

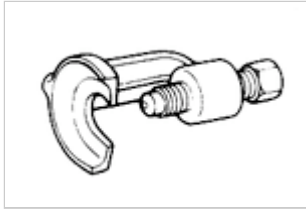
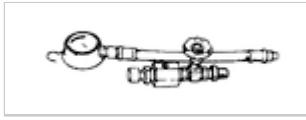


Steering System

General Information

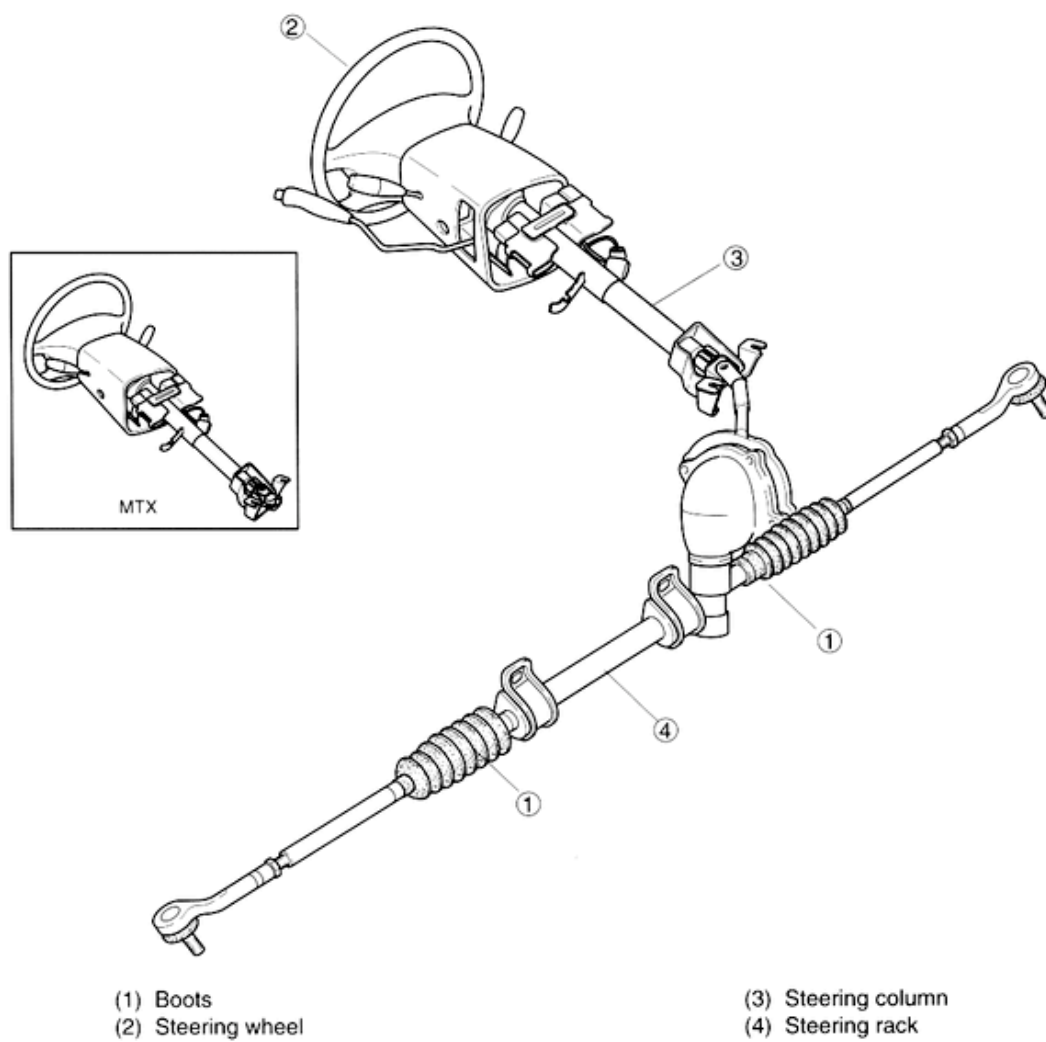


Service special tools

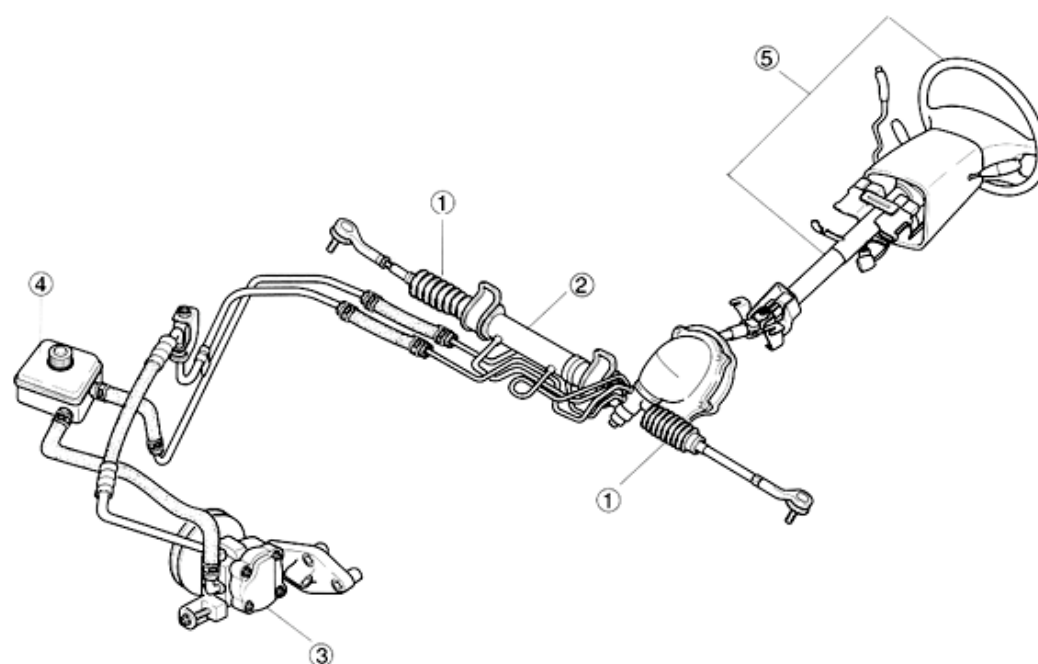
Tool(Name & Number)	Illustration	Use
OK130 283 021 Puller, ball joint		Used for removing tie rod end.
OK130 322 020 Attachment, steering worm bearing preload measuring		Used for measuring pinion pre-load.
OK201 323 AA0 Gauge set, power steering		Used for measuring fluid pressure.



Manual steering



Power steering



- (1) Boots
- (2) Steering rack
- (3) Power steering pump

- (4) Power steering fluid reservoir
- (5) Steering wheel and column



General diagnostics and tests

Manual steering

Problem	Possible cause	Action
Steering feels heavy (Vehicle raised)	Poor lubrication, foreign material in mechanism or damage of steering ball joint Inadequate gear oil, foreign material in oil Improper steering gear preload Damaged steering gear Malfunction of steering shaft joint Malfunction of steering gear Cracked or worn steering gear mounting rubber Damaged suspension	Repair Lubricate or replace Adjust Replace Replace Replace Replace Repair
Steering wheel pulls to one side	Damaged steering linkage Damaged wheel or tire Malfunction of brake system and suspension	Replace Replace Repair or Replace
General instability while driving	Worn or damaged steering rack Improper steering gear preload Damaged steering linkage Damaged wheel or tire Malfunction of suspension	Replace Adjust Replace Repair Repair
Steering feels unstable	Malfunction of steering gear Malfunction of steering rack Malfunction of steering linkage	Replace Replace Replace
Excessive steering wheel play	Worn steering gear Worn or damaged steering linkage Loose steering gear mounting bolts	Replace Replace Tighten
Poor steering wheel return	Stuck or damaged steering rack Improper steering gear preload Damaged wheel or tire malfunction of suspension	Replace Replace gear Repair Repair
Shimmy (Steering wheel vibrates left/right)	Damaged steering linkage Loose steering gear mounting bolts Stuck or damaged steering joint Damaged or worn front wheel bearings Damaged wheel or tire Malfunction of suspension	Replace Tighten Replace Replace Repair Repair
Abnormal noise from steering system	Loose steering gear mounting bolts Malfunction of steering gearObstruction near steering column Loose steering column Worn steering joints	Tighten Replace Replace Tighten Replace

Power steering

Problem	Possible cause	Action
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Movements of steering feels heavy	Looseness or damage of power steering belt Insufficient power steering fluid or air insertion Crushed or twisted hoses Pipe damage Leakage of power steering fluid Low fluid pressure Insufficient air pressure in tire Incorrect wheel alignment adjustment Steering gear linkage binding Interference between steering column and or parts interference between steering column and parts.	Adjust or replace power steering belt Fluid fill up or air bleeding Replace hoses Replace pipes Repair or replace leaking parts Repair or replace power steering pump or gear Adjust tire air pressure Adjust wheel alignment Replace or repair steering gear linkage Repair or replace steering gear linkage Repair or replace steering column Replace or repair
Poor returning of steering wheel	Insufficient air pressure in tire Incorrect wheel alignment adjustment Steering gear linkage binding Malfunction of steering gear	Adjust tire air pressure Adjust wheel alignment Repair or replace steering gear linkage Replace steering gear
Irregular steering power	Looseness of power steering belt Malfunction of steering column or looseness of mounting bolt Steering gear linkage binding Malfunction of steering gear	Adjust power steering belt Repair or tightening of steering column Repair or replace steering linkage Replace steering gear
Steering wheel pulls to one side	Insufficient air pressure in tire Improper preload adjustment or worn of wheel bearing Incorrect wheel alignment Malfunction of steering gear	Adjust tire air pressure Adjust or replace wheel bearing Adjust wheel alignment Replace steering gear
Leakage of power steering fluid	Problem with hose coupling Clogged or damaged hoses Damage of power steering fluid reservoir Over flow Malfunction of power steering pump Malfunction of steering gear	Repair or replace hose coupling Replace hoses Replace reservoir Air bleeding or adjust fluid level Replace power steering pump Replace steering gear
Abnormal noise	Looseness of power steering pump Looseness of steering gear Looseness of power steering pump bracket Looseness of power steering pump pulley nut Excessive tightness or looseness of belt Air insertion Malfunction of steering gear malfunction of power steering pump Interference on steering column or pressure hose Looseness or excessive tightness of steering linkage	Tightening of power steering pump Tightening of steering gear Tightening of power steering pump bracket Tightening of power steering pump pulley nut Adjust power steering pump belt Air bleeding Replace steering gear Replace power steering pump Remove interference on steering column or repair /replace hoses Adjust tightness of steering linkage or replace steering linkage.



