DAIHATSU

TERIOS

J100

TO INDEX

STEERING

JSR00001-00000

SR

NO. 9710-JE

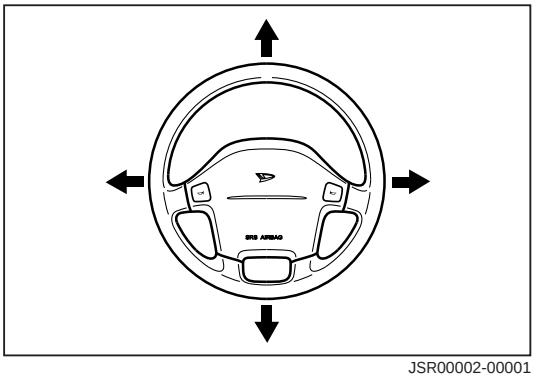
IN-VEHICLE INSPECTION

STEERING WHEEL

Check for rattle

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.

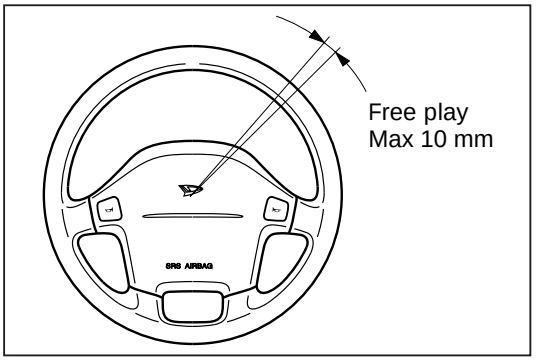
If any looseness and/or excessive play is present, check the steering wheel for improper installing condition. Repair any defective parts.



JSR00002-00001

Check 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: 10 mm

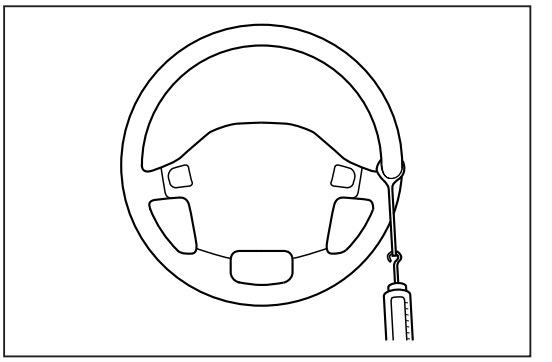


JSR00003-00002

If not, check each joint section for excessive play. If the joints are satisfactory, replace the steering gear assembly.
If the joint sections exhibit defects, such as excessive play, replace the defective parts.

Check of turning effort

Check of turning effort of steering wheel with vehicle in its stationary state
While the engine is idling and with the vehicle in its stationary state, measure the force required to turn the steering wheel from the straight-ahead position.
Specified Value: Not to exceed 5.4 N·m (0.55 kgf-m)



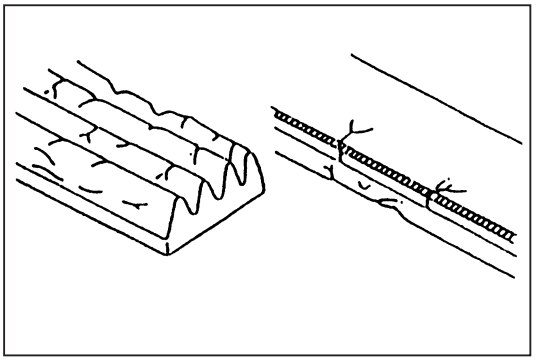
JSR00004-00003

If the turning effort is fails to meet with specified value, check tire pressure, quality of fluid etc., or check and overhaul the power steering systems as necessary.

POWER STEERING DRIVE BELT

Visual inspection

Inspect the drive belt for damage.
Visually check the belt for separation of the adhesive rubber above and below the core, core separation from the belt side, severed cord, separation of the rib from the adhesive rubber, cracks or separation of the ribs, torn ribs or cracks in the inner ridges of the ribs. Replace the drive belt, if necessary.

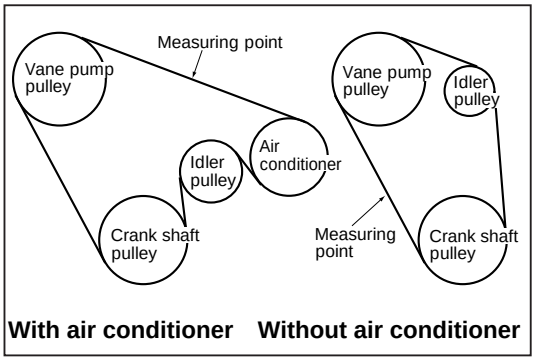


JSR00005-00004

Check of drive belt tension

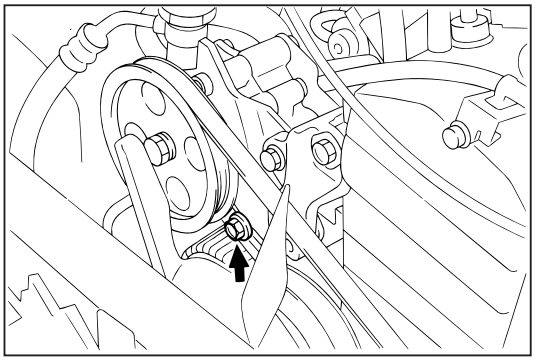
Ensure that the amount of the drive belt deflection within specified value, by depressing the midpoint of the drive belt between the vane pump and crank shaft pulley (vehicles equipped without air conditioner) or vane pump and air conditioner pulley (vehicles equipped with air conditioner) is pushed with a force of 98 N (10 kgf).

Specified Belt Deflection
New belt: 8 - 11 mm
Used belt: 11 - 14 mm



JSR00006-00005

Adjust the drive belt deflection by means of adjusting bolt, if the deflection is failes to meet with the specified value.



JSR00007-00006

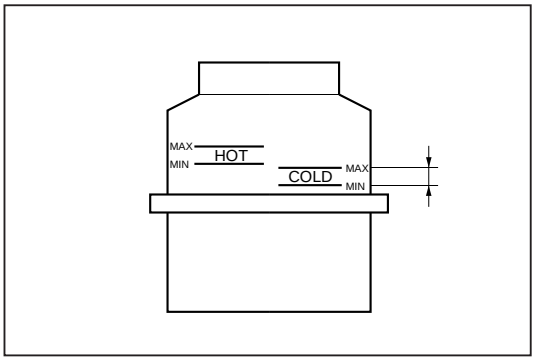
NOTE:

- Prior to the check, ensure that the drive belt is applied correctly on the pulley.
- The new belt refers to that belt driven not more than five minutes on the engine.
- The used belt refer to that belt driven more than five minutes on the engine.

POWER STEERING FLUID

Check of fluid level

1. Park the vehicle on a level floor.
2. Stop the engine.
3. Ensure that the power steering fluid level within specified level at the reservoir tank.
   NOTE:
   - Hot range denotes that when the fluid temperature is between 40 to 80 degrades.
   - Cold range denotes that when the fluid temperature is between 0 to 40 degrades.
   - When the fluid level does not conform to the specification, check the fluid leakage or component parts for malfunction. Then, add the specified powersteering fluid to specified level as necessary.



JSR00008-00007

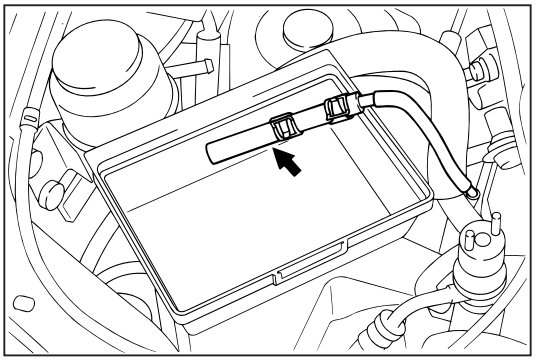
Check of fluid properties

1. While the vehicle is in its stationary state and the engine is idling, turn the steering wheel from lock to lock position in both right and left directions.
2. Visually inspect the fluid inside the reservoir tank.
   NOTE:
   - If the fluid is foamy or exhibits whitish cloudiness, most likely the fluid is lacking. Hence, perform air bleeding and adjust the fluid level.
   - If foreign matters, such as dirt, are mixed in the fluid, be certain to change the fluid.

JSR00009-00000

Fluid change

1. Jack up the vehicle and support it with the safety stands. (Refer to the GI section.)
2. Place the suitable container to under the return hose at reserve tank side.
3. Disconnect the return hose from the reservoir tank so as to allow the fluid to flow out.
4. Start the engine. (Never race the engine.)
5. Turn the steering wheel from lock to lock position in both the right and left directions.
   CAUTION:
   - To prevent vane pump seizure, be sure to drain the fluid as shortest as possible without raising the engine revolution speed.
6. Stop the engine.
7. Fill the reservoir tank with fluid.
   Power Steering Fluid: ATF DEXRON®II
8. Start the engine and run it idly. When the fluid starts to flow out from the return hose side, immediately stop the engine.
9. Repeat the steps 7 and 8 above, until air no longer injects from the return side.
10. Connect the return hose to the reservoir tank.
11. Jack down the vehicle.
12. Perform air bleeding for the power steering system. (Refer to step “Air bleeding for the power steering system” mentioned below.)

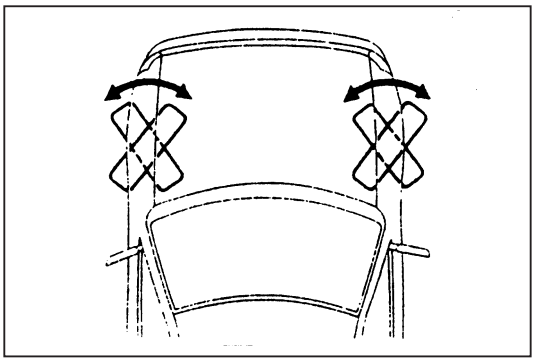


JSR00010-00008

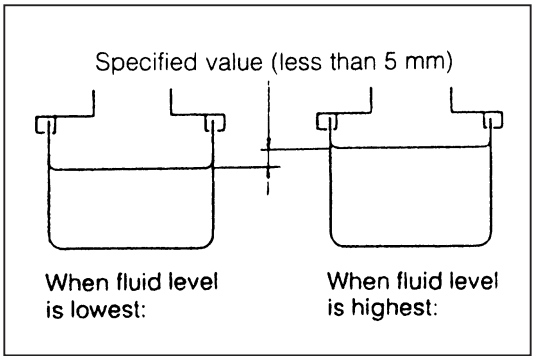
Air bleeding for the power steering system

1. Check the fluid level of the reservoir tank.
   NOTE:
   - If the fluid is lacking, add the specified fluid to the maximum level in the reservoir tank.
2. Run the engine at a speed below the fast idle speed. Turn the steering wheel up to the lock position in either the right or left direction. Hold this locked state for about two to three seconds. Next, turn the steering wheel up to the opposite lock position. Hold this locked state for about two to three seconds. Repeat this operation two to three times.
   NOTE:
   - Be certain to turn the steering wheel quickly.
   - If the fluid temperature is low, most likely the fluid remains foamy. Hence, prior to the bleeding operation, be certain to warm the fluid up to 40 to 70°C by turning the steering wheel repeatedly with the vehicle in its stationary state.
   - Check the fluid level of the reservoir tank during the bleeding operation. If the drop in fluid level is more than 5 mm, recheck the piping for fluid leakage.

JSR00011-00000



JSR00012-00009



JSR00000-00010

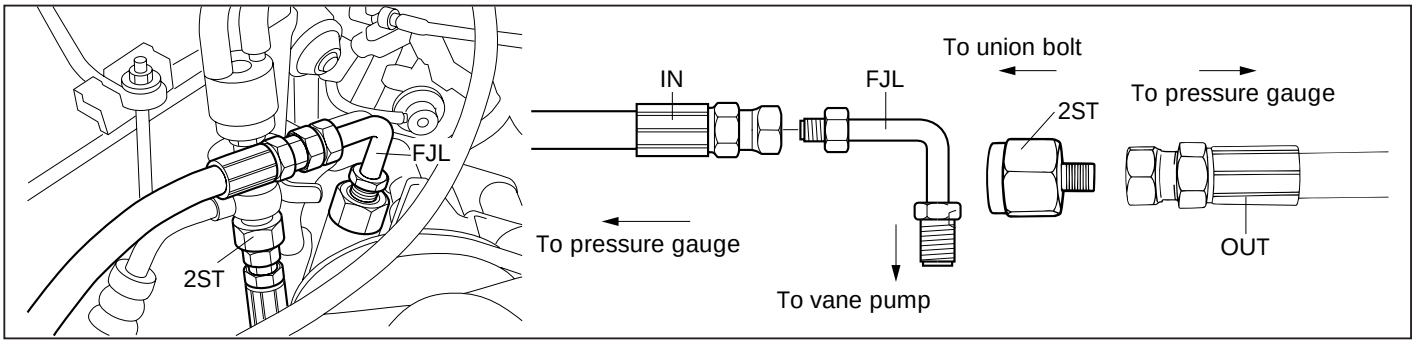
3. While turning the steering wheel with the vehicle in its stationary state, check that the power steering system is operating properly or it emits no abnormal noise, etc. Perform this check with the engine running at over 3000 rpm.
   NOTE:
   - If the following abnormalities are encountered during this check, check each part of the power steering system for sign of leakage. Again repeat the operations described in the step (2) afterward. If the trouble persists even these steps have been followed, replace faulty components of the power steering system.
   - The fluid exhibits whitish cloudiness when the engine revolution speed is rising quickly.
   - The steering operation is not smooth and also emitting abnormal noise.
   - The change in fluid level exceeds 5 mm between a time when the engine is running and a time when the engine is stopped or between a time when the power steering is operating and a time when the power steering is stopped.
   - The power steering system emits abnormal noise during the running (when the front wheels are turning).

JSR00013-00000

Check of power steering fluid pressure

1. Drain the fluid from the power steering system. (Refer to the “Fluid change” section.)
2. Disconnect the pressure feed hose with gasket from the vane pump by disconnecting the union bolt which is bolted in the air control valve. (Refer to the SR–36.)
3. Connect the two end of the following SST to vane pump.
   (1) Connect the one end of the SST to vane pump.
   (2) Connect the other end of the SST to pressure feed hose with gasket using the union bolt.
   SST: 09990-87704-000

(Use the attachments (PSG-FJL, 2ST) for connection of the oil pressure gauge to the vane pump and pressure feed hose as shown bellow.)



JSR00014-00011

CAUTION:
- Never connect the “IN” and “OUT” side hoses of the oil pressure gauge in wrong way. Failure to observe this caution may lend to damaging the oil pressure gauge.
- Never bend or twist the hoses and tubes forcibly.
- Never close the valve of the oil pressure gauge at this moment.

4. Perform the filling of fluid (Refer to the “Fluid change” section.) and the air bleeding (Refer to the “Air bleeding for the power steering system” section.).
5. Warm up the power steering fluid, until its temperature rises above 50°C.
6. Measurement of hydraulic pressure generated by vane pump
   While the engine is idling, measure the hydraulic pressure generated by the vane pump by closing the valve of the oil pressure gauge fully.
   Specified Pressure: 5786 kPa (59 kgf/cm^2) or more

   If the hydraulic pressure is low, replace the vane pump assembly with new one.
   CAUTION:
   - Never close the valve of oil pressure gauge not more than 10 seconds during measurement.

7. Check of pressure difference under unloaded state
   (1) Open the pressure gauge valve fully.
   (2) Determine the difference in pressure between a time when the engine revolution speed is 1000 rpm and a time when it is 3000 rpm.
   Specified Value: Not to exceed 294 kPa (3 kgf/cm^2)

   NOTE:
   - If the difference in hydraulic pressure exceeds the specified value, replace the vane pump assembly.
   - Never operate the steering wheel during the measurement.

8. Measurement of hydraulic pressure at gear housing side
   (1) While the engine is idling, open the pressure gauge valve fully.
   (2) Ensure that the oil pressure gauge reading is more than that specified during steering wheel turns lock to lock positions from the steering wheel turns fully in right and left positions.
   Specified Value: 5.4 MPa $^{+0.5}_{0}$ (55 $^{+5}_{0}$ kgf/cm^2)

   If the hydraulic pressure is lower than that specified at either side of the right or the left, overhall the steering gear assembly.

9. Drain the fluid from the power steering system. (Refer to the “Fluid change” section.)
10. Remove the oil pressure gauge (SST).

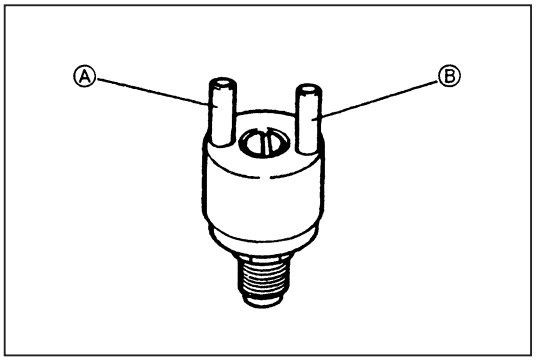
JSR00015-00000

11. Connect the pressure feed hose to the vane pump, by union bolt with new gasket interposed.
12. Perform the filling of fluid (Refer to the “Fluid change” section.) and the air bleeding (Refer to the “Air bleeding for the power steering system” section.).
13. Ensure that no fluid leakage is exists from the fluid pipe connected sections of power steering systems under engine operated and when turning the steering wheel.

