

Steering

Power Steering

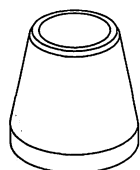
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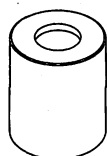
Power Steering

Special Tools

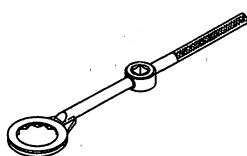
Ref. No.	Tool Number	Description	Qty
①	07LAG-SM40100	Piston Seal Ring Guide	1
②	07LAG-SM40200	Piston Seal Ring Sizing Tool	1
③	07MAA-SL00200	Locknut Wrench, 43 mm	1
④	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑤	07RAK-S040122	P/S Joint Adapter (Hose)	1
⑥	07VAK-P8A011A	P/S Joint Adapter (Pump)	1
⑦	07VAK-P8A012B	P/S Joint Adapter Plate (Pump)	1
⑧	07ZAB-S5A0100	Pulley Holder	1
⑨	070GD-0010100	Driver Handle, 480 mm	1
⑩	07406-0010001 or 07406-001000A or 07406-001A101	P/S Pressure Gauge	1
⑪	07746-0010300	Attachment, 42 x 47 mm	1
⑫	07749-0010000	Driver	1
⑬	07946-MJ00201	Driver Head	1
⑭	07946-1870100	Attachment, 28 x 30 mm	1
⑮	07965-SA50500	Front Hub Dis/assembly Tool	1



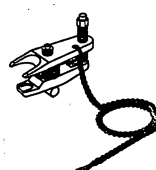
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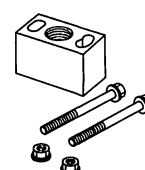
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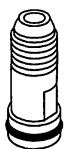
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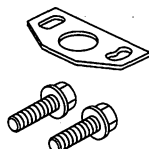
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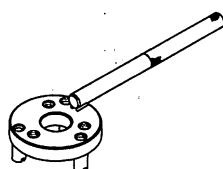
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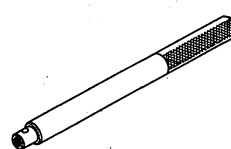
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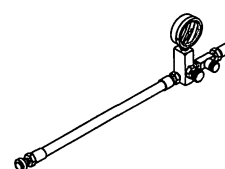
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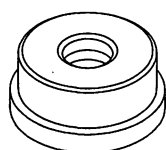
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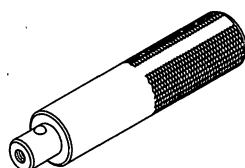
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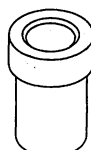
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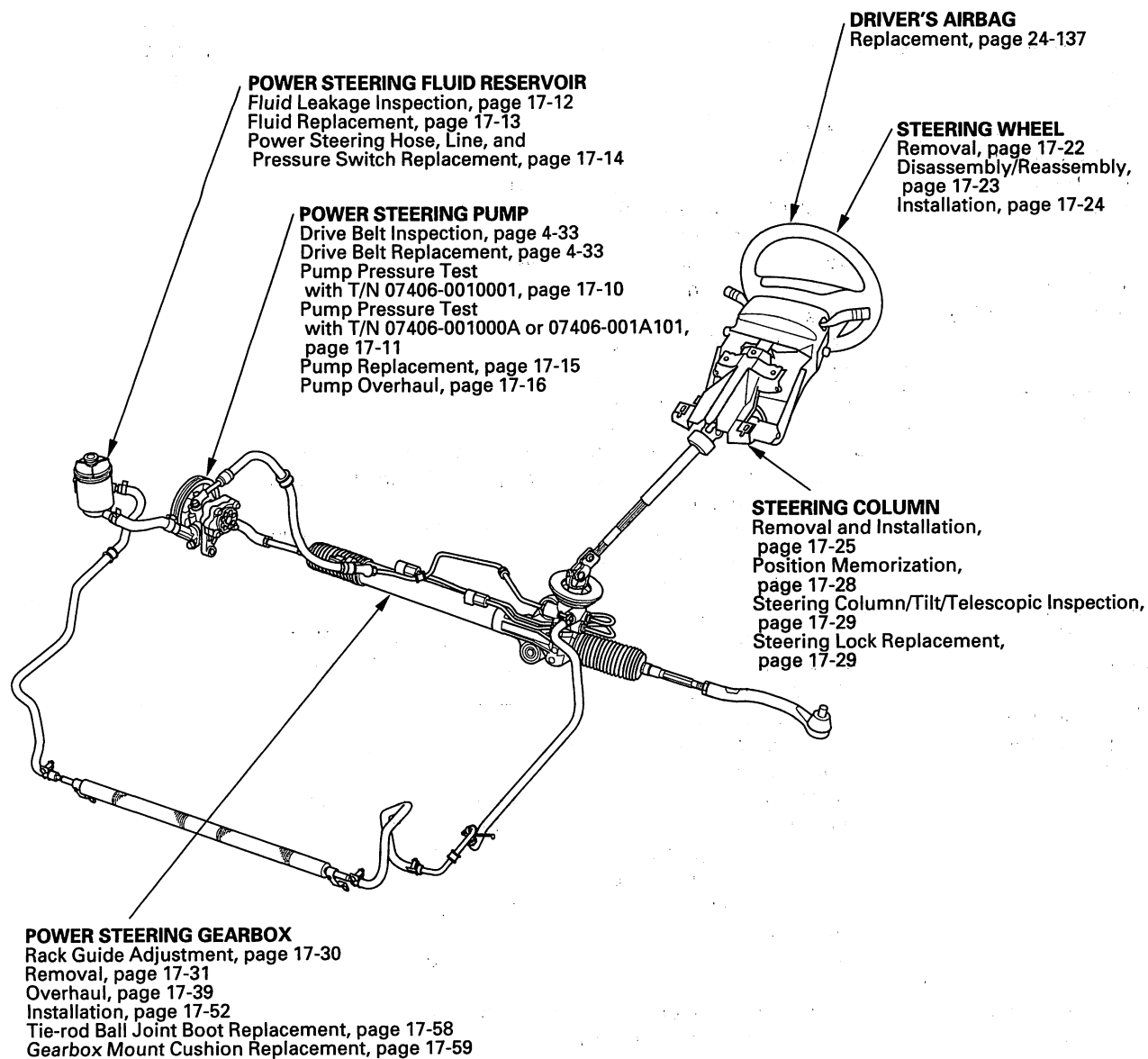
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Component Location Index



Power Steering

Symptom Troubleshooting Index

Find the symptom in the chart below, and do the related procedures in the order listed until you find the cause.

Symptom	Procedure(s)	Also check for
Hard steering	Troubleshoot the system (see page 17-6).	- Modified suspension - Damaged suspension - Tire sizes, tire varieties, and air pressure
Assist (excessively light steering at high speed)	Check the rack guide adjustment (see page 17-30).	Front wheel alignment (see page 18-5)
Shock or vibration when the steering wheel is turned to full lock	1. Check the rack guide adjustment (see page 17-30). 2. Check the drive belt for slippage (see page 4-33). 3. Check the power steering pump fluid pressure with T/N 07406-0010001 (see page 17-10), T/N 07406-001000A or T/N 07406-001A101 (see page 17-11). 4. Overhaul the steering gearbox (see page 17-39).	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check the ball joints for binding. 3. Check wheel alignment (see page 18-5). 4. Overhaul the steering gearbox (see step 2 on page 17-40).	
Uneven or rough steering	1. Check the rack guide adjustment (see page 17-30). 2. Check the drive belt (see page 4-33). 3. Check for low or erratic engine idle speed (see page 11-310). 4. Check for air in the power steering system due to air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system (see page 17-14). 6. Overhaul the steering gearbox (see step 2 on page 17-40).	
Steering wheel kicks back during wide turns	1. Check the drive belt (see page 4-33). 2. Check the power steering pump fluid pressure with T/N 07406-0010001 (see page 17-10), T/N 07406-001000A or T/N 07406-001A101 (see page 17-11).	
Humming noise from the power steering system	1. Check when the noise occurs: • If the noise is heard 2—3 minutes after starting the engine in cold weather, this is normal. • If the noise is heard when the wheel is turned with the vehicle stopped, this is normal due to the fluid pulsation. 2. Check for the high-pressure hose touching the subframe or body. 3. Check for automatic transmission converter noise. 4. Check for air bubbles in the power steering fluid, leak on inlet side of pump. 5. Check for particle contamination of fluid and restricted filter in the reservoir.	Pump pressure
Power steering rack rattle or chattering	1. Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. 2. Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see page 17-25). 3. Check the rack guide adjustment (see page 17-30). 4. Check the power steering pump pulley: • If the pulley is loose, tighten it (see step 33 on page 17-21). • If the pump shaft is loose, replace the pump (see page 17-15).	



Symptom	Procedure(s)	Also check for
Hissing from the power steering system/foaming fluid	• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks (see page 17-13). • Check the reservoir for leaks. • Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system (see page 17-12). • Check the power steering pump shaft oil seal for leaks.	Air in the P/S fluid
Noise from the power steering pump	• Compare the pump noise at normal operating temperature to another like vehicle (pump noise for 2—3 minutes after starting the engine in cold weather is normal). • Remove and inspect the pump for wear and damage (see page 17-15).	• P/S pump pressure • Air in the P/S fluid
Squeaking from the power steering pump	Check the drive belt (see page 4-33).	
Fluid leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit. Replace the valve body unit (see page 17-39). • Fluid leaks from the driver's side boot. Replace the valve oil seal on the pinion shaft. Replace the cylinder end seal on the gearbox side. • Fluid leaks from the passenger's side boot. Replace the cylinder end seal on the cylinder side. • Fluid leaks from pinion shaft near the lower steering joint bolt. Replace the valve body unit (see page 17-39). • Fluid leaks from the steering damping valve covers on the valve body unit. Replace the valve housing.	
Fluid leaks from the power steering line	• Fluid leaks from the cylinder line connections (flare nuts). Tighten the connection and retest (see page 17-14). • Fluid leaks from a damaged cylinder lines. Replace the cylinder line (see page 17-14). • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts). Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from the power steering pump	• Fluid leaks from the front oil seal. Replace the front oil seal. • Fluid leaks from the power steering pump housing. Replace the leaking O-rings or seals (see page 17-12), and if necessary replace the power steering pump (see page 17-15).	
Fluid leaks from the power steering reservoir	• Fluid leaks from around the reservoir cap because fluid level is too high. Drain the reservoir to the proper level. If the fluid is aerated check for an air leak on the inlet side of pump. • Fluid leaks from reservoir. Check for the reservoir for cracks and replace as necessary.	
Fluid leaks from the power steering pump outlet hose (high-pressure)	• Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring. • Fluid leaks at the swagged joint. Replace the pump outlet hose.	
Fluid leaks from the power steering pump inlet hose (low-pressure)	Check the hose for damage, deterioration, or improper assembly. Replace or repair as necessary.	

Power Steering

Symptom Troubleshooting

Hard Steering

1. Check the power assist (see page 17-8).

Is the initial turning load more than 29 N (3.0 kgf, 6.6 lbf) ?

YES—Go to step 2.

NO—Power assist is OK. ■

2. Connect the P/S joint adapter (pump), P/S joint adapter (hose), and P/S pressure gauge T/N 07406-0010001 (see page 17-10), T/N 07406-001000A or T/N 07406-001A101 (see page 17-11) to the pump.

3. Measure steady-state fluid pressure from the pump at idle.

Is the pressure 1,470 kPa (15 kgf/cm², 213 psi) or less?

YES—Go to step 4.

NO—Go to step 8.

4. Measure the pump relief pressure at idle.

Is the pressure 8,920–9,420 kPa (91–96 kgf/cm², 1,290–1,370 psi) or more?

YES—Go to step 5.

NO—Go to step 9.

5. With a spring scale, measure the power assist in both directions, to the left and to the right.

Are the two measurements within 5.0 N (0.51 kgf, 1.12 lbf) of each other?

YES—Go to step 6.

NO—Go to step 11.

6. Measure the fluid pressure with both pressure gauge valves open (if so equipped), while turning the steering wheel fully to the left and fully to the right.

Is the pressure 8,920–9,420 kPa (91–96 kgf/cm², 1,290–1,370 psi) or more?

YES—Go to step 7.

NO—Faulty steering gearbox. ■

7. Adjust the rack guide (see page 17-30), and retest.

Is the steering OK?

YES—Repair is completed. ■

NO—Faulty steering gearbox. ■

8. Check the outlet and return hoses and lines between the pump and the steering gearbox for clogging and deformation.

Are the lines clogged or deformed?

YES—Repair or replace the lines. ■

NO—Faulty valve body unit. ■



9. Disassemble the pump (see page 17-16).

10. Check the flow control valve for smooth movement and leaks (see step 13 on page 17-18).

Is the flow control valve OK?

YES—Faulty pump assembly. ■

NO—Faulty flow control valve. ■

11. Check the cylinder lines for deformation (see page 17-14).

Are any of the lines deformed?

YES—Replace the deformed line. ■

NO—Go to step 12.

12. Check for a bent rack shaft or misadjusted rack guide (too tight).

Is the rack shaft bent or the rack guide adjusted too tight?