Specifications

Item		Type	
		M/S	P/S
Steering wheel	Outer diameter in(mm)	380(14.96)	
	Lock-to-lock turns	3.93	3.09
Steering column	Type	Collapsible	
	Joint type	2-cross joint	
	Tilt stroke in(mm)	NON TILT	
Steering rack	Type	Rack-and-pinion	
	Gear ratio	∞	
	Rack travel in(mm)	5.51(140)	
P/S fluid	Capacity US qt (liter)	-	0.64(0.6)
	Type	-	ATF M-III or DESRON-II

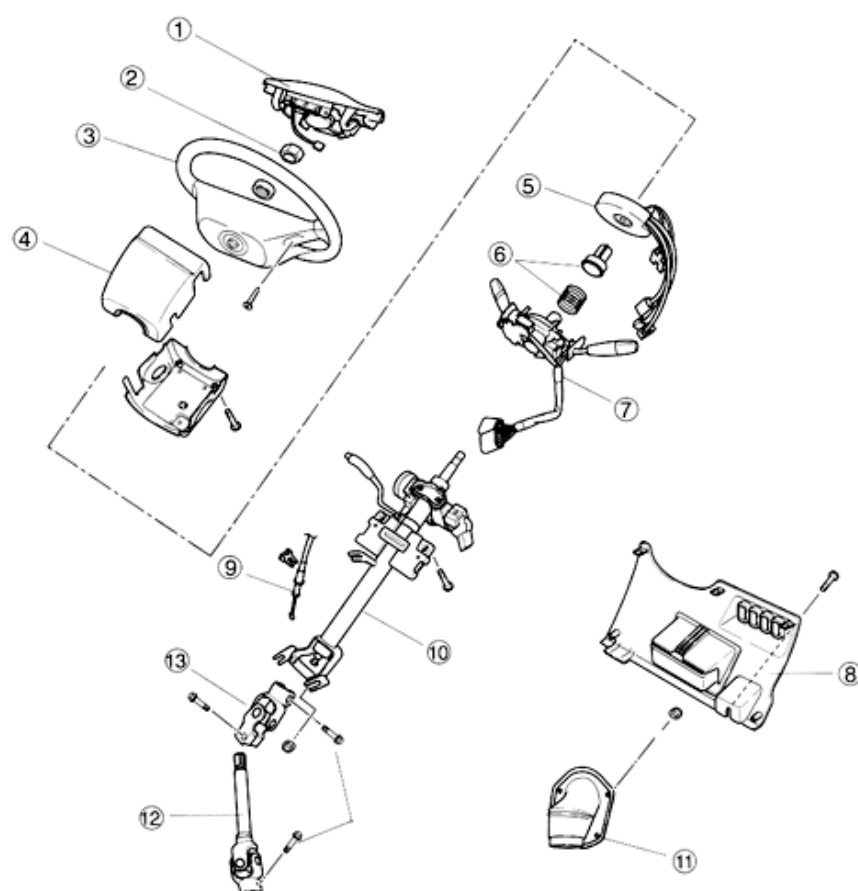


Steering System

Steering Column & Shaft



Component

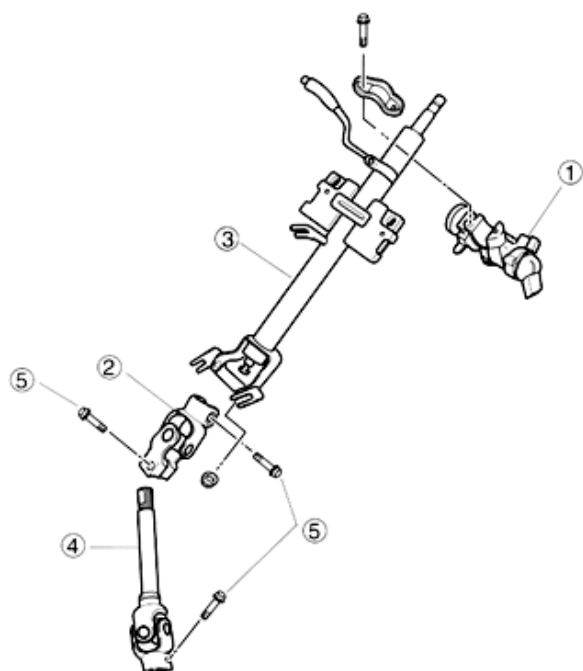


- (1) Driver's air bag module
- (2) Retaining nut
- (3) Steering wheel
- (4) Column cover
- (5) Clock spring
- (6) Canteen cam and spring
- (7) Combination switch

- (8) Undercover
- (9) Selector cable (Except Europe)
- (10) Steering column assembly
- (11) Dust cover
- (12) Intermediate shaft
- (13) Universal joint



Component



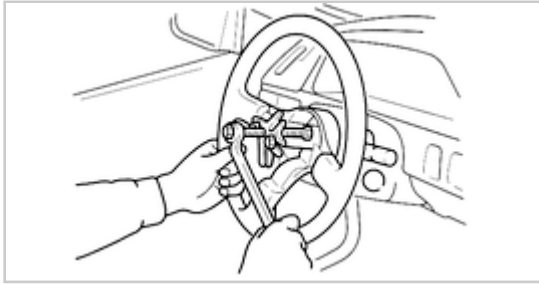
- (1) Steering lock assembly
- (2) Universal joint
- (3) Steering shaft assembly

- (4) Intermediate shaft
- (5) Pinch bolts



Removal

1. Disconnect (-) terminal of battery.
2. Place vehicle in a straight forward position.
3. Loosen four bolts from steering wheel and remove driver's air bag module. (Refer to section Air bag system)
4. Disconnect horn switch electrical connector.
5. Make an alignment mark on steering wheel and steering shaft for proper installation.
6. Remove retaining nut and washer from a end of steering shaft.
7. Remove steering wheel with a suitable puller.



NOTICE

Do not remove steering wheel by hitting end of shft with a hammer, Damage to shaft threads and shaft support bearings could occur.

8. Remove the clockspring assembly (Air bag only).
9. Remove the cancel cam.
10. Remove three lower steering column panel screws and separate upper and lower steering column panels.
11. Remove three combination switch screws.
12. Disconnect combination switch electrical connectors.
13. Slide combination switch off steering column shaft.
14. Disconnet ignition switch electrical connector.
15. Remove the selector cable clip and disconnect the selector cable(Auto transaxle only).
16. Remove one universal joint pinch bolts.
17. Remove two lower column bracket nuts.
18. Remove two upper column bracket bolt.
19. Remove steering column from vehicle.

Installation

1. Install steering column in vehicle.
2. Tighten two lower column bracket nuts.
3. Tighten upper column bracket bolt.

Tightening torque : Nut 12~17 lb-ft (16~23 N·m, 1.6~2.3kg-m)

Bolt : 12~17 lb-ft (16~23 N·m, 1.6~2.3 kg-m)

4. Tighten two universal joint pinch bolts.
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Tightening torque : 13~20 lb-ft(18~26 N·m, 1.8~2.7 kg-m)

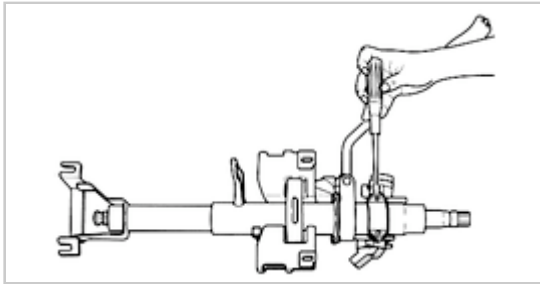
5. Connect the selector cable (Auto transaxle only). (Refer to section Auto transaxle)
6. Connect ignition switch electrical connector.
7. Install combination switch to steering column shaft.
8. Connect combination switch electrical connectors.
9. Install upper and lower steering column panels.
10. Tighten three lower steering column panel screws.
11. Connect connectors and install clock spring to steering column shaft (Refer to section air bag).
12. Install properly steering wheel to steering shaft.
13. Install washer and install retaining nut and tighten.

Tightening torque : 29~36 lb-ft(39~49 N·m, 4~5 kg-m)

14. Connect horn switch electrical connector.
15. Install driver's air bag module and tighten four bolts.(Refer to section Air bag system)
16. Connect (-) terminal of battery.

Disassembly

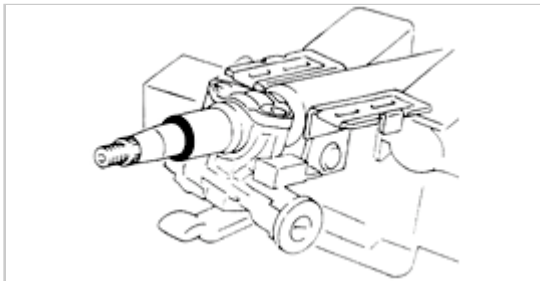
1. Make a groove (-) on the head of the steering mounting bolt using a chisel, and loosen the bolt using a screwdriver then remove the steering lock assembly



NOTICE

Secure column in a vise whose jaws are covered with soft brass or cloth.

2. Hold steering column in a vise and use a screwdriver to remove lock bolts.
3. Remove steering lock assembly.



4. Remove two universal joint pinch bolts from steering column assembly and intermediate shaft.
5. Remove intermediate shaft pinch bolt.

Inspection

1. Check for following and replace assembly if necessary.

Steering shaft assembly - Column bushing wear.

Intermediate shaft - Excessive play in universal joint, abnormal noise, or sticking.



Steering lock assembly

Verify that cable connector cannot be moved when key is in LOCK position, but that it will move freely with key in any other position.

Reassembly

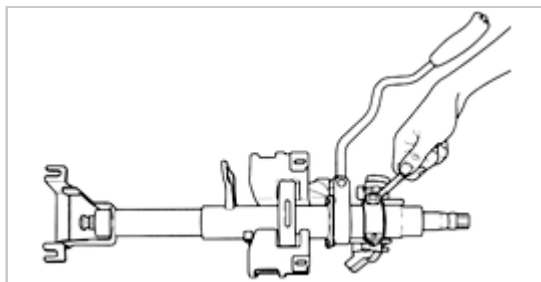
1. Install intermediate shaft pinch bolt.

Tightening torque : 13~20 lb-ft (18~26 N·m, 1.8~2.7 kg-m)

2. Install universal joint onto steering column assembly and intermediate shaft and then tighten two universal joint pinch bolts.

Tightening torque : 13~20 lb-ft (18~26N·m, 1.8~2.7 kg-m)

3. Install steering lock assembly on jacket. Install new steering lock mounting bolts, and tighten them until heads break off.