JSR00016-00000

Check of air control valve

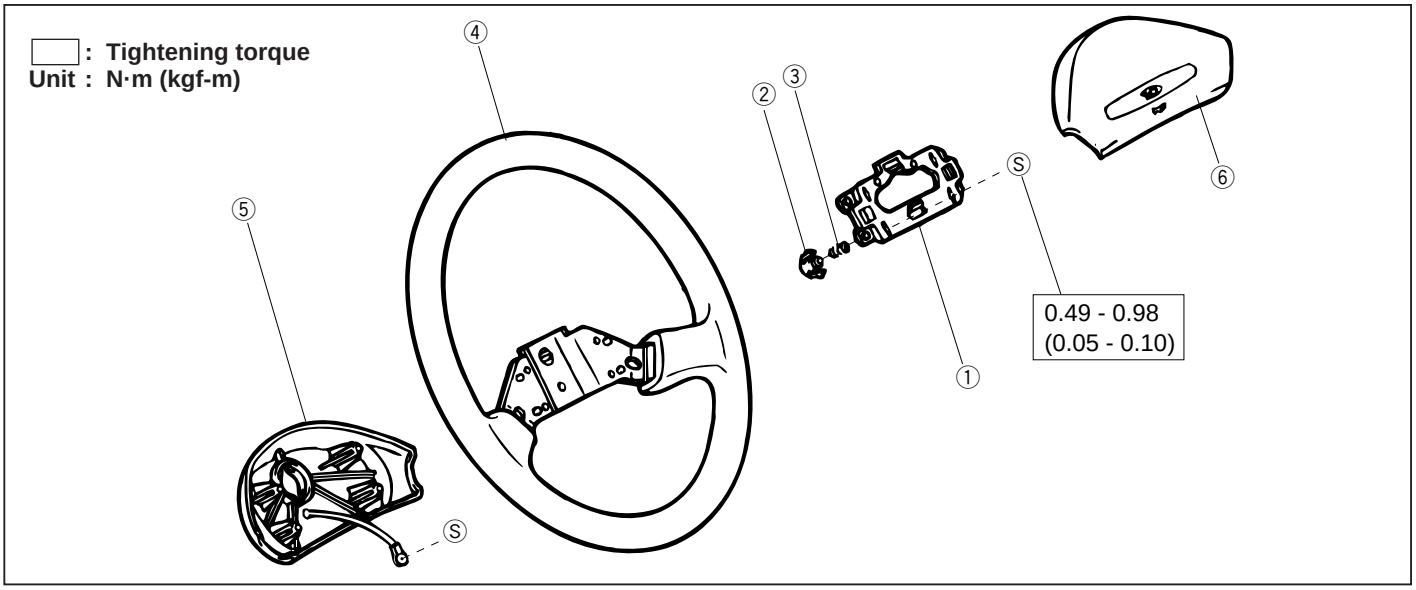
1. Ensure that there is no air continuity exists between port Ⓐ and port Ⓑ of the air control valve in the right figure when steering wheel not operated under engine at idling state.
2. Ensure that there is air continuity exists between port Ⓐ and port Ⓑ of the air control valve in the right figure when steering wheel turns fully in right or left direction under engine at idling state.
   NOTE:
   - Be sure to perform the above check with the air control valve in the vane pump assembly.



JSR00017-00012

STEERING WHEEL (PP TYPE)

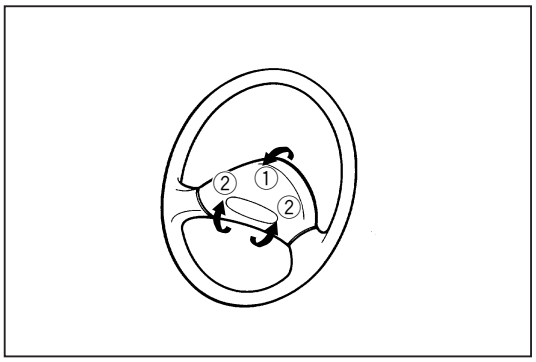
COMPONENTS



JSR00018-00013

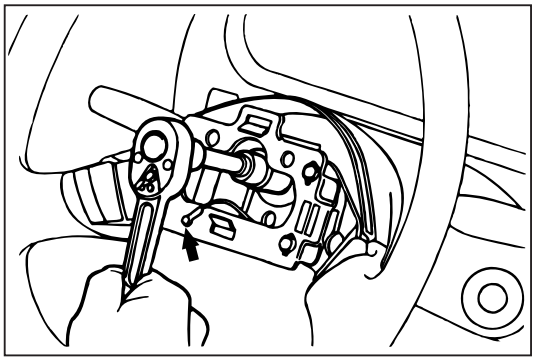
REMOVAL

1. Disconnect the battery ground cable terminal from the negative (–) terminal of the battery.
2. Hold the steering wheel pad sub-assembly at its lower end by your fingers. Then, detach the upper side of the steering wheel pad sub-assembly by pulling it toward your side.
   NOTE:
   - Be careful not to break the claw of the steering wheel pad by pulling it excessively.



JSR00019-00014

3. Remove the horn harness and lock nut.
4. Remove the steering wheel.
   CAUTION:
   - Never tap the shaft, using a hammer or the like, when removing the steering wheel from the shaft. If any difficulty is encountered in removing the steering wheel, use a steering wheel puller to remove it.



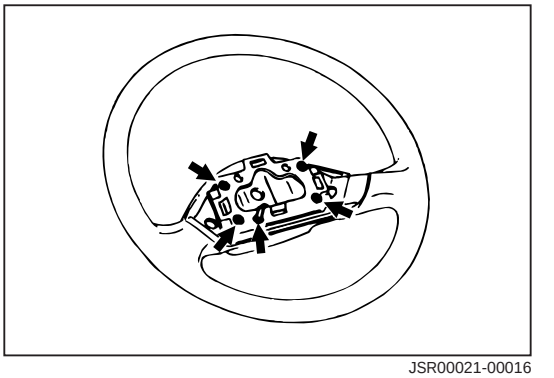
JSR00020-00015

DISASSEMBLY

1. Remove the horn button contact plate.
2. Remove the steering wheel cover from the steering wheel.

ASSEMBLY

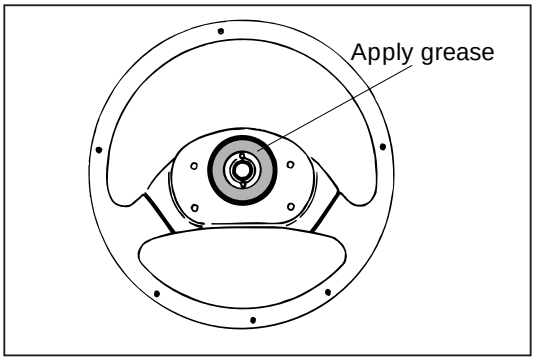
1. Install the steering wheel cover to the steering wheel.
2. Install the horn button contact plate to the steering wheel.



JSR00021-00016

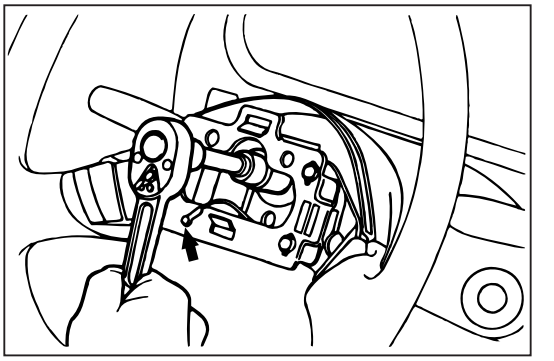
INSTALLATION

1. Install the steering wheel to the steering wheel cover.
2. Apply rubber grease on the indicated area in the right figure.



JSR00022-00017

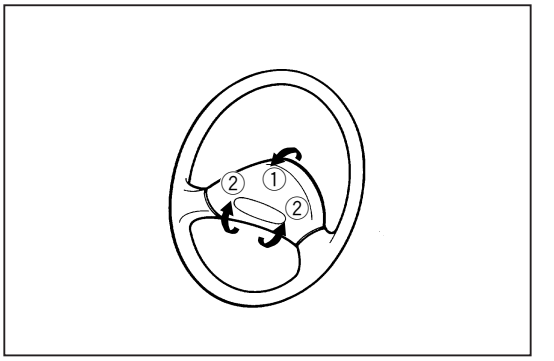
3. Ensure that the vehicle is in a straight-ahead state. Then, install the steering wheel assembly to the steering shaft.
   NOTE:
   - Make sure that the steering wheel is installed, making an angle of ±15° from the neutral position.
   - Never tap the shaft, using a hammer or the like, when installing the steering wheel to the shaft.



JSR00023-00018

4. Install and tighten the lock nut. Then, connect the horn harness.
   Tightening Torque: 27.5 - 41.2 N·m (2.8 - 4.2 kgf-m)

5. Install the steering wheel pad.
   NOTE:
   - Be careful not to break the claw at the back side of the steering wheel pad by pushing it excessively.

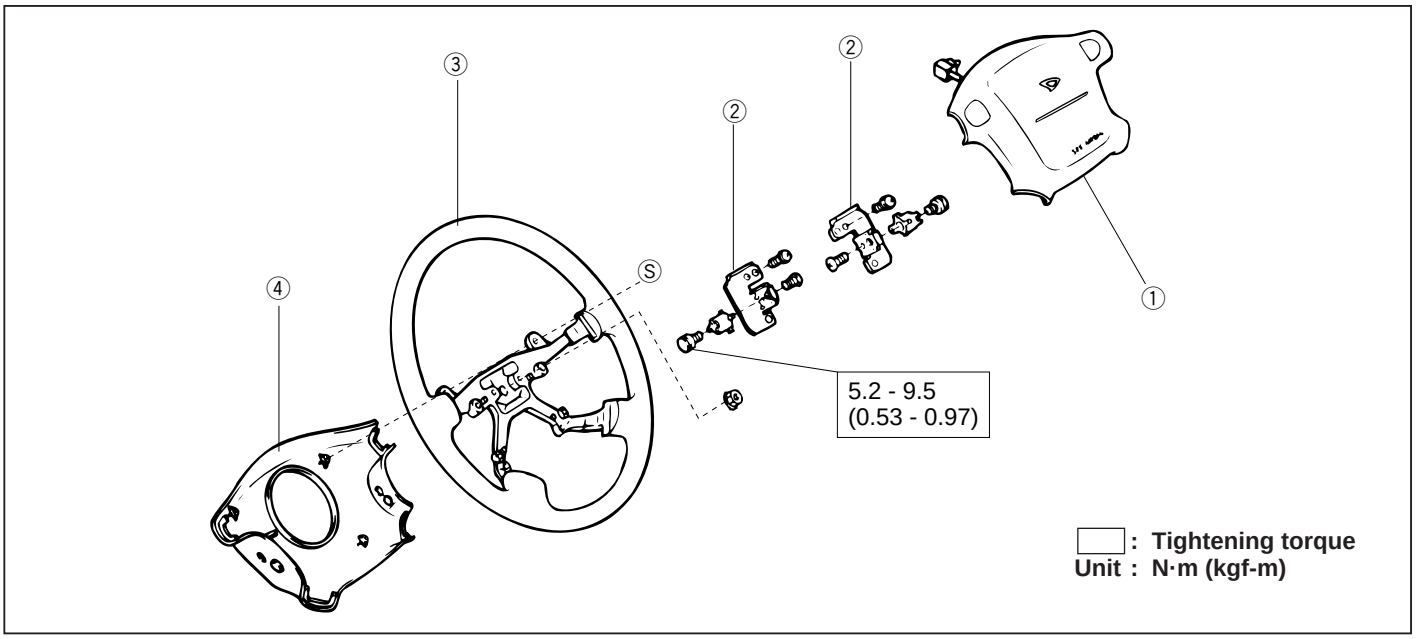


JSR00024-00019

6. Connect the battery ground cable to the negative terminal of the battery.

STEERING WHEEL(AIRBAG TYPE)

COMPONENTS



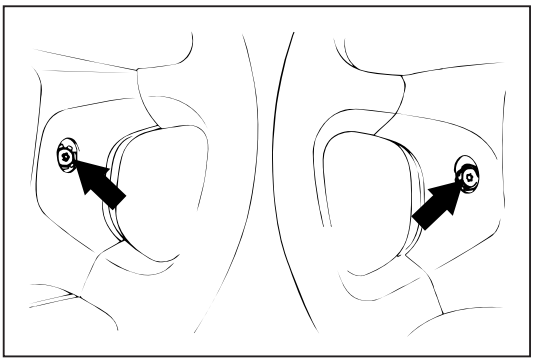
JSR00025-00020

REMOVAL

1. Turn OFF the ignition switch and disconnect the battery cable from the negative (–) terminal of the battery.
2. Set the steering wheel to a straight-ahead position.
   Remove the attaching bolts (TORX® bolt) at the right and left sides of the steering wheel cover side.
   WARNING:
   - Be sure to start the operation 60 seconds after the power supply is cut off. Failure to observe this warning may cause unexpected deployment of the airbag owing to impacts, etc. during the removal.
   - Never bring your face, arms and body to the front of the steering wheel during the removal.
   - If the pad assembly is dropped or damaged during the removal or the storage, be sure to dispose of the pad assembly according to the disposal procedure. Be sure to mount a new pad assembly to the vehicle.

   CAUTION:
   - It should be noted that, when the negative (–) terminal of the battery is disconnected, the memory of the ECU control of other systems will be erased at the same time.

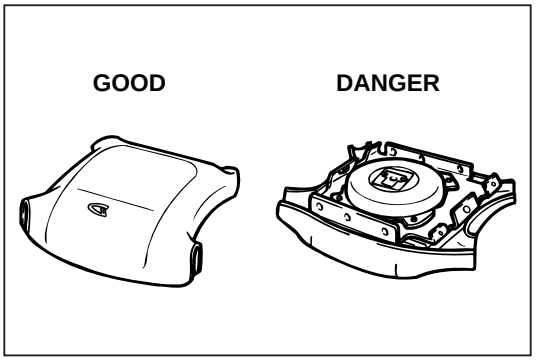
JSR00026-00021



JSR00000-00022

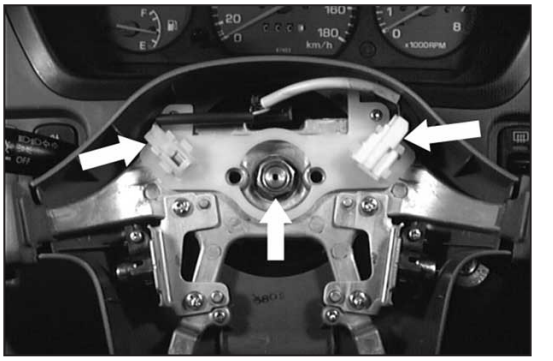
3. Separate the pad and steering wheel from the top of the pad assembly. Disconnect the connector for the airbag and connector for the horn provided at the reverse side of the pad assembly.
   WARNING:
   - Never resume the operation within 60 seconds after the power supply has been cut off, during which the backup condenser is discharged.

4. After the connector is disconnected, remove the pad assembly from the steering wheel.
   WARNING:
   - Be sure to place the removed pad assembly with the pad surface facing upward. The pad assembly placed with the pad surface facing downward is potentially hazard. Failure to observe this caution may cause unexpected deployment of the airbag, resulting in scattered pad assembly. Furthermore, store the pad assembly at a low place close to the ground level where no heat source (100°C or less) exists in close proximity.



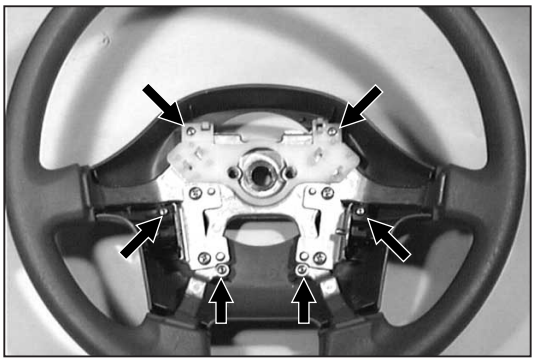
JSR00027-00023

5. Ensure that the steering wheel is set to a straight-ahead position.
6. Remove the lock nut.
7. Detach the connector from the clamp.
8. Remove the steering wheel.
   CAUTION:
   - Care must be exercised so that the connector may not be caught in when removing the steering wheel.


JSR00028-00024

DISASSEMBLY

Remove the steering wheel cover by removing the attaching screws.


JSR00029-00025

ASSEMBLY

Install the steering wheel cover by installing the attaching screws.

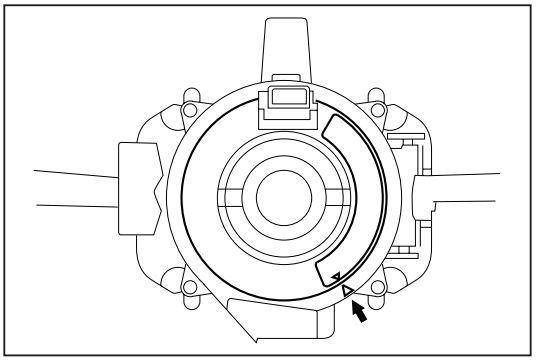
INSTALLATION

PRECAUTION:
- It should be noted that wrong installation of the steering roll connector may pose potential hazard, for it may break the wire and also prevent proper turning of the steering wheel.

1. Ensure that the front wheels are set to the straight-ahead position.

JSR00030-00000

2. Turn the steering roll connector clockwise, until it is locked.
   CAUTION:
   - The steering roll connector makes five turns at the maximum. Hence, when the steering roll connector is connected to the steering wheel, be sure to set the steering roll connector to the midpoint of the rotation.


JSR00031-00026

3. Back off the steering roll connector about 2.5 turns counterclockwise from the locked position. Align the center mark. Temporarily secure the steering roll connector, using a tape, so that it may not move.

4. Ensure that the vehicle is in a straight-ahead state. Then, install the steering wheel assembly to the steering shaft.
   CAUTION:
   - Make sure that the steering wheel is installed, making an angle of ±15° from the neutral position.

5. Turn the steering wheel about 60° in a right-and-left direction two or three times so as to positively fit the cancellation pin of the multi-use lever switch to the cutout section of the steering wheel boss section.
6. Install and tighten the lock nut.
   Tightening Torque: 27.5 - 41.2 N·m (2.8 - 4.2 kgf-m)

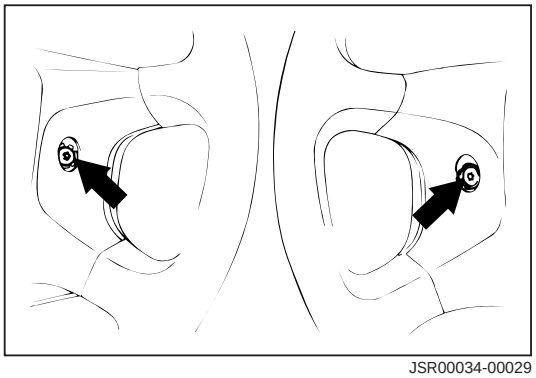
7. Installation of steering wheel pad assembly
   (1) Ensure that the ignition switch is set to the OFF or ACC position.
   (2) Set the horn connector at the roll connector side to the connector holder of the steering wheel.
   (3) Join the horn connector at the pad assembly side to the connector that has been set in Step (2).
   (4) Join the connectors for the squib at the roll connector side and pad assembly side together so as to make double locking.
   (5) With the double locking side of the connector for the squib which has been set in Step (4) facing downward, set the connector for the squib to the connector holder of the steering wheel while sliding it.
   (6) Set the harness for the squib leading to the roll connector to the lower part of the connector holder.
8. Temporarily install the pad assembly to the steering wheel, making sure that it exhibits no excessive rattle.
9. Tighten the TORX® bolts (at two points) provided at the side of the steering wheel proper to the specified tightening torque.
   Tightening Torque: 5.2 - 9.5 N·m (0.53 - 0.97 kgf-m)

CHECK AFTER INSTALLATION

1. Ensure that steering wheel operates smoothly with out any pulling and abnormal resistance by turning the steering wheel to the right and left sides, respectively, as far as it will go.
2. Connect the negative (–) terminal of the battery ground cable to the negative terminal of the battery terminal.
3. Ensure that the horn is set off by pushing the horn button.
4. Ensure that the airbag warning lamp illuminates for six seconds immediately after turn ON the ignition switch.