YES—Replace the rack shaft, or readjust the rack guide. ■

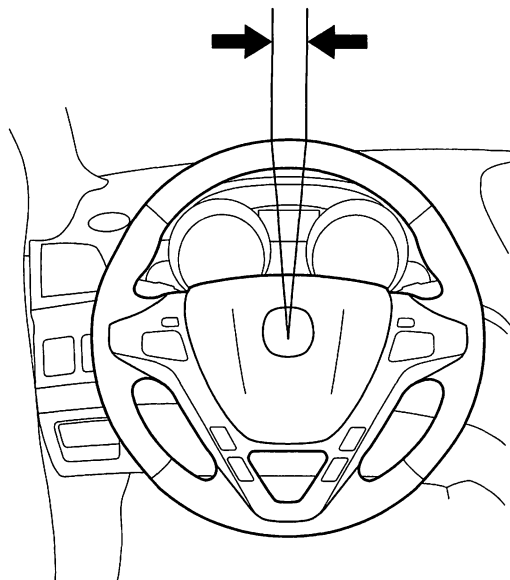
NO—Faulty valve body unit. ■

Power Steering

Steering Wheel Rotational Play Check

1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
 - If the play is within the limit, the steering gearbox and linkages are OK.
 - If the play exceeds the limit, adjust the rack guide (see page 17-30). If the play is still excessive after rack guide adjustment, inspect the steering linkage and steering gearbox (see page 17-9).

Rotational play: 0—10 mm (0—0.39 in.)

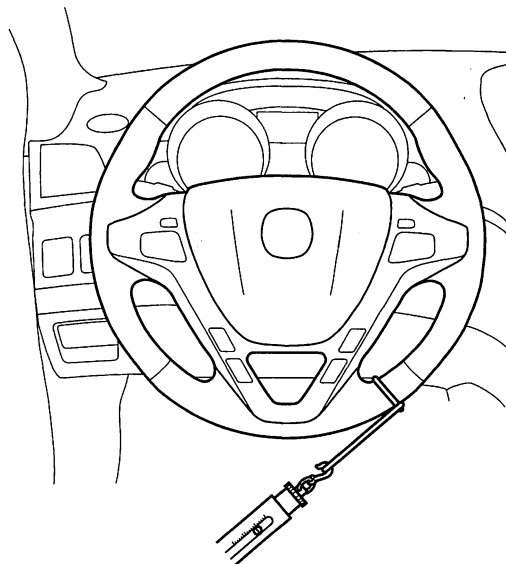


Power Assist Check

NOTE: This test should be done with original equipment tires and wheels at the correct tire pressure.

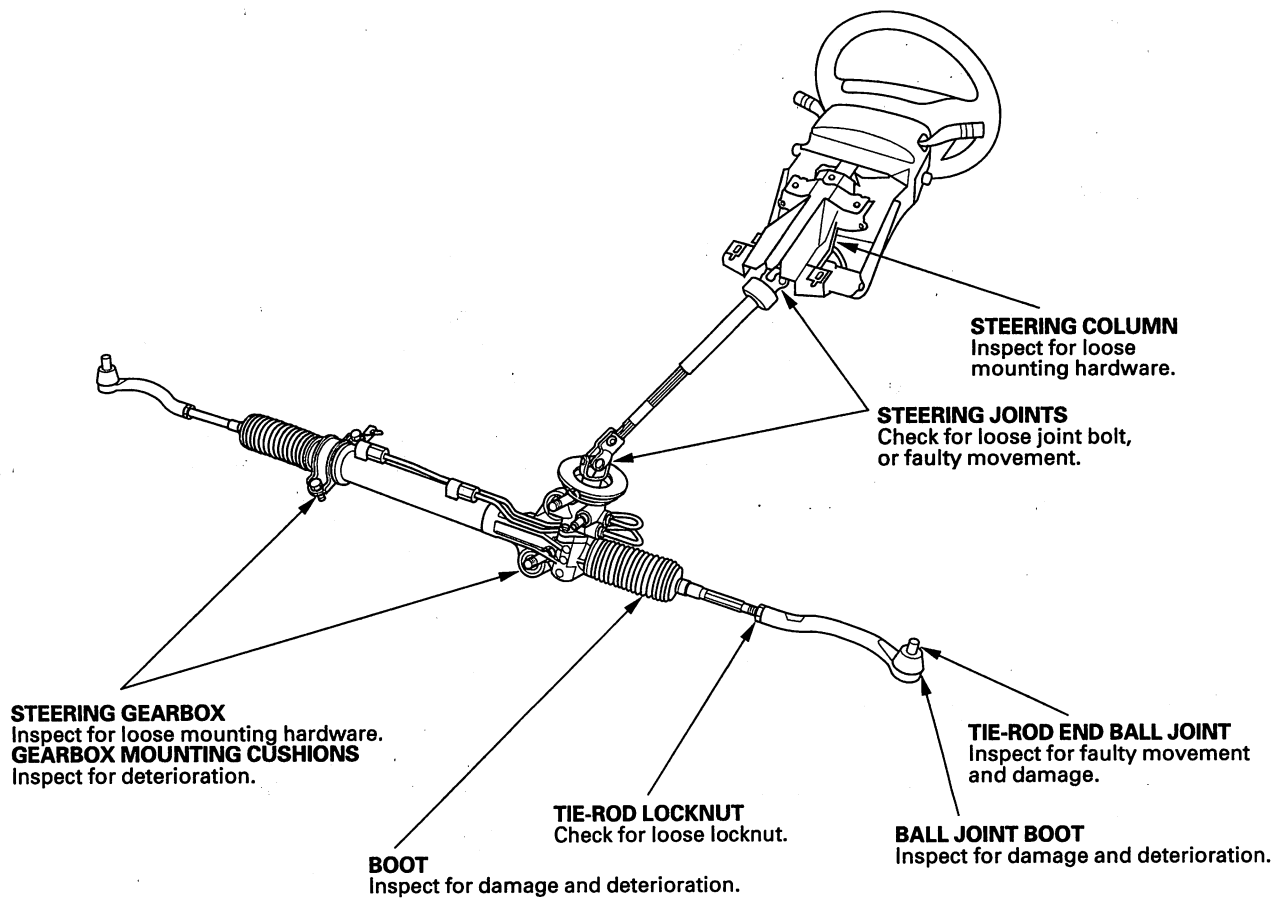
1. Check the power steering fluid level (see page 17-13).
2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.
3. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn.
 - If the scale reads no more than the specification, the steering gearbox and pump are OK.
 - If the scale reads more than the specification, troubleshoot the steering system (see page 17-6).

Initial turning load: 29 N (3.0 kgf, 6.6 lbf)





Steering Linkage and Gearbox Inspection



Power Steering

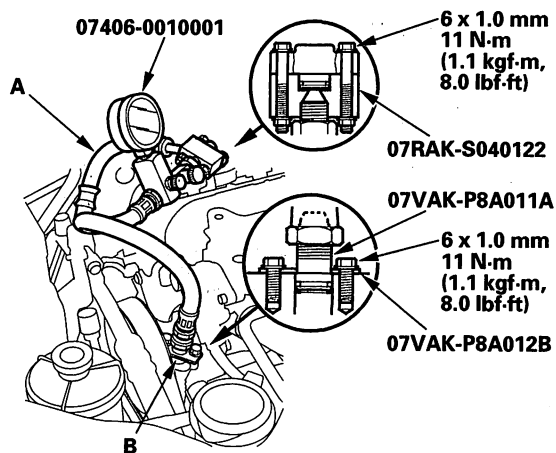
Pump Pressure Test with T/N 07406-0010001

Special Tools Required

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07VAK-P8A012B
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-0010001

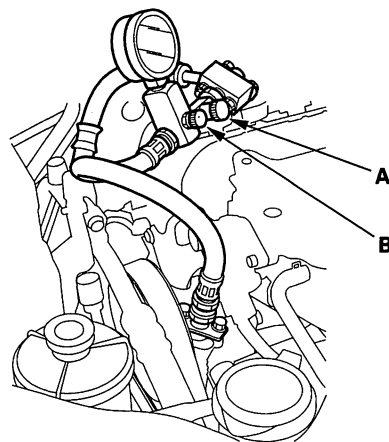
Check the fluid pressure as follows to determine whether the trouble is in the pump or steering gearbox.

1. Check the power steering fluid level (see page 17-13).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts, then install the P/S joint adapter (pump) on the pump outlet (B) with the P/S joint outlet plate.



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Fully open the shut-off valve (A).



6. Fully open the pressure control valve (B).

7. Start the engine and let it idle.

8. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158 °F (70 °C).

9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read no more than 1,470 kPa (15 kgf/cm², 213 psi).

If it reads high, check for:

- Clogged or deformed feed or return line between the pump and the steering gearbox.
- Clogged valve body unit.

10. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTICE

Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

11. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,920—9,420 kPa (91—96 kgf/cm², 1,290—1,370 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.



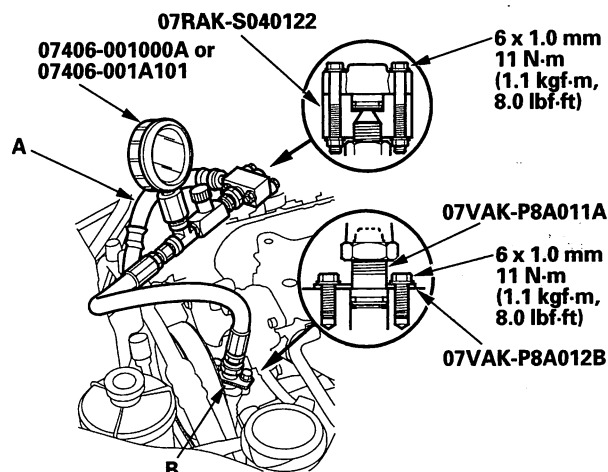
Pump Pressure Test with T/N 07406-001000A or T/N 07406-001A101

Special Tools Required

- P/S joint adapter (pump) 07VAK-P8A011A
- P/S joint adapter plate (pump) 07VAK-P8A012B
- P/S joint adapter (hose) 07RAK-S040122
- P/S pressure gauge 07406-001000A or 07406-001A101

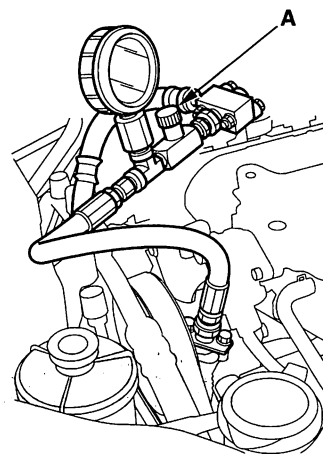
Check the fluid pressure as follows to determine whether the trouble is in the pump or steering gearbox.

1. Check the power steering fluid level (see page 17-13).
2. Disconnect the pump outlet hose (A) from the pump outlet with care so as not to spill the power steering fluid on the frame and other parts, then install the P/S joint adapter (pump) on the pump outlet (B) with the P/S joint outlet plate.



3. Connect the P/S joint adapter (hose) to the P/S pressure gauge, then connect the pump outlet hose to the P/S joint adapter (hose).
4. Install the P/S pressure gauge to the P/S joint adapter (pump).

5. Open the shut-off valve (A) fully.



6. Start the engine and let it idle.
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature at 158 °F (70 °C).
8. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read no more than 1,470 kPa (15 kgf/cm², 213 psi). If it reads high, check for:

- Clogged or deformed feed or return line between the pump and the steering gearbox.
- Clogged valve body unit.

9. Let the engine idle, and gradually close the shut-off valve and immediately read the pressure.

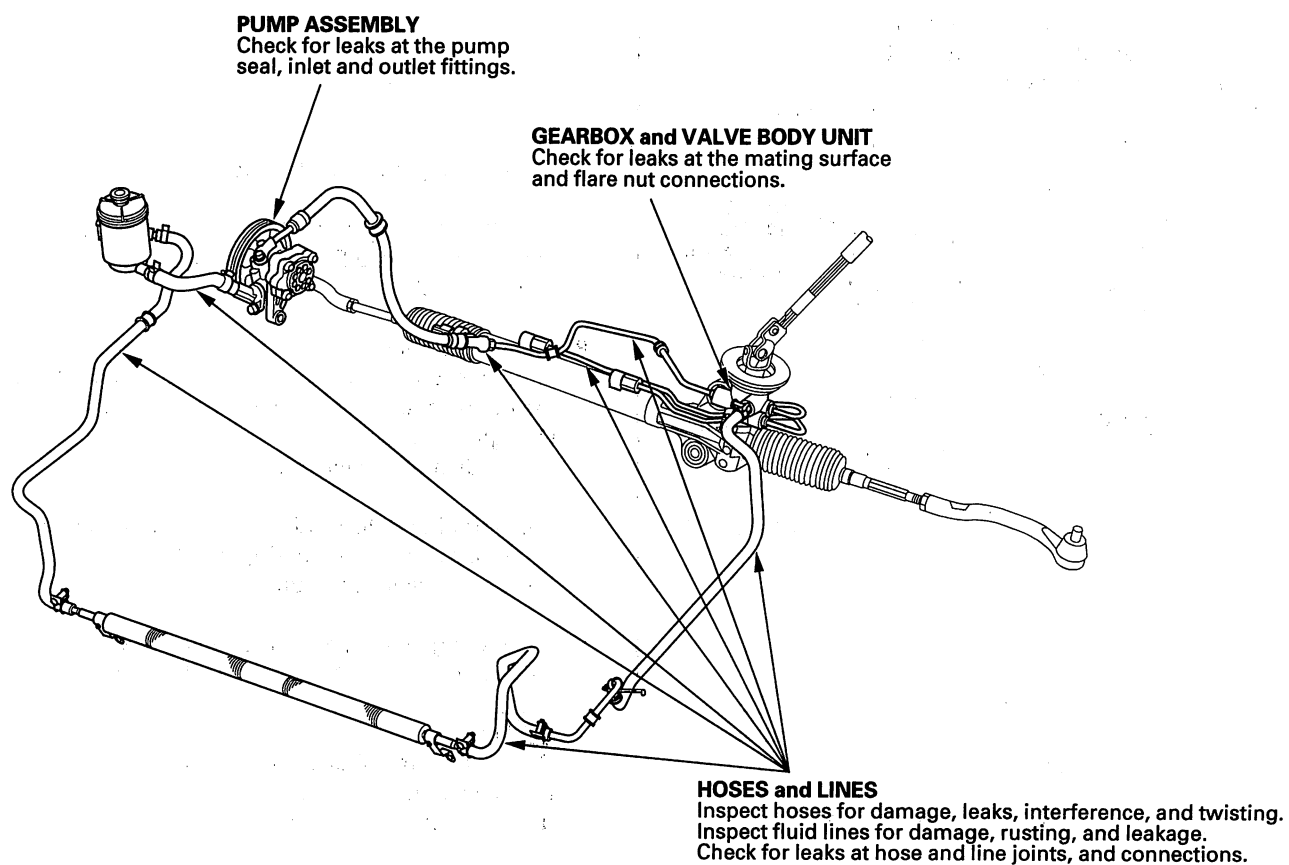
NOTICE

Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by over-heating.

10. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,920—9,420 kPa (91—96 kgf/cm², 1,290—1,370 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

Power Steering

Fluid Leakage Inspection





Fluid Replacement

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Acura Power Steering Fluid. Using any other type of power steering fluid or automatic transmission fluid can cause increased wear and poor steering in cold weather.

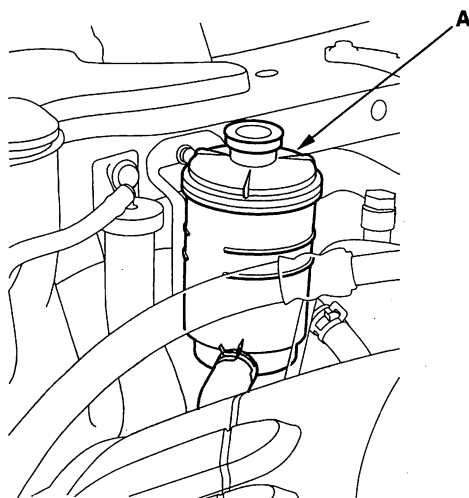
NOTE: If the fluid is contaminated, the screen in the reservoir may be partially blocked. Replace the reservoir if necessary.

System capacity:

1.03 L (1.09 US. qt) at disassembly

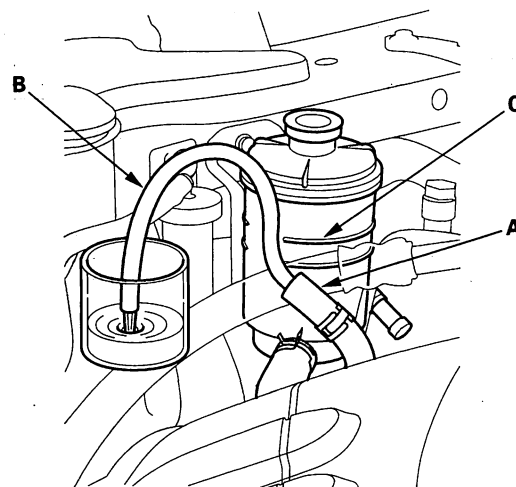
Reservoir capacity:

0.34 L (0.36 US. qt)



1. Remove the reservoir from its holder. Raise the reservoir, then disconnect the return hose (A) to drain the reservoir. Take care not to spill the fluid on the body and parts. Wipe off any spilled fluid at once.

NOTE: Inspect the reservoir screen for any debris. If the reservoir screen is clogged, replace the reservoir.



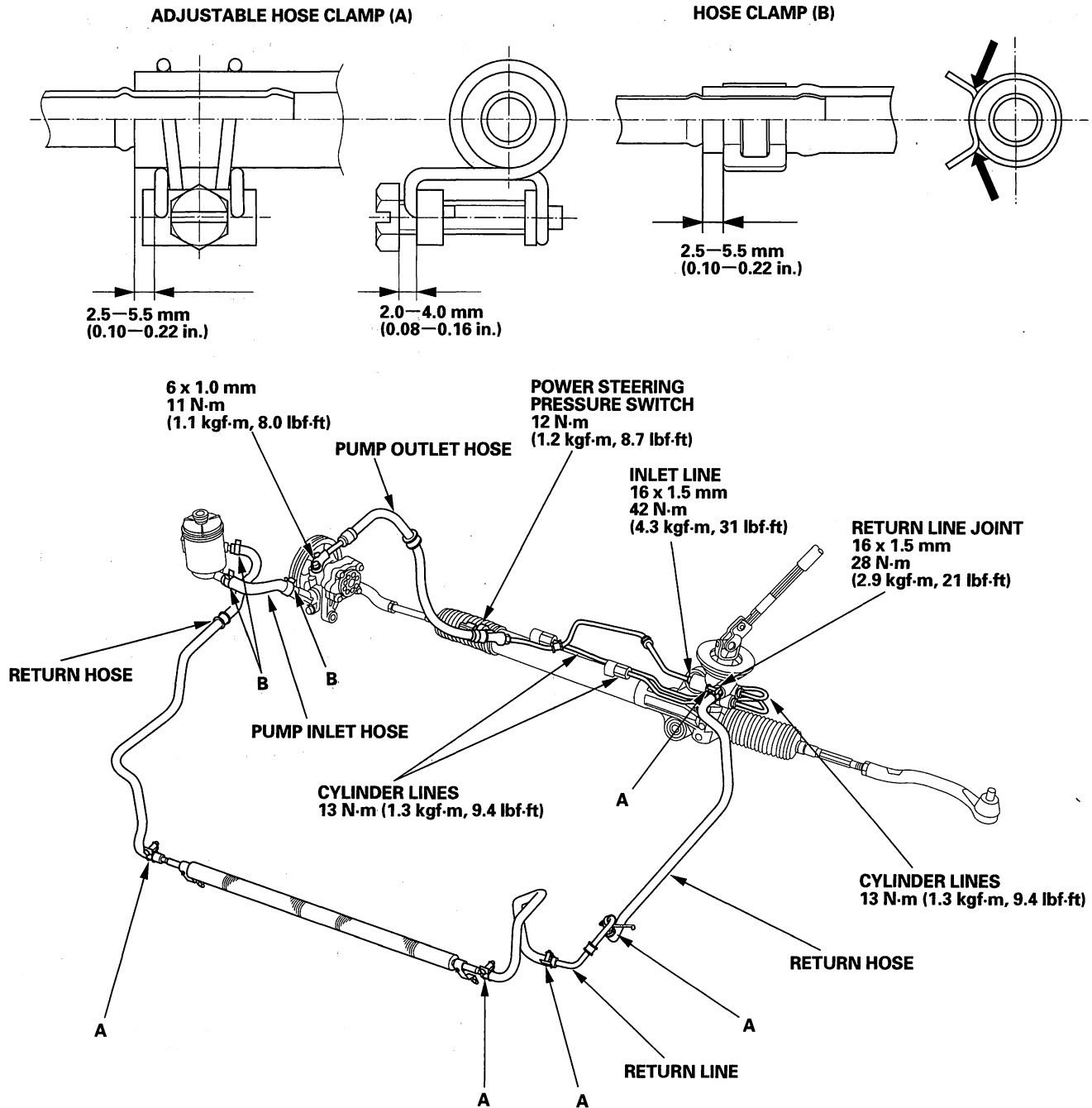
2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
4. Reinstall the return hose on the reservoir.
5. Fill the reservoir to the upper level line (C).
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add some if necessary. Do not fill the reservoir beyond the upper level line.
8. If the fluid is contaminated, dark, or discolored, repeat the procedure as necessary.

Power Steering

Power Steering Hose, Line, and Pressure Switch Replacement

Note these items during installation:

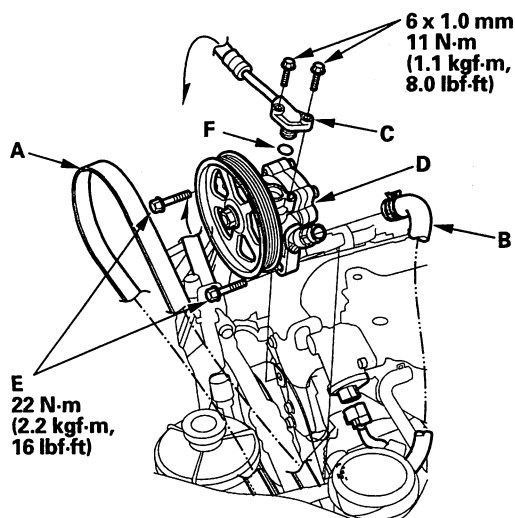
- Connect each hose to the corresponding line securely until it contacts the stop on the line. Install the clamp or adjustable clamp at the specified distance from the hose end as shown.
- Check all clamps for deterioration or deformation; replace the clamps with new ones if necessary.
- Add the recommended power steering fluid to the specified level on the reservoir and check for leaks.





Pump Replacement

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir (see page 17-13).
3. Remove the engine cover.
4. Remove the drive belt (A) from the pump pulley (see page 4-33).

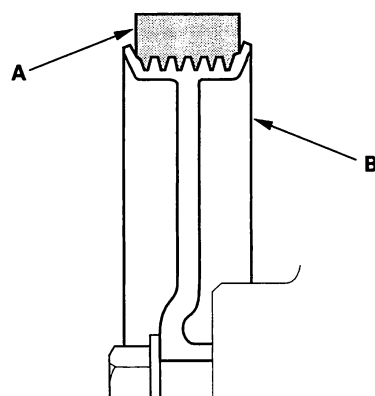


5. Cover the auto-tensioner, alternator, and A/C compressor with several shop towels to protect them from spilled power steering fluid. Disconnect the pump inlet hose (B) and pump outlet hose (C) from the pump (D), and plug them. Take care not to spill the fluid on the body or parts. Wipe off any spilled fluid at once. Do not turn the steering wheel with the pump removed.
6. Remove the pump mounting bolts (E).
7. Cover the opening of the pump with a piece of tape to prevent foreign material from entering the pump.
8. Connect the pump inlet hose and pump outlet hose onto the new pump with a new O-ring (F).
9. Loosely install the pump in the pump bracket with the mounting bolts, then tighten the pump fittings securely.

10. Tighten the pump mounting bolts to the specified torque.
11. Install the drive belt (A).

Note these items during belt installation:

- Make sure that the belt is properly positioned on the pulleys (B).
- Do not get power steering fluid or grease on the auto-tensioner, alternator, A/C compressor, and drive belt or pulley faces. Clean off any fluid or grease before installation.



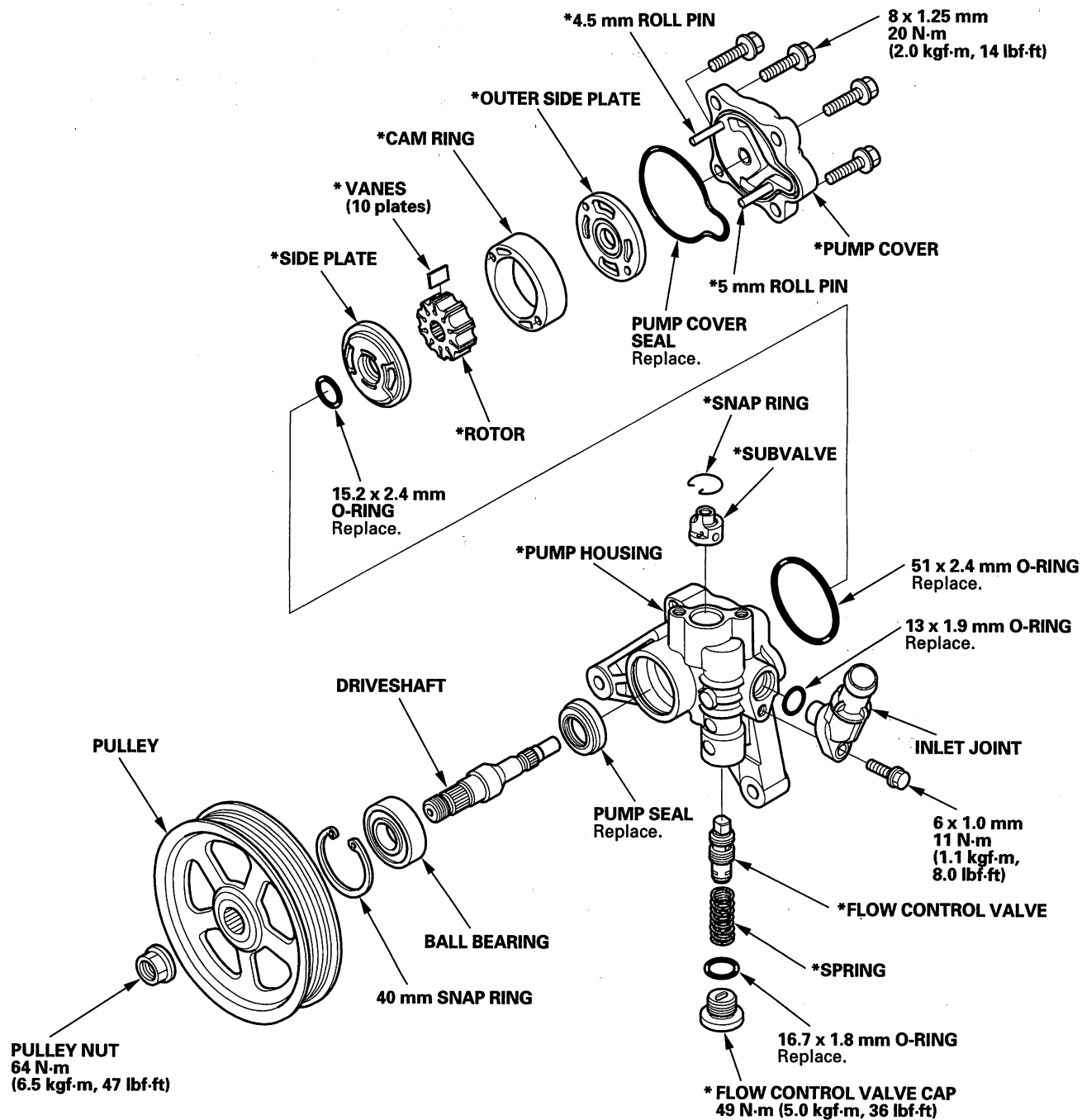
12. Fill the reservoir to the upper level line (see page 17-13).