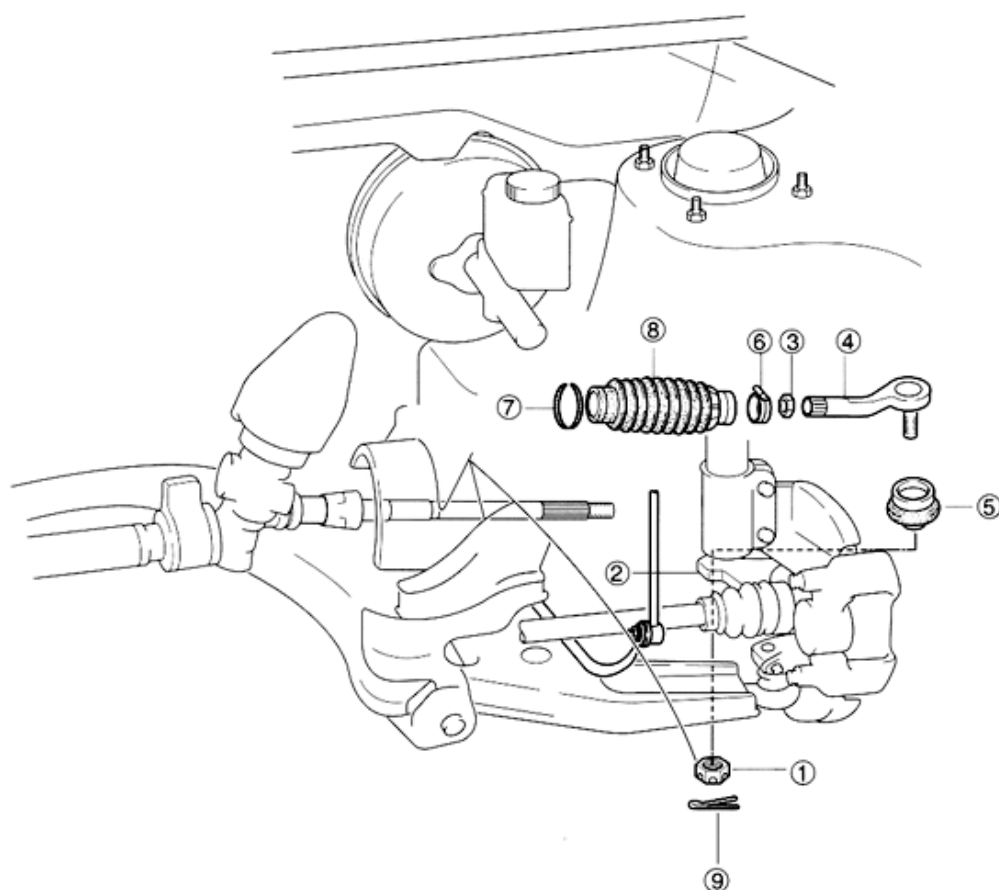


Steering System

Manual Steering System - Gear Box



Component



- (1) Nut (replace)
- (2) Steering knuckle
- (3) Jam nut
- (4) Tie rod end
- (5) Tie rod end boot (replace)

- (6) Boot retaining clip (replace)
- (7) Boot retaining clip (replace)
- (8) Steering rack boot
- (9) Cotter pin (replace)

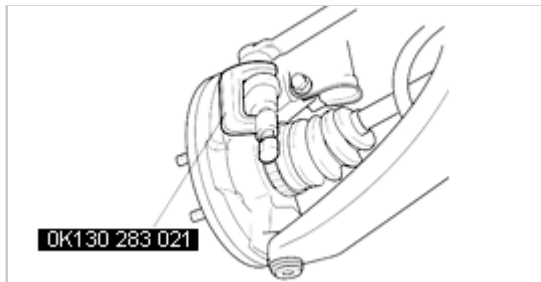


Removal

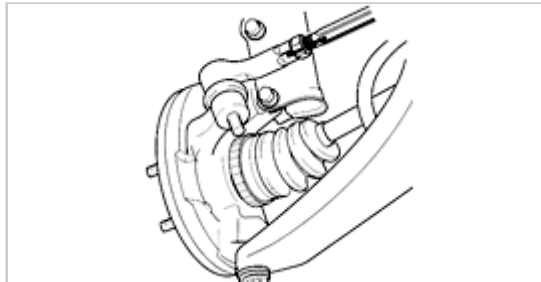
1. Lift front of vehicle and support it with safety stands.
2. Remove wheel and tire.
3. Remove plastic undercover.
4. Turn wheels fully to left.
5. Pull out cotter pin, and remove nut.
6. Remove tie rod from knuckle are with SST(-K130 283 021).

NOTICE

Replace nut temporarily so screw thread does not become damaged.



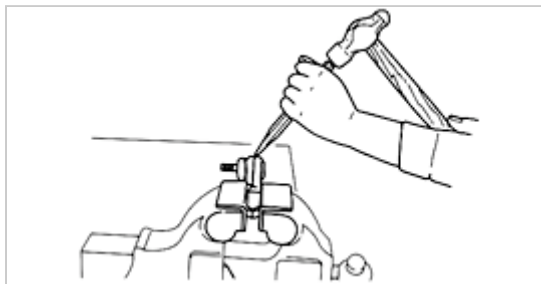
7. Mark alignment of tie rod, jam unit, and tie rod end as shown.



8. Loosen tie rod jam nut, and then remove tie rod.
9. Secure tie-rod end in a vise.
10. Place a chisel against dust boot, holding it at angle shown.
11. Carefully remove tie rod boot, working around boot.

NOTICE

Do not scar area where the tie rod seals to the dust boot.

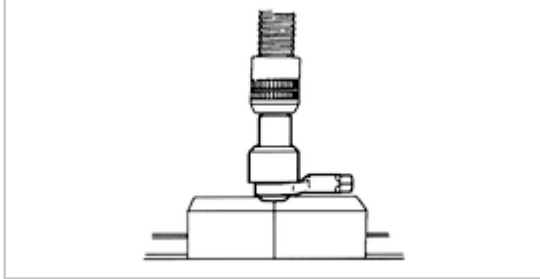


12. Loosen steering rack boot retaining clip.
13. Remove tie rod jam nut.

14. Remove steering rack boot.
15. Remove boot clip.

Installation

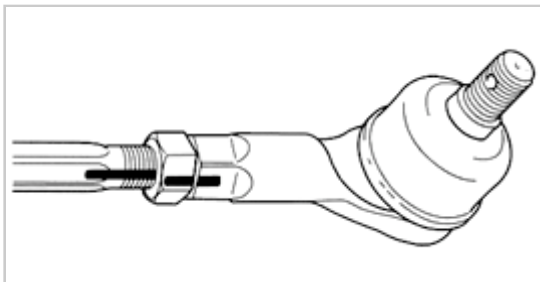
1. Put a small amount of grease into new tie rod dust boot.
2. Install dust boot onto tie rod end with suitable tool and a press.



3. Fill the new steering rack boot with specified grease.

Specified grease : Approx.66 oz (30g)

4. Apply a coat of sealant to inside of boot to rack housing contact area.
5. Install steering rack boot.
6. Install retaining clip on boot.
7. Install tie rod jam nut and align with mark made before removal.
8. Install tie rod end and rotate to align with mark made before removal.
9. Tighten tie rod jam nut.



Tightening torque : 40~55 lb-ft (54~75 N·m, 5.6~7.6 kg-m)

10. Install tie rod to knuckle arm.
11. Install tie rod nut and tighten to specified torque. If necessary, tighten nut farther to install cotter pin.

Tightening torque : 22~33 lb-ft(29~44 N·m, 3~4.5 kg-m)

12. Install new cotter pin.
13. Install plastic undercover.
14. Install wheel and tire.
15. Lower vehicle.



Inspection

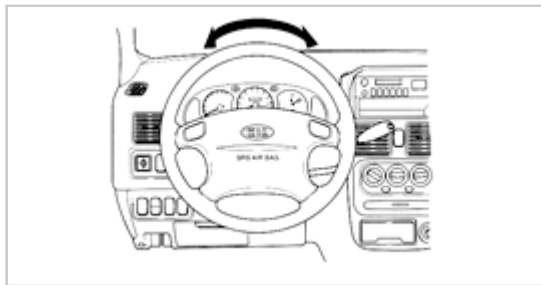
Steering wheel play

1. With wheels in straight-ahead position, gently turn steering wheel left and right to determine if play is within specification. Play is measured at outer rim of wheel

Play : 1.18 in (30 mm) Max.

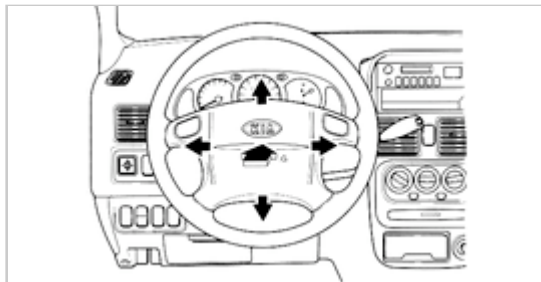
NOTICE

If play exceeds specification, either steering joints are worn or backlash in steering rack is excessive.



Looseness of steering wheel and column

1. Move steering wheel in directions shown to check for wear in steering column bearings, steering shaft universal joint play, and steering wheel to shaft looseness.



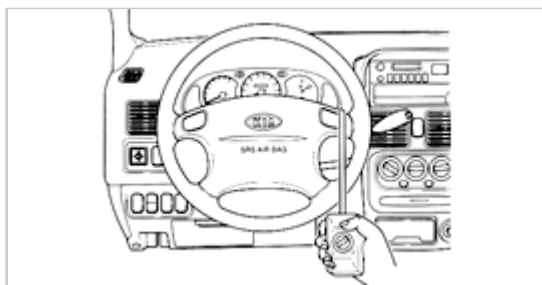
Steering wheel effort

1. With vehicle on a hard level surface, turn wheels to straight-ahead position.

NOTICE

Measure after turning steering wheel to left and right 5 times or more.

2. Attach a pull scale to outermost point of a steering wheel spoke. Then, with wheels in straight-ahead position, check steering effort required to turn steering wheel to left or to right
3. If measured effort exceeds specification, check following : rotation torque of pinion, rotation torque of each ball joint and seizure of tie-rod ends.



Steering wheel effort : 33 lb (147 N)

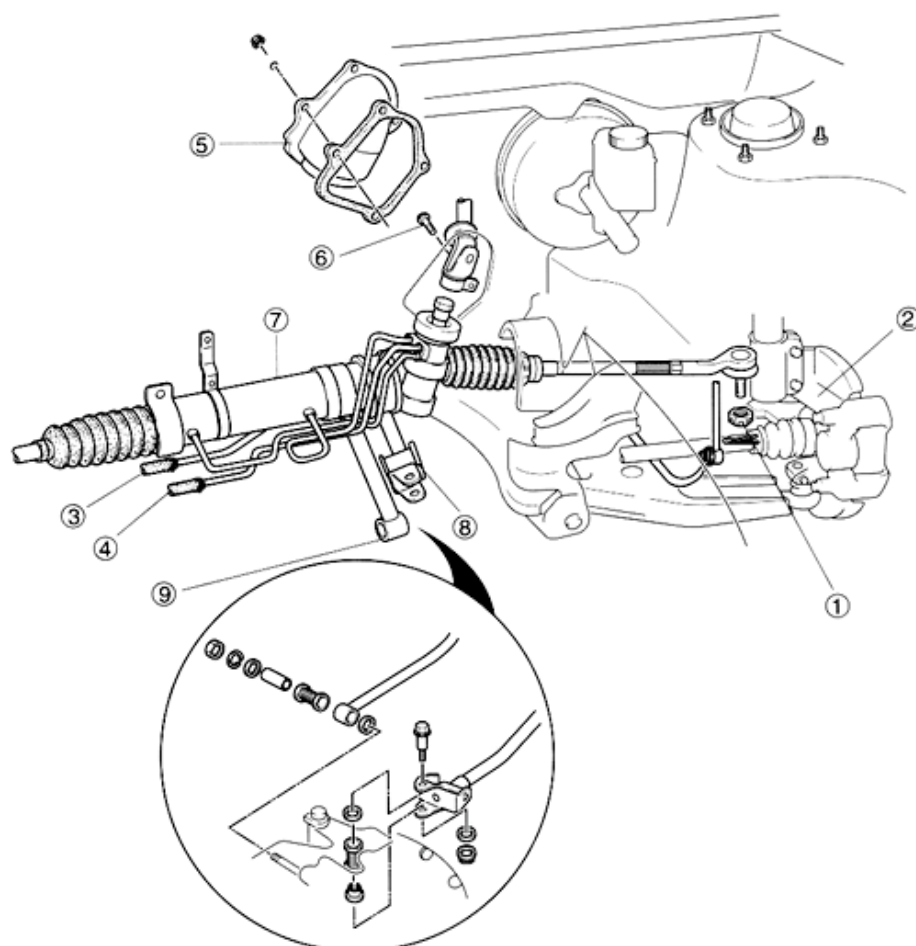


Steering System

Hydraulic Power Steering System - Power Steering Gear Box



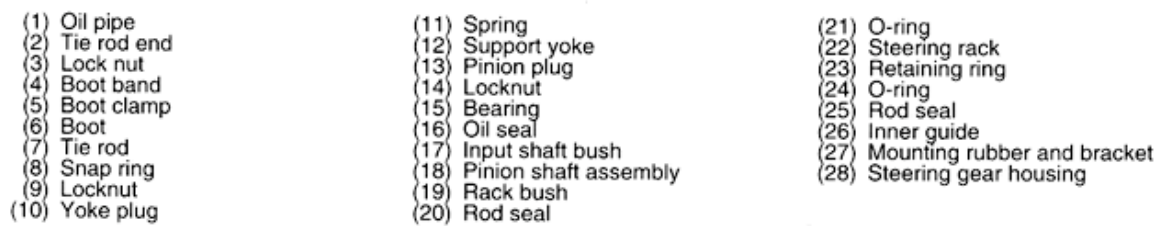
Component



- (1) Tie-rod end nut
- (2) Steering knuckle
- (3) High-pressure line
- (4) Return line
- (5) Dust cover

