

**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.
- If the steering shaft and intermediate shaft are reused, align the mating mark which was put during the disassembly when these parts are assembled.

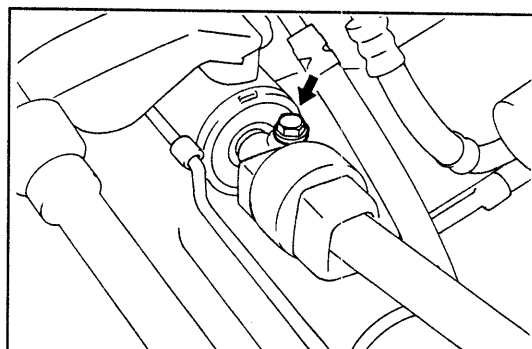


WRU90-SR197

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

**Tightening Torque:**

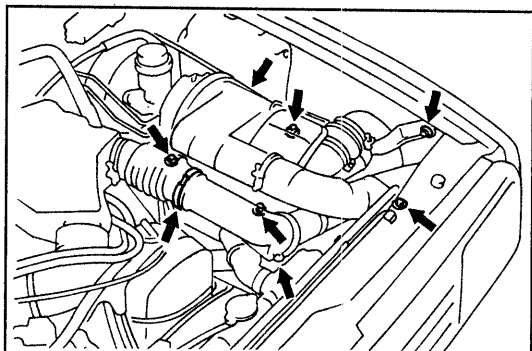
2.5 - 3.5 kgf-m (18.1 - 25.3 ft-lb, 24.5 - 34.3 N·m)



WRU90-SR198

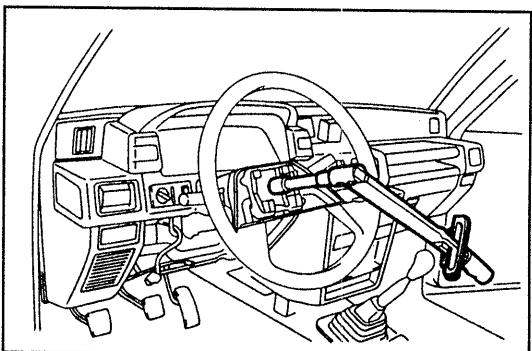
42. Installation of air cleaner and air hose  
(For details, refer to the Engine section.)

- (1) Install the air cleaner and air hose as an assembly to the vehicle. Tighten the five attaching bolts.
- (2) Tighten the hose band.
- (3) Tighten the clutch cable clamp bolt.



WRU90-SR199

43. Installation of steering wheel  
(See page SR-27.)

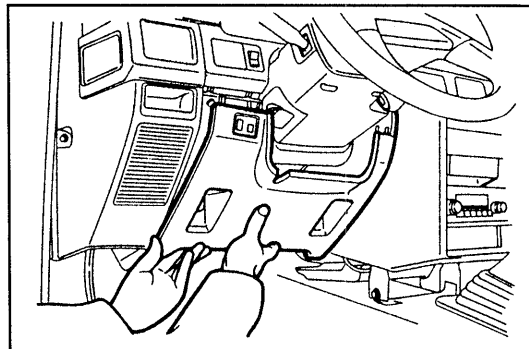


WRU90-SR200

## STEERING

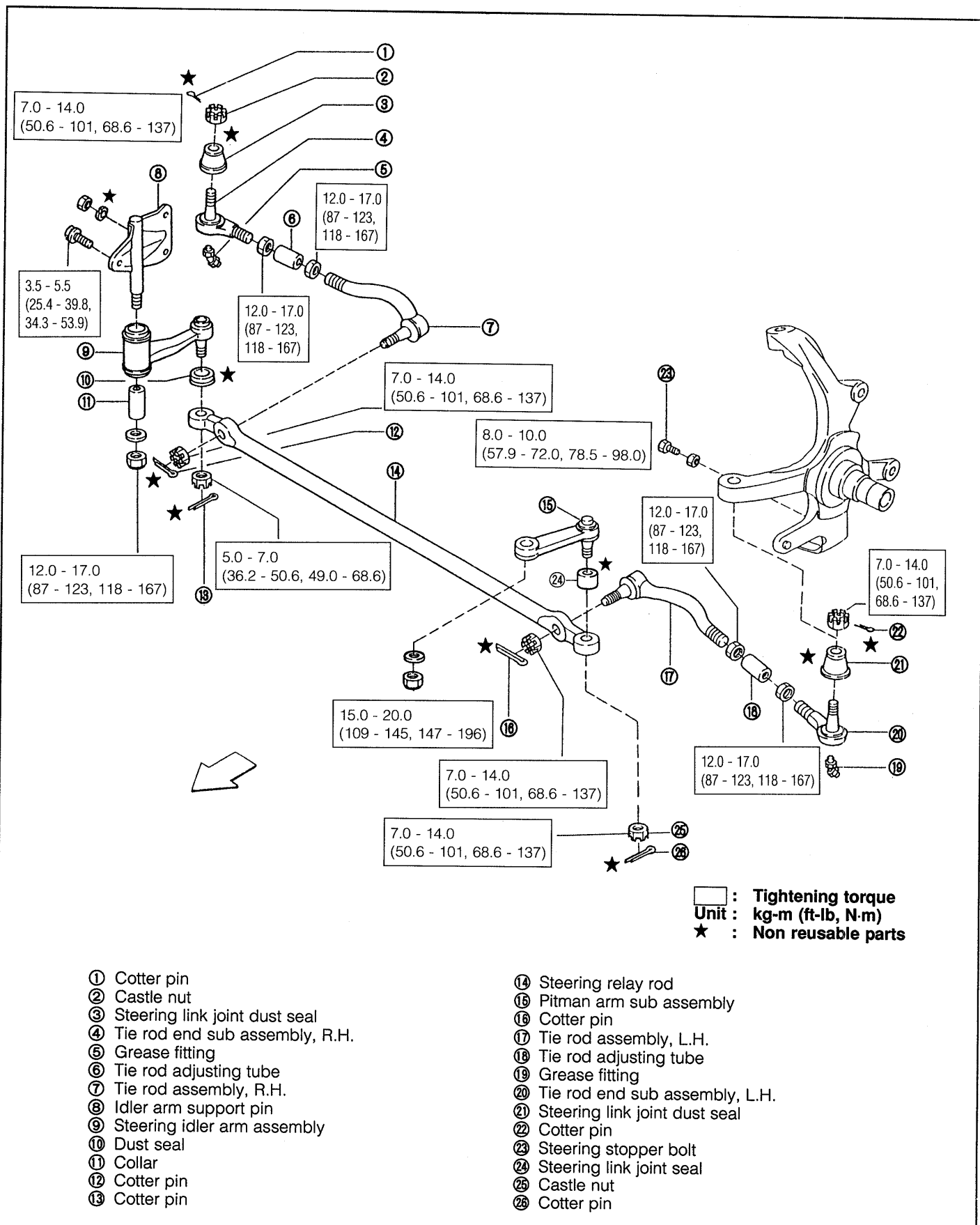
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44. Install the instrument panel lower panel.  
(For details, see the Body section.)



WRU90-SR201

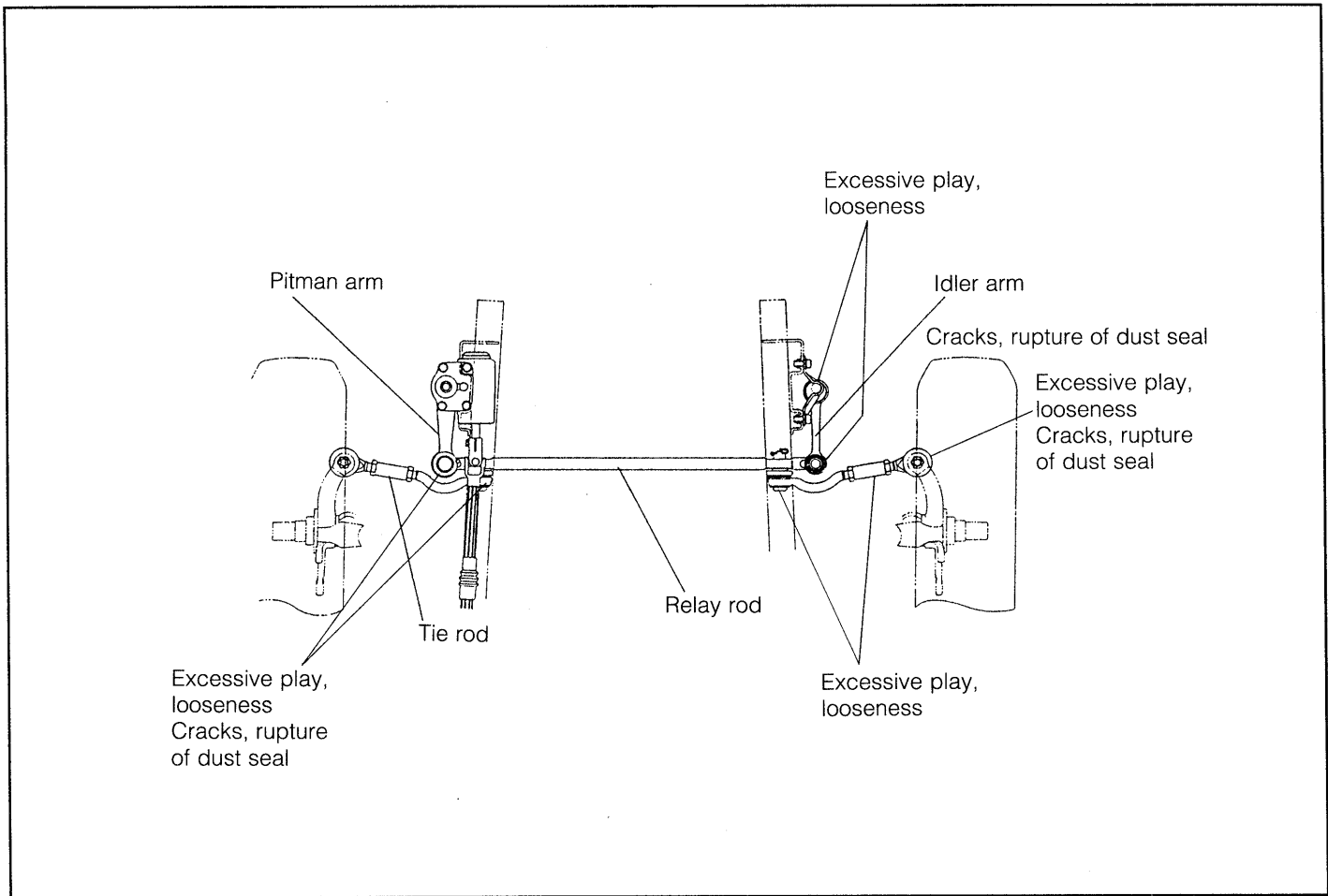
# STEERING LINKAGE COMPONENTS



# STEERING

## INSPECTION

Ensure that each section exhibits no defect, such as cracks, excessive play, looseness and deformation. Replace any defective part.



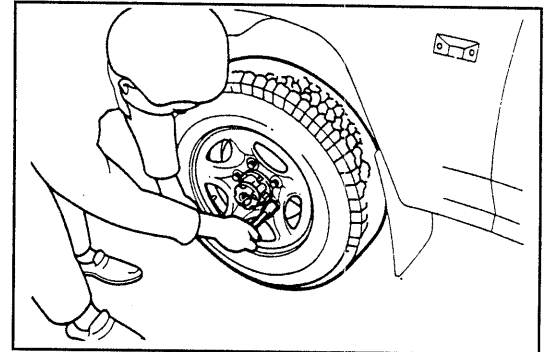
WRU90-SR203

**REMOVAL**

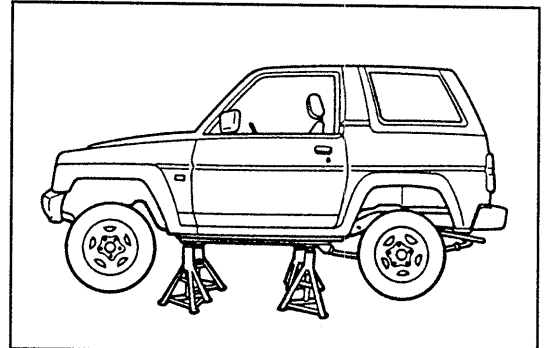
1. Loosen the front wheel attaching bolts.
2. Jack up the vehicle and support it with safety stands.
3. Remove the front wheels. (Both right and left sides)
4. Remove the cotter pin at the connecting section of the tie rod end and the steering knuckle. (Both right and left sides)
5. Loosen the castle nut two or three threads at the connecting section of the tie rod end and the steering knuckle. (Both right and left sides)
6. Disconnect the connecting section of the tie rod end and the steering knuckle, using the following SST.  
SST: 09610-20012-000

**NOTE:**

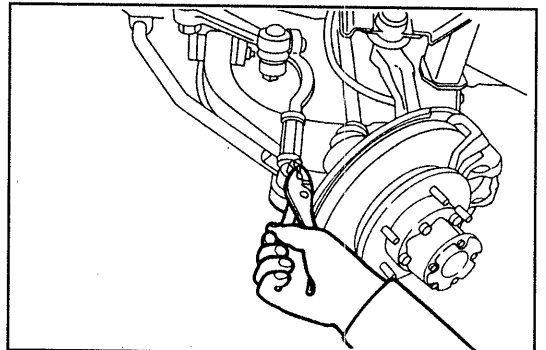
- If any difficulty is encountered during this disconnection, apply a suitable metal rod against the side of the tapered section of the steering knuckle and lightly tap the metal rod with a hammer or the like. This will facilitate the disconnection.



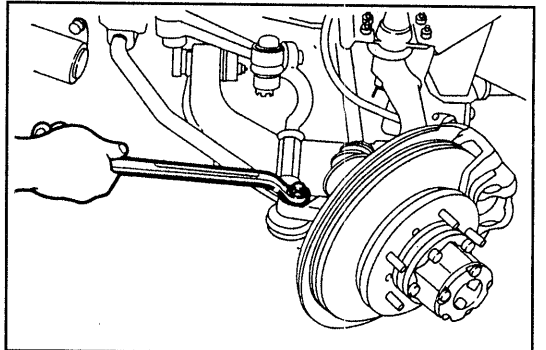
WRU90-SR204



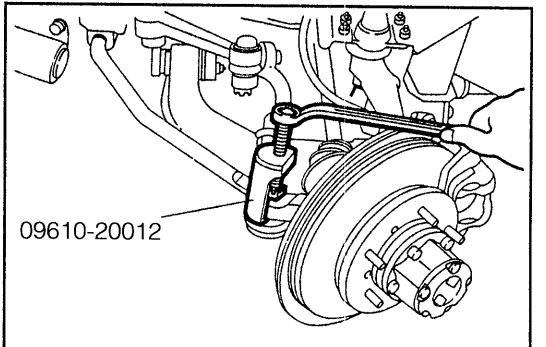
WRU90-SR205



WRU90-SR206



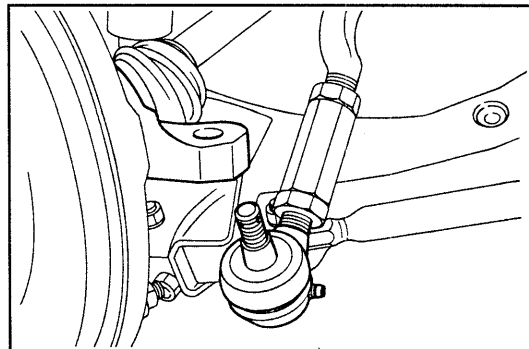
WRU90-SR207



WRU90-SR208

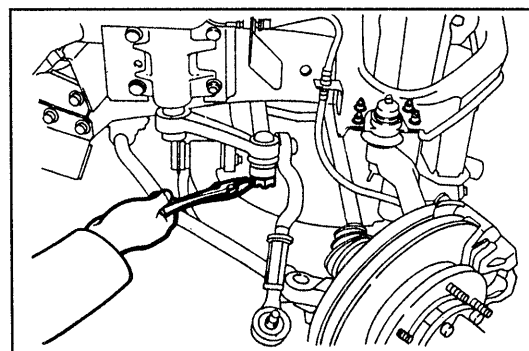
## STEERING

7. Remove the castle nut.
8. Separate the tie rod end from the steering knuckle.



WRU90-SR209

9. Remove the cotter pin at the connecting section of the pitman arm and the relay rod.
10. Loosen the castle nut four or five threads which connects the pitman arm with the relay rod.



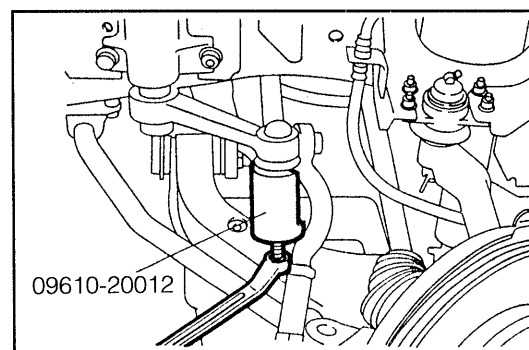
WRU90-SR210

11. Disconnect the connecting section of the pitman arm and the relay rod, using the following SST.

SST: 09610-20012-000

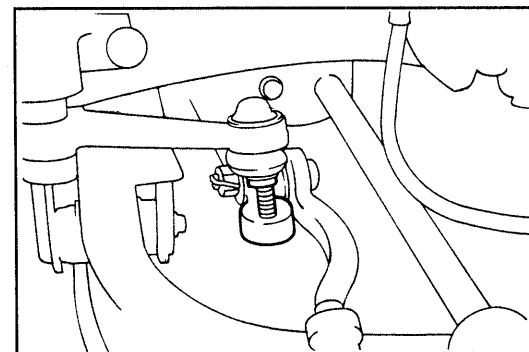
### NOTE:

- If any difficulty is encountered during this disconnection, apply 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.



