

STEERING SYSTEM

Return to Main Table of Contents

GENERAL	2
STEERING COLUMN AND SHAFT	13
POWER STEERING GEAR BOX.....	18
POWER STEERING OIL PUMP.....	31
POWER STEERING HOSES	36

GENERAL SPECIFICATIONS

Power Steering	
Shaft and joint type	Collapsible, cross joints, tilt column with pop-up weight
Steering gear type	Rack and pinion
Rack stroke	136 ± 1 mm (lock to lock : 2.97 turns) 124 ± 1 mm (lock to lock : 2.71 turns) [1.8 A/T only]
Oil pump type	Vane type
Oil pump displacement	9.6 cm ³ /rev. (0.59 in ³ /rev.)
Oil pump pressure switch operating pressure	1.5-2.0 MPa (15-20 kg/cm ² , 213-284 psi)

SERVICE STANDARD

Power Steering	
Steering wheel free play	0-30 mm (0-1. 1 in.)
Steering angle	
Inner wheel	37°83' ± 1°30'
Outer wheel	32°95'
Difference between LH and RH	2° or less
Stationary steering effort	37 N (3.8 kg, 8.3 lbs) or less
Belt deflection [under 98N (10 kg, 22 lb) force]	6-9 mm
Oil pump relief pressure	5.5-6.2 MPa (56-63 kg/cm, 782-881 psi)
Total pinion preload	0.6-1.3 Nm (6-13 kg.cm, 5.2-11.3 lb.in.)
Tie rod swing resistance	2-5 Nm (20-50 kg.cm, 1.4-3.6 lb.ft)



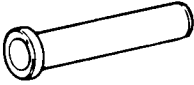
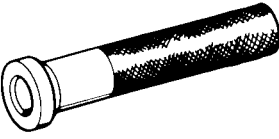
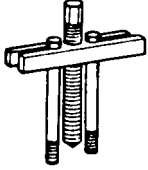
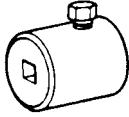
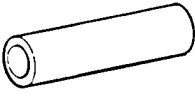
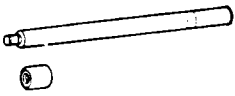
TIGHTENING TORQUE

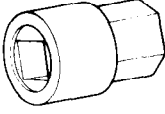
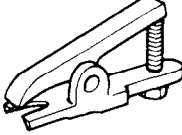
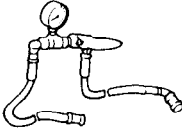
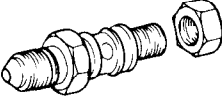
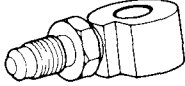


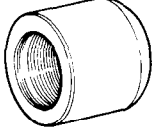
	Nm	kg.cm	lb.ft
Steering wheel and shaft	35-45	350-450	26-33
Steering column and shaft assembly mounting bracket	9-14	90-140	6.6-10
Steering shaft and joint	15-20	150-200	11-15
Dust cover mounting bolt	4-6	40-60	3-4
Gear box mounting bolt	60-80	600-800	44-59
Tie rod end lock nut	34-50	340-500	25-37
Tie rod end ball joint slotted nut	15-34	150-340	11-25
Yoke rod to rack	50-70	500-700	37-52
Tie rod to rack	80-100	800-1000	59-74
Valve body housing to rack housing assembly	17-26	170-260	13-19
Pressure and return tube to gear box	12-18	120-180	9-13
Pinion and valve assembly to self-locking nut	20-30	200-300	15-22
End plug	50-70	500-700	37-52
Feed tube	12-18	120-180	9-13
Oil pump mounting bracket bolt	45-55	450-550	33-41
Oil pump bracket to engine	25-33	250-330	18-24
Pressure hose to oil pump	14-21	140-210	10-15
Pressure hose to body	9-14	90-140	6.6-10
Oil reservoir mounting bolt	9-14	90-140	6.6-10
Oil pump suction connector to pump body	14-18	140-180	10-13

LUBRICANTS

	Recommended lubricant	Quantity
Horn contact ring of steering wheel	LONG TIME PD2 (OPTIMOL, GERMANY)	As required
Bearing of steering shaft	ALVANIA #2 OR #3 (KEUK DONG SHELL, KOREA)	As required
Ball joint of tie rod end	VALIANT R-2 (SHOSEK I, JAPAN)	As required
Steering gear housing	ONE-LUBER RP (KYODOYUSHI, JAPAN)	As required
Inner ball joint of gear box	LONG TIME PD2 (OPTIMOL, GERMANY)	As required
Contact area of gear box bellows & tie rod	SILICON GREASE (SPEC NO : MS511-41)	As required
Power steering fluid	ATF DEXRON II type	0.9 liter (0.95qts.)

SPECIAL TOOLS

Tool (Number and name)	Illustration	Use
09517-21400 Drift		Removal of pinion gear bearing.
09222-21100 Valve stem oil seal installer		Installation of the pinion gear bearing.
09432-21600 Bearing installer		Installation of the pinion gear bearing.
09434-14200 Counter shaft bearing installer		Installation of the valve housing oil seal.
09561-11002 Steering wheel puller		Removal of the steering wheel.
09565-11100 Pre-load socket		Measurement of the mainshaft pre-load.
09565-21000 Pinion bearing remover and installer		Removal & installation of pinion gear bearing.
09555-21000 Bar		Removal & installation of the oil seal.

Tool (Number and name)	Illustration	Use
09565-21100 Yoke plug torque wrench socket		Removal, installation and adjustment of steering gear yoke plug.
09568-34000 Ball joint		Separation of the tie rod end ball joint.
09572-21000 Oil pressure gauge		Measurement of the oil pressure. (use with 09572-22000, 09572-22100)
09572-22000 Oil pressure gauge adapter		Measurement of the oil pressure. (use with 09572-21000, 09572-22000)
09572-22100 Oil pressure gauge adapter		Measurement of the oil pressure. (use with 09572-21000, 09572-22000)
09573-21000 Oil seal installer gauge		Installation of the back-up washer and oil seal. (use with 09573-21100, 09573-21200, 09517-11000, 09555-21000)
09573-21100 Oil seal installer		Installation of the back-up washer and oil seal. (use with 09573-21000, 09573-21200, 09555-21000)
09573-21200 Oil seal guide		1) Removal of gear box oil seal and back washer (Use with 09555-21000) 2) Installation of gear box oil seal and back washer (Use with 09555-21000, 09573-21000)

TROUBLESHOOTING

Symptom	Probable cause	Remedy
Excessive play of steering wheel	Loose rack support cover Loose steering gear mounting bolts Loose or worn tie-rod end	Retighten Retighten Retighten or replace as necessary
Steering wheel operation is heavy (Insufficient power assist)	V-belt slippage Damaged V-belt Low fluid level Air in the fluid Twisted or damaged hoses Insufficient oil pump pressure Sticky flow control valve Excessive internal oil pump leakage Excessive oil leaks from rack and pinion in gear box Distorted or damaged gear box or valve body seal ring	Check Replace Replenish Bleed air Correct the routing or replace Repair or replace the oil pump Replace Replace damaged parts Replace damaged parts Replace
The steering wheel does not return properly	Excessive turning resistance of tie-rod end Excessively tightened rack support cover Rough turning or inner tie-rod and/or ball joint Loose mounting of gear box to gear box mounting bracket Worn steering shaft joint and/or body grommet Distorted rack Damaged pinion bearing Twisted or damaged hoses Damaged oil pressure control valve Damaged oil pump input shaft bearing	Replace Adjust Replace Retighten Correct or replace Replace Replace Reroute or replace Replace Replace
Noise	<p>Hissing Noise in Steering Gear</p> <p>There is some noise in all power steering systems. One of the most common is a hissing sound when the steering wheel is turned and the car is not moving. This noise will be most evident when turning the wheel while the brakes are applied.</p> <p>There is no relationship between this noise and steering performance. Do not replace the valve unless the "hissing" noise is extremely objectionable. A replacement valve will also have a slight noise, and is not always a cure for the condition.</p>	

Symptom	Probable cause	Remedy
Rattling or chucking noise in rack and pinion	Interference with hoses from vehicle body Loose gear box bracket Loose tie-rod end and/or ball joint Worn tie-rod end and/or ball joint	Reroute Retighten Retighten Replace
Noise in the oil pump	Low fluid level Air in the fluid Loose pump mounting bolts	Replenish Bleed air Retighten

NOTE

A slight "grinding noise" may be heard immediately after the engine is started in extremely cold weather condition (below -20°C): This is due to power steering fluid characteristics in extreme cold conditions and is not a malfunction.

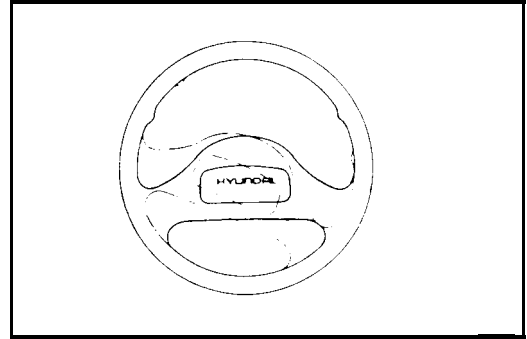
SERVICE ADJUSTMENT PROCEDURE

Checking Steering Wheel Free Play

1. Start the engine and with the steering wheel in the straight ahead position, apply a force of 5 N (1.1 lb) while turning the steering wheel.
2. Measure the play at the circumference of the steering wheel.

Steering wheel free play [Standard value]
0-30 mm (0-1.1 in.)

3. If the play exceeds the standard value, inspect the contact of the steering shaft and tie rod ends.

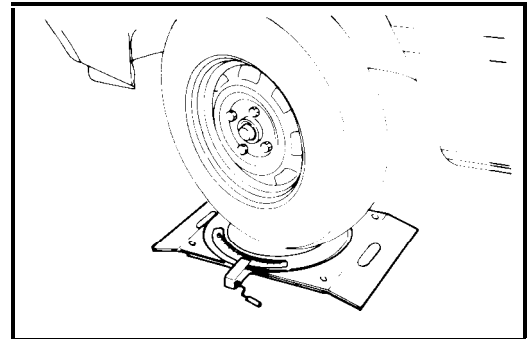


Checking Steering Angle

1. Place the front wheel on a turning radius gauge and measure the steering angle.

Wheel angle [Standard value]
Inner wheel $37^{\circ}83' \pm 1^{\circ}30'$
Outer wheel $32^{\circ}95'$

2. If the measured value is not within the standard value, adjust the linkage.



Checking Tie Rod End Ball Joint Starting Torque

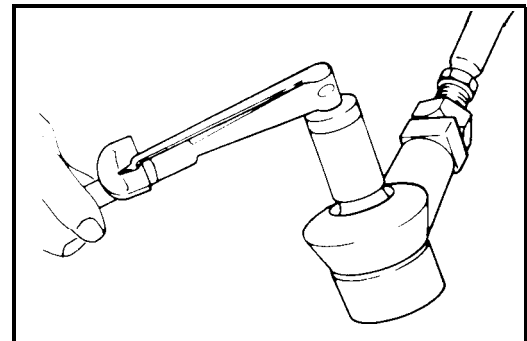
1. Mount two nuts on the ball joint, and then measure the starting torque.

Tie rod end ball joint starting torque
[Standard value]
0.5-2.5 Nm (5-25 kg.cm, 4-22 lb.in.)

2. If the starting torque exceeds the standard value, replace the tie rod end.

NOTE

Even if the starting torque is below limit of the standard value, the ball joint may be reused unless it has drag or excessive play.