- (6) Pinch bolt
- (7) Steering rack and linkage
- (8) Change control rod
- (9) Extension bar

Component





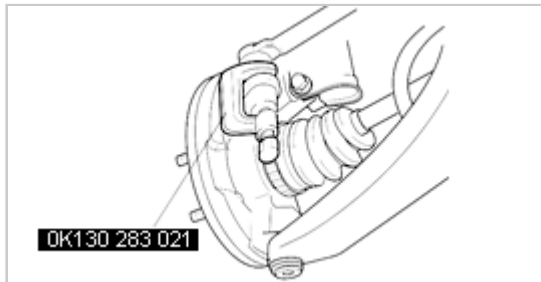
Removal

Steering rock and linkage

1. Loosen wheel lug nuts.
2. Raise front of vehicle and support it with safety stands.
3. Remove wheels and tires.
4. Pull out cotter pins, and remove nuts.
5. Separate tie-rod from knuckle arm with SST(OK130 283 021).

NOTICE

Replace nuts temporarily so that screw threads do not become damaged.

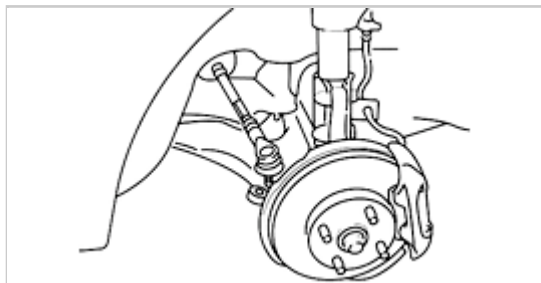


6. Remove bracket fixed to pipe and gear box after loosening two bracket bolts and nuts.
7. Disconnect high-pressure line and return line.

NOTICE

Use a container or rags to catch power steering fluid when disconnecting high pressure line and/or return line.

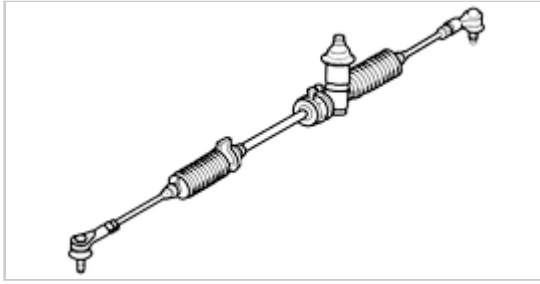
8. Remove two universal joint pinch bolts and intermediate shaft pinch bolt.
9. Remove four steering column nuts from vehicle and then remove sealing cover
10. Loosen two steering rack nuts.
11. Remove change control rod and extension bar from transaxle.
12. Remove steering rack from right side of vehicle. If necessary, replace rack and linkage entirely, do not disassemble.



Installation

Steering rack and linkage

1. Install steering rack into right side of vehicle.
2. Tighten four steering rack nuts.

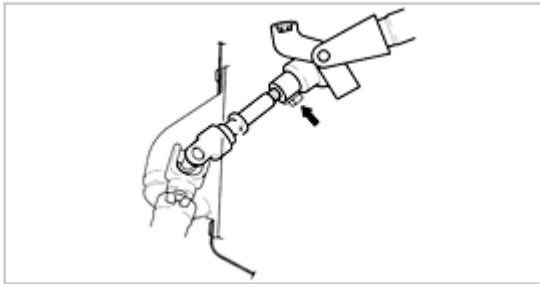


Tightening torque : 27~38 lb-ft(37~52 N·m, 3.8~5.3 kg-m)

3. Tighten intermediate shaft bolt.

Tightening torque : 13~20 lb-ft(18~26 N·m, 1.8~2.7 kg-m)

4. Install sealing covers and then tighten four steering column nuts in vehicle.
5. Tighten two universal joint pinch bolts.



Tightening torque : 13~20 lb-ft(18~26 N·m, 1.8~2.7 kg-m)

6. Connect high-pressure line and return line fittings.
7. Install bracket to pipes and gear box and tighten two bracket bolts and nuts.
8. Install tie rod into knuckle arm.
9. Tighten nuts and install cotter pins.

Tightening torque : 22~33 lb-ft (29~44 N·m, 3~4.5 kg-m)

10. Install extension bar on transaxle.

Tightening torque : 28~38 lb-ft(38~51 N·m, 3.8~5.3 kg-m)

11. Install change control rod on transaxle.

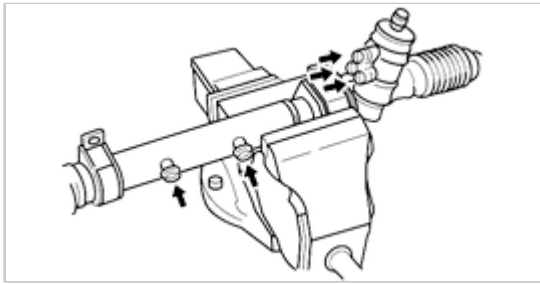
Tightening torque : 12~16 lb-ft(16~22 N·m, 1.6~2.3kg-m)

12. Install wheels and tires.
13. Lower vehicle.

Disassembly

Steering rack and linkage

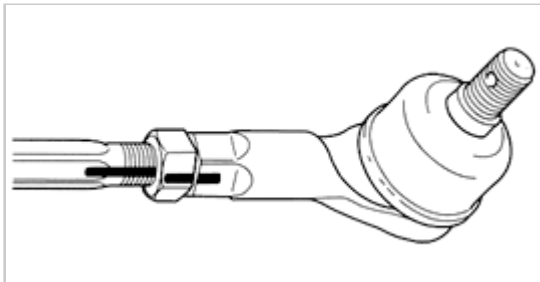
1. After loosening two bracket bolts and nuts, remove oil pipe bracket and then remove four oil pipes from steering gear.



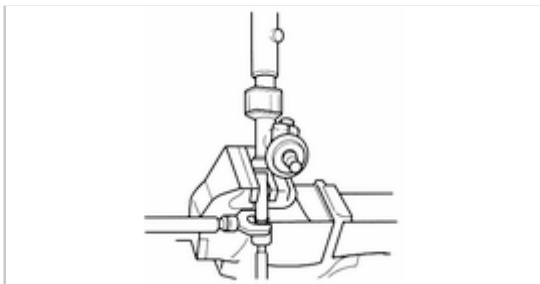
NOTICE

After disconnecting pipes, use a plug or adhesive type tape to seal each port to prevent entry of foreign materials.

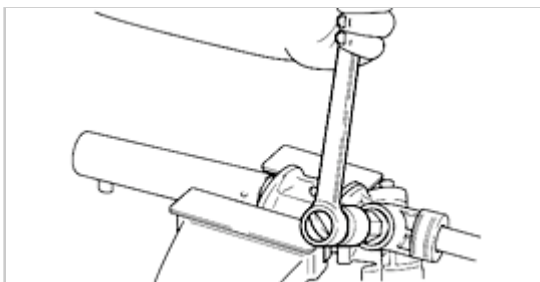
2. Before removing tie rod ends, make a mark for proper installation.



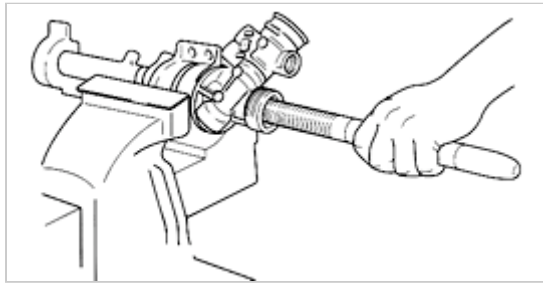
3. Remove tie rod end from rack.
4. Remove spring pin with a pin-and hammer.



5. Remove lock nut from yoke plug.
6. Remove yoke plug with suitable tool.
7. Remove spring and support yoke.



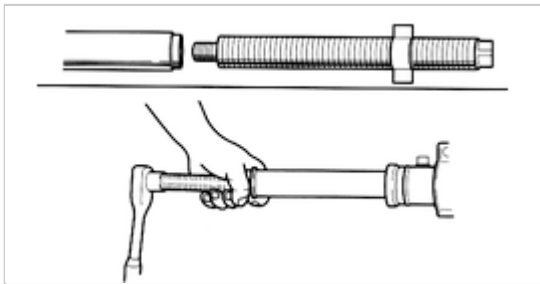
8. Remove locknut.
9. Set steering gear housing assembly in a vise and remove pinion shaft assembly.
10. Remove rack bushing.
11. Slide suitable tool over rack from gear housing side.



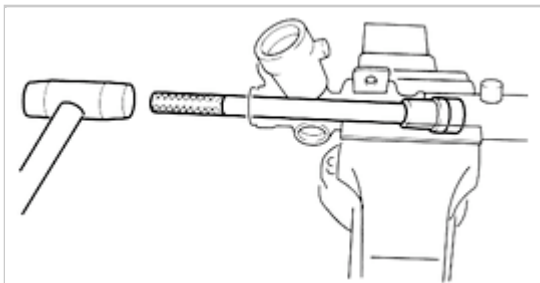
NOTICE

If rack is removed without using suitable tool, there is a possibility that rack housing may be damaged by rack teeth.

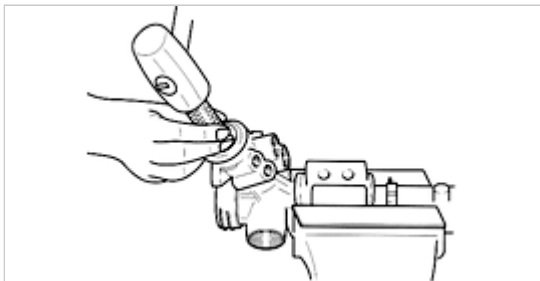
12. Install suitable tool to threaded part of rack a tube side of gear housing.
13. Remove rod seal at tube side while pulling out rack.



14. Insert suitable tool from pinion housing side so that it contacts spacer.
15. Set suitable tool against suitable tool inserted in step 1.
16. Secure gear housing in a vise.
17. Drive spacer and rod seal out of housing.