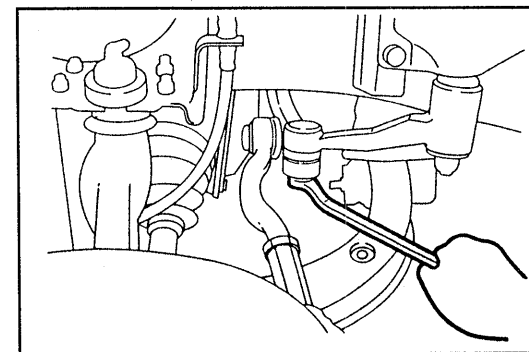
WRU90-SR211

12. Remove the castle nut and separate the pitman arm.



WRU90-SR212

13. Remove the cotter pin at the connecting section of the steering idler arm and the relay rod.
14. Loosen the castle nut four or five threads.



WRU90-SR213

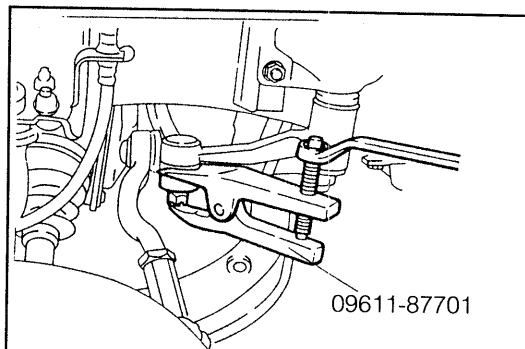


15. Disconnect the connecting section of the steering idler arm and the relay rod, using the following SST.

SST: 09611-87701-000

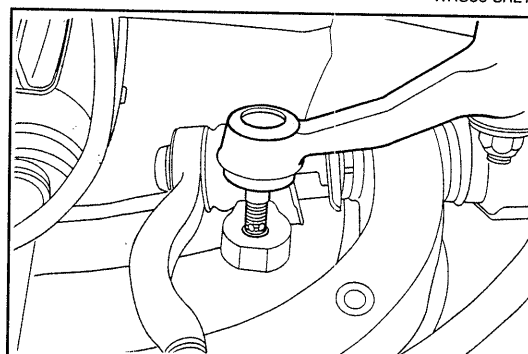
**NOTE:**

- If any difficulty is encountered during this disconnection, apply a suitable metal rod against the side of the tapered section of the steering relay rod and lightly tap the metal rod with a hammer or the like to give impact. This will facilitate the disconnection.



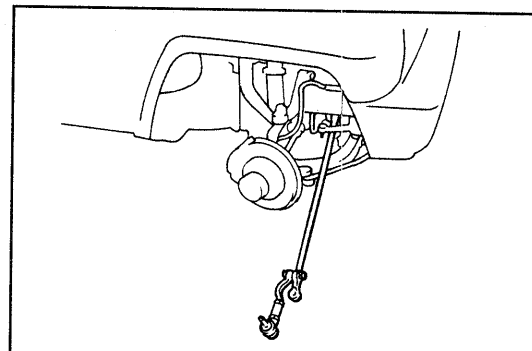
WRU90-SR214

16. Remove the castle nut. Disconnect the idler arm and relay rod.



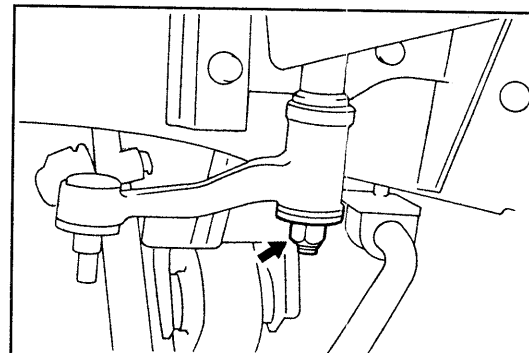
WRU90-SR215

17. Remove the relay rod together with the tie rod end from the vehicle.



WRU90-SR216

18. Remove the idler arm attaching nut. Remove the thrust washer and idler arm.

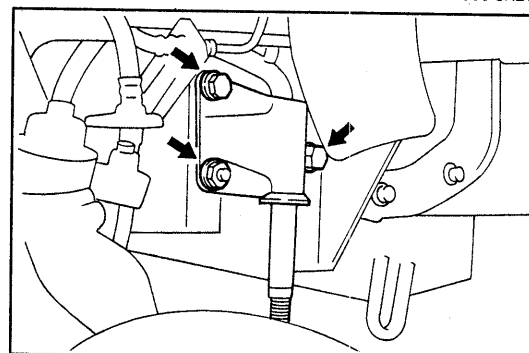


WRU90-SR217

19. Remove the idler arm support pin from the frame. (Never reuse the spring washer.)

**NOTE:**

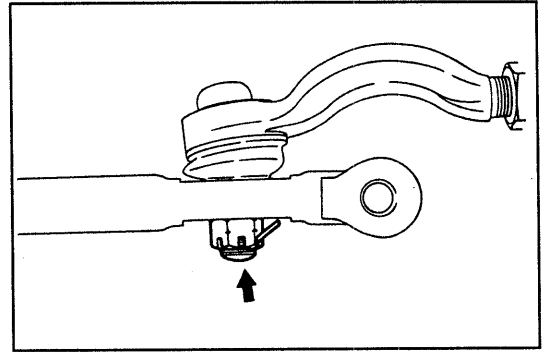
- Do not reuse the used spring washers.



WRU90-SR218

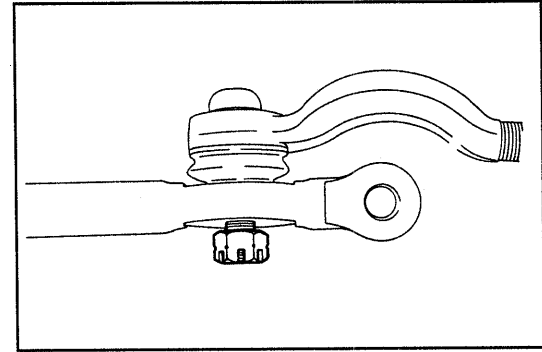
## STEERING

20. Remove the cotter pin at the tie rod assembly attaching nut.



WRU90-SR219

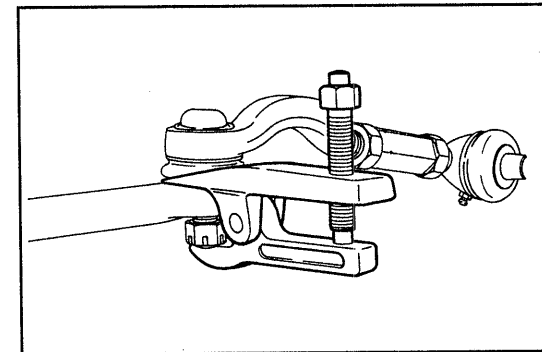
21. Loosen the tie rod assembly attaching nut two or three threads.



WRU90-SR220

22. Remove the tie rod assembly from the steering rod, using the following SST.

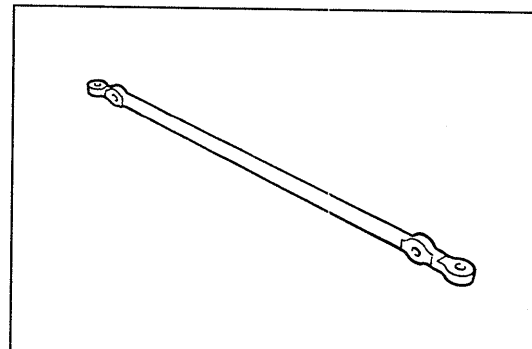
SST: 09611-87701-000



WRU90-SR221

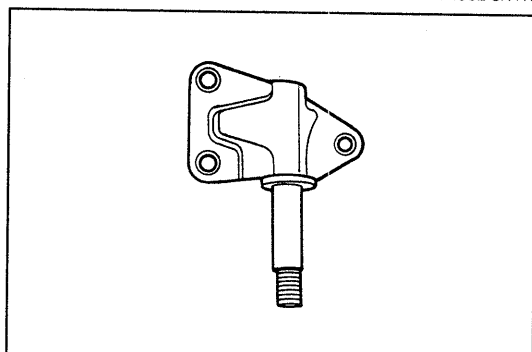
## INSPECTION

1. Inspection of steering relay rod  
Ensure that the steering relay rod exhibits no defect, such as deformation, wear and/or cracks.



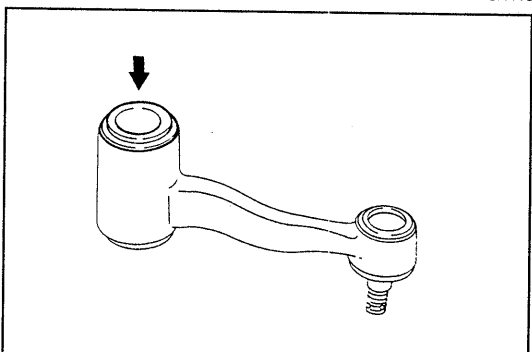
WRU92-SR417

2. Inspection of idler arm support pin  
Ensure that the idler arm support pin exhibits no defect, such as deformation, wear and/or cracks.



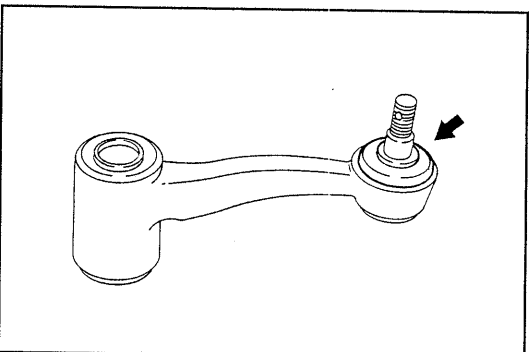
WRU92-SR418

3. Inspection of steering idler arm
  - (1) Ensure that the steering idler arm exhibits no defect, such as deformation, wear and cracks.
  - (2) Ensure that the bush section of the steering idler arm exhibits no damage and/or wear.



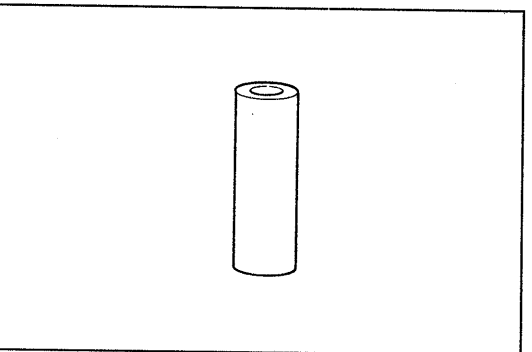
WRU90-SR224

- (3) Ensure that the dust seal of the steering idler arm exhibits no damage, such as cracks and/or rupture. If any damage is present, replace the dust seal.



WRU90-SR225

4. Ensure that the collar exhibits no damage, such as cracks and/or wear.

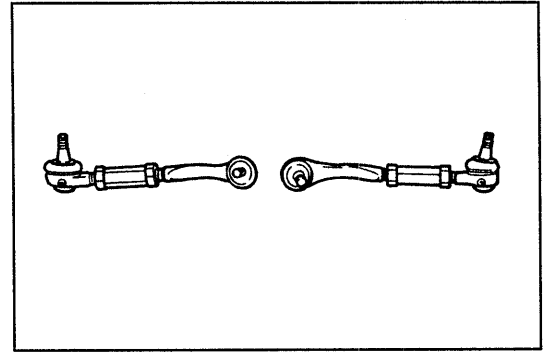


WRU90-SR226

## STEERING

### 5. Inspection of tie rod end

Ensure that each section of the tie rod end exhibits no damage, such as deformation, excessive play and/or cracks.

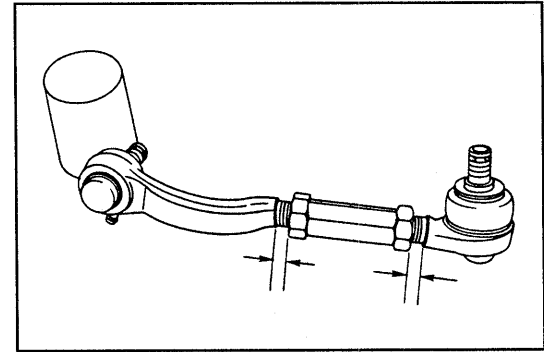


WRU90-SR227

### 6. Disassembly and assembly of tie rod end (Only cases where such operation is required)

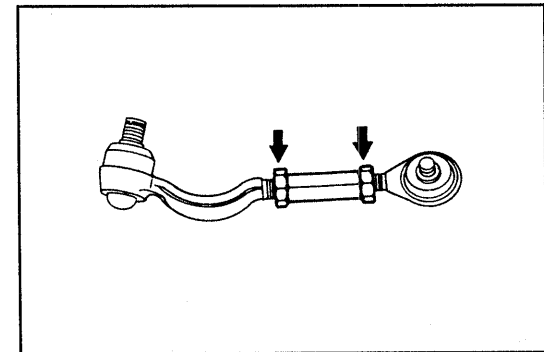
- (1) Measure the distances between the tie rod adjusting tube lock nut and the tie rod end as well as between the tie rod adjusting tube lock nut and the tie rod, respectively.

**Reference Value:** About 10 mm (0.39 inch)



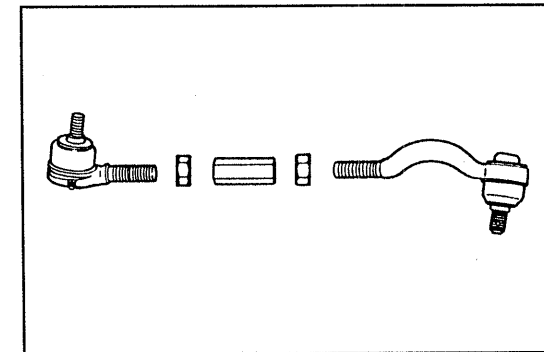
WRU90-SR228

- (2) Loosen the tie rod adjusting tube lock nut.



WRU90-SR229

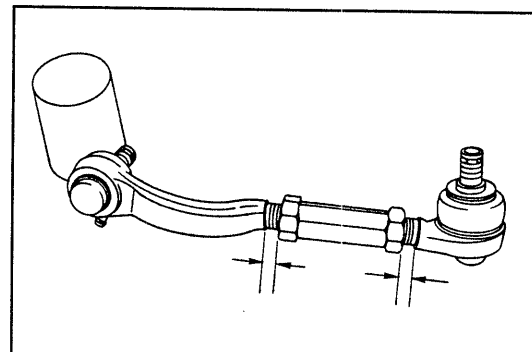
- (3) Remove the tie rod and tie rod end from the tie rod adjusting screw.
- (4) Remove the lock nut from the tie rod and tie rod end.



WRU90-SR230

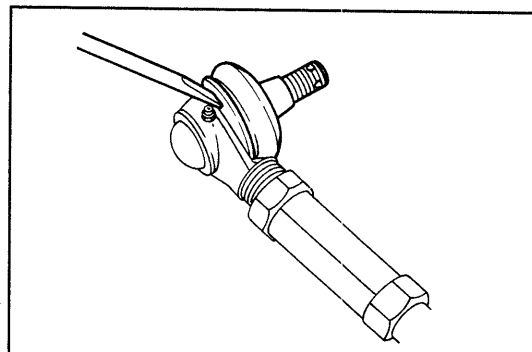
- (5) Install the lock nut to the tie rod and tie rod end, respectively.
- (6) Install the tie rod and tie rod end to the tie rod adjusting screw.

- (7) Adjust the distances between the tie rod adjusting tube lock nut and the tie rod end as well as between the tie rod adjusting tube lock nut and the tie rod to the values measured at the step (1), respectively.
- (8) Temporarily tighten the lock nut.  
(After this operation, be sure to adjust the side slip.)



WRU90-SR232

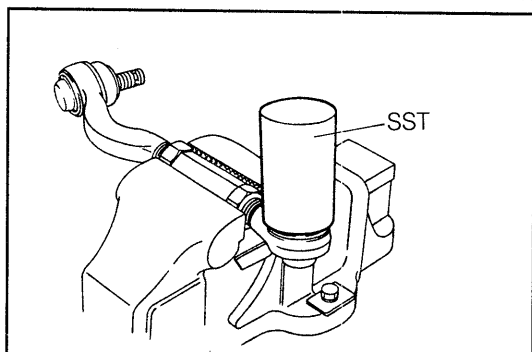
- (9) Replacement of dust seal.  
(Only cases where such operation is required)
- ① Remove the steering joint dust seat of the tie rod end by prying it with a standard screwdriver.
- ② Remove old grease.
- ③ Install a new dust seal to the tie rod end.



WRU90-SR233

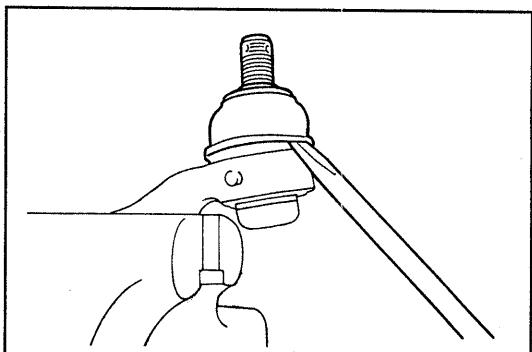
- ④ Drive the new dust seal into position by lightly tapping it with a hammer in combination with the following SST.

SST: 09608-87611-000



WRU90-SR234

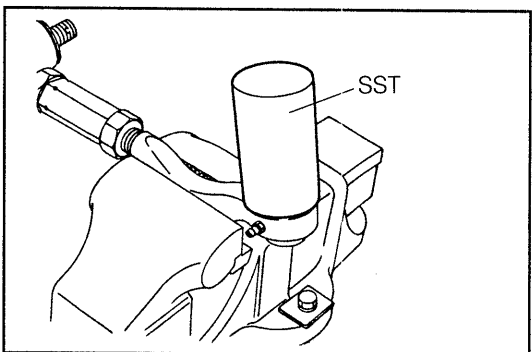
- ⑤ Remove the dust seal of the tie rod by prying it with a standard screwdriver.
- ⑥ Remove old grease.



