

TO INDEX

SR

STEERING

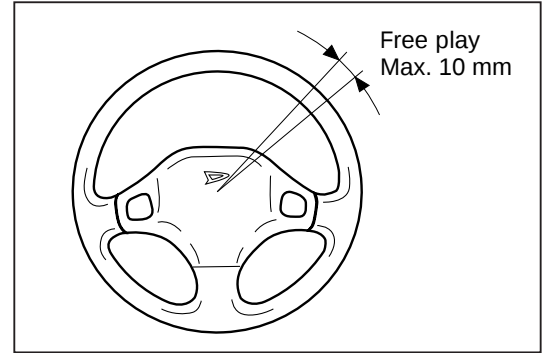
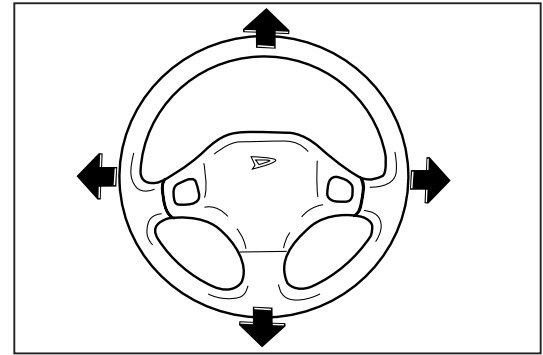
PRIOR CHECK	SR- 2	ASSEMBLY	SR-11
STEERING WHEEL	SR- 2	INSTALLATION	SR-12
DRIVE BELT	SR- 2	POWER STEERING GEAR	SR-13
POWER STEERING PUMP		COMPONENTS	SR-13
FLUID	SR- 3	FLUID CHANGE	SR-14
STEERING WHEEL (PP TYPE)	SR- 4	REMOVAL	SR-15
COMPONENTS	SR- 4	DISASSEMBLY	SR-16
REMOVAL	SR- 4	INSPECTION	SR-19
DISASSEMBLY	SR- 5	ASSEMBLY	SR-21
ASSEMBLY	SR- 5	INSTALLATION	SR-24
INSTALLATION	SR- 5	POWER STEERING PUMP	SR-26
STEERING WHEEL		COMPONENTS	SR-26
(AIRBAG TYPE)	SR- 6	INSPECTION	SR-26
COMPONENTS	SR- 6	REMOVAL	SR-27
REMOVAL	SR- 6	INSTALLATION	SR-28
DISASSEMBLY	SR- 7	MANUAL STEERING GEAR	SR-29
ASSEMBLY	SR- 7	COMPONENTS	SR-29
INSTALLATION	SR- 7	REMOVAL	SR-30
STEERING COLUMN &		DISASSEMBLY	SR-31
INTERMEDIATE SHAFT	SR- 9	INSPECTION	SR-33
COMPONENTS	SR- 9	ASSEMBLY	SR-33
REMOVAL	SR- 9	INSTALLATION	SR-35
DISASSEMBLY	SR-10	SSTs	SR-37
INSPECTION	SR-11	TIGHTENING TORQUE	SR-38

PRIOR CHECK

STEERING WHEEL

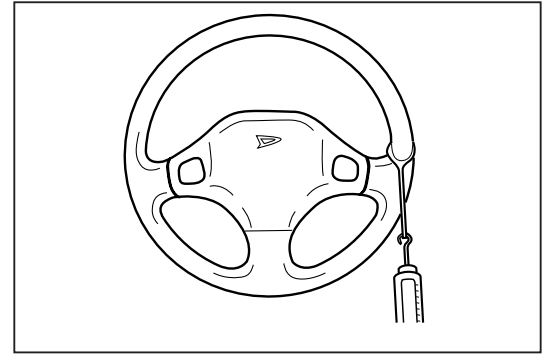
1. Move the steering wheel in an up-and-down direction as well as in a right-and-left direction. At this time, check to see if the steering wheel exhibits any significant play (excessive looseness).
2. Set the steering wheel to the straight-ahead position, and then, turn the steering wheel in a right-and-left direction. At this time, measure the steering wheel play at the circumference of the steering wheel up to a point immediately before the front tires start to be steered.

Specified Value: 10 mm



3. Start the engine and keep the engine idling. Measure the input force at the circumference of the steering wheel at the time when the steering wheel starts to be turned.

Specified Value: 5.4 N·m



NOTE:

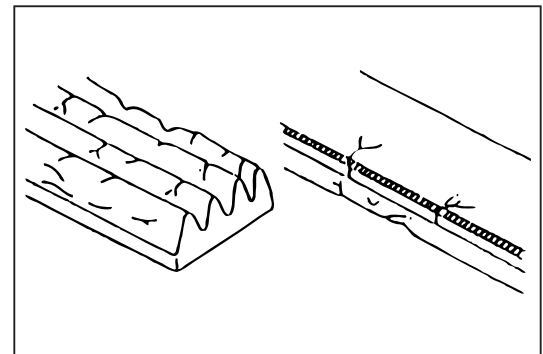
- If the force required to turn the steering wheel is too small, the front tires would sensitively respond to the behavior of the steering wheel. It would have an adverse effect, hindering the straight-ahead running.
- The measurement should be conducted on a flat, asphalt road.
- The tire inflation pressure should be the specified value. (197 kPa)

DRIVE BELT

1. Visually check the drive belt for damage.

NOTE:

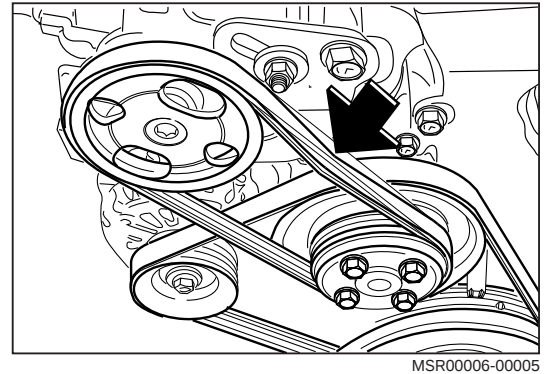
- Check to see if the rubber quality of the drive belt is deteriorated or the drive belt exhibits cracks.
- Check to see if the edge and projected sections of the drive belt are worn out. Also, check to see if the core section is cut.



2. Check that a suitable tension is applied to the drive belt.
Specified Value: 7.5 - 11.5 mm
(When a force of 98N is applied to the drive belt at the midpoint between respective pulleys.)

NOTE:

- In the case of a new drive belt, the measurement of deflection amount should be carried out after completion of the trial running for at least 5 minutes with the new belt installed to the engine.

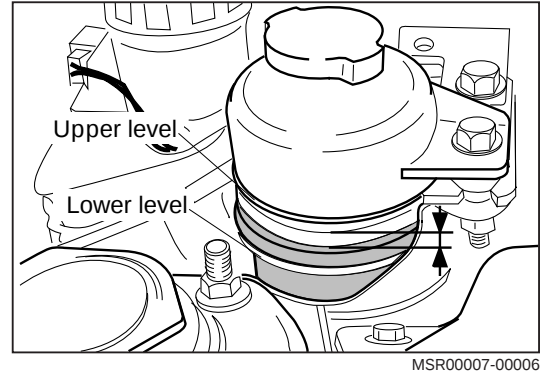


POWER STEERING PUMP FLUID

1. Check to see if the operation fluid of the power steering pump satisfies the specified value indicated on the reservoir tank.

NOTE:

- The measurement should be carried out with the vehicle placed on a level floor and its engine in a stopped state.
- Make sure that the fluid level drops 4 to 5 mm when the steering wheel is turned fully to the right or the left.
- When you notice the fluid level varies more than 5 mm, check the piping. (Refer to SR-14.)

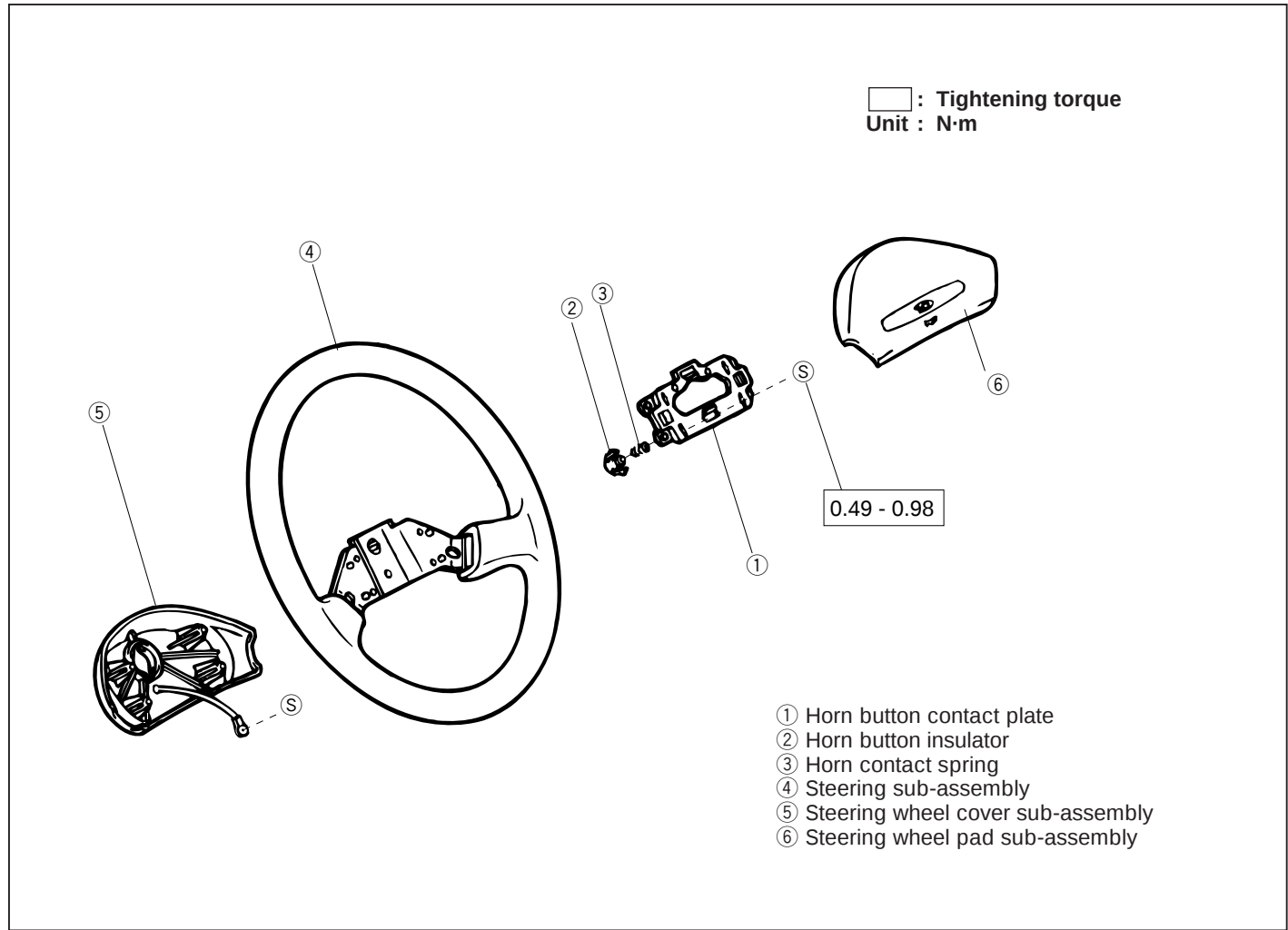


2. If bubbles or whitish cloudy state is observed in the power steering pump fluid inside the reservoir tank, check the pump and pipings.

NOTE:

- In cases where the power steering pump is malfunctioning, a whitish cloudy state will be observed when the engine revolution speed is raised rapidly. The measurement of the power steering pump fluid pressure, which will be described later, makes it easier to find causes.

STEERING WHEEL (PP TYPE) COMPONENTS



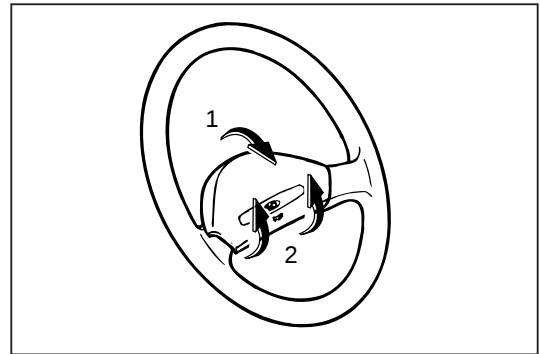
MSR00009-00007

REMOVAL

1. Disconnect the battery ground cable from the negative (-) terminal of the battery.
2. Set the steering wheel to the straight-ahead position.
3. Remove the steering wheel pad subassembly.

NOTE:

- Be sure to remove the pad subassembly in the sequence indicated in the figure. Failure to observe this note may damage the attaching pawl of the pad subassembly.

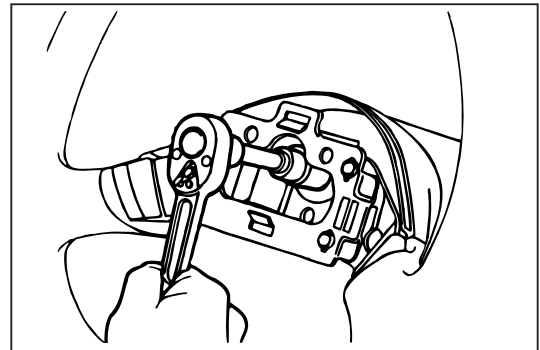


MSR00010-00008

4. Disconnect the connector of the horn harness.
5. Take out the steering wheel by removing the nut.

CAUTION:

- If any difficulty is encountered in separating the steering wheel from the shaft, utilize a steering wheel remover. Never tap the steering shaft with a hammer, etc.



MSR00011-00009

DISASSEMBLY

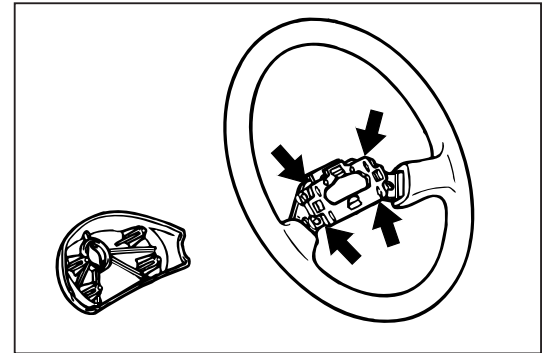
1. Remove the horn button contact plate.
2. Remove the steering wheel cover.

ASSEMBLY

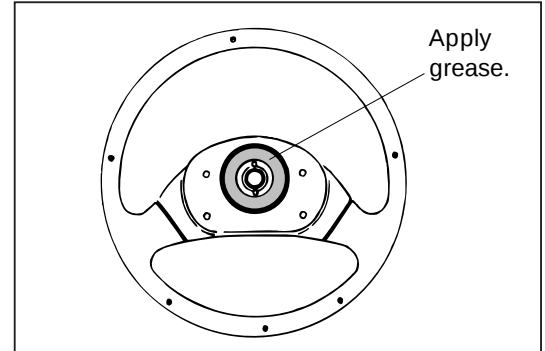
1. Install the steering wheel cover.
2. Install the horn button contact plate.

INSTALLATION

1. Apply a small amount of rubber grease to the section indicated in the figure.



MSR00012-00010



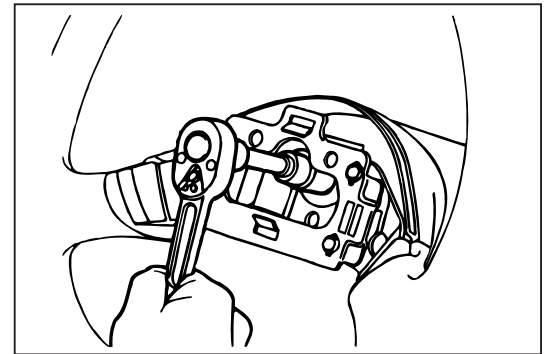
MSR00013-00011

2. Install the steering wheel to the steering shaft. Tighten the nut.

Tightening Torque: 27.5 - 41.2 N·m

NOTE:

- The steering wheel should be installed within an angle range of ± 6 degrees from the straight-ahead running direction.



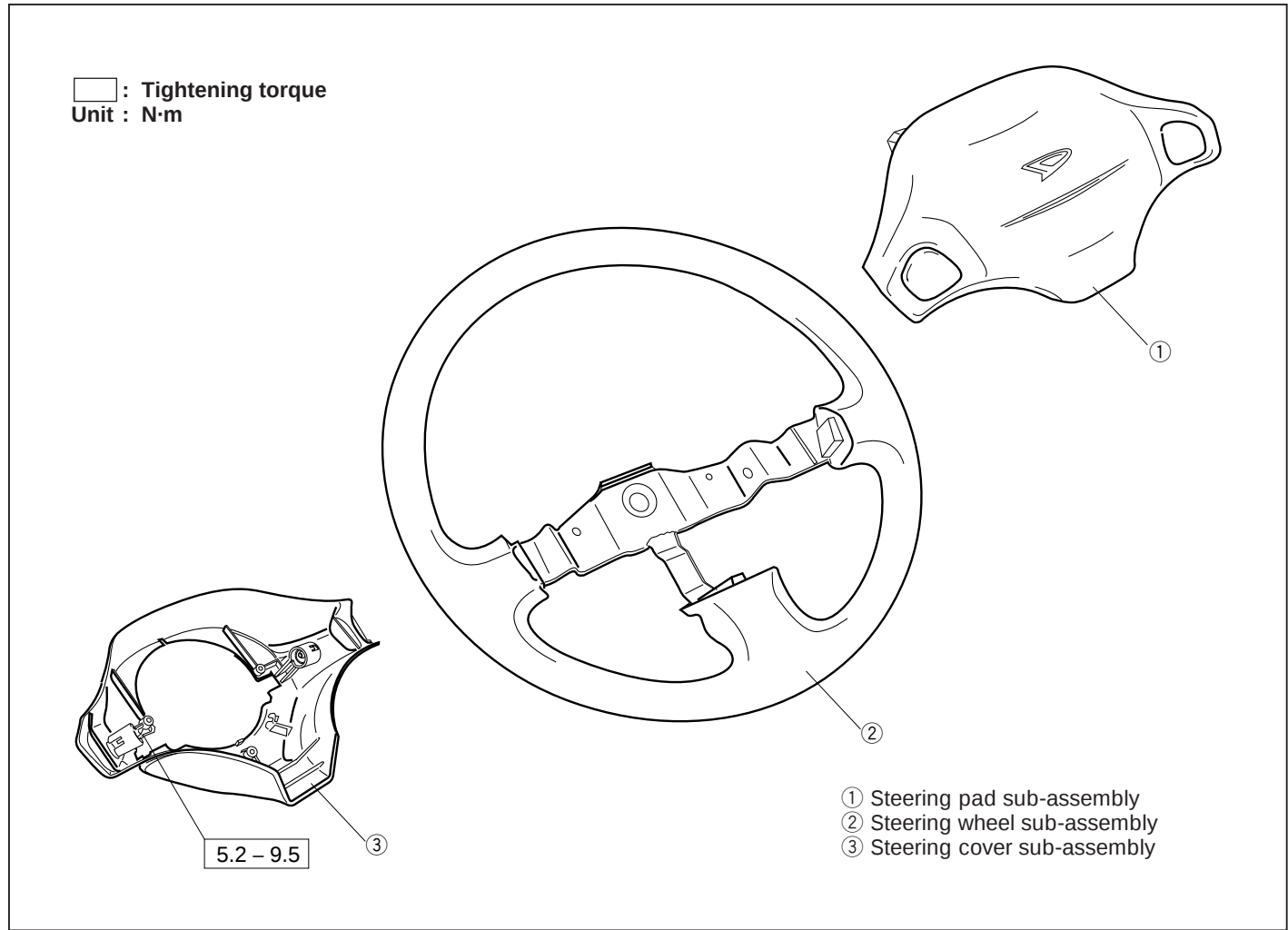
MSR00014-00012

3. Connect the horn harness connector.
4. Install the steering wheel pad subassembly.
5. Connect the battery cable.

MSR00015-00000

STEERING WHEEL (AIRBAG TYPE)

COMPONENTS



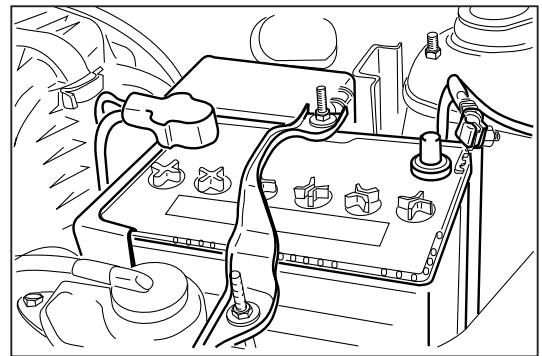
MSR00016-00013

REMOVAL

1. Disconnect the battery ground cable from the negative (-) terminal of the battery.

WARNING:

- To avoid unexpected deployment of the airbag, the operation should be started at least about 60 seconds after the power supply has been turned off.
- There are cases where the memory of the trouble shooting device is erased when the battery power supply is turned off. Therefore, be sure to read and record the contents of the memory in advance.