18. Drive lower bearing out of housing with suitable tool.

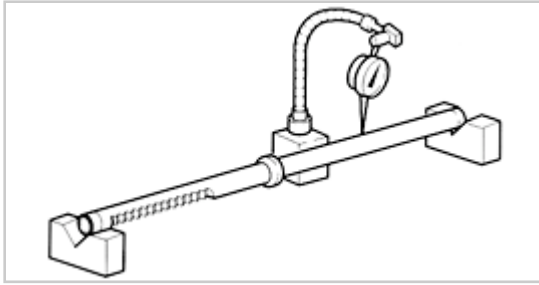


Inspection

Steering rack and linkage

1. Check rack for cracks or other damage, or for abnormal wear of teeth ; replace if necessary.
2. Check seal ring part of rack for abnormal wear or damage ; replace it if necessary.

3. Use V blocks to support both ends of large-diameter part of rack ; check for excessive bending ; replace it if necessary.

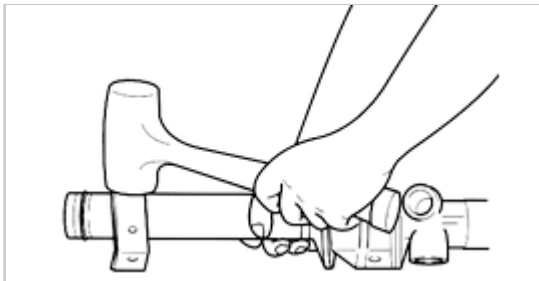


Bending : 0.006 in (0.15 mm) (near rack center)

Reassembly

Steering rack and linkage

1. Install mounting rubber.
2. Tap mounting bracket on with a plastic hammer.

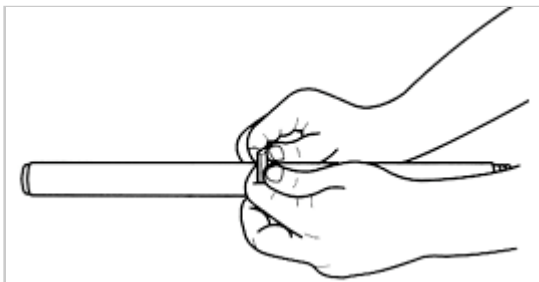


3. Apply ATF (Automatic Transmission Fluid to)-ring and weal ring.
4. Install O-ring in ring groove of rack.
5. Install seal ring in groove of rack.

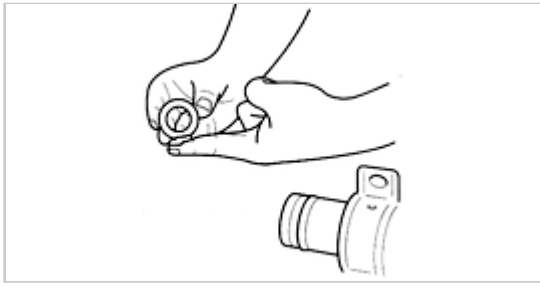
NOTICE

Be careful not to cut or otherwise damage edge of seal ring.

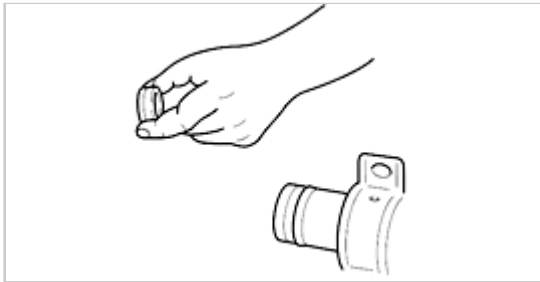
6. Compress seal ring by hand by to fit it to groove.



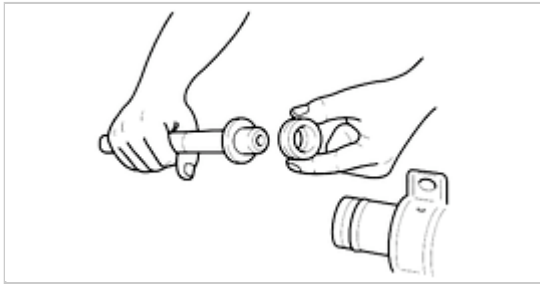
7. Apply grease to flat surface of housing insert.



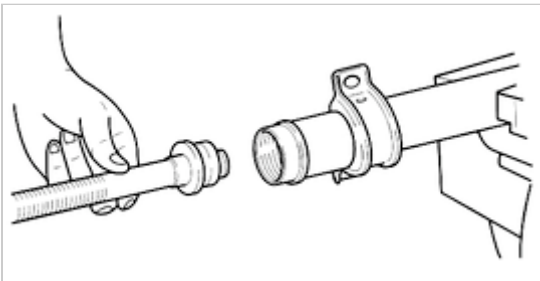
8. Connect rod seal to grease coated surface of housing insert.
9. Apply ATF to inside and outside of housing insert and rod seal.



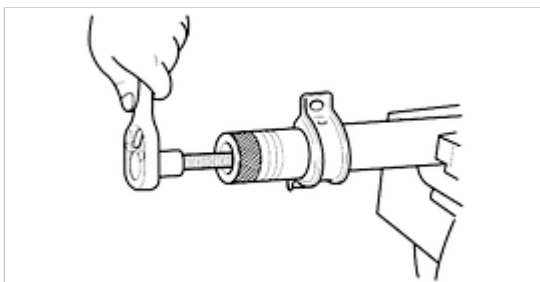
10. Set housing insert and rod seal on suitable tool.



11. Insert suitable tool from tube side of gear housing.

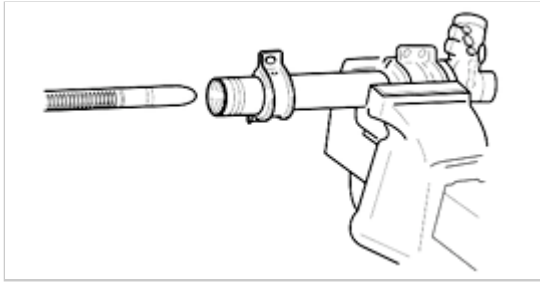


12. Install and tighten suitable tool nut against tube.
13. Turn suitable tool shaft in as far as it will go to push in rod seal and housing insert.
14. Remove suitable tool.



15. Apply grease (lithium base, NLGI No.2) to friction surface and teeth of rack.
16. Slide suitable tool over rack and slide it in from tube side of gear housing.

17. Remove suitable tool.



18. Apply sealant to thread area of rack bushing .

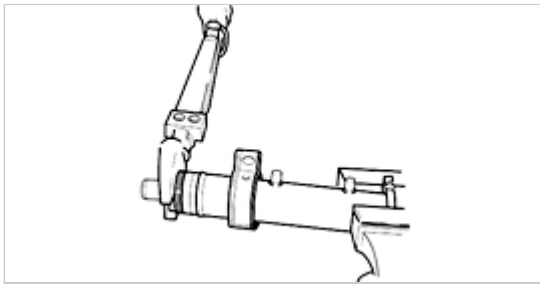
19. Install rack bushing assembly in rack housing.

20. Tighten rack bushing as rod seal goes into tube.

Tightening torque : 65~72 lb-ft (88~98 N·m, 9~10 kg-m)

NOTICE

Rod seal is pushed to correct position in rack housing by tightening of rack bushing.

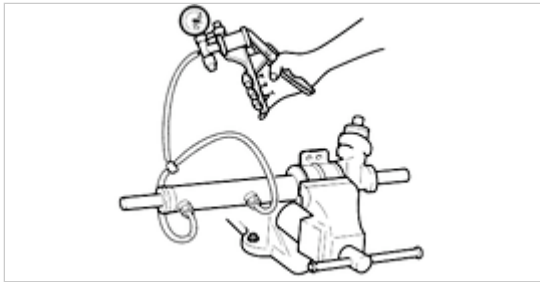


21. Connect suitable tool to cylinder housing.

22. Connect a vacuum pump to suitable tool.

23. Apply 15.7 inHg(400 mmHg) vacuum.

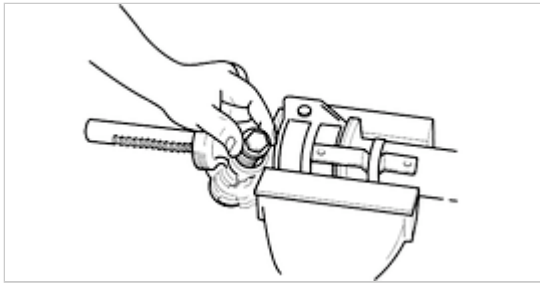
24. Verify that vacuum is held for at least 30 seconds. If not, check seal and assembly.



25. Secure gear housing in a vise so that lower bearing bore faces upward.

26. Apply ATF (Automatic Transmission Fluid) to lower bearing, then install in housing.

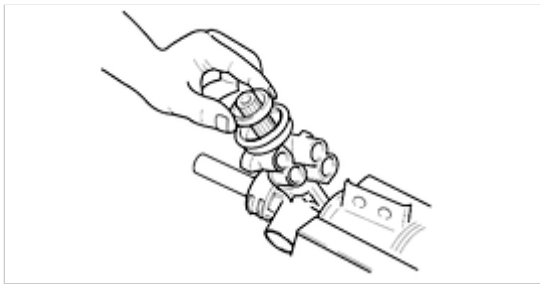
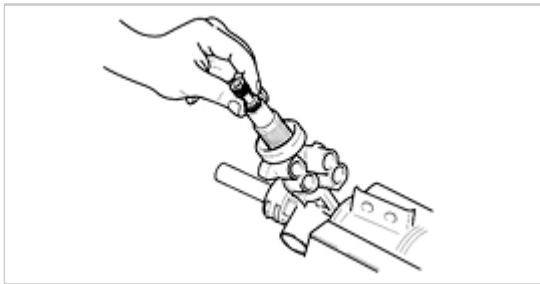
27. Press bearing into gear housing with pinion cover. Tighten pinion plug until tightening force suddenly increases.



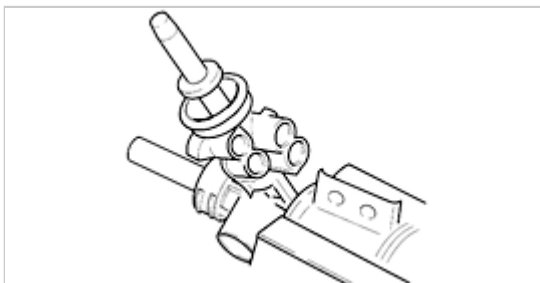
28. Apply grease (lithium base, NLGI No.2) to teeth of pinion shaft.
29. Apply ATF to seal ring and friction surface of control valve.
30. Install pinion shaft in housing.

NOTICE

- 1) Be careful not to damage oil seal with pinion teeth.
- 2) Be careful not to damage edge of seal ring and control valve.



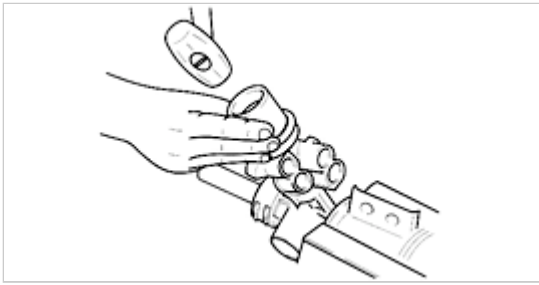
31. Apply ATF to input shaft bearing, and then install it.
32. Apply ATF to oil seal, and fill inside lip with grease (lithium base, NLGI No.2).
33. Slide suitable tool over serrations of pinion shaft assembly.
34. Slide suitable tool over serrations of pinion shaft assembly.
35. Slide oil seal over suitable tool and position it in housing.