WRU90-SR235

- ⑦ Install a new dust seal to the tie rod end.
- ⑧ Drive the new dust seal into position by lightly tapping it with a hammer in combination with the following SST.

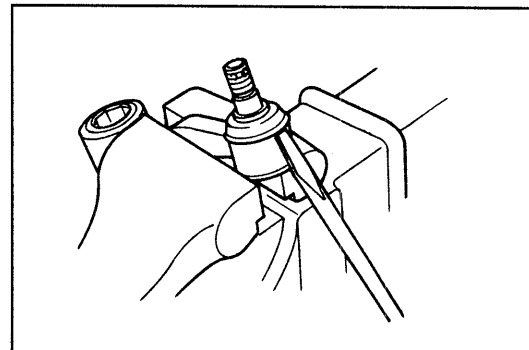
SST: 09608-87613-000



WRU90-SR236

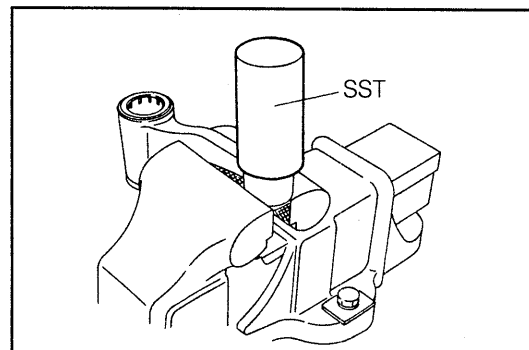
## STEERING

7. Replacement of steering idler arm dust seal  
(Only cases where such operation is required)
  - (1) Remove the steering idler arm dust seal by prying it with a standard screwdriver or the like.
  - (2) Remove old grease or the like.
  - (3) Pack a new dust seal with rubber grease.



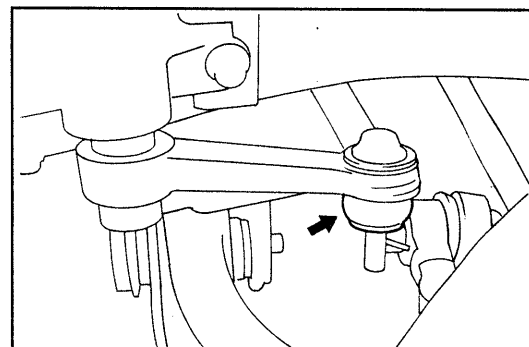
WRU90-SR237

- (4) Install the dust seal to the idler arm.
    - (5) Drive the dust seal into the idler arm by lightly tapping it with a hammer in combination with the following SST.
- SST: 09608-87614-000



WRU90-SR238

8. Ensure that the steering ring joint seal of the pitman arm exhibits no damage.  
Replace the joint seal if it is damaged.



WRU90-SR239

## ASSEMBLY

1. Connect the tie rod to the steering relay rod. Install a castle nut.
2. Tighten the castle nut to the specified torque.

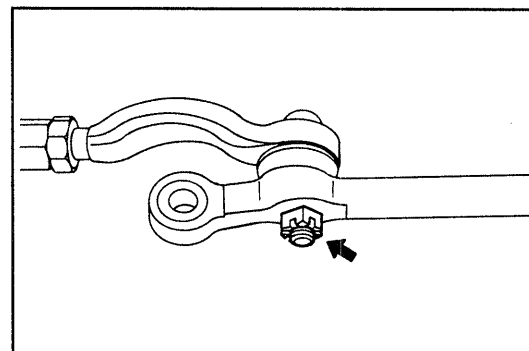
### Tightening Torque:

7.0 - 14.0 kgf-m (50.6 - 101 ft-lb, 68.6 - 137 N-m)

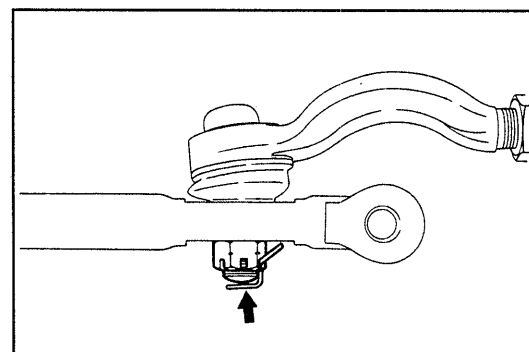
### NOTE:

- Be sure to align the cotter pin hole of the tie rod with the cut-out section of castle nut.

3. Insert a cotter pin and bend its legs, as indicated in the right figure.



WRU90-SR240



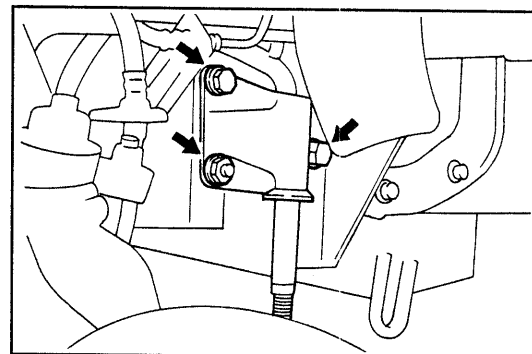
WRU90-SR241

4. Install the idler arm support pin to the frame. Tighten the attaching bolts and nuts to the specified torque with new washer interposed.

**Tightening Torque:**  
3.5 - 5.5 kgf-m (25.4 - 39.8 ft-lb, 34.3 - 53.9 N-m)

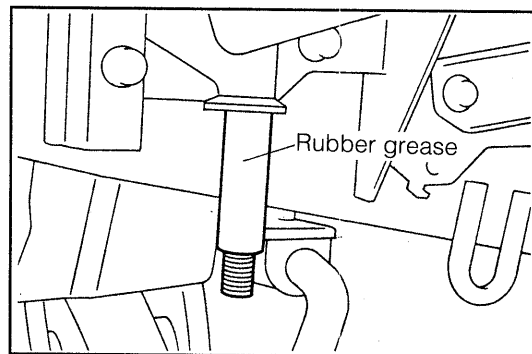
**NOTE:**

- Do not reuse the washer.



WRU90-SR242

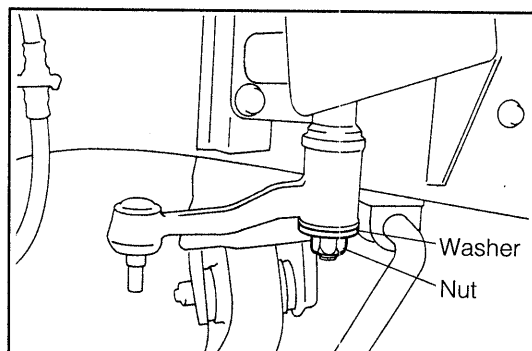
5. Apply rubber grease to the collar. Install it to the idler arm support pin.



WRU90-SR243

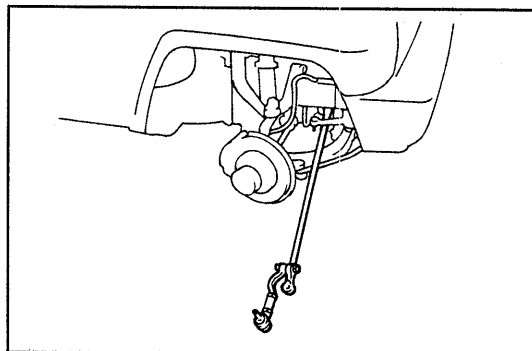
6. Apply rubber grease to the bush section of the idler arm. Install it to the collar with a washer interposed. Tighten the nut to the specified torque.

**Tightening Torque:**  
12 - 17 kgf-m (87 - 123 ft-lb, 108 - 167 N-m)



WRU90-SR244

7. Insert the relay rod together with the tie rod onto the vehicle.



WRU90-SR245

8. Connect the relay rod to the idler arm. Install a new castle nut and tighten it to the specified torque.

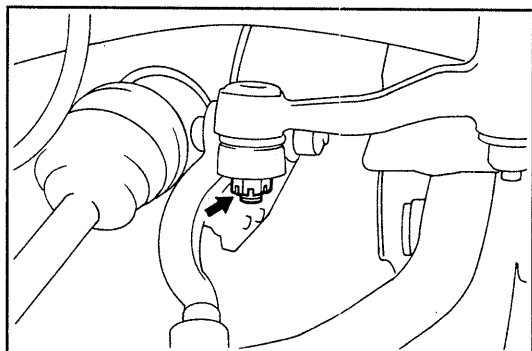
**Tightening Torque:**  
5.0 - 7.0 kgf-m (36.2 - 50.6 ft-lb, 49.0 - 68.6 N-m)

**NOTE:**

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

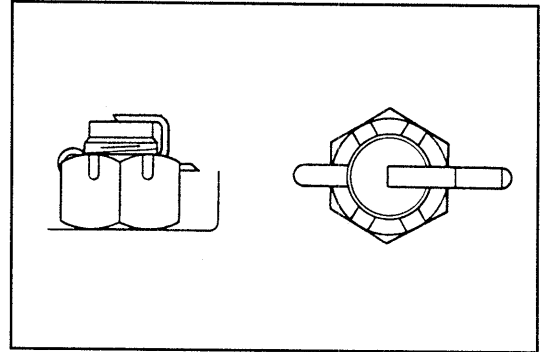
**CAUTION:**

- Make sure that the tapered and threaded portions of the ball joint are free of grease. If grease exists on these portions, be sure to wipe off the grease prior to reassembling. Failure to observe the caution may cause insufficient tightening torque.



WRU90-SR246

9. Bend the legs of the cotter pin, as indicated in the right figure.



WRU90-SR247

10. Connect the relay rod to the pitman arm. Install a new castle nut and tighten it to the specified torque.

**Tightening Torque:**

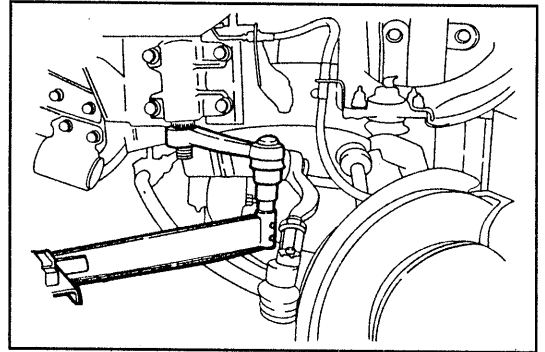
7.0 - 14.0 kgf-m (50.6 - 101 ft-lb, 68.6 - 137 N·m)

**NOTE:**

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

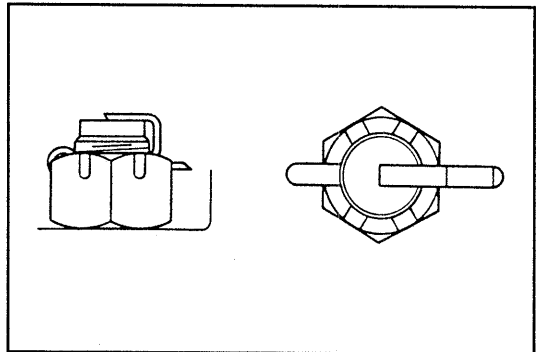
**CAUTION:**

- Make sure that the tapered and threaded portions of the ball joint are free of grease. If grease exists on these portions, be sure to wipe off the grease prior to reassembling. Failure to observe the caution may cause insufficient tightening torque.



WRU90-SR248

11. Bend the legs of the cotter pin, as indicated in the right figure.



WRU90-SR249

12. Connect the tie rod end to the steering knuckle. Install a new castle nut and tighten it to the specified torque.

**Tightening Torque:**

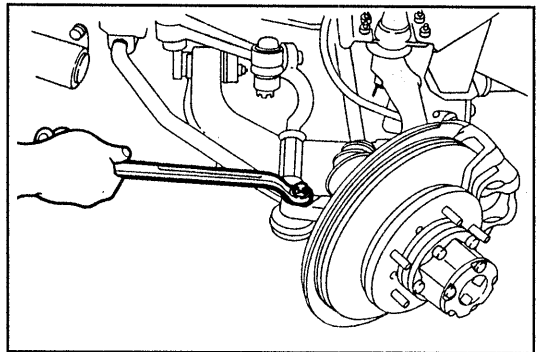
7.0 - 14.0 kgf-m (50.6 - 101 ft-lb, 68.6 - 137 N·m)

**NOTE:**

- Be sure to align the cotter pin hole of the tie rod end with the cut out section of the castle nut.

**CAUTION:**

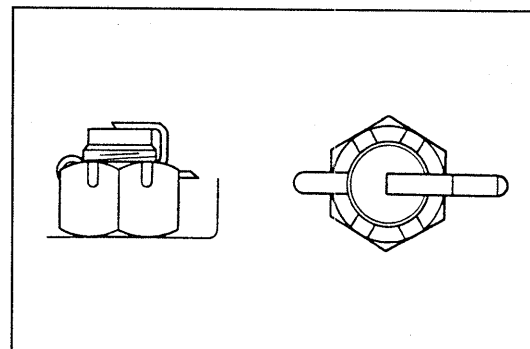
- Make sure that the tapered and threaded portions of the ball joint are free of grease. If grease exists on these portions, be sure to wipe off the grease prior to reassembling. Failure to observe the caution may cause insufficient tightening torque.



WRU90-SR250

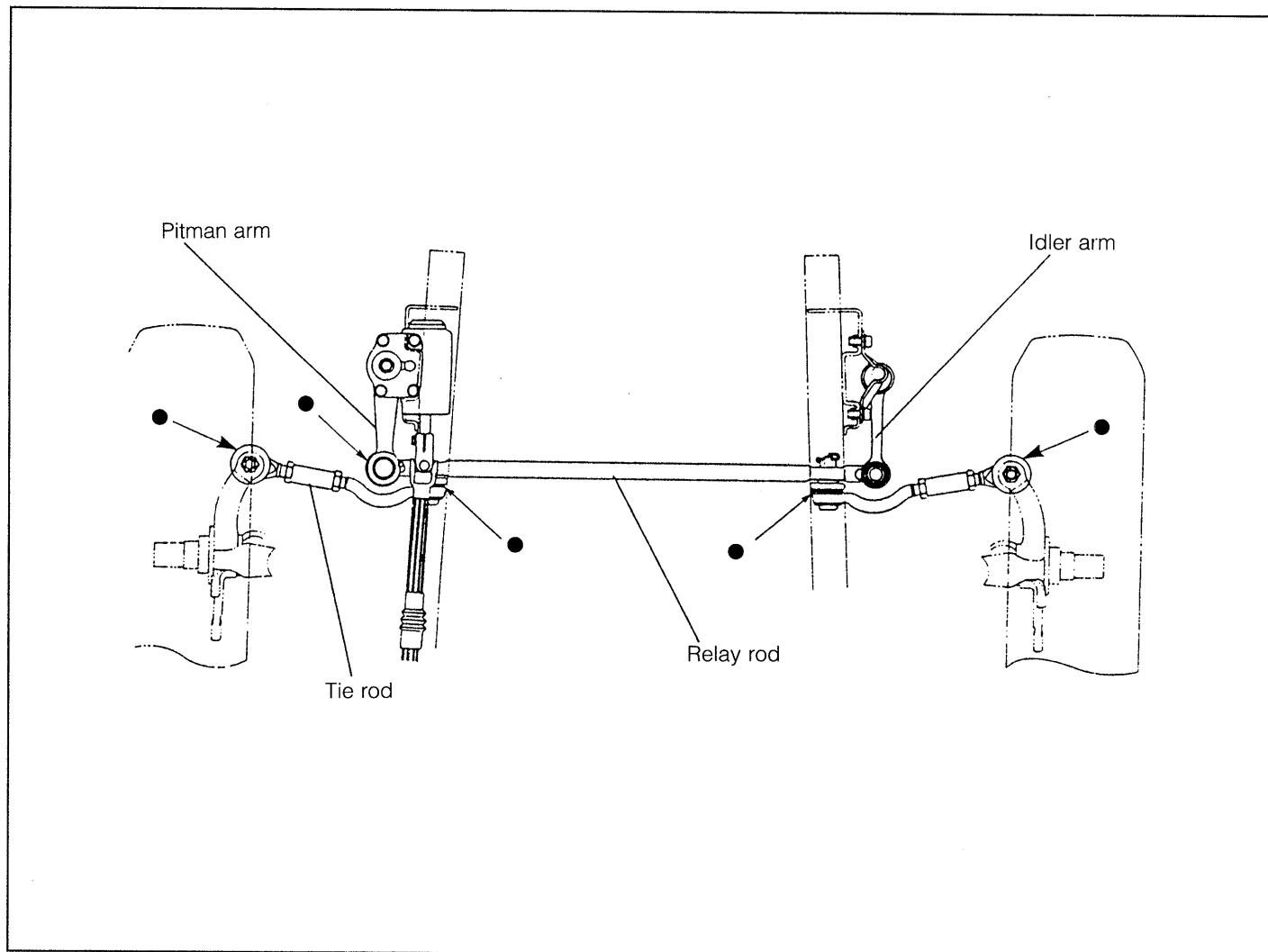


13. Bend the legs of the cotter pin, as indicated in the right figure.



WRU90-SR251

14. Apply chassis grease to the points bearing an asterisk "●" mark, as shown in the illustration below.



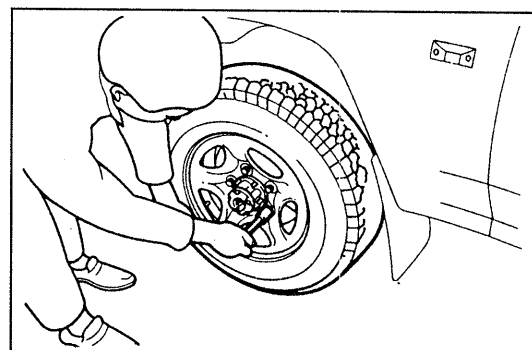
WRU92-SR419

15. Install the front tires and tighten the attaching nuts.
16. Jack down the vehicle.
17. Tighten the front tire attaching nuts to the specified torque evenly over two or three stages.