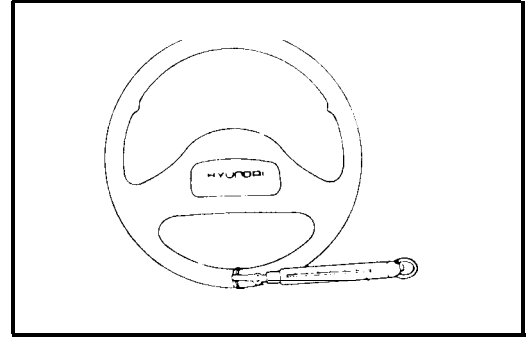
Checking Stationary Steering Effort

1. Place the vehicle on a level surface and place the steering wheel in the straight ahead position.
2. Increase the engine speed to 1,000 rpm.

NOTE:

After checking, reset the engine speed to the standard value (idling speed).

3. Measure the turning force with a spring scale by turning the steering wheel clockwise and count clockwise one and a half turns.



Stationary steering effort [Standard value]
 37 N (3.8 kg, 8.3 lbs) or less

4. Check that there is no excessive force change while turning the steering wheel.
5. If the stationary steering effort is excessive, check and adjust the following points:
 - 1) Damage or cracks of the dust covers of the lower arm ball joint and tie rod end.
 - 2) Pinion preload of the steering gear box and turning starting torque of the tie rod end ball joint.
 - 3) Turning starting torque of the lower arm ball joint.

Checking Steering Wheel Return

Check the steering wheel return and confirm the following points:

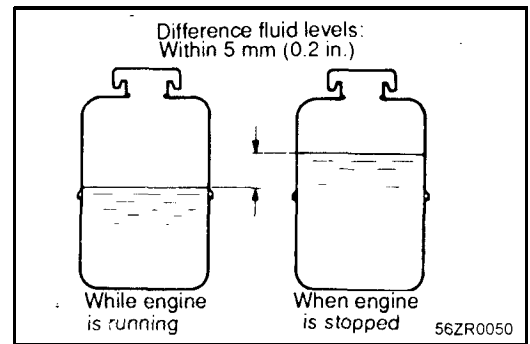
1. The force required to turn the steering wheel and the wheel return should be the same for both moderate and sharp turns.
2. When the steering wheel is turned 90° and held for a couple of seconds while the vehicle is being driven at 35 km/h (22 mph), the steering wheel should return at least 70% when it is released.

Checking Power Steering Fluid Level

1. Position the vehicle on a level surface.
2. Start the engine. With the vehicle kept stationary, turn the steering wheel several times continuously to raise the fluid temperature from 50-60°C (122-140°F).
3. With the engine at idle, turn the steering wheel fully clockwise and counterclockwise several times.
4. Make sure there is no foaming or cloudiness in the reservoir fluid.
5. Stop the engine to check for a difference in fluid level between a stationary and a running engine.

NOTE

- 1) If the fluid level varies 5 mm (0.2 in.) or more, bleed the system again.
- 2) If the fluid level suddenly rises after stopping the engine, insufficient bleeding is indicated.
- 3) Incomplete bleeding will produce a chattering sound in the pump and a noise in the flow control valve, decreasing durability of the pump.



Replacing Power Steering Fluid

1. Jack up the front of the car and support with rigid racks.
2. Disconnect the return hose from the oil reservoir and plug the oil reservoir.
3. Connect a hose to the disconnected return hose, and drain the oil into a container.
4. Disconnect the high-tension cable at the ignition coil side. While operating the starter motor intermittently, turn the steering wheel all the way to the left and then to the right several times to drain the fluid.
5. Connect the return hoses, then fill the oil reservoir with the specified fluid.
6. Bleed the system.
Automatic transmission fluid DEXRON II type:
Total quantity : Approx. 0.9 liter (0.95 qts.)

Air Bleeding

1. Disconnect the ignition coil high tension cable, and then, while operating the starter motor intermittently (for 15 to 20 seconds), turn the steering wheel all the way to the left and then to the right five or six times,

NOTE

- 1) During air bleeding, replenish the fluid supply so that the level does not fall below the lower position of the filter.
- 2) If air bleeding is done while the vehicle is idling, the air will be broken up and absorbed into the fluid. Be sure to do the bleeding only while cranking.

2. Connect the high tension cable, and then start the engine.
3. Turn the steering wheel to the left and then to the right. until there are no air bubbles in the oil reservoir.

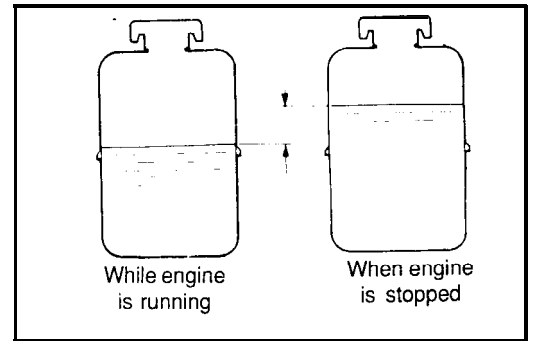
NOTE

Do not hold the steering wheel turned all the way to either stop for longer than ten seconds.

4. Confirm that the fluid is not milky, and that the level is up to the specified position.
5. Check that there is little change in the fluid level when the steering wheel is turned left and right.

NOTE

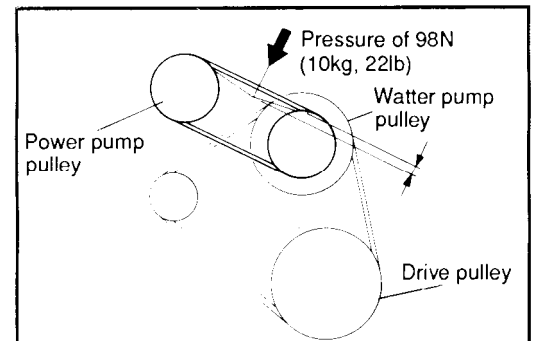
- 1) If the level of the fluid changes considerably, air bleeding should be done again.
- 2) If the fluid level rises suddenly when the engine is stopped, it indicates that there is still air in the system.
- 3) If there is air in the system, a jingling noise may be heard from the pump and the control valve. Air in the system will shorten the life of the pump and other parts.



Checking Power Steering Belt Tension

1. Depress the V-belt by applying a pressure of 98 N (10 kg, 22 lb) at the specified point, and measure the deflection to confirm that it is within the standard value.

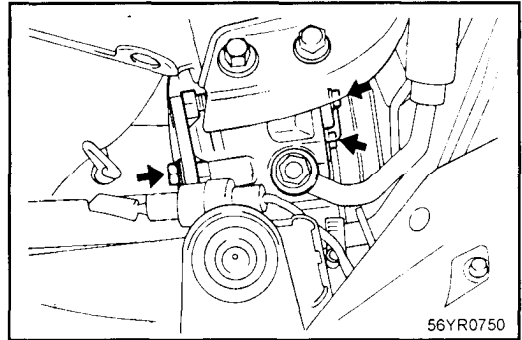
V-belt deflection [Standard value]
6-9 mm (0.24-0.35 in.)



- To adjust the belt tension, loosen the oil pump mounting bolts, move the oil pump, and then retighten the bolts.

CAUTION

Be sure to run the engine momentarily prior to recheck of the belt deflection



Oil Pump Pressure Test

- Disconnect the pressure hose from the oil pump. Connect the special tool between the oil pump and pressure hose as illustrated.
- Bleed the air, and then start the engine and turn the steering wheel several times so that the fluid temperature rises to approximately 50°C (122°F).
- Increase the engine speed to 1,000 rpm.
- Close the shut-off valve of the special tool and measure the fluid pressure to confirm that it is within the standard value range.

Oil pump pressure [Standard value]	
Relief pressure	5.5-6.2 MPa (56-63 kg/cm ² , 782-881 psi)

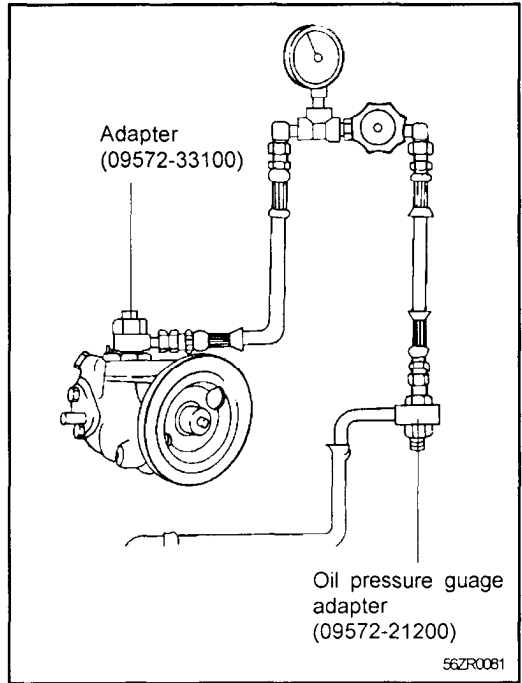
CAUTION

Do not keep the shut-off valve on the pressure gauge closed for no more than ten seconds.

- Remove the special tools, and tighten the pressure hose to the specified torque.

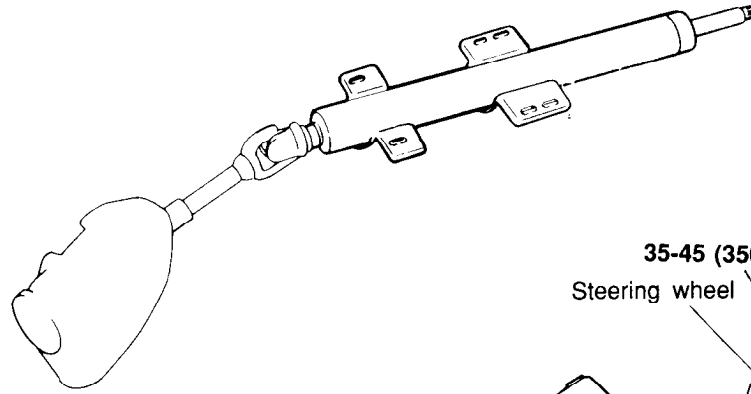
Tightening torque	14-21 Nm (140-210kg.cm, 10-15lb.ft)
-------------------------	-------------------------------------

- Bleed the system.



STEERING COLUMN AND SHAFT

[NORMAL]



35-45 (350-450, 28-33)
Steering wheel Horn cover

Multifunction switch

Steering column and shaft

Tilt lever

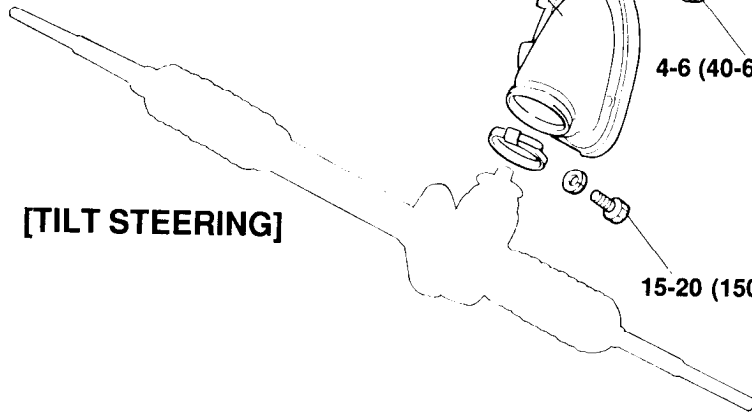
Dust cover

Column shroud

9-14 (90-140, 7-10)

4-6 (40-60, 3-4)

[TILT STEERING]



15-20 (150-200, 11-15)

TORQUE : Nm (kg.cm, lb.ft)

REMOVAL

1. Remove the horn cover assembly.
2. Remove the upper and lower horn plate, and disconnect the horn button connector.

CAUTION

Before doing these procedures, see the SRS section (56A GROUP) for further information (SRS equipped vehicle only).

3. Remove the steering wheel lock nut.
4. After making alignment marks on the steering shaft and wheel, remove the steering wheel, using the special tool.