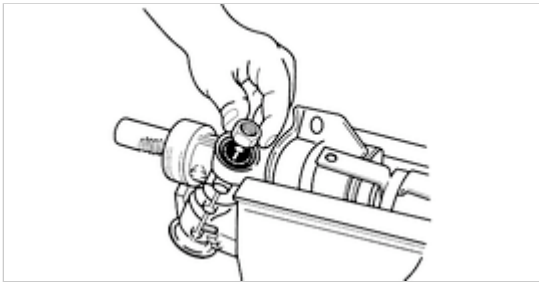
36. Tap oil seal in with suitable tool until snap ring installation groove in housing is just visible.

NOTICE

Apply uniform force to oil seal when installing.

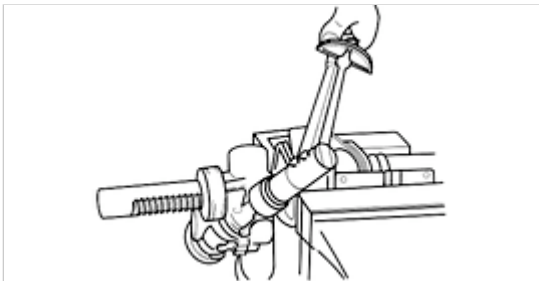


- 37. Temporarily install tie rod on tube side of rack housing.
- 38. Install locknut on pinion shaft assembly and turn it until tie rod contacts tube.
- 39. Tighten locknut.



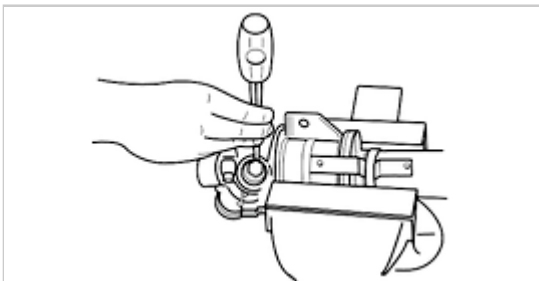
Tightening torque : 29~36 lb-ft(39~49 N·m, 4.0~5.0 kg-m)

- 40. Apply thread sealant to housing cover treads.
- 41. Install housing cover.

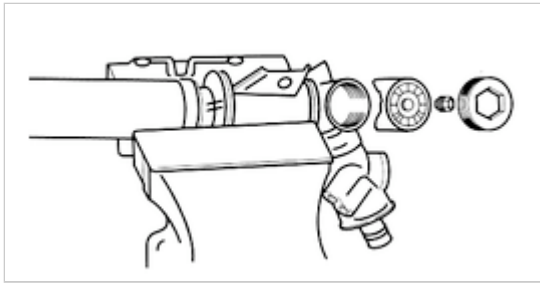


Tightening torque : 33~40 lb-ft(44~54 N·m, 4.5~5.5 kg-m)

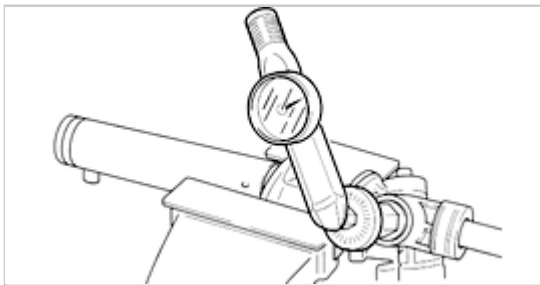
- 42. Stake between rack housing and pinion plug cover at two points with a center punch.



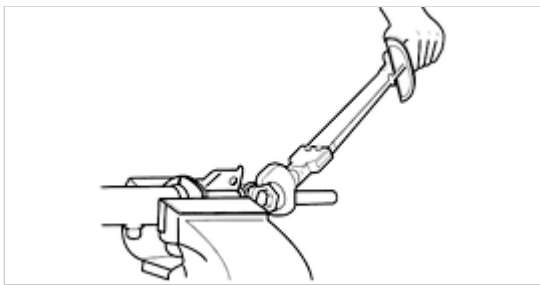
- 43. Secure gear housing in a vise so that support yoke position faces upward.
- 44. Apply grease (Lithium base, NLGI No.2) to rack sliding surface of support yoke ; then install in housing.
- 45. Install support yoke.



46. Set rack in center position.
47. Tighten yoke plug to 14.4 lb-ft (20 N·m, 200 kg-cm) then loosen it.
48. Tighten again to 3.6 lb-ft (4.9N·m, 50 kg-cm), and then loosen it 67.5°
49. Apply thread sealant to exposed threads of yoke plug.

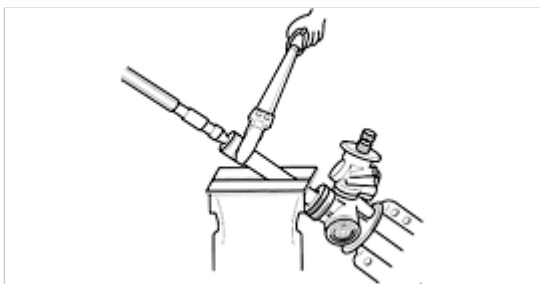


50. Install and tighten locknut.



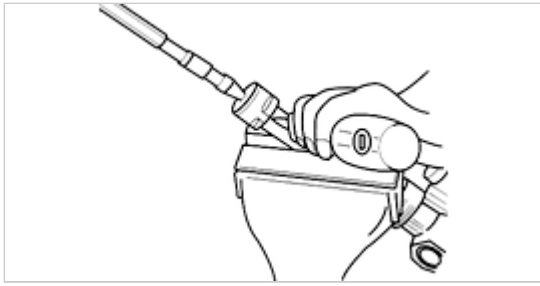
Tightening torque : 36~43 lb-ft (49~59 N·m, 5.0~6.0 kg-m)

51. Secure rack in a vise.
52. Install tie rod on rack.



Tightening torque : 80~94 lb-ft(108~128 Nm, 11~13 kg-m)

53. Tap in a new roll pin.



54. Fill new steering rack boot with specified grease.

Specified grease (KTSG 06) ; Approx 66 oz (30g)

55. Apply a coat of sealant to inside of boot contact to rack housing contact area.

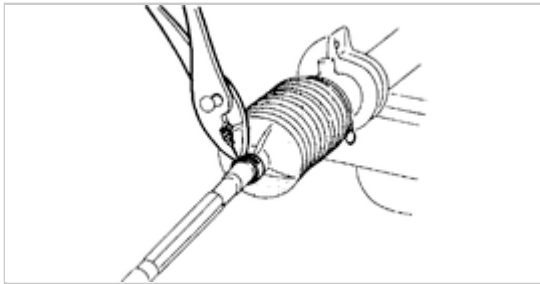
56. Apply grease to inner surface of small end of boot.

57. Install boot, wrap a new wire around large end of boot two times and then twist it 4 to 4.5 times. Bend twisted part toward mounting bracket.

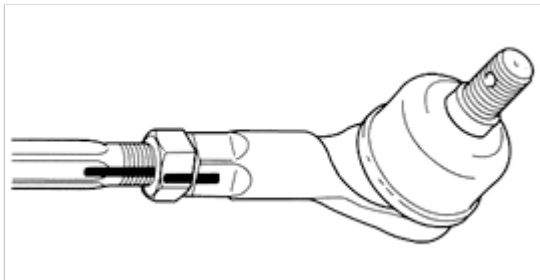
NOTICE

Be careful not to break boot wire.

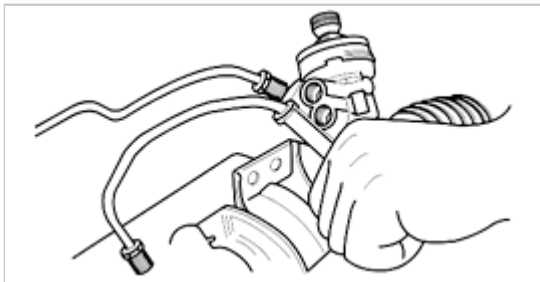
58. Install spring clip on small end of boot.



59. Align with mark made before disassembly, and then tighten nut.



60. Secure mounting bracket in a vise so that oil pipe connections face upward.



61. Install oil pipe bracket to oil pipes and steering gear housing and tighten two bracket bolts and nuts.

Tightening torque : 29~36 lb-ft (39~49 N·m, 4.0~5.0 kg-m)