**Tightening Torque:**

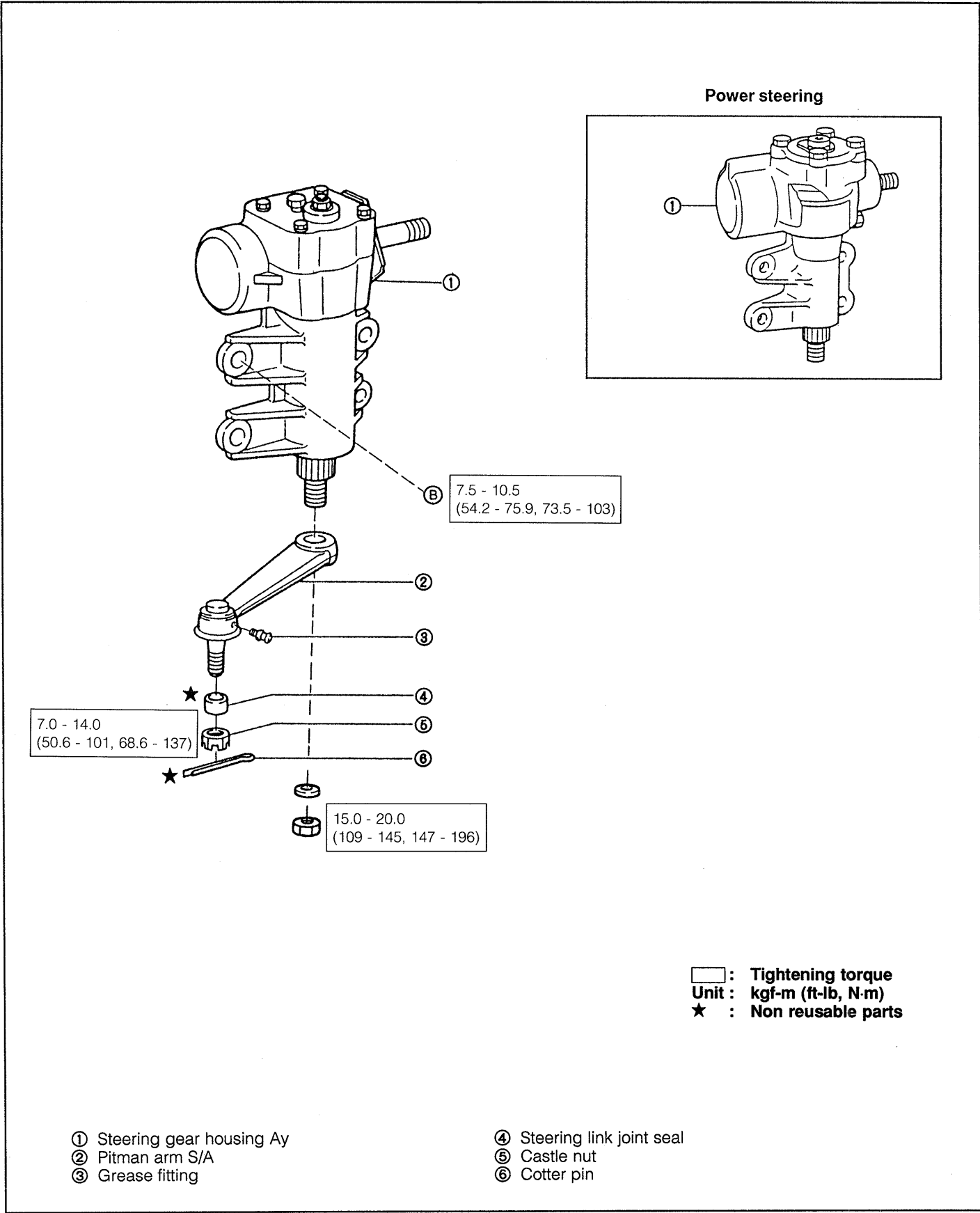
9.0 - 12.0 kgf-m (65.1 - 87.0 ft-lb, 88.3 - 118 N·m)

18. Check and adjust the toe-in and side slip.  
(For further details, see front axle and suspension section page FS-21.)



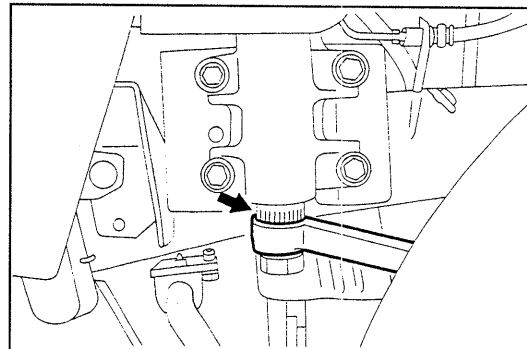
WRU90-SR253

STEERING GEAR HOUSING  
COMPONENTS



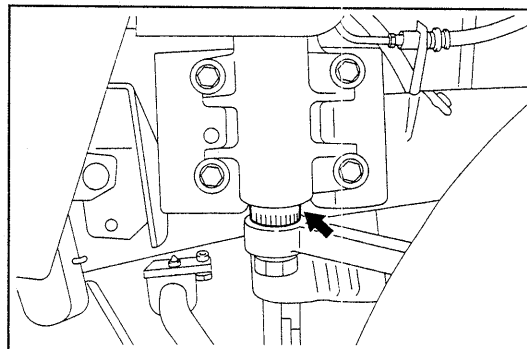
## IN-VEHICLE INSPECTION

1. Ensure that the connecting section of the pitman arm and steering gear housing exhibits no defect, such as excessive play and/or looseness.  
If any defect is present, check the tightening torque of the nuts and perform retightenings, as required and/or replace defective parts.



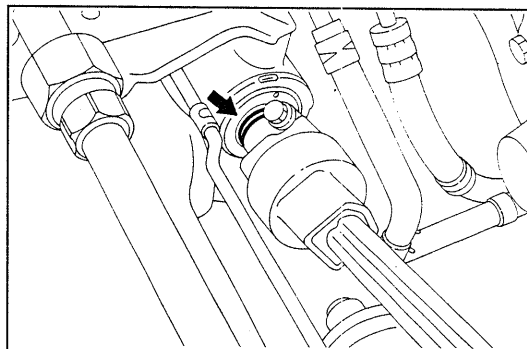
WRU92-SR420

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.



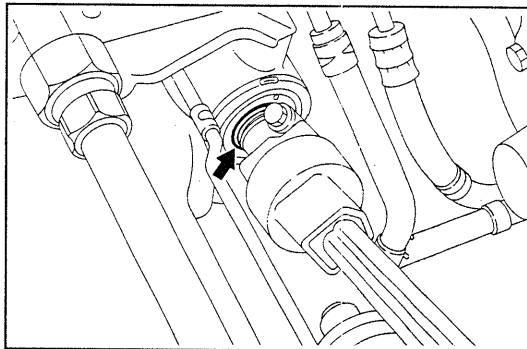
WRU90-SR256

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



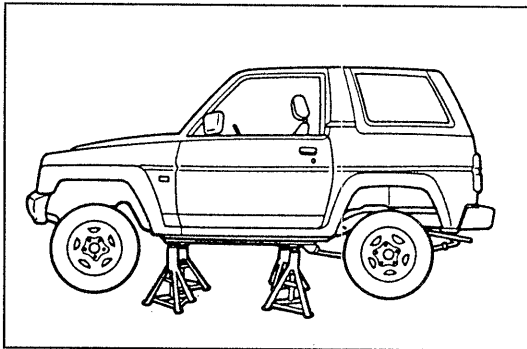
WRU92-SR421

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



WRU90-SR258

5. Check of total preload
  - (1) Jack up the vehicle and support it with safety stands.  
(See GI section.)



WRU90-SR259

## STEERING

- (2) Pull out the cotter pin from the nut which connects the relay rod with the pitman arm.

- (3) Loosen the castle nut.

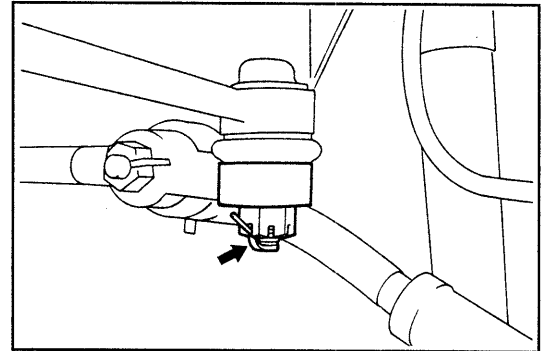
**NOTE:**

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

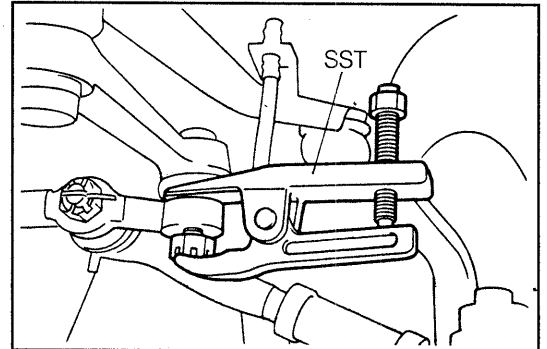
- (4) Disconnect the relay rod from the pitman arm, using the following SST.

**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.



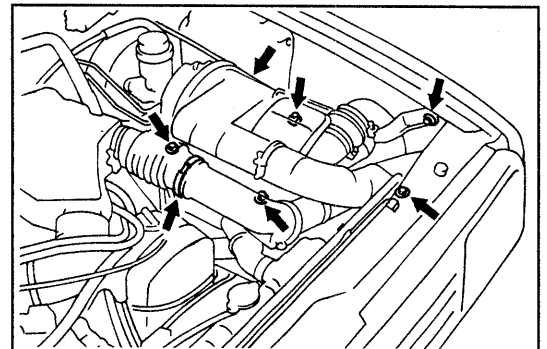
WRU90-SR260



WRU90-SR261

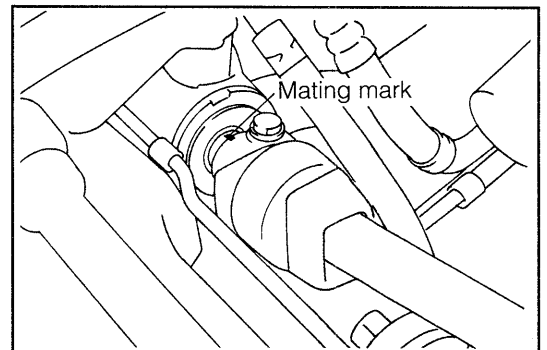
- (5) Remove the attaching bolts and hose bands for the air cleaner and air hose. Also remove the clutch cable clamp bolt. Remove the air cleaner and air hose as an assembly from the vehicle.

(For details, refer to the Engine section.)



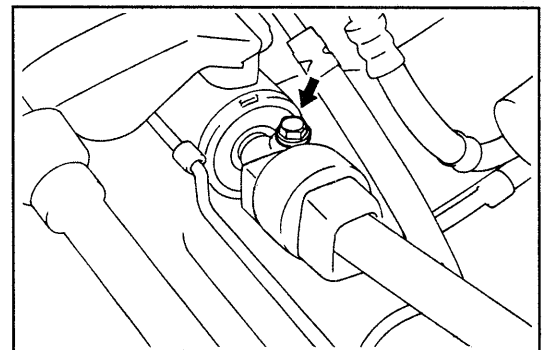
WRU90-SR262

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



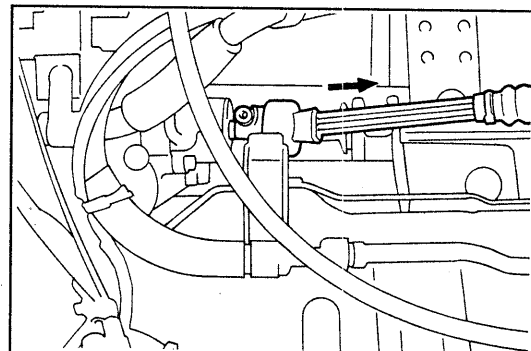
WRU90-SR263

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



WRU90-SR264

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



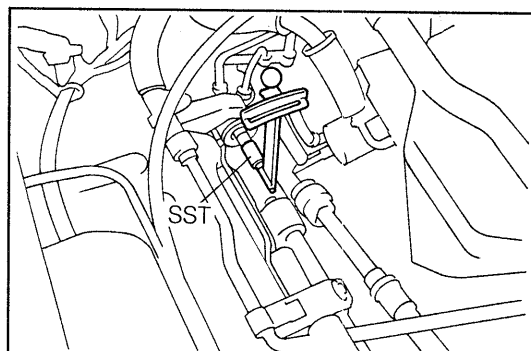
WRU90-SR265

- (9) Install the following SST to the steering shaft with a 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.



WRU90-SR266

- (10) 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:**

7 - 10 kgf-cm (6.1 - 8.7 inch-lb)

**Power Steering:**

6 - 9.5 kgf-cm (5.2 - 8.2 inch-lb)

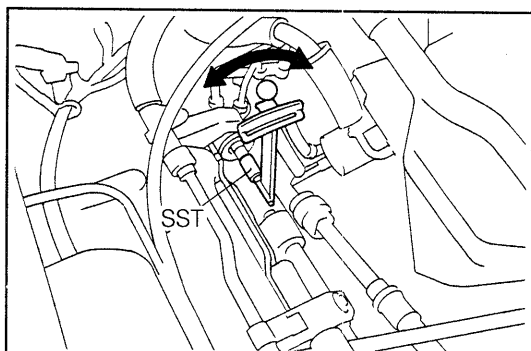
If the maximum torque does not conform to the specified value, loosen the lock nut of the cross shaft adjusting screw. Then, adjust the preload to the specified value by means of the cross shaft adjusting screw. Tighten the lock nut to the specified torque.

**Tightening Torque:**

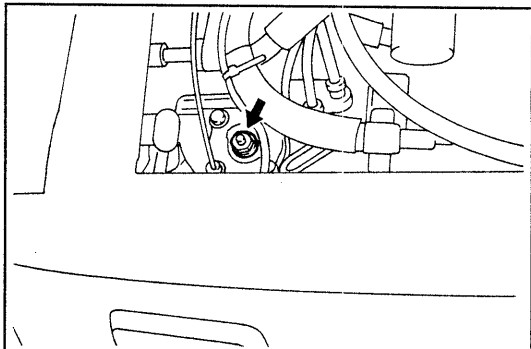
2.0 - 3.5 kgf-m (14.5 - 25.3 ft-lb, 19.6 - 34.3 N·m)

**NOTE:**

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



WRU90-SR267

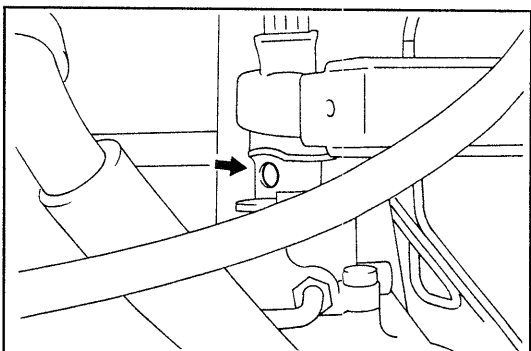


WRU90-SR268

- (11) Remove the SST.
- (12) 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:**

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



WRU90-SR269

# STEERING

## 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.
- If the steering gear box and intermediate shaft are reused, align the mating mark which was put during the disassembly when these parts are assembled.

- (13) Install the air cleaner and air hose to the vehicle. Tighten the attaching bolts.
- (14) Tighten the hose clamp.
- (15) Install the clutch cable to the air cleaner by means of the clamp bolt.

- (16) 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.  
(See page SR-75.)

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

## CAUTION:

- Ensure that no oil nor grease gets to the tapered section and/or threaded portions.

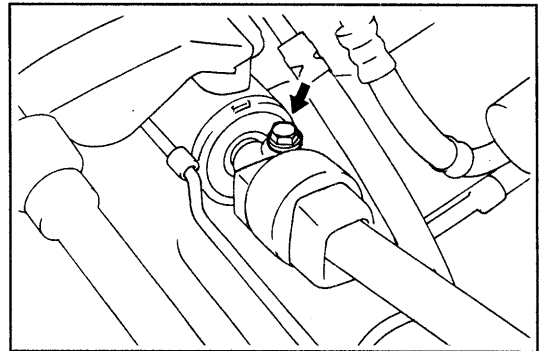
- (18) Install the castle nut and tighten it to the specified torque.

Tightening Torque:

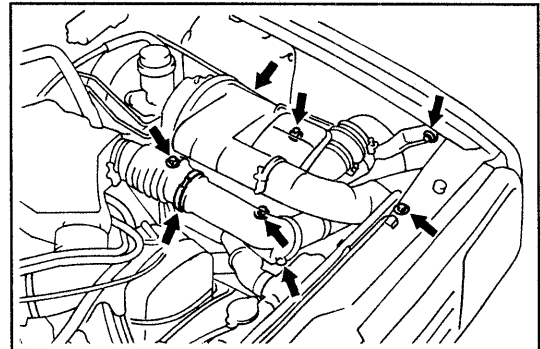
7.0 - 14.0 kgf-m (50.6 - 101 ft-lb, 68.6 - 137 N-m)

## NOTE:

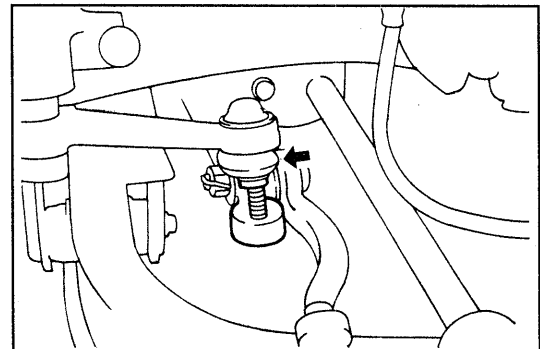
- Be sure to align the cotter pin hole of the pitman arm with cut-out section of castle nut.
- (19) Install a new cotter pin and bend its legs as indicated in the right figure.