JSR00032-00027

JSR00033-00028

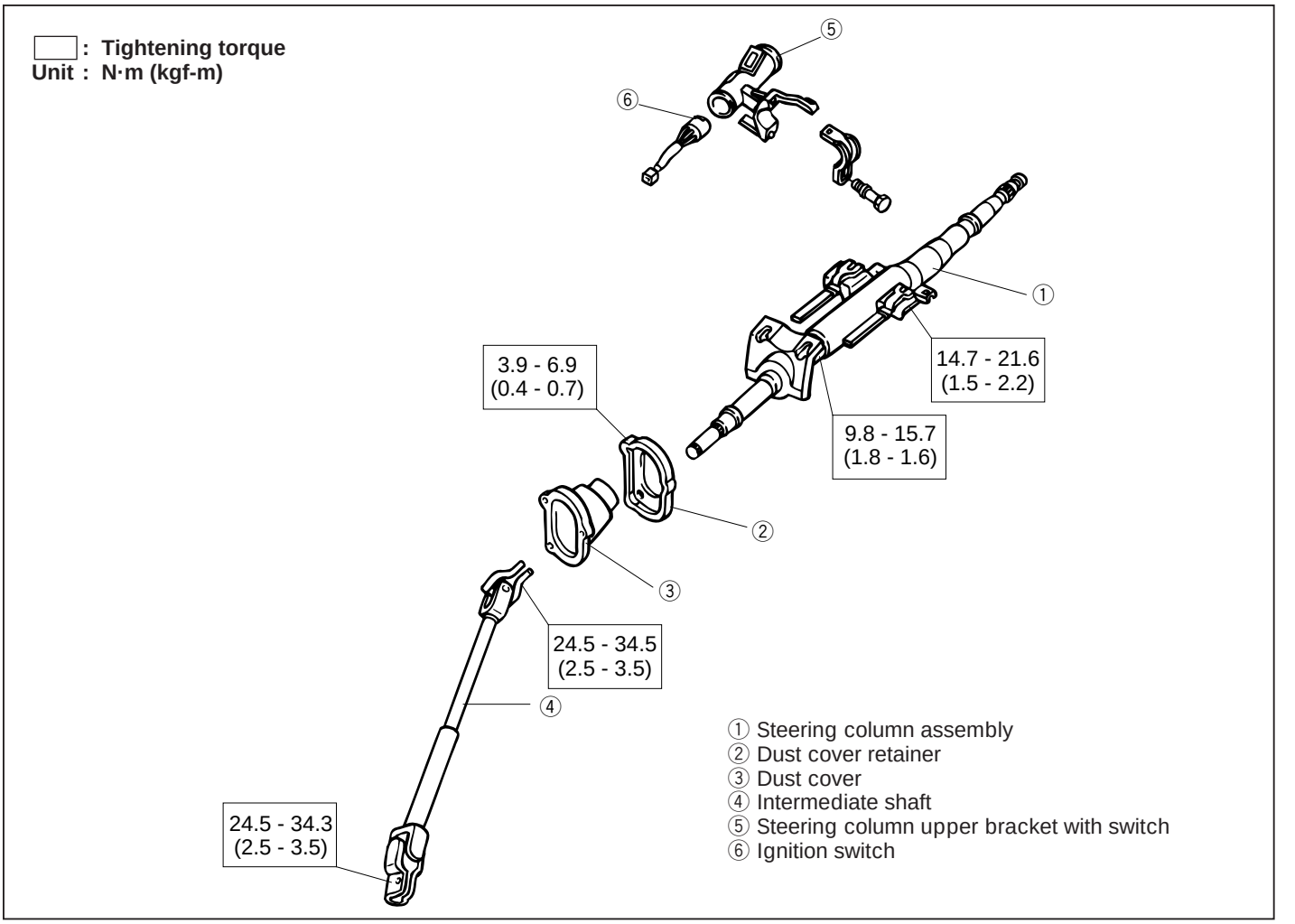


JSR00034-00029

JSR00035-00000

STEERING COLUMN & INTERMEDIATE SHAFT

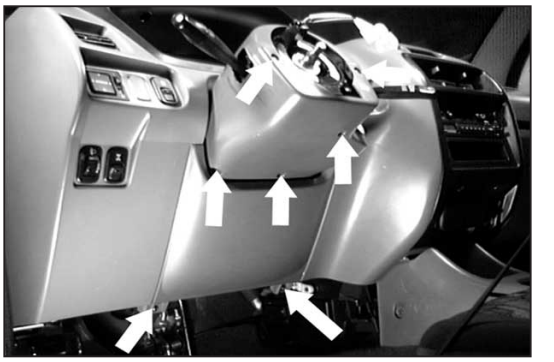
COMPONENTS



JSR00036-00030

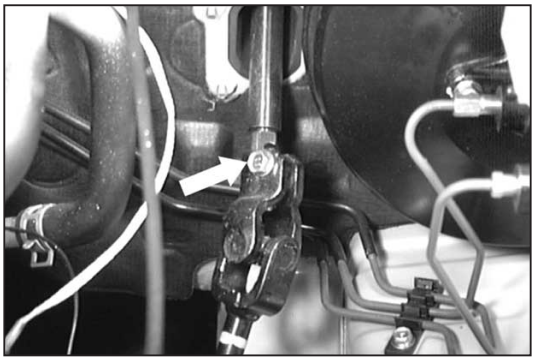
REMOVAL

1. Disconnect the negative (–) terminal of the battery ground cable from the negative (–) terminal of the battery.
2. Remove the steering wheel.
   (Refer to the “STEERING WHEEL” section.)
3. Remove the instrument panel lower finish panel.
4. Remove the steering column lower cover.



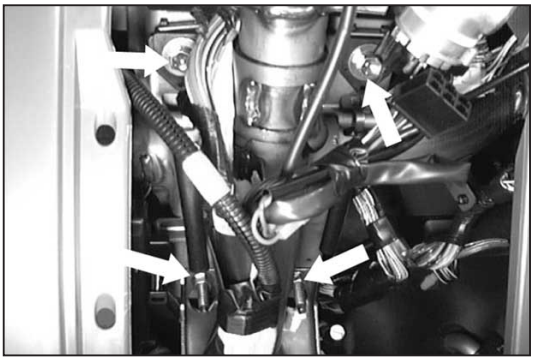
JSR00037-00031

5. Remove the intermediate shaft and steering column connecting bolt.

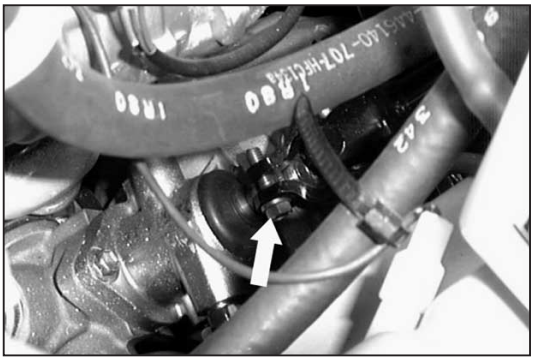


JSR00038-00032

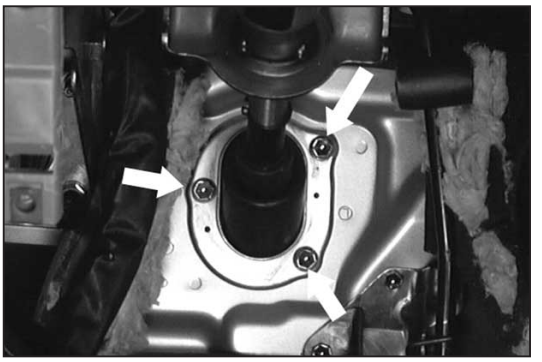
6. Disconnect the connector for the ignition switch.
7. Remove the steering column attaching bolts and nuts.
8. Remove the steering column upper cover.
9. Disconnect the connector for the multi-use lever switch, air bag (if equipped) and immobilizer (if equipped).
10. Remove the steering column by removing the attaching bolt.
    CAUTION:
    - Be very careful not to scratch the dust cover when removing the steering column.


JSR00039-00033

11. Removal of intermediate shaft
    (1) L.H.D. vehicle
    Remove the air intake duct from the air cleaner case.
    R.H.D. vehicle
    Remove the battery and battery carrier.
    (2) Remove the intermediate shaft and steering gear pinion connecting bolt.
    (3) Remove the intermediate shaft from the steering gear.

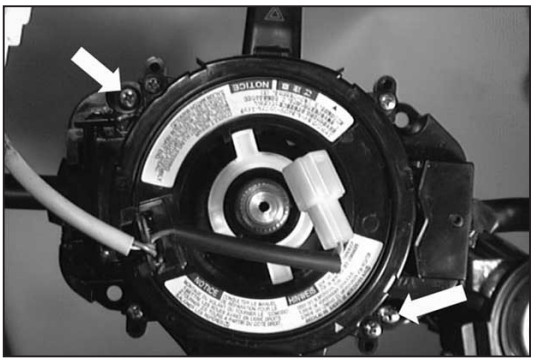

JSR00040-00034

12. Remove the dust cover retainer and dust cover from the dash panel by removing attaching bolts.


JSR00041-00035

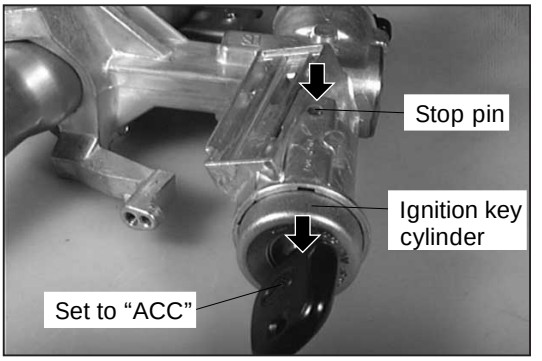
DISASSEMBLY

1. Remove the multi-use lever switch assembly by loosening the two attaching screws.
   NOTE:
   - On airbag-equipped vehicles, the multi-use lever switch should be removed with the roll connector attached.


JSR00042-00036

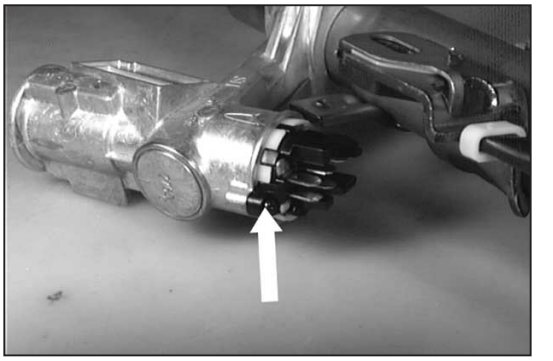
2. Remove the antenna coil.(If equipped.)
   NOTE:
   - For the replacement of the antenna coil on immobilizer-equipped vehicles, refer to the BE section.

3. Remove the ignition key cylinder from the steering column upper bracket with the switch.
   NOTE:
   - Set the ignition key to the ACC position and push the stop pin. Then, draw out the cylinder.
     This operation can be performed on the vehicle if the steering column cover is removed beforehand.



JSR00043-00037

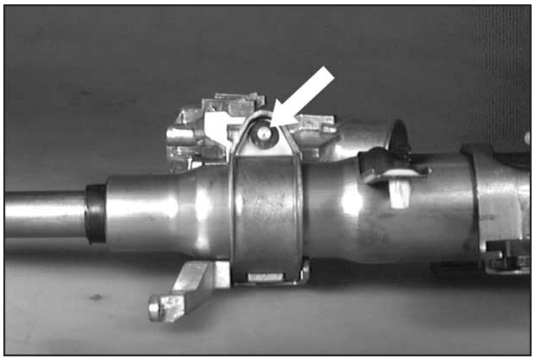
4. Remove the ignition switch from the steering column upper bracket by removing the attaching screw.
   NOTE:
   • This operation can be performed also on the vehicle.



JSR00044-00038

5. Removal of the steering column upper bracket.
   NOTE:
   • Perform this operation only when it becomes necessary to replace the steering column upper bracket alone.

   (1) Remove the steering column upper bracket by remove the head section of the attaching bolt, using a drill.
   (2) Remove the upper bracket from the steering column tube.
   (3) Screw-out the thread part of the attaching bolt from the steering column upper bracket.



JSR00045-00039

INSPECTION

Steering column dust cover and retainer

Ensure that the steering column dust cover and dust cover retainer free from cracks, deterioration, aging, deformation and other damage.

If any damage is exists, replace the damaged part with new one

JSR00046-00040

Intermediate shaft (collapsible type and rigid type)

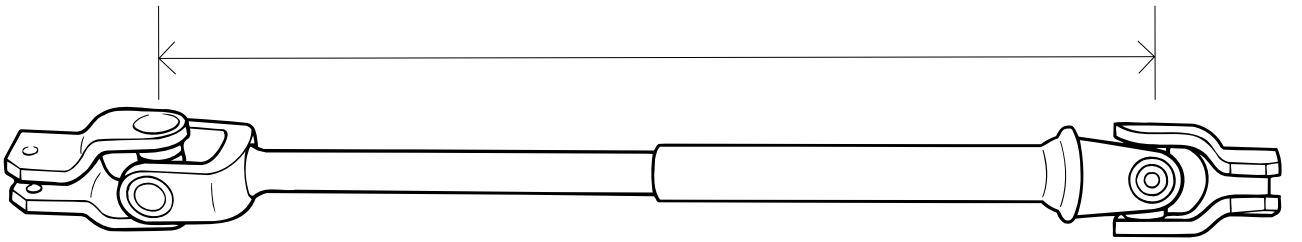
Measure the length of intermediate shaft.

If the length is shorter than the specified length excessively, replace it with a new one.

Ensure that the intermediate shaft exhibits no defect, such as excessive play or rattle at the spline section and excessive play or rattle at the joint section of the universal joint.

CAUTION:

• Never drop the collapsible type intermediate shaft nor apply strong impacts to it. Failure to observe this caution may lead to loss of the impact-absorbing function.



Specified Length:

L.H.D. 368 mm R.H.D 363 mm

JSR00047-00041

Steering column assembly

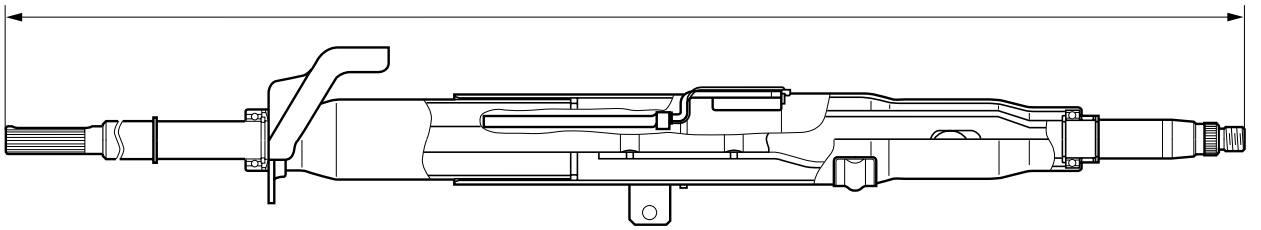
Ensure that the length of the steering column assembly is not less than specified value by measuring the its length.

If the length is shorter than the specified length excessively, replace it with a new one.

Ensure that the steering column assembly exhibits no defect, such as excessive play at the spline section.

CAUTION:

- Never drop the collapsible type steering column assembly nor apply strong impacts to it. Failure to observe this caution may lead to loss of the impact-absorbing function.



Specified Length:

Rigid type 708.6 mm Collapsible type 701 mm

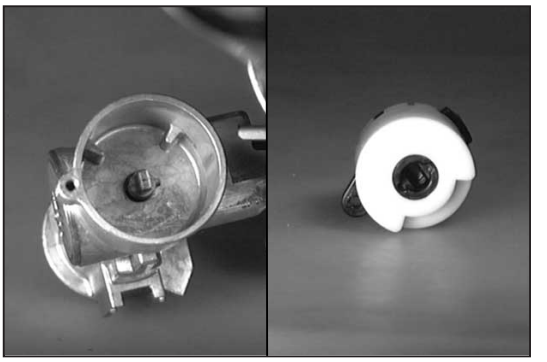
JSR00048-00042

ASSEMBLY

1. Install the steering column upper bracket to the steering column tube with new attaching bolt and tighten it until it with break off.
2. Install the ignition switch to the steering column upper bracket with attaching screws.

   NOTE:

   - Before installing the ignition switch, set the protrusion of steering column upper bracket with the groove inside the ignition switch each other.

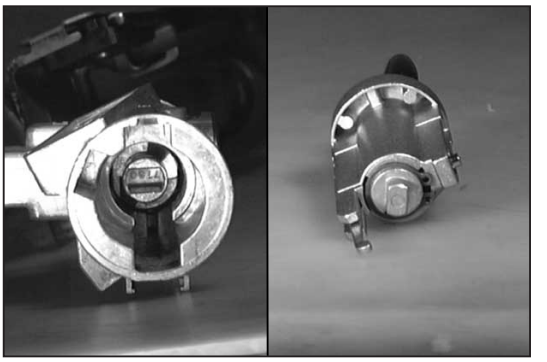


JSR00049-00043

3. Install the ignition key cylinder to the steering column upper bracket. Then, ensure that the stop pin of the ignition key cylinder is hooked at the hole of the column upper bracket.

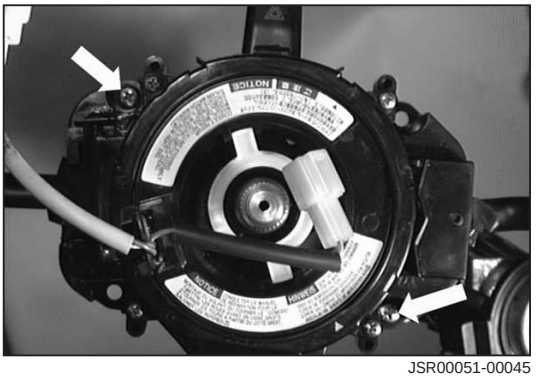
   NOTE:

   - Before installing the ignition key cylinder, set the ignition key position to the ACC. Then, set the pawl groove inside the steering column upper bracket with the protrusion of ignition key cylinder.



JSR00050-00044

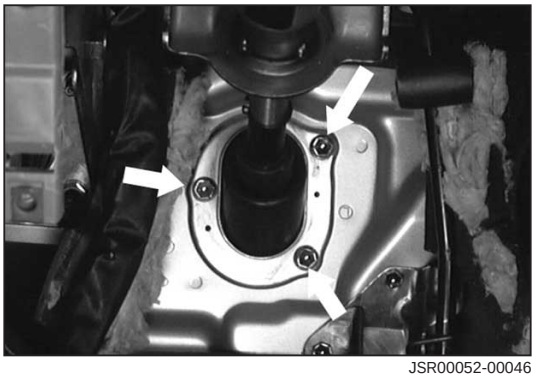
4. Install the multi-use lever switch assembly to the steering column with the attaching screw.