Power Steering

Pump Overhaul

Exploded View

Replace the pump as an assembly if the parts indicated with an asterisk (*) are worn or damaged.





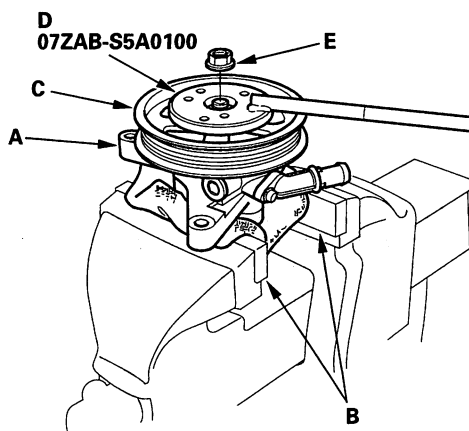
Special Tools Required

- Attachment, 28 x 30 mm 07946-1870100
- Driver 07749-0010000
- Pulley holder 07ZAB-S5A0100

Disassembly

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Drain the fluid from the pump (see page 17-13).
2. Remove the power steering pump (see page 17-15).
3. Hold the power steering pump (A) in a vise with soft jaws (B), then hold the pulley (C) with the pulley holder (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.



4. Remove the inlet joint and O-ring.
5. Loosen the flow control valve cap with a hex wrench, and remove it and the O-ring, the flow control valve and spring.
6. Remove the pump cover and pump cover seal.
7. Remove the outer side plate, cam ring, rotor, vanes, side plate and O-rings.
8. Remove the snap ring, then remove the subvalve from the pump housing.
9. Remove the snap ring, then remove the pump driveshaft by tapping the shaft end with a plastic hammer.
10. Remove the pump seal from the pump housing.

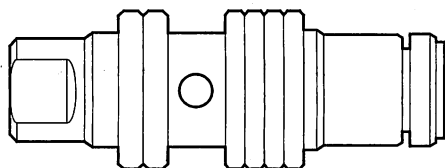
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Power Steering

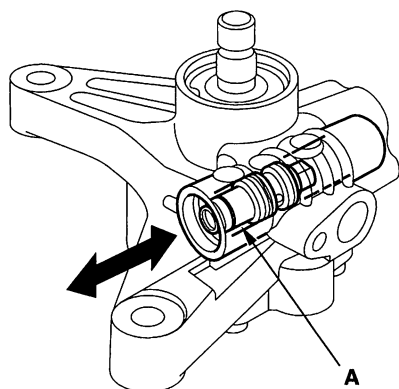
Pump Overhaul (cont'd)

Inspection

11. Check the flow control valve for wear, burrs, and other damage to the edges of the grooves in the valve.

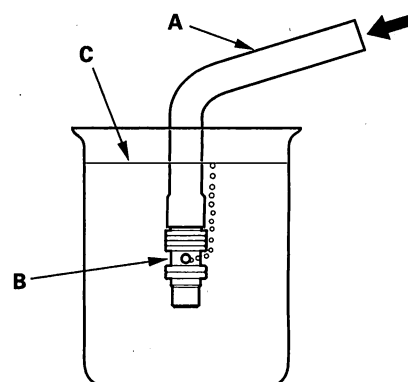


12. Inspect the bore of the flow control valve on the pump housing for scratches and wear.
13. Slip the flow control valve back in the pump housing, and check that it moves in and out smoothly. If OK, go to step 14; if not, replace the pump as an assembly. The flow control valve (A) is not available separately.

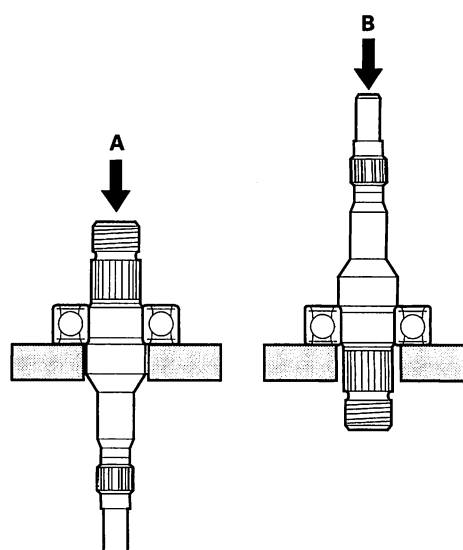


14. Attach a hose (A) to the end of the flow control valve (B) as shown. Then submerge the flow control valve in a container of power steering fluid or solvent (C), and blow in the hose.

- If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm², 14.2 psi), replace the pump as an assembly. The flow control valve is not available separately.
- If the flow control valve is OK, set it aside for reassembly later.



15. Inspect the ball bearing by rotating the outer race slowly. If you feel any play (axial or radial) or roughness, remove the faulty ball bearing (A) and install a new one (B).

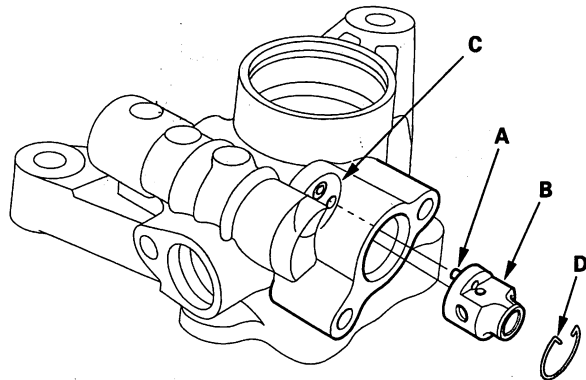


16. Inspect each part shown with an asterisk in the Exploded View. If any of them are worn or damaged, replace the pump as an assembly.

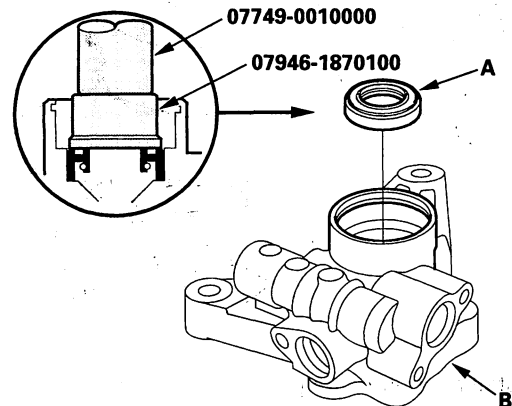


Reassembly

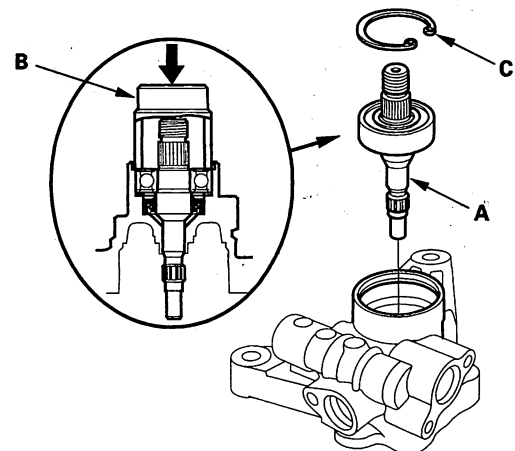
17. Align the pin (A) of the subvalve (B) with the oil passage (C) in the pump housing, and push the subvalve into place, then install the snap ring (D).



18. Install the new pump seal (A) (with its grooved side facing in) into the pump housing (B) by hand first, then drive it in using the driver and attachment until there is no step at the top of the pump seal, and the seal is fully seated in the pump housing.



19. Position the pump driveshaft (A) in the pump housing, then press it in with the appropriate size socket wrench (B) as shown.



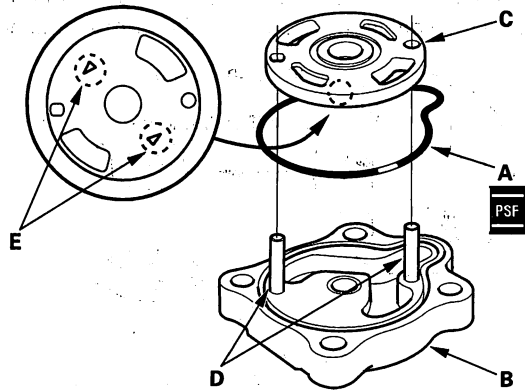
20. Install the 40 mm snap ring (C) with its beveled edge facing out.

(cont'd)

Power Steering

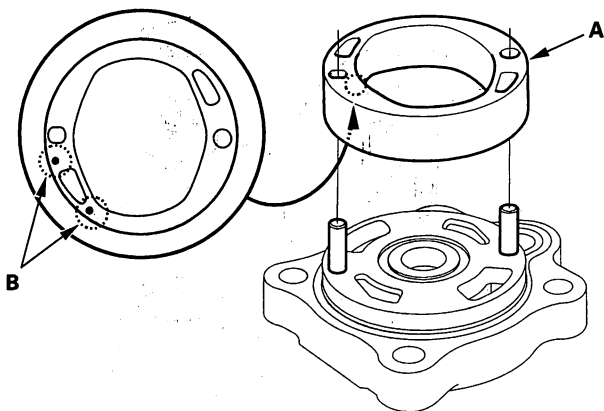
Pump Overhaul (cont'd)

21. Coat the new pump cover seal (A) with power steering fluid, and install it into the groove in the pump cover (B).

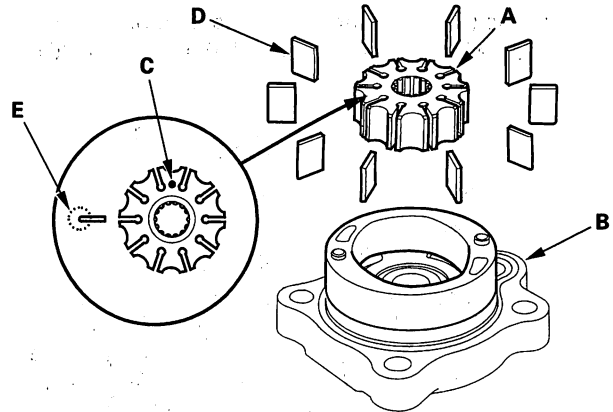


22. Install the outer side plate (C) over the two roll pins (D) with its arrow marks stamped (E) facing down.

23. Set the cam ring (A) over the two roll pins with the "•" marks (B) facing down.

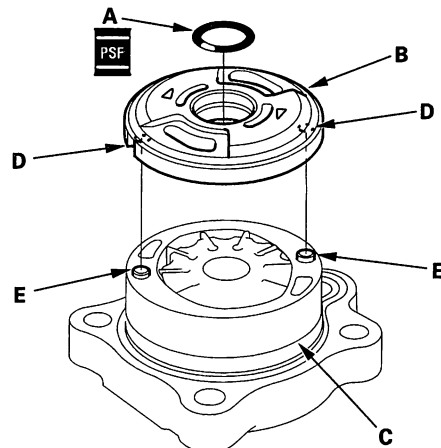


24. Install the rotor (A) to the pump cover (B) with its "•" mark (C) facing up.



25. Set the 10 vanes (D) in the grooves in the rotor. Make sure that the round ends (E) of the vanes are in contact with the sliding surface of the cam ring.

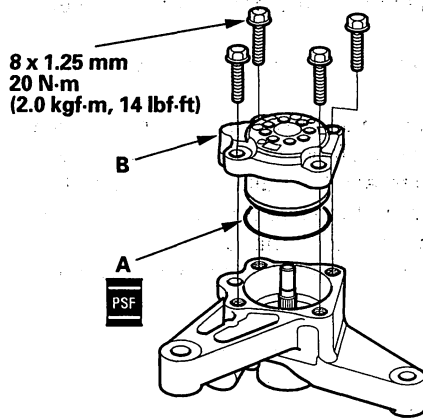
26. Coat the new 15.2 mm O-ring (A) with power steering fluid, and install it into the groove in the side plate (B).