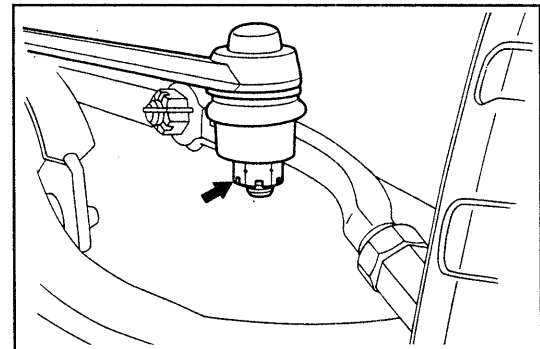
WRU90-SR270



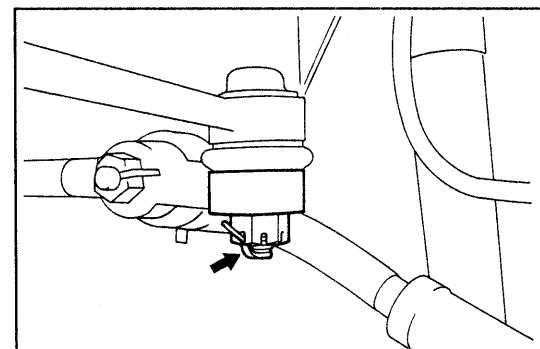
WRU90-SR271



WRU90-SR272



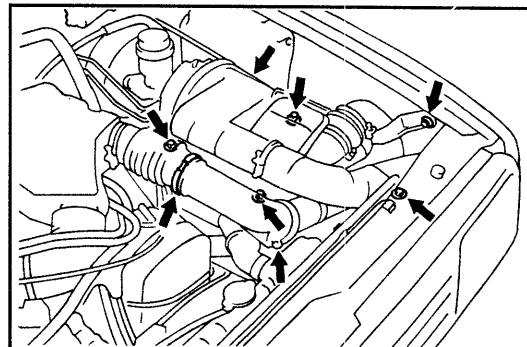
WRU90-SR273



WRU90-SR274

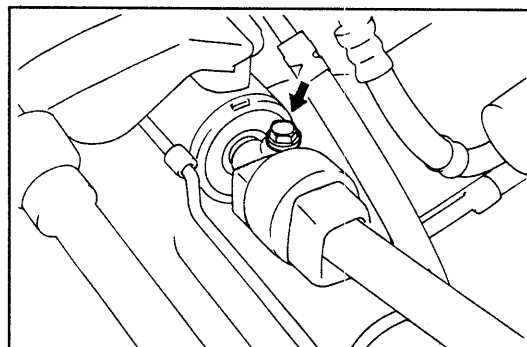
**REMOVAL**

1. Remove the attaching bolts for the air cleaner and air hose. Also, remove the clutch cable clamp bolts and hose bands. Remove the air cleaner and air hose as an assembly. (For details, refer to the Engine section.)



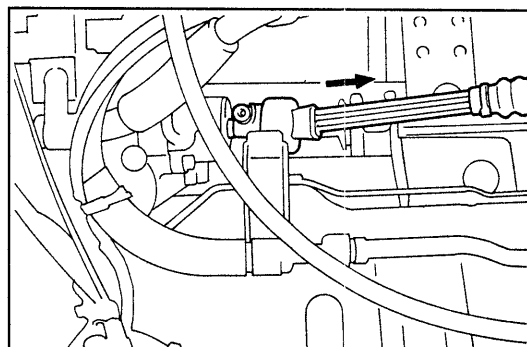
WRU90-SR275

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



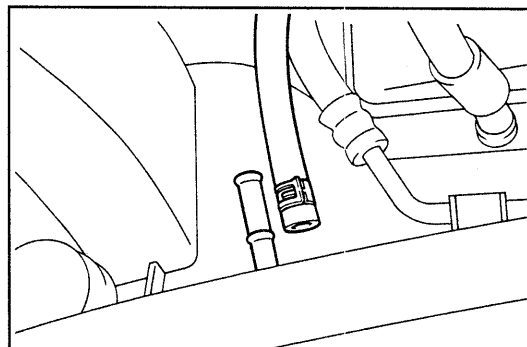
WRU90-SR276

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



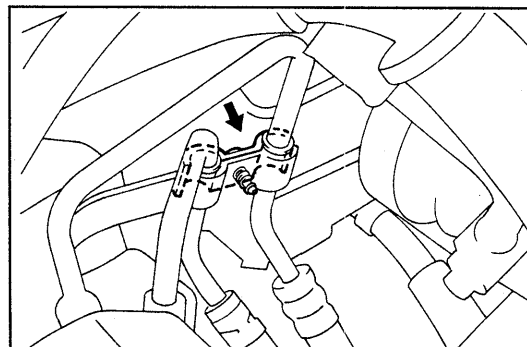
WRU90-SR277

4. Draining of power steering oil  
(Power steering-equipped vehicle only)  
(As for the draining procedure, see page SR-13 to SR-15.)



WRU90-SR278

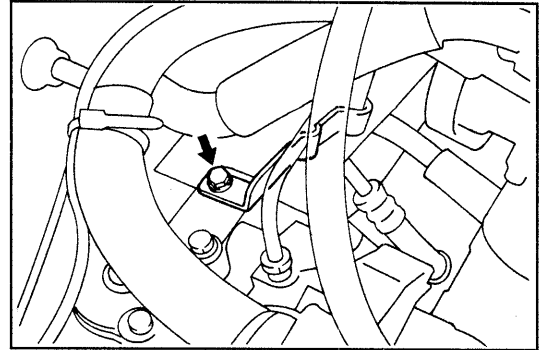
5. Detach the clamp by removing the screw.  
(Power steering-equipped vehicle only)



WRU90-SR279

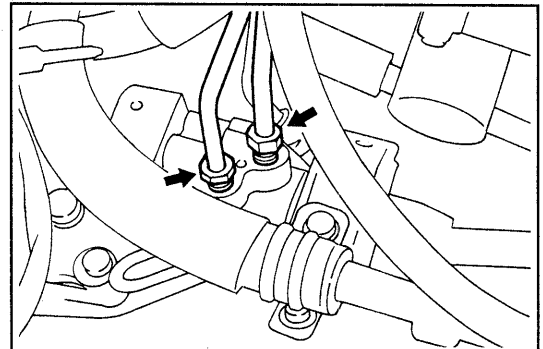
## STEERING

6. Remove the pressure feed tube clamp bracket from the steering gear housing.  
(Power steering-equipped vehicle only)



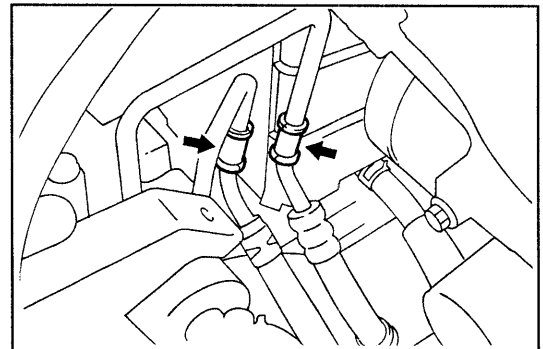
WRU90-SR280

7. Remove the pressure feed tubes from the power steering gear housing.  
(Power steering-equipped vehicle only)



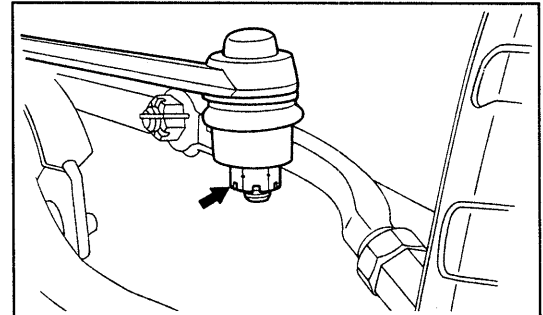
WRU90-SR281

8. Remove the rubber grommet from the pressure feed tube.  
(Power steering-equipped vehicle only)



WRU90-SR282

9. Remove the cotter pin.  
10. Loosen the castle nut.  
**NOTE:**
- Loosen the castle nut two or three threads.



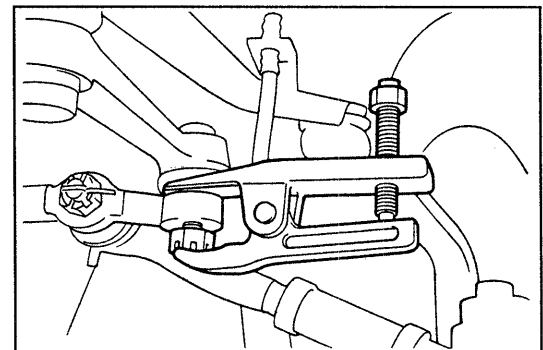
WRU90-SR283

11. Disconnect the pitman arm from the relay rod, using the following SST.

SST: 09611-87701-000

**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.



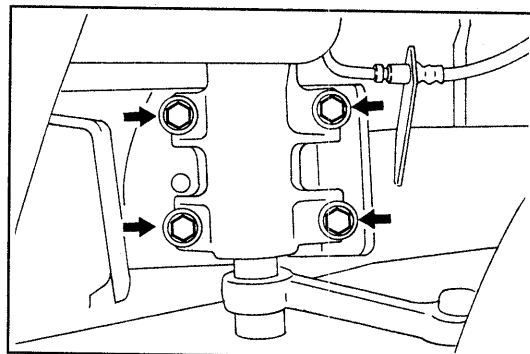
WRU90-SR284



12. Remove the pitman arm attaching nut to the steering gear housing.

WRU90-SR403

13. Loosen the attaching bolts and nuts for the steering gear housing evenly. Remove them.

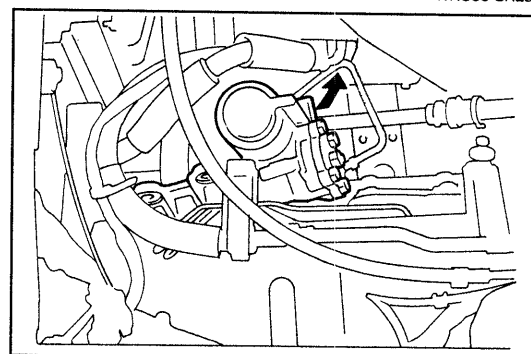


WRU90-SR285

14. Remove the steering gear housing from the vehicle.

**NOTE:**

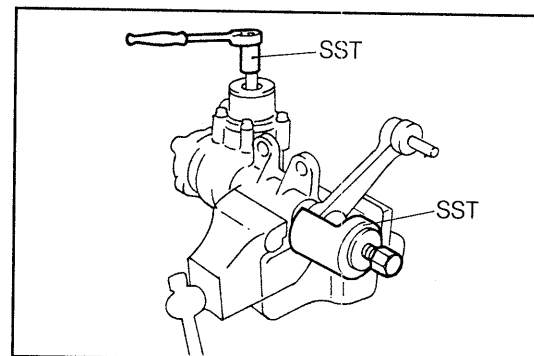
- Be very careful not to damage the brake pipe. Also, prevent the steering gear housing from interfering with other parts strongly.



WRU90-SR286

15. 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

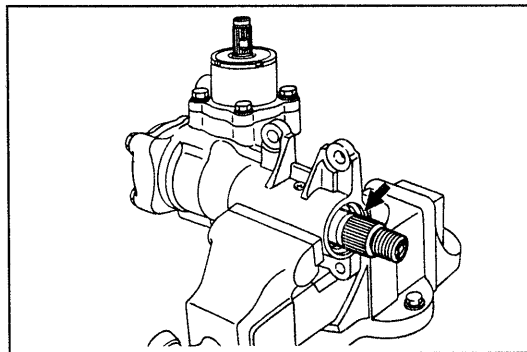


WRU90-SR288

# STEERING

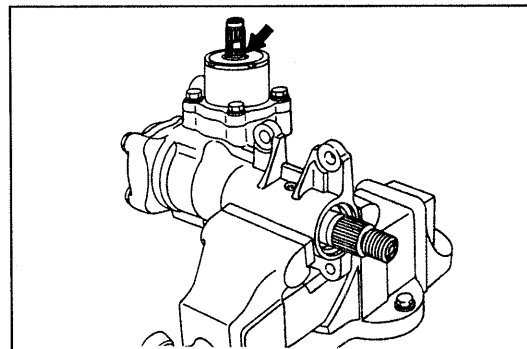
## INSPECTION

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.



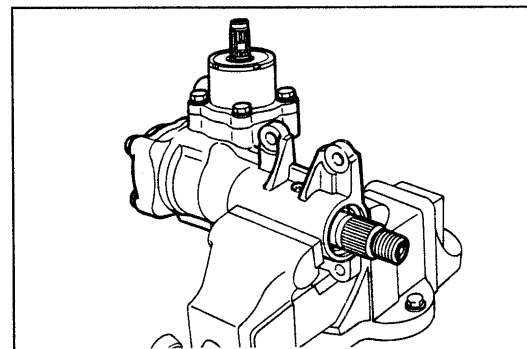
WRU90-SR289

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.



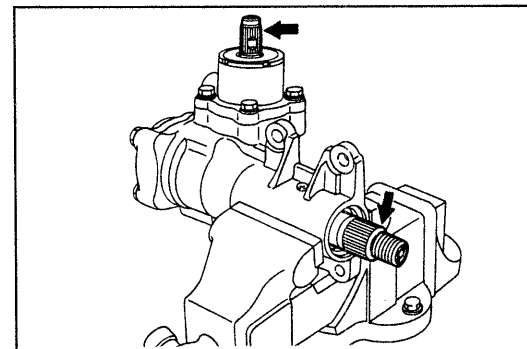
WRU90-SR290

3. Ensure that the steering gear housing assembly exhibits no damage, such as cracks and/or oil leakage.  
If any damage is present, replace the steering gear housing assembly.



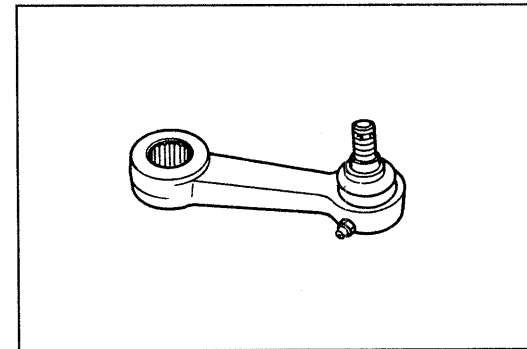
WRU92-SR422

4. Ensure that no damage, such as cracks, wear and/or 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.



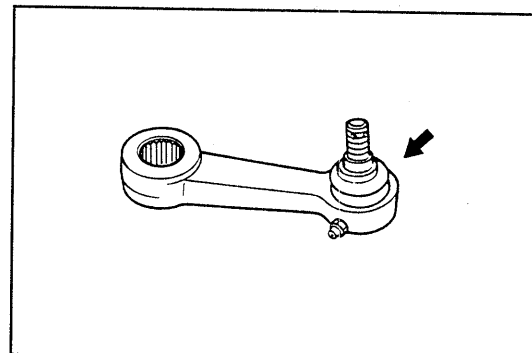
WRU92-SR423

5. Ensure that the pitman arm exhibits no damage, such as cracks and/or deformation.



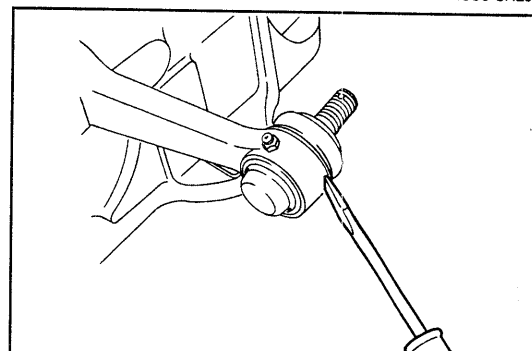
WRU90-SR293

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.



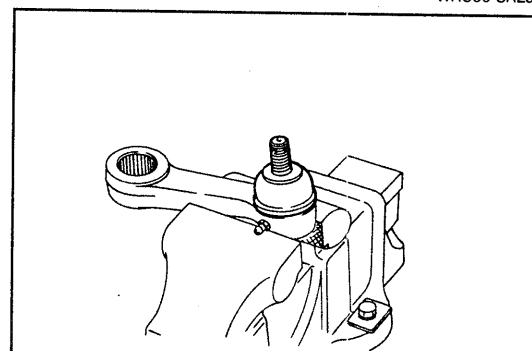
WRU90-SR294

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.



WRU90-SR295

- (2) Remove the old grease.
- (3) Install a new steering joint seal to the pitman arm.

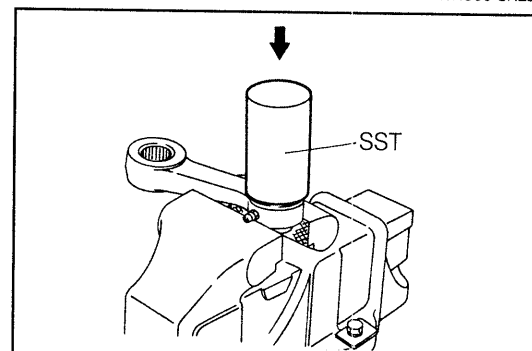


WRU90-SR296

- (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.



WRU90-SR297

# STEERING

## ASSEMBLY

### CAUTION:

- As for the power steering tube, be certain to follow the specified procedure to assemble it.  
Failure to observe this caution will cause breakage of the power steering tube or fluid leakage.

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

### NOTE:

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

2. With the cut-out section of the pitman arm aligned with that of the cross shaft, 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.