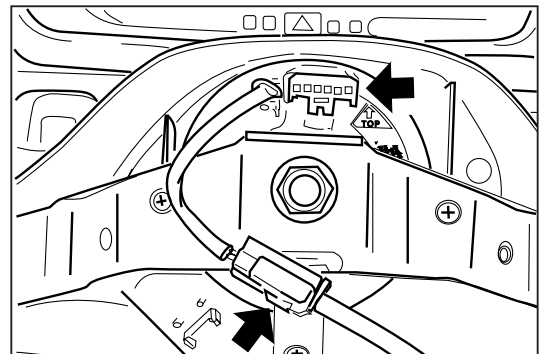


MSR00017-00014

2. Set the steering wheel to the straight-ahead position.
3. Remove the TORX(r) bolts from both sides of the steering wheel. Then, remove the steering pad assembly.
4. Disconnect the connector of the horn harness.
5. Disconnect the connector of the airbag harness.

NOTE:

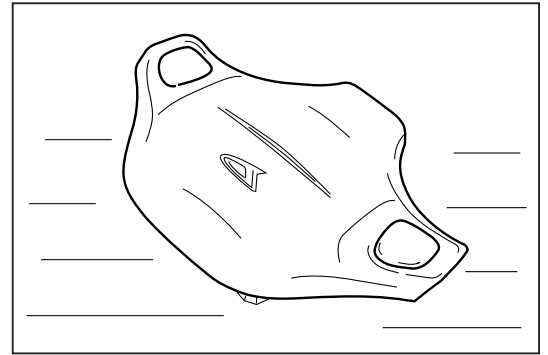
- All connectors of the airbag system are of double-locking type. Therefore, be sure to unlock the locks at the two sections before the disconnection.



MSR00018-00015

WARNING:

- Be sure to store the pad subassembly with airbag at a place that is not exposed to fire and direct sunrays.
- Moreover, make sure that the pad surface faces upward when the pad assembly is put.

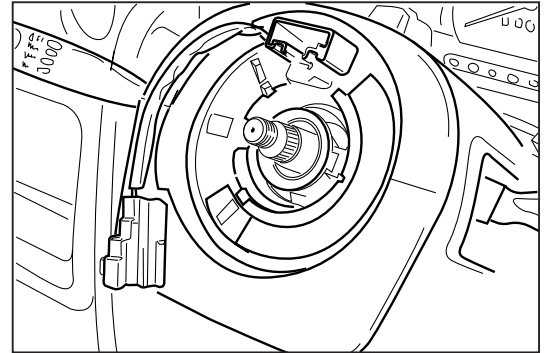


MSR00019-00016

6. Remove the steering wheel by removing the lock nut.

CAUTION:

- If any difficulty is encountered in separating the steering wheel from the shaft, utilize a steering wheel remover. Never tap the steering shaft with a hammer, etc.



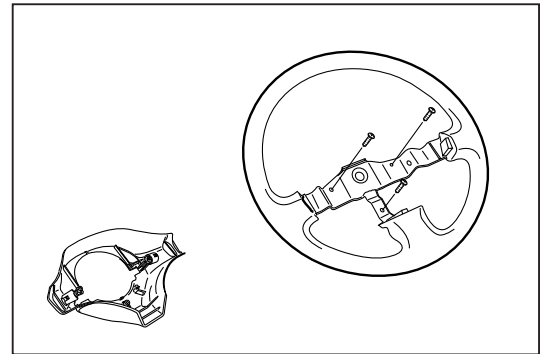
MSR00020-00017

DISASSEMBLY

1. Remove the steering wheel cover from the steering wheel by removing the attaching screws.

ASSEMBLY

1. Install the steering wheel cover to the steering wheel.



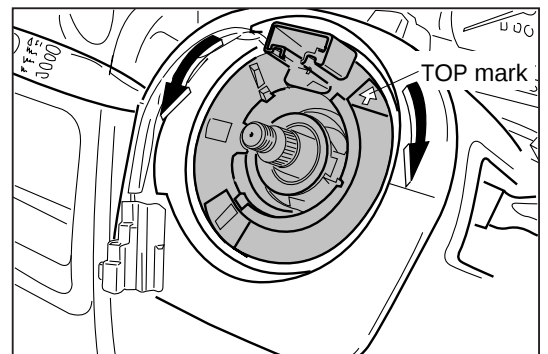
MSR00021-00018

INSTALLATION

1. Turn the roll connector clockwise, until it is locked. Then, return the roll connector about 2.5 turns counterclockwise so that the top mark may come at the top.

NOTE:

- The roll connector is made up of film-state wire. Therefore, there are cases where the roll connector is broken when it is turned beyond the lock point with a strong force. Moreover, when returning the roll connector, the roll connector reaches the lock point when it is turned about five turns. Therefore, be very careful not to turn the roll connector beyond the lock point.



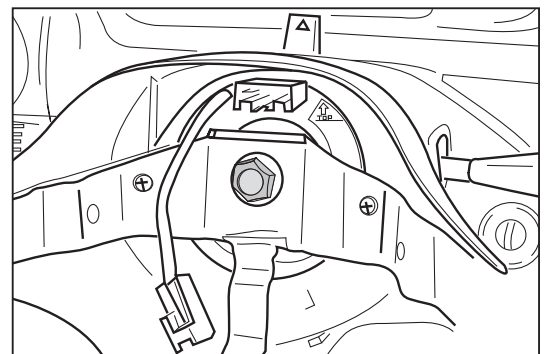
MSR00022-00019

2. Install the steering wheel to the steering shaft. Tighten the nut.

Tightening Torque: 27.5 - 41.2 N·m

NOTE:

- The steering wheel should be installed within an angle range of 15 degrees from the straight-ahead running direction.



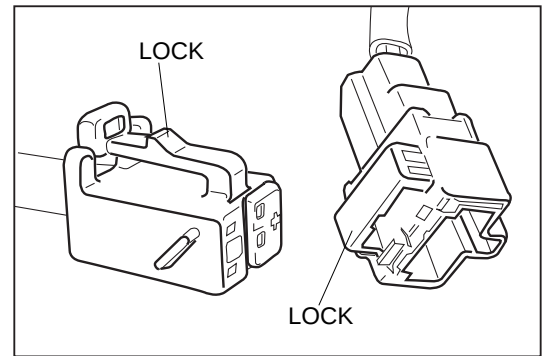
MSR00023-00020

SR-8

3. Connect the horn harness connector.
4. Connect the connector of the airbag harness.

NOTE:

- All connectors of the airbag system are of double-locking type. Therefore, be sure to positively lock the locks at the two sections.

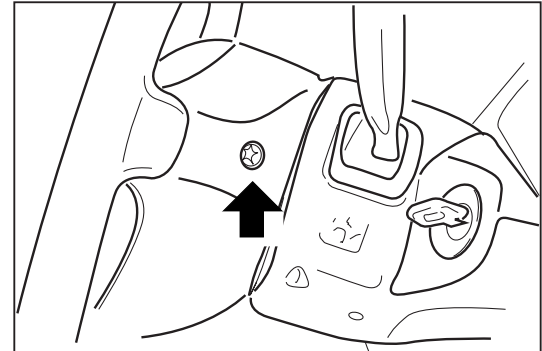


MSR00024-00021

5. Install the steering wheel pad subassembly to the steering wheel. Then, secure the pad subassembly with the TORX® bolt.

Tightening Torque: 5.2 - 9.5 N·m

6. Connect the battery cable.

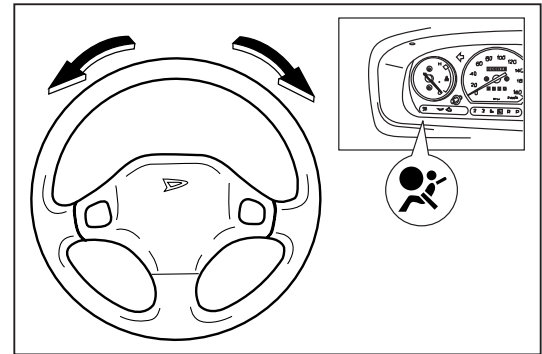


MSR00025-00022

7. Check to see if there is no hindrance when the steering wheel is turned to the right and to the left, until the steering wheel is locked.
8. Set off the horn once. At this time, check that there is no abnormality.
9. Ensure that the airbag warning lamp goes on when the ignition switch is turned ON. Also, ensure that that warning lamp goes out about six seconds later.

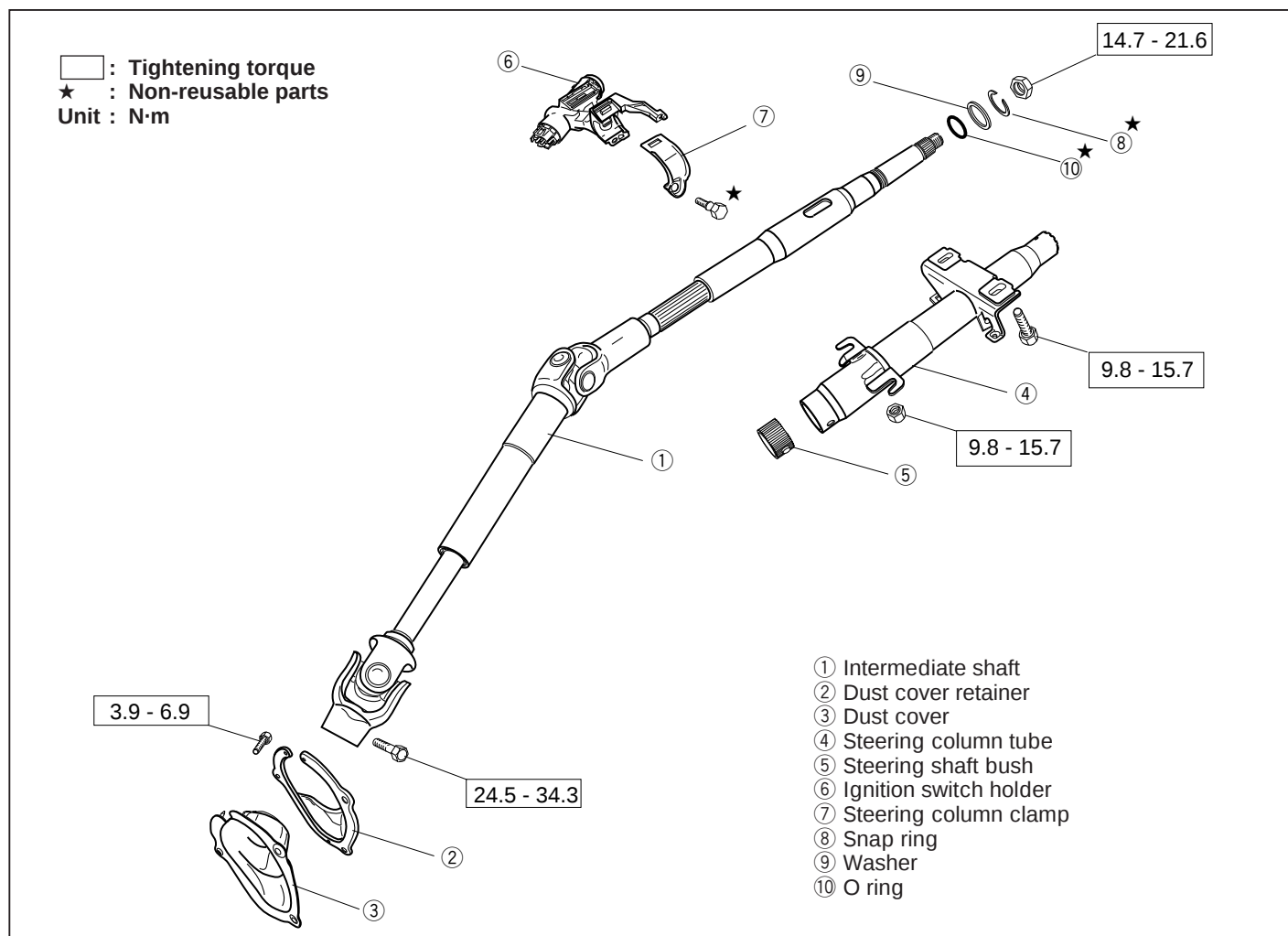
WARNING:

- If the warning lamp flashes, immediately turn OFF the ignition switch and take appropriate measures, referring to the airbag manual.



MSR00026-00023

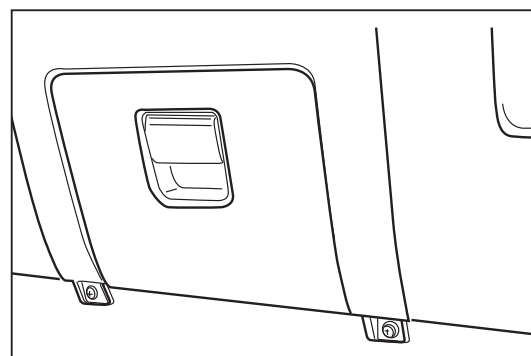
STEERING COLUMN & INTERMEDIATE SHAFT COMPONENTS



MSR00027-00024

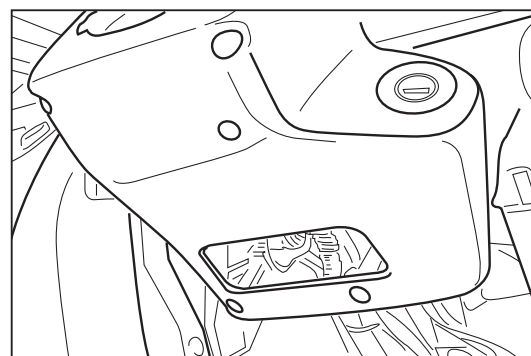
REMOVAL

1. Disconnect the battery ground cable from the negative (-) terminal of the battery.
2. Remove the steering wheel.
(See page SR-6.)
3. Remove the instrument panel lower finish panel.



MSR00028-00025

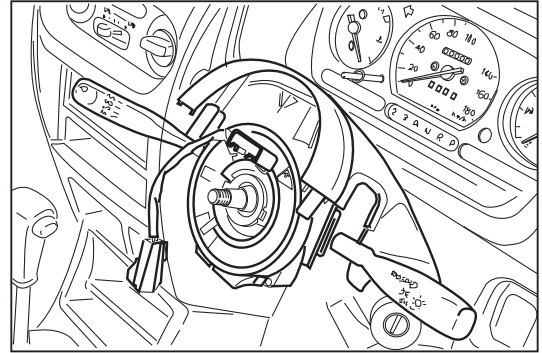
4. Remove the steering column lower cover.
5. Disconnect the connector of the ignition switch.
6. Disconnect the connector of the airbag harness.
7. Disconnect the connector of the antenna of the immobilizer.



MSR00029-00026

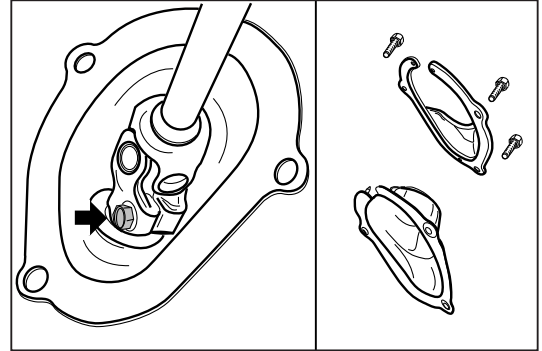
SR-10

8. Remove the combination switch together with the roll connector.
9. Remove the steering column upper cover.



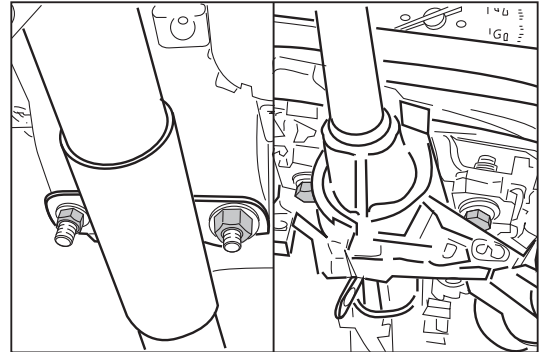
MSR00030-00027

10. Remove the floor carpet so that the dust cover retainer section may be exposed.
11. Remove the dust cover retainer and dust cover by removing the attaching bolts.
12. Remove the bolt of the universal joint.
13. Remove the joint section of the intermediate shaft from the steering gear shaft.



MSR00031-00028

14. Remove the steering column assembly by removing the attaching bolts and nuts.



MSR00032-00029

DISASSEMBLY

1. Put a mark at the tapered tip end of the bolt, using a center punch.
2. Make a hole at the marked section, using a 3 to 4 mm diameter drill.