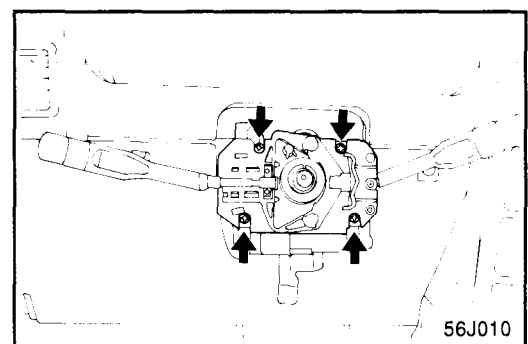
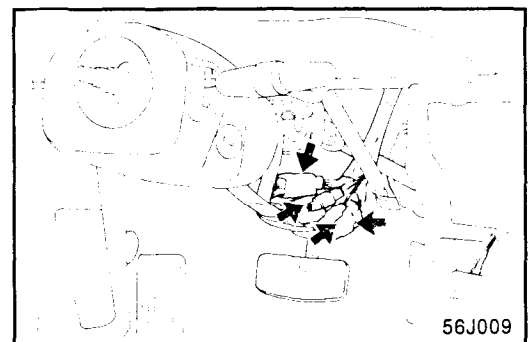
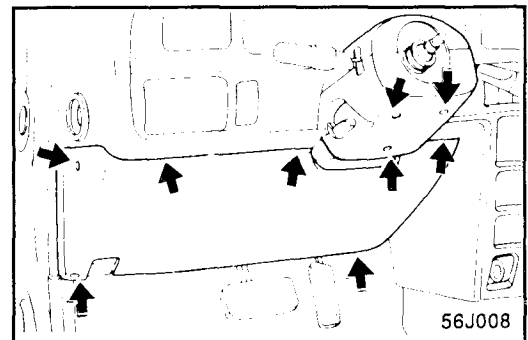
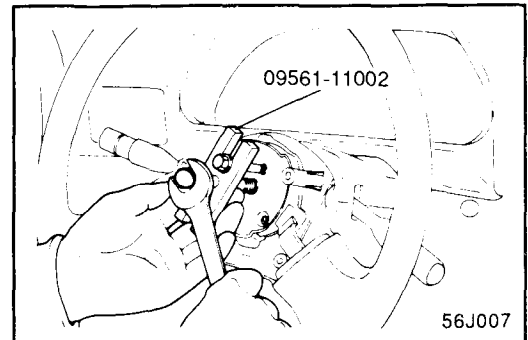
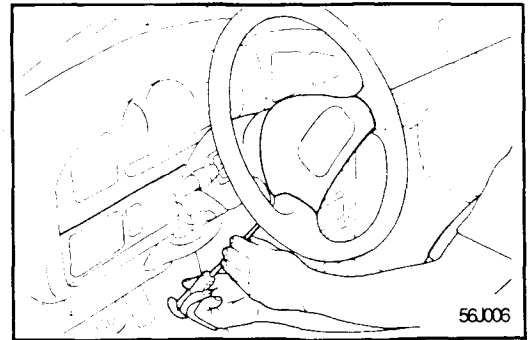
NOTE

Do not hammer on the steering wheel to remove it: doing so may damage the steering column.

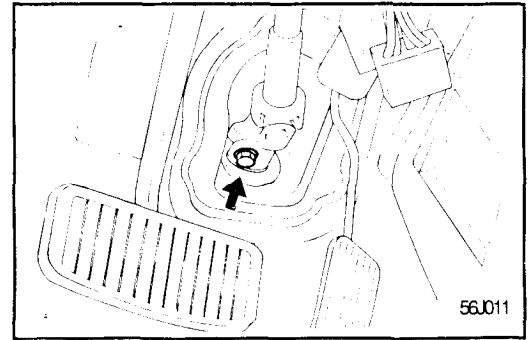
5. Remove the lower crash pad, and disconnect the rheostat connector.
6. Remove the column shroud.

7. Disconnect the connectors.

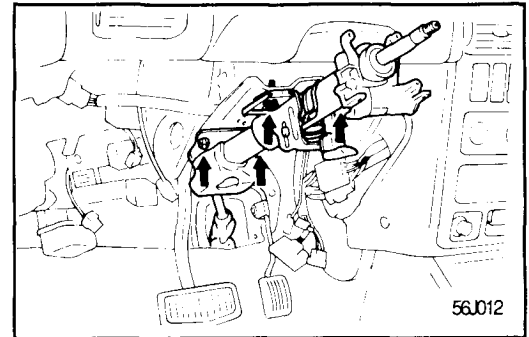
8. Remove the multifunction switch.



- Remove the bolt coupling the universal joint and pinion.



- After removing the bolts used to secure the column bracket to the frame, remove the steering column and shaft assembly.

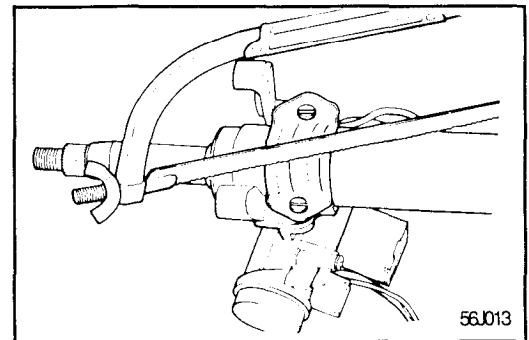


DISASSEMBLY

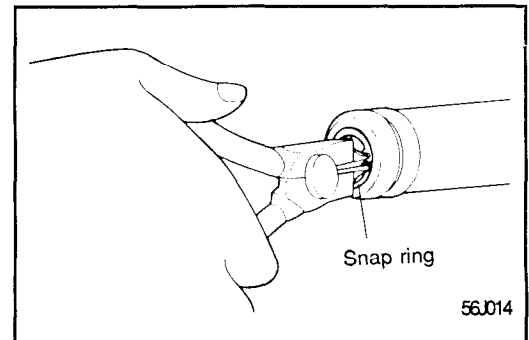
- If necessary to remove the steering lock, cut a slot in the mounting screw heads and bracket with a hack saw. Loosen the screws with a flat-blade screwdriver to remove the steering wheel lock.

CAUTION

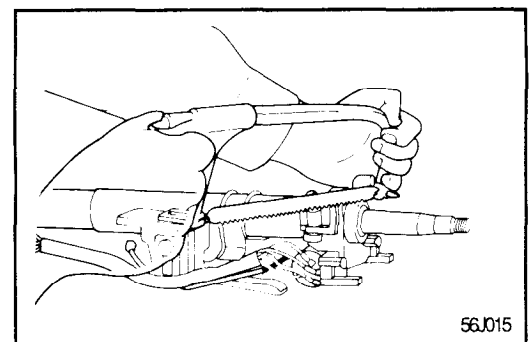
When the steering wheel lock is reinstalled, the steering wheel lock assembly and screws should be replaced with new parts.



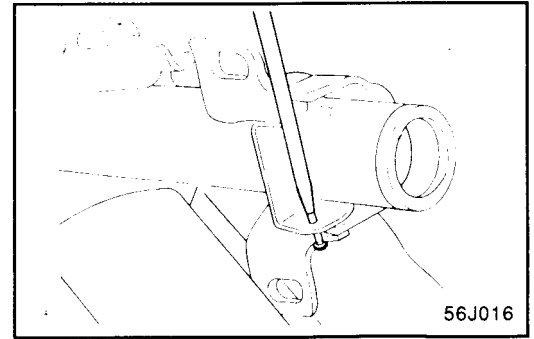
- Remove the snap ring and remove the steering shaft downward.



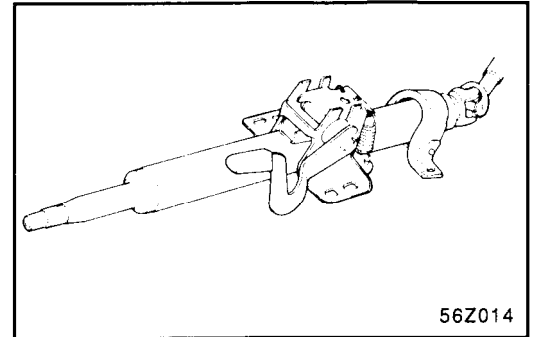
- If it is necessary to remove the steering column brackets, use a hack-saw to cut a groove on the head of the special bolt, and then use screwdriver to remove the column brackets.



- Remove the snap ring then tap out the clevis pin from the inner side. (Tilt steering only)



- If necessary, remove the tilt steering lever and mounting bracket. (Tilt steering only)



INSPECTION

- Check the steering column and shaft for damage and distortion.
- Check the joints for play, damage or rough movement.
- Check the tilt bracket and spring for cracks and damage.
- Check that the steering lock mechanism operates properly.
- Check the dust cover for cracks or damage.
If necessary, replace.

ASSEMBLY

- When installing the steering column brackets, tighten the special bolt until the head twists off.

CAUTION

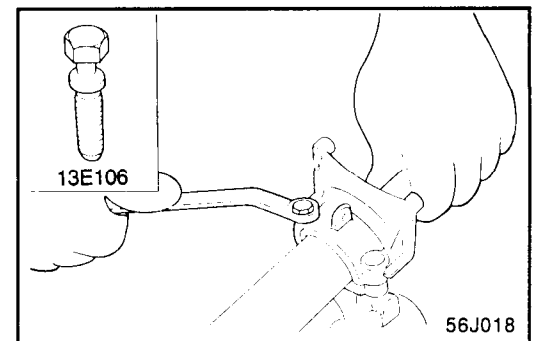
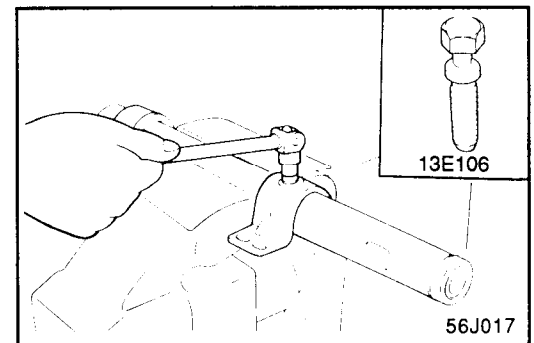
A new special screw must be used each time.

INSTALLATION

- When installing the steering lock and steering lock bracket to the column tube, temporarily install the steering lock in alignment with the column boss.
- After checking the lock works properly, tighten the special bolts until the head twists off.

CAUTION

The steering lock bracket and bolts must be replaced with new ones when the steering lock is installed.



3. Mount the steering column shaft to the mounting frame.

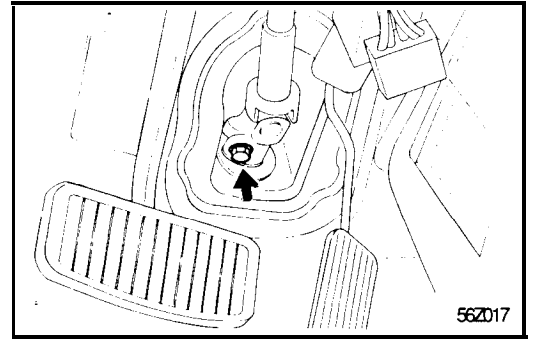
NOTE

When installing, be careful not to distort the steering column.

4. Install the multifunction switch and connect the connectors.
5. Install the column shroud.
6. Connect the rheostat connector and install the lower crash pad.
7. Install the steering wheel.