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

4. Insert the steering gear housing in the vehicle.

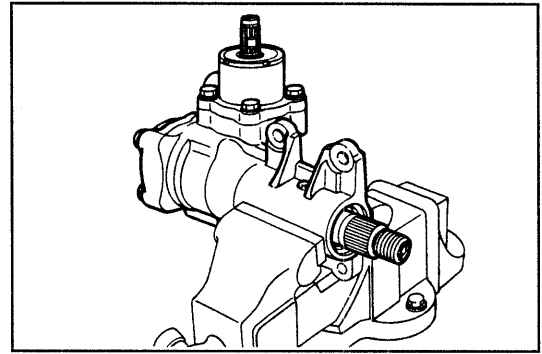
### NOTE:

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

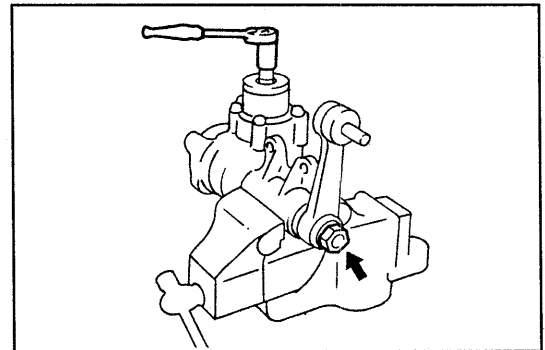
5. Install the steering gear housing in the vehicle. Install the attaching bolts and nuts with new spring washers interposed.
6. Tighten the attaching bolts and nuts of the steering gear housing evenly over two or three stages to the specified torque.

### Tightening Torque:

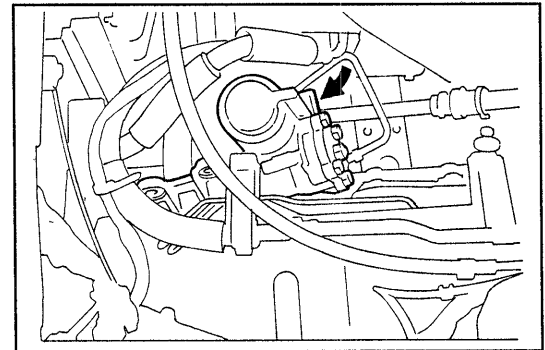
7.5 - 10.5 kgf-m (54.2 - 75.9 ft-lb, 73.5 - 103 N·m)



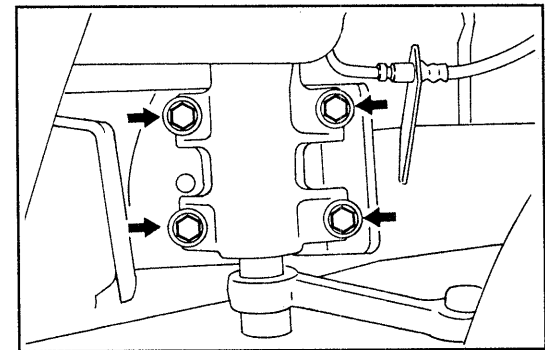
WRU90-SR298



WRU90-SR299



WRU90-SR300



WRU90-SR301

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

**Tightening Torque:**

15 - 20 kgf-m (109 - 145 ft-lb, 147 - 196 N-m)

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:**  $2.4 \pm 1.5$  mm ( $0.09 \pm 0.06$  inch)

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

**Tightening Torque:**

7.0 - 14 kgf-m (50.6 - 101 ft-lb, 68.6 - 137 N-m)

**NOTE:**

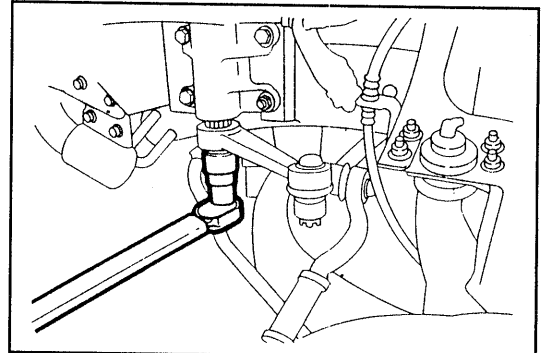
- At this time, align the recess in the castle nut with the hole in the Pitman arm ball joint.

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

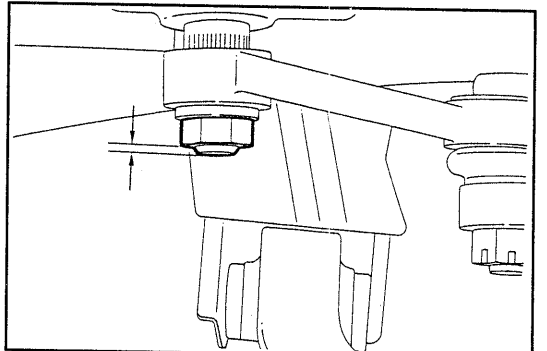
11. Connect the intermediate shaft onto the steering shaft in such a way that the cut-out section of the steering shaft may be aligned with the bolt hole of the intermediate shaft or in such a way that the mating marks put during the removal may be aligned.

**NOTE:**

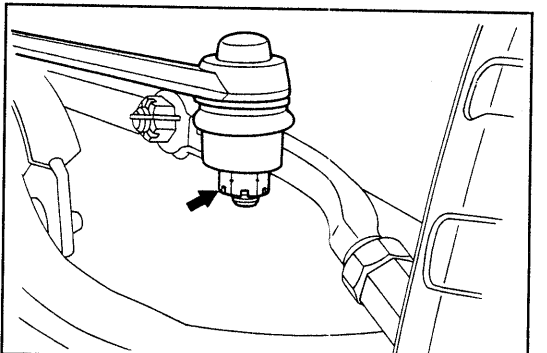
- Ensure that the tires are set to a straight-ahead condition and that the steering wheel assumes the normal straight-ahead position.
- Be sure to positively connect the universal joint to the serration section as far as it will go, until the serration section of the steering shaft becomes invisible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



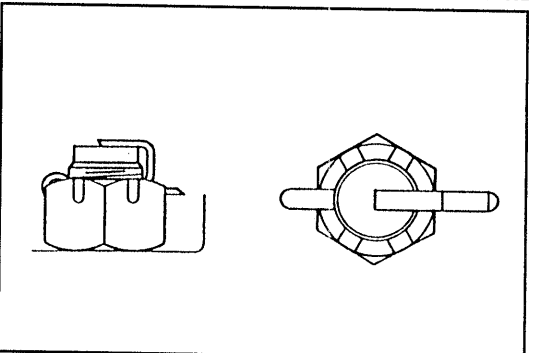
WRU90-SR404



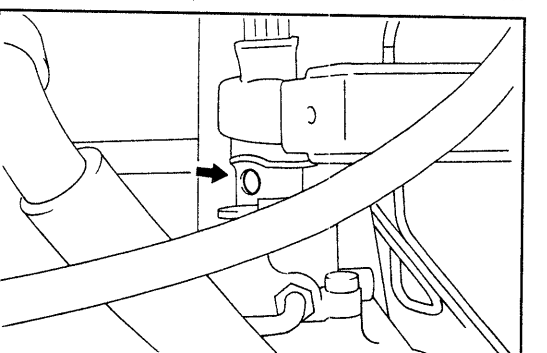
WRU90-SR405



WRU90-SR302



WRU90-SR303



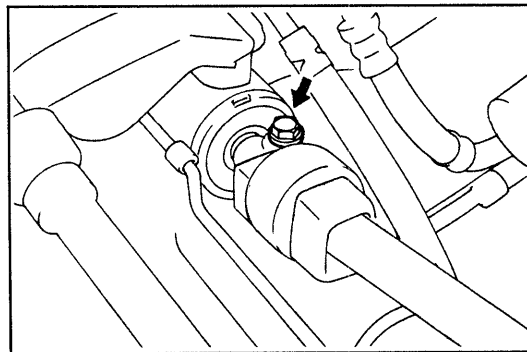
WRU90-SR305

## STEERING

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

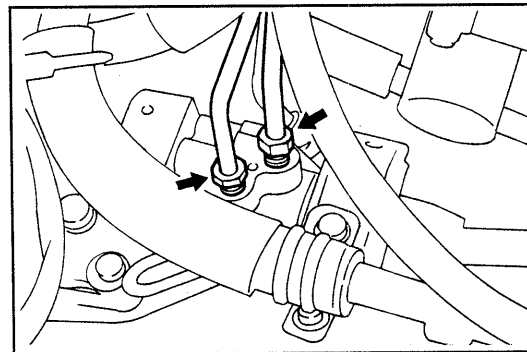
**Tightening Torque:**

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



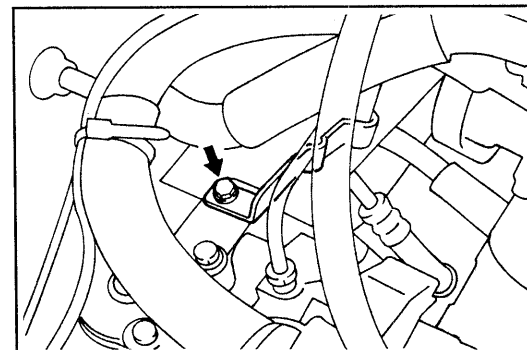
WRU90-SR306

13. Temporarily install the pressure feed tubes to the power steering gear housing.  
(Power steering-equipped vehicle only)



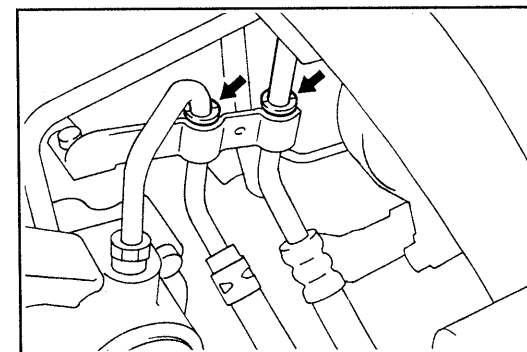
WRU90-SR307

14. Install the pressure feed tube clamp bracket to the power steering gear housing.  
(Power steering-equipped vehicle only)



WRU90-SR308

15. Install the rubber grommets to the pressure feed tubes.  
(Power steering-equipped vehicle only)

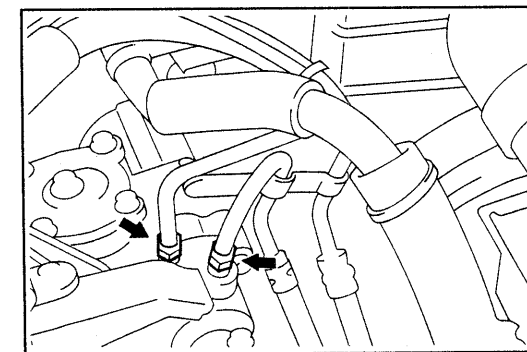


WRU90-SR309

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:**

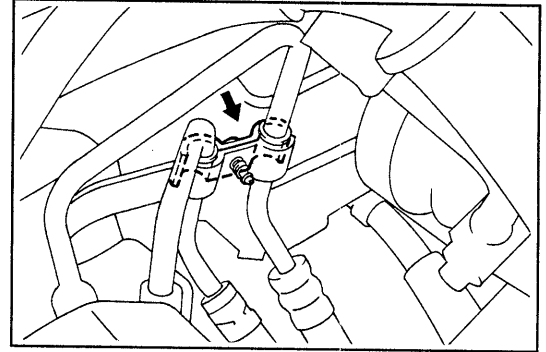
4.0 - 5.0 kgf-m (28.9 - 36.2 ft-lb, 39.2 - 49.0 N·m)



WRU90-SR310

17. Install the pressure feed tube clamp and tighten the attaching screws.

(Power steering-equipped vehicle only)



WRU90-SR311

18. Install the air cleaner and air hose assembly to the vehicle. Tighten the attaching bolts.

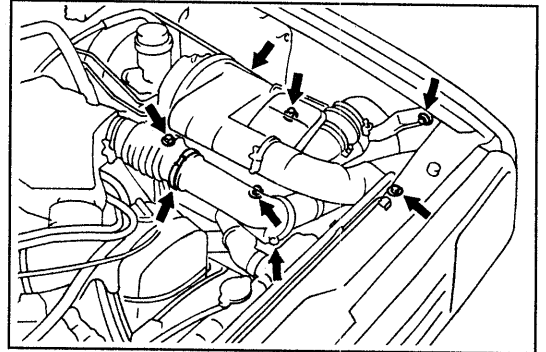
(For details, refer to the Engine section.)

19. Tighten the air cleaner hose band.

(For details, refer to the Engine section.)

20. Clamp the clutch cable to the air cleaner with the clamp bolt.

(For details, refer to the Engine section.)

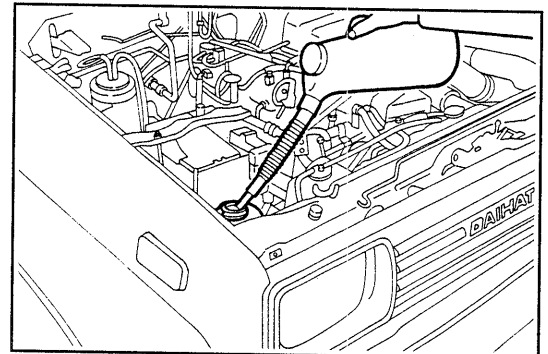


WRU90-SR312

21. Fill power steering fluid.

(Power steering-equipped vehicle only)

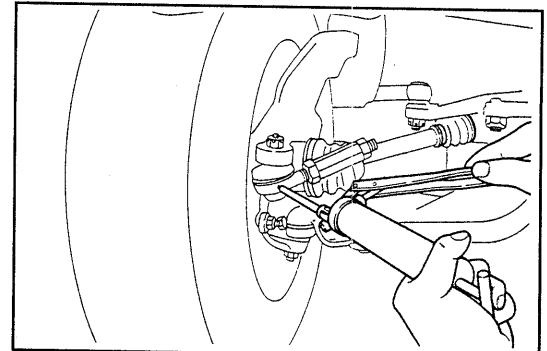
(See page SR-15 to SR-16.)



WRU90-SR313

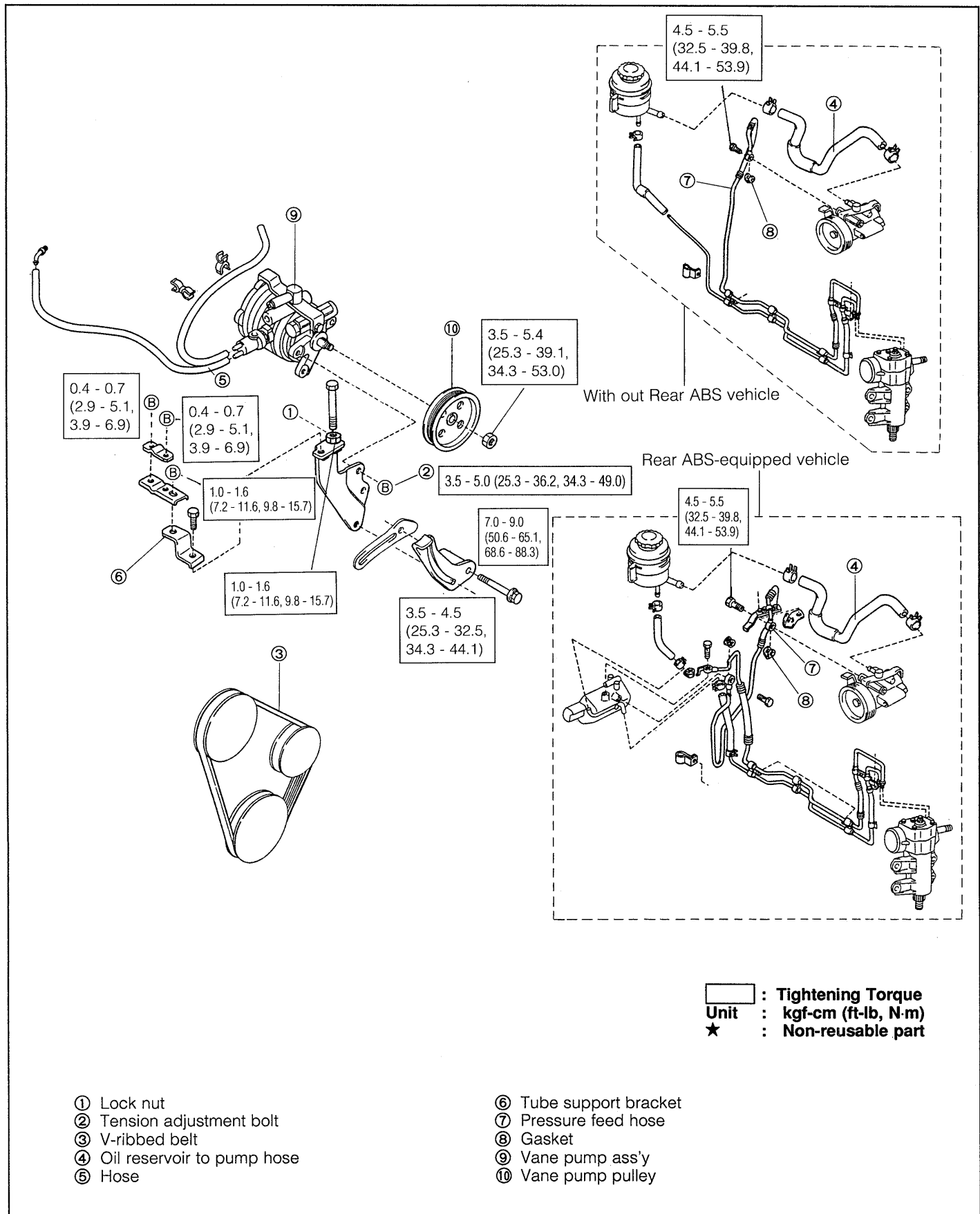
22. Fill lithium based MP grease to the pitman arm.

(See page FS-87.)