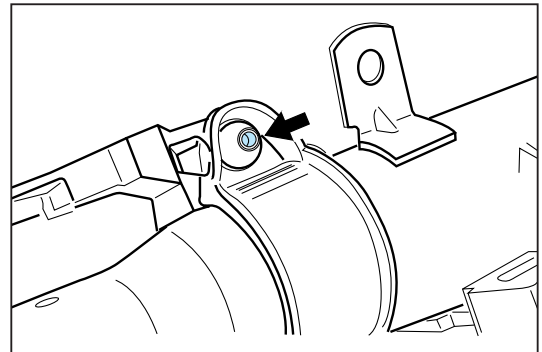
NOTE:

- Be very careful not to damage the threaded portion of the ignition switch holder.

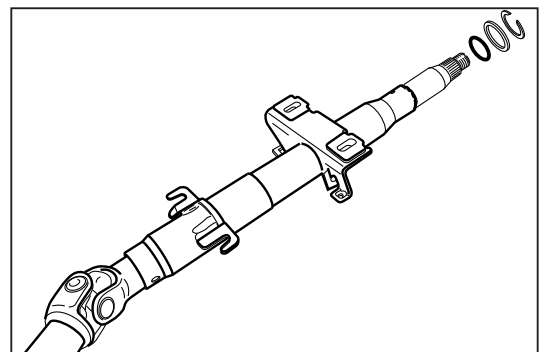
3. Remove the ignition switch holder by pulling out the bolt, using a screw extractor.
4. Remove the snap ring, using a snap ring expander.
5. Remove the washer.
6. Remove the O-ring.
7. Pull out the steering shaft from the steering column tube.

CAUTION:

- When removing the steering shaft, never tap the shaft with a hammer, etc.



MSR00033-00030



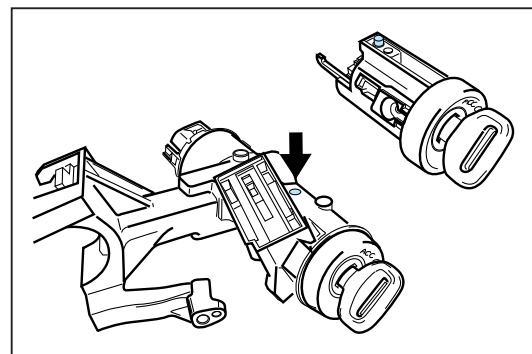
MSR00034-00031

INSPECTION

1. Insert the ignition key into the ignition switch. Check that the lock mechanism of the steering shaft functions normally.

NOTE:

- Replace the ignition switch if any malfunction is present.
- When replacing the ignition switch, set the key to the ACC position and hold the stopper pin. Then, pull out the ignition switch assembly from the ignition switch holder.

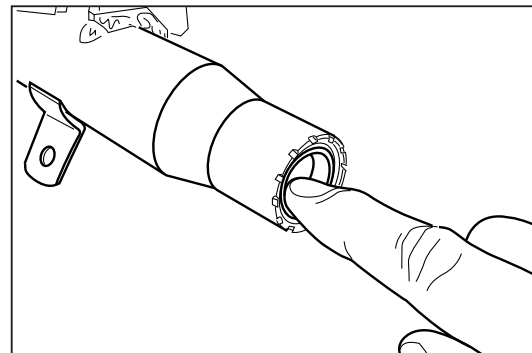


MSR00035-00032

2. Ensure that the steering shaft upper bearing turns smoothly with your fingers. At this time, check that no abnormal noise is emitted. Also, check to see if the bearing is damaged.

NOTE:

- If the bearing exhibits any malfunction, replace the steering column tube.

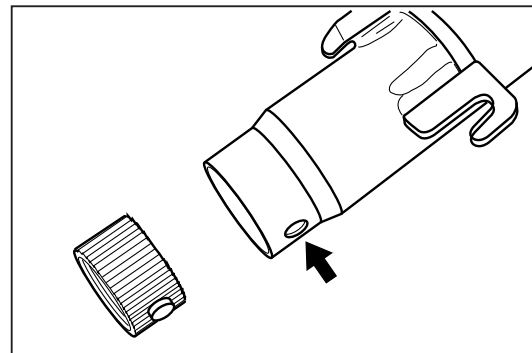


MSR00036-00033

3. Visually inspect the steering shaft bush.

NOTE:

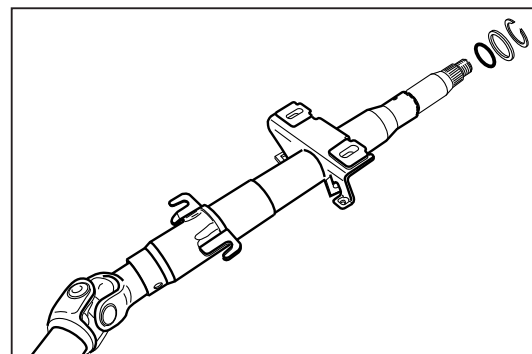
- Replace the bush if the bore is deformed or the bush exhibits defects, such as wear.
- When replacing the bush, take out the bush from the tube, using a screwdriver. Then, insert a new bush, while aligning the protruding section of the new bush with the tube hole.
- Be sure to apply a small amount of MP grease to the bore section of the bush.



MSR00037-00034

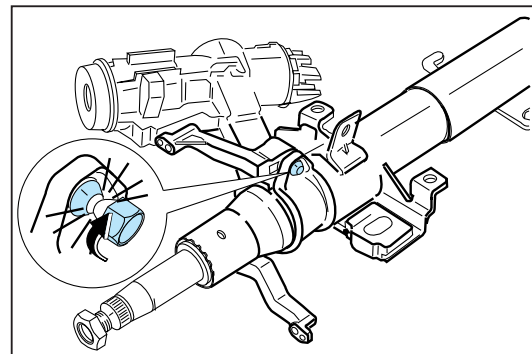
ASSEMBLY

1. Insert the steering shaft into the steering column tube.
2. Insert the O-ring and washer into the steering shaft.
3. Attach a new snap ring to the steering shaft, using a snap ring expander.



MSR00038-00035

4. Support the steering column with a vice. Then, install the ignition switch holder to the steering column with a new taper head bolt and steering column clamp.
5. Tighten the bolt, until the head of the taper head bolt is cut off.



MSR00039-00036

INSTALLATION

1. Install the bracket at the lower side of the steering column assembly to the pillar-to-pillar member bracket with the two nuts.

Tightening Torque: 17.7 - 24.5 N·m

2. Install the bracket at the upper side of the steering column assembly with the two bolts.

Tightening Torque: 17.7 - 24.5 N·m

3. Install the U joint of the steering shaft to the steering gear shaft with the bolt.

Tightening Torque: 19.6 - 29.4 N·m

4. Assemble the steering shaft dust cover retainer with the dust cover. Then, install them in place with the bolts.

Tightening Torque: 3.9 - 6.9 N·m

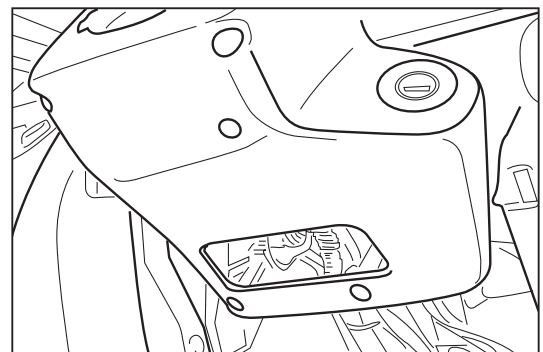
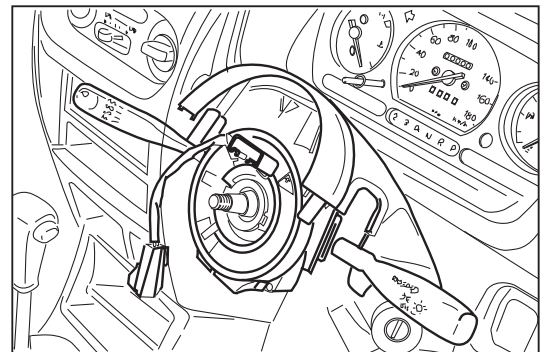
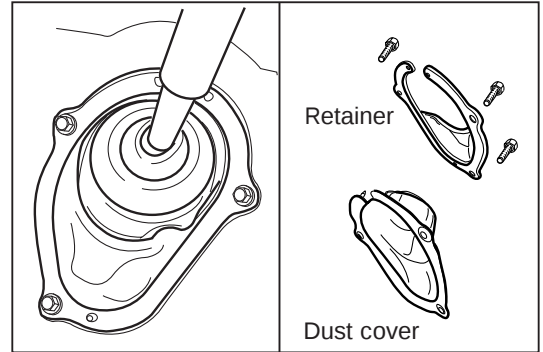
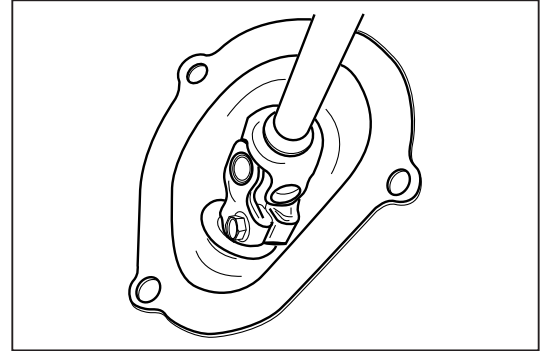
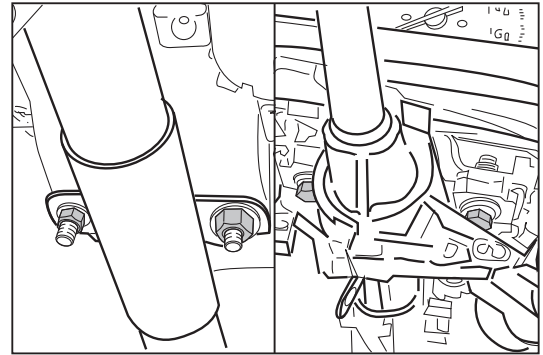
5. Install the steering column upper cover.
6. Install the combination switch and roll connector to the steering column.
7. Connect the connector of the antenna of the immobilizer to the wire harness connector.
8. Connect the connector of the airbag to the wire harness connector.
9. Connect the connector of the ignition switch to the wire harness connector.

10. Assemble the steering column lower cover with the upper cover. Then, install them to the steering column.

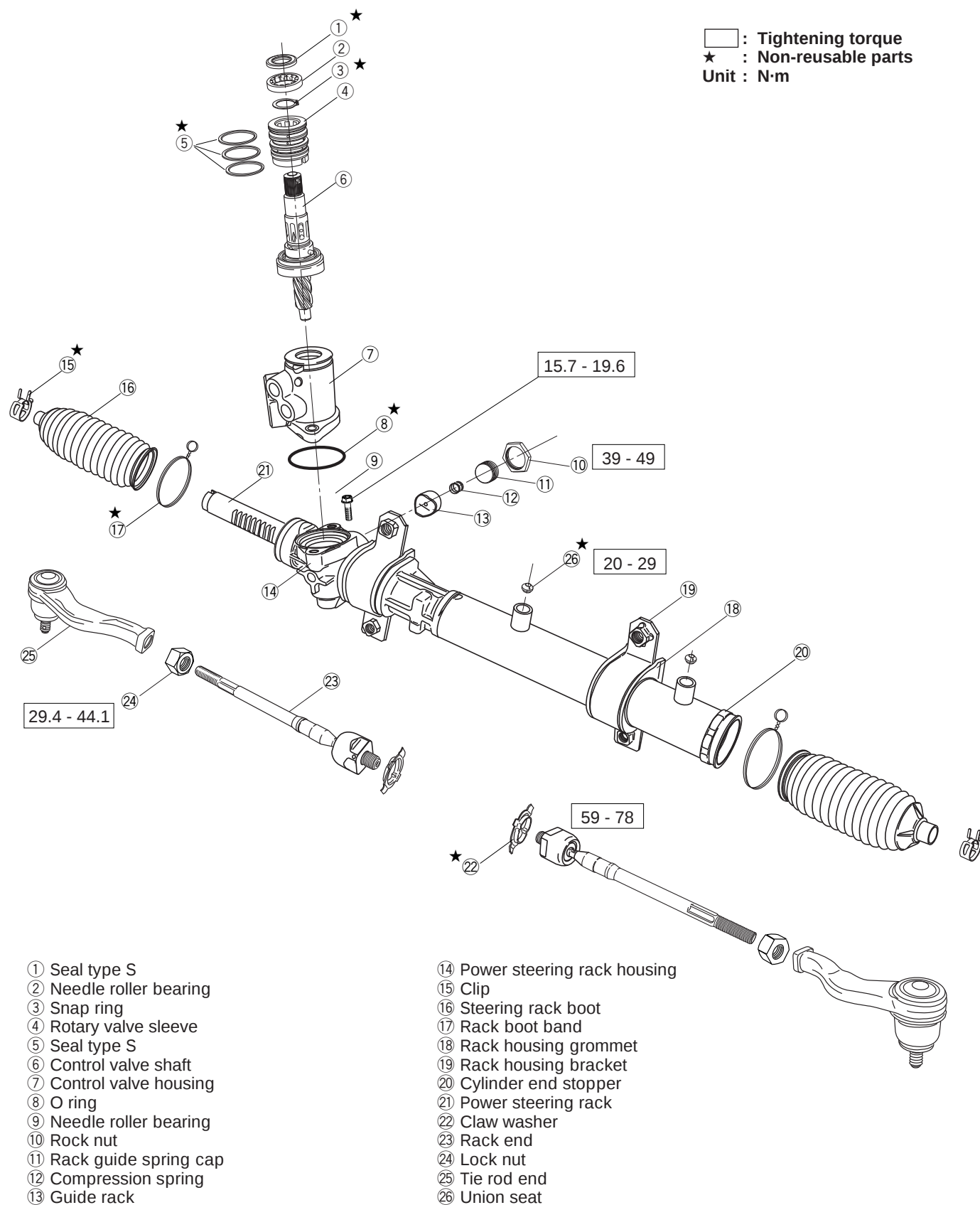
11. Install the instrument panel lower finish panel.

12. Install the steering wheel.

Tightening Torque: 27.5 - 41.2 N·m



POWER STEERING GEAR COMPONENTS



FLUID CHANGE

1. Jack up the vehicle to such an extent that the front wheels float.
2. Disconnect the return hose coming from the vane pump assembly at the power steering fluid reservoir tank. Receive the fluid of the reservoir, using a suitable container.

Furthermore, receive the fluid from the return hose, using a suitable container.

3. Start the engine and keep it idling.

WARNING:

- Never raise the engine revolution speed.

4. Turn the steering wheel clockwise to the lock point and hold the steering wheel for three seconds. Then, turn the steering wheel counterclockwise to the lock point and hold the steering wheel for three seconds. Repeat this operation two or three times.
5. Stop the engine immediately after the fluid is no longer coming out from the return hose.

CAUTION:

- If the engine is kept running even after the fluid is no longer coming out, there are cases where the power steering vane pump seizes.

6. Fill the reservoir tank with fluid.
Power steering fluid: JWS2312C or PSF-1
7. Repeat the operations from Step 4 through Step 6, until no air is mixed in the fluid from the return hose.

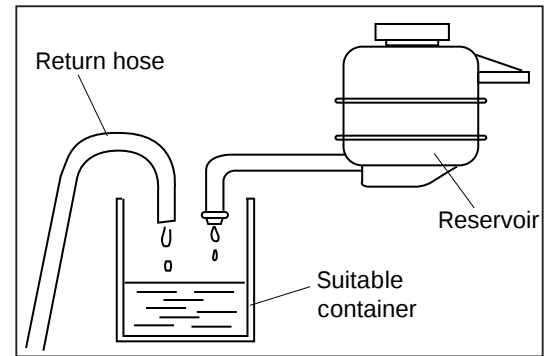
8. Connect the return hose to the reservoir.
9. Check the fluid level of the reservoir. Replenish, as required.

10. Jack down the vehicle. Start the engine and keep the engine revolution speed at around 1000 rpm.

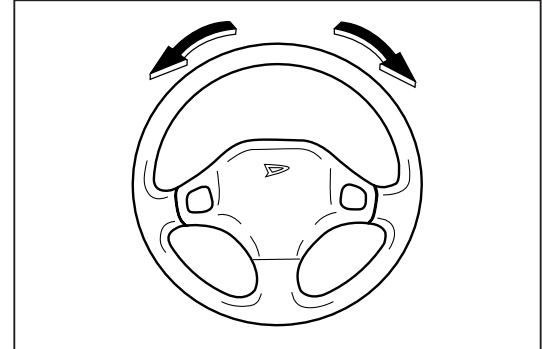
WARNING:

- Make sure that the shift lever of the transmission is set to the parking or the neutral position. Be sure to apply the parking brake so as to prevent the vehicle from moving unexpectedly.

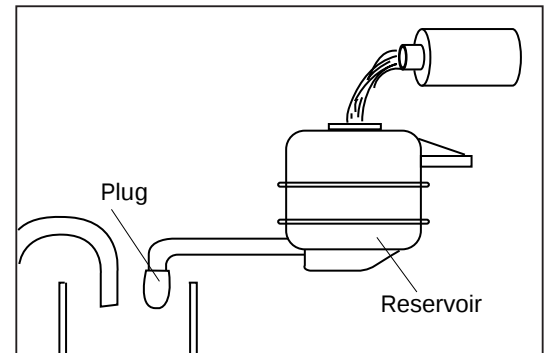
11. Turn the steering wheel clockwise to the lock point and hold the steering wheel for two or three seconds. Then, turn the steering wheel counterclockwise to the lock point and repeat this operation two or three times.



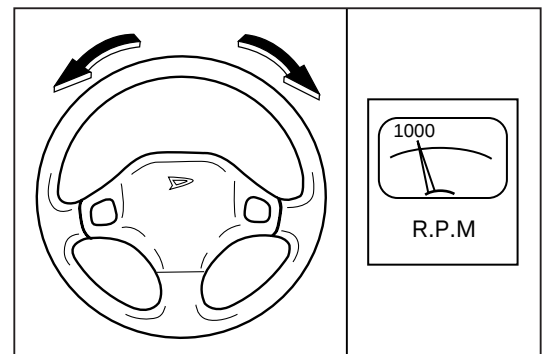
MSR00046-00043



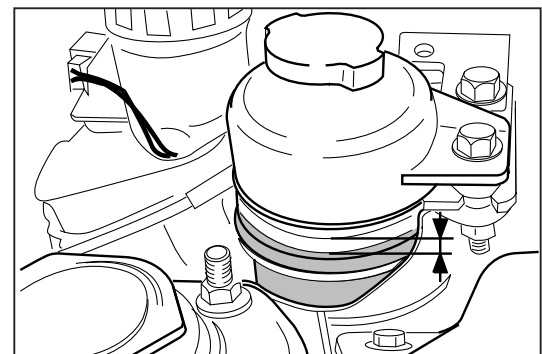
MSR00047-00044



MSR00048-00045



MSR00049-00046



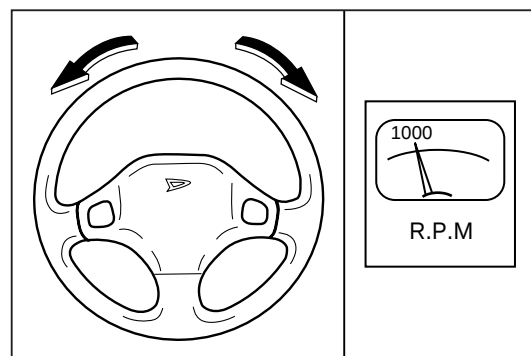
MSR00050-00047

12. Ensure that the difference in fluid level between at the time when the engine is running and at the time when the engine is in a stopped state is less than 5 mm.