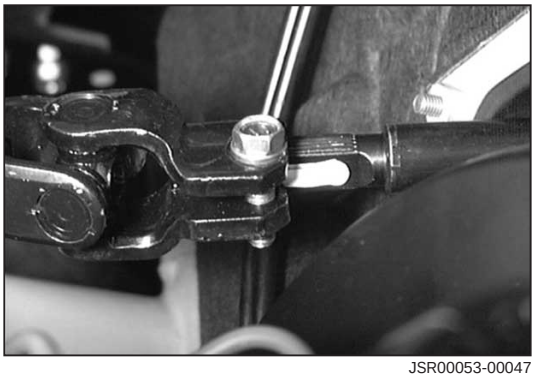


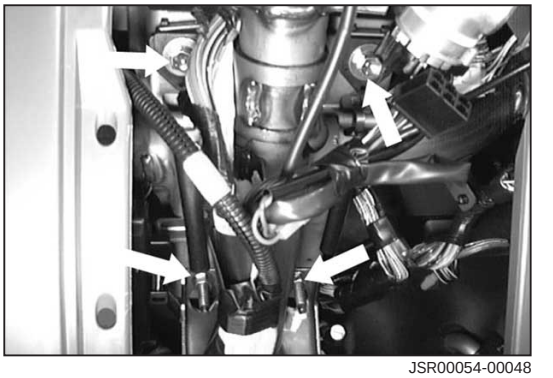
JSR00051-00045

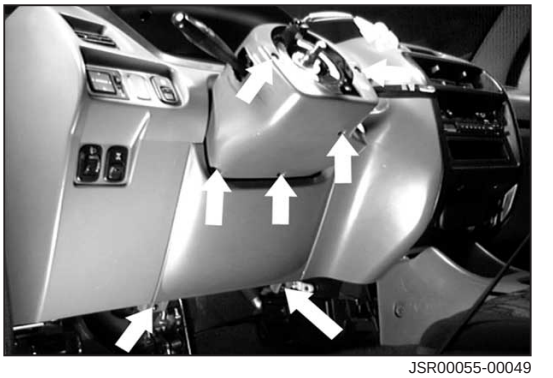
INSTALLATION

1. Install the dust cover to the retainer.
2. Install the dust cover retainer to the dash panel with the attaching bolts.
   Tightening Torque: 3.6 - 6.9 N·m (0.4 - 0.7 kgf-m)
3. Insert the steering column to the dust cover hole.
4. Attaching the steering column upper cover on the steering column.
5. Install the steering column temporarily with the attaching bolts and nuts.
6. Connect the intermediate shaft between the steering column shaft and steering gear pinion while aligning the tooth less section of the steering column shaft and universal joint of the intermediate shaft during the assembly. Then, tighten the attaching bolts to the specified tightening torque.
   Tightening Torque: 24.5 - 34.3 N·m (2.5 - 3.5 kgf-m)
7. Tighten the steering column attaching bolts and nuts.
   Tightening Torque:
   Bolt: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)
   Nut: 9.8 - 15.7 N·m (1.0 - 1.6 kgf-m)
8. Connect the connectors.
9. Install the steering column lower cover.
10. Install the instrument panel lower finish panel.
11. Install the steering wheel.(Refer to the STEERING WHEEL section.)
12. Connect the battery ground cable terminal to the negative terminal of the battery.


JSR00052-00046

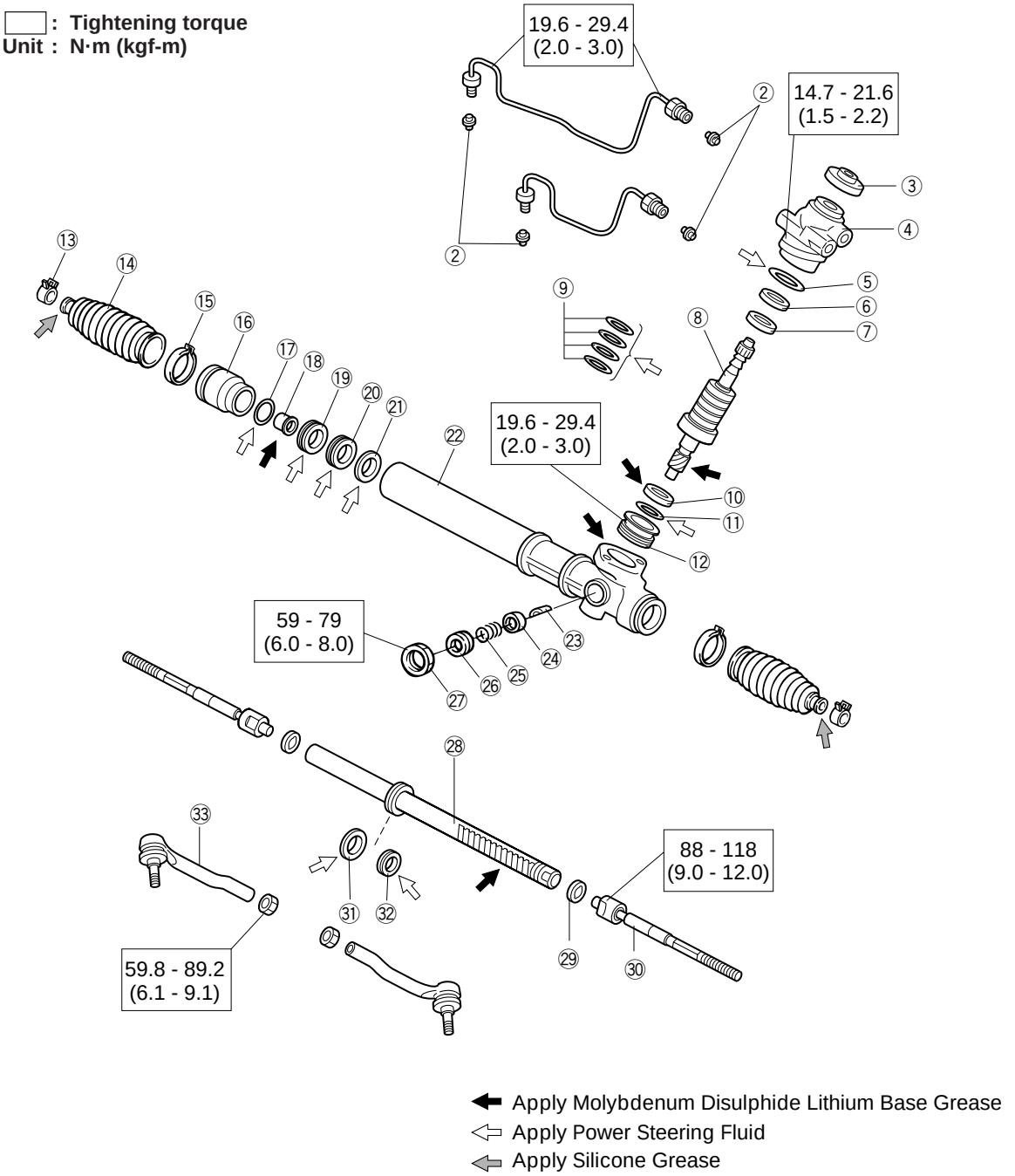

JSR00053-00047


JSR00054-00048


JSR00055-00049

STEERING GEAR

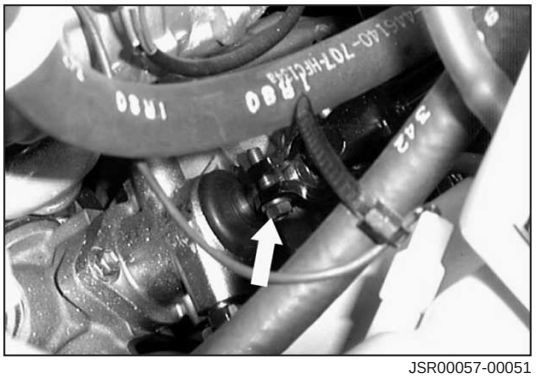
COMPONENTS



① Turn pressure tube
② Union seat
③ Dust cover
④ Control valve housing
⑤ O-ring
⑥ Oil seal
⑦ Bearing
⑧ Control valve
⑨ Ring
⑩ Oil seal
⑪ O-ring
⑫ Bearing guide nut
⑬ Clip
⑭ Rack boot
⑮ Boot band
⑯ Cylinder end stopper
⑰ O-ring
⑱ Bush
⑲ Oil seal
⑳ Oil seal
㉑ Spacer
㉒ Rack housing
㉓ Rack guide seat
㉔ Rack guide
㉕ Spring
㉖ Rack guide spring cap
㉗ Lock nut
㉘ Steering rack
㉙ Claw washer
㉚ Rack end
㉛ Seal ring
㉜ O-ring
㉝ Tie rod end

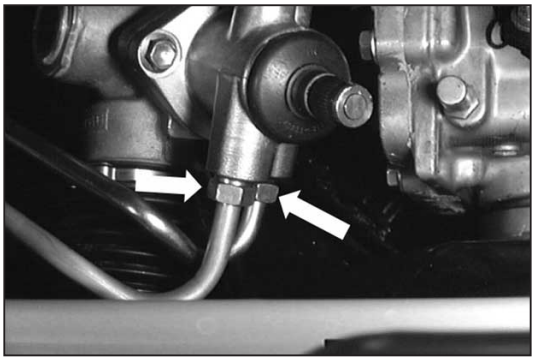
REMOVAL

1. Drainage of power steering fluid
   (See page SR–4, Fluid change.)
2. Remove the intermediate shaft. (See page SR–12.)
3. Affix a tape or the like to the pinion section of the steering gear so as to prevent the body, etc., from being damaged during the removal of the steering gear assembly.



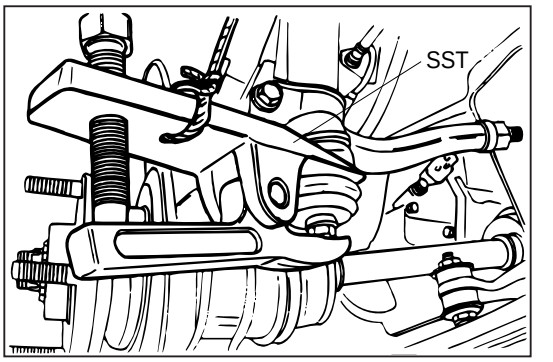
JSR00057-00051

4. Disconnect the return tube and pressure feed hose at the union section of the steering gear assembly.



JSR00058-00052

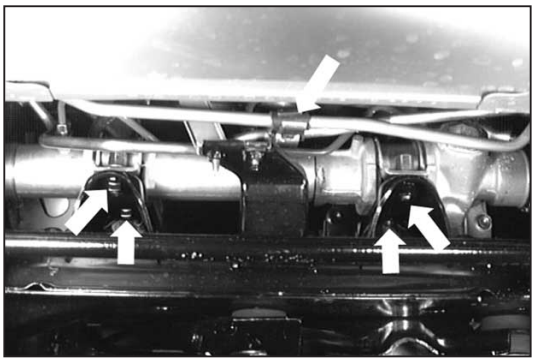
5. Jack up the vehicle and support it with safety stands. (Refer to the GI section.)
6. Remove the engine undercover.
7. Remove the front wheels.
8. Separation of tie-rod end
   (1) Remove the clip, then remove the castle nut from the tie-rod end.
   (2) Separate the tie-rod end from the steering knuckle, using the following SST.
   SST: 09611-87701-000



JSR00059-00053

CAUTION:
- Never made damage to boot and threaded portion during disconnection by the SST.

9. Remove the bracket retaining the pressure feed hose and return tube.
10. Remove the steering gear assembly mounting bolts.
11. Take out the power steering gear assembly from the vehicle.
    NOTE:
    - Remove the tape which was affixed in Step 3.



JSR00060-00054

DISASSEMBLY

PRECAUTION

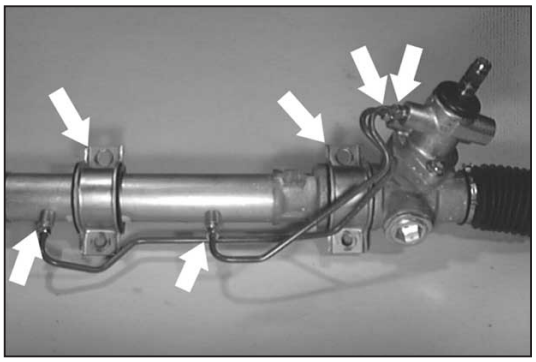
- Never reuse non-reusable parts. (Failure to observe this caution may cause serious accidents.)
- Prior to the disassembly, be sure to wipe off any sand or mud adhering to the outside of the power steering gear assembly so that they may not get into the inside during the disassembly and assembly.
- When disassembling and assembling, do not use gloves. These operations should be performed by bare hands.
- Be sure to always arrange the disassembled parts in order and protect them from dust, etc.
- Prior to the assembling of each part, be sure to wash the part completely and dry it. Then, apply the ATF DEXRON®II. As for aluminum and rubber sections, never wash them with alkaline chemicals. Also, never wash rubber parts, such as O-rings and oil seals, with cleaning solvent (white gasoline, etc.).
- Liberally apply the ATF DEXRON®II to sliding surfaces and rotating sections before assembling them.
- When securing a part in a vice, be sure to interpose aluminum plates.
- Be very careful not to scratch oil seals, O-rings and so forth during the installation.
- Prior to the application of seal agents, be sure to wipe off thoroughly the old seal agent remaining at the seal section. Then, wash the seal section with white gasoline and dry it.
- When using compressed air, be sure to wear protective goggles.

JSR00061-00000

1. Removal of turn pressure tube
   Remove the turn pressure tubes from the rack housing assembly, using the following SST.
   SST: 09633-00020-000

   CAUTION:
   - If the steering rack is moved with the turn pressure tube removed, residual fluid may splash.
     Therefore, care must be exercised so that no fluid may get to your eyes.

   NOTE:
   - Be very careful not to scratch the spool section during the removal of the tube.



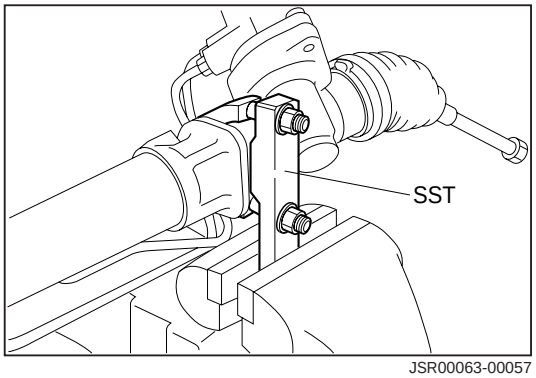
JSR00062-00055

2. Remove the union seats from the cylinder tube side turn pressure tube attaching hole.

JSR00000-00056

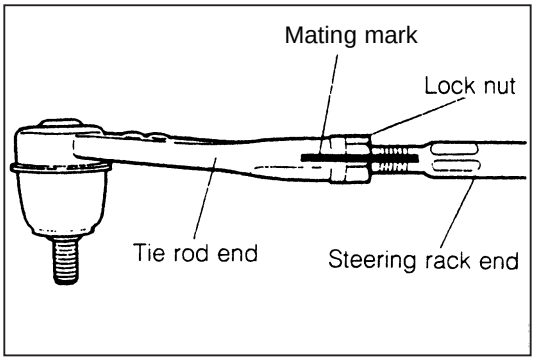
3. Remove the bracket and grommet from the steering gear housing.
4. Secure the power steering gear assembly with a vice, using the following SST.
   SST: 09612-00012-000

   NOTE:
   - When the SST is installed to the power steering gear assembly, a gap will be formed. At this time, be very careful not to damage the rack housing by excessively tightening the attaching nuts of the SST.
   - Be sure to evenly tighten the attaching nuts of the SST.



JSR00063-00057

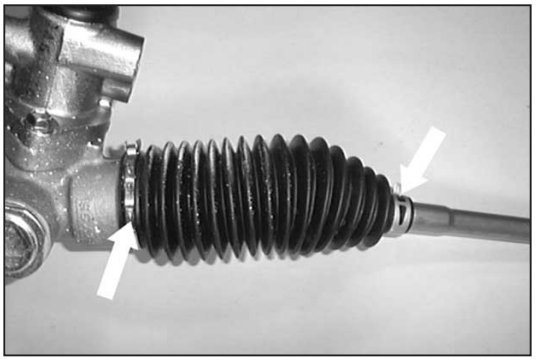
5. Removal of tie rod end
   (1) Put a mating mark on the tie rod end and steering rack end.
   (2) Remove the tie rod end by loosening the lock nut.



JSR00064-00058

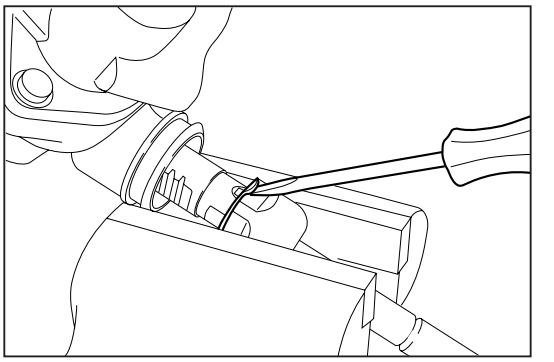
6. Removal of steering rack boots
   (1) Remove the steering rack boot bands.
   NOTE:
   • Never reuse the removed steering rack boot bands. Be very careful not to damage the boots during the removal of the steering rack boot bands.

   (2) Remove the clips by means of a pair of pliers.
   (3) Remove the steering rack boots from the steering rack end sub-assemblies while compressing the boots by means of a screwdriver or the like.
   NOTE:
   • When removing the steering rack boots, care must be exercised so that no overstroke and so forth may take place due to the steering rack's displacement.
   • When removing the steering rack boots, be very careful not to apply impacts to the boots.


JSR00065-00059

7. Removal of steering rack end sub-assemblies
   (1) Secure the ball joint section of the steering rack end with a vice.
   (2) Release the staked part of the claw washer, using a chisel.
   NOTE:
   • Be very careful not to damage the steering rack.
   • Never reuse the removed claw washer.
   • When removing the claw washer, be very careful not to apply impacts to the steering rack.

JSR00066-00000


JSR00067-00060

   (3) Remove the steering rack end sub-assemblies from the steering rack, using the following SST and a wrench.
   SST: 09922-10010-000 (Width across flats: 30 mm)

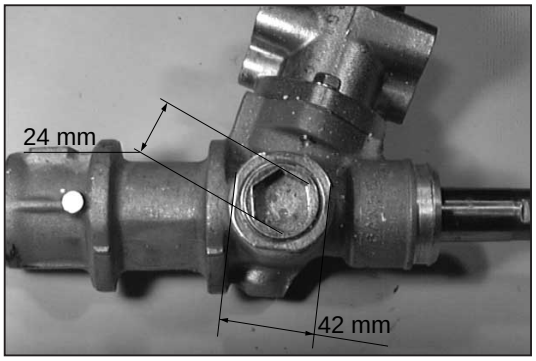
   NOTE:
   • After removing the tooth side steering rack end, put the turning-preventing cutout section provided at the tooth side of the rack in a vice. Then, remove the steering rack end at the opposite side.