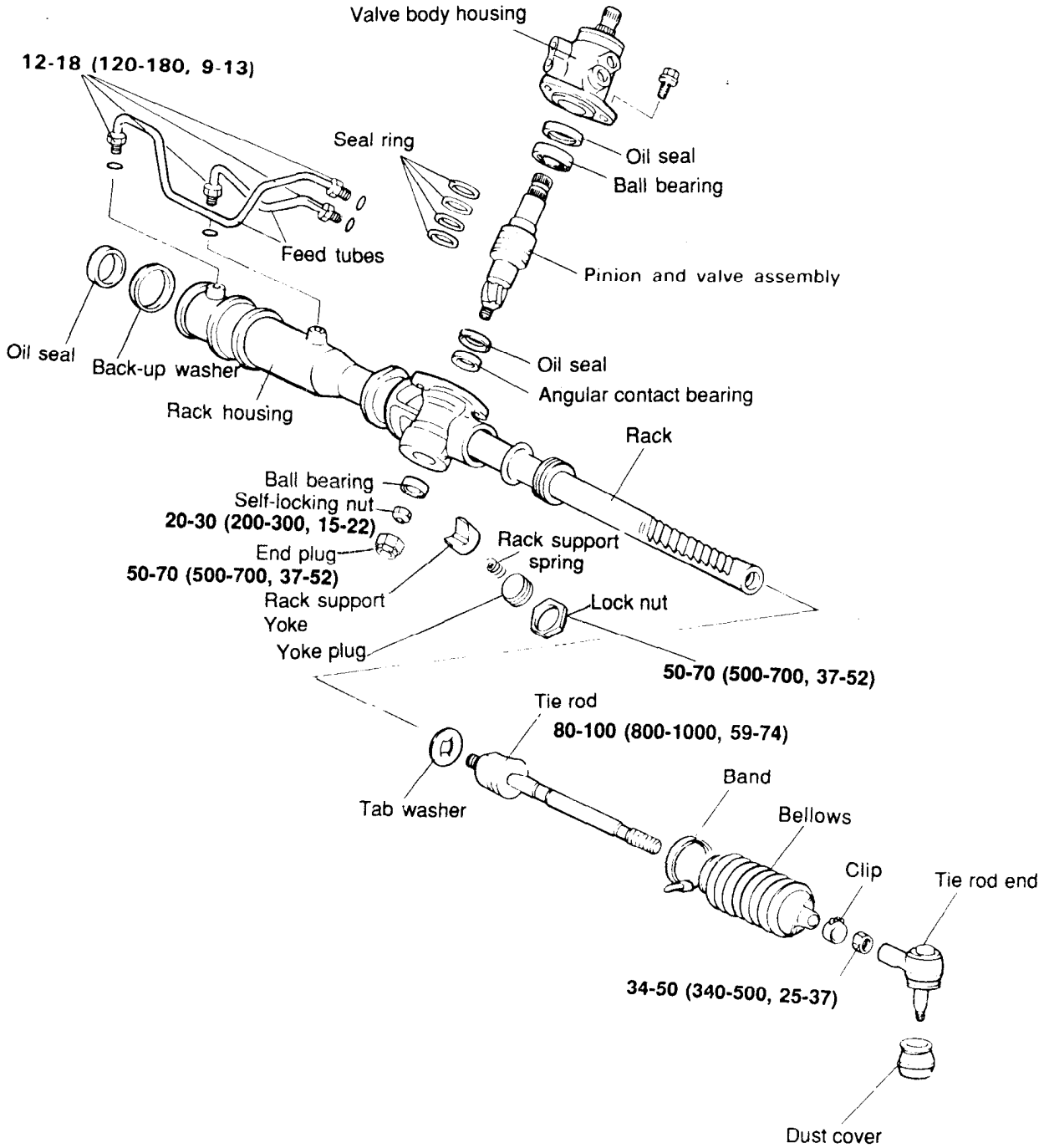
NOTE

When the steering is installed, make sure that the alignment marks are in alignment and that the steering wheel is in the straight ahead position.



POWER STEERING GEAR BOX

COMPONENTS



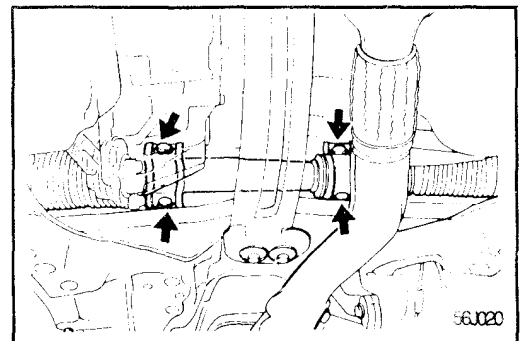
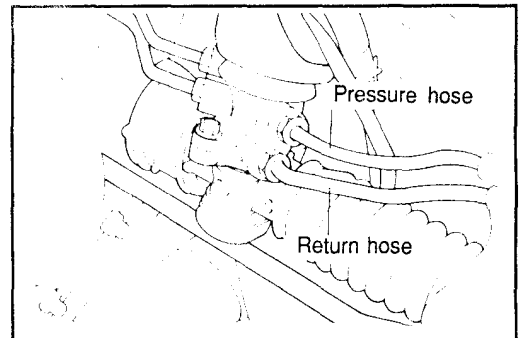
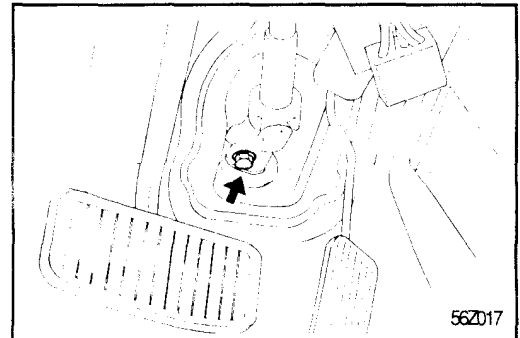
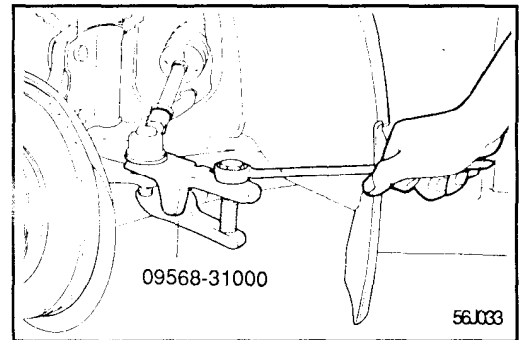
TORQUE : Nm (kg.cm, lb.ft)

REMOVAL

1. Using special tool, disconnect the tie rod end from the knuckle.
2. Disconnect the shaft assembly from the gear box inside the driver's seat compartment.
3. Drain the fluid.
4. Disconnect the pressure and return hoses from the gear box.
5. Remove the band from the steering joint cover.
6. Remove the gear box mounting bolts.
7. Pull the gear box out toward the right side of the vehicle.

NOTE

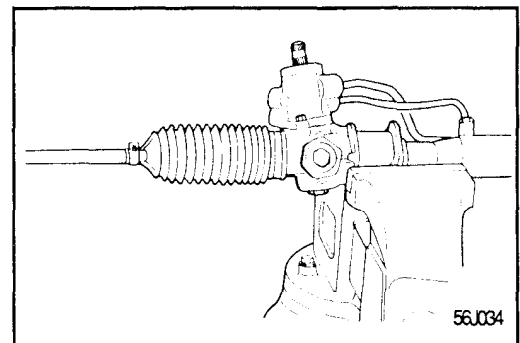
When the gear box is to be removed, pull it out carefully and slowly so as not to cause damage to the boots.

**INSPECTION AND ADJUSTMENT PRIOR TO DISASSEMBLY**

Mount the gear box in a soft jawed vise.

NOTE

Do not tighten the vise on the gear housing. Use the mounting section of the rack to secure it in the vise.



Total Pinion Preload

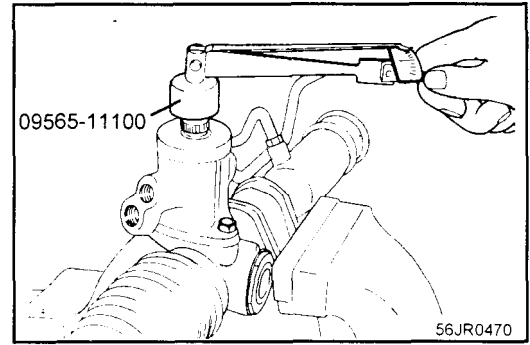
1. Rotate the pinion gear for approximately 4 to 6 seconds for one rotation to confirm the total pinion preload.

Total pinion preload [Standard value]
 0.6-1.3 Nm (6-13 kg.cm, 5.2-11.3 lb.in.)

NOTE

Measure the pinion preload through the entire stroke of the rack.

2. If the measured value is out of specifications, first adjust the yoke plug, then re-check the total pinion preload.
3. If the yoke plug adjustment does not obtain the total pinion preload, check or replace the rack support cover components.



Tie Rod Swing Resistance

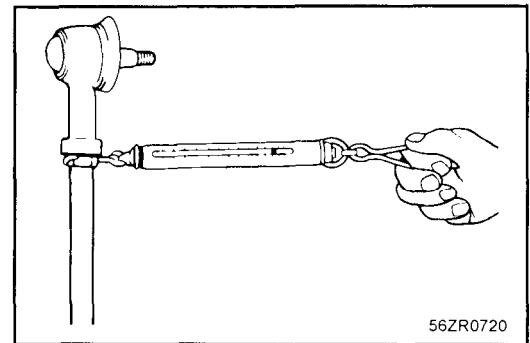
1. Give 10 hard swings to the tie rod.
2. Measure the tie rod swing resistance with a spring scale

Tie rod swing resistance [Standard value]
 8-22 N (1.9-4.6 lb)
 [2-5 Nm (20-50 kg.cm, 1.4-3.6 lb.in.)]

3. If the measured value exceeds the standard value, replace the tie rod assembly.

NOTE

Even if the measured value is below the standard value, a tie rod that swings smoothly without excessive play may be used. If the measured value is below 4.3 N (0.9 lb)[100 Ncm (8.7 lb.in.)], replace the tie rod.

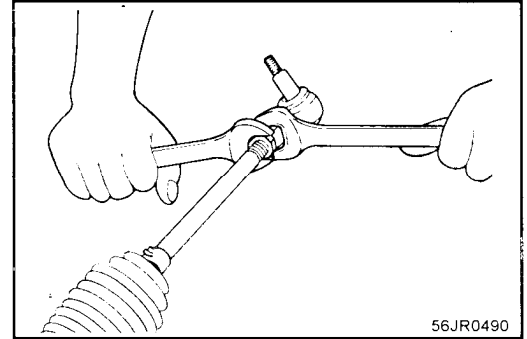


Bellows Inspection

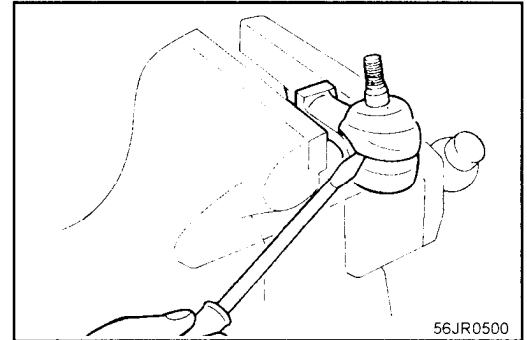
1. Inspect the bellows for damage or deterioration.
2. Make sure the bellows are secured in the correct position
3. If the bellows are defective, replace them.

DISASSEMBLY

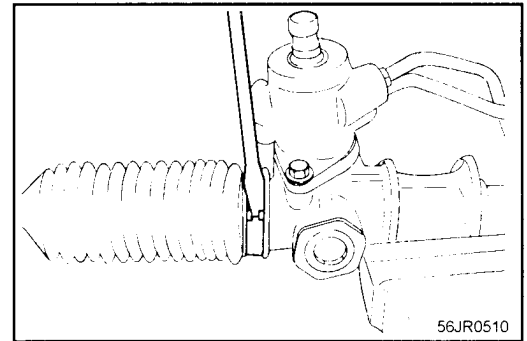
1. Remove the tie rod end from the tie rod.