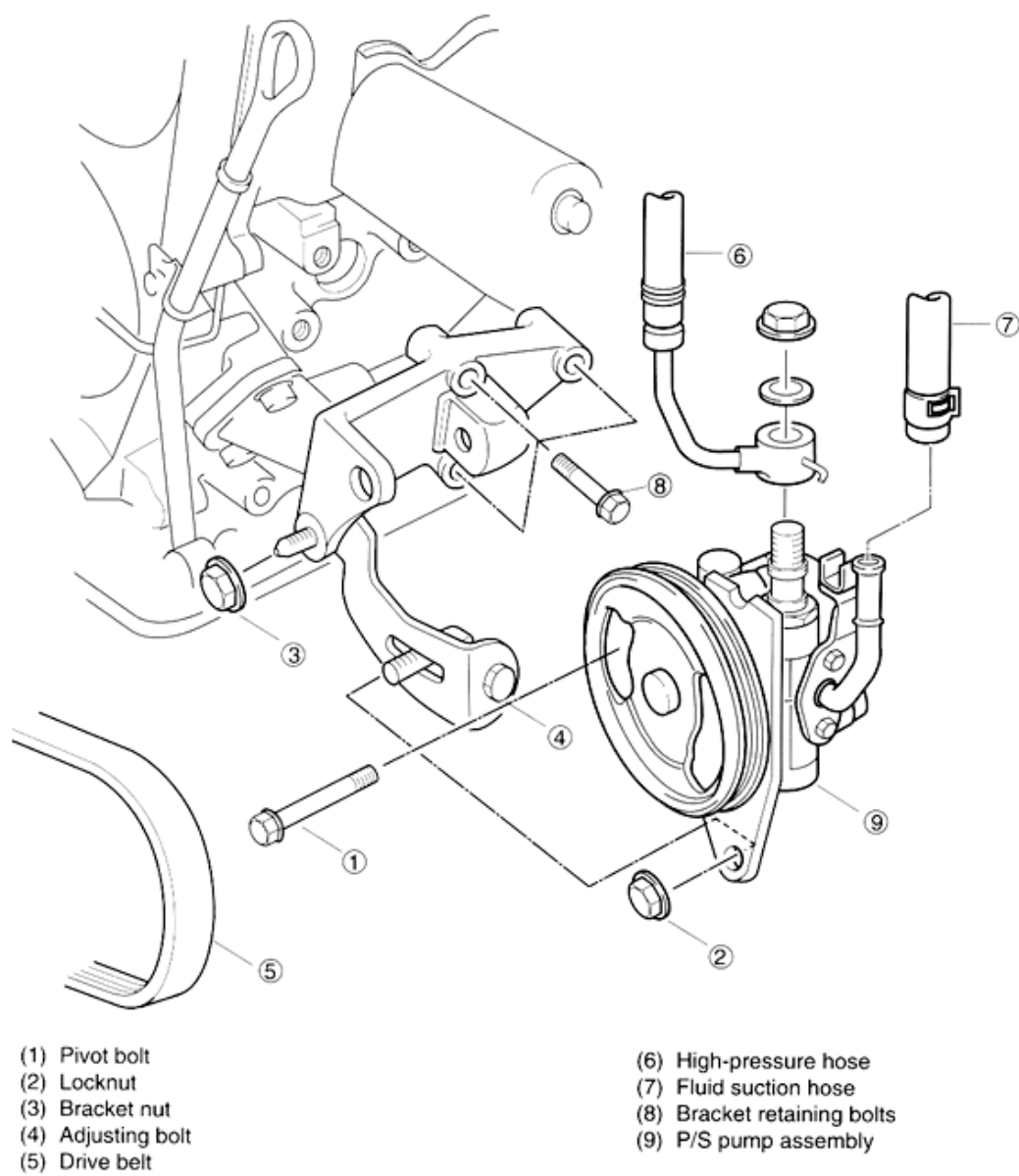


Steering System

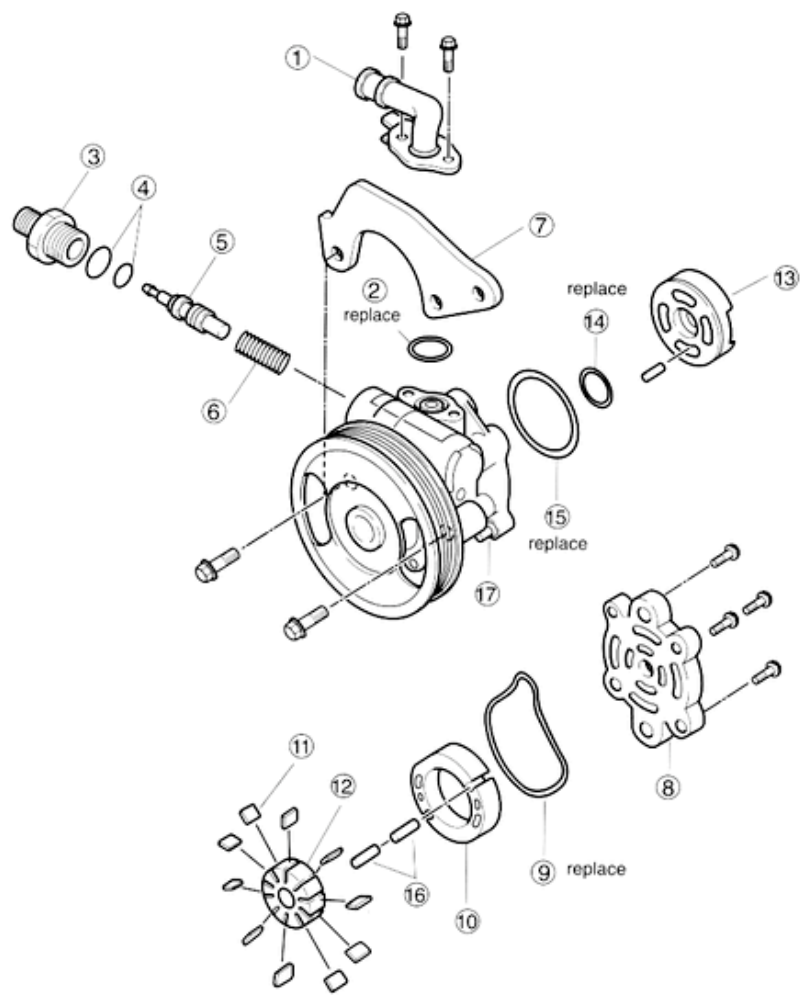
Hydraulic Power Steering System - Power Steering Oil Pump



Componet



Component



- (1) Suction pipe
- (2) O-ring
- (3) Connector
- (4) O-rings
- (5) Control valve
- (6) Spring
- (7) Bracket
- (8) Pump body(rear)
- (9) O-ring

- (10) Cam ring
- (11) Vane
- (12) Rotor
- (13) Side plate
- (14) O-ring
- (15) O-ring
- (16) Pin
- (17) Pump body (front)



Removal

1. Loosen pivot bolt from P/S pump.
2. Loosen locknut from P/S pump.
3. Loosen bracket nut from P/S pump bracket.
4. Remove drive belt.
5. Loosen nut and remove high pressure hose from P/S pump.
6. Disconnect fluid suction hose after pressing clip.
7. Loosen three bracket retaining bolts.
8. Remove power steering pump assembly.

Installation

1. Install power steering pump assembly.
2. Tighten three bracket retaining bolts.

Tightening torque : 27~38 lb-ft(37~52N·m, 3.8~5.3 kg-m)

3. Connect fluid suction hose onto P/S pump.
4. Install high pressure hose and tighten bolt.

Tightening torque : 33~40 lb-ft(44~54 N·m, 4.5~5.5 kg-m)

5. Install drive belt.
6. Tighten bracket nut.

Tightening torque : 27~38 lb-ft (37~52 N·m, 3.8~5.3kg-m)

7. Tighten locknut and bolt.

Tightening torque : 27~38 lb-ft(37~52 N·m, 3.8~5.3 kg-m)

8. Tighten pivot bolt.

Tightening torque : 27~38 lb-ft(37~52 N·m, 3.8~5.3 kg-m)

Disassembly

1. Secure power steering pump in a vise equipped with protective jaw caps.
2. Remove two power steering pump-to- power steering bracket bolts and remove bracket.
3. Remove two suction pip bolts and remove suction pipe.
4. Remove suction pipe O-ring from power steering pump.
5. Remove connector from power steering pump
6. Remove four O-rings from connector.
7. Remove control valve from power steering pump valve bore.
8. Remove spring from power steering pump valve bore.
9. Reposition power steering pump in vise to remove four rear body bolts.

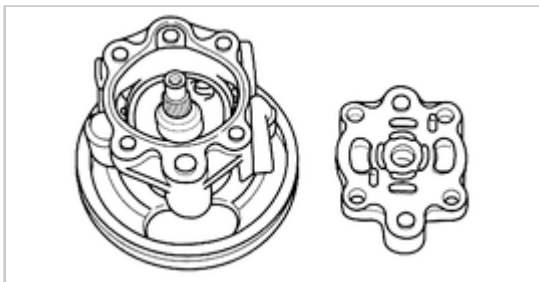
10. Remove rear body.
11. Remove rear body O-ring.
12. Remove cam ring.
13. Remove rotor.
14. Remove valves.
15. Remove side plate.
16. Remove two O-rings from side plate.

Inspection

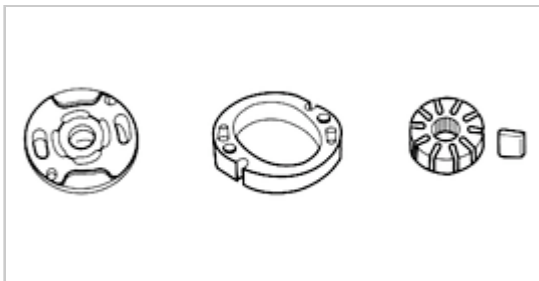
NOTICE

Replace pump assembly if necessary.

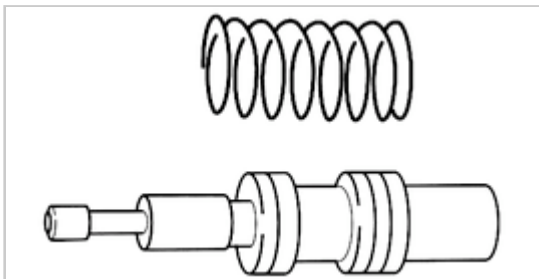
1. Check for cracks and damage of front and rear bodies, and for abnormal wear of moving surface of rotor.



2. Check moving surface of cam ring vane for abnormal wear.
3. Check moving surface of side plate and pump bodies for abnormal wear.
4. Check moving surface of valve arm ring for abnormal wear.
5. Check clearance of rotor and vanes.



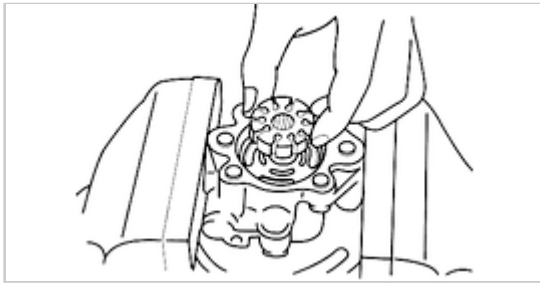
6. Check for cracks, damage, and dogging of control valve, and for abnormal wear of moving surface.
7. Check spring for damage.



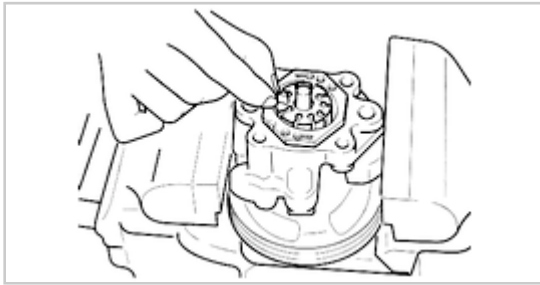
Reassembly

1. Install two O-ring on side plate.
2. Install side plate.

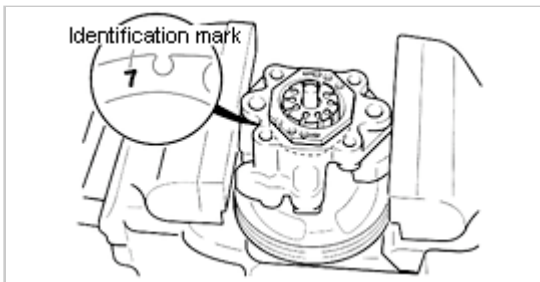
3. Align side plate pin holes to ease installation of rear body.
4. Install rotor with rotor identification mark facing up.



5. Install ten vanes with flat portions facing inside rotor.



6. Install cam ring with identification mark facing down.



7. Install rear body O-ring.
8. Install rear body.
9. Install and tighten four rear body bolts.

Tightening torque : 13~16 lb-ft (18~22 N·m, 1.8~2.2 kg-m)

10. Install spring and control valve in power steering pump valve bore.
11. Install four O-ring on connector.
12. Install and tighten connector.

Tightening torque : 36~51 lb-ft(49~69N·m, 5~7 kg-m)

13. Install suction pipe O-ring in power steering pump.
14. Install suction pipe and two suction pipe bolts.

Tightening torque : 5~6 lb-ft(6~9 N·m, 0.6~0.9 kg-m)

15. Position bracket to power steering pump and install two bracket bolts.

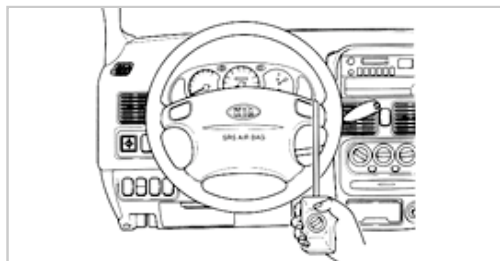
Tightening torque : 22~29 lb-ft (29~39 N·m, 3~4 kg-m)



Inspection

Steering wheel effort

1. With vehicle on a hard level surface. Turn wheels to straight-ahead position.
2. Start engine and warm power steering fluid to 122~140(50~60) Turn steering wheel fully left and right several times to warm fluid.
3. With engine running at idle speed, attach a pull scale to outermost point of a steering wheel spoke. Then, beginning with wheels in straight-ahead position, check steering effort required to turn steering wheel to left and to right.
4. If measured effort exceeds specification, check the following fluid level, air in system fluid leakage at hose or its connections, function of P/S oil pump and steering gear, and tire pressures.