8. Remove the claw washer from the removed steering rack end sub-assembly.

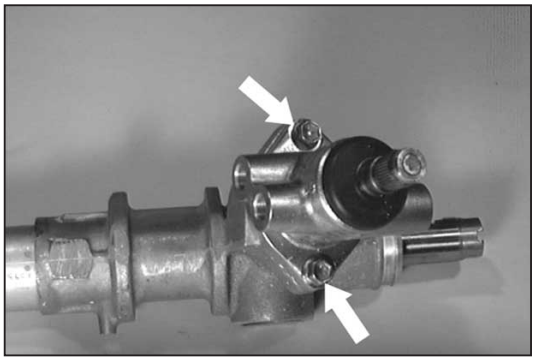
9. Remove the lock nut for the rack guide spring cap, using the following SST.
   SST: 09922-10010-000
   (Width across flats: 42 mm)

10. Remove the rack guide spring cap, using the following SST.
    SST: 09612-10020-000
    (Width across flats: 24 mm)

11. Remove the rack guide spring, rack guide and rack guide seat.
12. Put a mating mark on the control valve housing and rack housing.
13. Remove the control valve housing by removing attaching bolts.
14. Remove the O-ring from the valve housing.

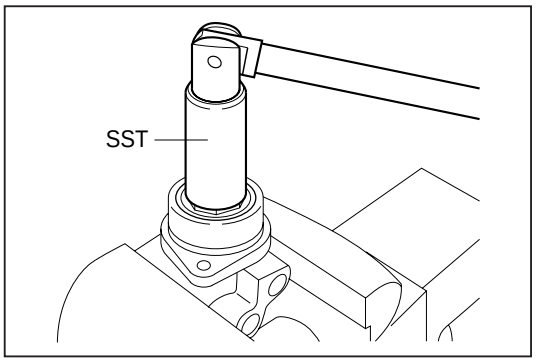


JSR00068-00062


JSR00069-00063

15. Removal of control valve
    (1) Put the control valve housing in a vice.
    (2) Affix a tape or the like to the pinion section of the steering gear so as to prevent the pinion section from being damaged.
    (3) Remove the bearing guide nut, using the following SST.
    SST: 09631-20060-000

    (4) Remove the O-ring from the bearing guide nut.

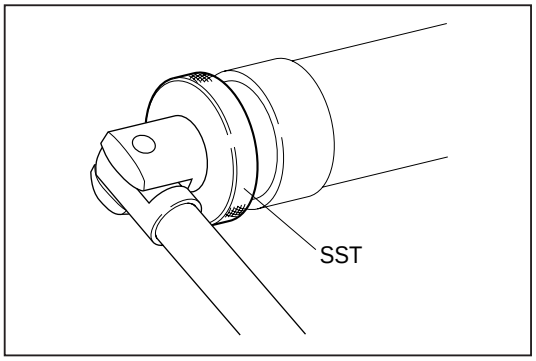


JSR00070-00064

16. Remove the dust cover.
17. Remove the control valve by tapping it, using a plastic hammer or the like.

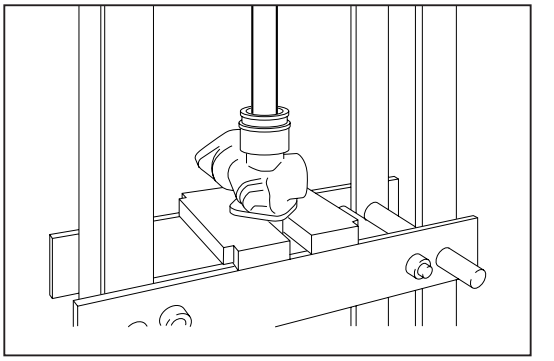

JSR00071-00065

18. Remove the cylinder end stopper, using the following SST.
    SST: 09631-20090-000



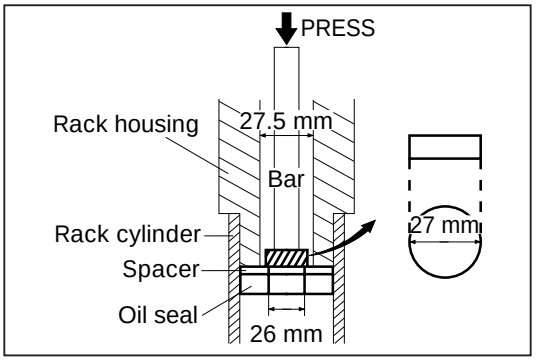
JSR00072-00066

19. Removal of rack and cylinder side rack oil seal
    (1) Insert a 20 mm-dia. bar or a suitable tool from the rack housing side. Remove the cylinder side rack oil seal and rack together, using a press.
    (2) Remove the oil seal from the rack.



JSR00073-00067

20. Removal of the rack housing side rack oil seal
    (1) Insert a 27 mm-dia. remover or a suitable tool from the rack housing side. Remove the rack oil seal and spacer at the rack housing side, using a press.



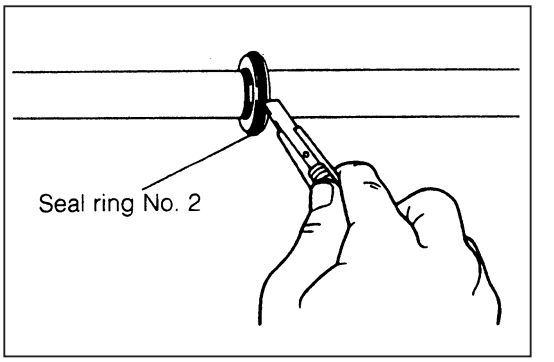
JSR00074-00068

21. Removal of steering rack oil seal ring and O-ring
    (1) Cut off the seal ring No. 2 from the rack sub-assembly by means of a cutter or the like.

    NOTE:
    • When cutting off the seal ring No. 2, be very careful not to scratch the ring groove and side surface.

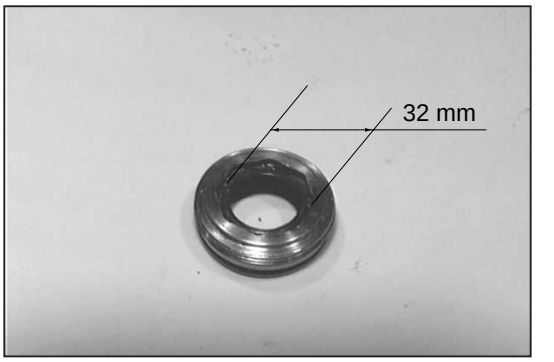
    (2) Remove the O-ring from the rack sub-assembly by means of a small screwdriver or the like.

    NOTE:
    • Never reuse the removed O-ring.



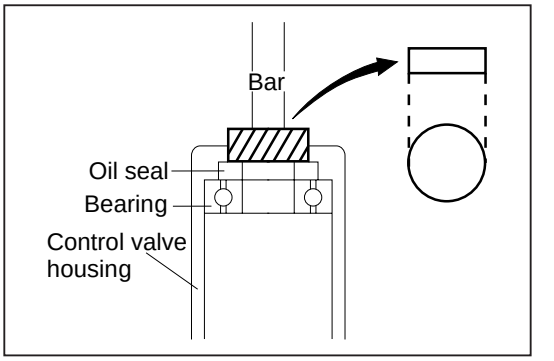
JSR00075-00069

22. Remove the bearing guide nut oil seal, using a 32 mm-dia. remover or a suitable tool (e.g. 22 mm socket wrench) in combination with a press.



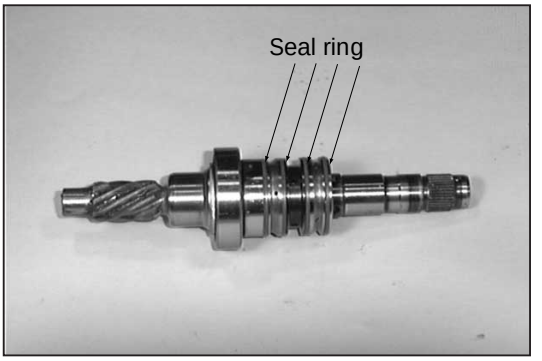
JSR00076-00070

23. Remove the control valve housing oil seal and bearing, using a 27 mm-dia. remover or a suitable tool in combination with a press.



JSR00077-00071

24. Remove the seal rings of the power steering control valve sub-assembly by cutting them by means of a cutter or the like.
    NOTE:
    • When cutting the seal rings, be very careful not to scratch the seal ring grooves and side surface.



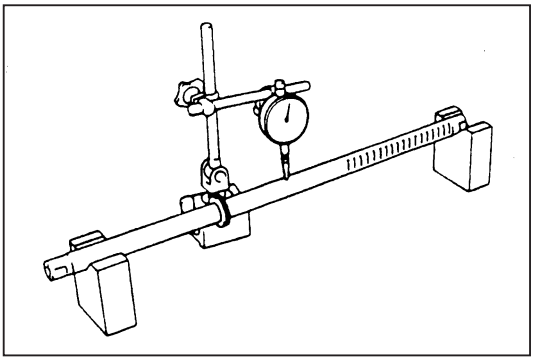
JSR00078-00072

INSPECTION

Power steering rack

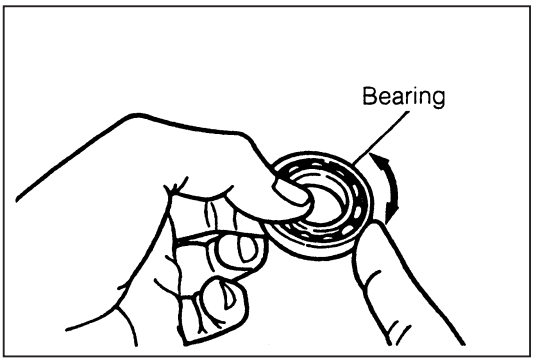
1. Check the tooth surface for wear and damage.
2. Ensure that the bend of the rack is within the specified value, using V-blocks and a dial gauge.
   Bend: 0.15 mm

   NOTE:
   • The bend should be measured at the center of the rack.


JSR00079-00073

Radial ball bearing of control valve housing

Turn the bearing by your hands. At this time, ensure that the bearing exhibits no binding and emits no abnormal noise.
Also, check to see if the bearing rotates smoothly.



JSR00080-00074

Control valve

Turn the bearing by your hands. At this time, ensure that the bearing exhibits no binding and emits no abnormal noise.
Also, check to see if the bearing rotates smoothly.
Check that the gear section and serration section have no scores.

If any damage is exists, replace the damaged part with new one.


JSR00081-00075

Control valve housing

Check to see if the turn pressure tube attaching hole is not clogged or scored.
Check that the control valve housing inner section has no scores.

If any damage is exists, replace the damaged part with new one.


JSR00082-00076

Rack housing assembly
Check to see if the turn pressure tube attaching hole is not clogged or scored.
Check that the external and inner sections exhibit no major scores and dents.

If any damage is exists, replace the damaged part with new one.


JSR00083-00077

Cylinder end stopper
Check that the external and inner sections exhibit no major scores and dents.

If any damage is exists, replace the damaged part with new one.


JSR00084-00078

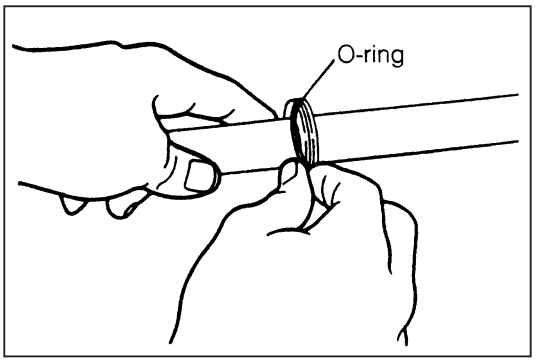
Boot
Check the boot for rapture, deformation and major scores.

If any damage is exists, replace the damaged part with new one.


JSR00085-00079

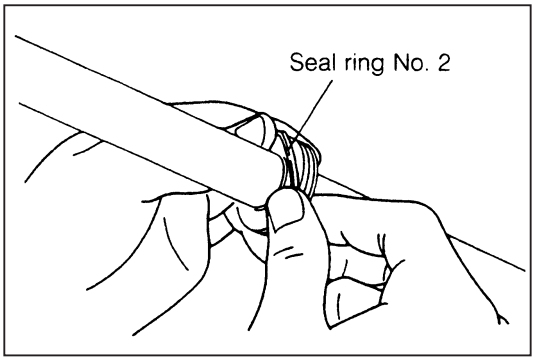
ASSEMBLY

1. Assembly of power steering rack sub-assembly
   (1) Attach a new O-ring to the ring groove of the rack sub-assembly.
   NOTE:
   - Do not expand the O-ring excessively.
   - When attaching the O-ring, apply power steering fluid to the O-ring.
   - Care must be exercised so that the O-ring may not be twisted during the installation. Also, be very careful not to scratch the O-ring.



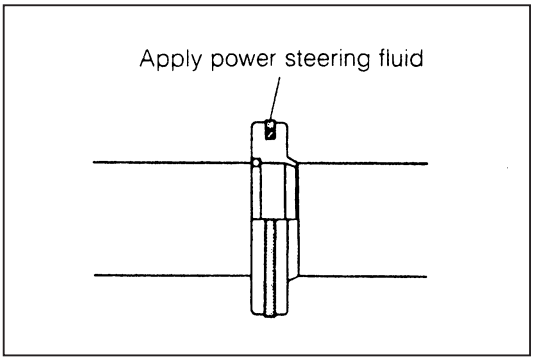
JSR00086-00080

   (2) Lightly rub a new seal ring No. 2 with your fingers so as to expand the ring. Then, attach the ring to the ring groove of the rack sub-assembly.



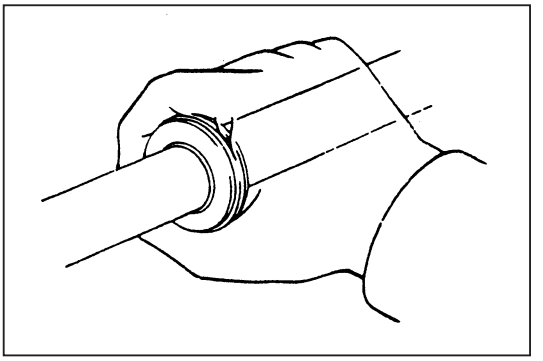
JSR00087-00081

NOTE:
- Do not expand the seal ring excessively.
  When attaching the ring, apply power steering fluid to the seal ring.
  Be very careful not to twist the seal ring during the installation. Also, at most care must be exercised so as not to scratch the ring by your finger nails during the installation.
  After completion of the installation, be sure to apply power steering fluid to the ring groove again.

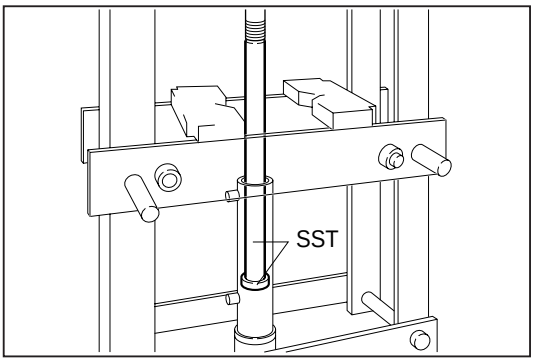


JSR00088-00082

(3) Hold the expanded seal ring by your hand and contract it so that the ring may be bedded in.


JSR00089-00083

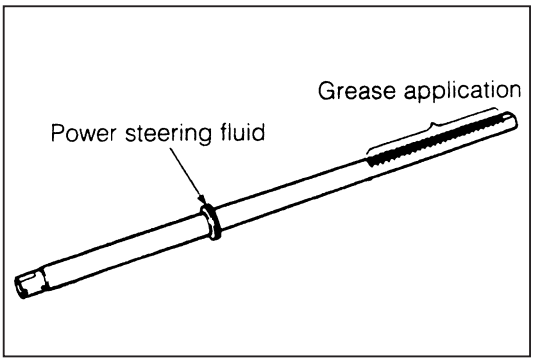
2. Installation of rack housing side rack oil seal
   Insert the spacer and oil seal in this order from the cylinder tube side, using the following SSTs in combination with a press.
   SST: 09631-00020-000
   09631-12020-000



JSR00090-00084

3. Installation of rack cover tube to power steering rack subassembly
   (1) Pack lithium base grease to the bottom land of the steering rack tooth.
   NOTE:
   - Care must be exercised so that the ventilation hole of the steering rack may not be restricted with grease.

   (2) Apply power steering fluid to the steering seal ring No. 2.



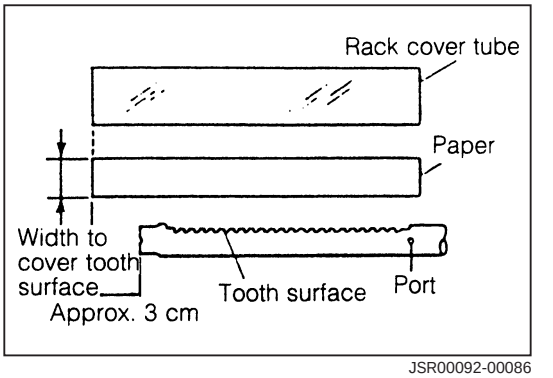
JSR00091-00085

(3) Installation of rack cover tube
Rack Cover Tube (SST): 09612-87101-000

① Prepare the rack cover tube and a sheet of paper.

NOTE:

- The rack cover tube is used to protect the oil seal. Any damage on the tube surface will cause oil leakage. Therefore, prior to use, be sure to check that no burr nor cracks are present at the tube surface before it is contracted.



JSR00092-00086

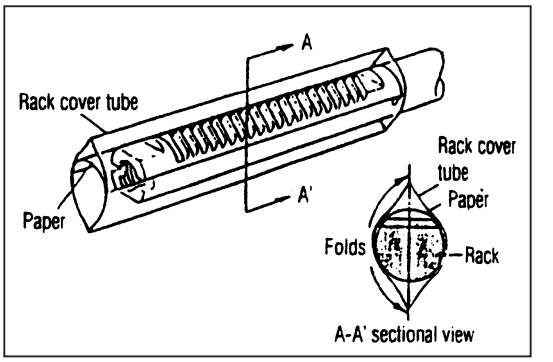
② Cut the rack cover tube (SST) 3 cm greater than the length that covers the power steering rack tooth surface and port.

③ Cut a sheet of paper having thickness virtually the same as that of a newspaper in such a way that the width may cover the tooth surface and the length may become equal to that of the rack cover tube.

NOTE:

- Paper is used to prevent the tooth pattern of the rack from remaining on the rack cover tube when it is contracted.