2. Remove the dust cover from the ball joint.



3. Remove the bellows band.

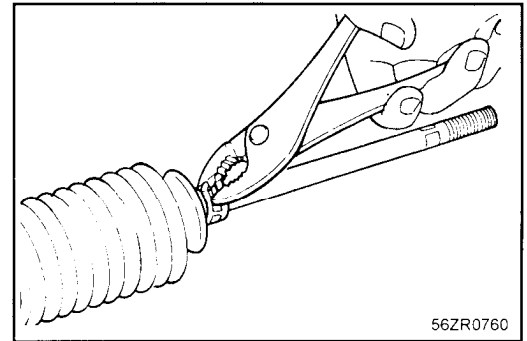


4. Remove the bellows clip.
5. Pull the bellows out toward the tie rod.

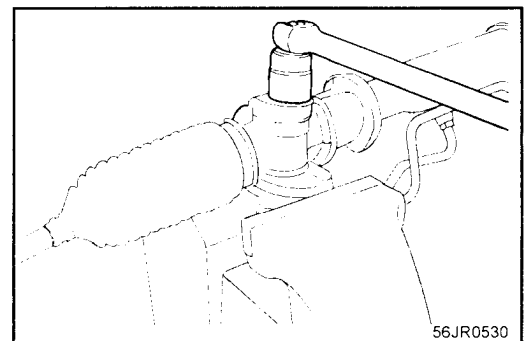
NOTE

Check for rust on the rack when the bellows are replaced.

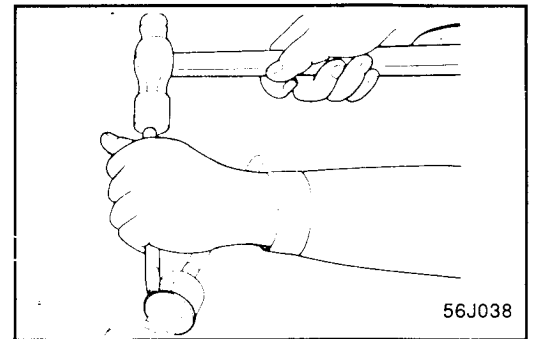
6. Remove the feed tube from the gear housing.
7. While moving the rack slowly, drain the fluid from the gear housing.



8. Remove the end plug.
9. With the pinion turned clockwise until the rack is locked, remove the self-locking nut.



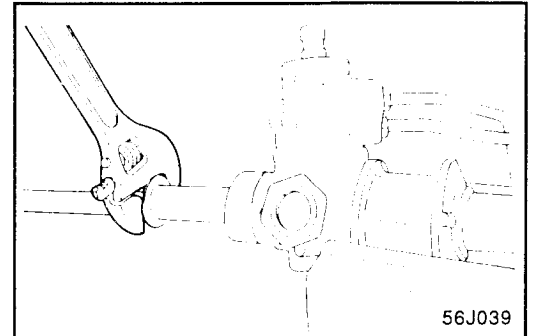
10. Unstake the tab washer between the tie rod and rack with a chisel.



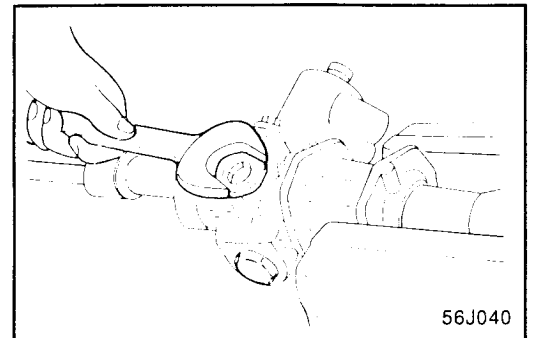
11. Remove the tie rod from the rack.

NOTE

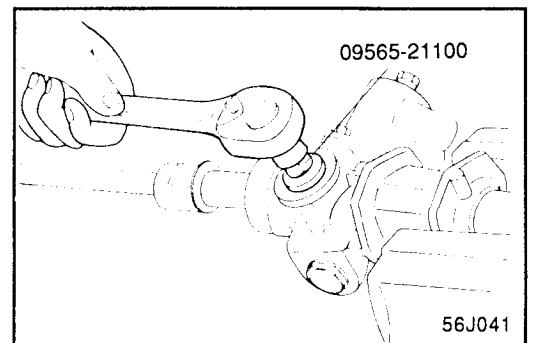
Remove the tie rod from the rack, taking care not to twist the rack.



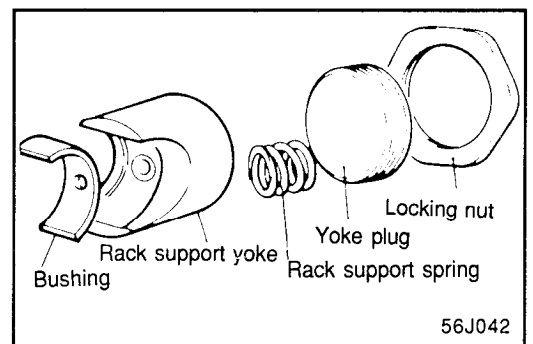
12. Remove the yoke plug locking nut



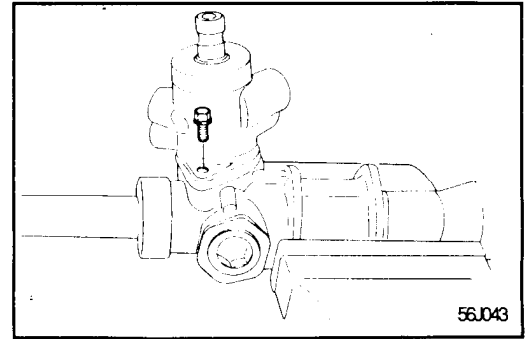
13. Using special tool, remove the yoke plug.



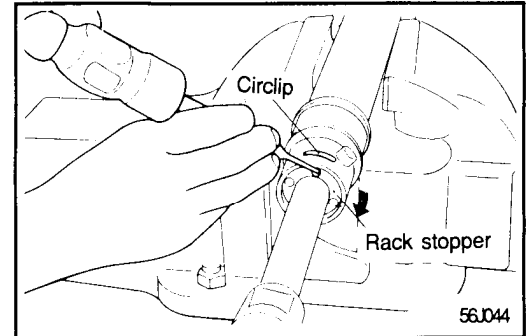
14. Remove the rack support spring, rack support yoke from the gear box.



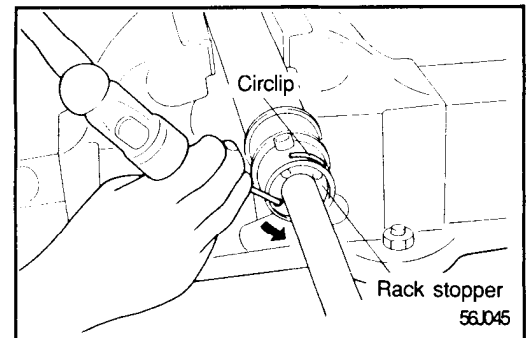
15. Remove the valve body housing by loosening the two bolts.



16. Turn the rack stopper clockwise until the end of the circlip comes out of the slot in the gear housing.



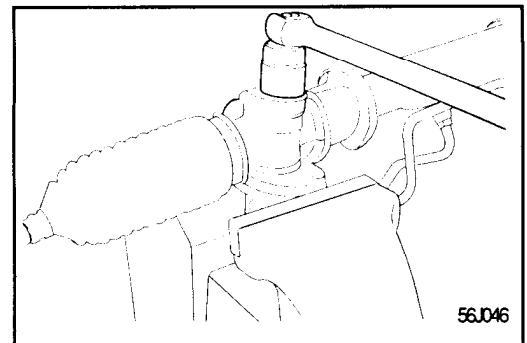
17. When the end of the circlip comes out from the notched hole of the housing rack cylinder, turn the rack stopper counterclock and remove the circlip.



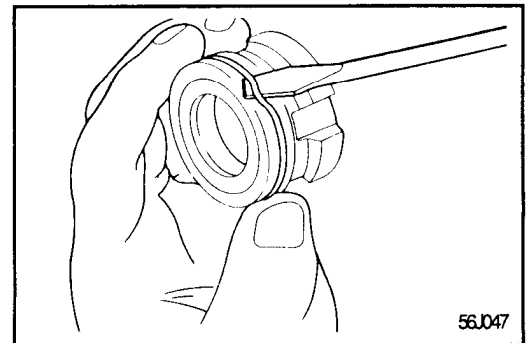
18. Remove the rack stopper, rack bushing and rack from the gear housing by moving it toward the pinion side.

NOTE

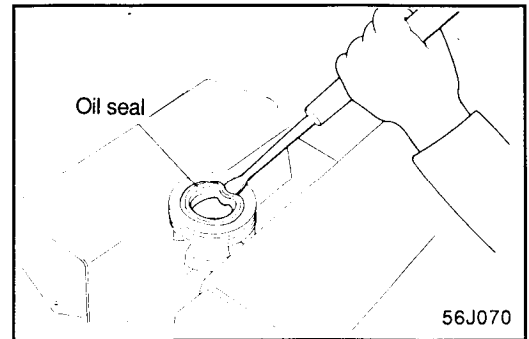
When the rack has been removed, be sure to replace the housing side oil seal.



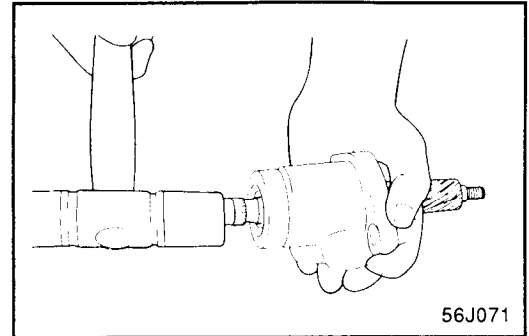
19. Remove the O-ring from the rack bushing.



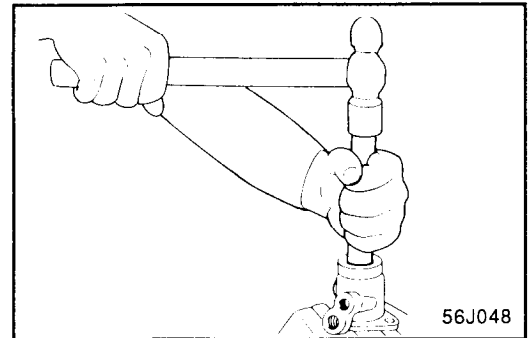
20. Remove the oil seal from the rack bushing.



21. Remove the valve body from valve body housing with a soft hammer.



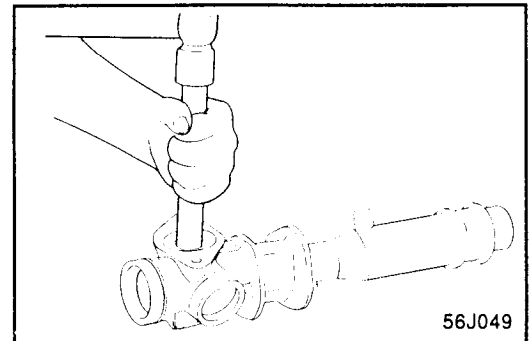
22. Use the special tool to remove the oil seal and ball bearing from the valve body housing.



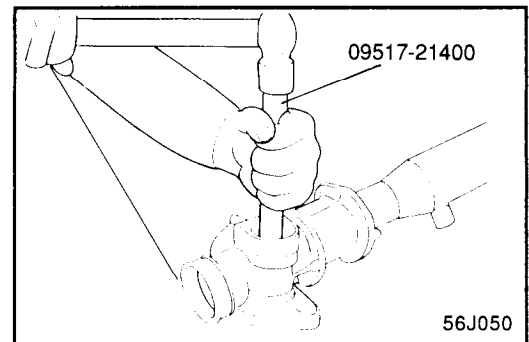
23. Use the special tool to remove the ball bearing from the gear housing.

NOTE

Be careful not to damage the pinion valve cylinder inside of the gear housing.



