

Steering System

GENERAL	ST -2
STEERING COLUMN & SHAFT	ST -7
POWER STEERING SYSTEM	ST -10

GENERAL

EPA0010

SPECIFICATIONS

Shaft and joint type	Collapsible, crossjoint with tilt column
Steering gear type	Rack and pinion
Rack stroke	150 ± 1 mm
Oil pump type	Vane type
Displacement	9.6 cm ³ /rev.

SERVICE STANDARD

Steering wheel free play	0-30 mm (0-1.1 in.)
Steering angle	
Inner wheel	37.34°
Outer wheel	32.73°
Tie rod end ball joint starting torque	0.5-2.5 Nm (5-25 kg·cm, 0.36-1.78 lb·ft)
Steering effort	3.5 kgf Max.
Drive belt tension	75 ± 10kg (New one) 50 ± 5kg (Used one)
Oil pump max. pressure	94-99 kgf/cm ²

TIGHTENING TORQUE

EPA0050

Item	Nm	kg·cm	lb·ft
Steering column and shaft			
Airbag module mounting bolt	15-20	150-200	10.8-14.5
Steering column to column member mounting (upper)	13-18	130-180	9.4-13.0
Steering column to column member mounting (lower)	13-18	130-180	9.4-13.0
Steering column member to cowl panel	9-14	90-140	6.5-10.1
Steering wheel lock nut	40-50	400-500	28.9-36.1
Joint assembly	15-20	150-200	10.8-14.5
Steering gear box			
Pressure hose to gear box	12-18	120-180	8.7-13.0
Return tube to gear box	12-18	120-180	8.7-13.0
Tie rod to rack	80-100	800-1000	57.8-72.3
Tie rod end lock nut	50-55	500-550	36.1-39.8
Rack support plug lock nut	50-70	500-700	36.1-50.6
Pinion and valve assembly to self locking nut	50-70	500-700	36.1-50.6
End plug	50-70	500-700	36.1-50.6

Item	Nm	kg-cm	lb-ft
Feed tubes	10-16	100-160	7.2-11.6
Tie rod end to knuckle	24-34	240-340	17.3-24.6
Mounting bracket to crossmember	60-80	600-800	43.4-57.8
Oil pump			
Pressure hose to oil pump	55-69	550-690	39.8-50
Oil pump mounting bolt	35-50	350-500	25.3-36.1
Oil pump pressure switch	17-23	170-230	12.3-16.6
Oil pump bracket mounting bolt	35-50	350-500	25.3-36.1
Pump cover to pump body	33-43	330-430	23.8-31.1
Suction connector to oil pump body	13.6-18.4	136-184	9.8-13.3
Flow control valve connector to pump body	70-80	700-800	50.6-57.8
Steering hoses and oil reservoir			
Oil reservoir bracket mounting bolt	4-6	40-60	2.9-4.3
Cooler tube clamp mounting bolt	4-6	40-60	2.9-4.3
Tube clip and tube bracket	4-6	40-60	2.9-4.3
Pressure hose bracket mounting bolt	4-6	40-60	2.9-4.3
Clamp hose	4-6	40-60	2.9-4.3

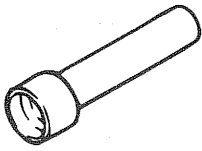
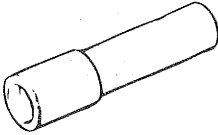
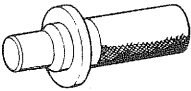
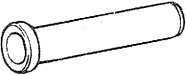
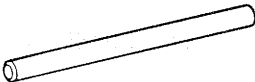
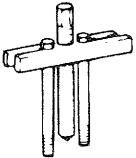
LUBRICANTS

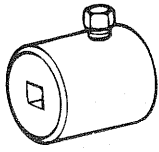
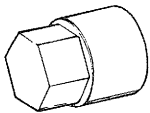
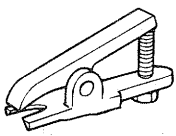
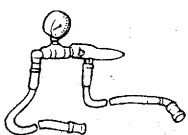
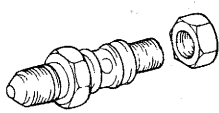
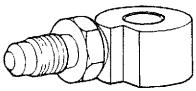
EPHA0150

Items	Specified lubricant	Quantity
Steering column bearing	Multipurpose grease SAE J310a, NLGI No.2	As required
Steering gear box rack, pinion gear part	Multipurpose grease SAE J310a, NLGI No.2	As required
Bellows	Silicone grease	As required
Oil pump	Power steering fluid (PSF-3)	As required
Power steering fluid	Power steering fluid (PSF-3)	1.0 lit (0.88 qts.)

SPECIAL TOOLS

EPA0200

Tool (Number and Name)	Illustration	Use
09222-21100 Valve stem oil seal installer	 HCT56-01	Installation of the pinion gear bearing
09222-32100 Valve stem oil seal installer	 HCT56-02	Installation of the oil pump oil seal
09431 - 11000 Front oil seal installer	 EPA9005C	Installation of the pinion gear oil seal
09432-21601 Bearing installer	 EPA9005D	Installation of the pinion gear bearing
09517-21400 Drift	 EPA9005E	1. Removal of pinion gear bearing 2. Removal of pinion bearing outer race
09561-11001 Steering wheel puller	 HCT56-07	Removal of the steering wheel

Tool (Number and Name)	Illustration	Use
09565-11100 Pre-load socket	 EPA9005G	Measurement of the main shaft pre-load
09565-21000 Pinion bearing remover and installer	 EPA9005H	Removal and installation of pinion gear bearing
09565-31300 Yoke plug torque wrench socket	 EPA9005I	Removal, installation and adjustment of steering gear yoke plug
09568-31000 Tie rod end puller	 EPA9005J	Separation of the tie rod end bail joint
09572-21000 Oil pressure gauge	 EPA9005K	Measurement of the oil pressure (use with 09572-33100, 09572-21200)
09572-21200 Oil pressure gauge adapter	 EPA9005L	Measurement of the oil pressure (use with 09572-21000, 09572-33100)
09572-33100 Oil pressure gauge adapter	 EPA9005M	Measurement of the oil pressure (use with 09572-21000, 09572-21200)

TROUBLESHOOTING

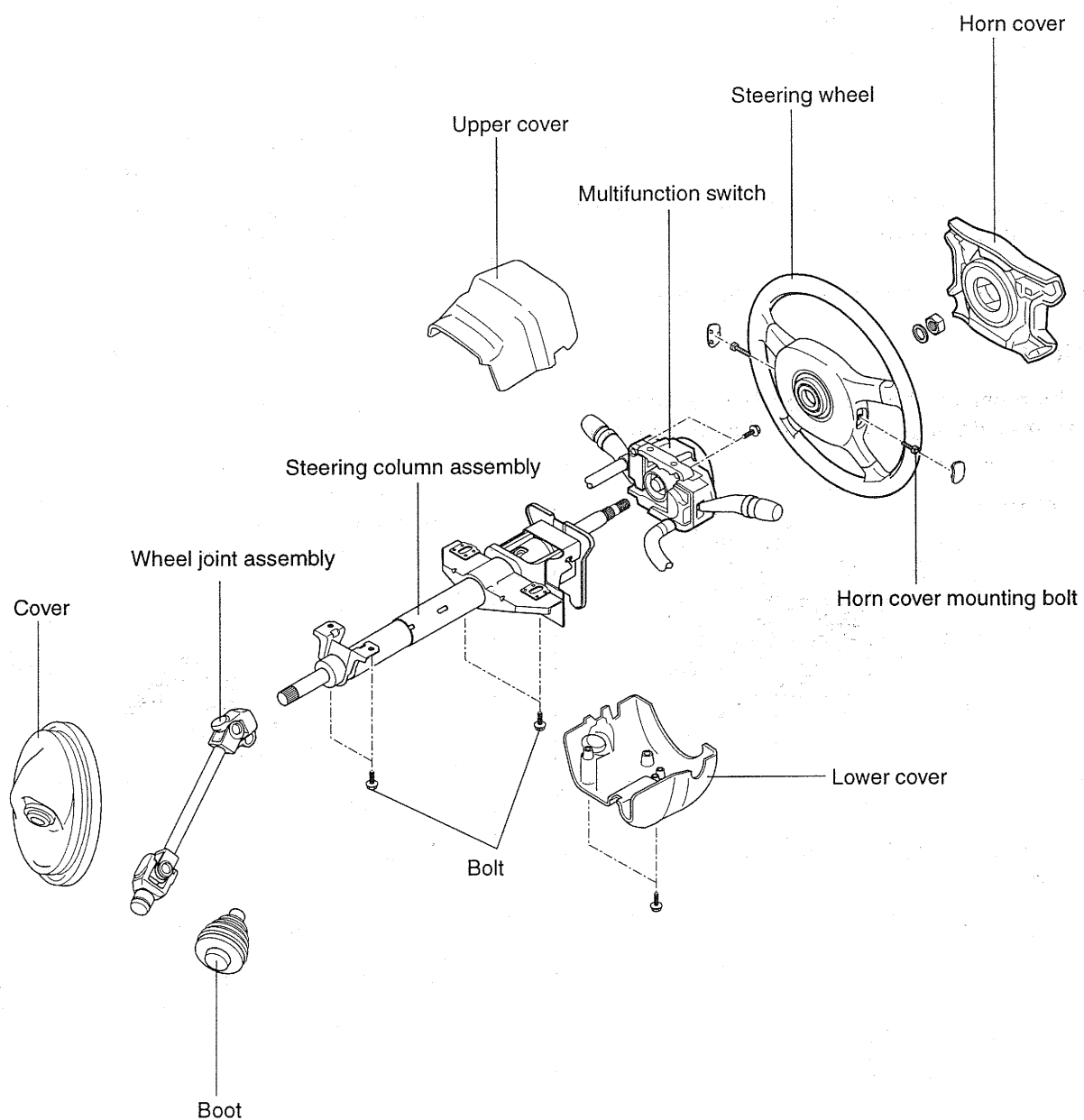
EPHA0250

Trouble symptom	Probable cause	Remedy
Excessive steering wheel free play	York plug loosened Steering gear mounting bolts loosened Stud of tie rod end is worn or loosened	Retighten Retighten Retighten or replace
Steering wheel operation is "hard"	Incorrect tire pressure Loosed belt Damaged belt Low fluid level Air in fluid line Fluid hose is twisted or damaged Insufficient of oil pressure Control valve is stuck Oil leakage in the oil pump Deteriorated or damaged the gear box or valve	Adjust the tire pressure Adjust the belt tension Replace the belt Refill fluid Bleed the system Replace fluid hose Replace or repair oil pump Replace control valve Replace the damaged part Replace the damaged part
Poor recovery of steering wheel	Tie rod ball joint rotational resistance is excessive Over tightened the yolk plug Tie rod or ball joint is damaged Loosened the gear box mountings Worn steering shaft or body grommet Twisted rack Deteriorated pinion bearing Fluid hose is twisted or damaged Damaged oil pressure control valve Damaged oil pump input shaft bearing	Replace Adjust Replace Tighten Repair or replace Replace Replace Replace Replace
Abnormal noise at the rack and pinion	Interference between body and fluid hose Loosen gear box Loosen the tie rod end ball joint Worn the tie rod end ball joint	Adjust Retighten Retighten Replace
Abnormal noise at the oil pump	Insufficient power steering fluid Air in fluid line Loosen the oil pump mounting	Add fluid Bleeding the air Retighten