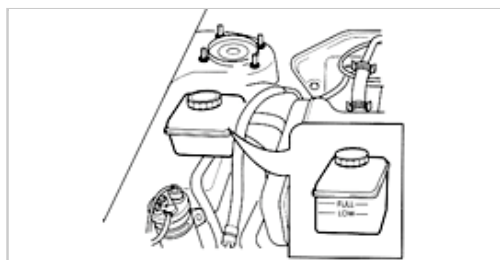
Steering wheel effort : 7 lb(31N, 3.2kg) Max.

Fluid level

NOTICE

Add only specified power steering fluid.

1. Verify that the fluid level is between Full and Low marks.
2. Add or remove fluid if not within specification.

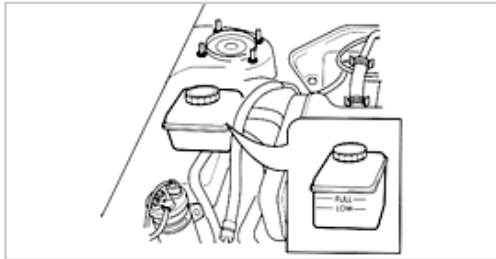
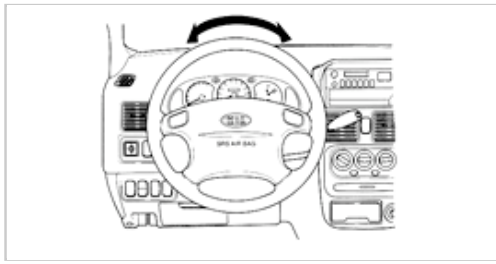


Power steering fluid bleeding

CAUTION

- 1) Do not start engine.
- 2) Lift front of vehicle, and support with safety stands.

1. Check fluid level.
2. Turn steering wheel fully to left and right several times with engine not running.
3. Recheck fluid level. If level has lowered, add fluid.
4. Repeat steps 2 and 3 until fluid level stabilizes.
5. Start engine and let it idle.
6. Turn steering wheel fully to left and right several times.
7. Check that fluid has not foamed, and that fluid level has not dropped.
8. If necessary, add fluid and repeat steps 6 and 7.

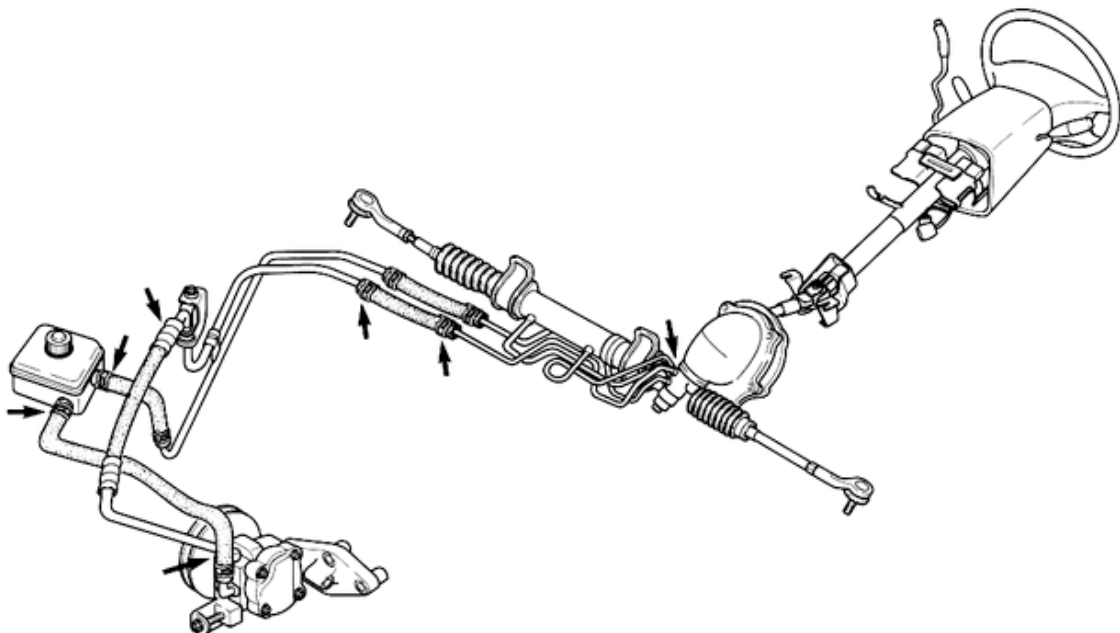


Fluid leakage

1. Start engine.
2. Remember to run steering wheel fully left and right to build fluid pressure.
3. Check for fluid leakage.

NOTICE

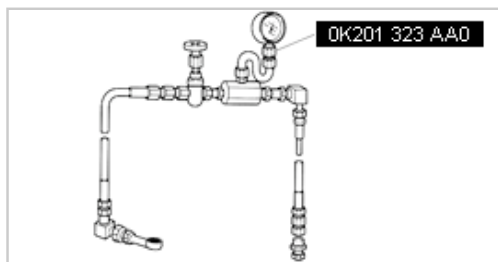
- 1) To prevent damage, do not keep steering wheel fully turned for more than 15 seconds.
- 2) Points where fluid leakage might occur are indicated by arrows in figure.



Fluid pressure check

Fluid pressure

1. Assemble SST(OK201 232 AA0) as shown in figure, and tighten its fittings.



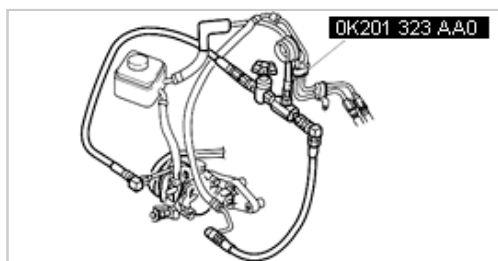
Tightening torque : 29~36 lb-ft (39~49 N·m, 4~5 kg-m)

2. Disconnect high-pressure hose from pump, and connect SST(OK210 323 AA0) between hose and pump.

NOTICE

Before disconnecting hose, place marks at connections for proper reinstallation.

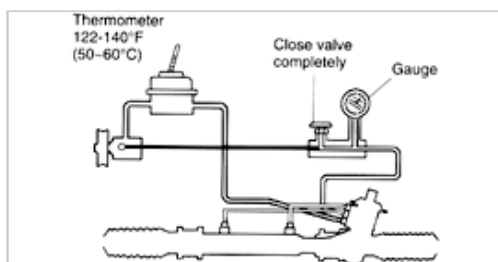
3. Bleed air from system.
4. Open gauge valve fully Start engine and turn steering wheel fully left and right to raise fluid temperature to 122~140°F(50~60)°C.



NOTICE

If valve is left closed for more than 15 seconds, fluid temperature will increase excessively and damage oil pump.

5. Close gauge valve completely. Increase engine speed to 1,000~1,500 rpm and measure fluid pressure generated by power steering pump If pressure is below specification, replace power steering pump assembly.



Power steering pump fluid pressure : 1067~1138 psi (7358~7848kPa, 75.0~80.0 kg/cm²)

6. Open gauge valve fully and again increase engine speed to 1,000~1,500 rpm.
7. Turn steering wheel fully to left and right and measure fluid pressure generated by gear housing. If pressure is below specifications, replace gear housing assembly.

Gear housing fluid pressure : 1067~1138 psi (7385~7848 kPa. 75.0~80.0 kg./cm²)

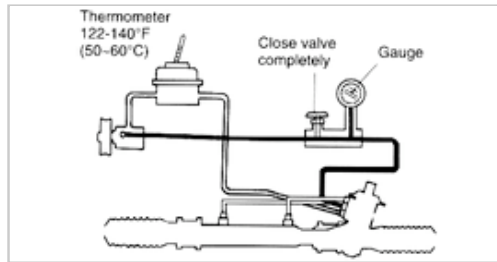
NOTICE

If steering wheel is kept in fully turned position for more than 15seconds. fluid temperature will rise excessively and damage oil pump.

8. Remove SST(0K210 323 AA0). Replace and tightne high-pressure hose. Tighten to specified torque.

Tightening torque : 29~36 lb-ft(39~49 Nm, 4~5kg-m)

9. Bleed air from system (Refer to steering system on-vehicle service).



Drive belt

1. Check drive belt for wear, cracks, and fraying. Replace if necessary.
2. Measure drive belt tension with a tension gauge.

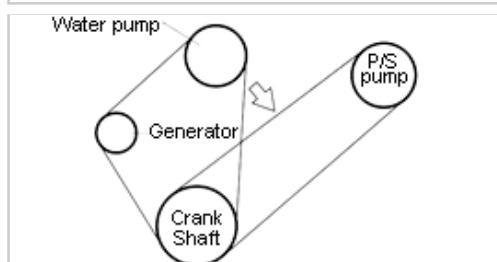
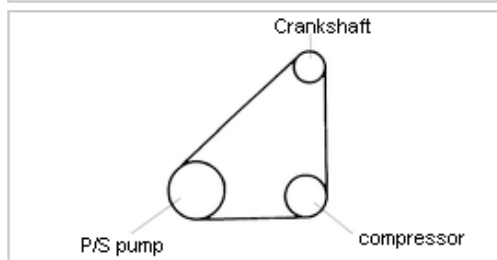
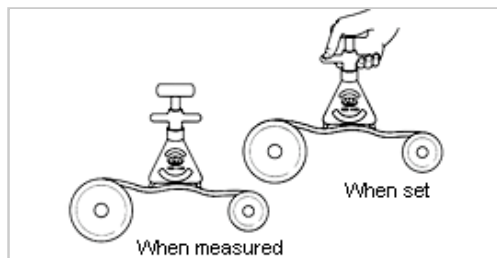
Tension (lb (N, kg))

Drive belt	New	Used
A/C and P/S	110~132 (491~589, 50~60)	95~110 (422~491, 43.2~50.0)

3. Measure deflection by applying moderate pressure (22lb [98N]) midway between pulleys. Adjust if necessary.

Deflection (in (mm))

Drive belt	New	Used
A/C and P/S	110~132 (491~589, 50~60)	95~110 (422~491, 43.2~50.0)



Adjustment

Drive belt

1. Loosen pivot bolt, locknut, and bracket nut. Turn adjusting bolt to set specified deflection.
2. Tighten, and to specified torques.

Tightening torque

Bolt : 28~38 lb-ft(37~52 Nm, 3.8~5.3 kg-m)

Nut : 28~38 lb-ft (37~52 Nm, 3.8~5.3kg-m)

Nut : 28~38 lb0ft (37~52 Nm, 3.8~5.3kg-m)

Replacement

1. Loosen pivot bolt, bracket nut, and locknut.
2. Turn adjusting bolt to release belt tension.
3. Remove belt.
4. Install a new drive belt and adjust deflection.