WRU90-SR314

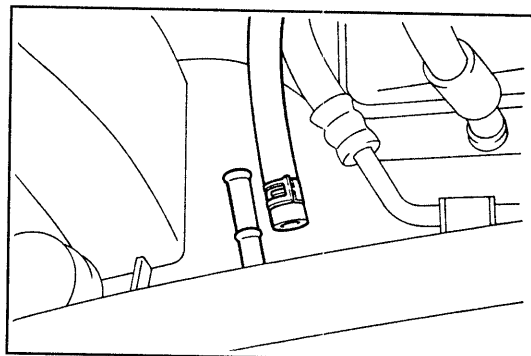
# VANE PUMP COMPONENTS





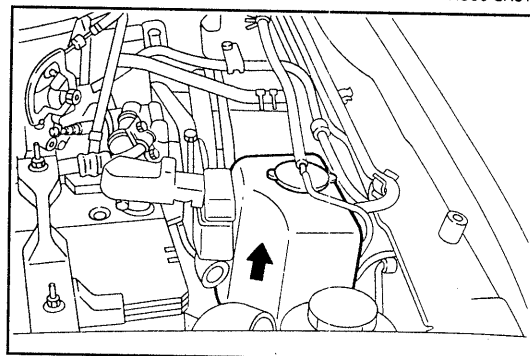
**REMOVAL**

1. Drain the power steering fluid.  
(As for the draining procedure, see page SR-13 to SR-14.)



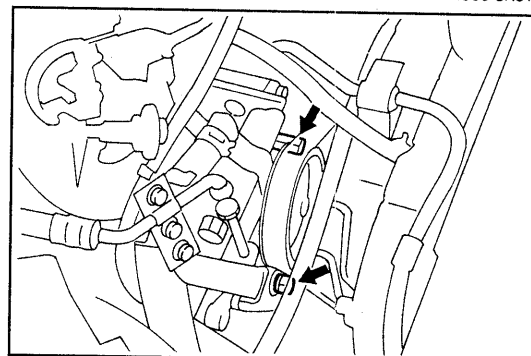
WRU90-SR316

2. Remove the radiator reservoir tank from the vehicle by raising it. Place the tank on the radiator.



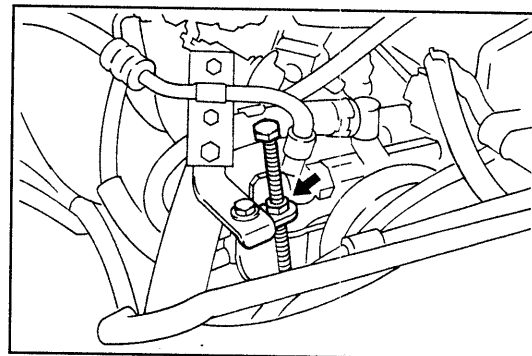
WRU90-SR317

3. Loosen the vane pump attaching bolts.
4. Loosen the vane pump drive belt adjusting set bolt.



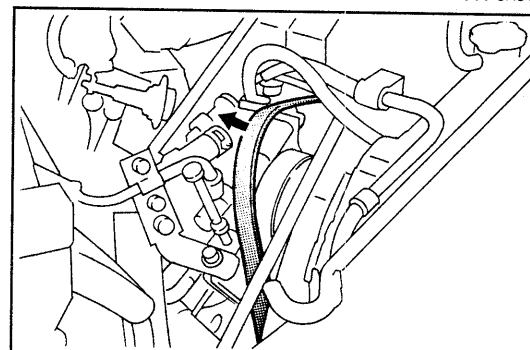
WRU90-SR318

5. Loosen the lock nut of the drive belt adjusting bolt. Loosen the adjusting bolt.



WRU90-SR319

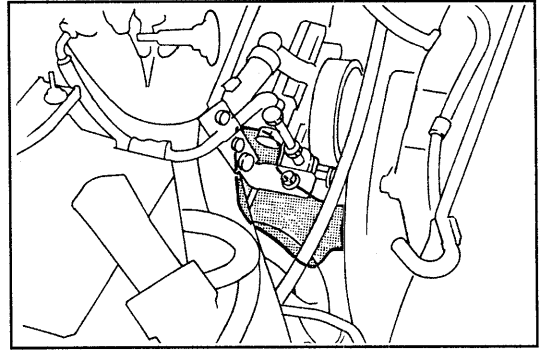
6. Remove the drive belt.



WRU90-SR320

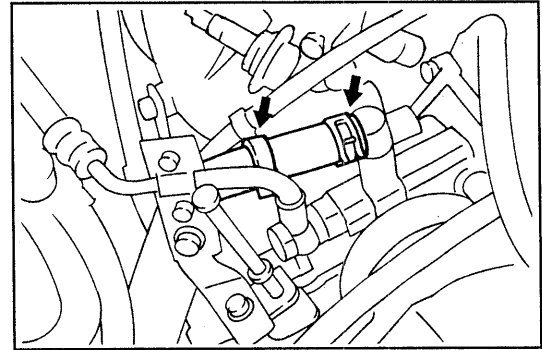
## STEERING

7. Place an adequate cloth under the vane pump so as not to soil the alternator and alternator drive belt.



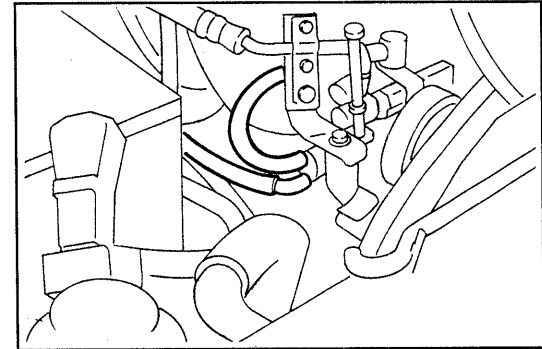
WRU90-SR321

8. Detach the hose clamp from the oil reservoir-to-pump hose.
9. Disconnect the oil reservoir-to-pump hose from the vane pump.



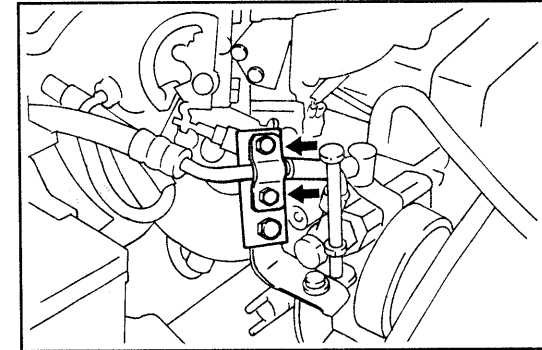
WRU90-SR322

10. Disconnect the air hoses for idle-up use from the air control valve.



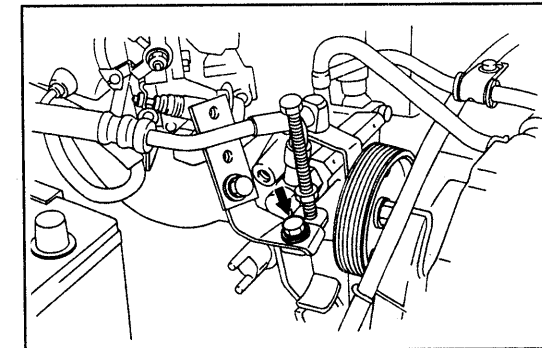
WRU90-SR323

11. Remove the attaching bolt of the pressure feed tube clamp. Detach the clamp.



WRU90-SR324

12. Remove the tube support bracket from the pump front stay.

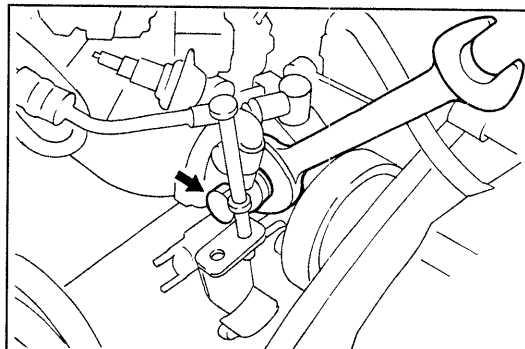


WRU90-SR325

13. Loosen and remove the pressure feed tube attaching union bolts, while preventing them from turning at the nut section of the pressure feed pump side.

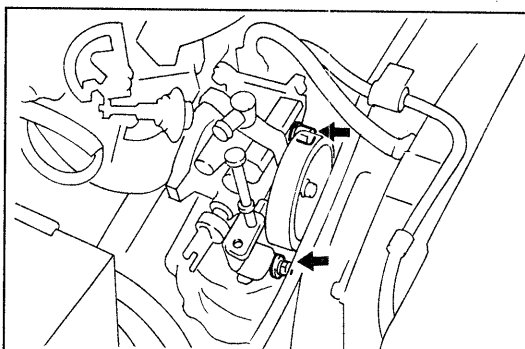
**NOTE:**

- Never reuse the gasket.



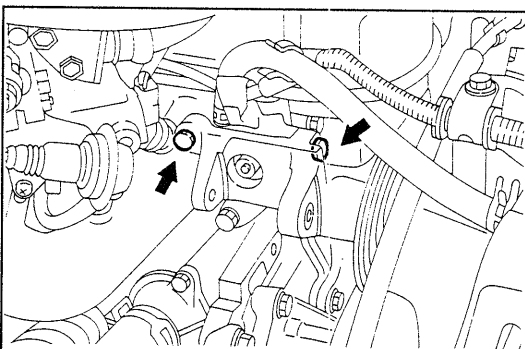
WRU90-SR326

14. Remove the vane pump attaching bolts and set bolt. Remove the vane pump from the engine.



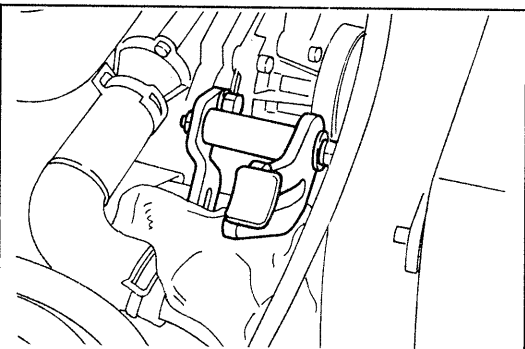
WRU90-SR327

15. Remove the pump bracket attaching bolts.



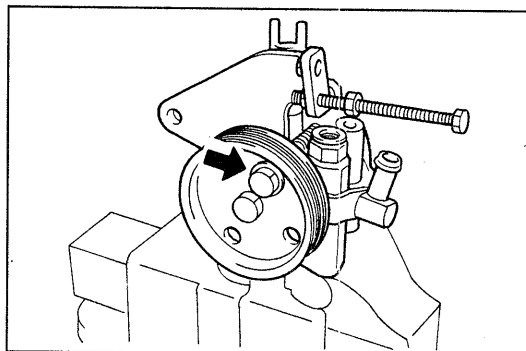
WRU90-SR328

16. Visually inspect the adjusting strut for damage, such as cracks and/or deformation. If any damage is present, remove the adjusting strut by removing the set bolt and nut.



WRU92-SR424

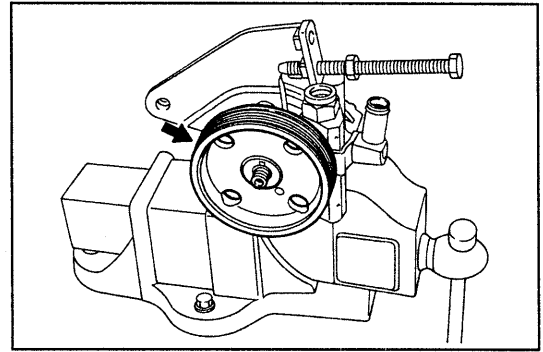
17. Remove the set bolt, while preventing the vane pump pulley from turning by inserting a suitable bolt to the pulley, as indicated in the right figure.



WRU90-SR330

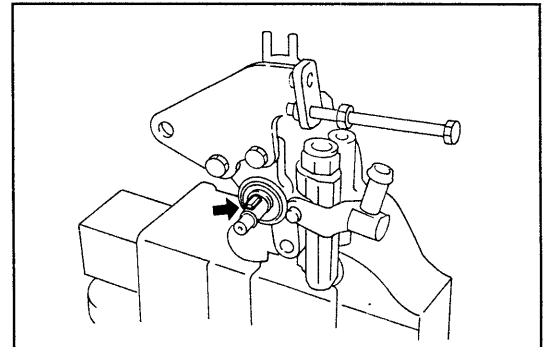
## STEERING

18. Remove the pulley from the vane pump.



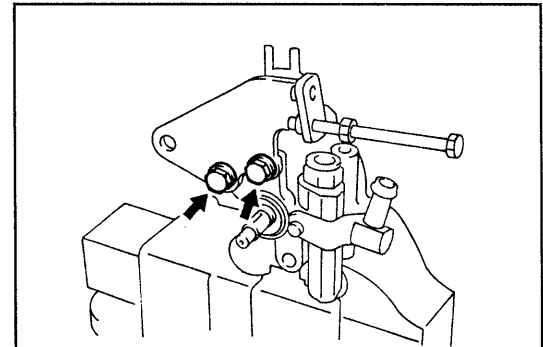
WRU90-SR331

19. Remove the woodruff key from the vane pump.



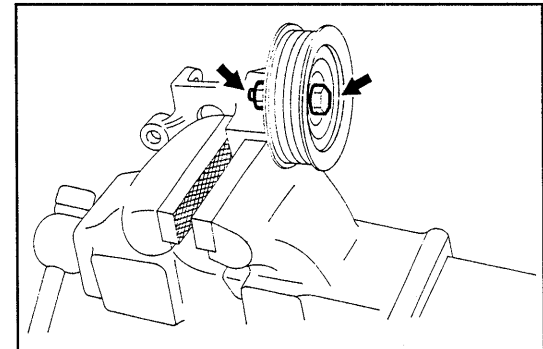
WRU90-SR332

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



WRU90-SR333

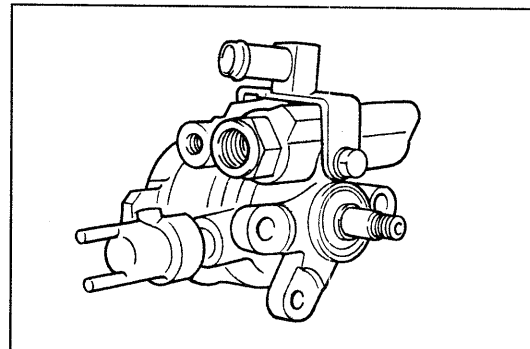
21. Remove the idle pulley from the vane pump bracket.



WRU90-SR334

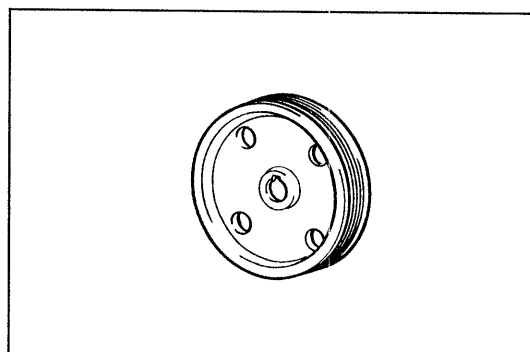
**INSPECTIONS**

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



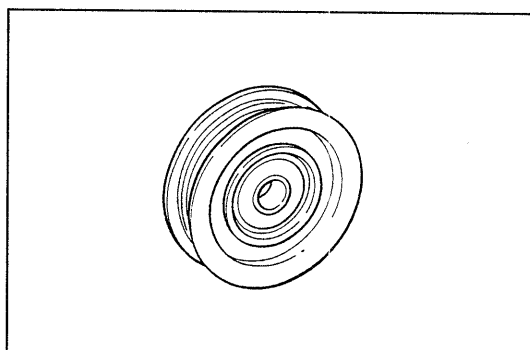
WRU92-SR425

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



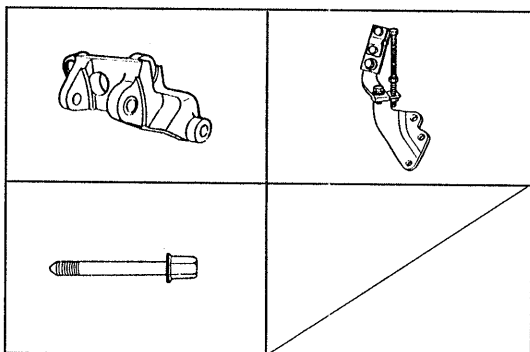
WRU92-SR426

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



WRU92-SR427

4. Ensure that no damage is present at the brackets and attaching bolts.  
If any damage is present, replace defective parts.