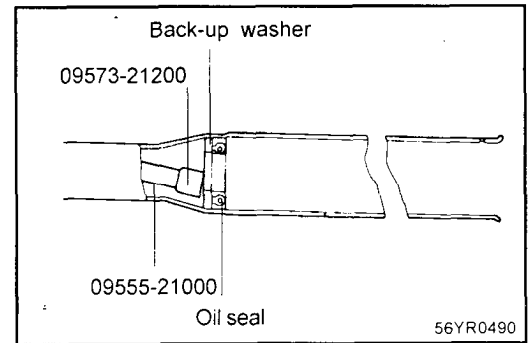
24. Use the special tool (09517-21400) to remove the angular contact bearing from the gear housing.



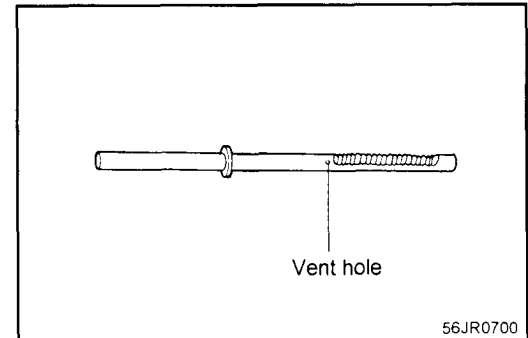
25. Use the special tools to remove the back washer and oil seal from the gear housing.

NOTE

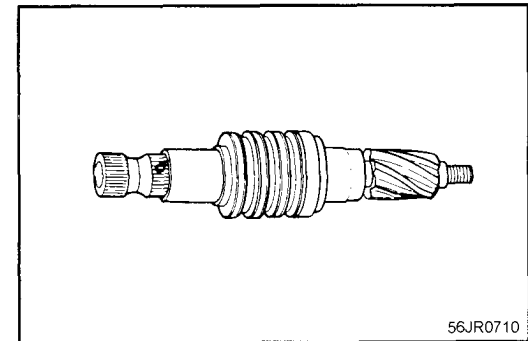
Be careful not to damage the rack cylinder inside of the gear housing.

**INSPECTION****Rack**

- 1) Rack tooth face damage or wear
- 2) Oil seal contact surface damage
- 3) Rack distortion
- 4) Oil seal ring damage or wear
- 5) Oil seal damage or wear

**Pinion Valve**

- 1) Pinion gear tooth face damage or wear
- 2) Oil seal contact surface damage
- 3) Seal ring damage or wear
- 4) Oil seal damage or wear

**Bearing**

- 1) Seizure or abnormal noise during bearing rotation
- 2) Excessive play.
- 3) Missing angular contact bearing.

Others

- 1) Damage of the gear housing cylinder bore
- 2) Boot damage or deterioration

ASSEMBLY

1. Apply the specified oil to the entire surface of the rack oil seal.

Recommended fluid
 Automatic transaxle fluid DEXRON II type

2. Install the backup washer and oil seal to the specified position in the gear housing.
3. Apply the specified grease to the entire surface of the angular contact bearing.

Recommended grease
 Multipurpose grease SAE J310, NLGI No.2

4. Set the scribed side of the angular contact bearing the special tool and install it into the gear housing (until the special tool contacts the gear housing).

NOTE
Note the direction of the angular contact bearing.

5. Apply the specified grease to the ball bearing and install using the special tool.

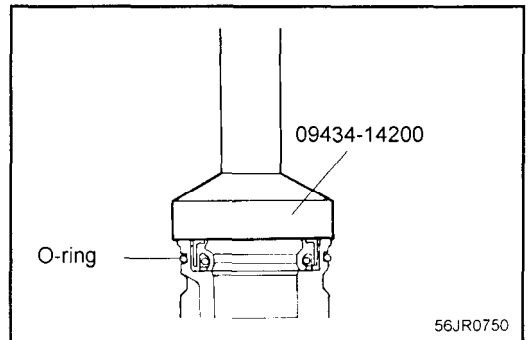
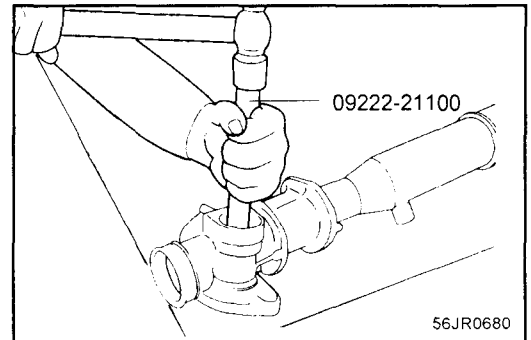
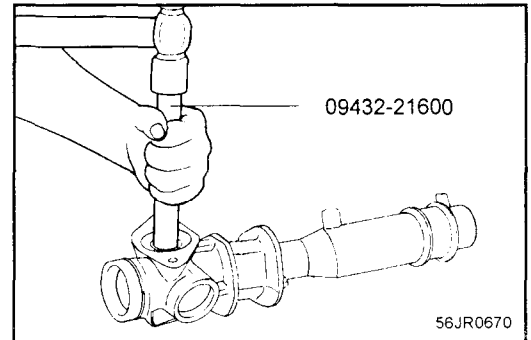
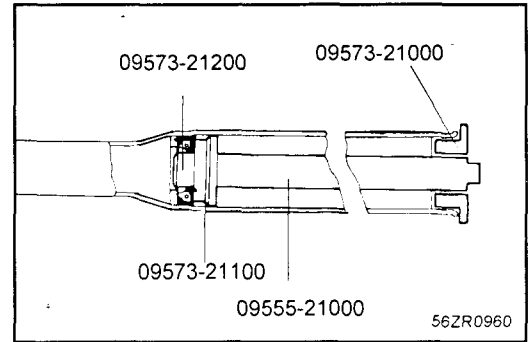
Recommended grease
 Multipurpose grease SAE J310, NLGI No.2

NOTE
Always use a new bearing

6. Apply the specified oil to the entire surface of the rack bushing oil seal.

Recommended fluid
 Automatic transaxle fluid DEXRONII type

7. Install the oil seal in the rack bushing.
8. Apply the specified oil to the entire surface of the O-ring and install it in the rack bushing.



9. Apply the specified grease to the rack teeth.

Recommended grease
Multipurpose grease SAE J310, NLGI No.2

NOTE
Do not plug the vent hole in the rack with grease.

10. Wrap the rack end with vinyl tape, apply a coating of the specified fluid, and then install the rack bushing and rack stopper.

NOTE
Do not allow oil seal retainer spring to slip out.

11. Push in the rack stopper until the circlip groove of the rack stopper is aligned with the notched hole of the rack housing. Install the circlip while turning the rack stopper.

NOTE
The circlip end should not be visible through the notched hole of the rack housing.

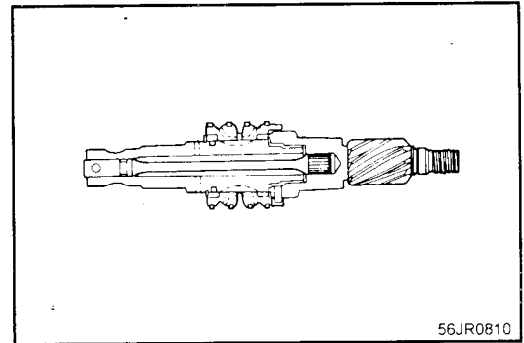
12. Using special tool, install the oil seal and the ball bearing in the valve body.

13. When installing seal rings, press firmly into valve groove. Apply specified fluid.

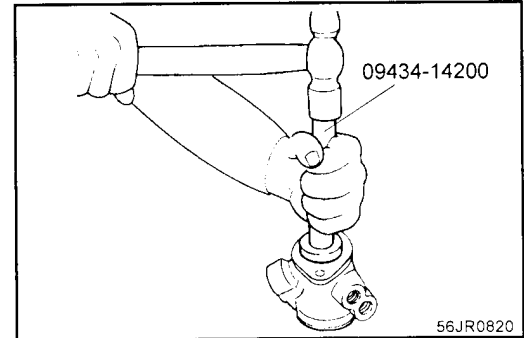
14. Apply the specified oil and grease to the pinion valve assembly and install in the gear housing assembly.

Recommended fluid
 Automatic transaxle fluid DEXRONII type

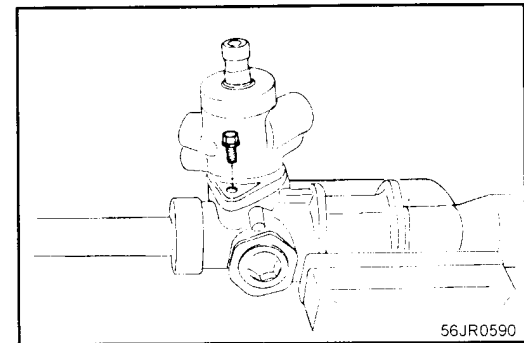
Recommended grease
 Multipurpose grease SAE J310, NLGI No.2



15. Apply the specified oil and then use the special tool to install the seal in the valve body housing.



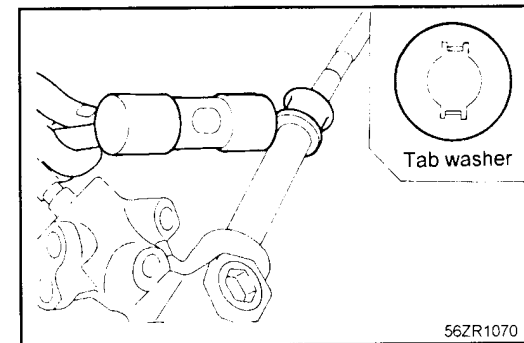
16. Install the valve body assembly with the seal ring to the gear box.



17. Install the tab washer and the tie rod and stake the tab washer end at two points over the tie rod.

NOTE

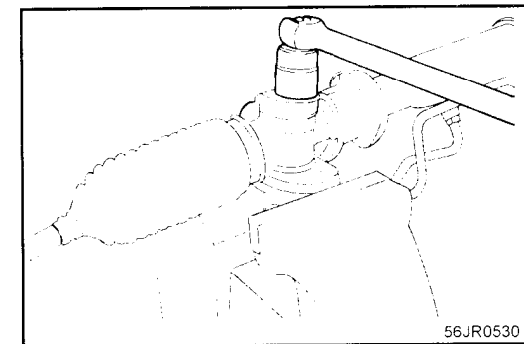
- 1) **Align the tab washer pawls with the rack grooves.**
- 2) **Always use a new tab washer.**



18. With the pinion turned all the way clockwise, tighten the self-locking nut.

CAUTION

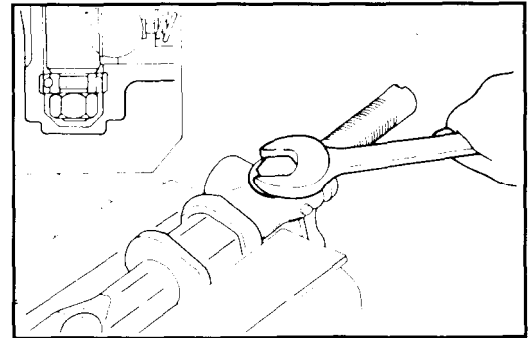
Always use a new nut.



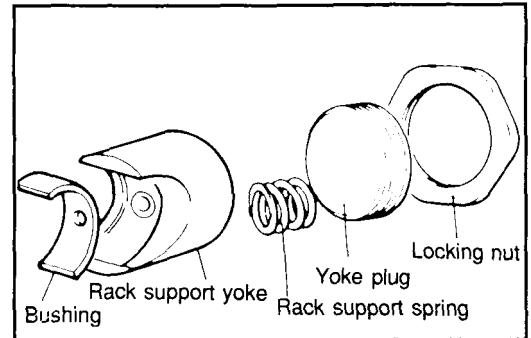
19. Apply semi-drying sealant to the threaded section of the end plug and tighten to the specified torque.