STEERING COLUMN & SHAFT

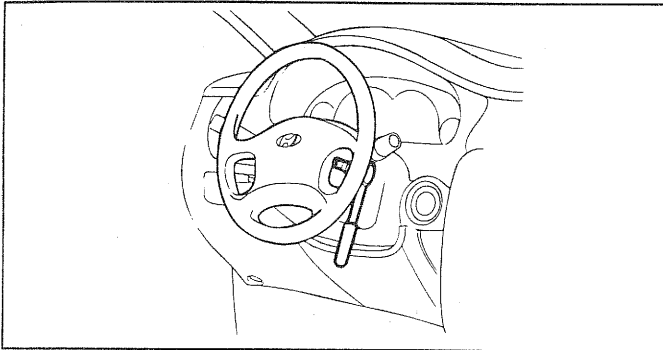
STEERING COLUMN/SHAFT

COMPONENTS EPHA0700

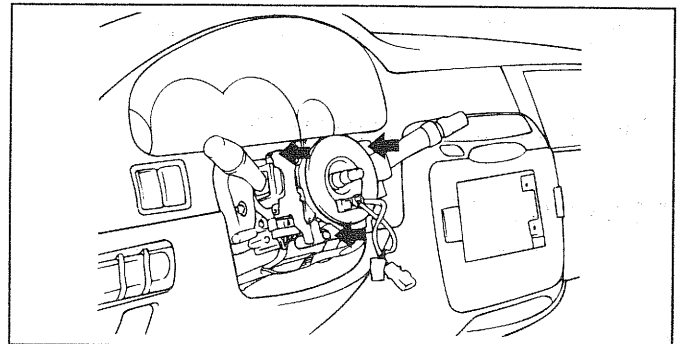


REMOVAL EPHA0750

1. Remove the cover in the steering wheel below.
2. Remove the bolt by using the hexagonal wrench.

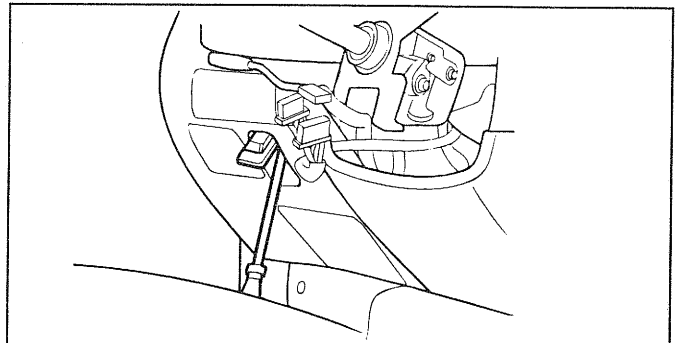


EPHA002A



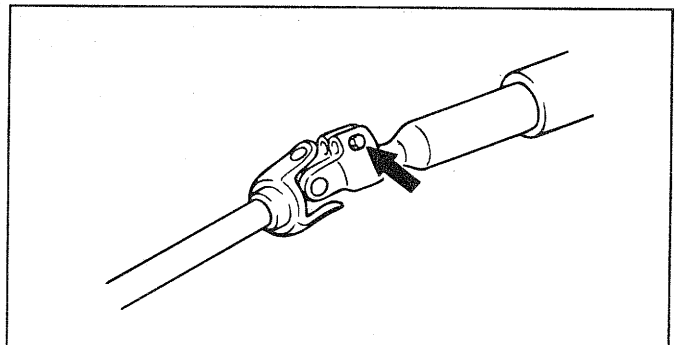
ESHA040P

7. Remove the lower cover.
8. Remove the hood release lever.



EPHA002C

9. Remove the bolts securing the coupling and universal joint. Pull out the coupling and universal joint from the gear box.

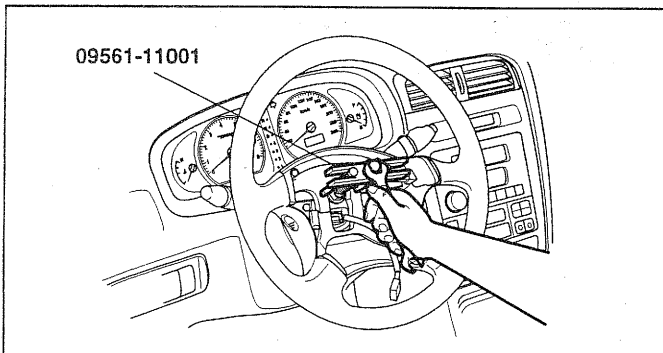


HEW56-10

3. Disconnect the DAB and horn connector, and remove the steering wheel nut.
4. Using the SST, remove the steering wheel.

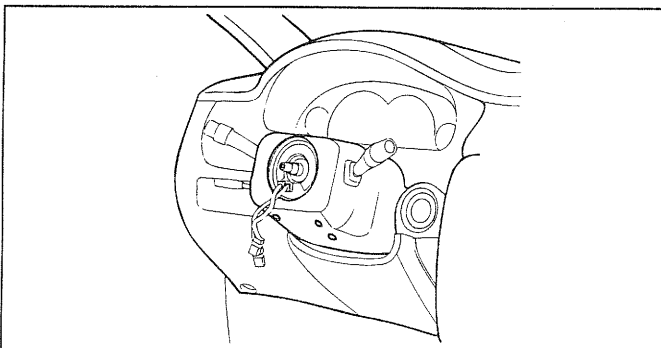
CAUTION

Do not hammer on the steering wheel to remove it; doing so may damage the collapsible mechanism.



KFWC003A

5. Remove the steering column lower and upper shrouds.

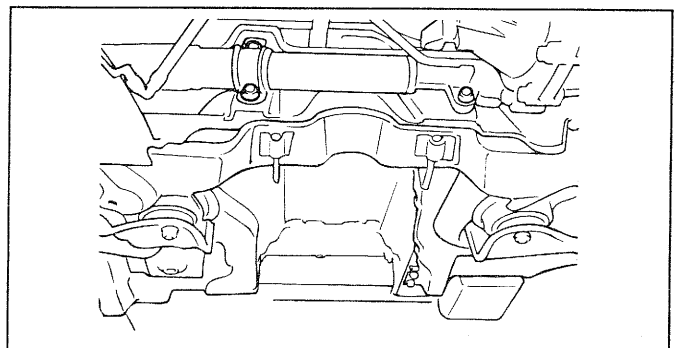


EPHA002B

6. Disconnect the connectors and remove the multi-function switch.

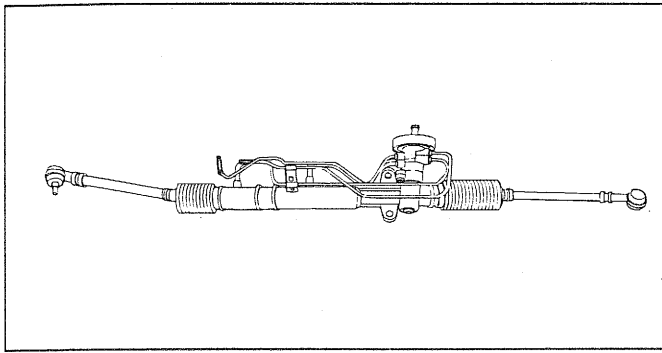
10. Remove the dust cover mounting bolts.

11. Remove the steering column mounting 4 bolts.



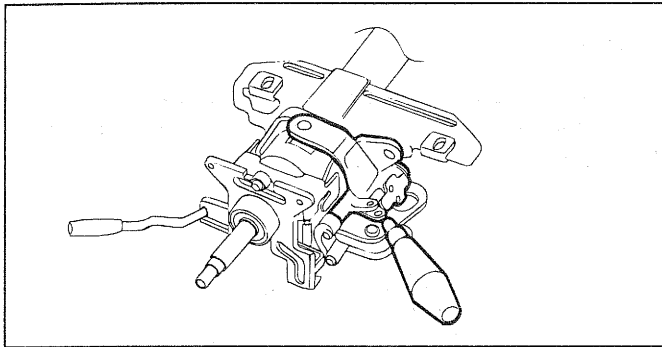
EPHA002D

12. Drain the power steering fluid and disconnect the return hose.



EPHA002F

13. Remove the lever sub in the A/T equipped vehicle.



EPHA002E

14. Remove the steering column and shaft together with the universal joint and dust cover.

INSPECTION

EPHA0800

1. Check the steering shaft for damage or distortion.
2. Check the upper and lower bearing for worn out or damaged.
3. Check the joints for excessive play, damage or tightness.
4. Check the tilt bracket for cracks or damage.
5. Check the cover or boot for damage.
6. Check that the steering lock mechanism operates properly.

If necessary, replace.

ASSEMBLY

EPHA0850

1. Assembly is the reverse of disassembly.
2. When installing the steering lock, align the hook and shaft groove with the steering column.

INSTALLATION

EPHA0900

1. Before installation, apply multipurpose grease to the groove on the inside of the bearing and mating surfaces of the boot and cover assembly.
2. Connect the steering lower shaft and joint assembly.

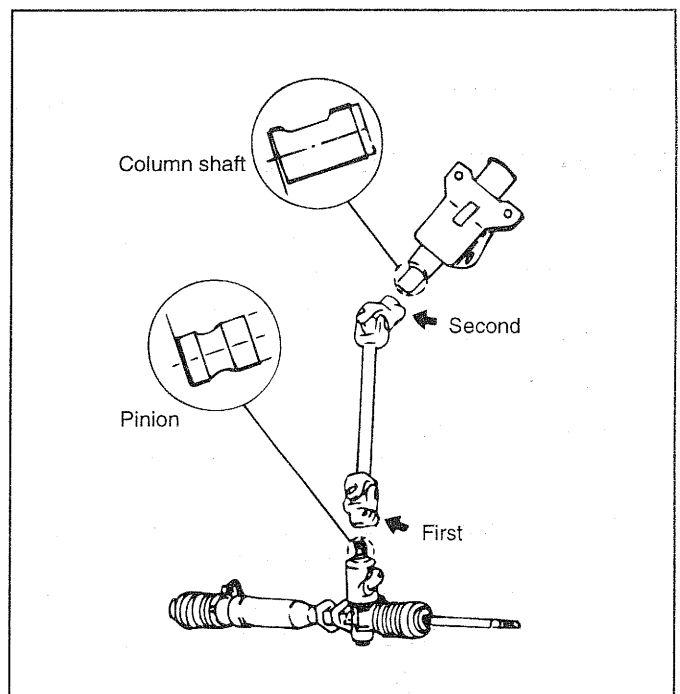
NOTE

When installing, secure the U-joint to the gear box first, then to the steering column shaft.

3. Install the dust cover with column shaft assembly.
4. Install the steering column assembly to the column member assembly.
5. Install the multifunction switch and connect the connectors.
6. Install the lower cover and upper and lower shroud.
7. Install the steering wheel.

NOTE

When installing, do not use a hammer as the collapsible column shaft could be damaged.



HCT56-39

POWER STEERING SYSTEM

SERVICE ADJUSTMENT PROCEDURE

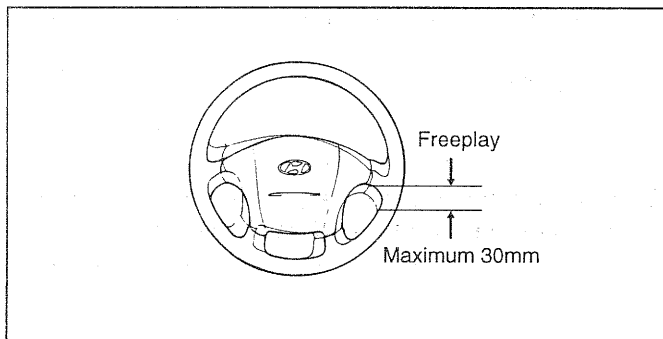
EPA0300

CHECKING STEERING WHEEL FREE PLAY

1. Start the engine with the steering wheel in the straight ahead position.
2. Measure the free play at the circumference of the steering wheel.