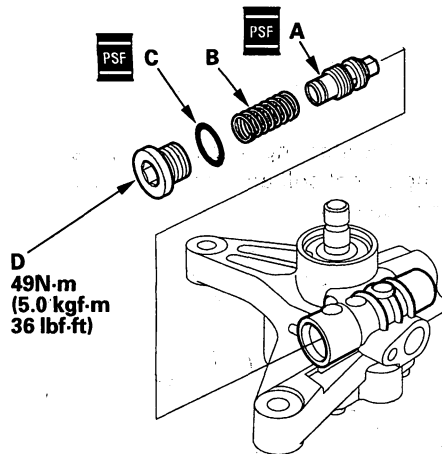
27. Install the side plate on the cam ring (C) by aligning the roll pin set holes (D) in the side plate with the roll pins (E).



28. Coat the new 51 mm O-ring (A) with power steering fluid, and position it in the bottom of the pump housing.

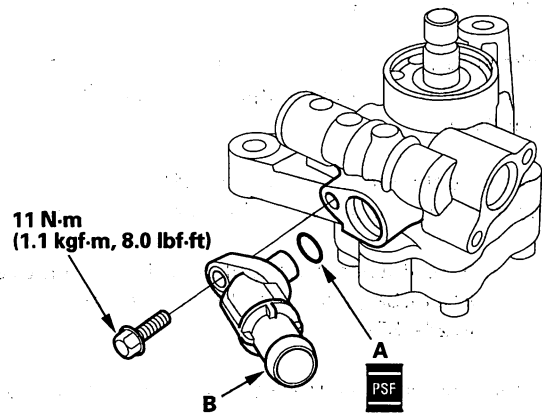


29. Install the pump cover assembly (B) in the pump housing. Tighten the bolts to the specified torque alternating in two or more steps.
30. Coat the flow control valve (A) with power steering fluid, then install it and the spring (B) in the pump housing.

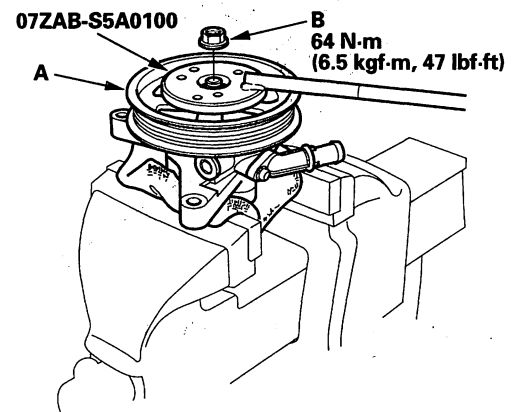


31. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the flow control valve cap (D), then install the cap on the pump housing. Tighten it to the specified torque.

32. Coat the new 13-mm O-ring (A) with power steering fluid, and install it on the inlet joint (B). Install the inlet joint on the pump housing.



33. Install the pulley (A), then loosely install the pulley nut (B). Hold the steering pump in a vise with soft jaws. Be careful not to damage the pump housing with the jaws of the vise.



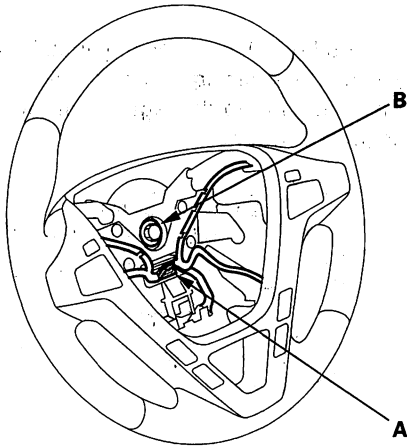
34. Hold the pulley with the pulley holder, and tighten the pulley nut to the specified torque.
35. Check that the pump turns smoothly by turning the pulley by hand. If it turns hard, loosen the four flange bolts on the cover, then retighten them in same manner as in step 29. Turn the pump again by hand.

Power Steering

Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 24-18) and the precautions and procedures (see page 24-20) before doing repairs or service.

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 24-137).
4. Disconnect the cable reel subharness connector (A).

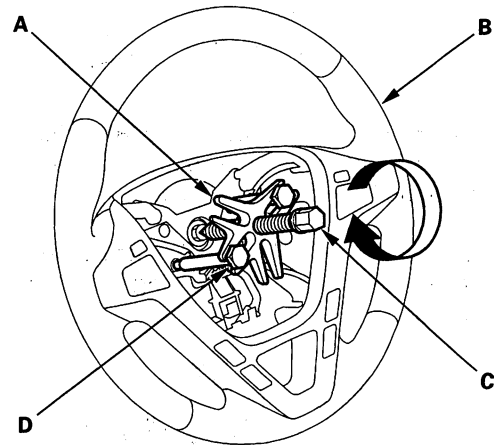


5. Loosen the steering wheel bolt (B).

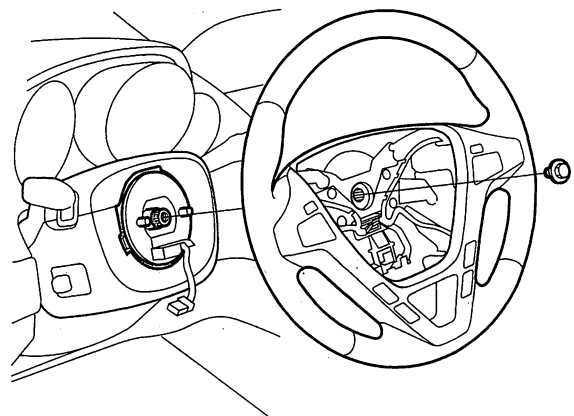
6. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

Note these items when removing the steering wheel:

- Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
- If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.

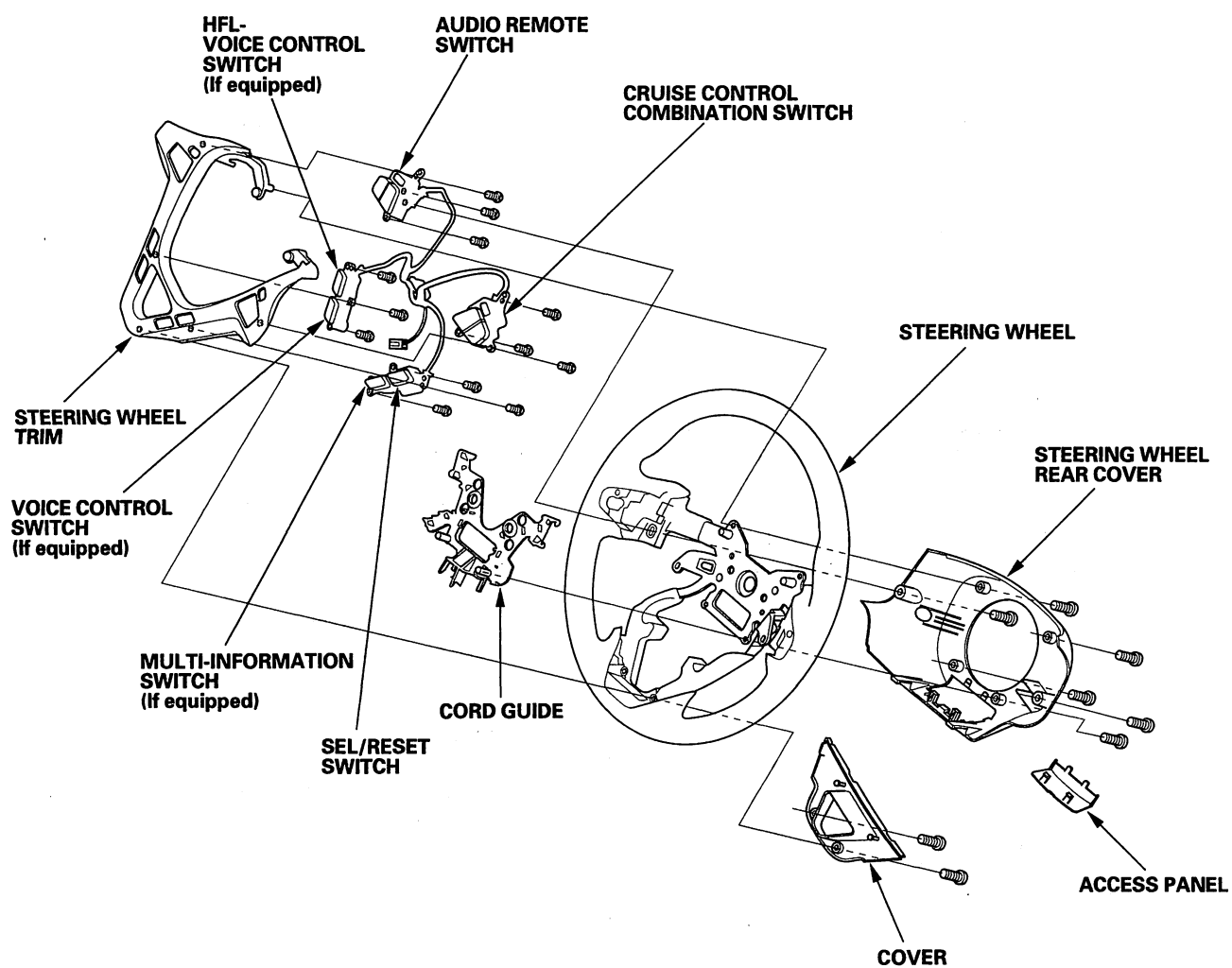


7. Remove the steering wheel puller, then remove the steering wheel bolt and steering wheel from the steering column.





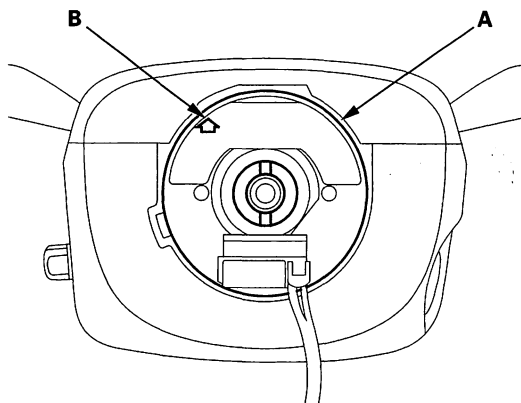
Steering Wheel Disassembly/Reassembly



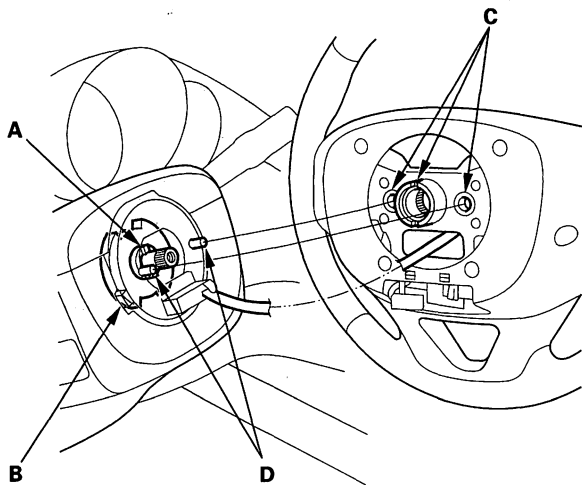
Power Steering

Steering Wheel Installation

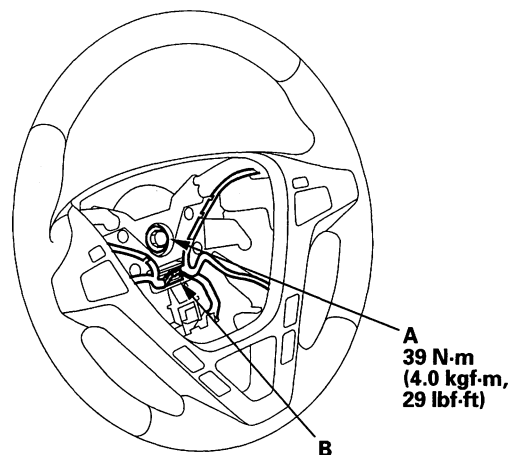
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about three full turns. The arrow mark (B) on the cable reel label should point straight up.



2. Position the two tabs (A) of the turn signal cancelling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the turn signal cancelling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



3. Install the steering wheel bolt (A), and tighten it to the specified torque. Connect the cable reel subharness connector (B). Make sure the wire harness is routed and fastened properly.



4. Install the driver's airbag, and confirm that the system is operating properly (see page 24-137).
5. Reconnect the negative battery cable to the battery, and do these tasks:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - Enter the anti-theft code for the audio system and the navigation system (if equipped).
 - Make sure the horn and turn signal switches work properly.
 - Make sure the steering wheel switches work properly.
 - Make sure the steering wheel is centered.
 - Do the steering column position memorization (see page 17-28).



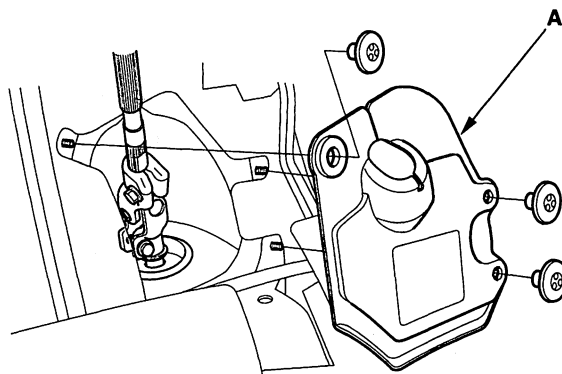
Steering Column Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 24-18), and the precautions and procedures (see page 24-20) before doing repairs or service.

Removal

1. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
2. Adjust the steering column to full tilt down position, and to the full telescopic out position.
3. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
4. Remove the driver's airbag assembly and the steering wheel (see page 17-22).
5. Remove the driver's dashboard undercover (see page 20-120).