JSR00093-00000

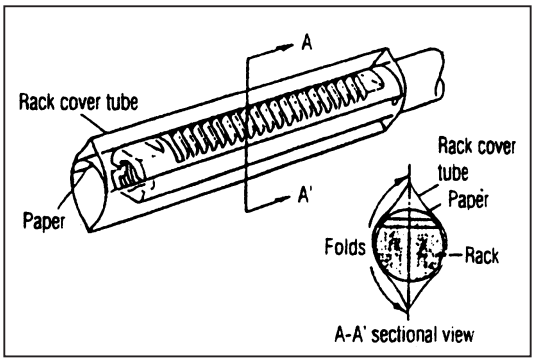


JSR00094-00087

④ Install the paper in such a way that it covers the tooth surface of the power steering rack sub-assembly.

⑤ Install the rack cover tube on the power steering rack sub-assembly in such a way that the folds of the rack cover tube come at points indicated in the right figure.

⑥ Contract the rack cover tube by blowing air with a dryer or the like. At this time, blow air from the section Ⓐ toward section Ⓑ at the back of the rack tooth surface of the rack cover tube which is installed to the power steering rack sub-assembly. In this way, ensure that air inside the rack cover tube flows into the side Ⓑ.



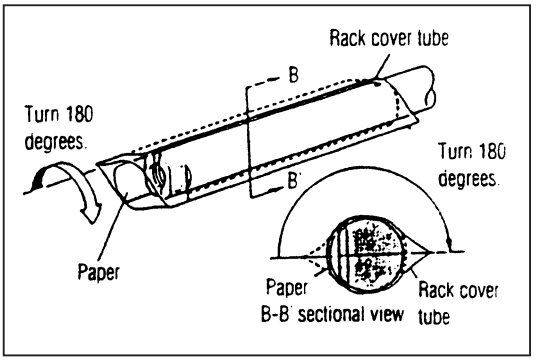
JSR00095-00088

NOTE:

- Be sure to contract the back side of the tooth surface. If the tooth surface side of the power steering rack should be contracted, the tooth pattern at the tube will make the tube removal difficult.

⑦ Turn the rack cover tube 180 degrees.
⑧ Contract the rack cover tube at the back side of the tooth with a dryer in the same manner with the operation above.
⑨ Pull out the paper installed to the power steering rack sub-assembly.

NOTE:
- If the paper breaks, pull out the tube once and remove the paper. Install the tube again to the power steering rack sub-assembly.



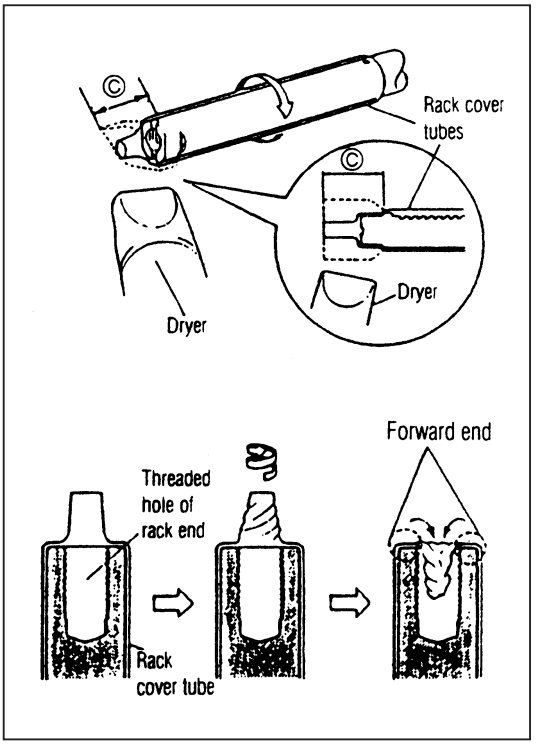
JSR00096-00089

⑩ Fully warm up the forward end of the power steering rack only with a dryer. After warming-up, immediately push the forward end into the threaded hole of the rack end while twisting the tube.

NOTE:
- Do not contract the rack cover tube at the tooth surface of the power steering rack sub-assembly.

⑪ Ensure that the rack cover tube surface exhibits no protrusion or edge.

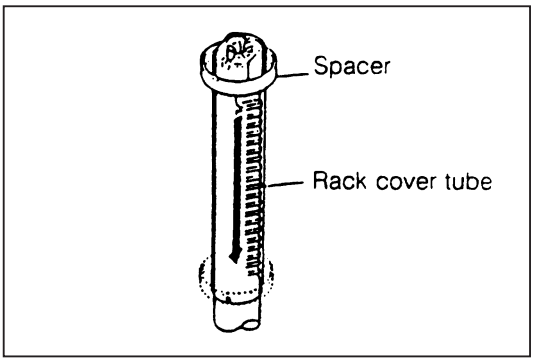
NOTE:
- If any protrusion or edge exists, remove it by warming up the tube by means of a dryer, etc. and contracting it.
- Do not contract the rack cover tube at the tooth surface of the power steering rack sub-assembly.



JSR00097-00090

⑫ Ensure that the power steering cylinder tube oil seal spacer can be passed smoothly without any binding.

NOTE:
- Prior to this check, ensure that no burr exists at the inner periphery of the spacer.
- This check is performed so as to confirm that the inner side of the spacer will not scrape the rack cover tube surface during the assembly of the power steering rack sub-assembly.

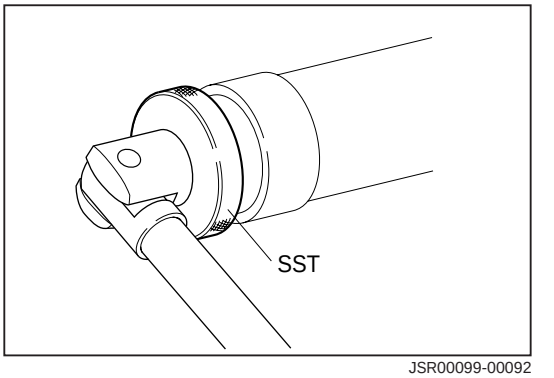


JSR00098-00091

⑬ Ensure that no damage, such as scratch, exists on the rack cover tube surface.

4. Install the rack into the cylinder.
5. Installation of cylinder tube side rack oil seal
   (1) Put the rack housing in a vice, using the following SST.
   SST: 09612-00012-000

   (2) Install the cylinder tube side oil seal to the rack.
   (3) Install a new O-ring to the cylinder end stopper.
   (4) Insert the cylinder end stopper while pushing the oil seal, using the following SST.
   SST: 09631-20090-000



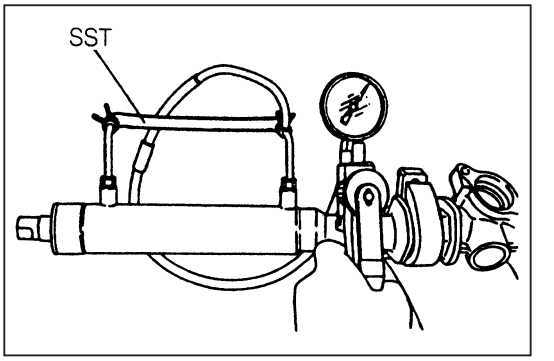
JSR00099-00092

6. Remove the rack cover tube installed to the power steering rack sub-assembly.
7. Air tightness test
   (1) Install the SST to the union section of the steering rack housing assembly.
   SST: 09631-12071-000

   NOTE:
   • Install the SST with a packing interposed.

   (2) Connect a MityVac to the SST.
   Apply a negative pressure of about 52 kPa (0.53 kgf/cm^2) and keep it for about 30 seconds.
   Ensure that the reading of the MityVac will not change.

   NOTE:
   • If any air leakage exists, replace the oil seals.

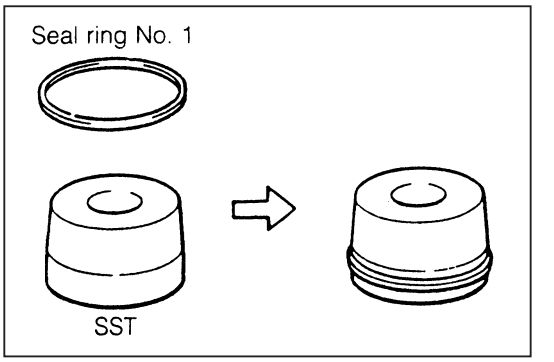


JSR00100-00093

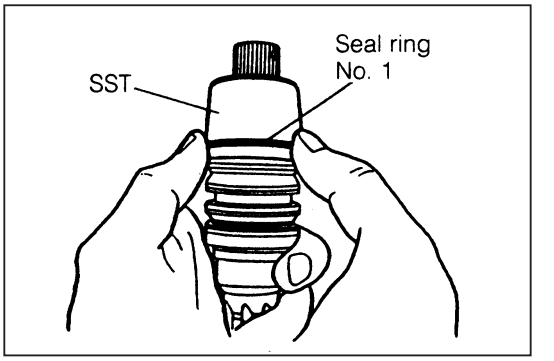
8. Assembly of power steering control valve
   (1) Apply power steering fluid to a new seal ring No. 1.
   Push the ring from the smaller-diameter side to the center of the larger-diameter side so as to expand the ring.
   SST: 09631-20070-000

   NOTE:
   • Thoroughly wash the SST. Make sure that the SST is not scratched. Also, make sure that no dust adheres to the SST.
   • Do not expand the ring unnecessarily.
   • Be sure to expand evenly the entire periphery of the ring.
   • Be very careful not to scratch the ring.

   (2) With the seal ring attached to the SST, insert the SST into the control valve sub-assembly from the direction indicated in the right figure. Attach the expanded seal rings to the seal ring grooves of the control valve sub-assembly.



JSR00102-00095

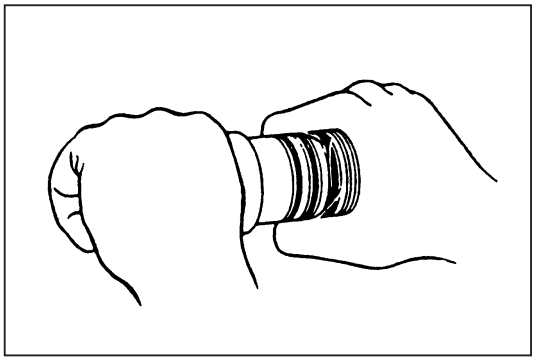


JSR00103-00096

(3) Hold the seal rings attached to the control valve sub-assembly with your fingers and contract it so that the rings may be bedded in.

NOTE:

- Be very careful not to scratch the edge surface and outer periphery of the ring by your finger nails.

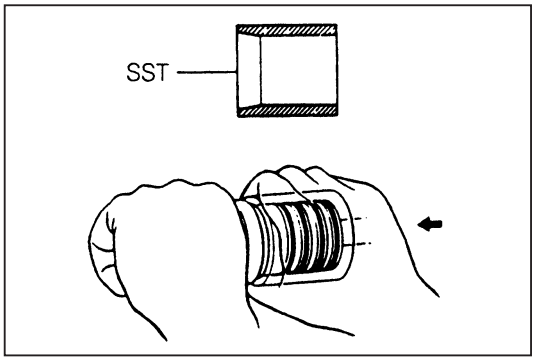


JSR00104-00097

(4) Apply power steering fluid to the seal rings again. Contract the rings further, using the following SST, while settling the ring in place.
SST: 09631-20081-000

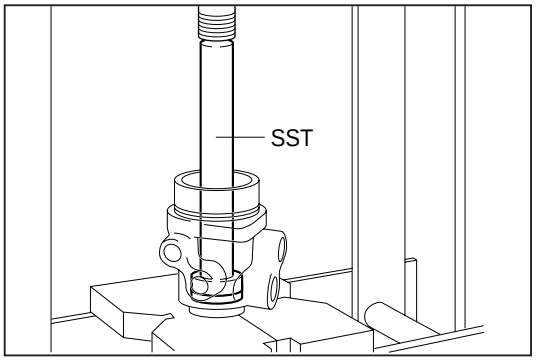
NOTE:

- Thoroughly wash the SST. Make sure that the SST is not scratched. Also, make sure that no dust adheres to the SST.
- Apply power steering fluid to the inside of the SST.

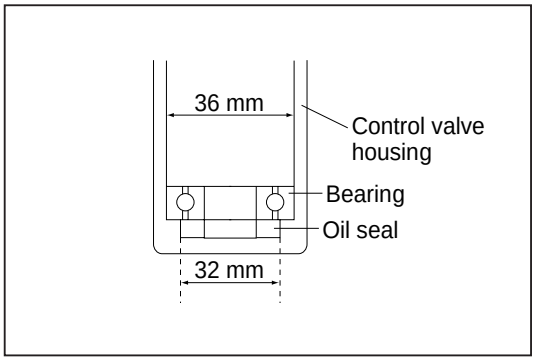


JSR00105-00098

9. Assembly of control valve housing
(1) Install the oil seal, using the following SST or a 32 mm-dia. remover or a suitable tool in combination with a press.
(2) Install the bearing, using the following SST or a 34 mm-dia. remover or a suitable tool in combination with a press.
SST: 09608-30012-000 (Part No. of set)
09608-04020-000 (Bar)
09630-24013-000 (Part No. of set)
09620-24030-000 (Spacer)

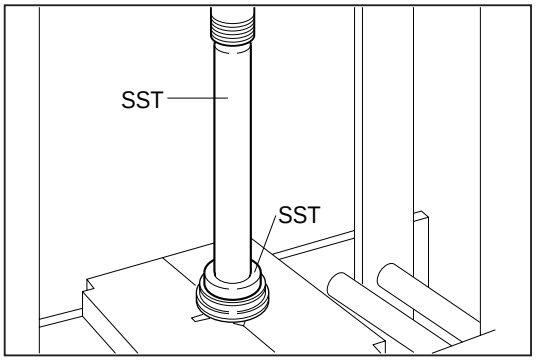


JSR00106-00099



JSR00000-00100

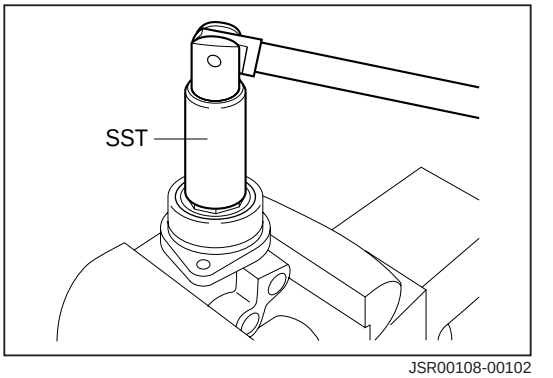
(3) Install the oil seal to the bearing guide nut, using the following SST in combination with a press.
(4) Install a new O-ring to the bearing guide nut.
SST: 09608-30012-000 (Part No. of set)
09608-04020-000 (Bar)
09631-22070-000 (Replacer)



JSR00107-00101

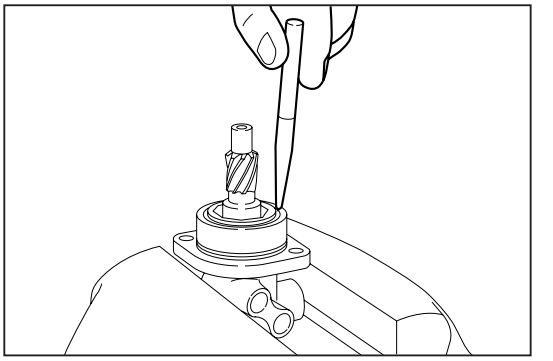
(5) Insert the control valve to the control valve housing.
NOTE:
- To prevent the oil seal damage, wind a vinyl tape on the serration part of the control valve shaft.

(6) Install the oil seal to the control valve shaft.
(7) Install the bearing guide nut, using the following SST.
SST: 09631-20060-000
Tightening Torque: 19.6 - 29.4 N·m (2.0 - 3.0 kgf-m)

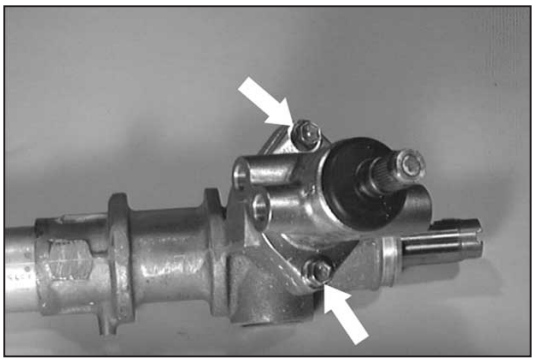


JSR00108-00102

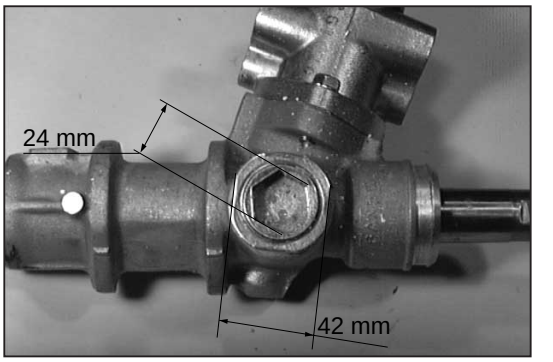
(8) Stake the guide nut.
(9) Install a new O-ring to the control valve housing.
(10) Install the dust cover to the control valve housing.


JSR00109-00103

10. Installation of power steering control valve housing
(1) Apply power steering fluid to the ring section of the power steering control valve.
(2) Assemble the power steering control valve sub-assembly to the steering rack housing.
NOTE:
- During this assembling, make sure that the steering rack is engaged with the pinion of the control valve by turning the control shaft in a right-&-left direction, using the following SST.
SST: 09616-00010-000
Tightening Torque: 14.7 - 21.6 N·m (1.5 - 2.2 kgf-m)


JSR00110-00104

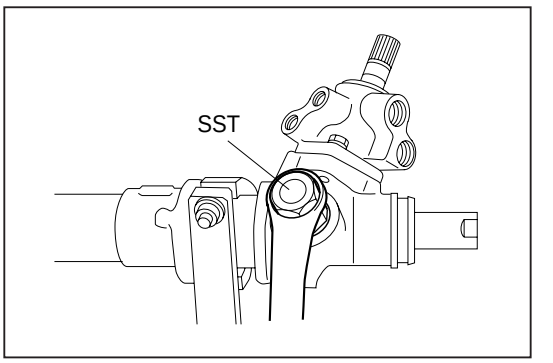
11. Assemble the rack guide seat to the rack guide.
12. Install the rack guide with the rack guide seat to the steering gear housing.
13. Install the rack guide spring.
14. Temporarily tighten the rack guide spring cap.