CAUTION:

- If the difference is 5 mm or more, repeat the operations from Step 7 through Step 9 again.

13. With the engine revolution speed kept at 3000 rpm, turn the steering wheel to the right and left sides. At this time, ensure that no abnormal noise is emitted.



MSR00051-00048

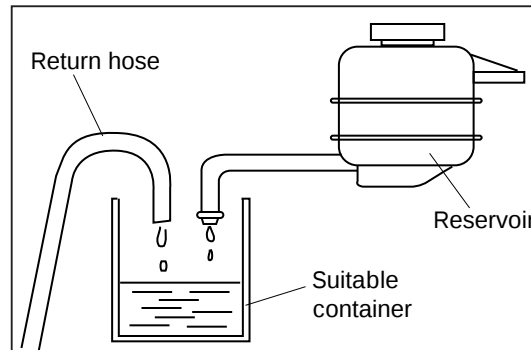
REMOVAL

1. Jack up the vehicle and remove the front tires.

NOTE:

- For assured safety, before you start the following operations, be sure to support the vehicle with safety stands placed underneath the vehicle.

2. Drain the fluid of the power steering pump.



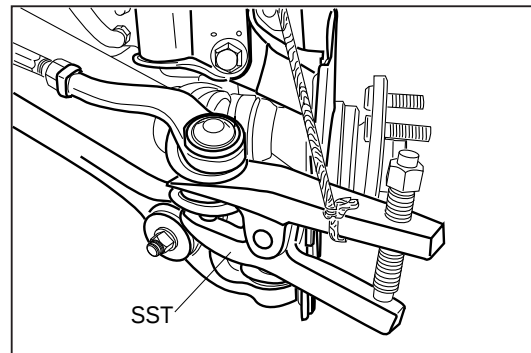
MSR00052-00049

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

SST: 09611-87701-000

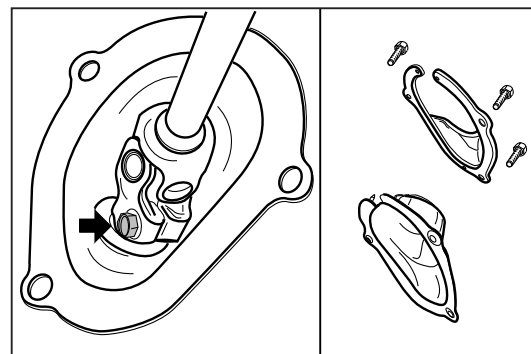
WARNING:

- The SST must be used in such a way that the SST is suspended from the upper side, using the cord attached to the SST.



MSR00053-00050

4. Remove the floor carpet so that the dust cover retainer section may be exposed.
5. Remove the dust cover retainer and dust cover by removing the attaching bolts.
6. Remove the bolt of the universal joint.
7. Remove the joint section of the intermediate shaft from the steering gear shaft.

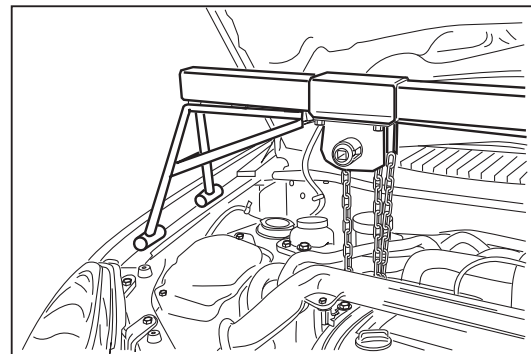


MSR00054-00051

8. Support the engine with an engine support bridge.

NOTE:

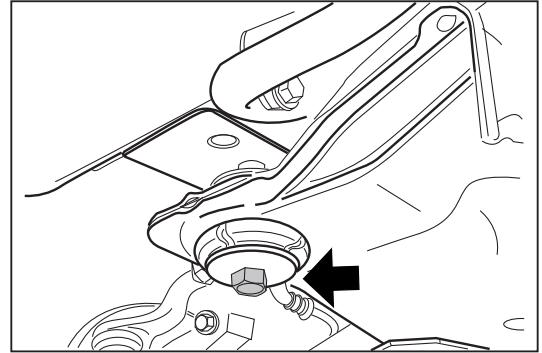
- Be sure to hang the hook on the engine hanger and transmission hanger.



MSR00055-00052

SR-16

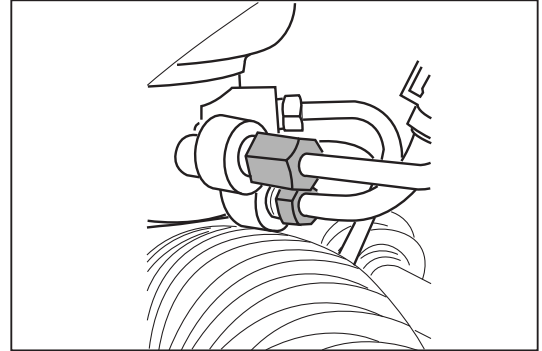
9. Loosen the front frame attaching bolts and lower the engine together with the frame.



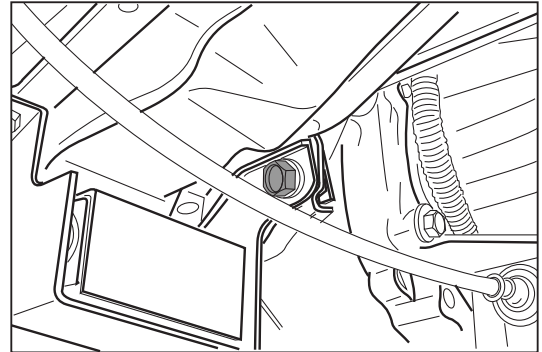
10. Disconnect the hydraulic hose coming from the pump at the power steering control valve.
11. Disconnect the hydraulic hose coming from the reservoir tank at the power steering control valve.

WARNING:

- Be sure to wear protective goggles during the operation, for the fluid may splash when the rack moves.



12. Remove the attaching bolt of the power steering gear assembly.
13. Take out the power steering gear assembly from the left side of the vehicle.



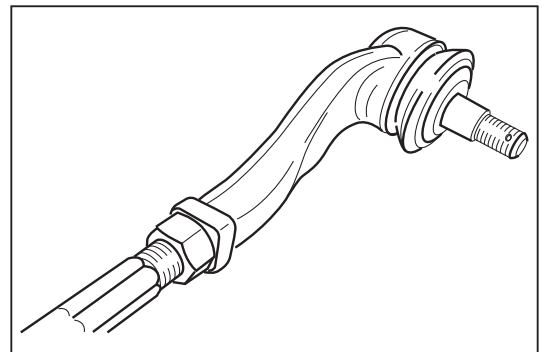
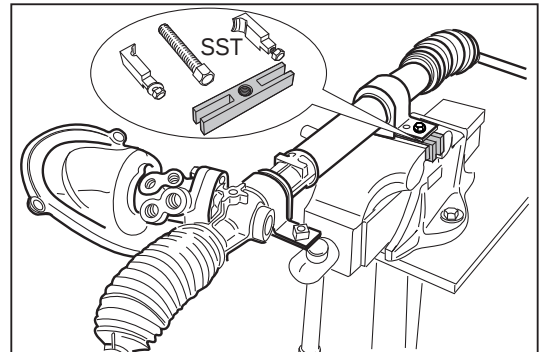
DISASSEMBLY

1. Support the power steering gear assembly in a vice, using the following SST.
SST: 09306-87302-000

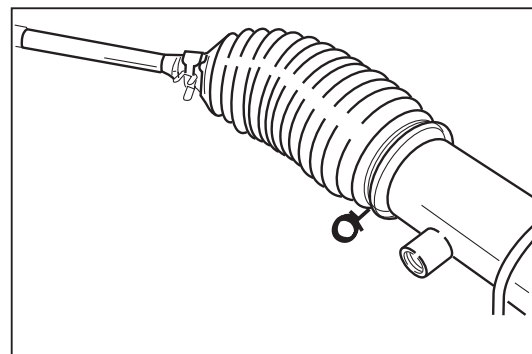
NOTE:

- A part of the SST above is to be used after disassembling it.

2. Disconnect the right and left turn pressure tubes between the rack housing and the power steering control valve.
3. Take out the union seats from the rack housing. (Two sections)
4. Put a mating mark. Then, remove the tie-rod end.

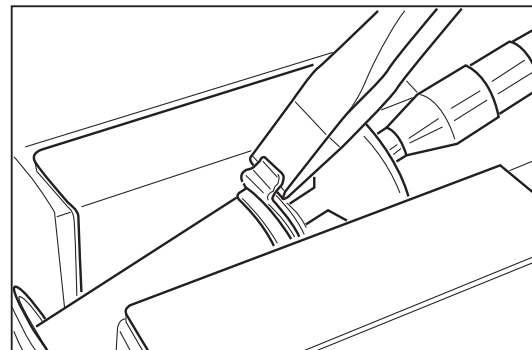


5. Remove the boot band and remove the boot from the rack end.



MSR00061-00058

6. Clamp the rack end in a vice. Then, expand the claw of the claw washer, using a chisel.

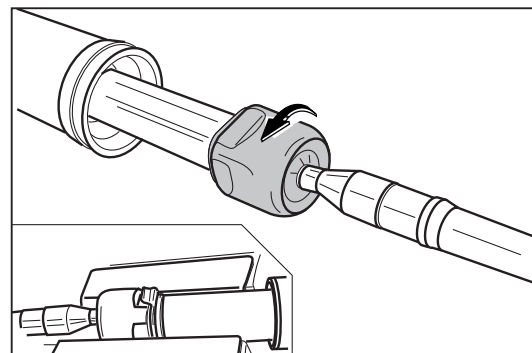


MSR00062-00059

7. Clamp the rack end in a vice. Then, remove the rack end at the opposite side by turning it with a spanner.

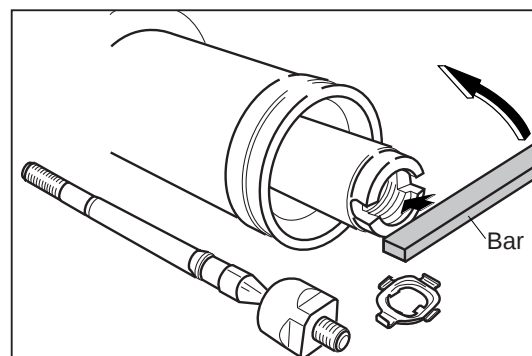
WARNING:

- Never clamp the rack housing and gear case in a vice in order to turn the rack end. Failure to observe this warning may apply an excessive force to the gear, causing an adverse effect.



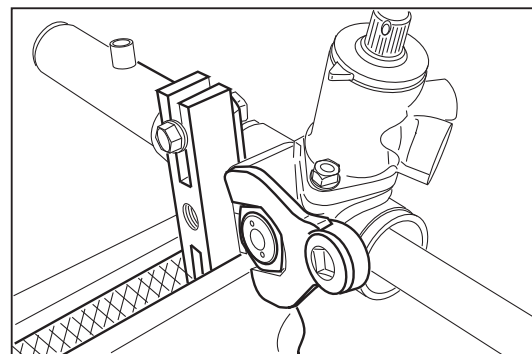
MSR00063-00060

8. Clamp the rack end in a vice. Then, insert a suitable square bar into the groove of the rack end at the opposite side to turn the rack. In this way, remove the rack end at the opposite side.



MSR00064-00061

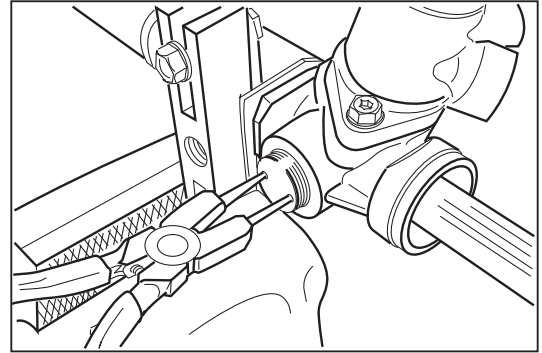
9. Clamp the SST in a vice. Then, remove the lock nut from the power steering rack housing.



MSR00065-00062

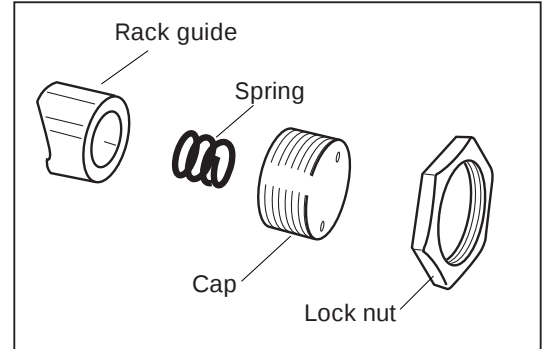
SR-18

10. Remove the rack guide spring cap from the power steering rack housing.



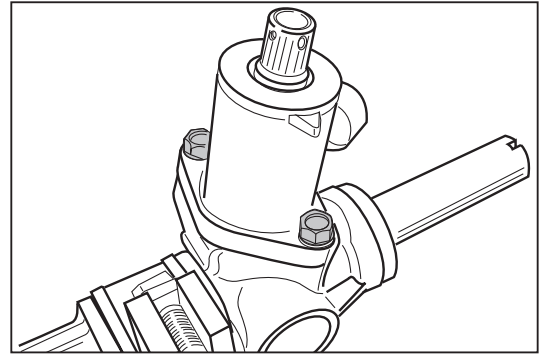
MSR00066-00063

11. Remove the rack guide and spring from the power steering rack housing.



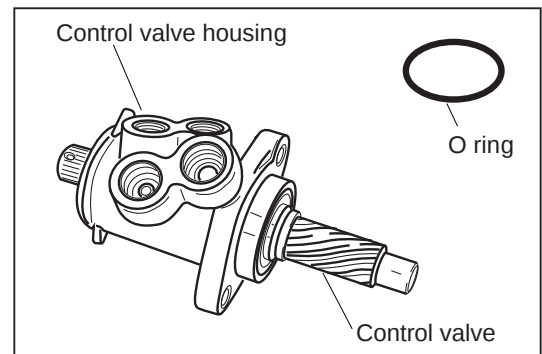
MSR00067-00064

12. Remove the control valve assembly from the power steering rack housing.



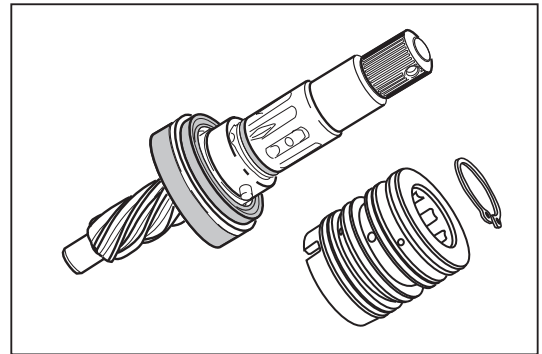
MSR00068-00065

13. Remove the O-ring.
14. Pull out the control valve subassembly from the control valve housing.



MSR00069-00066

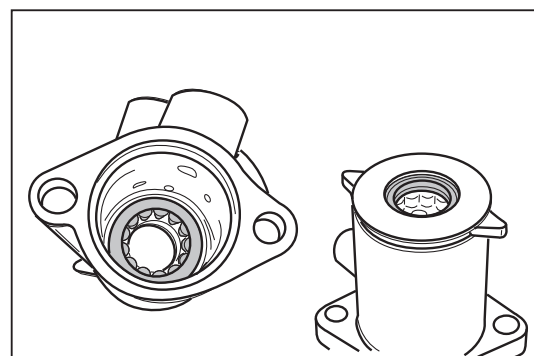
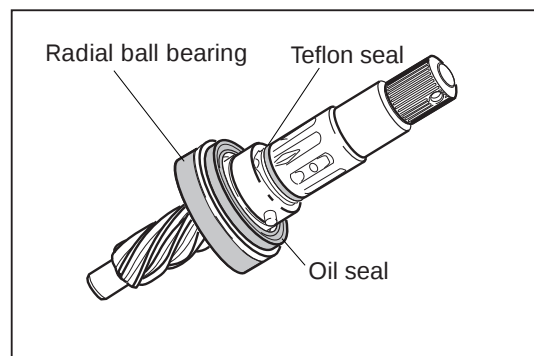
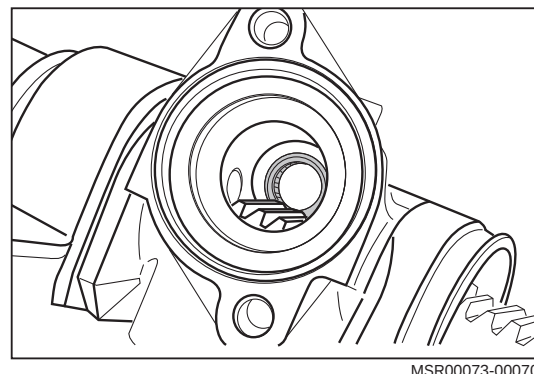
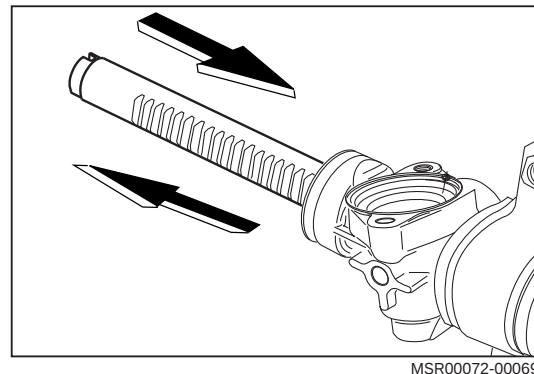
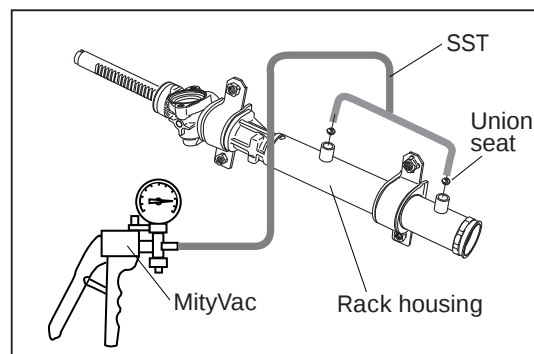
15. Separate the shaft from the rotary valve sleeve by removing the snap ring.