Tightening torque
 50-70 Nm (500-700 kg.cm, 37-52 lb.ft)

20. Stake the end plug at two points on its circumference with a punch.

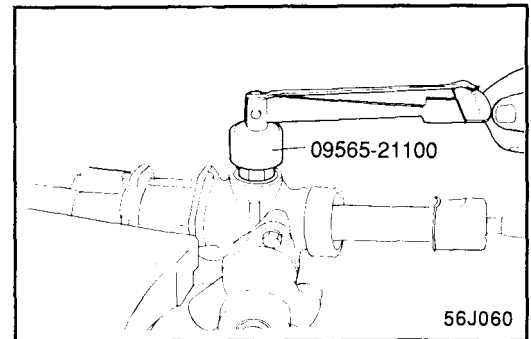


21. Install the rack support yoke, rack support spring and yoke plug in the order shown. Apply semi-drying sealant to the threaded section of the yoke plug before installation.



22. With the rack placed in the center position, attach the rack support cover to the gear housing. Tighten the rack support cover to 15 Nm (150 kg.cm, 11 lb.ft), using the special tool. Loosen the yoke plug approximately 30 to 60°, and tighten the locking nut to the specified torque.

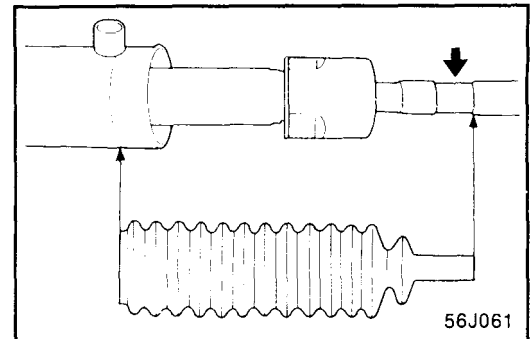
Tightening torque
 50-70 Nm (500-700 kg.cm, 37-52 lb.ft)



23. Tighten the feed tube to the specified torque and install the mounting rubber using adhesive.

24. Apply the specified grease to the bellows mounting position (fitting groove) of the tie rod.

Recommended grease
 Silicone grease



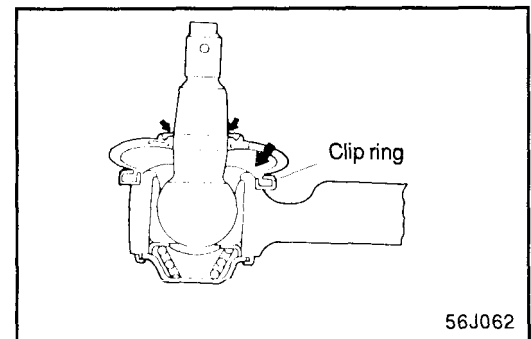
25. install the attaching band to the bellows.

NOTE

When the bellows are installed, a new band must be used.

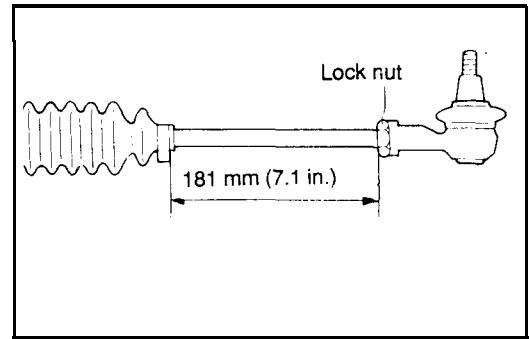
26. Install the bellows in position, taking care not to twist it.

27. Fill the dust cover inner side and lip with the specified multi-purpose grease, and place the dust cover in position with the clip ring attached in the groove of the tie rod end.



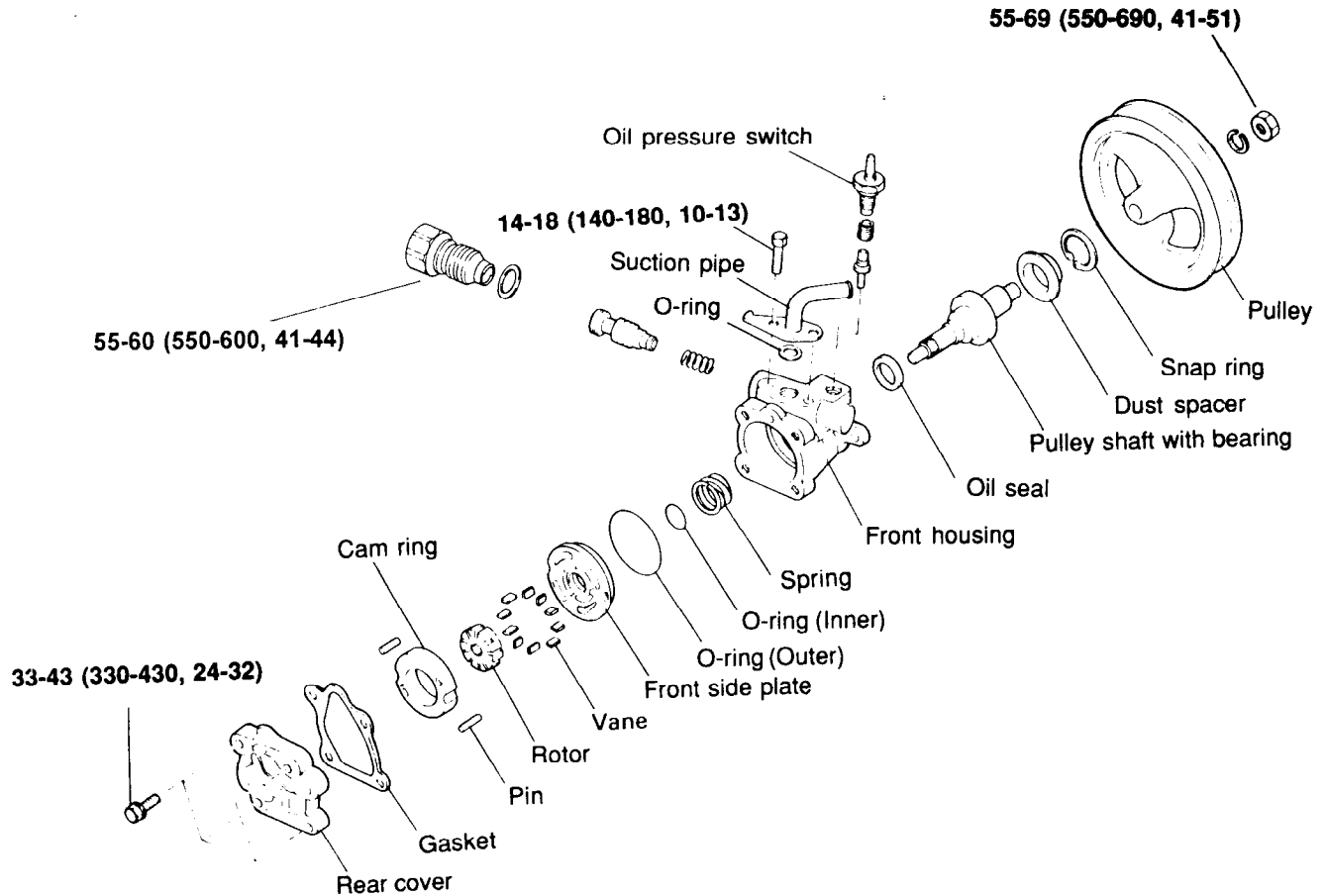
INSTALLATION

1. Screw in tie rod end to have its right and left length as illustrated.
Lock with lock nut.



POWER STEERING OIL PUMP

COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

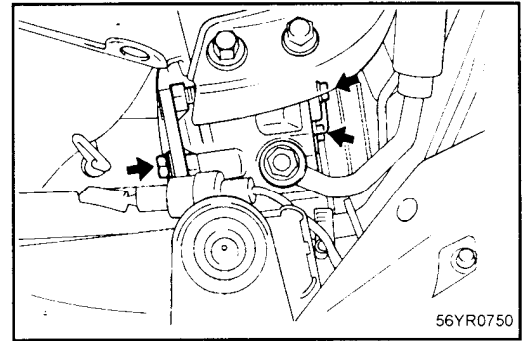
REMOVAL

CAUTION

Be sure to cover the generator with a protector when servicing the oil pump.

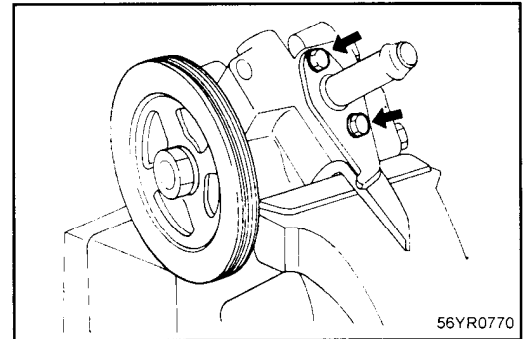
1. Remove the pressure hose from the oil pump.
2. Disconnect the suction hose from the suction connector and drain the fluid into a container.

3. Loosen the oil pump mounting bolts to remove the V-belt.
4. Disconnect suction hose from the oil pump.
5. Remove the oil pump bracket mounting bolts and disconnect the pressure switch connector.
6. Remove the oil pump.

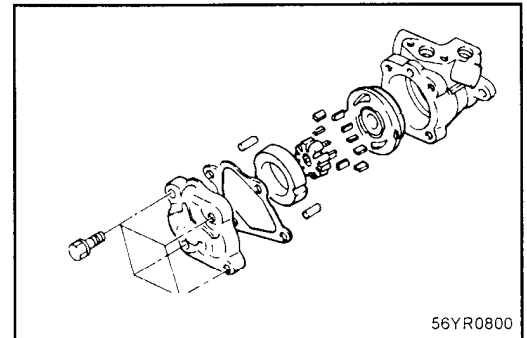


DISASSEMBLY

1. Remove the suction pipe and the O-ring from the oil pump.



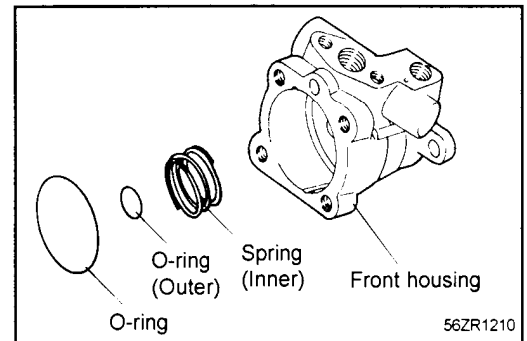
2. Remove the rear cover with the gasket and pins.
3. Remove the cam ring.
4. Remove the rotor and vanes.
5. Remove the front side plate.



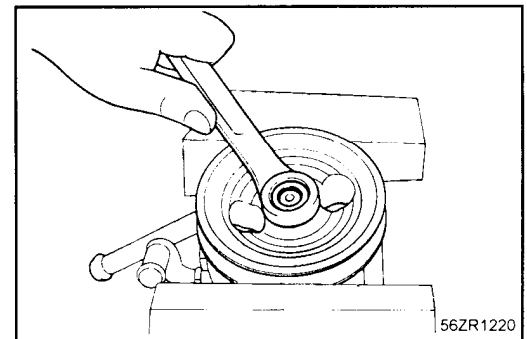
6. Remove the inner and outer O-ring.
7. Remove the spring.

NOTE

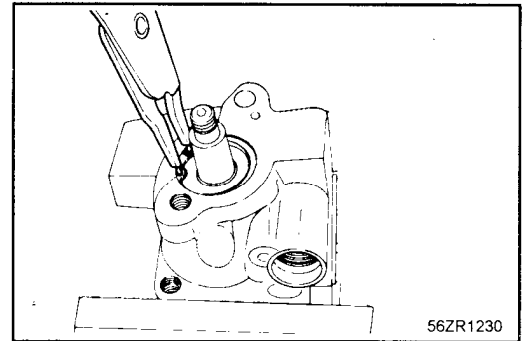
When assembling, use a new gasket and O-ring.