JSR00111-00105

15. Adjustment of total pre-load
(1) Tighten the rack guide spring cap to the specified torque, using the following SST.
SST: 09922-10010-000
Tightening Torque: 14.5 N·m (1.5 kgf-m)

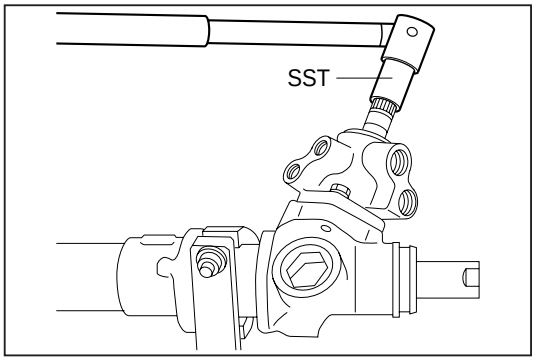
(2) From the condition (1), back off the rack guide spring cap about 12 degrees.



JSR00112-00106

(3) Move the steering rack one or two times in the full stroke by turning the control valve shaft, using the following SST, so that steering rack may be bedded in.
SST: 09616-00010-000

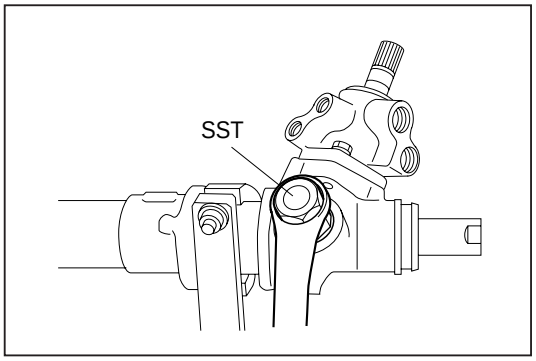
NOTE:
- Make sure that the rack end surface will not enter into each end surface of the rack housing sub-assembly.
- Care must be exercised so that no overstroke takes place.



JSR00113-00107

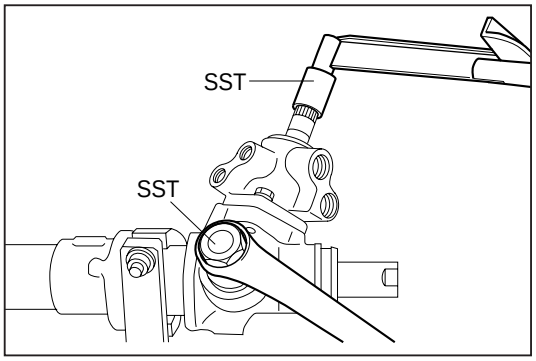
(4) Loosen the steering rack guide spring cap, using the following SST, until the rack guide spring no longer operates.
SST: 09612-10020-000

NOTE:
- Loosen the cap to the extent that the steering rack end surface moves smoothly when pushing it by your hand.



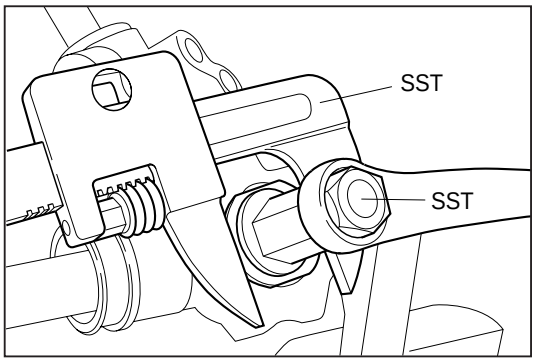
JSR00114-00108

(5) Tighten the steering rack guide spring cap progressively, until the pre-load may become the specified value when the control valve shaft is being turned, using the following SSTs.
SSTs: 09616-00010-000 (Steering gear pinion)
09612-10020-000 (Rack guide spring cap)
Specified Pre-load: 0.78 - 1.54 N·m
(0.08 - 0.16 kgf-m)/during turning



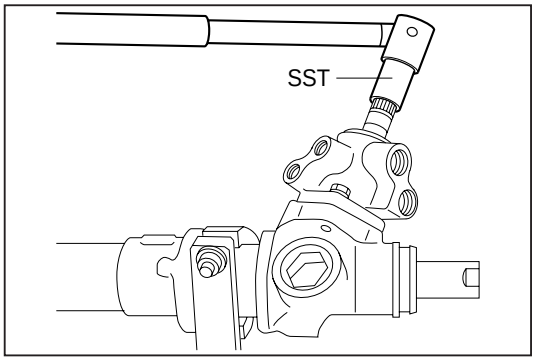
JSR00115-00109

(6) Apply Three Bond 1141 to the threaded portion of the lock nut (for rack guide spring cap) and to the end surface of the rack housing side.
Tighten it to the specified torque, using the following SSTs.
SSTs: 09922-10010-000 (Width across flats: 42 mm)
09612-10020-000 (Rack guide spring cap)
Tightening Torque: 59 - 79 N·m
(6.0 - 8.0 kgf-m)



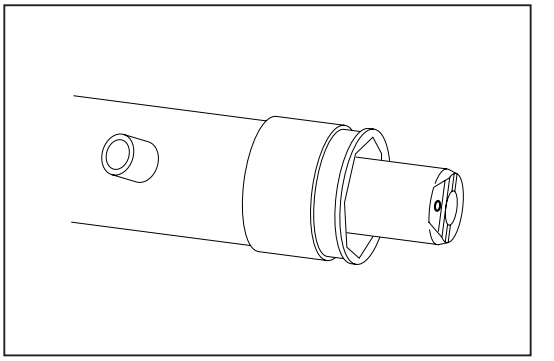
JSR00116-00110

(7) Turn the control valve shaft, using the following SST. Ensure that the pre-load during turning comes within the specified range.
SST: 09616-10020-000
Specified Pre-load: 0.78 - 1.54 N·m
(0.08 - 0.16 kgf-m)/during turning



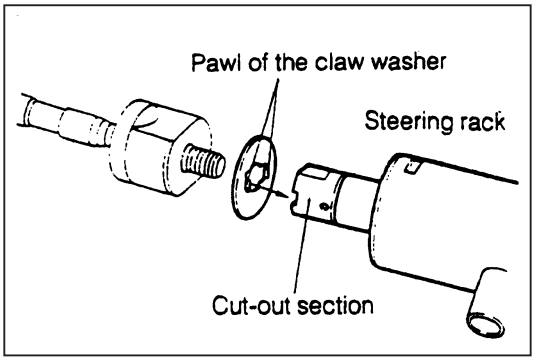
JSR00117-00111

16. Check the rack hole.



JSR00118-00112

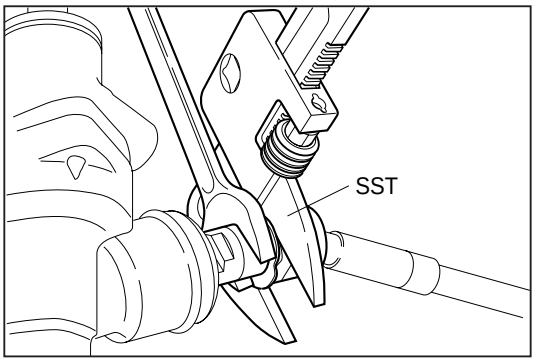
17. Attach a new claw washer to the steering rack in the direction indicated in the right figure.
    NOTE:
    - Be sure to align the pawl of the claw washer with the cut-out section of the steering rack.



JSR00119-00113

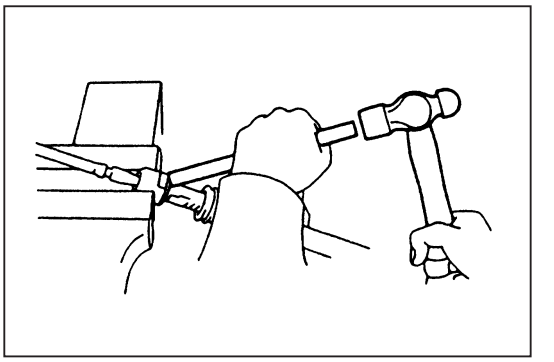
18. Install the steering rack end sub-assembly to the steering rack assembly. Tighten it to the specified torque.
    SSTs: 09922-10010-000 (Width across flats: 30 mm)
    Tightening Torque: 88 - 118 N·m (9.0 - 12.0 kgf-m)

    NOTE:
    - Be very careful not to twist the steering rack during tightening.



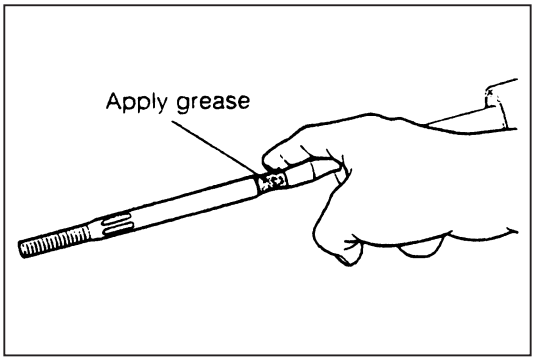
JSR00120-00114

19. Secure the ball joint section of the steering rack end sub-assembly with a vice. Stake the claw washer, using a hammer in combination with a brass bar or the like.
    NOTE:
    - Positively stake the two points of the claw washer.
    - Be very careful not to apply impacts to the steering rack.
    - Be very careful not to tighten the ball joint section excessively. Failure to observe this caution may cause deformation of the ball joint section.



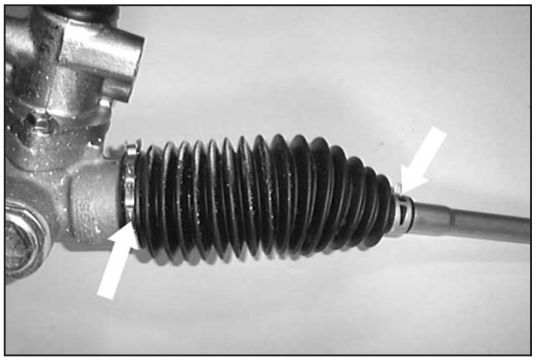
JSR00121-00115

20. Apply silicone grease into the rack boot groove of the steering rack end sub-assembly.
    Specified Grease: Silicone grease
    (Three Bond® TB–1855)



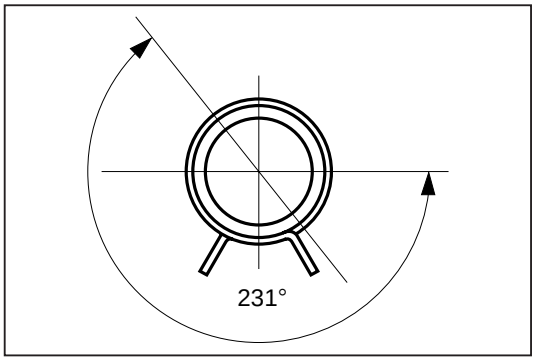
JSR00122-00116

21. Install new steering rack boot bands to the steering rack housing sub-assembly.
22. Install the steering rack boots to the steering rack end sub-assembly.
23. Stake the installed steering rack boot bands.



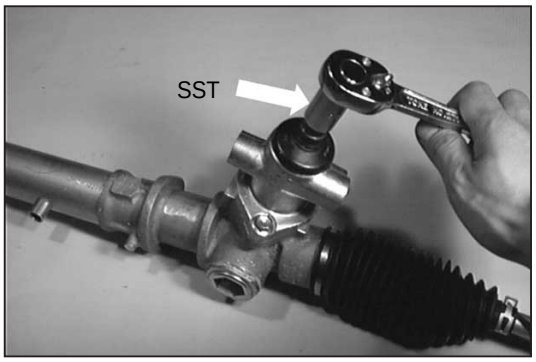
JSR00123-00117

24. Install the clips to the steering rack end sub-assembly.
    CAUTION:
    - Make sure that the knob of the clip comes in the range indicated in the figure when installing the clip.



JSR00124-00118

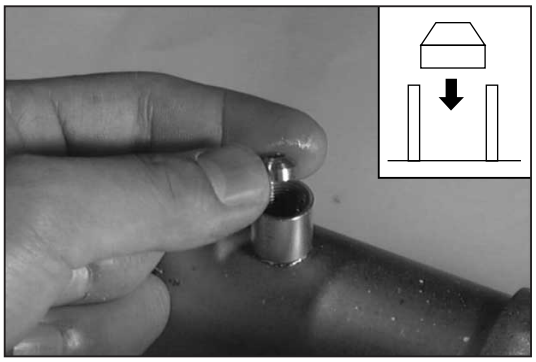
25. After the steering rack boots have been installed, move the steering rack in the full stroke several times using the following SST. Ensure that the boots exhibit no abnormal dent or bulge.
    Also, ensure that the boots are not caught-in.
    SST: 09616-00010-000



JSR00125-00119

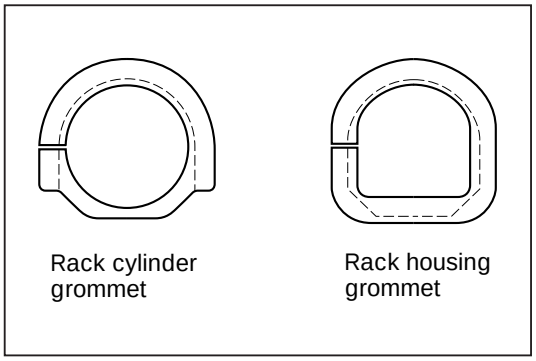
26. Install the union seats into the rack housing tube.
    NOTE:
    - Be very careful not to insert the union seat in a wrong direction.

27. Install the right and left turn pressure tubes to the rack housing cylinder, using the following SST.
    SST: 09633-00020-000
    Tightening Torque: 19.6 - 29.4 N·m (2.0 - 3.0 kgf-m)



JSR00126-00120

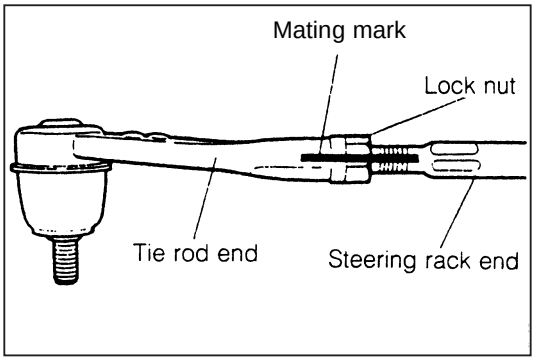
28. Install the grommet to the steering rack housing.
29. Install the bracket to the grommet.
    NOTE:
    - The rack housing and rack cylinder grommets differ in shape.
    - Hence, be sure to assemble the grommets correctly.



JSR00127-00121

30. Install the tie rod ends to the steering rack ends according to the mating marks that were put during the removal, except for the installation of a new part.
    Tighten the nut to the specified torque.
    Tightening Torque: 59.8 - 89.2 N·m (6.1 - 9.1 kgf-m)

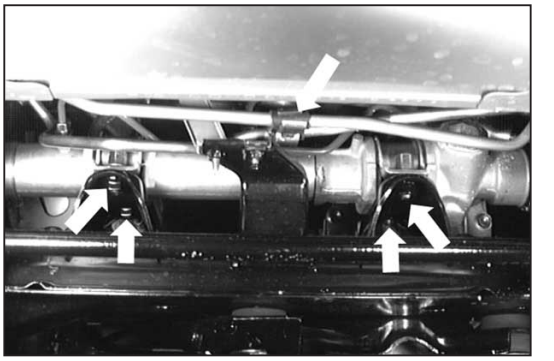
    NOTE:
    • Make sure that the tie rod end is installed in the correct direction.



JSR00128-00122

INSTALLATION

1. Attach the power steering gear assembly to the front suspension cross member sub-assembly from the right.
   (On left-hand drive vehicles, attach the power steering gear assembly from the left side.)
   Tightening Torque: 53.9 - 81.4 N·m (5.5 - 8.3 kgf-m)


JSR00129-00123

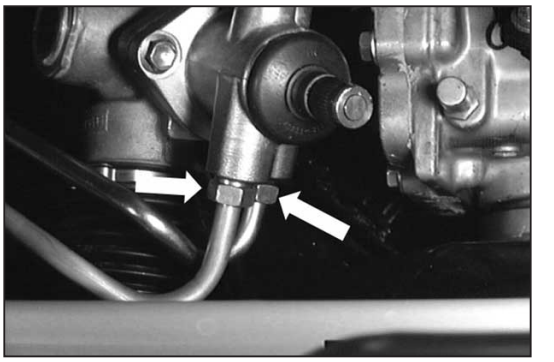
2. Install the bracket retaining the pressure feed hose and return tube.
   Tightening Torque: 4.4 - 10.3 N·m (0.45 - 1.05 kgf-m)

3. Attach the tie-rod end to the steering knuckle and tighten the nut.
   Tightening Torque: 39.2 - 53.9 N·m (4.0 - 5.5 kgf-m)


JSR00130-00124

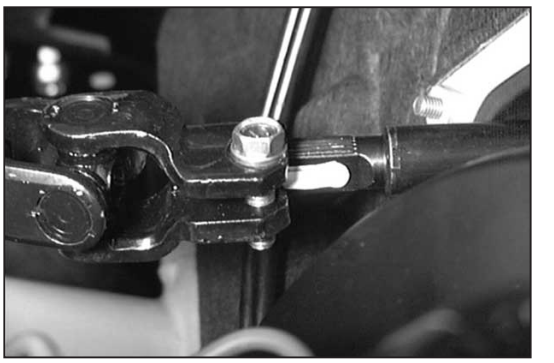
4. Install the clip.

5. Install the engine undercover.
6. Install the front wheel.
7. Jack down the vehicle.
8. Connect the return tube and pressure feed hose at the union section of the steering gear assembly.
   Tightening Torque: 39.2 - 49.0 N·m (4.0 - 5.0 kgf-m)


JSR00131-00125

9. Connect the intermediate shaft between the steering column shaft and the steering gear pinion.
   Tightening Torque: 24.5 - 34.3 N·m (2.5 - 3.5 kgf-m)

   NOTE:
   • Make sure that the non-spline section of the steering column shaft is aligned with the opening section of the universal joint of the intermediate shaft during the assembly.