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

3. If the play exceeds the standard value, inspect the contact of the steering shaft and steering linkage.



EPA9001A

CHECKING STEERING ANGLE

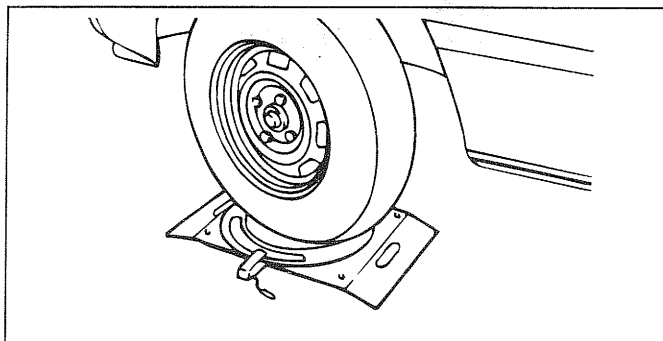
1. Place the front wheel on a turning radius gauge and measure the steering angle.

Wheel angle [Standard value]

Inside wheel : 37.34°

Outside wheel : 32.73°

2. If the measured value is not within the standard value, adjust the toe and reinspect.



EPA9002A

CHECKING STEERING WHEEL RETURN

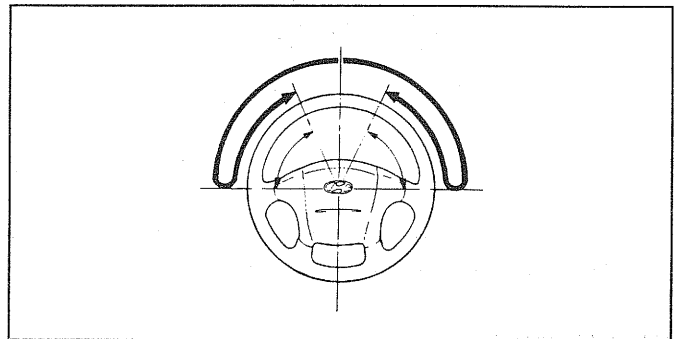
EPA0350

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 left and right moderate turns 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 0–80kph (0–50 mph), the steering wheel should return at least 20° from the neutral position when it is released and max vehicle speed is 35kph at that time.

NOTE

If the steering wheel is turned very quickly, the steering wheel operation may be momentarily difficult. This is not a malfunction.

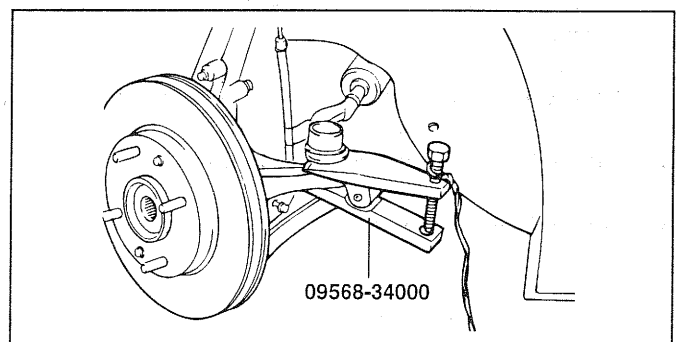


EPA035A

CHECKING TIE ROD END BALL JOINT STARTING TORQUE

EPA0400

1. Disconnect the tie rod and knuckle by using the SST.



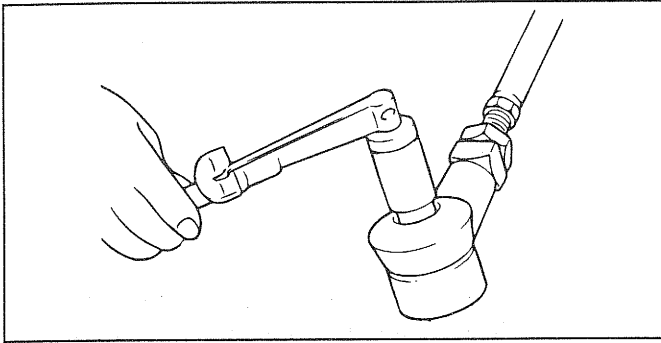
EIA9401A

2. Shake the ball joint stud several times, mount the nuts on the ball joint, and then measure the ball joint starting torque.

Standard value :

0.5-2.5 Nm (5-25 kg-cm, 0.36-1.78 lb-ft)

3. If the starting torque exceeds the standard value, replace the tie rod end.
4. Even if the starting torque is below the lower limit of the standard value, the ball joint may be reused unless it has drag and excessive play.



EPA9003A

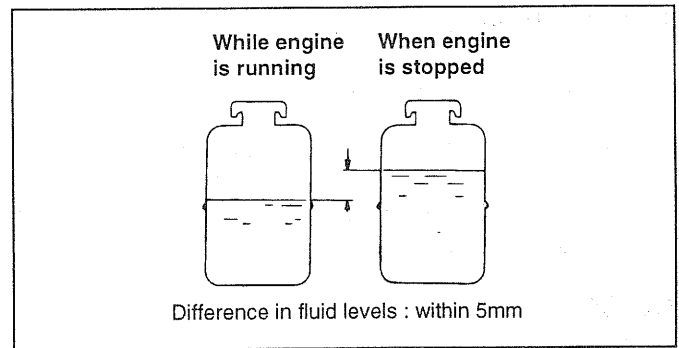
CHECKING POWER STEERING FLUID LEVEL

EPHA0450

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 idle, turn the steering wheel fully clockwise and counterclockwise several times.
4. Make sure that there is no foaming or cloudiness in the reservoir fluid.
5. Stop the engine and check for any difference in fluid level between a stopped and a running engine.

NOTE

1. If the fluid level varies 5 mm (0.2 in.) or more, bleed the system.
2. If the fluid level suddenly rises after stopping the engine, it shows that bleeding is not satisfactory.
3. Incomplete bleeding will produce a chattering sound decreasing durability of the pump, etc.



EPA9003C

REPLACING POWER STEERING FLUID

EPHA0500

1. Jack the front wheels up and support with rigid racks.
2. Disconnect the return hose from the oil reservoir and install a plug on the oil reservoir.
3. Connect a vinyl 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 securely, and then fill the oil reservoir with the specified fluid.
6. Start the engine and check for oil leakage. Then stop the engine.

Then stop the engine.

7. Bleed the system.

Power steering fluid (PSF-3) type

Total quantity : Approx. 1.0 liter

AIR BLEEDING

EPHA0550

1. Fill the oil in the reservoir.
2. Disconnect the high tension cable, and while operating the starting motor intermittently (for 15-20 seconds), turn the steering wheel all the way to the left and to the right five or six times.

NOTE

1. During air bleeding, replenish the fluid supply so that the level never falls 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.
3. Connect the high tension cable, and then start the engine (idling).
4. Turn the steering wheel to the left and then to the right until there are no air bubbles in the oil reservoir.

CAUTION

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

5. Confirm that the fluid is not milky, and that the level is up to the specified position on the level gauge.
6. Confirm that there is little change in the surface of the fluid when the steering wheel is turned left and right.

CAUTION

1. If the surface 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 may also produce unusual noises. Air in the system will shorten the useful life of the pump and other parts.

CHECKING POWER STEERING BELT TENSION

EPHA0600

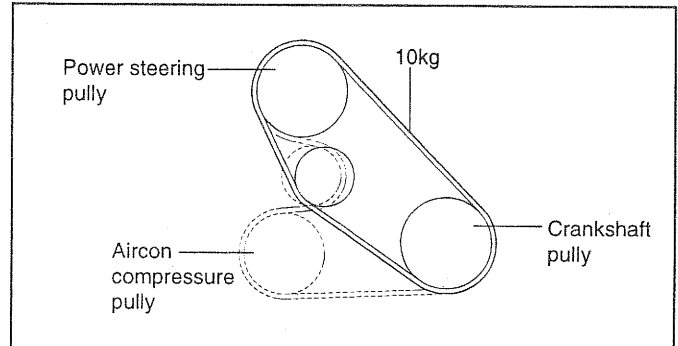
1. Press the belt applying a pressure of 98 N (10 kg, 22 lb) at the specified point, and measure the deflection to confirm that it is within the standard value range.

Belt deflection [Standard value]

Regular inspection : 11.7-15.3 mm(0.46-0.60 in.)

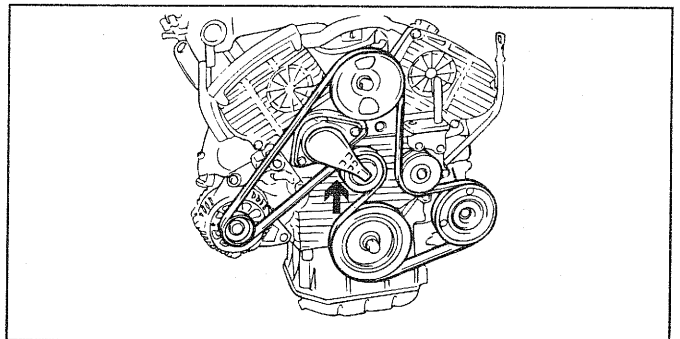
New belt : 8.8-11.0 mm(0.35-0.43 in.)

Used belt : 12.5-14.3mm (0.43-0.56 in.)



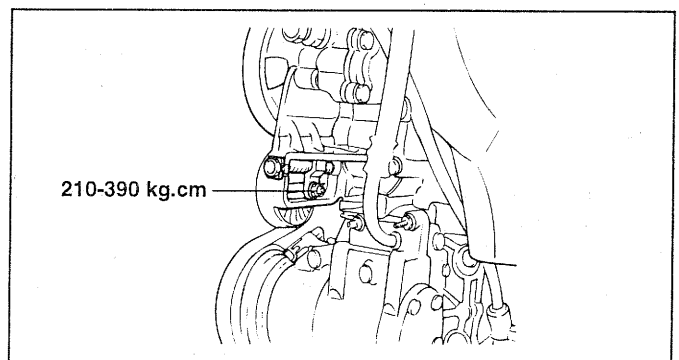
EPHA001A

2. To adjust the belt tension, the auto tensioner automatically adjusts to the standard value (Delta 2.7 Liter).



EPA9004A

3. To adjust the belt tension, loosen the tensioner adjusting bolt, and then retighten the bolts (DOHC ENG.).

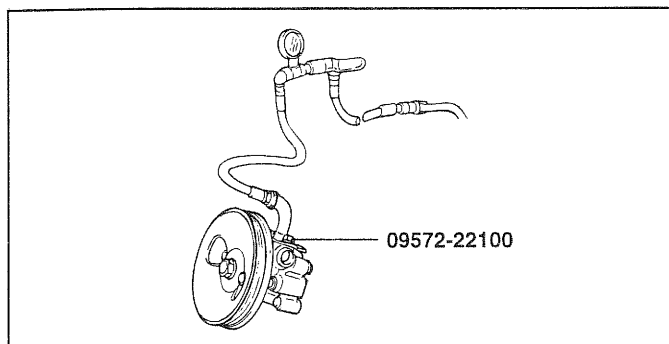


EPHA060A

OIL PUMP PRESSURE TEST

EPHA0650

1. Disconnect the pressure hose from the oil pump, and then connect the special tool between the oil pump and pressure hose as illustrated.