8. Remove the pulley nut with the spring washer.
9. Pull off the pulley and the woodruff key.



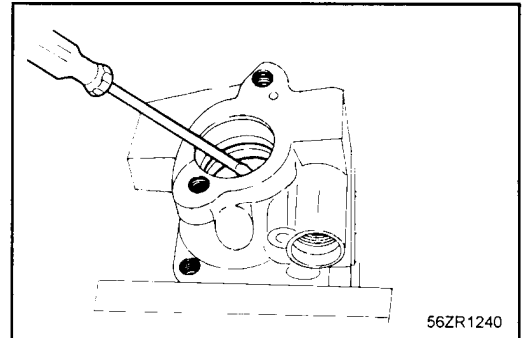
10. Remove the snap ring using snap ring pliers.
11. Drive out the pulley shaft with the bearing.
If necessary, use plastic hammer.



12. Remove the oil seal from the oil pump body.

NOTE

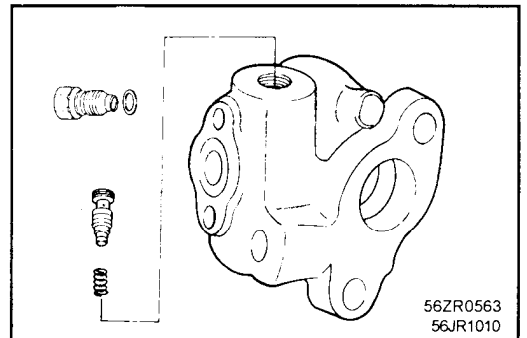
When assembling, use a new oil seal.



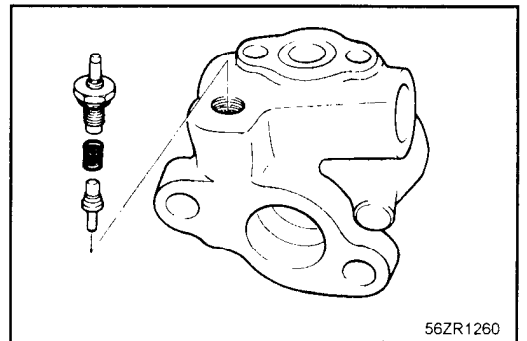
13. Remove the guide bracket and nut.
14. Remove the connector from the oil pump body, and take out the flow control valve and the flow control spring.
15. Remove the O-ring from the connector.

CAUTION

Do not disassemble the flow control valve.



16. Remove the oil pump switch.
17. Take out the spring and the spool.
18. Remove the O-ring from the oil pump switch

**INSPECTION**

1. Clean all disassembled parts with suitable cleaning solvent.
2. If any inside parts of the oil pump have been damaged, replace the pump as an assembly.
3. If the pulley is cracked or deformed, replace it.
4. If oil leaks from around pulley shaft oil seal, replace the oil seal.
5. If the serrations of the pulley or pulley shaft are deformed or worn, replace them.

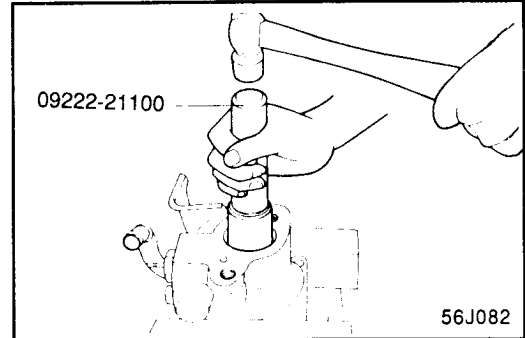
ASSEMBLY

1. Install the oil pump switch.
2. Install the flow control valve spring, valve and connector in the pump body.

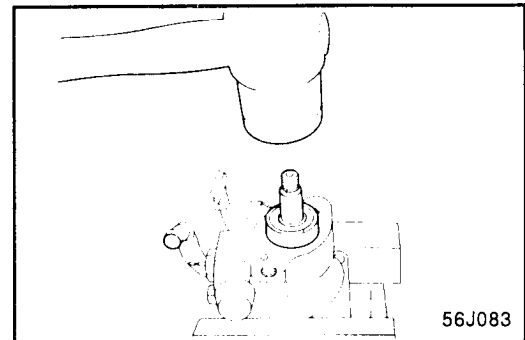
NOTE

Apply a thin coat of A.T.F. to all the replaced parts including the oil seal and the O-ring.

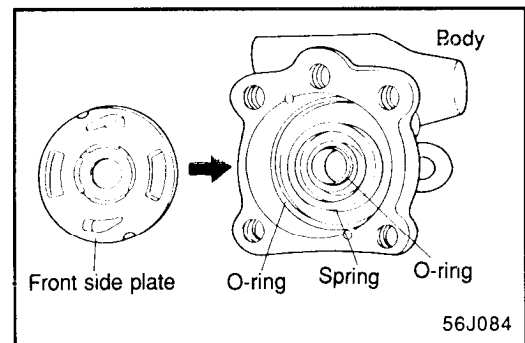
3. Install the guide bracket and nut.
4. Using special tool, install the oil seal into the pump body.



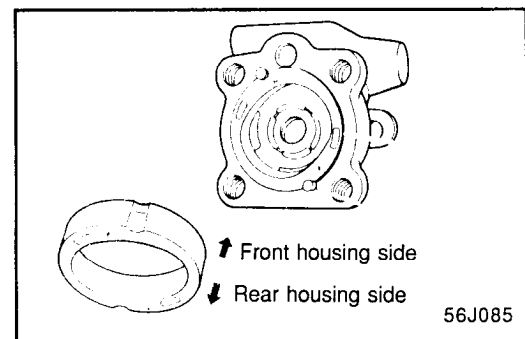
5. Gently insert the shaft assembly and install the snap ring.
6. Install the pump pulley with woodruff key in place.



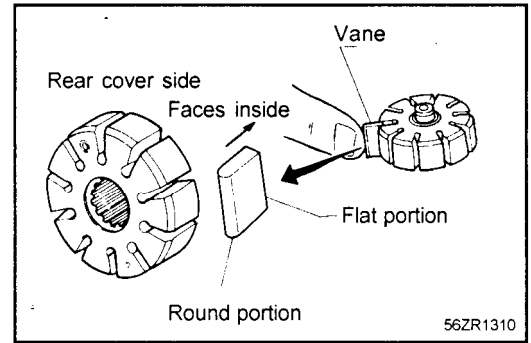
7. Install the spring and the inner and outer O-rings.
8. Install the front side plate.



9. Insert the pins into the pin grooves of front housing, then install the cam ring, paying attention to its direction.



10. Install the rotor with its punch marked side facing towards the front side plate.
11. Install the vane plates with the round end facing outward.



12. Install the gasket and the rear cover.
13. Tighten the suction connector.

INSTALLATION

1. Install the oil pump to the oil pump bracket.
2. Install the suction hose.
3. Install the V-belt and adjust the V-belt tension.
4. Connect the pressure hose to the oil pump, and the suction hose to the oil reservoir.

NOTE

Install the hoses so that they are not twisted and they do not come in contact with any other parts.

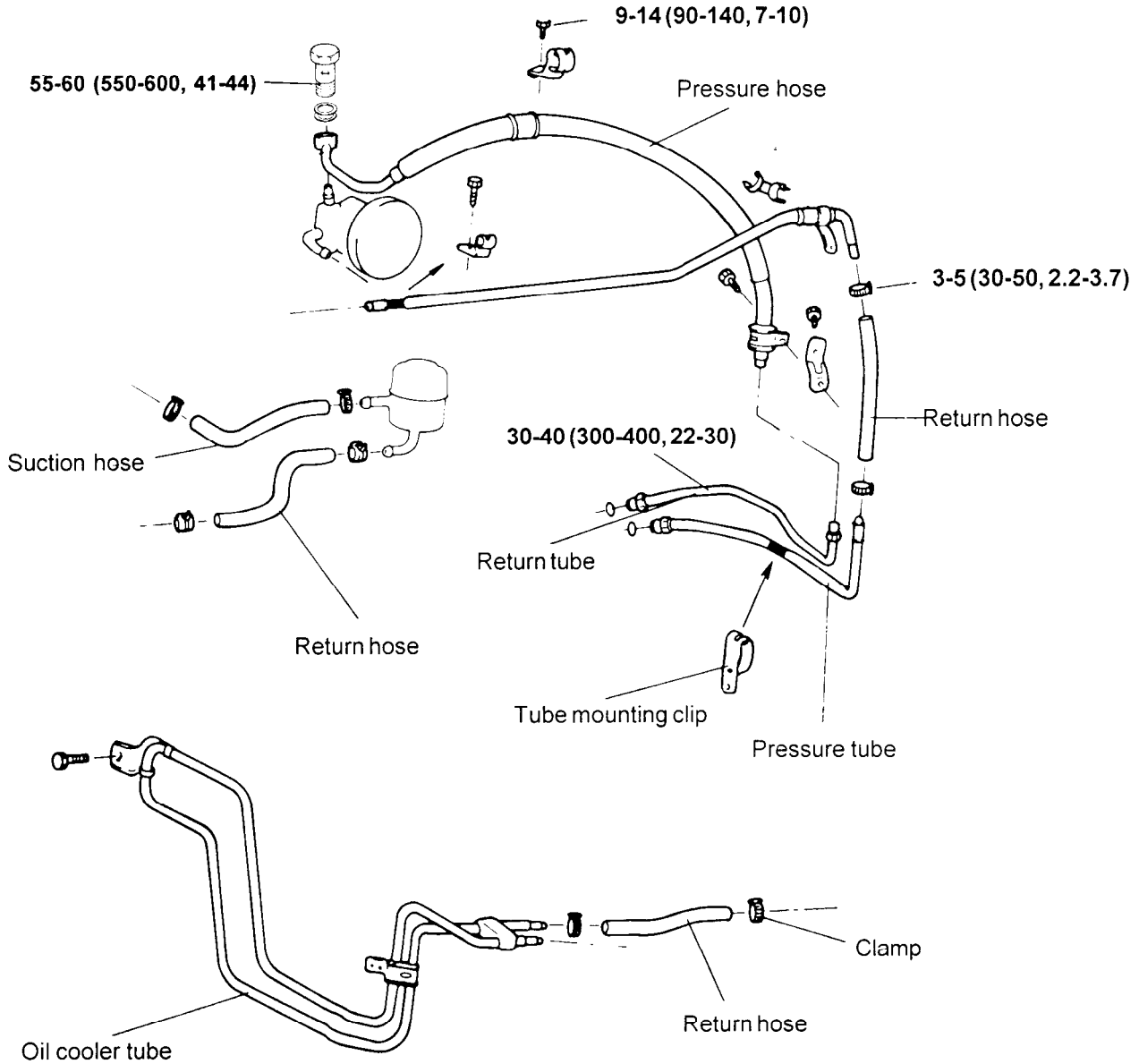
5. Replenish the fluid.

Recommended fluid
 Specified Automatic Transmission Fluid

6. Bleed the system.
7. Check the oil pump pressure.
8. Install parts by reference to the torque specification.

POWER STEERING HOSES

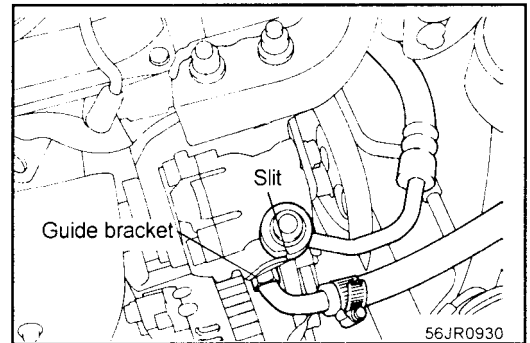
COMPONENTS



TORQUE : Nm (kg.cm, lb.ft)

INSTALLATION

1. Connect the pressure hose so that its slit part contacts the oil pump's guide bracket.



2. When the pressure hose is installed, align the white line on the pressure hose with the white line on the pressure tube so that together they form a straight line.