6. Remove the steering joint cover (A).

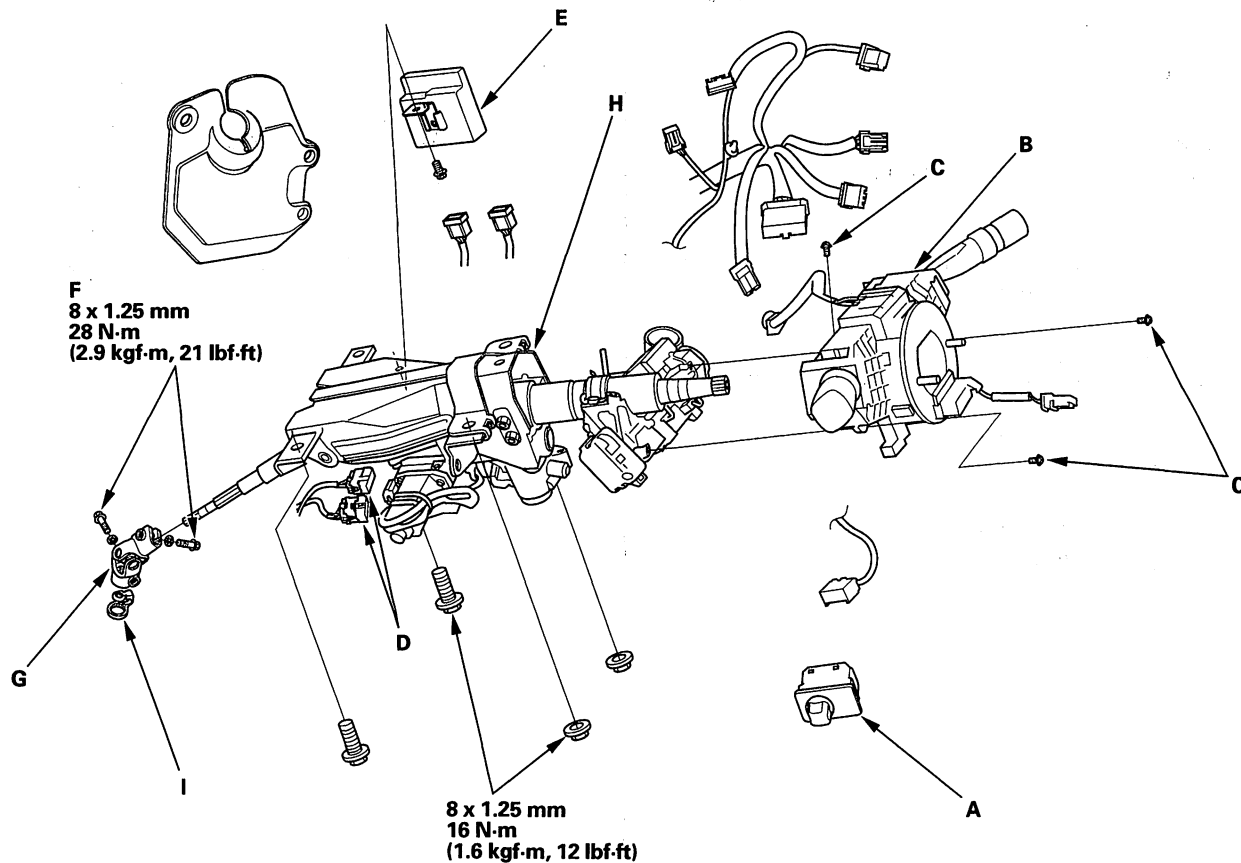


(cont'd)

Power Steering

Steering Column Removal and Installation (cont'd)

7. Remove the upper column cover (see page 20-129), and disconnect the connectors from the power tilt/telescopic switch (A) (see page 22-488).



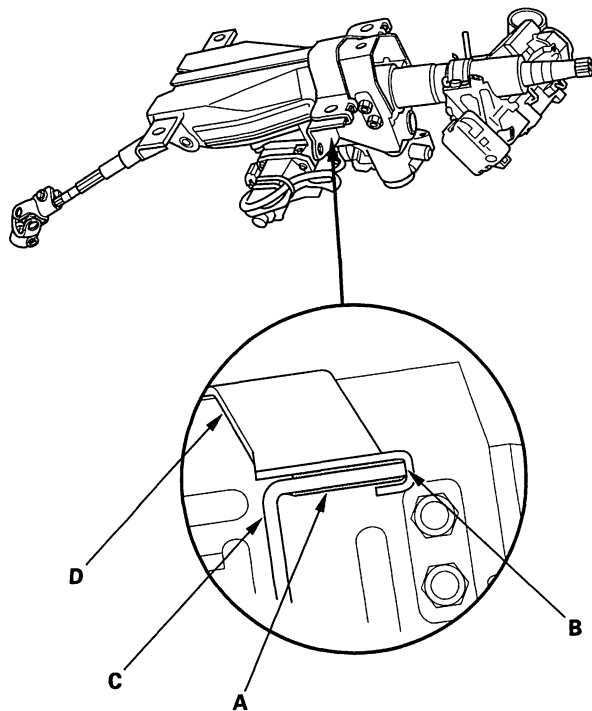
8. Disconnect the wire harness connectors from the combination switch assembly (B).
9. Remove the combination switch assembly from the steering column shaft by removing the three screws (C).
10. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.
11. Disconnect the connectors (D) from the tilt/telescopic motors.
12. Disconnect the connectors from the tilt/telescopic control unit (E).
13. Remove the steering joint bolts (F), then disconnect the steering joint (G) from the pinion shaft and the steering column shaft.
14. Remove the steering column (H) by removing the attaching nuts and bolts.
15. Remove the center guide (I) (if equipped) from the top of the pinion shaft, and discard it. The center guide is for factory assembly use only.



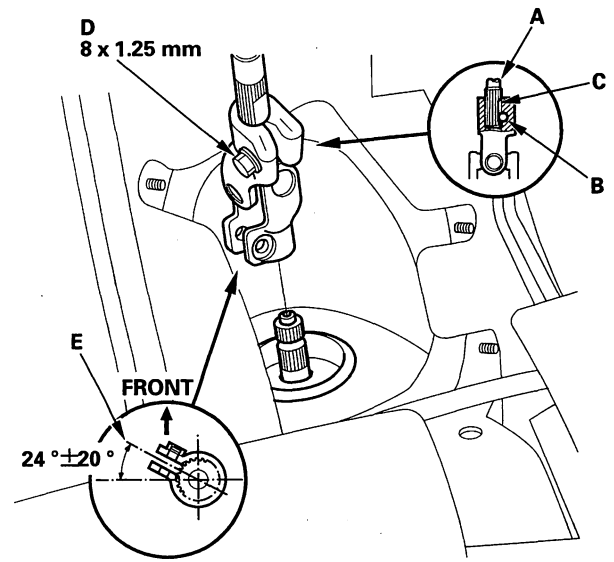
Installation

1. Install the steering column in the reverse order of removal, and note these items:

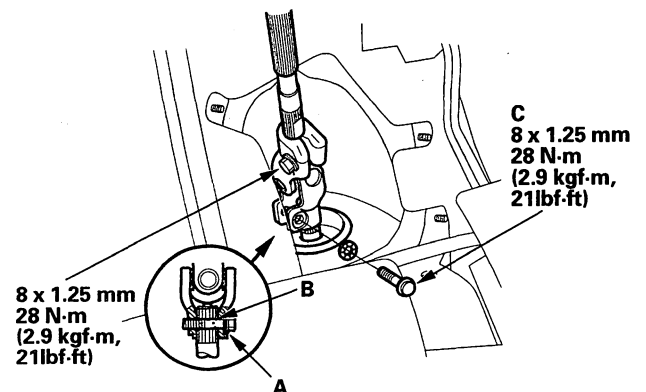
- Take care not to let the sliding plates (A) fall out of position during column installation.
- Make sure the wires are not caught or pinched by any parts.
- Make sure that there is no gap (B) between bracket (C), sliding plates, and absorbing plate (D) once column is mounted in place and fixing bolts and nuts are tightened.



2. Center the steering rack within its stroke.
3. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft), and loosely install the upper joint bolt (D).



4. Slip the lower end of the steering joint onto the pinion shaft taking care to align the gap (E) within the angle.
5. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft then loosely install the lower joint bolt (C).

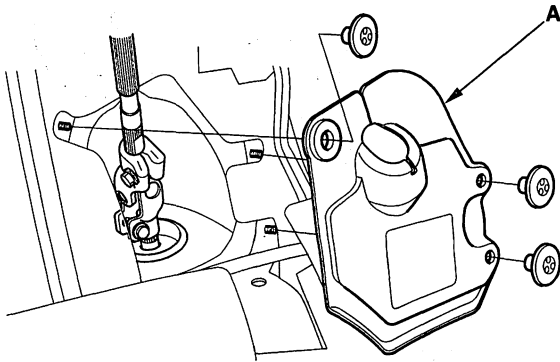


(cont'd)

Power Steering

Steering Column Removal and Installation (cont'd)

6. Pull on the steering joint to make sure that the steering joint is fully seated, then tighten the lower joint bolt to the specified torque.
7. Tighten the upper joint bolt to the specified torque.
8. Install the steering joint cover (A).



9. Install the steering wheel (see page 17-24).
10. Reconnect the negative battery cable to the battery, and do these tasks:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - Enter the anti-theft code for the audio system and the navigation system (if equipped).
 - Make sure the horn and turn signal switches work properly.
 - Make sure the steering wheel switches work properly.
 - Make sure the steering wheel is centered.
 - Do the steering column position memorization (see page 17-28).

Steering Column Position Memorization

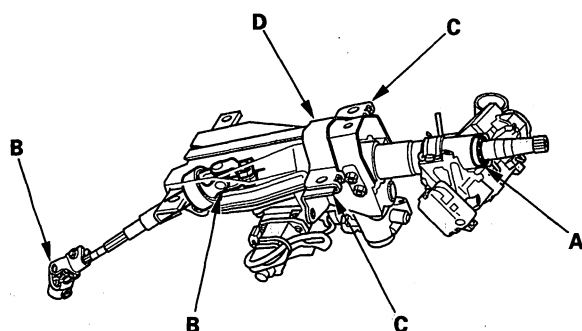
NOTE: If the battery is disconnected, the power tilt and telescopic steering wheel system needs to be reset when you reconnect the battery.

1. Insert the built-in key into the ignition switch, and remove it.
2. The steering wheel automatically moves fully in and up to let you know the system is reset.



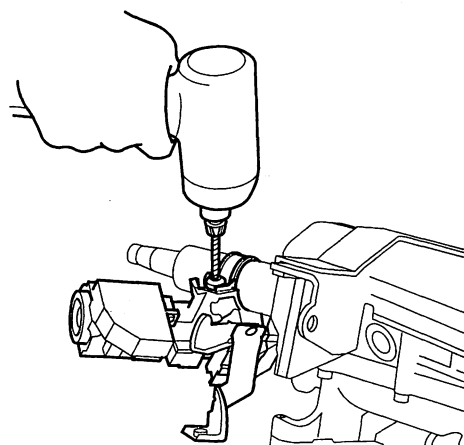
Steering Column/Tilt/Telescopic Inspection

- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the sliding capsules (C) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.
- Check the tilt mechanism and telescopic mechanism for movement and damage.
- Check the absorbing plates (D) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.

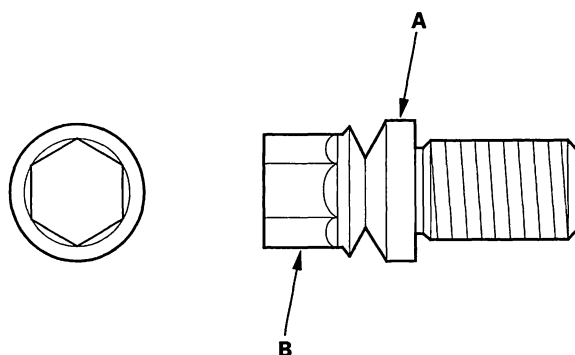


Steering Lock Replacement

1. Remove the steering column (see page 17-25).
2. Center-punch each of the two shear bolts, and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body and steering column when removing the shear bolts.



3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.
5. Loosely tighten the new shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.