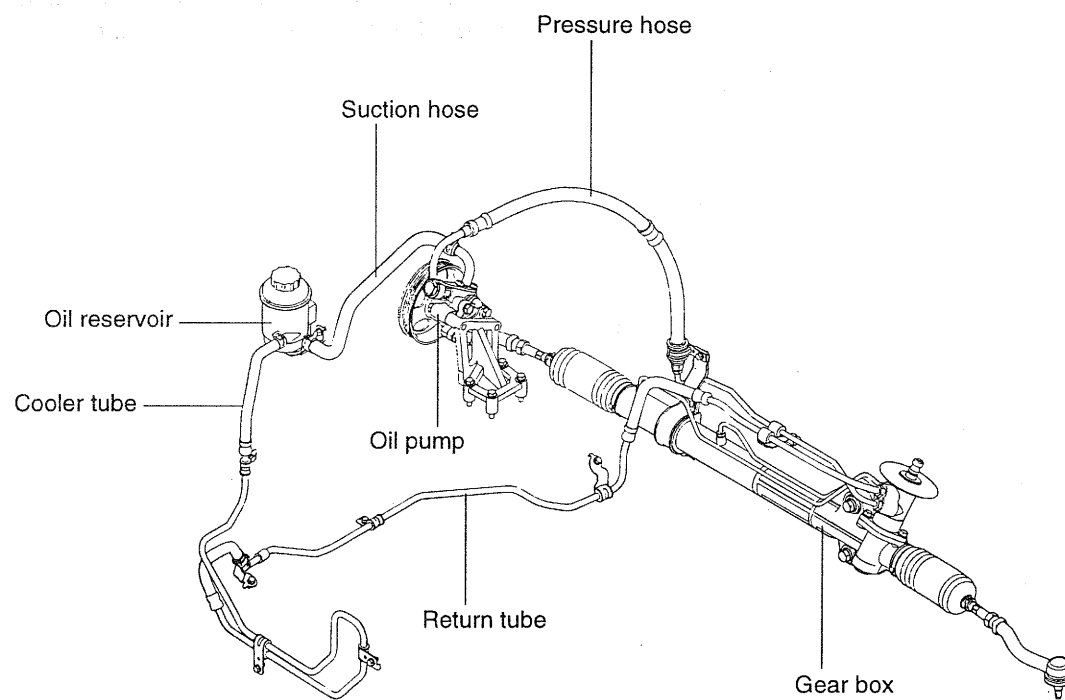


EPHA065A

2. Bleed the air. Start the engine and turn the steering wheel several times so that the fluid temperature rises to approximately 50°C (122°F) operating temperature.
3. Set the engine speed to 1,000 rpm.
4. Fully close and then fully open 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] : 94-99 kg/cm²

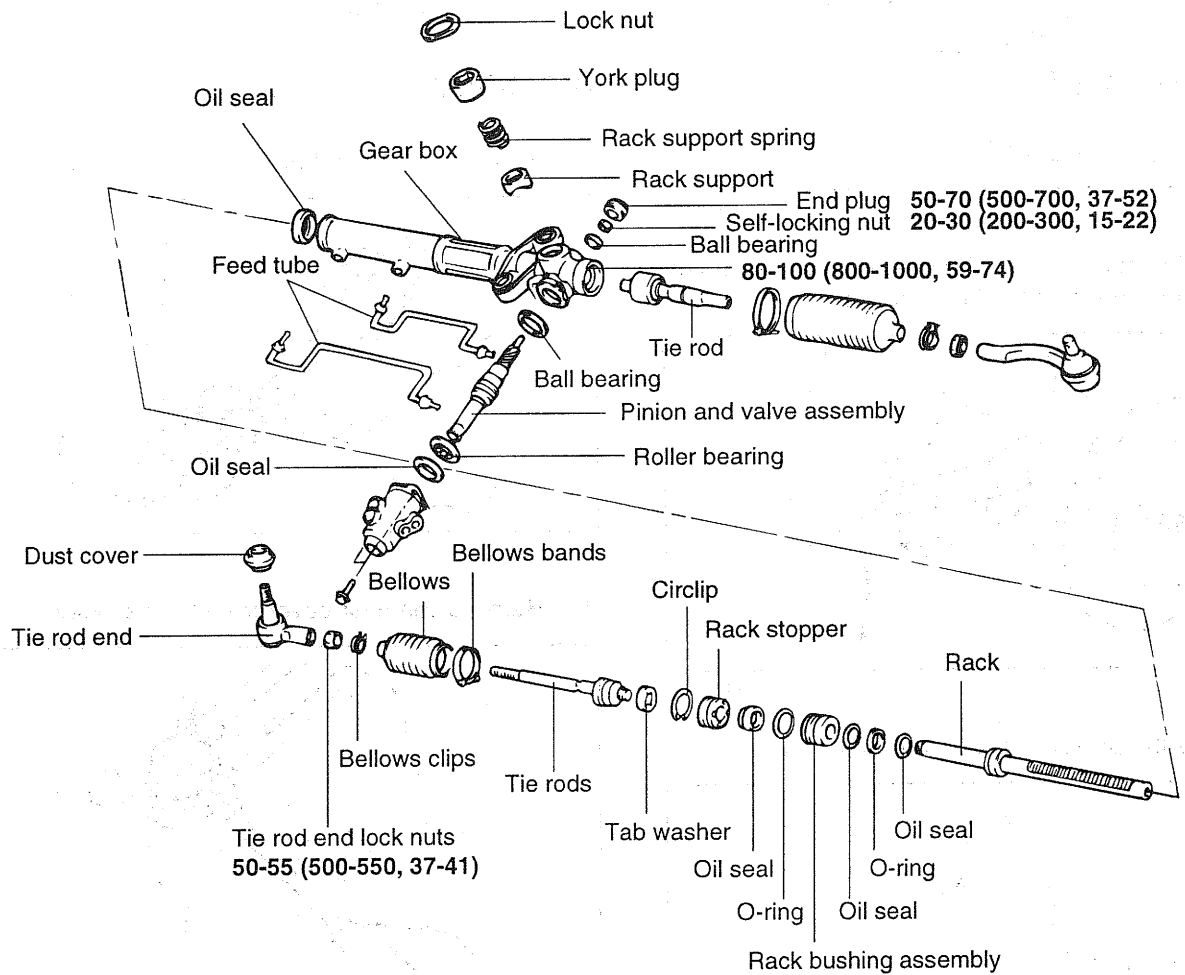
5. Remove the special tools and then tighten the pressure hose to the specified torque.

POWER STEERING HOSE EPHA1500**COMPONENTS**

POWER STEERING GEAR BOX

COMPONENTS

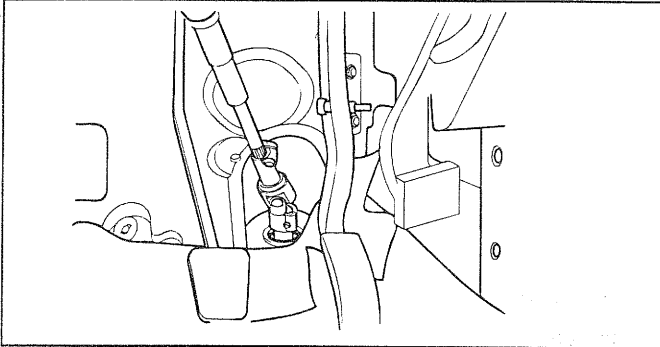
EPAH0950



TORQUE : Nm (kg·cm, lb·ft)

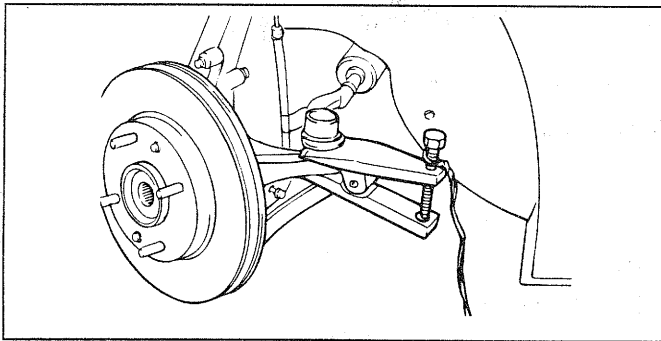
REMOVAL EPHA1000

1. Drain the power steering fluid.
2. Disconnect the pressure hose and return tube.
3. Remove the joint assembly connecting bolt.



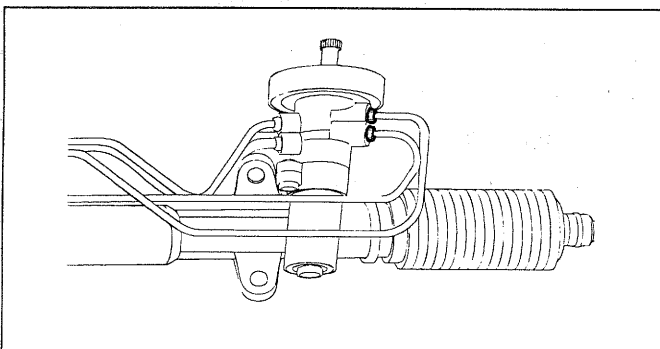
EPHA003A

4. Using the special tool (09568-31000), disconnect the tie rod end from the knuckle arm.



EPA9020F

5. Remove the pressure hose and return tube.

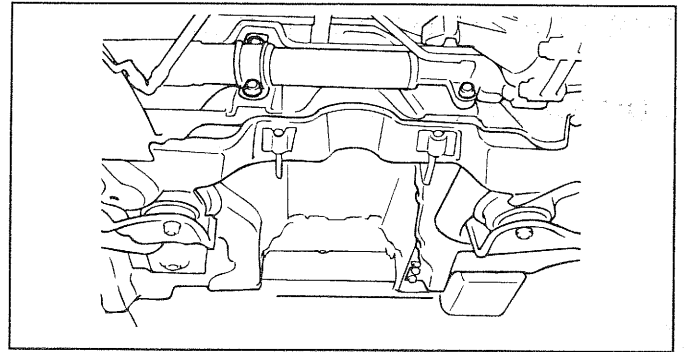


EPHA003B

6. Remove the steering gear box mounting brackets and remove the steering gear box assembly together with mounting rubber.

CAUTION

When removing the gear box, pull it out carefully and slowly to avoid damaging the boots.