MSR00070-00067

INSPECTION

1. Install the union seats (two pcs.) to the power steering rack housing.
2. Connect the following SST to the power steering rack housing.
SST: 09631-12071-000
3. Connect a MityVac to the SST. Then, apply a negative pressure of 53 kPa to the power steering rack housing.
4. Keep the above condition for about 30 minutes. At this time, ensure that the negative pressure remains unchanged. If any abnormality is observed, replace the power steering rack housing assembly.
5. Visually check to see if the tooth shape of the rack is worn out.
6. Check that the rack moves smoothly by moving it by your hands.
If any abnormality is observed, replace the power steering rack housing assembly.
7. Visually check to see if the needle roller bearing exhibits scores and wear.
8. Apply molybdenum disulfide lithium base grease to the bearing.
If any abnormality is observed, replace the power steering rack housing.
9. Check to see if the oil seal and bearing of the control valve shaft assembly exhibit scores and wear.
10. Check to see if the teflon ring exhibits scores and wear.
If any abnormality is observed, replace the control valve shaft assembly.
11. Check to see if the oil seal and needle roller bearing of the control valve housing exhibit scores and wear.
Replace any abnormal parts.

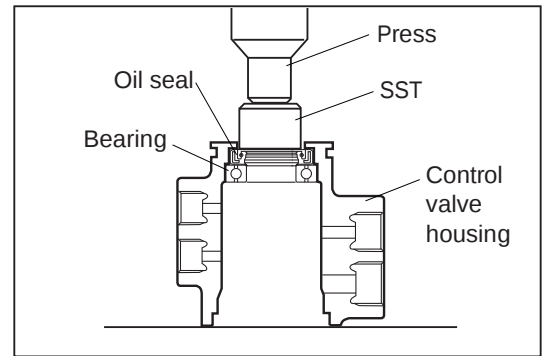


SR-20

Replacement of oil seal and needle roller bearing

11.1 Pull out the oil seal and bearing at the same time, using the following SST in combination with a hydraulic press.

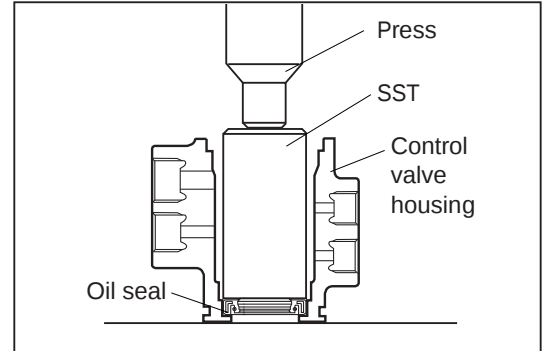
SST: 09726-87201-000



MSR00076-00073

11.2 Press-fit a new oil seal, using the following SST in combination with a hydraulic press.

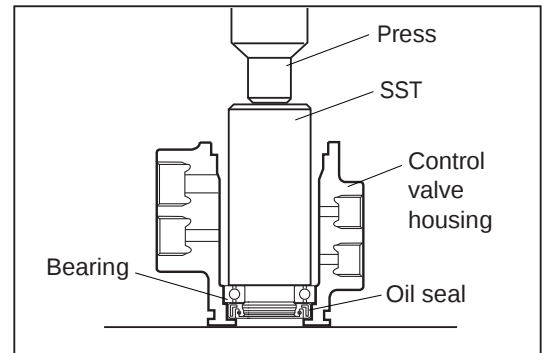
SST: 09238-87701-000



MSR00077-00074

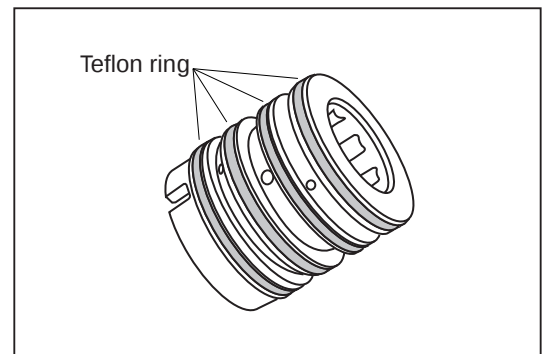
11.3 Press-fit a new bearing, using the following SST in combination with a hydraulic press.

SST: 09238-87701-000



MSR00078-00075

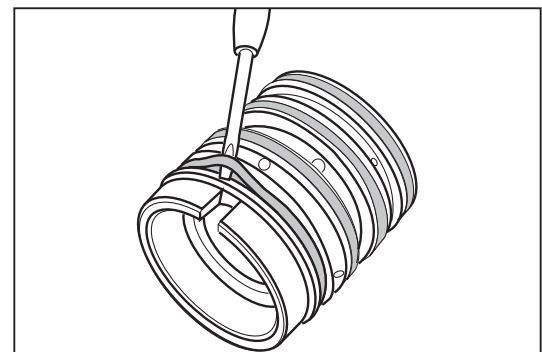
12. Check to see if the teflon ring of the rotary valve sleeve exhibits scores and wear. Replace any abnormal parts.



MSR00079-00076

Replacement of teflon ring

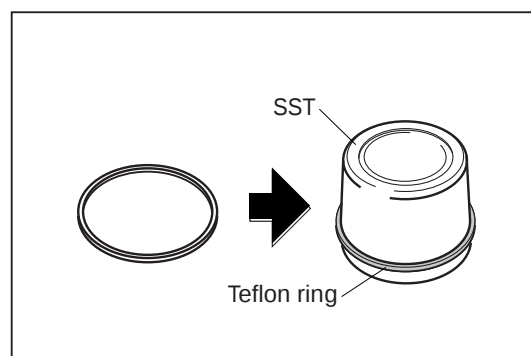
12.1 Remove the teflon ring, using a screwdriver.



MSR00080-00077

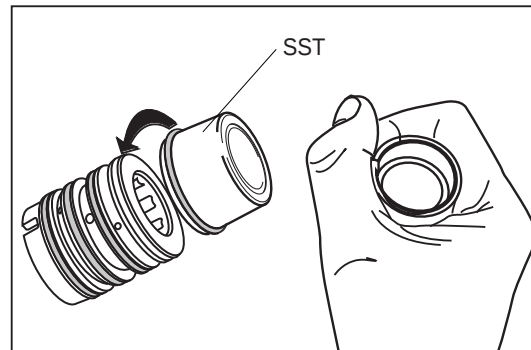
12.2 Apply power steering fluid to a new teflon ring. Then, expand the teflon ring, using the following SST.

SST: 09631-20070-000



MSR00081-00078

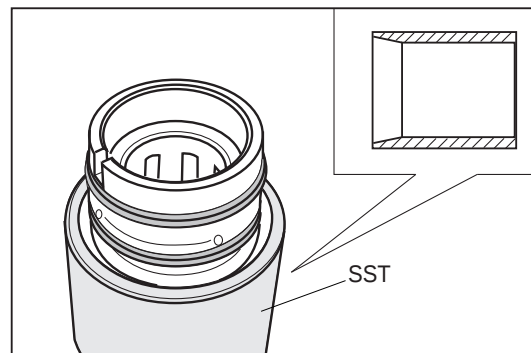
12.3 Fit the expanded teflon ring into the groove of the rotary valve sleeve. Then, contract the outer periphery of the teflon ring by holding the outer periphery of the teflon ring with your fingers so that it may be bedded in the sleeve.



MSR00082-00079

12.4 Apply power steering fluid to the inner surface of the following SST. Then, cover the outer periphery of the teflon ring, starting from the tapered section of the SST. Leave the SST installed for at least 30 minutes.

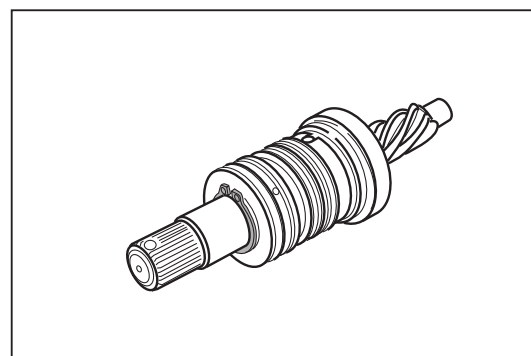
SST: 09631-20081-000



MSR00083-00080

ASSEMBLY

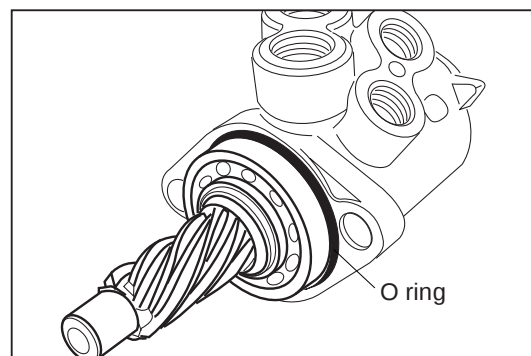
1. Fit the rotary valve sleeve subassembly into the control valve shaft assembly and secure it with a snap ring.



MSR00084-00081

2. Insert the control valve assembly into the control valve housing.

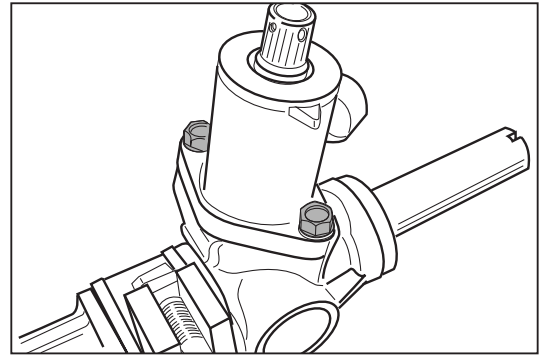
3. Install the O-ring to the bearing.



MSR00085-00082

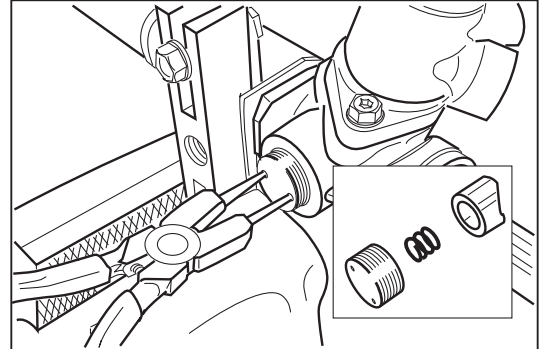
4. Install the control valve assembly to the power steering rack housing.

Tightening Torque: 15.7 - 19.6 N·m



MSR00086-00083

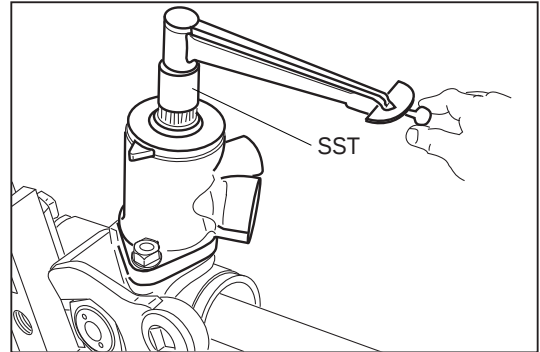
5. Insert the rack guide and spring into the power steering rack housing.
6. Apply a small amount of sealant to the threaded portion of the rack guide spring cap. Then, screw the threaded portion into the power steering rack housing.



MSR00087-00084

7. Install the following SST and a torque wrench to the control valve shaft. Screw in the rack guide spring cap to such an extent that the torque (preload) for turning the shaft becomes 0.9 - 1.5 N·m.

SST: 09616-87702-000

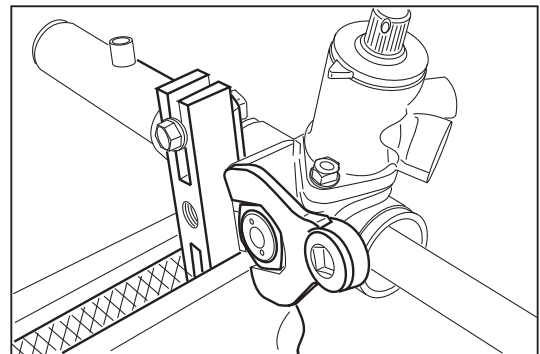


MSR00088-00085

8. Apply a small amount of sealant to the lock nut.
9. Tighten the lock nut to the specified tightening torque, using the following SST.

SST: 09617-22030-000

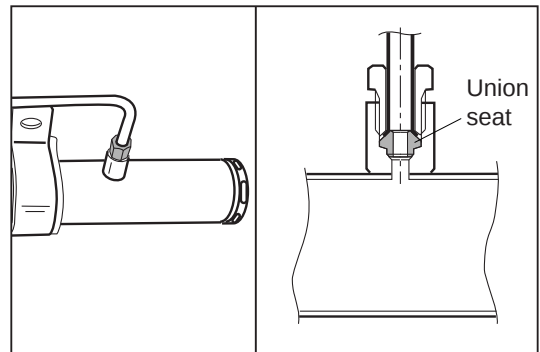
Tightening Torque: 39 - 49 N·m



MSR00089-00086

10. After the lock nut has been tightened, check the preload again. If the preload fails to conform to the specified value, repeat the operations from Step 7 through Step 9 again.

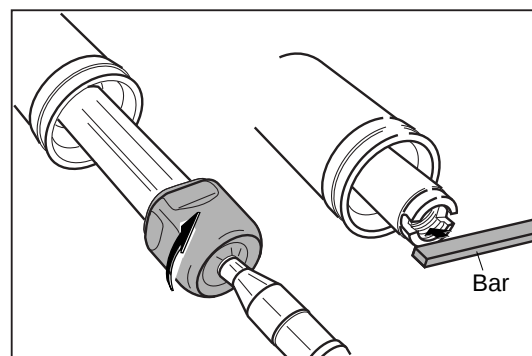
11. Insert the union seat into the rack housing. Connect the right and left turn pressure tubes between the power steering control valve and the rack housing.



MSR00090-00087

12. Insert a suitable square bar into the groove of the shaft of the rack in order to prevent the shaft from turning.
13. Install the claw washer and rack end to the shaft at the opposite side.

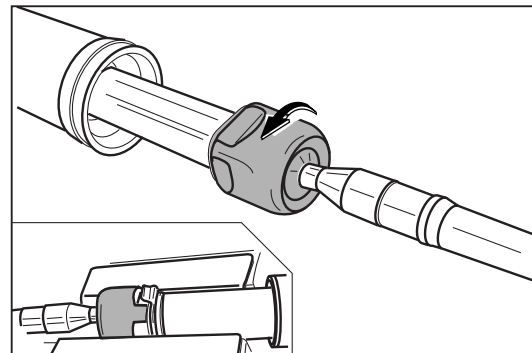
Tightening Torque: 59 - 78 N·m



MSR00091-00088

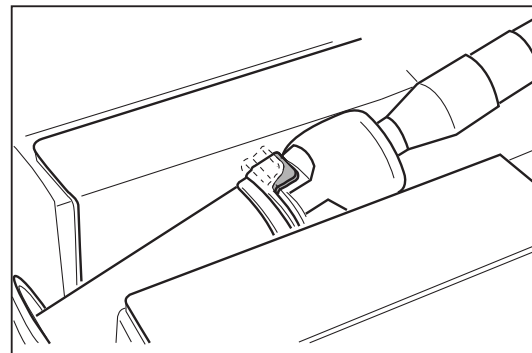
14. Clamp the rack end in a vice in order to prevent the rack end from turning. Then, install the claw washer and rack end to the rack at the opposite side.

Tightening Torque: 59 - 78 N·m



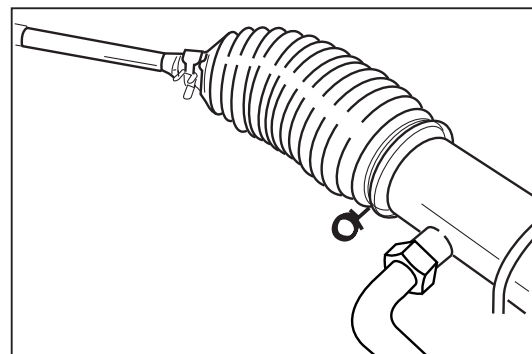
MSR00092-00089

15. Bend the tip end of the claw washer, using a brass bar in combination with a hammer, in order to prevent the washer from turning.



MSR00093-00090

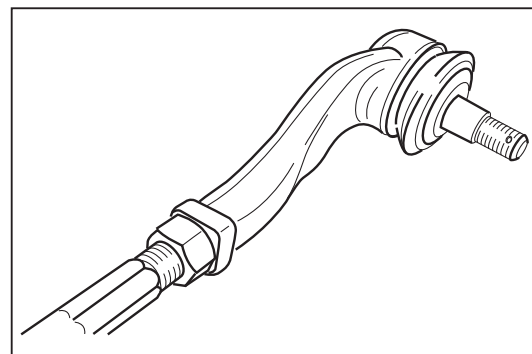
16. Install the boot to the rack end and secure the boot with a boot band.



MSR00094-00091

17. Install the lock nut and tie-rod end to the rack end. Temporarily tighten the lock nut at a place where a mating mark has been put.

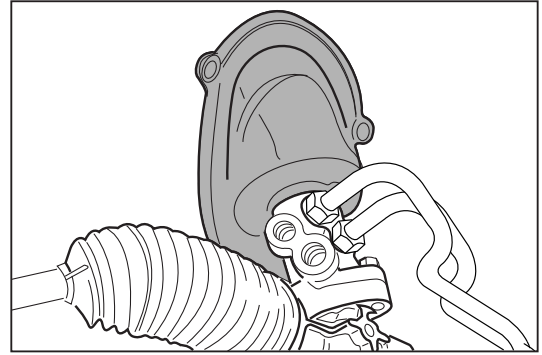
Tightening Torque: 2.9 - 9.8 N·m



MSR00095-00092

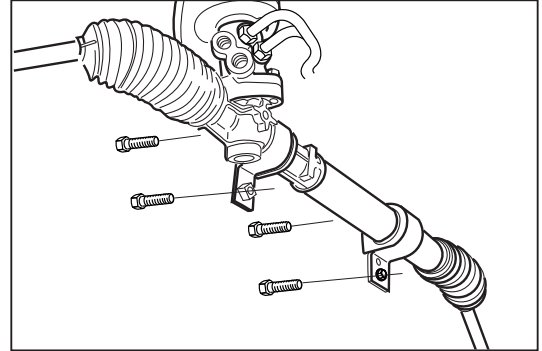
INSTALLATION

1. Install the steering column hole shield to the power steering rack housing.



2. Pass the power steering gear assembly under the engine compartment from the left side of the vehicle.
3. Install the power steering gear assembly and bracket to the frame with the specified bolts.