8. Register the immobilizer-keyless control unit (see page 22-410), and make sure the immobilizer system works properly.

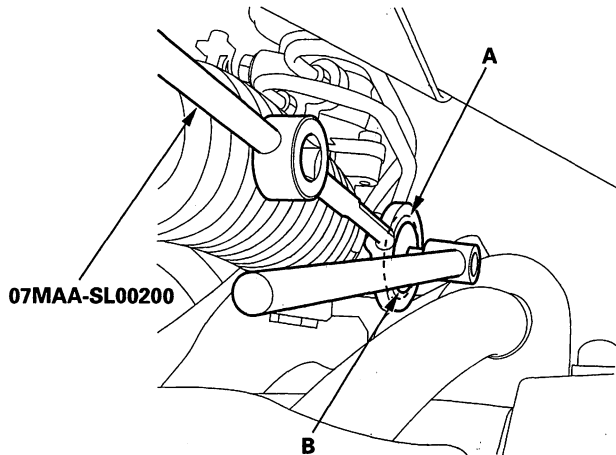
Power Steering

Rack Guide Adjustment

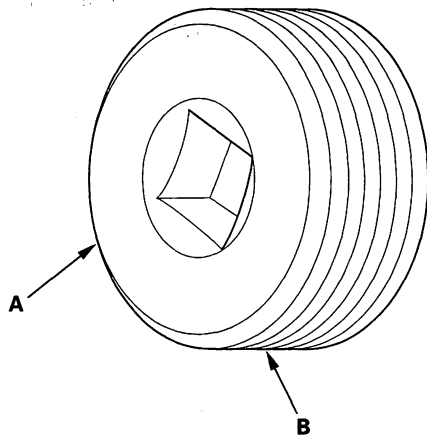
Special Tools Required

Locknut wrench, 43 mm 07MAA-SL00200

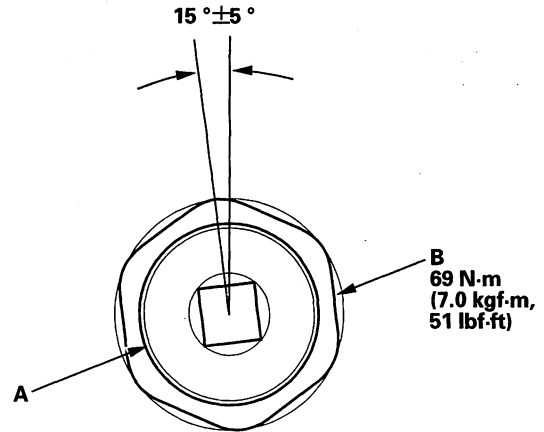
1. Set the wheels in the straight ahead position.
2. Loosen the rack guide screw locknut (A) with the locknut wrench, then remove the rack guide screw (B).



3. Remove the old sealant from the rack guide screw (A), and apply new sealant (Loctite 565) to the middle of the threads (B). Loosely install the rack guide screw on the steering gearbox.



4. Tighten the rack guide screw (A) to 25 N·m (2.5 kgf·m, 18 lbf·ft), then loosen it.



5. Retighten the rack guide screw to 3.9 N·m (0.4 kgf·m, 4 lbf·ft), then back it off to the specified angle.

Specified return angle: 15° ± 5°

6. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.
7. Install the locknut wrench on the locknut (B), and hold the rack guide screw stationary with a wrench. Tighten the locknut to the specified torque.
8. Check for unusual steering effort through the complete turning range.
9. Check the steering wheel rotation play (see page 17-8) and the power assist (see page 17-8).



Steering Gearbox Removal

Special Tools Required

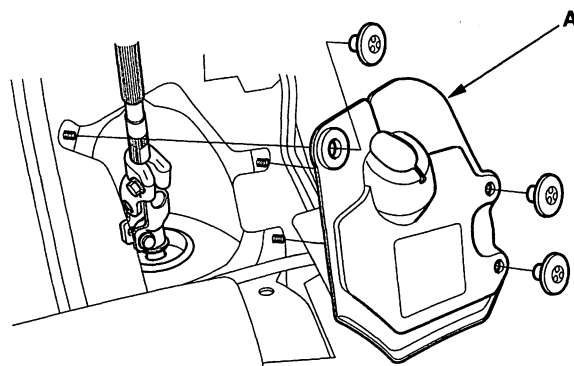
- Ball joint remover, 28 mm 07MAC-SL0A202
 - Front subframe adapter EQS02BMDXSB0 *
 - Front subframe adapter VSB02C000016 *
 - Engine support hanger, A and Reds AAR-T-12566 *
 - Engine hanger balance bar VSB02C000019 *
 - Engine hanger adapter set VSB02C000031 *
- * Available through the American Honda Tool and Equipment program, 1-888-424-6857.

Note these items during removal:

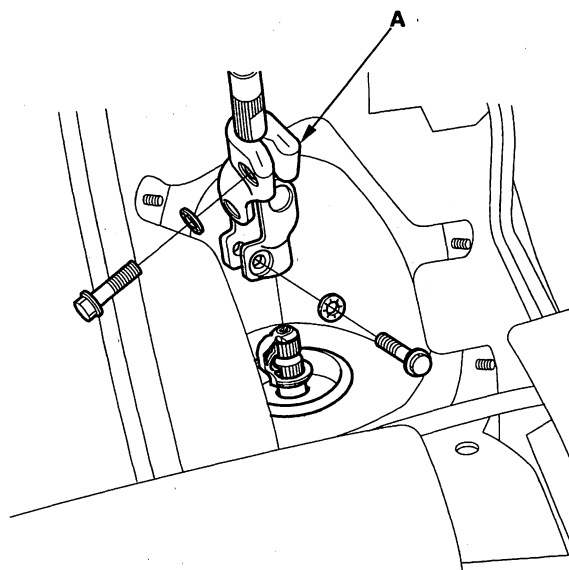
- Using solvent and a brush, wash any oil and dirt off the valve body unit, it's lines, and the end of the steering gearbox. Blow dry with compressed air.
- Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.
- Lower the front subframe from the body and remove the steering gearbox through the gap produced by lowering the front subframe.

1. Drain the power steering fluid (see page 17-13).
2. Make sure you have the anti-theft codes for the audio system and the navigation system (if equipped).
3. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
4. Raise the front of vehicle, and support it with safety stands in the proper locations (see page 1-7).
5. Remove the front wheels.
6. Remove the driver's dashboard undercover (see page 20-120).
7. Remove the steering wheel (see page 17-22).

8. Remove steering joint cover (A).



9. Remove the steering joint bolts, disconnect the steering joint by moving the steering joint (A) toward the column.

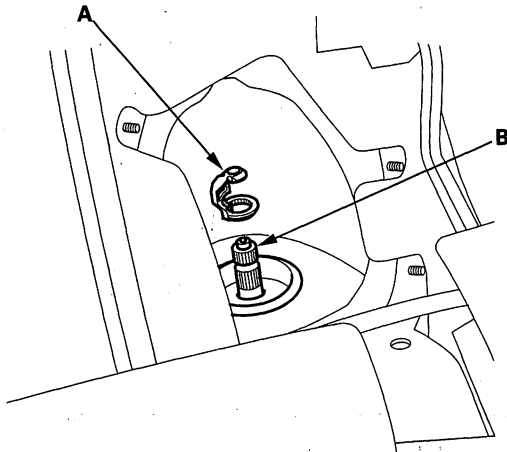


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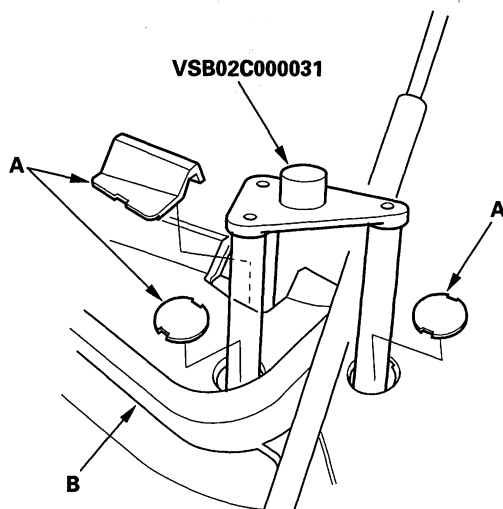
Power Steering

Steering Gearbox Removal (cont'd)

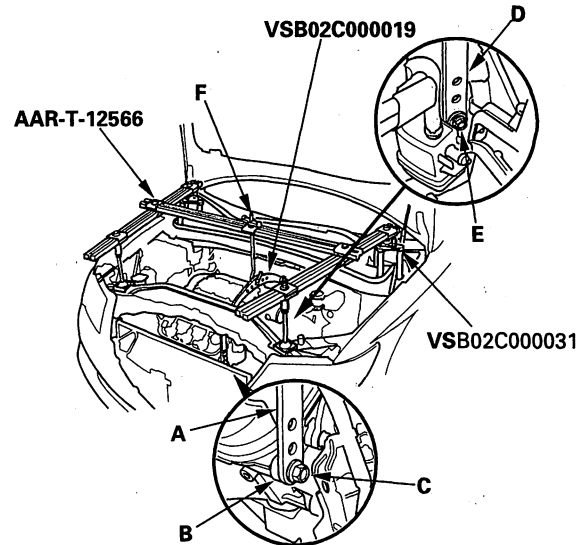
10. Remove the center guide (A) (if equipped), and discard it. The center guide is for factory assembly use only.



11. Apply vinyl tape to the splines on the pinion shaft (B).
12. Remove the air cleaner housing (see page 11-363).
13. Remove the service caps (A) for the front damper flange nuts from the cowl cover (B). Position the engine hanger adapters (VSB02C000031) with the "FRONT" mark facing forward over the damper flange nuts.



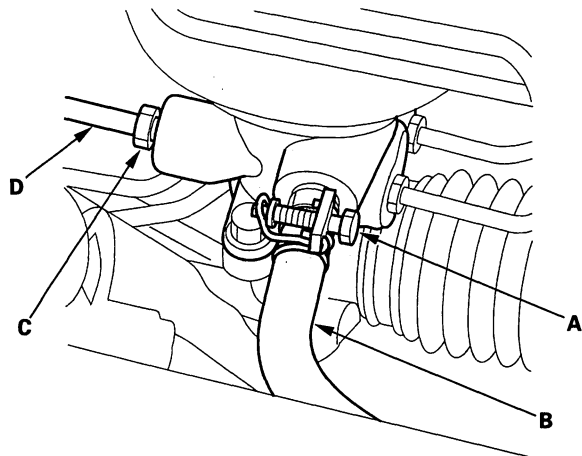
14. Install the engine hanger balancer bar (VSB02C000019); attach the front arm (A) to the front cylinder head with a spacer (B) and 10 x 1.25 mm bolt (C), attach the rear arm (D) to the rear cylinder head with 8 x 1.25 mm bolt (E).



15. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook to the slotted hole in the engine hanger balancer bar. Tighten the wing nut (F) by hand to lift and support the engine/transmission.

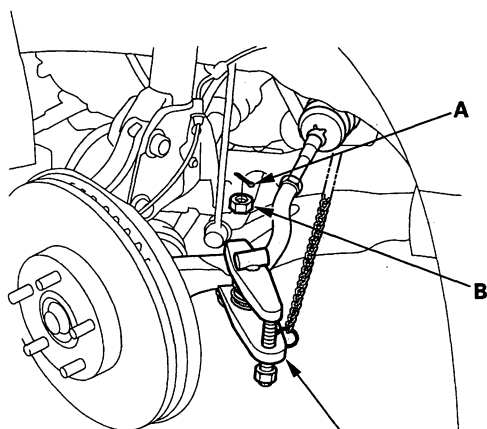


16. Loosen the adjustable hose clamp (A), and disconnect the return hose (B).



17. Loosen the 16 mm flare nut (C), and disconnect the inlet line (D).

18. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.

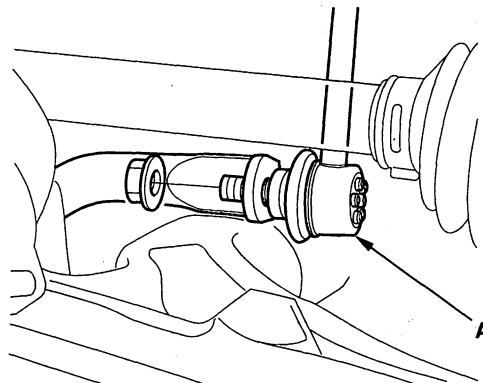


07MAC-SL0A202

19. Separate the tie-rod ball joint and knuckle using the ball joint remover (see page 18-11).

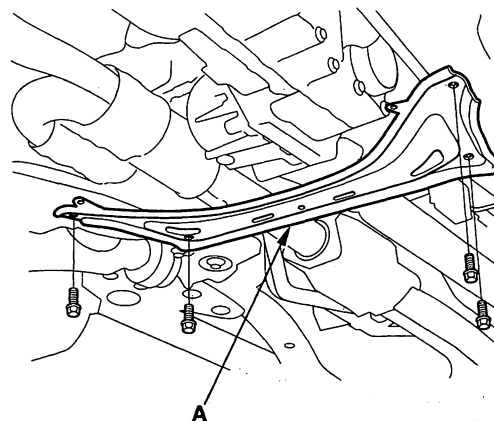
20. Disconnect the lower arm ball joints (see page 18-17).