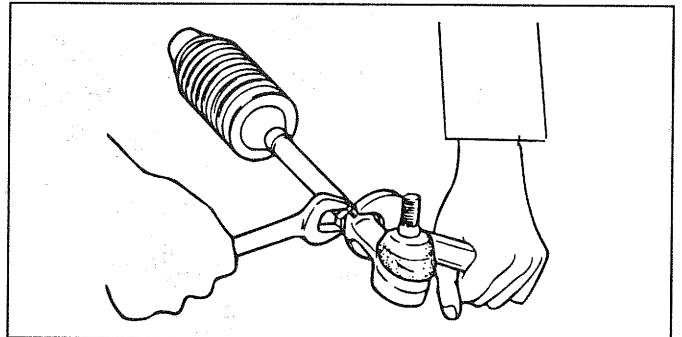


EPHA002D

7. Remove the stabilizer bar.

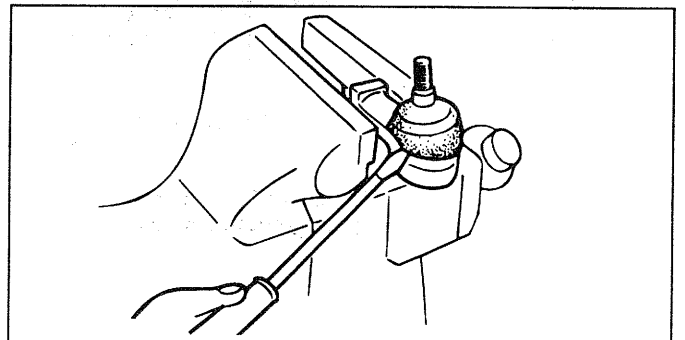
DISASSEMBLY EPHA1050

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



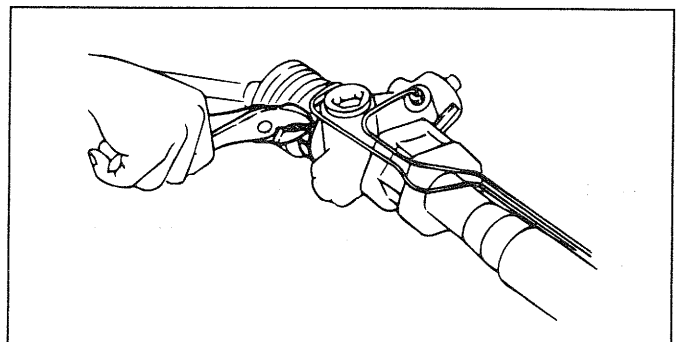
EPA9013F

2. Remove the dust cover from the ball joint.



EPA9013G

3. Remove the bellows band.



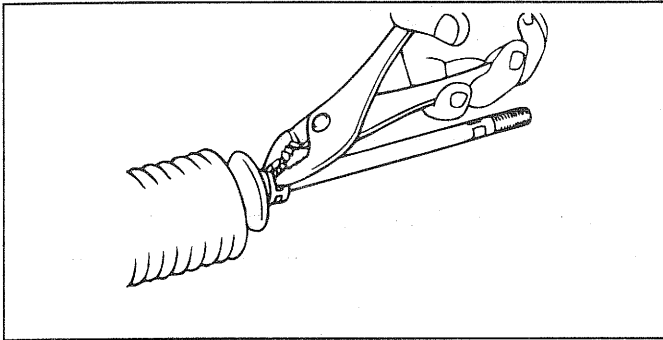
EPA9013H

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

NOTE

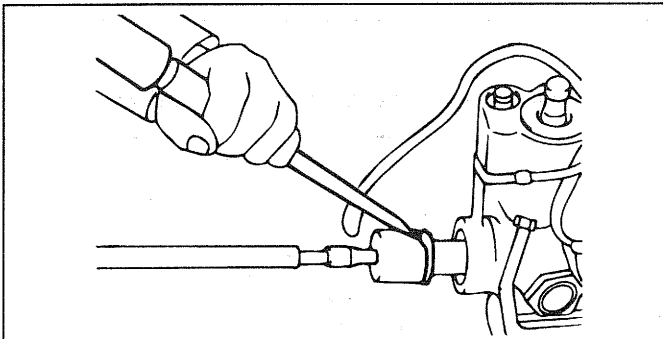
Check for rust on the rack when the bellows are replaced.

6. Remove the feed tube from the gear housing.



EPA9013I

7. While moving the rack slowly, drain the fluid from the gear housing.
8. Unstake the tab washer which fixes the tie rod and rack with a chisel.

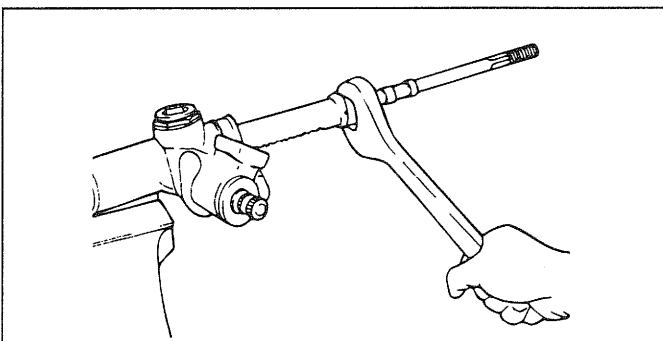


EPA9013J

9. Remove the tie rod from the rack.

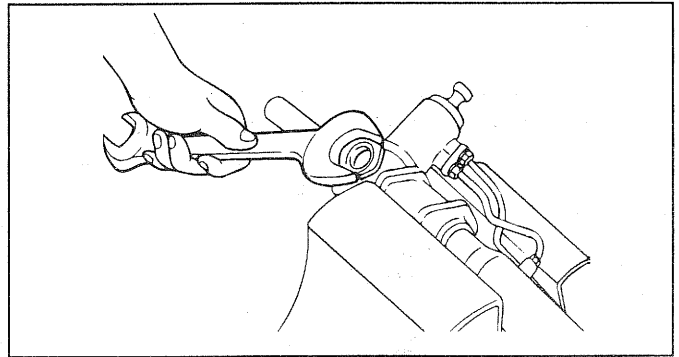
CAUTION

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



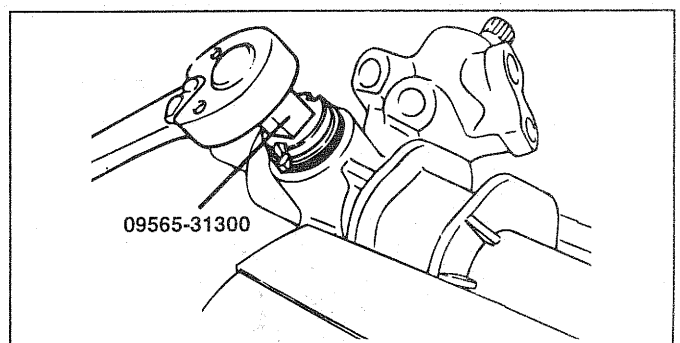
EPA9013K

10. Remove the yoke plug lock nut.



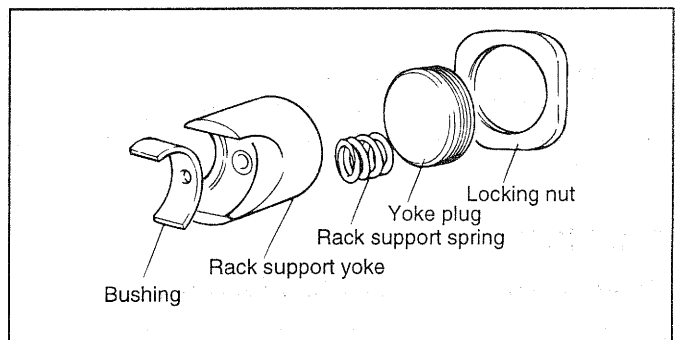
EPDA036H

11. Using the special tool (09565-31300), remove the yoke plug.



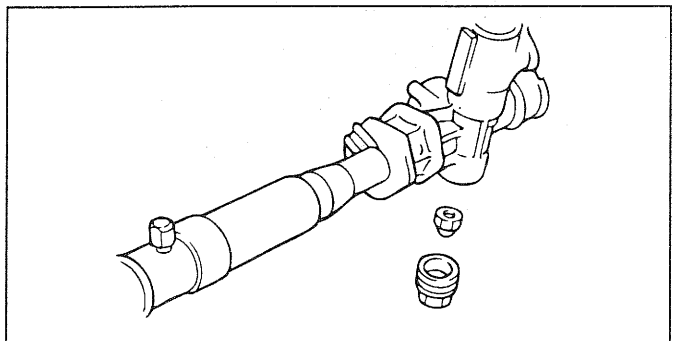
EPA9013M

12. Remove the rack support spring, rack support and bushing from the gear box.



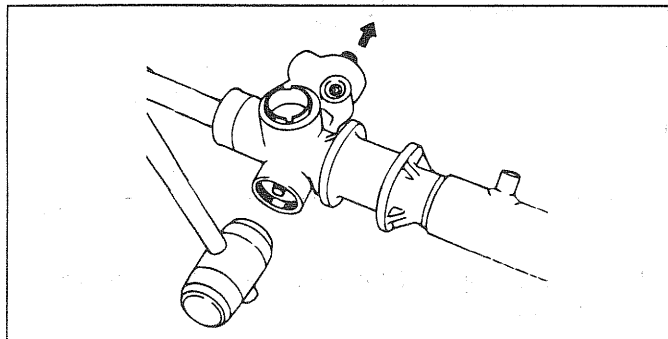
EPA9013N

13. Remove the end plug self-locking nut.



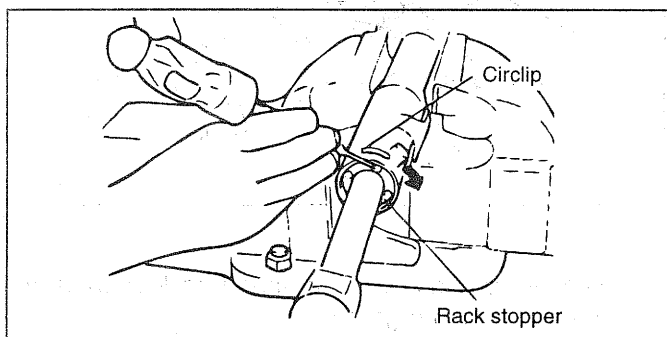
EPA9013O

14. Detach the dust seal.
15. Remove the snap ring with a snap ring plier.
16. Remove the pinion and valve assembly together with the oil seal (upper) using a soft hammer.



EPA9013P

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

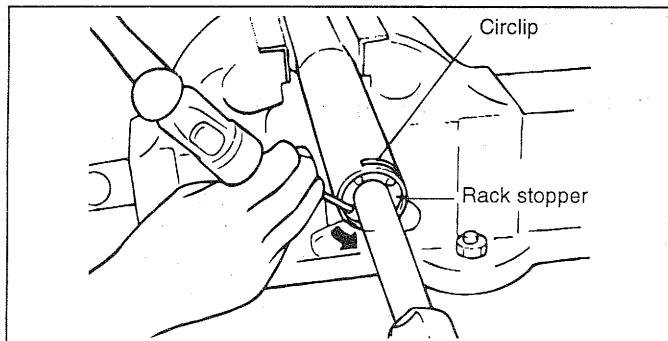


EPA9013Q

18. When the end of the circlip comes out from the notched hole of the housing rack cylinder, turn the rack stopper counter clockwise and remove the circlip.

CAUTION

Do not damage the rack when disassemble.