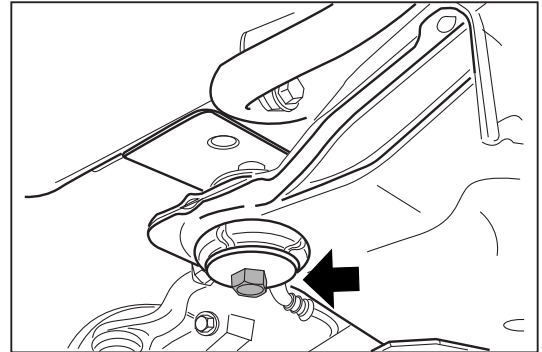
Tightening Torque: 39.2 - 53.9 N·m



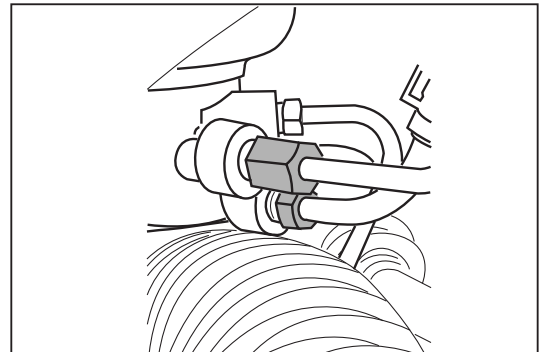
NOTE:

- As explained in the section under REMOVAL, support the engine with an engine support. Then, loosen the attaching bolts of the front frame and lower the engine together with the support. Then, install the bolt of the bracket.
4. While returning the engine frame to the specified position, using the engine support bridge, put the tip end of the steering column hole shield into the body through the column hole of the body. Then, secure the frame with the bolts.

Tightening Torque: 29.4 - 44.1 N·m



5. Connect the hydraulic hose coming from the pump to the power steering control valve.
6. Connect the hydraulic hose coming from the reservoir tank to the power steering control valve.

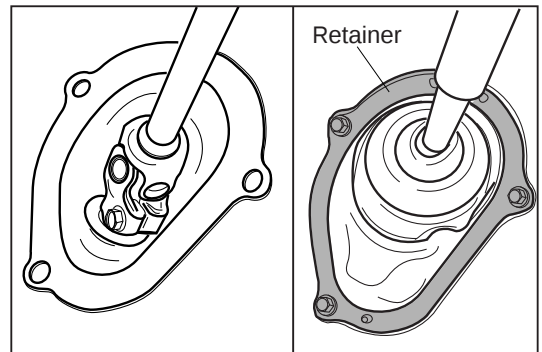


7. Connect the control valve shaft and universal joint of the intermediate shaft. Tighten the specified bolt.

Tightening Torque: 19.6 - 29.4 N·m

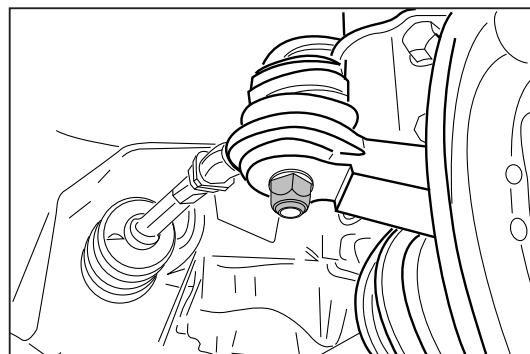
8. Install the retainer and dust cover.

Tightening Torque: 3.9 - 6.9 N·m



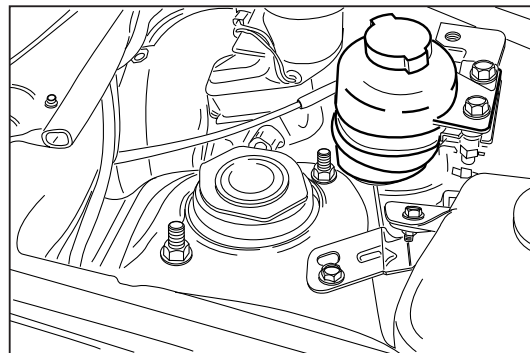
9. Connect the tie-rod end and steering knuckle with a new nut.

Tightening Torque: 29.4 - 44.1 N·m



MSR00101-00098

10. Fill power steering fluid and perform air bleeding.
See page SR-14.

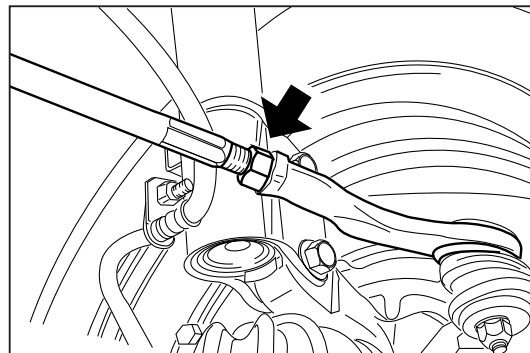


MSR00102-00099

11. Adjust the front wheel alignment.

Tightening Torque: 29.4 - 44.1 N·m

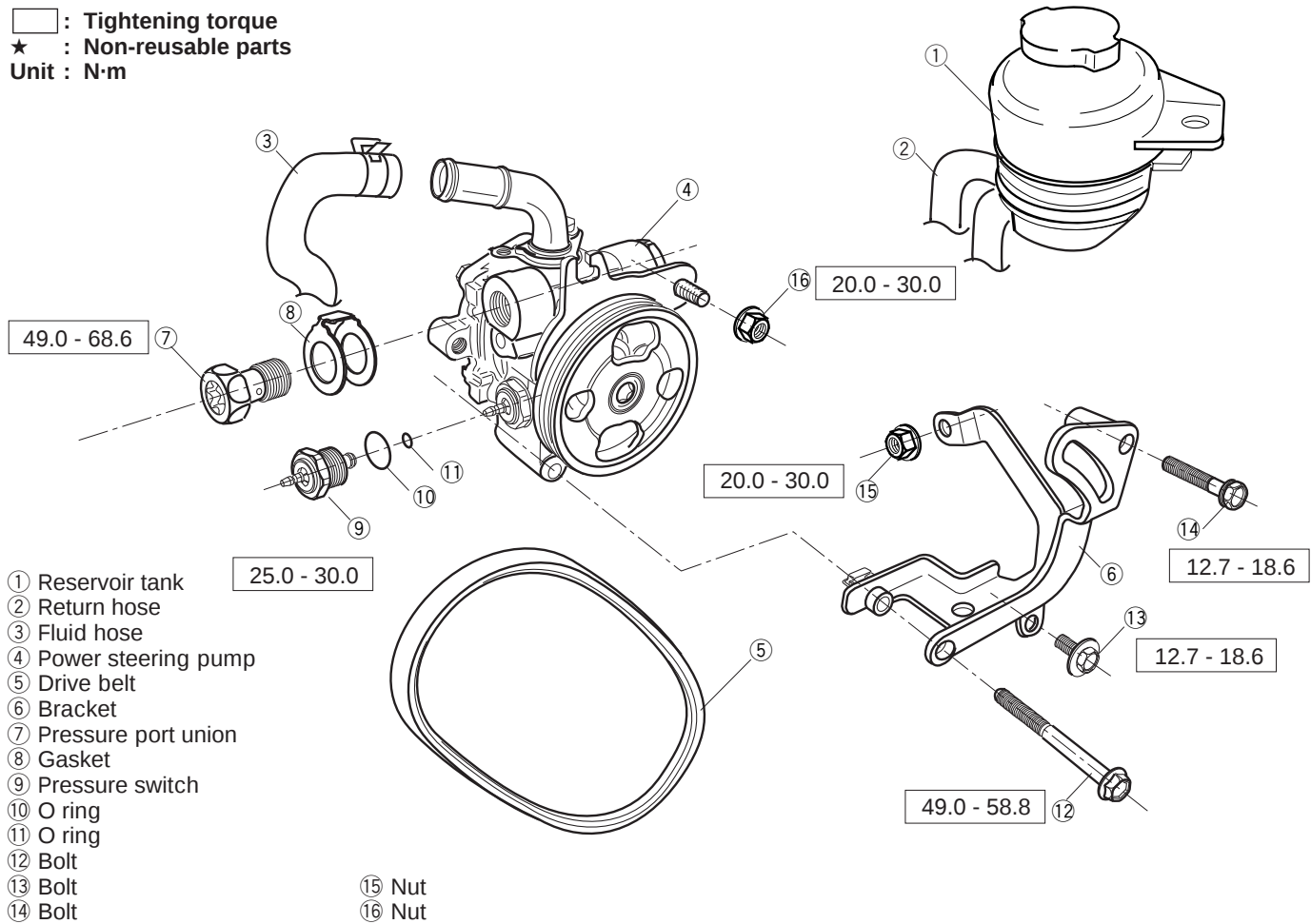
Refer to the FS section.



MSR00103-00100

POWER STEERING PUMP COMPONENTS

□ : Tightening torque
★ : Non-reusable parts
Unit : N·m



MSR00104-00101

INSPECTION

1. Check the generated hydraulic pressure of the pump, using the SST.

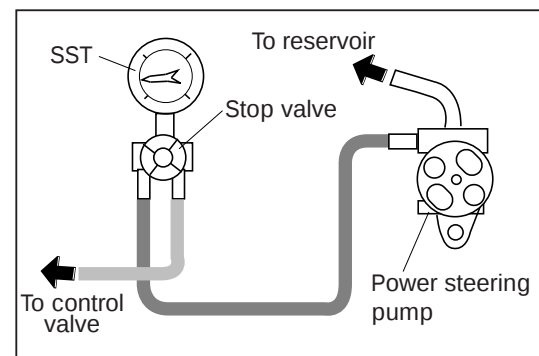
Specified Value: $6.4 + 0.5, -0.2$ MPa/Idling

NOTE:

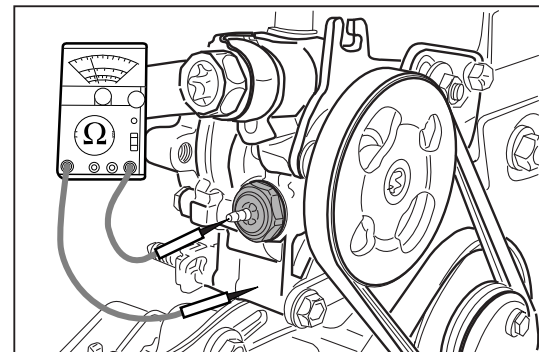
- After completion of the air bleeding inside the SST and power steering piping, close the valve of the SST. Then, measure the line pressure. If the measured value fails to meet the specified value, replace the pump.

2. Separate the pressure switch from its wiring harness terminal.
3. Open the valve of the SST. With the engine kept idling, check continuity between the terminal of the pressure switch and the body ground.

Specified Value: Continuity should exist when the steering wheel is turned. (The resistance should register zero.)



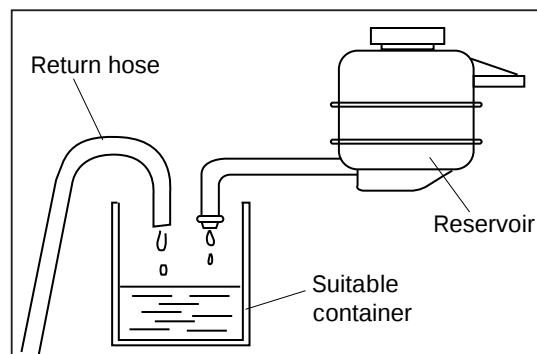
MSR00105-00102



MSR00106-00103

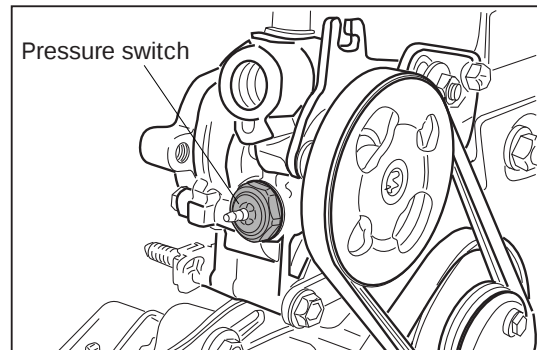
Replacement of pressure switch

3.1 Drain the power steering fluid.
See page SR-14.



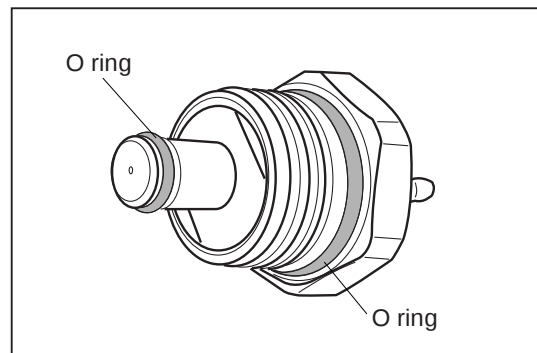
MSR00107-00104

- 3.2 Disconnect the pressure hose from the pump.
- 3.3 Separate the pressure switch from its wiring harness terminal.
- 3.4 Remove the pressure switch.



MSR00108-00105

- 3.5 Attach a new O-rings to a new pressure switch.
- 3.6 Apply sealant to the threaded portion of the pressure switch.
- 3.7 Install the pressure switch to the pump.
Tightening Torque: 25 - 30 N·m

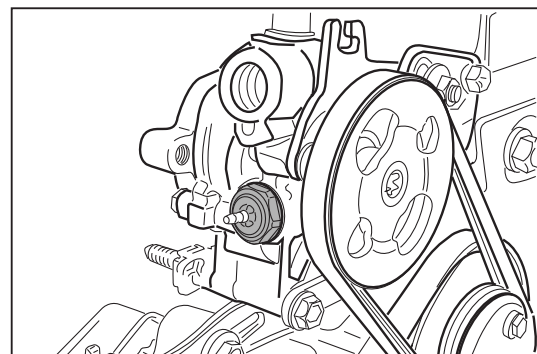


MSR00109-00106

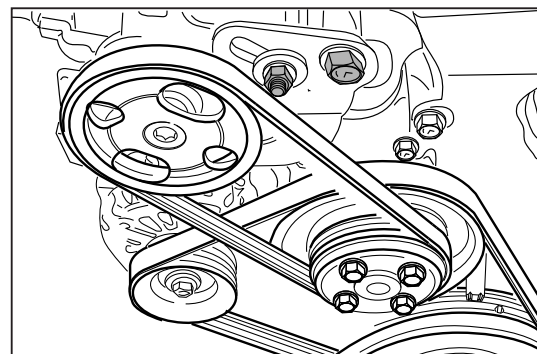
- 3.8 Install the pressure hose and a new gasket to the pump.
- 3.9 Fill power steering fluid and perform air bleeding.

REMOVAL

- 1. Drain the power steering fluid.
See page SR-14.
- 2. Disconnect the return hose from the pump.
- 3. Disconnect the pressure hose from the pump.
- 4. Separate the pressure switch from its wiring harness terminal.
- 5. Remove the belt by loosening the tension adjusting bolt of the power steering pump belt.
- 6. Remove the power steering pump from the engine by removing the attaching bolts.



MSR00110-00107

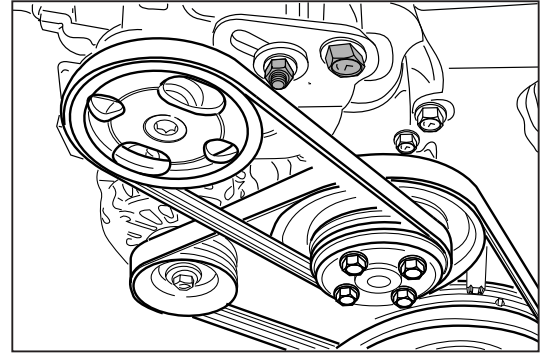


MSR00111-00108

INSTALLATION

1. Install the power steering pump to the engine with the specified bracket.

Tightening Torque: 49.0 - 58.8 N·m/90 mm-long bolt
12.7 - 18.6 N·m/Other bolts

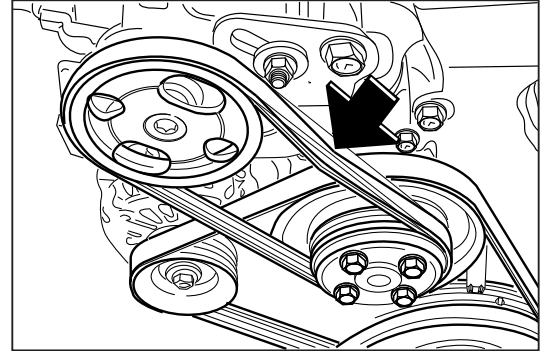


MSR00112-00109

2. Install the belt.
3. Tighten the tension adjusting bolt so that the belt may have the specified tension.

Specified Value: 7.5 - 11.5 mm

(When a force of 98N is applied to the drive belt at the midpoint between respective pulleys)



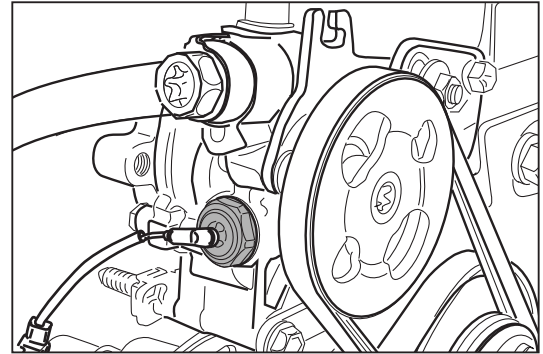
MSR000113-00110

NOTE:

- In the case of a new drive belt, the measurement of deflection amount should be carried out after completion of the trial running for at least 5 minutes with the new belt installed to the engine.