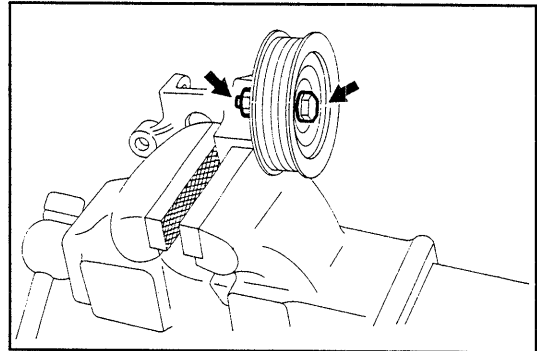
WRU90-SR338

## 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:**

3.5 - 5.0 kgf-m (25.3 - 36.2 ft-lb, 34.3 - 49.0 N-m)

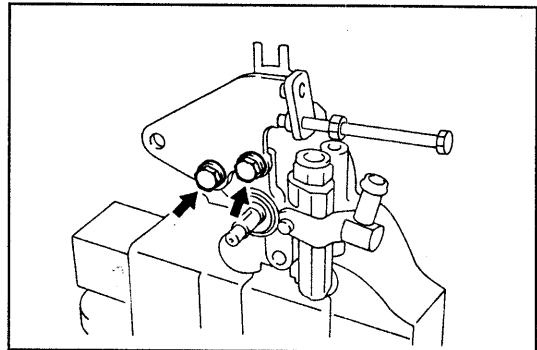


WRU90-SR339

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

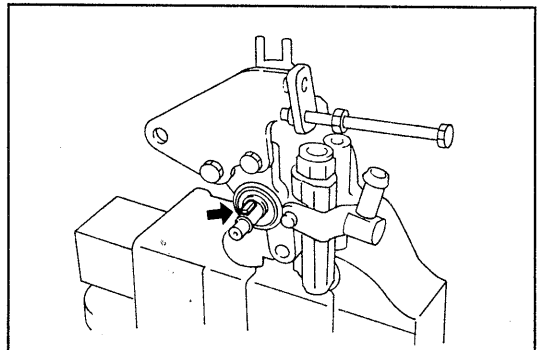
**Tightening Torque:**

3.5 - 5.0 kgf-m (25.3 - 36.2 ft-lb, 34.3 - 49.0 N-m)



WRU90-SR340

3. Install the woodruff key to the vane pump.

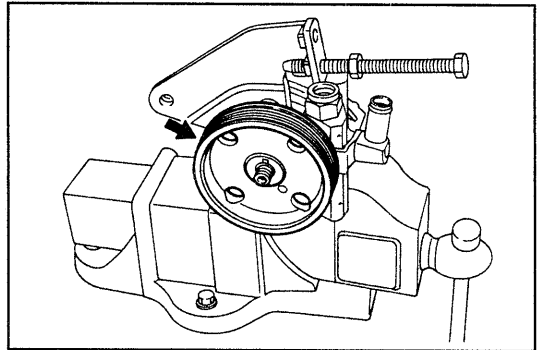


WRU90-SR341

4. Install the pulley to the vane pump.

**NOTE:**

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

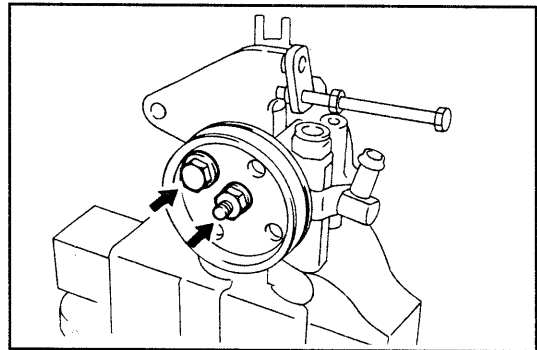


WRU90-SR342

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 nut to the specified torque.

**Tightening Torque:**

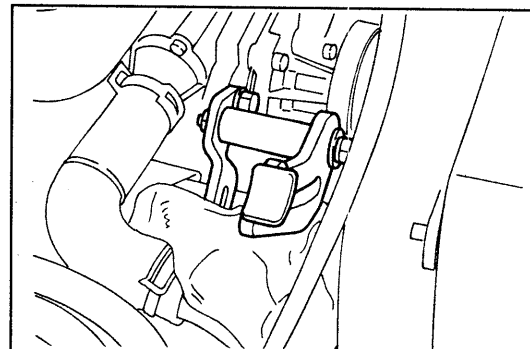
3.5 - 5.4 kgf-m (25.3 - 39.1 ft-lb, 34.3 - 53.0 N-m)



WRU90-SR343

6. Temporarily install the adjusting strut to the alternator adjusting bar.

(Only cases where the adjusting strut was removed)



WRU90-SR344

7. Install the vane pump bracket to the engine. Tighten the attaching bolts to the specified torque.

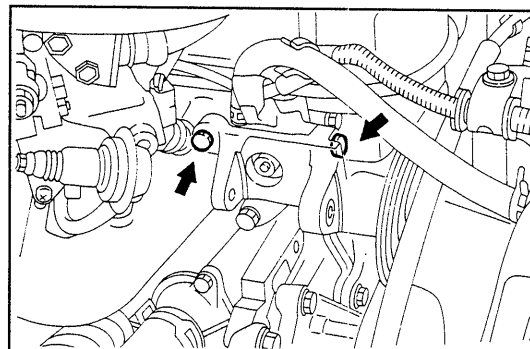
**Tightening Torque:**

**M8 bolt**

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

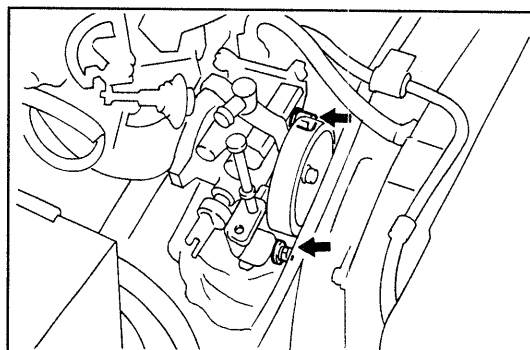
**M10 bolt**

3.5 - 4.5 kgf-m (25.3 - 32.5 ft-lb, 34.3 - 44.1 N·m)



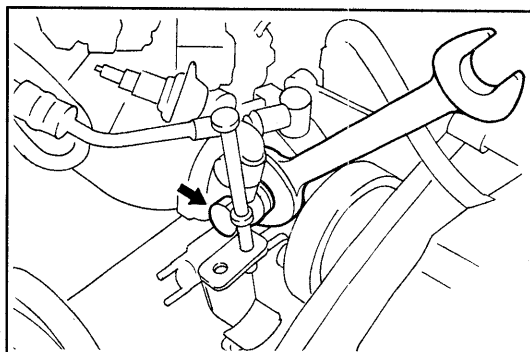
WRU90-SR345

8. Connect the vane pump to the engine. Temporarily tighten the attaching bolt and set bolt.



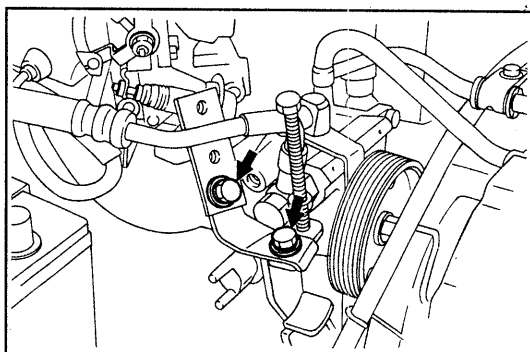
WRU90-SR346

9. Temporarily install the pressure feed tube to the vane pump with a new gasket interposed.



WRU90-SR347

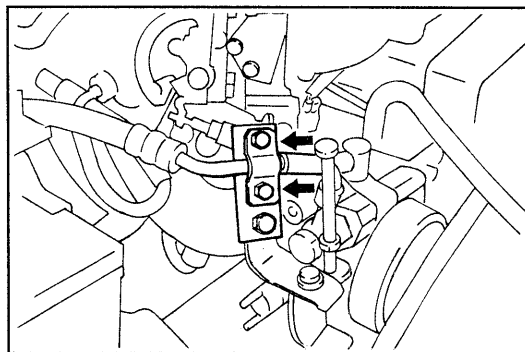
10. Temporarily install the tube support bracket to the pump front stay. Loosen the bolts connecting the tube support bracket to the tube support bracket No. 2.



WRU90-SR348

## STEERING

11. Temporarily install the pressure feed tube to the tube support bracket No. 2 with a clamp.

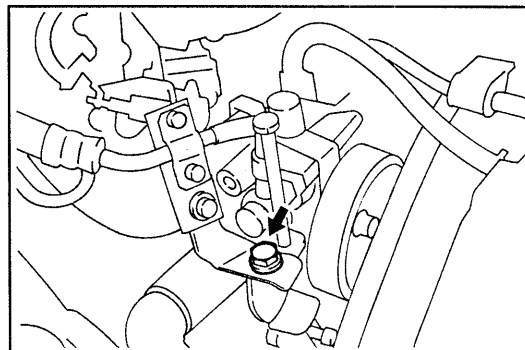


WRU90-SR349

12. Tighten the bolt connecting the tube support bracket to the pump front stay to the specified torque.

**Tightening Torque:**

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

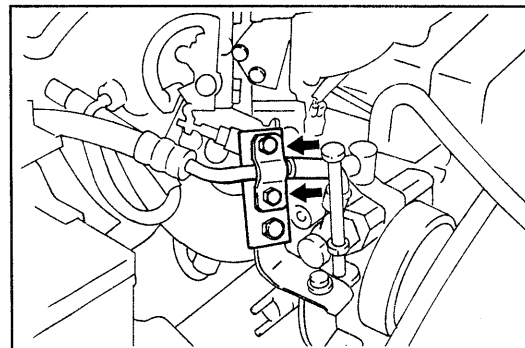


WRU90-SR350

13. Tighten the clamp attaching bolts to the specified torque.

**Tightening Torque:**

0.4 - 0.7 kgf-m (2.9 - 5.1 ft-lb, 3.9 - 6.9 N-m)



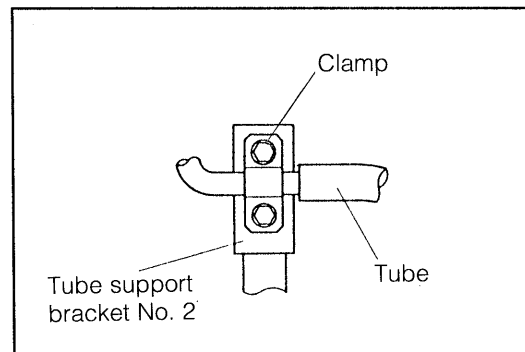
WRU90-SR351

### CAUTION:

- Prior to the tightening, make sure that the tube support does not overlap the large diameter section of the tube.

### NOTE:

- If the attaching bolts were tightened under the condition that the larger diameter section of the tube rode over the tube support, be sure to replace the tube support bracket and clamp with new parts.

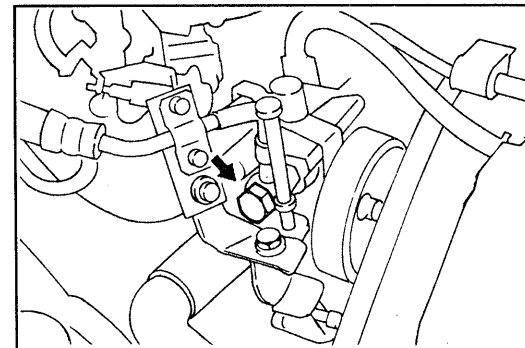


WRU90-SR352

14. Tighten the union bolt to the specified torque, while preventing it from turning at the nut section at the vane pump side.

**Tightening Torque:**

4.5 - 5.5 kgf-m (32.5 - 39.8 ft-lb, 44.1 - 53.9 N-m)



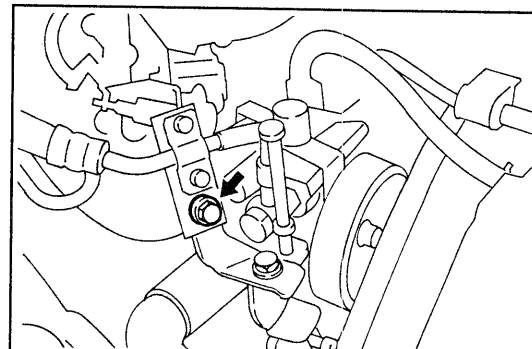
WRU90-SR353



15. Tighten the bolts connecting the tube support bracket No.2 to the tube support bracket to the specified torque.

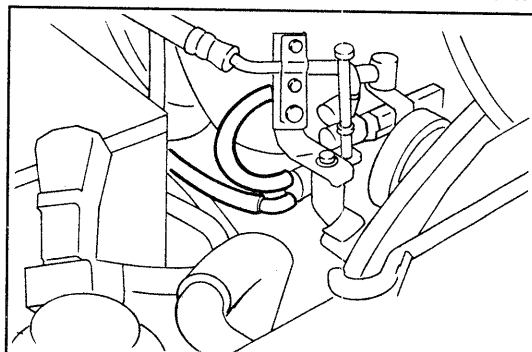
**Tightening Torque:**

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



WRU90-SR354

16. Connect the air hoses for idle-up use to the air control valve.

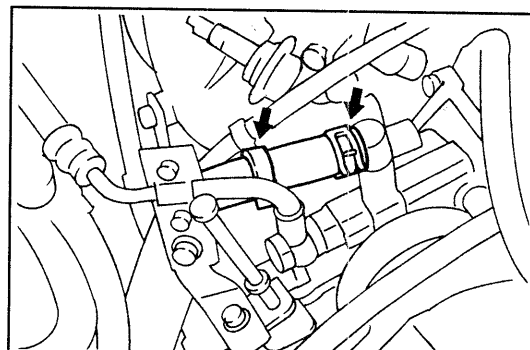


WRU90-SR355

17. Connect the oil reservoir-to-pump hose to the vane pump.

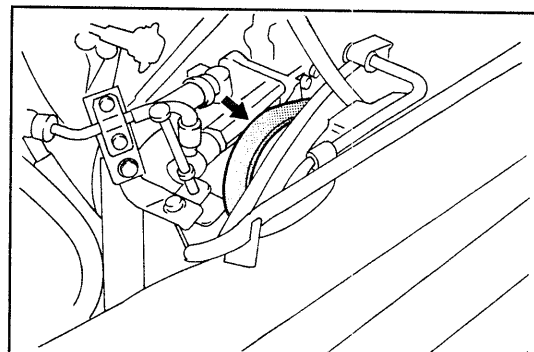
18. Attach the hose clip.

19. Remove the cloth placed during the disassembly.



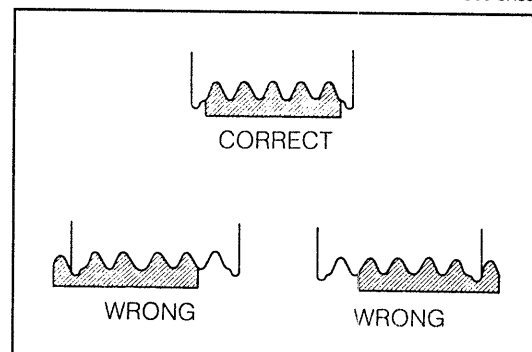
WRU90-SR356

20. Insert the drive belt.



WRU90-SR357

21. Correctly install the drive belt to each pulley.



WRU90-SR358

## STEERING

22. 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.

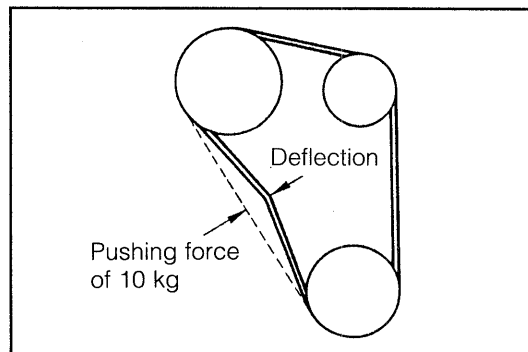
**Specified Belt Deflection:**

9 - 11 mm (0.36 - 0.43 inch)

[When a force of 10 kgf (22 lb) is applied:]

**Tightening Torque (lock nut):**

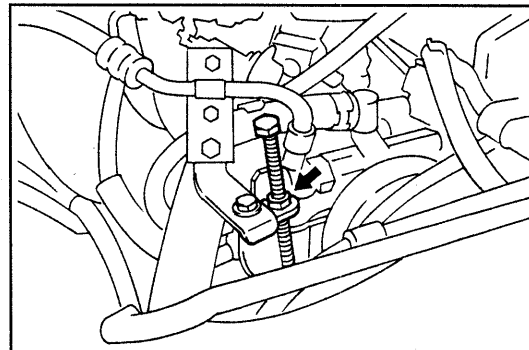
1.0 - 1.6 kgf-m (7.2 - 11.6 ft-lb, 9.8 - 15.7 N-m)



WRU90-SR359

**NOTE:**

- As for the belt tension of the air conditioner-equipped vehicle, see the Air Conditioner section.

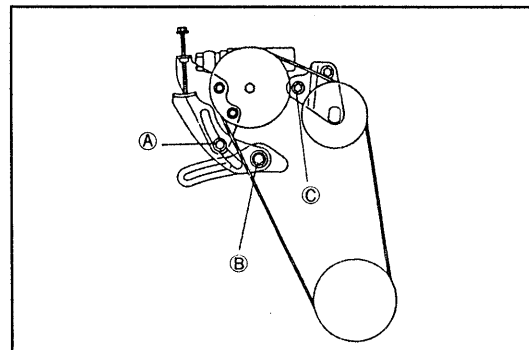


WRU90-SR360

23. Tighten the remaining bolts to the specified torque.

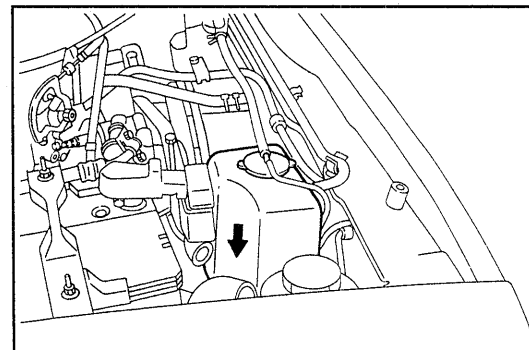
**Tightening Torque:**

- Ⓐ: 3.5 - 4.5 kgf-m  
(25.3 - 32.5 ft-lb, 34.3 - 44.1 N-m)
- Ⓑ: 7.0 - 9.0 kgf-m  
(50.6 - 65.1 ft-lb, 68.6 - 88.3 N-m)
- Ⓒ: 5.0 - 7.0 kgf-m  
(36.2 - 50.6 ft-lb, 49.0 - 68.6 N-m)



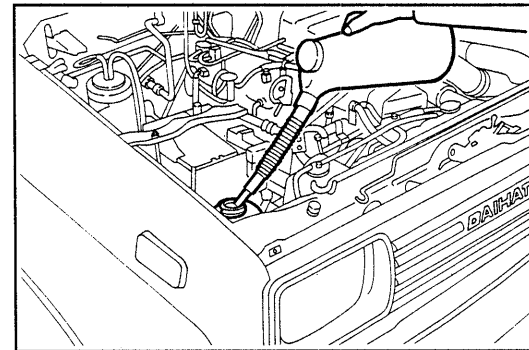
WRU90-SR361

24. Install the radiator reservoir tank by inserting it to the clamp at the vehicle side.



WRU90-SR362

25. Fill power steering fluid.  
(See page SR-15 to SR-16.)
26. Carry out the in-vehicle inspection of the power steering.  
(See page SR-11.)



WRU90-SR363