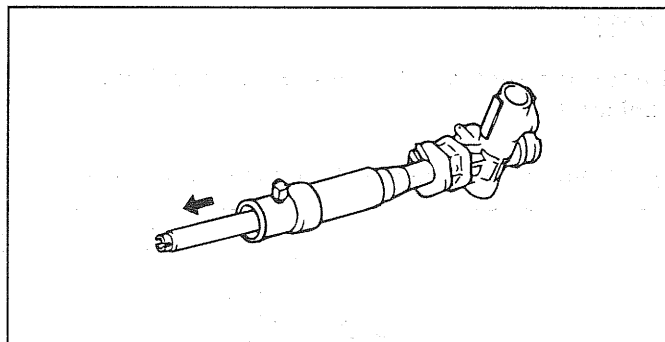


EPA9013R

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

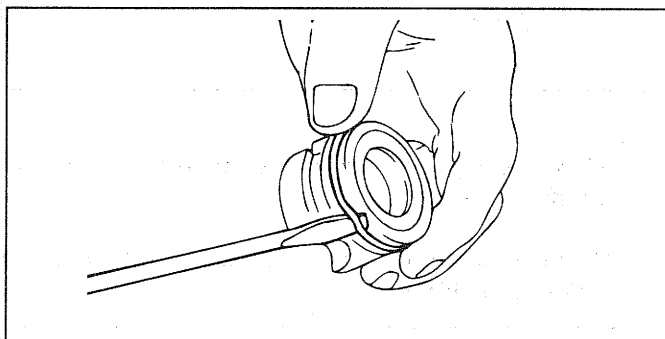
CAUTION

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



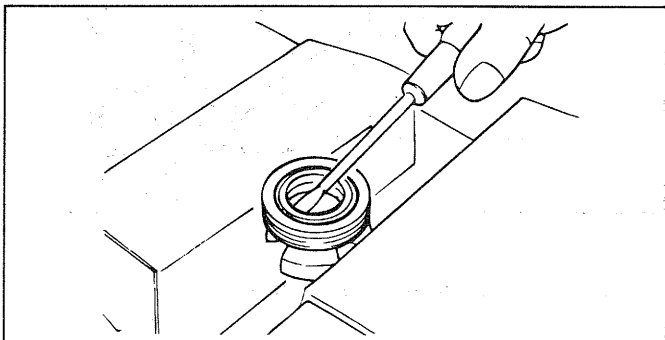
EPA9013S

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



EPA9013T

21. Remove the oil seal from the rack bushing.



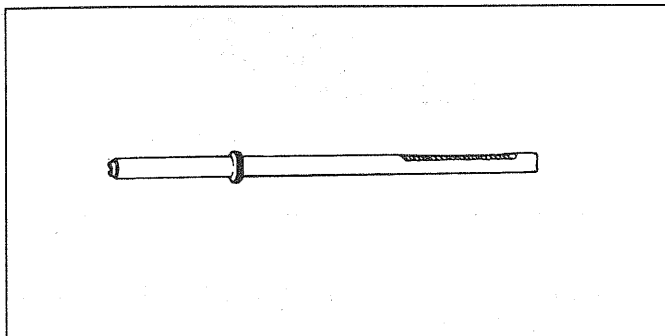
EPA9013U

INSPECTION

EPAH1100

1. Rack

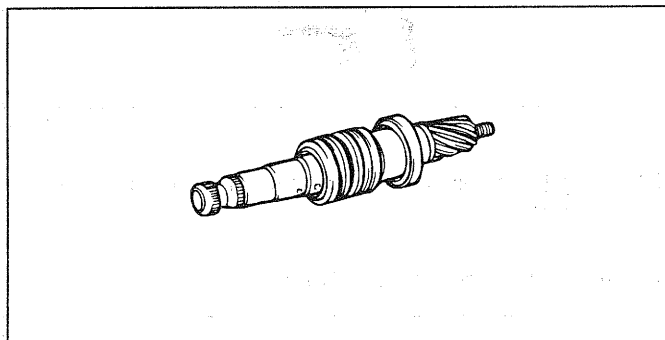
- 1) Rack tooth face damage or wear
- 2) Oil seal contact surface damage or wear
- 3) Bending or twisting of rack
- 4) Oil seal ring damage or wear
- 5) Oil seal damage or wear



EPA9013Y

2. 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



EPA9013Z

3. Bearing

- 1) Seizure or abnormal noise during bearing rotation
- 2) Excessive play
- 3) Missing needle bearing rollers

4. Others

- 1) Damage of the gear housing cylinder bore

- 2) Boot damage, cracking or ageing

ASSEMBLY

EPAH1150

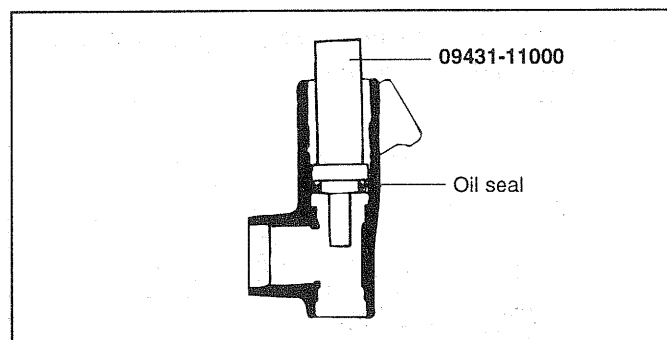
1. Apply the specified fluid to the entire surface of the oil seal and gear housing.

Recommended fluid :Power steering fluid (PSF-3)

2. Using the special tools (09431-11000), install the oil seal to the specified position in the gear housing.

CAUTION

1. Note the direction of the oil seal.
2. Use a new oil seal.

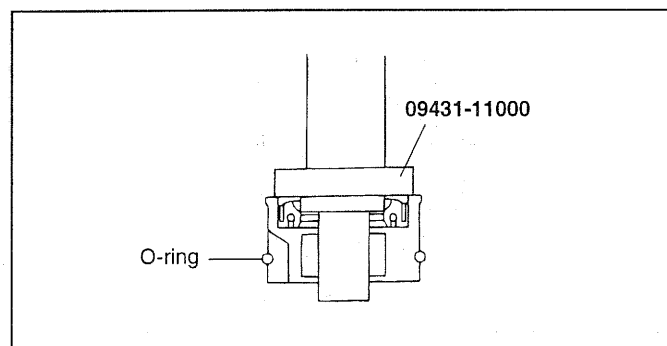


EPA9014C

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

Recommended fluid :Power steering fluid (PSF-3)

4. Install the oil seal on the rack bushing.
5. Apply the specified fluid to the entire surface of the O-ring and install to the rack bushing using the special tool (09431-11000).



EPA9014D

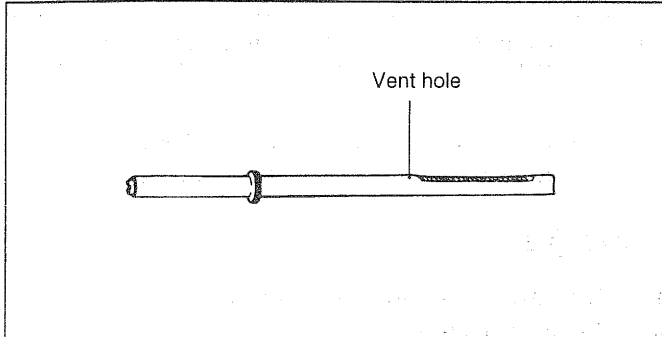
6. Apply the specified grease to the rack teeth and wrap with vinyl tape.

Recommended grease :

Multipurpose grease SAE J310a, NLGI grade #2 EP

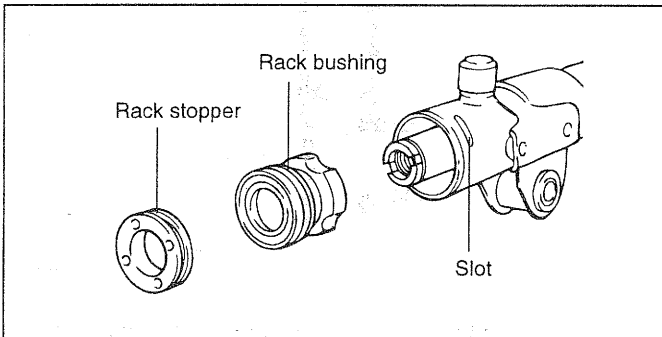
CAUTION

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



EPA9014E

7. Insert the rack into the gear housing. Install the rack bushing and rack stopper.

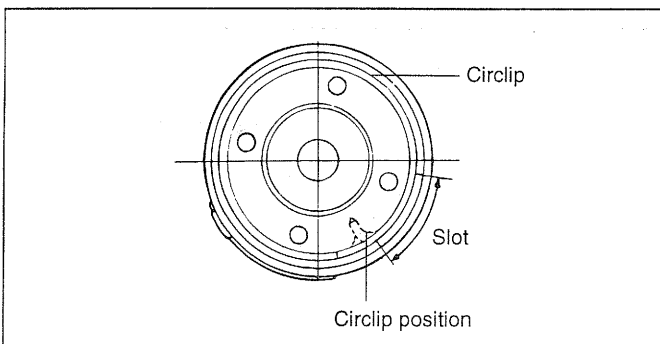


EPA9014F

8. Push in the rack stopper until the circlip groove of the rack stopper is aligned with the notched hole of the rack housing and then install the circlip while turning the rack stopper.

CAUTION

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



EPA9014G

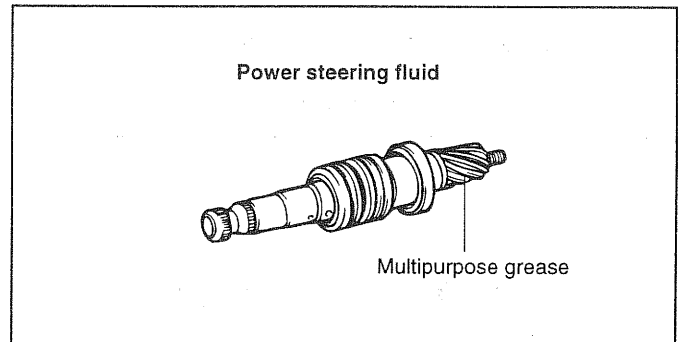
9. Apply the specified fluid and grease to the pinion valve assembly and install to the gear housing assembly.

Recommended fluid :

Power steering fluid (PSF-3)

Recommended grease :

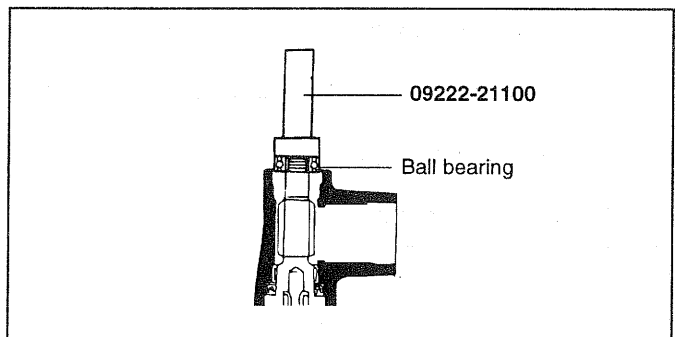
Multipurpose grease SAE J310a, NLGI #2 EP



EPA9014H

10. Install the ball bearing using special tool (09222-21100).

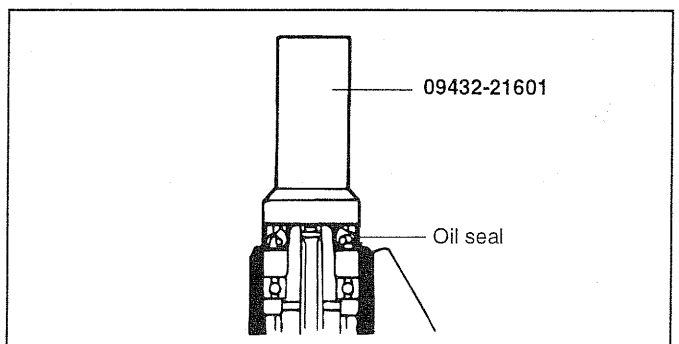
11. Install the pinion and valve assembly to the valve housing.



EPA9014I

12. Install the oil seal using the special tool (09432-21601).

13. Install the snap ring with snap ring plier

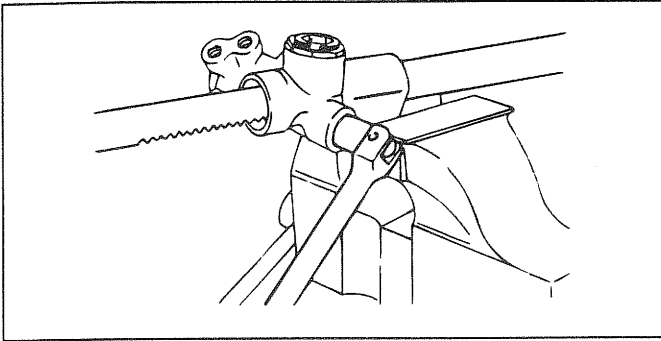


EPA9014J

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

CAUTION

Always replace the self-locking nut with a new one.