4. Connect the terminal of the wiring harness to the pressure switch terminal.
5. Connect the pressure hose to the pump.
Tightening Torque: 49.0 - 68.6 N·m

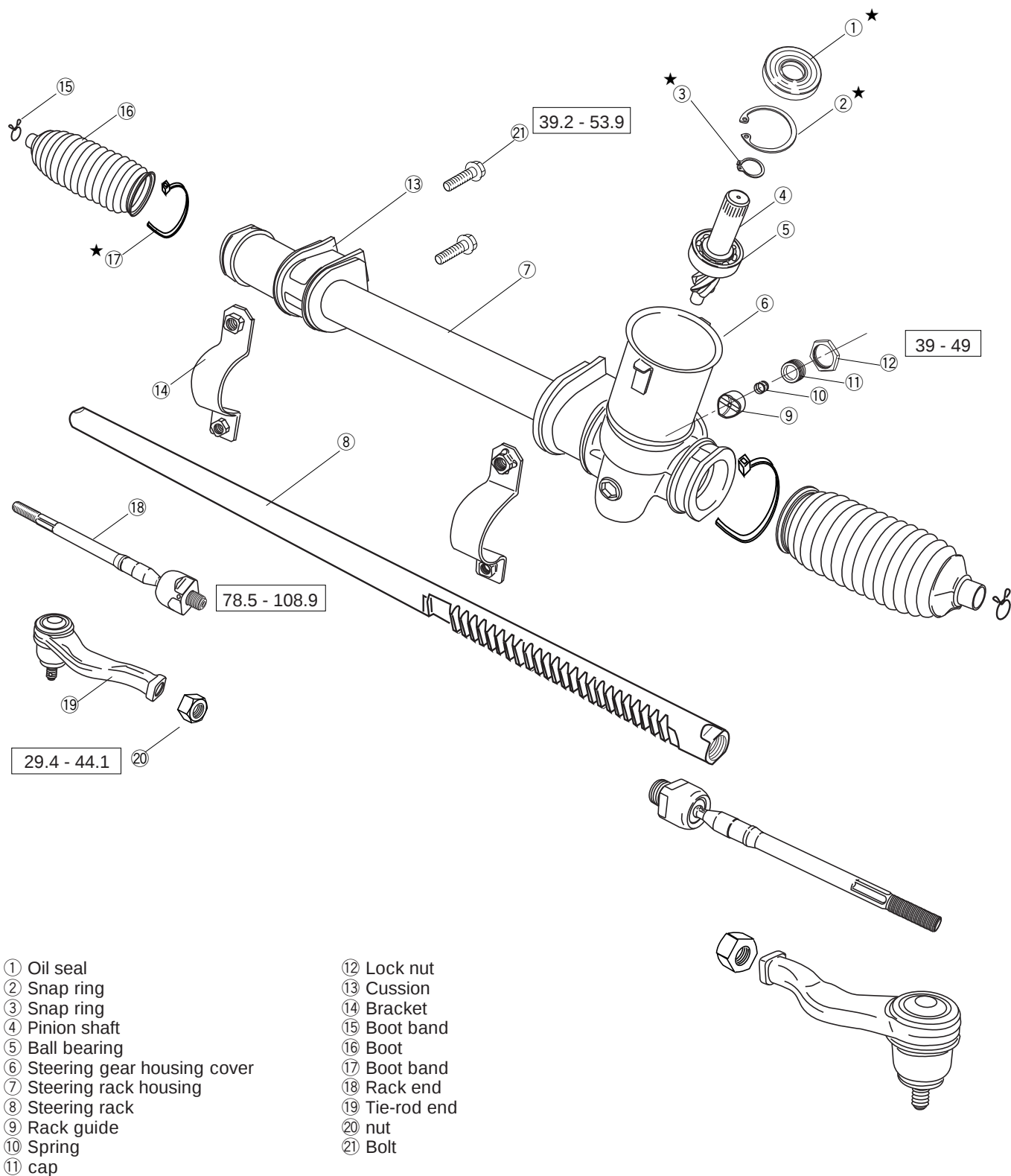
6. Connect the return hose to the pump.
7. Fill power steering fluid.
8. After fill power steering fluid, perform air bleeding.
See page SR-14.



MSR00114-00111

MANUAL STEERING GEAR COMPONENTS

 : Tightening torque
 ★ : Non-reusable parts
 Unit : N·m



REMOVAL

1. Jack up the vehicle.

NOTE:

- For assured safety, before you start the following operations, be sure to support the vehicle with safety stands placed underneath the vehicle.

2. Remove the front tires.
3. Separate the tie-rod end from the steering knuckle, using the following SST.

SST: 09611-87701-000

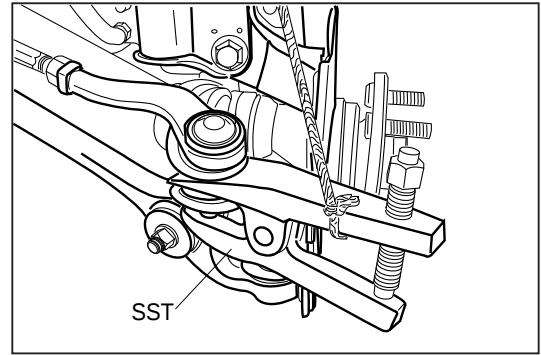
WARNING:

- The SST must be used in such a way that the SST is suspended from the upper side, using the cord attached to the SST.

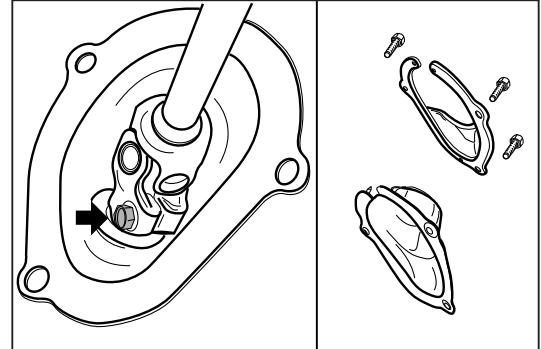
4. Remove the floor carpet so that the dust cover retainer section may be exposed.
5. Remove the dust cover retainer and dust cover by removing the attaching bolts.
6. Remove the bolt of the universal joint.
7. Remove the joint section of the intermediate shaft from the steering gear shaft.
8. Support the engine with an engine support bridge.

9. Loosen the front frame attaching bolts and lower the engine together with the frame.

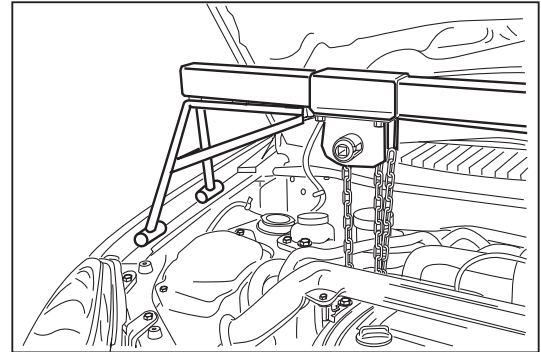
10. Remove the steering gear assembly attaching bolts.
11. Lower the steering gear assembly from the engine frame.



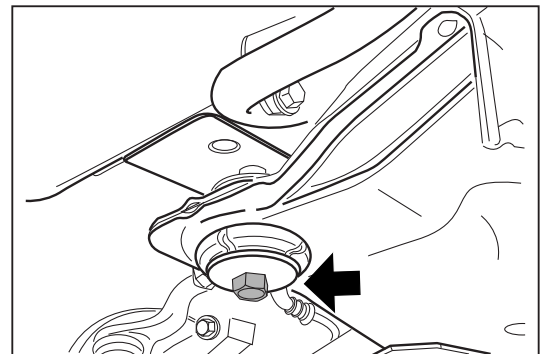
MSR00116-00113



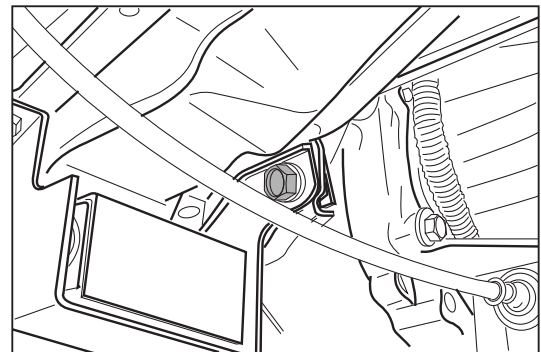
MSR00117-00114



MSR00118-00115



MSR00119-00116



MSR00120-00117

DISASSEMBLY

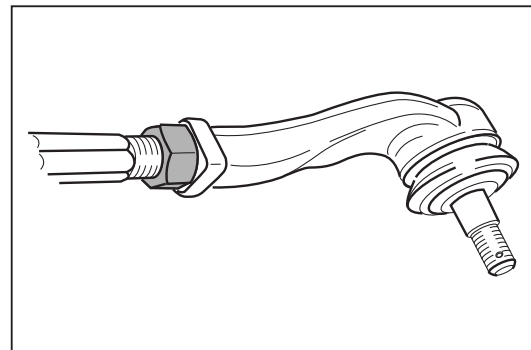
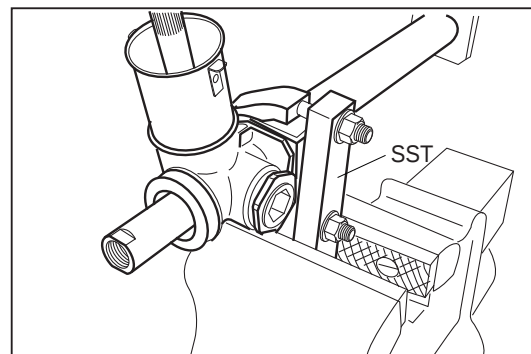
1. Support the steering gear assembly with a vice in combination with the following SST.

SST: 09727-70290-000* or
09612-00012-000

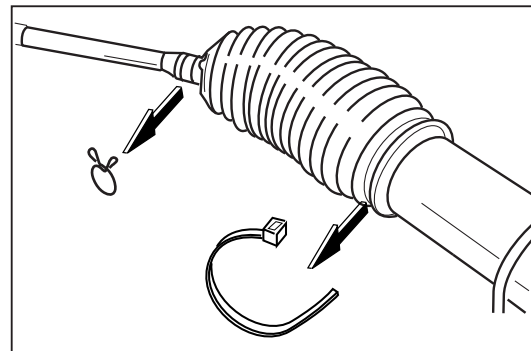
NOTE:

- A part of the SST* above is to be used after disassembling it.

2. Put a mating mark. Then, remove the tie-rod end.

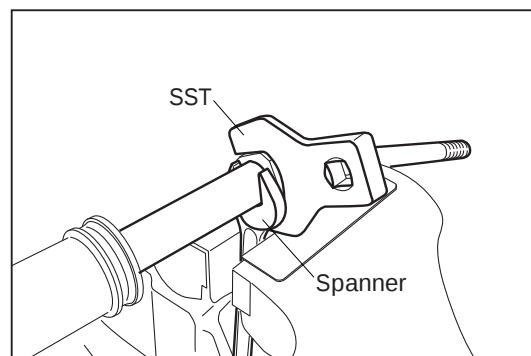


3. Remove the boot from the rack end by removing the boot band.

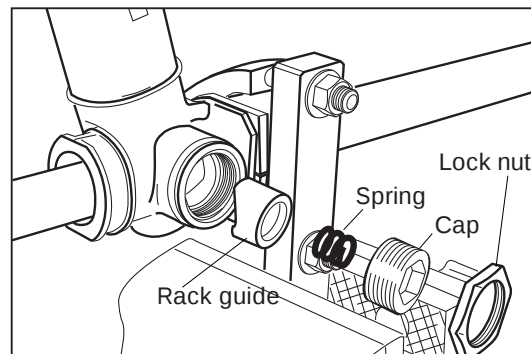


4. Clamp a spanner in a vice. Then, remove the rack end by turning it with the SST.

SST: 09628-10020-000



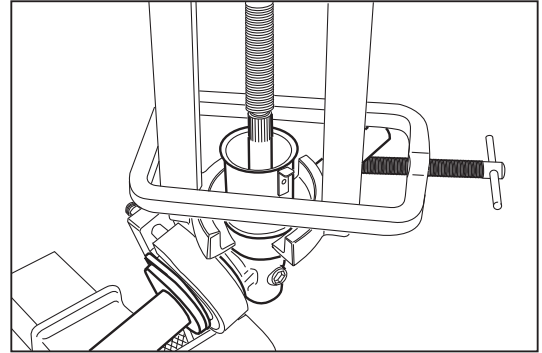
5. Clamp the SST in a vice. Then, remove the lock nut from the rack housing.
6. Remove the rack guide spring cap from the rack housing.
7. Remove the rack guide and spring from the rack housing.



SR-32

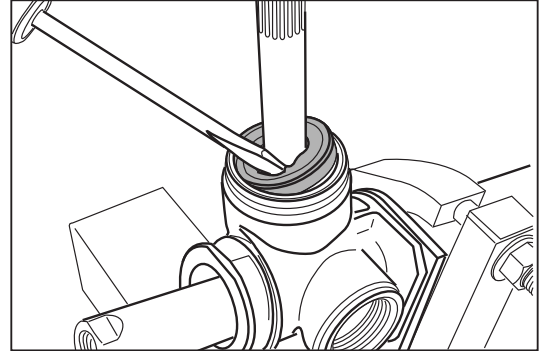
8. Remove the steering gear housing cover, using the following SST.

SST: 09602-87301



MSR00126-00123

9. Remove the oil seal, using a screwdriver.

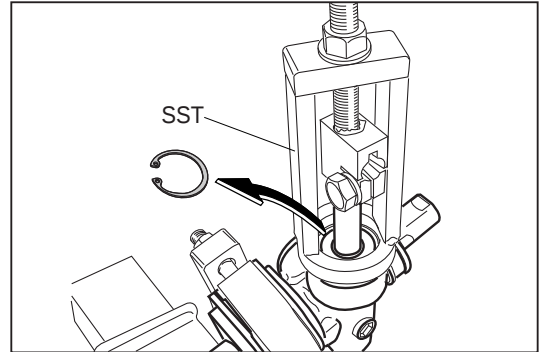


MSR00127-00124

10. Remove the snap ring.

11. Remove the steering gear shaft with bearing, using the following SST.

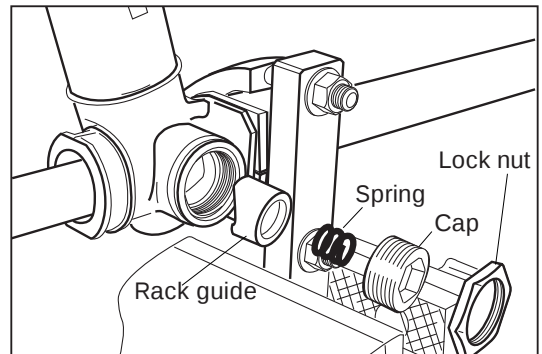
SST: 09631-87201



MSR00128-00125

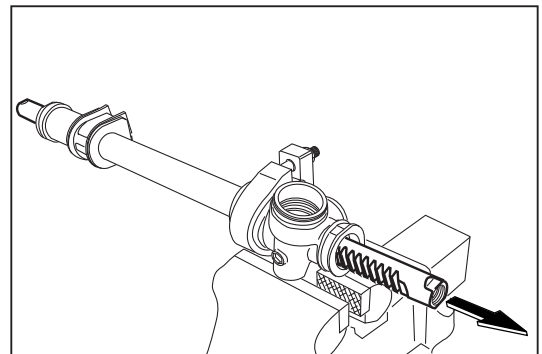
12. Remove the snap ring from the steering gear shaft.

13. Remove the bearing from the steering gear shaft, using a hydraulic press.



MSR00129-00126

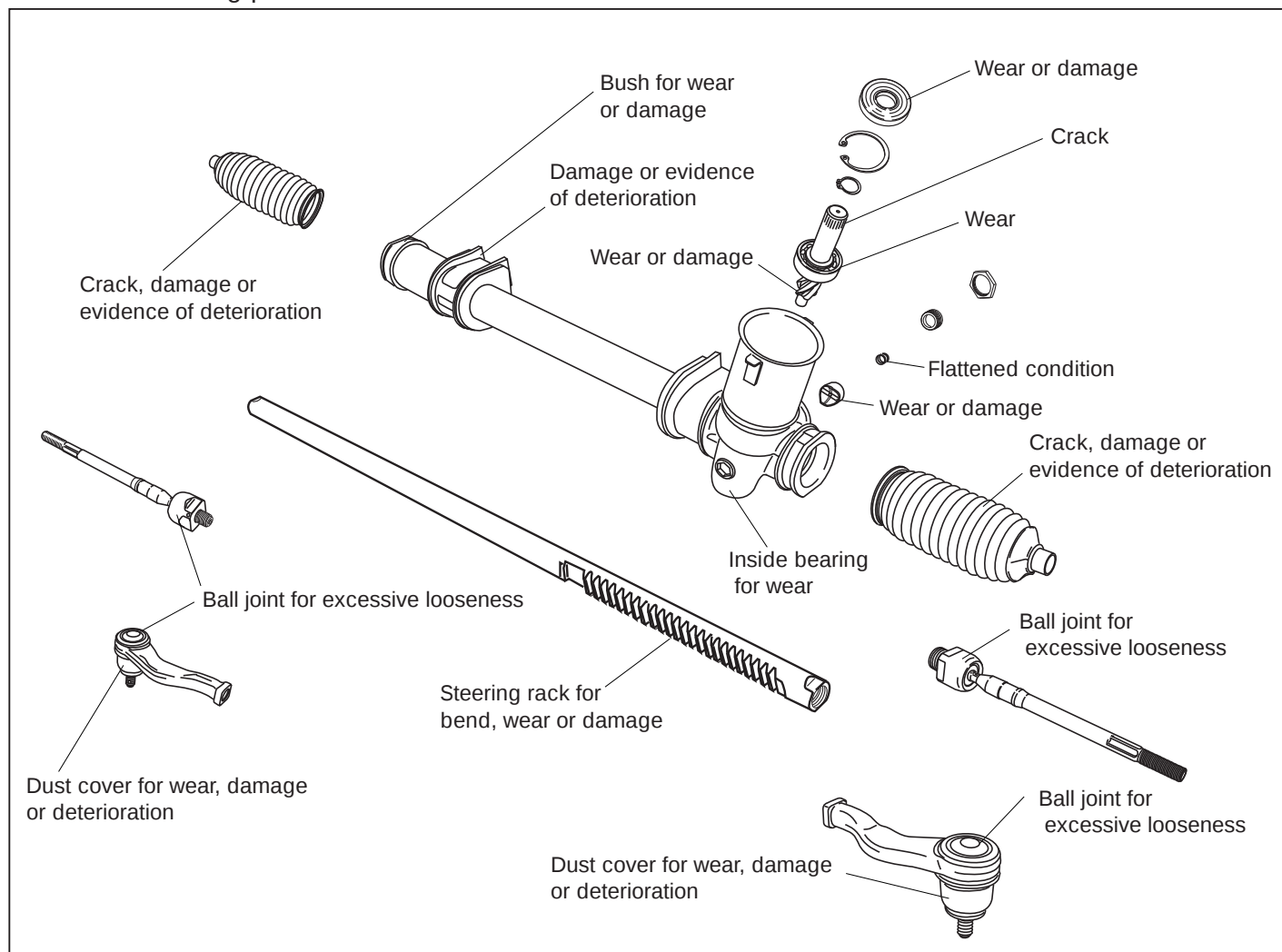
14. Pull out the steering rack from the rack housing.