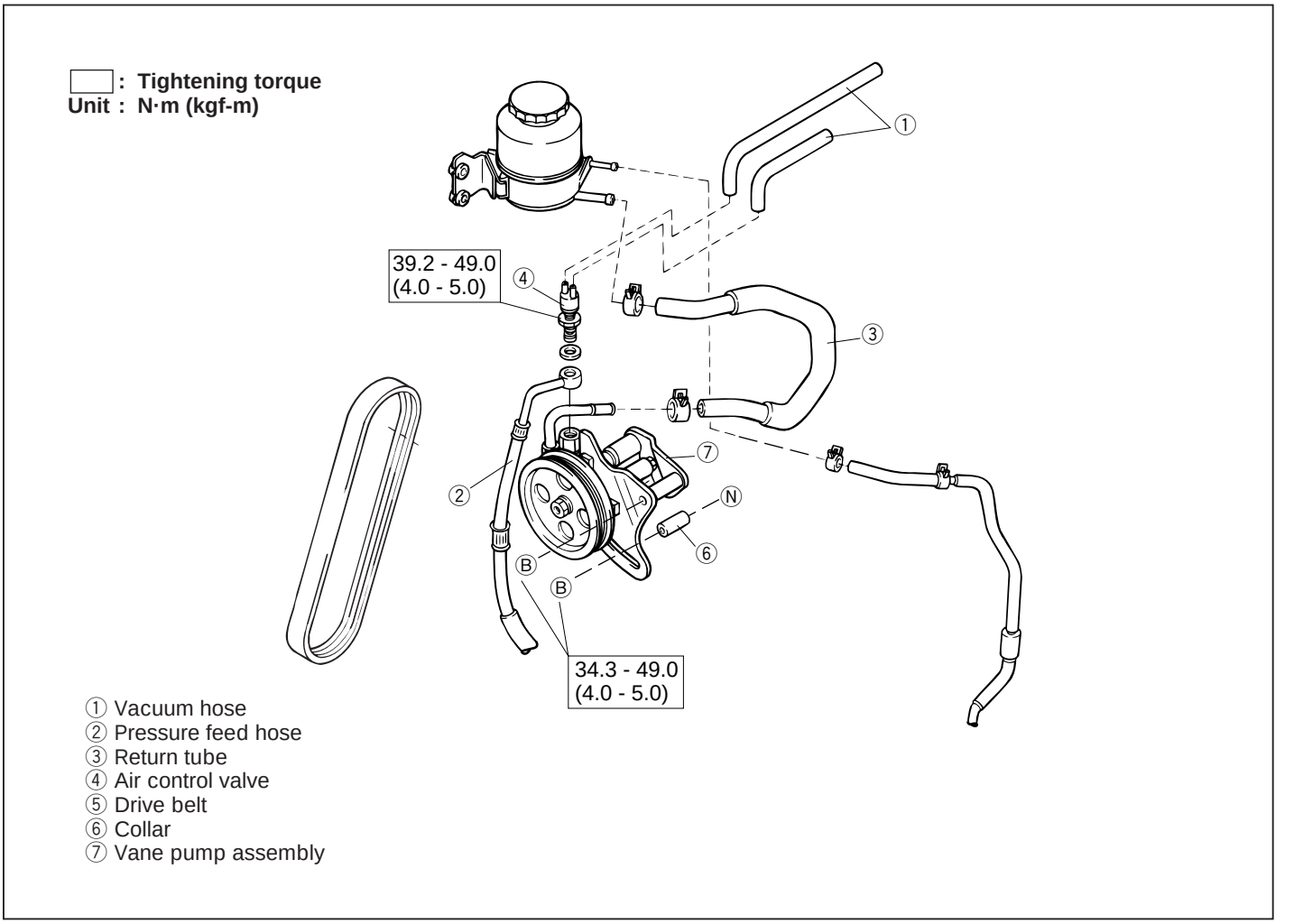

JSR00132-00126

10. Fill the power steering fluid. (See page SR–3.)
11. Perform the air bleeding. (See page SR–4.)
12. Adjust the wheel alignment. (Refer to the FS section.)

JSR00133-00000

VANE PUMP

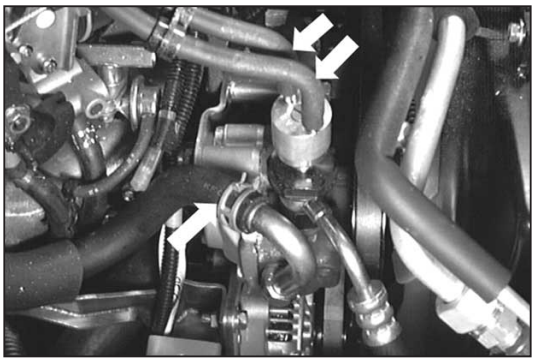
COMPONENTS



JSR00134-00127

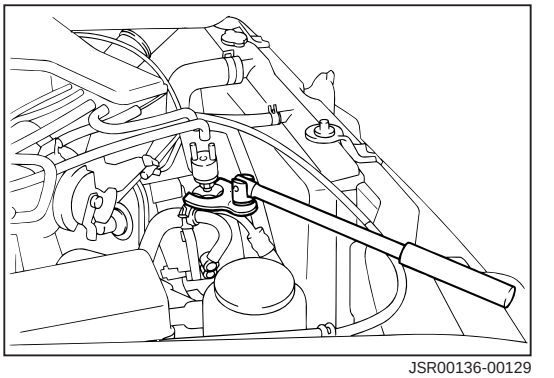
REMOVAL

1. Drain the power steering fluid. (See page SR–3.)
2. Disconnect the return tube from the suction pipe.
3. Disconnect the vacuum hose from the air control valve.



JSR00135-00128

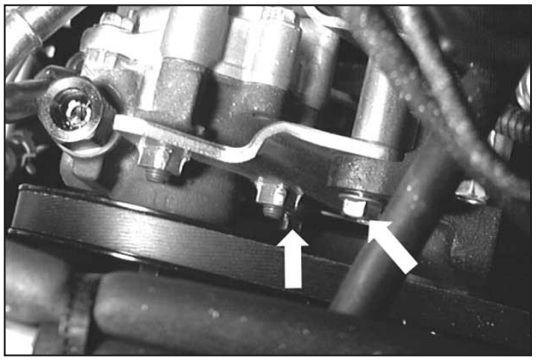
4. Remove the union bolt with the air control valve from the vane pump, using the following SST.
   SST: 09617-22030-000
5. Remove the pressure feed hose.



JSR00136-00129

6. Remove the adjusting bolt, collar and plate nut.
   NOTE:
   - While removing the adjusting bolt, be very careful not to drop the spacer and the plate nut on the floor.

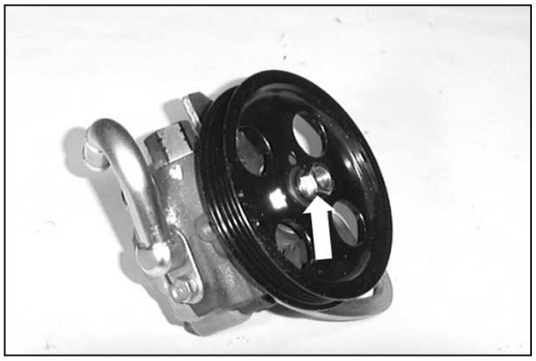
7. Remove the vane pump mounting bolt.
8. Remove the vane pump drive belt.
9. Remove the vane pump.



JSR00137-00130

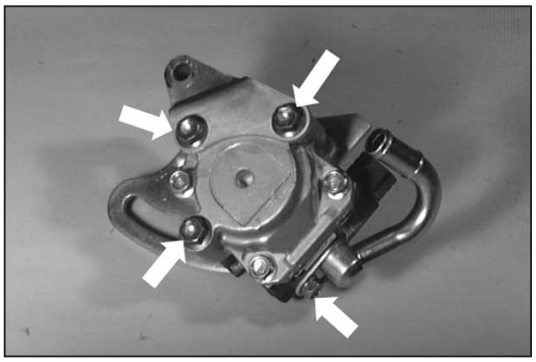
DISASSEMBLY

1. Remove the pulley from the vane pump.



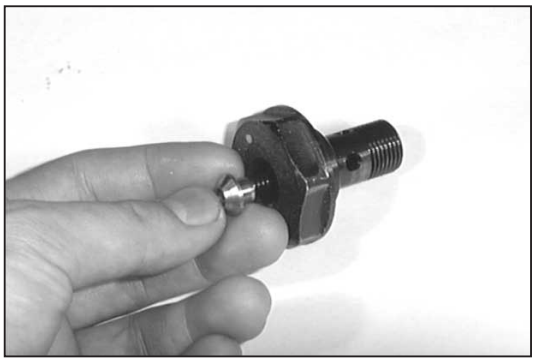
JSR00138-00131

2. Remove the bracket from the vane pump.
3. Remove the suction pipe from the vane pump.
4. Remove the O-ring from the suction pipe.



JSR00139-00132

5. Remove the air control valve from the union bolt.
6. Remove the union seat from the union bolt.



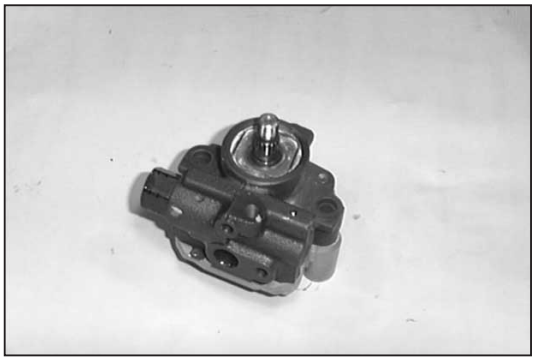
JSR00140-00133

INSPECTION

VANE PUMP

Check that the external section exhibits no major scores and dents.
Check that no oil leakage is present.

If any damage is exists, replace the damage part with now one.



JSR00141-00134

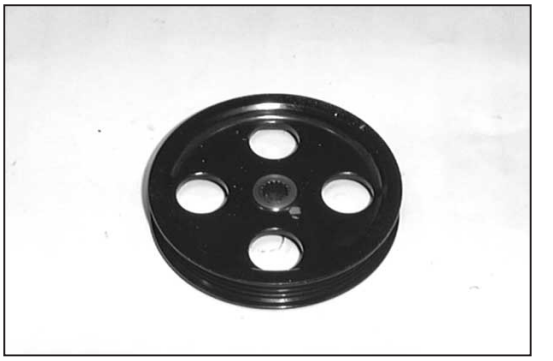
AIR CONTROL VALVE
Check that the external section exhibits no major scores and dents.
For operation check, see page SR–7.

If any damage is exists, replace the damage part with new one.


JSR00142-00135

VANE PUMP PULLEY
Check that the external section exhibits no major scores and dents.

If any damage is exists, replace the damage part with new one.


JSR00143-00136

SUCTION PIPE
Check the suction pipe for scores and rapture.

If any damage is exists, replace the damage part with new one.


JSR00144-0000137

ASSEMBLY

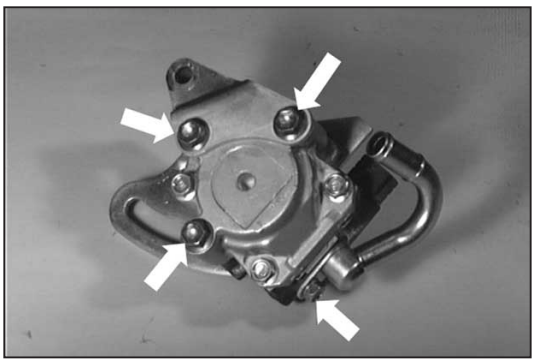
1. Install the union seat to the union bolt.
   NOTE:
   - Make sure that the union seat be installed in a correct direction.


JSR00145-00138

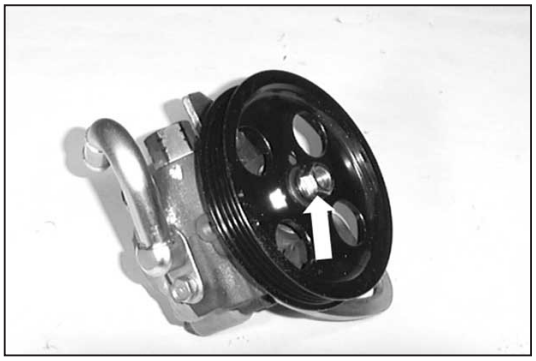
2. Install the air control valve to the union bolt.
   Tightening Torque : 32 - 42 N·m (3.2 - 4.2 kgf-m)

3. Install the O-ring to the suction pipe.
4. Install the suction pipe to the vane pump.
   Tightening Torque: 10 - 16 N·m (1.0 - 1.6 kgf-m)

5. Install the bracket to the vane pump.
   Tightening Torque: 34 - 52 N·m (3.52 - 5.28 kgf-m)

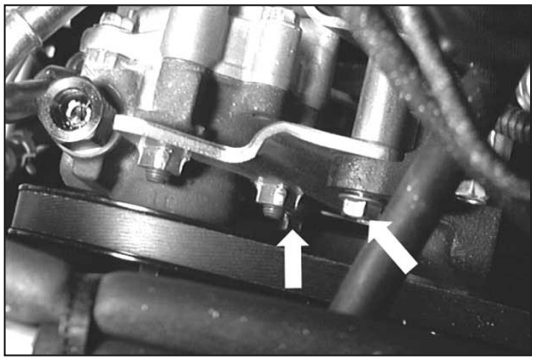

JSR00146-00139

6. Install the pulley to the vane pump.
   Tightening Torque: 33 - 53 N·m (3.4 - 5.4 kgf-m)



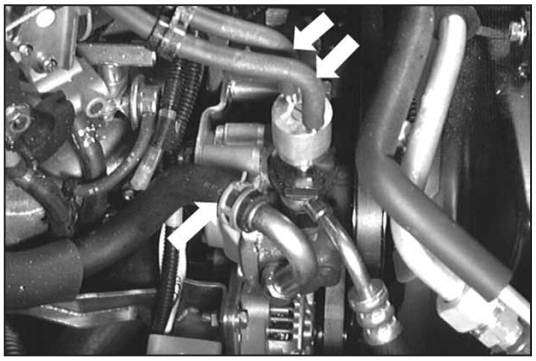
JSR00147-00140

7. Temporarily install the vane pump with the vane pump mounting bolt.
8. Install the vane pump drive belt. (Refer to the SR–2.)
9. Temporarily tighten the adjusting bolt.
10. Adjust the belt tension. Then, tighten the adjusting bolt and vane pump mounting bolt.
    (For the adjusting method of the belt tension, see page SR–3.)
    Tightening Torque:
    Adjusting bolt: 34.3 - 49.0 N·m (3.5 - 5.0 kgf-m)
    Mounting bolt: 34.3 - 49.0 N·m (3.5 - 5.0 kgf-m)



JSR00148-00141

11. Connect the return tube to the suction pipe.
12. Connect the pressure feed hose by means of the union bolt with the air control valve, using the following SST.
    SST: 09617-22030-000
    Tightening Torque: 39.2 - 49.0 N·m (4.0 - 5.0 kgf-m)



JSR00149-00142

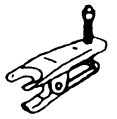
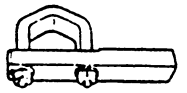
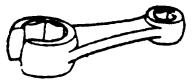
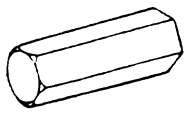
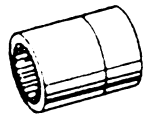
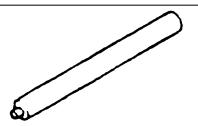
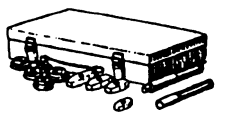
13. Connect the vacuum hose to the air control valve.

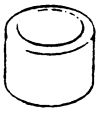
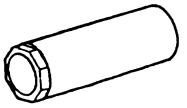
SERVICE SPECIFICATIONS

Item		Specified value	Remarks
Vane pump drive belt tension	When new belt is used:	8 - 11 mm	When pushed with a force of 98 N
	When used belt is used:	11 - 14 mm	
Oil pressure	Hydraulic pressure generated by vane pump	$5.4^{+0.5}_{0}$ MPa (55^{+5}_{0} kgf/cm^2) at 500 rpm	With oil pressure gauge valve closed
	Difference in pressure under unloaded state	Within 490 kPa (5 kgf/cm^2)	Pressure difference that occurs between 1000 rpm and 3000 rpm of engine speed
	Hydraulic pressure at gear housing	$5.4^{+0.5}_{0}$ MPa (55^{+5}_{0} kgf/cm^2) at 500 rpm	With steering gear in fully-locked state
Turning effort of steering wheel with vehicle in stationary state		Not to exceed 5.4 N·m (0.55 kgf-m)	
Pre-load of steering gear input shaft		0.78 - 1.57 N·m (8 - 16 kgf-cm)	While rotating:

JSR00150-00000

SSTs

Shape	Part No.	Part name
	09611-87701-000	Tie-rod end puller
	09990-87704-000	P/S pressure gauge
	09612-00012-000	Rack and pinion steering rack housing stand
	09633-00020-000	Power steering hose nut wrench
	09922-10010-000	Steering rack end wrench
	09617-22030-000	Worm bearing adjusting screw lock nut wrench
	09612-10020-000	Hexagon wrench
	09616-00010-000	Steering pinion bearing adjusting socket
	09631-12020-000	Handle
	09631-20090-000	Cylinder end stopper nut wrench
	09608-30012-000	Front hub and drive pinion bearing set
	09608-0420-000	Handle
	09631-00020-000	Handle

Shape	Part No.	Part name
	09630-24013-000	Steering rack oil seal tool set
	09620-24030-000	Valve cap bearing replacer
	09631-20070-000	Seal ring guide
	09631-20081-000	Seal ring tool
	09631-20060-000	Bearing guide nut wrench
	09631-22070-000	Oil seal replacer
	09631-12071-000	Steering rack oil seal test tool
	09612-87101-000	Rack tube cover

JSR00151-00143

TIGHTENING TORQUE

Components	N·m	kgf-m
Steering wheel × Steering shaft	25.7 - 41.2	2.8 - 4.2
Steering Wheel × Steering wheel pad (Air bag type)	5.2 - 9.5	0.53 - 0.97
Steering column × Instrument panel reinforthment (bolt)	14.7 - 21.6	1.5 - 2.2
Steering column × Instrument panel reinforthment (Nut)	9.8 - 15.7	1.8 - 1.6
Dust cover retainer × Dash panel	3.9 - 6.9	0.4 - 0.7
Steering column × Intermediate shaft	24.5 - 34.3	2.5 - 3.5
Inter mediate shaft × Steering gear	24.5 - 34.3	2.5 - 3.5
Steering rack housing × Control valve housing	14.7 - 21.6	1.5 - 2.2
Turn pressure tube × Control valve housing	19.6 - 29.4	2.0 - 3.0
Turn pressure tube × Steering rack cylinder	19.6 - 29.4	2.0 - 3.0
Rack guide housing × Lock nut	59 - 79	6.0 - 8.0
Pressure feed hose × Control valve housing	39.2 - 49.0	4.0 - 5.0
Control valve housing × Bearing guide nut	19.6 - 29.4	2.0 - 3.0
Steering rack × Rack end	88 - 118	9.0 - 12.0
Rack end × Tie rod end	59.8 - 89.2	6.1 - 9.1
Tie-rod end × Steering knuckle	39.2 - 53.9	4.0 - 5.5
Vane pump × Pump stay	34 - 52	3.52 - 5.28
Vane pump × Pulley	33 - 53	3.4 - 5.4
Vane pump × Air control valve	39.2 -49.0	4.0 - 5.0
Air control valve × Union bolt	32 - 42	3.2 - 4.2
Vane pump bracket × Engine	34.3 - 49.0	3.5 - 5.0
Drive belt adjusting bolt	34.3 - 49.0	3.5 - 5.0
Steering gear assembly × Front suspension cross member sub-assembly	53.9 - 81.4	5.5 - 8.3

JSR00152-00000

TO INDEX

TO NEXT SECTION