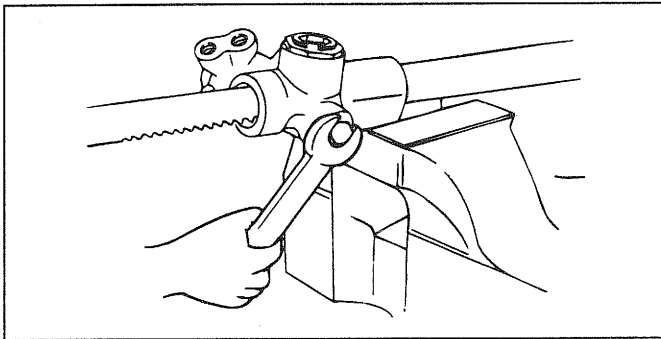
EPA9014K

15. 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, 36-51 lb-ft)

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

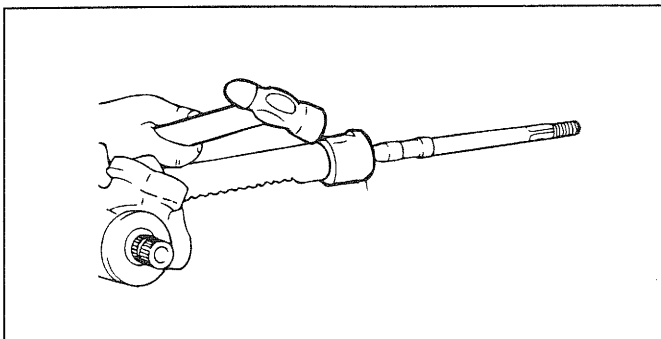


EPA9014L

17. Install the tab washer and then the tie rod and peen the tab washer end at two points to the tie rod.

CAUTION

1. Align the tab washer pawls with the rack grooves.
2. Use a new tab washer.

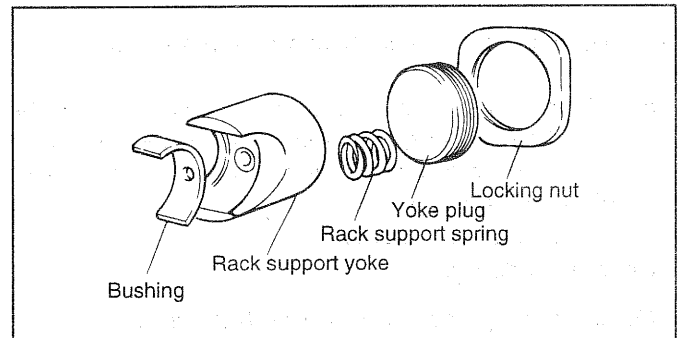


EPA9014M

18. Install the bushing, rack support, rack support spring and rack support cover in the order shown. Apply thread sealant to the threaded section of the rack support cover before installation.
19. With the rack placed at the center position, attach the rack support plug to the gear housing. Tighten the rack support plug within the range of 20-25 Nm (200-250 kg-cm, 14.5-18 lb-ft), using the special tool. Loosen the rack support plug for approximately 20° and adjust torque to the standard value.

Tightening torque

Locking nut : 50-70 Nm (500-700 kg-cm, 36-51 lb-ft)



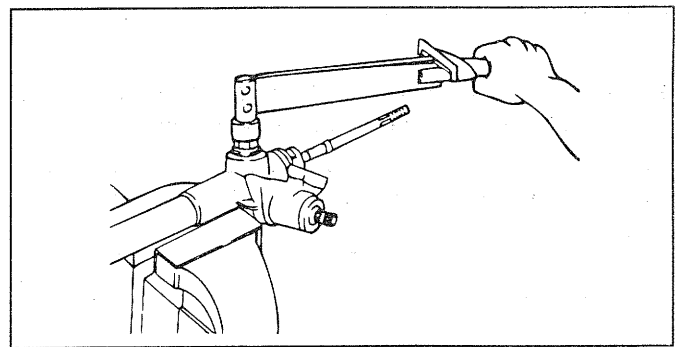
EPA9013N

20. After adjusting, yoke plug with lock nut.

NOTE

When it cannot be adjusted within the specified return angle, check rack support plug components or replace.

21. Tighten the feed tube to the specified torque and install the mount rubber using adhesive.



EPA9014O

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

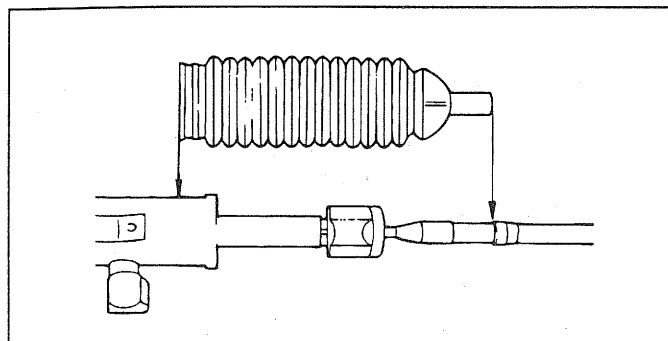
Recommended grease

Multipurpose grease SAE J310a, NLGI #2 EP

23. Install the new attaching band to the bellows.

CAUTION

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



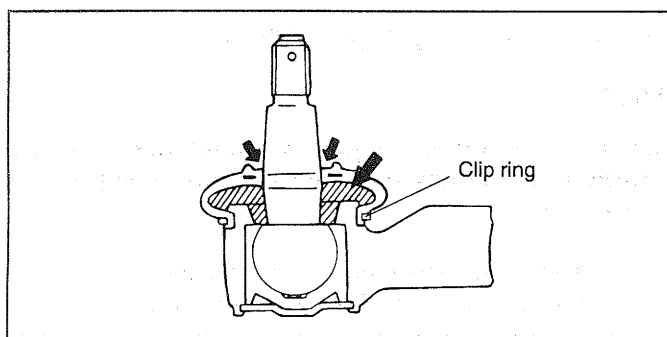
EPA9014P

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

25. Fill the dust cover inner side and lip with the specified multipurpose grease, and fix the dust cover in position with the clip ring attached in the groove of the tie rod end.

Recommended grease

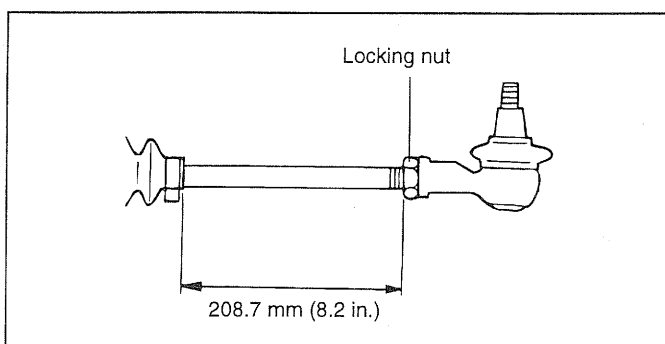
Multipurpose grease SAE J310a, NLGI #2 EP



EPA9014Q

26. Install the tie rods so that the length of the left and right tie rods will be equal to the standard value.

Tie rod free length [Standard value] :208.7 mm (8.2 in.)

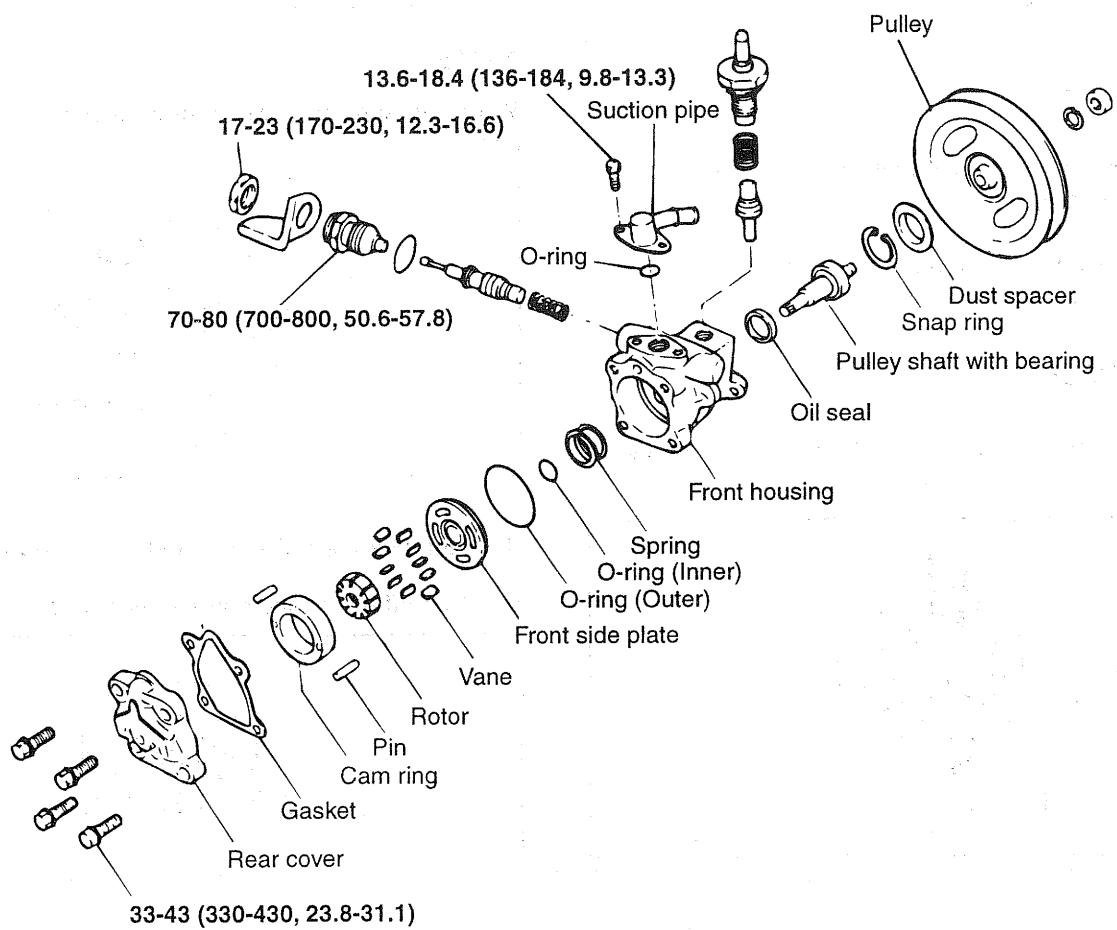


EPA115A

27. Install the rack, pinion, tie rod assembly to the vehicle.

POWER STEERING OIL PUMP

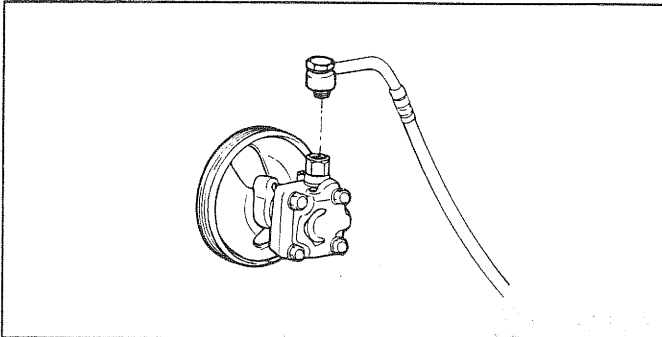
COMPONENTS EPHA1200



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

REMOVAL EPHA1250

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.