MSR00130-00127

INSPECTION

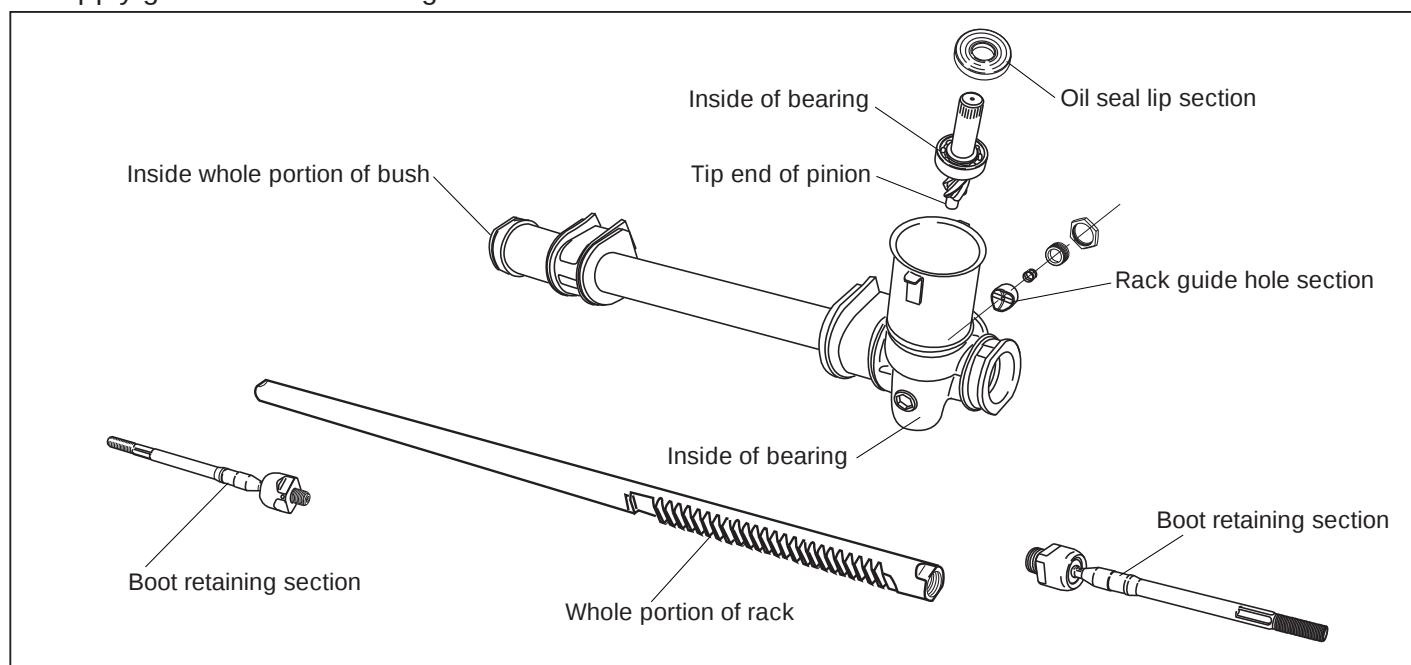
Check the following parts.



MSR00131-00128

ASSEMBLY

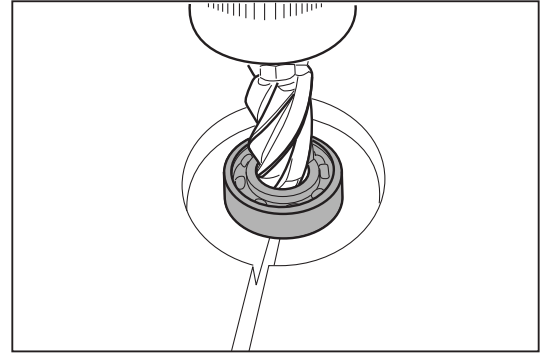
1. Apply grease to the following sections.



MSR00132-00129

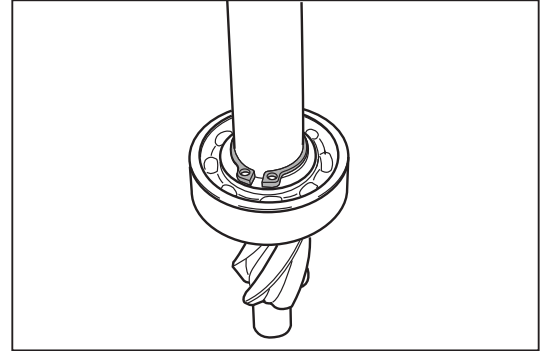
SR-34

2. Press-fit a new radial ball bearing into the steering gear shaft, using a hydraulic press.



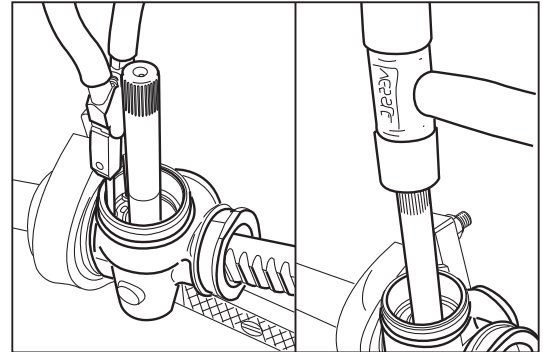
MSR00133-00130

3. Install the snap ring to the steering gear shaft.



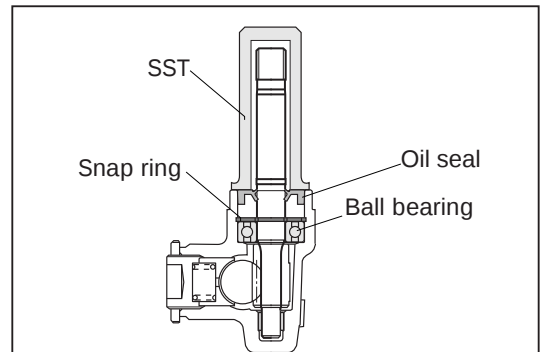
MSR00134-00131

4. Install the steering gear shaft to the rack housing.
5. Install the snap ring.



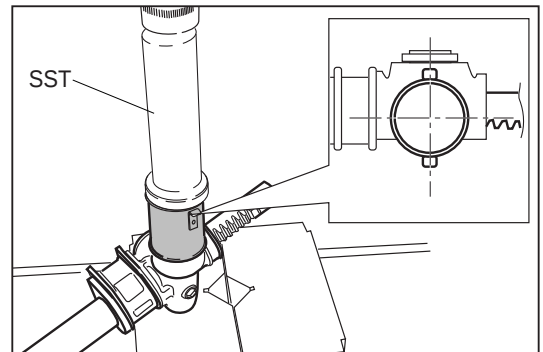
MSR00135-00132

6. Install a new oil seal to the rack housing, using the following SST in combination with a hydraulic press.
SST: 09309-87201



MSR00136-00133

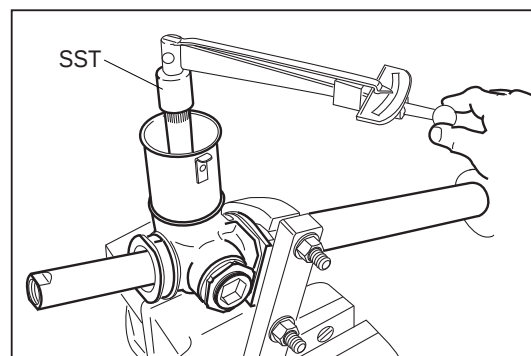
7. Install the steering gear housing cover, using the following SST in combination with a hydraulic press.
SST: 09309-87201



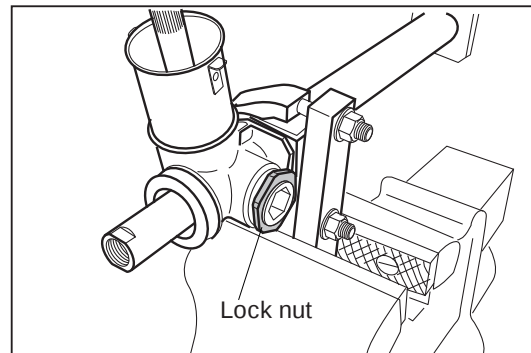
MSR00137-00134

8. Install the rack guide, spring and rack guide spring cap to the rack housing.
9. Install the following SST and a torque wrench to the steering gear shaft. Screw in the rack guide spring cap so that the torque (preload) required to turn the shaft may become 0.49 - 1.37 N·m.

SST: 09616-87701



10. Tighten the lock nut to the specified torque.
11. After tightening the lock nut, check the preload again. If the preload fails to conform to the specified value, perform the operations of Steps 9 and 10 again.



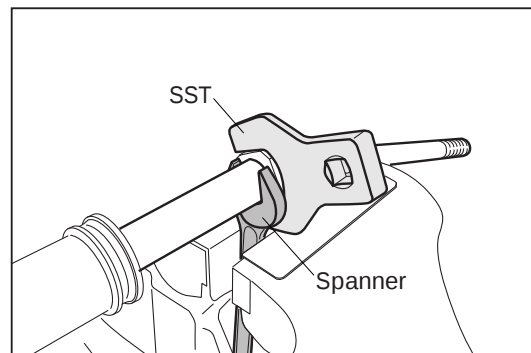
12. Install the rack end to the steering rack, using the following SST. Tighten the rack end to the specified torque.

SST: 09628-10020

Tightening Torque: 78.5 - 108.9 N·m

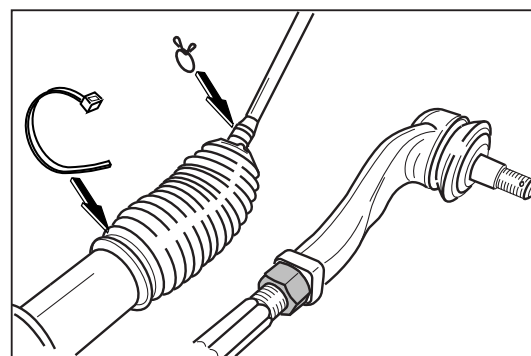
WARNING:

- Be sure to completely wipe off oil from the threaded portions of the steering rack and rack end.



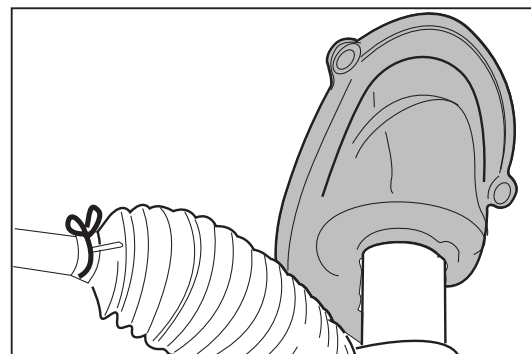
13. Install the boot to the rack end and secure the boot with a boot band.
14. Install the tie-rod end and lock nut to the rack end. Temporarily tighten the lock nut at a position where the making mark was put.

Tightening Torque: 4.9 - 14.7 N·m



INSTALLATION

1. Install the steering column hole shield to the steering gear housing cover.



2. Install the steering gear assembly to the frame with the specified brackets and bolts.

Tightening Torque: 39.2 - 53.9 N·m

NOTE:

- As explained in the section under REMOVAL, support the engine with an engine support. Then, loosen the attaching bolts of the front frame and lower the engine frame so that the tool may be inserted into the head of the attaching bolt.

3. While returning the engine frame to the specified position, using the engine support bridge, put the tip end of the steering column hole shield into the body through the column hole of the body. Then, secure the engine frame with the bolts.

Tightening Torque: 29.4 - 44.1 N·m

4. Connect the steering gear shaft with the universal joint of the intermediate shaft. Tighten the specified bolts.

Tightening Torque: 19.6 - 29.4 N·m

5. Install the retainer and dust cover.

Tightening Torque: 3.9 - 6.9 N·m

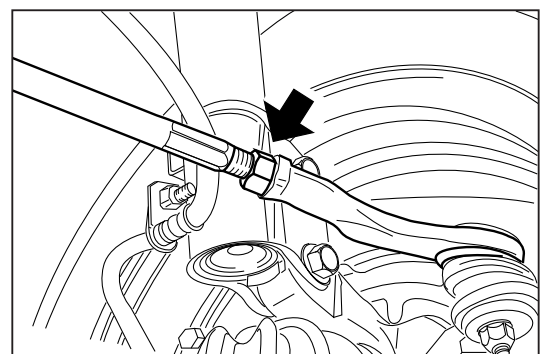
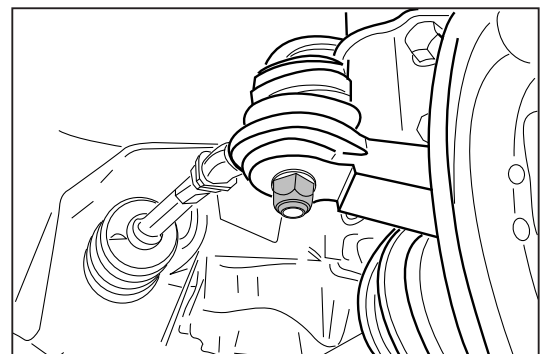
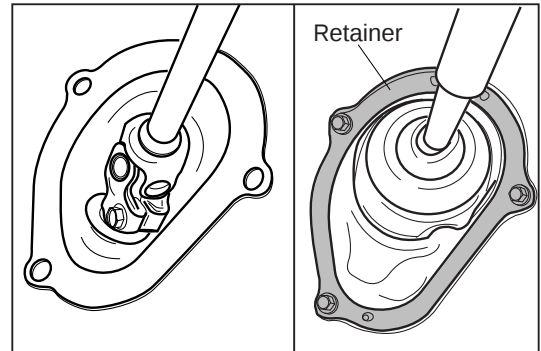
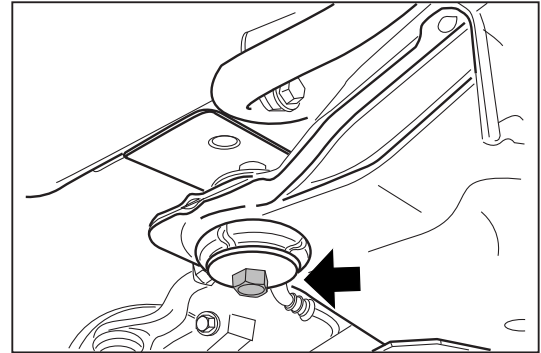
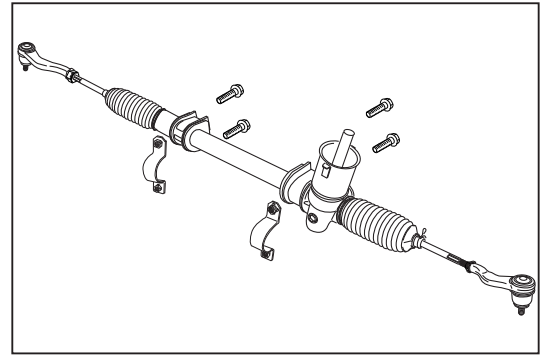
6. Tighten the tie-rod end and steering knuckle with a new nut.

Tightening Torque: 29.4 - 44.1 N·m

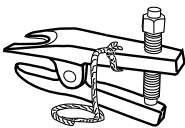
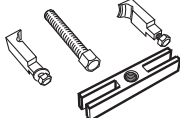
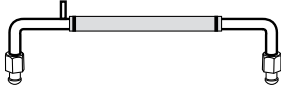
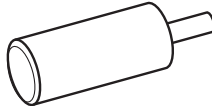
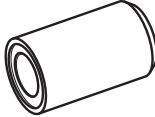
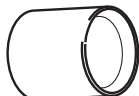
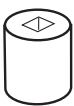
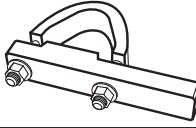
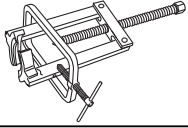
7. Adjust the front wheel alignment.

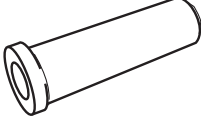
Tightening Torque: 29.4 - 44.1 N·m

Refer to the FS section.



SSTs

Shape	Part No. and name	Purpose	See page
	09611-87701-000 Puller, tie-rod end	Disconnection of tie-rod end	SR-15
	09306-87302-000 Counter gear front bearing puller	For securing rack housing	SR-16
	09631-12071-000 Steering rack oil seal test tool	For air-tightness test	SR-19
	09726-87201-000 Lower arm bushing replacer	Removal of oil seal (Type S) and needle roller bearing	SR-21
	09238-87701-000 Crank shaft bearing replacer	Removal of oil seal (Type S) and needle roller bearing	SR-20
	09631-20070-000 Seal ring guide	Installation of seal ring (Type S)	SR-21
	09631-20081-000 Seal ring tool	For compressing and bedding of seal ring	SR-21
	09616-87702-000 Steering pinion bearing adjusting socket	For inspection the control valve shaft is being turn	SR-22
	09617-22030-000 Lock nut wrench	Removal / installation of rack end	SR-22
	09612-00012-000 Rack and pinion steering rack housing stand	For securing rack housing	SR-31
	09628-10020-000 Lock nut wrench	Removal / installation of rack end	SR-31
	09602-87301-000 Counter gear bearing puller	Removal of steering gear housing cover	SR-32

Shape	Part No. and name	Purpose	See page
	09631-87201-000 Steering pinion bearing remover	Removal of steering gear shaft	SR-32
	09309-87201-000 Transmission bearing replacer	Installation of oil seal	SR-34
	09616-87701-000 Steering pinion bearing adjusting socket	For inspection the control valve shaft is being turn (Pre road)	SR-35

MSR00148-00145

TIGHTENING TORQUE

Tightening components	N·m	kgf·m
Steering wheel × Steering shaft	25.7 - 41.2	2.8 - 4.2
Steering wheel × Steering wheel pad assembly (Airbag type)	5.2 - 9.5	0.5 - 1.0
Steering column × Instrument panel reinforcement (Nut)	17.7 - 24.5	1.8 - 2.5
Steering column × Instrument panel reinforcement (Bolt)	17.7 - 24.5	1.8 - 2.5
Steering universal joint × Steering gear input shaft	19.6 - 29.4	2.0 - 3.0
Dust cover retainer × Body	3.9 - 6.9	0.4 - 0.7
Steering rack housing × Control valve housing	15.7 - 19.6	1.6 - 2.0
Rack housing × Lock nut (Power steering)	39.0 - 49.0	4.0 - 5.0
Turn pressure tube × Steering rack housing	20.2 - 29.0	2.1 - 3.0
Rack end × Tie rod end	59.0 - 78.0	6.0 - 8.0
Tie rod end × Lock nut /temporary torque (Power steering)	2.9 - 9.8	0.3 - 1.0
Tie rod end × Lock nut /temporary torque (Manual steering)	4.9 - 14.7	0.5 - 1.5
Tie rod end × Lock nut	29.4 - 44.1	3.0 - 4.5
Steering gear assembly × Front frame	39.2 - 53.9	4.0 - 5.5
Front frame × Body	29.4 - 44.1	3.0 - 4.5
Tie rod end × Steering knuckle	29.4 - 44.1	3.0 - 4.5
Pressure switch × Vane pump	25.0 - 30.0	2.6 - 3.1
Pressure port union × Vane pump	49.0 - 68.6	5.0 - 7.0
Vane pump bracket × Vane pump (Bolt 90 mm length)	49.0 - 58.8	5.0 - 6.0
Vane pump bracket × Vane pump (Bolt the others length)	12.7 - 18.6	1.3 - 1.9
Vane pump bracket × Vane pump (Nut)	20.0 - 30.0	2.0 - 3.1

MSR149-00000