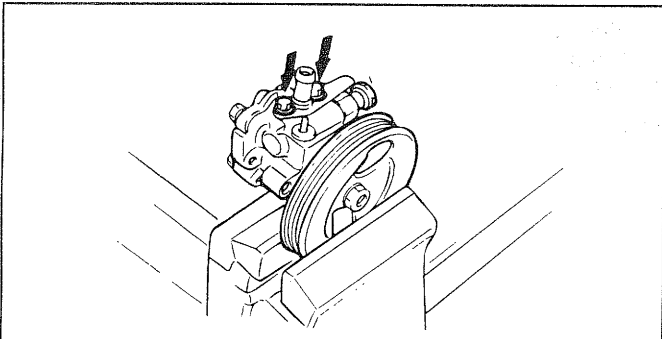


EPA9016A

3. To remove the drive belt, loosen the oil pump mounting bolt.
4. Remove the oil pump mounting bolts and disconnect the pressure switch connector.

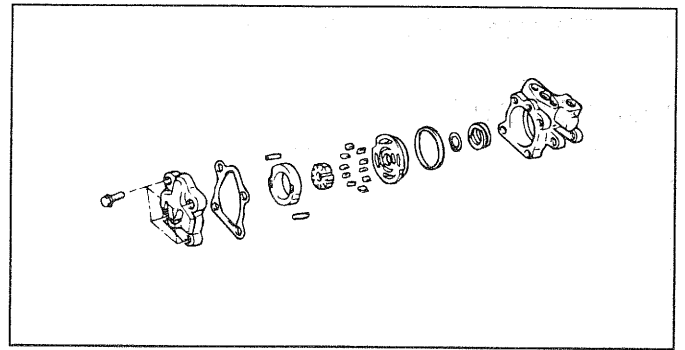
DISASSEMBLY EPHA1300

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



EPA9017A

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

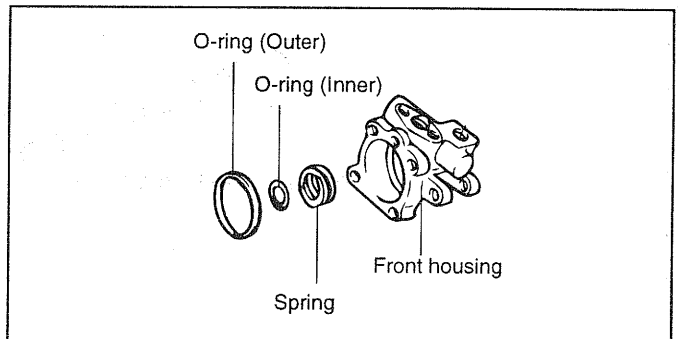


EPA9017B

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

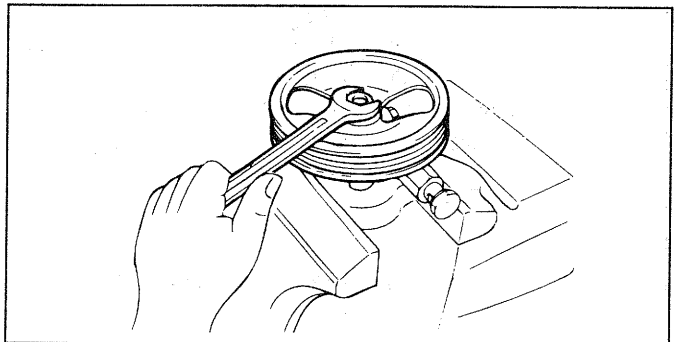
NOTE

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



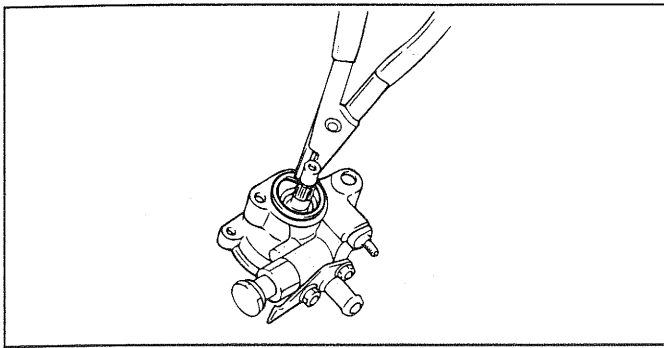
EPA9017C

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



EPA9017D

10. Remove the snap ring using the snap ring pliers.
11. Pull off the pulley shaft and bearing by using a plastic hammer.

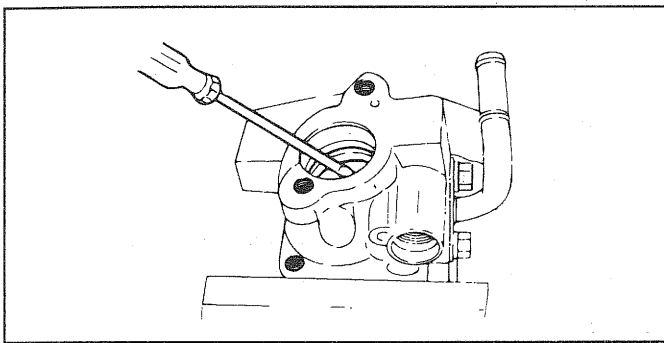


EPA9017E

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

NOTE

When assembling, use a new oil seal.



HCT56-94

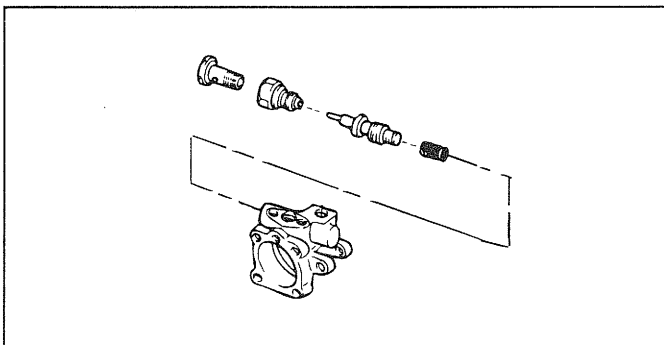
13. Remove the guide bracket and nut.

14. Remove the connector from the oil pump body, and then remove the flow control valve and flow control spring.

15. Remove the O-ring from the connector.

CAUTION

Do not disassemble the flow control valve.

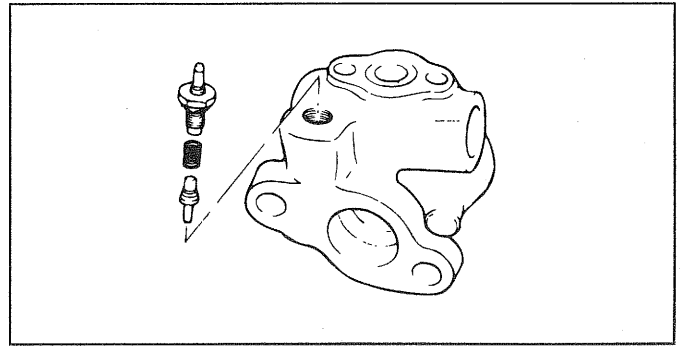


EPA9017G

16. Remove the oil pump switch.

17. Take the spring and the spool out.

18. Remove the O-ring from the oil pump switch.



HCT56-96

INSPECTION

EPA1350

1. Clean all disassembled parts with a 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 around the pulley shaft oil seal, replace the oil seal.
5. If the serrations of the pulley or pulley shaft are deformed or worn out, replace them.

ASSEMBLY

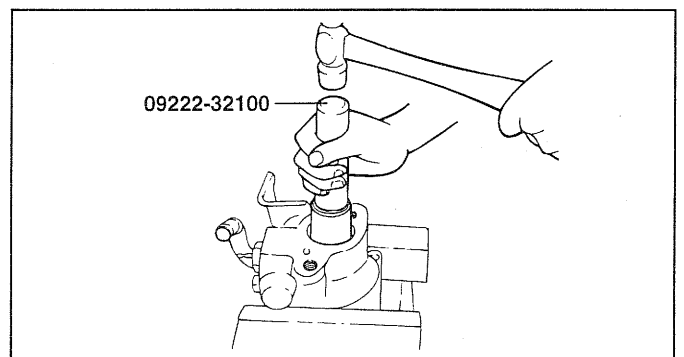
EPA1400

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

NOTE

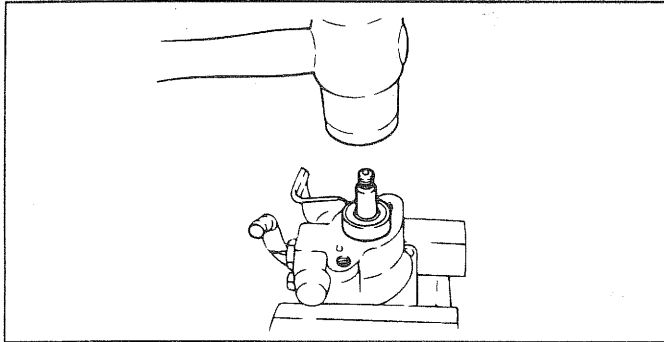
Apply a thin coat of power steering fluid to all parts including the oil seal and O-ring.

3. Install the guide bracket and nut.
4. Using special tool (09222-32100), install the oil seal into the pump body.



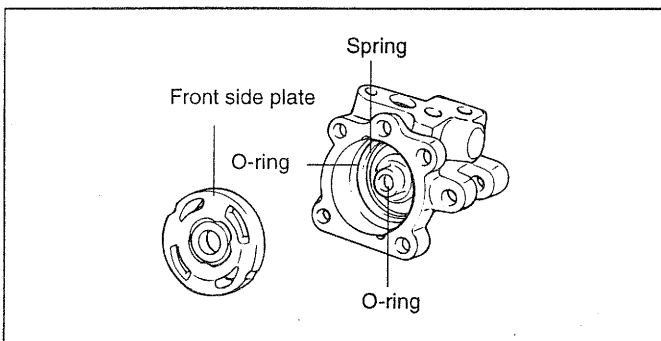
EPDA044A

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



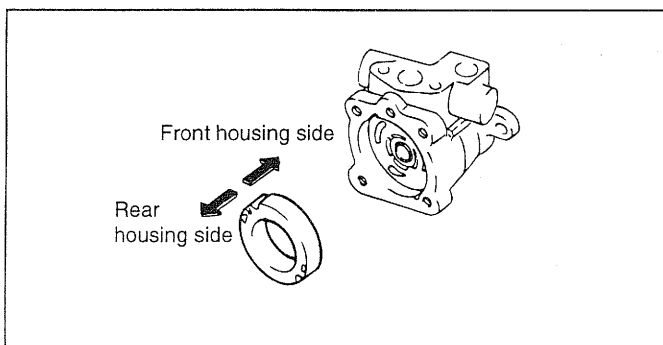
HCT56-98

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



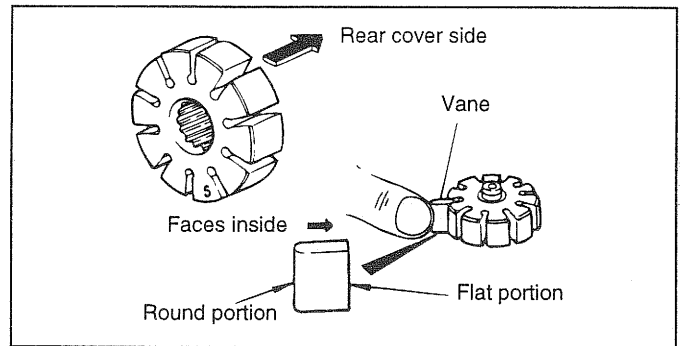
EPA9018C

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



EPA9018D

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.



EPA9018E

12. Install the gasket and rear cover.

13. Tighten the suction connector.

INSTALLATION

EPAH1450

1. Install the oil pump to the oil pump bracket.
2. Install the suction hose.
3. Install the ribbed V-belt and adjust its 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 reservoir.

Recommended fluid : Power steering fluid (PSF-3)

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