21. Disconnect the stabilizer links (A) from the lower arm on the right and left sides (see page 18-20).



22. Remove the front undercover (see page 20-219) and the front splash shield (see page 20-218).

23. Remove the front subframe stiffener plate (A).

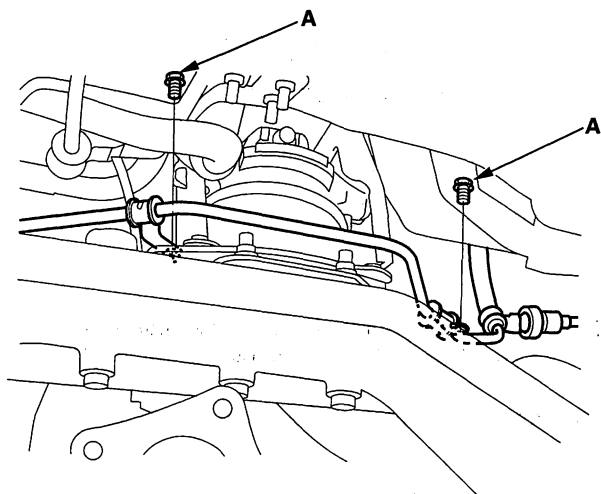


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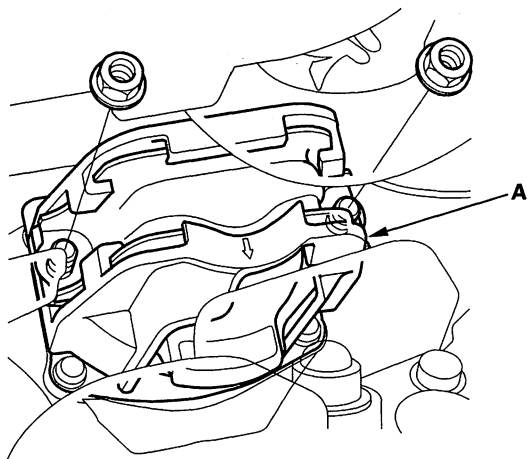
Power Steering

Steering Gearbox Removal (cont'd)

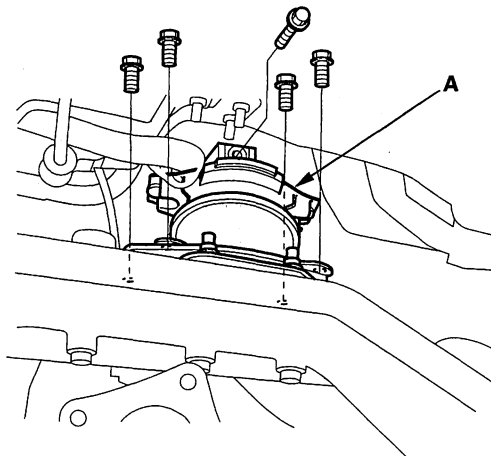
24. Remove exhaust pipe B (see page 9-9).
25. Remove the propeller shaft and propeller shaft protectors (see page 16-38).
26. Remove the inlet line clamp bolts (A).



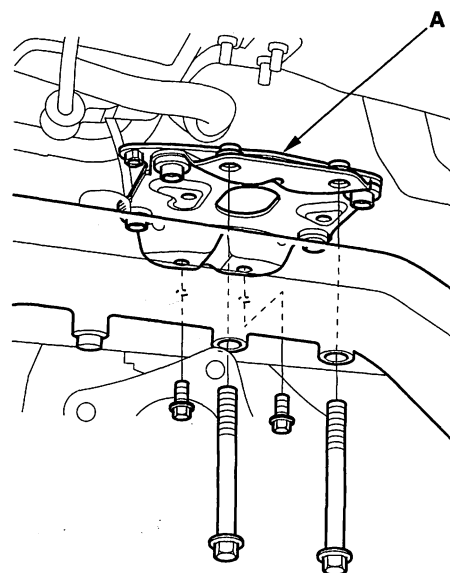
27. Remove the rear mount stop (A) from the rear engine mount.



28. Remove the rear engine mount (A) from the base bracket, and move it aside.

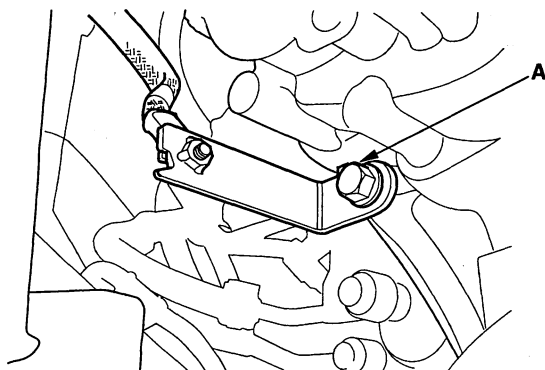


29. Remove the base bracket (A) from the front subframe.

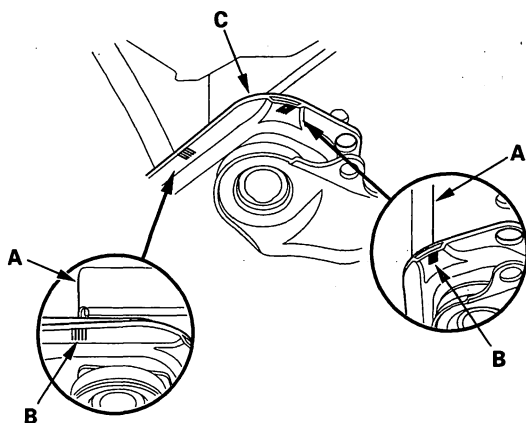




30. Remove the ground cable bolt (A) from the transmission.

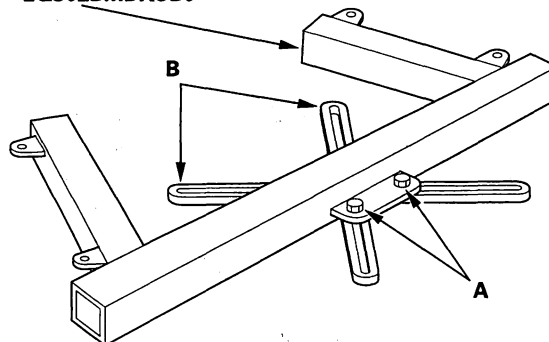


31. Make reference marks (A) on the body across the marks (B) on the edge of the front subframe (C).

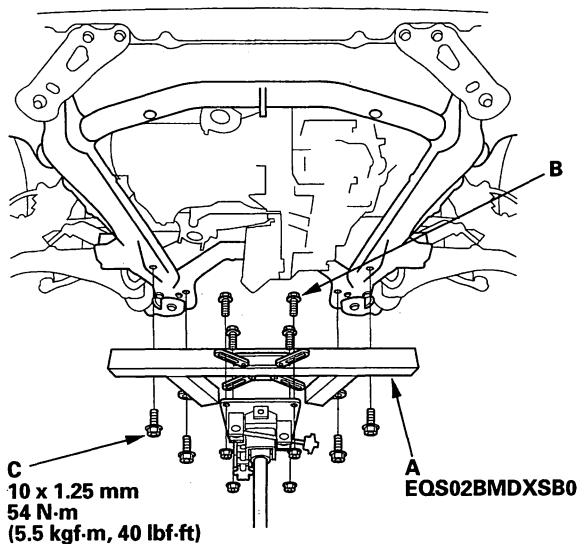


32. Loosen the four bolts (A) holding the adjustable arms (B) of the front subframe adapter to its center plate.

EQS02BMDXSB0



33. Line up the slots in the arms with the bolt holes on the corner of the jack base, then attach the front subframe adapter (A) to the jack base with the bolts (B) that came with the jack. Tighten all bolts securely.



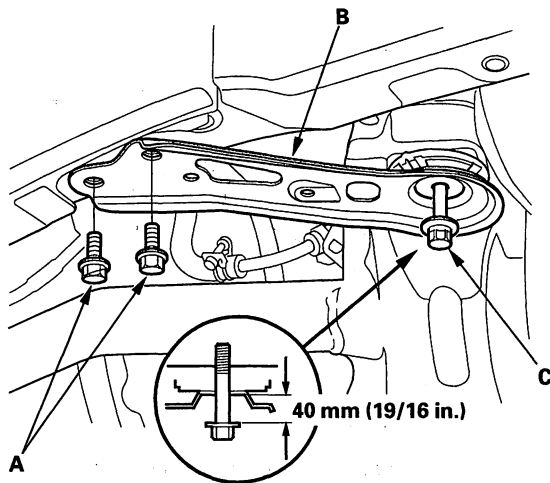
34. Raise the jack to vehicle height, then attach the front subframe adapter to the front subframe using the subframe stiffener mounting bolts (C) and bolt holes.
35. Support the front subframe securely by raising the transmission jack.

(cont'd)

Power Steering

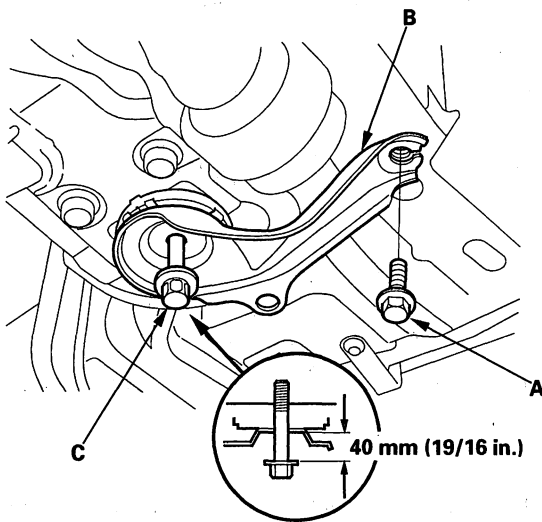
Steering Gearbox Removal (cont'd)

36. Remove the mounting bolts (A) from the front subframe front brackets (B).



37. Loosen the special bolts (C) on the front subframe front brackets so they are about 40 mm (19/16 in.) from the mounting surface. Do not loosen the special bolts more than necessary.

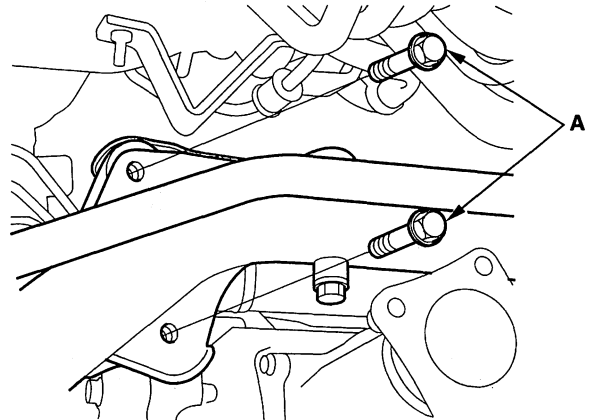
38. Remove the mounting bolts (A) from the front subframe rear brackets (B).



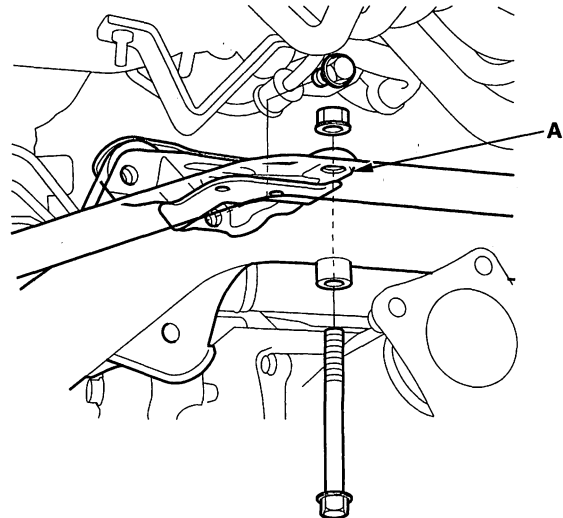
39. Loosen the special bolts (C) on the front subframe rear brackets so they are about 40 mm (19/16 in.) from the mounting surface. Do not loosen the special bolts more than necessary.

40. Lower the transmission jack slowly until the front subframe has dropped about 40 mm (19/16 in.).

41. Remove the mounting bolts (A) from the left side of the steering gearbox.

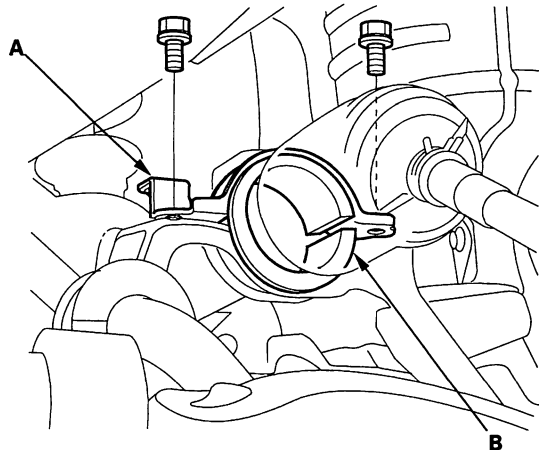


42. Remove the gearbox stiffener bracket (A) from the left side of the front subframe.

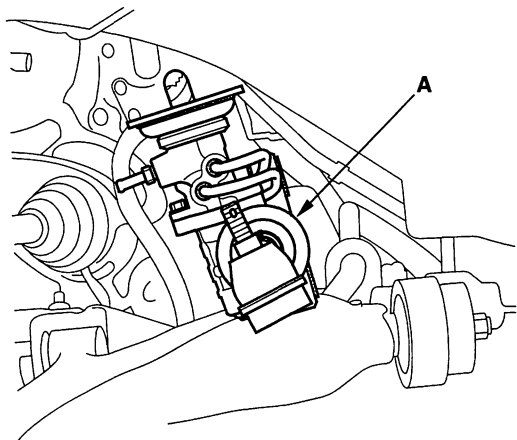




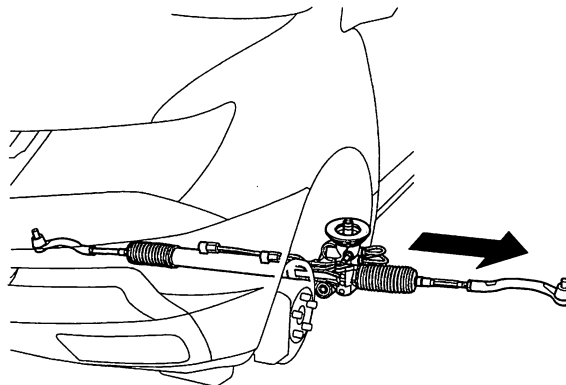
43. Remove the mounting bolts from the right side of the steering gearbox, then remove the mounting bracket (A) and cushion (B).



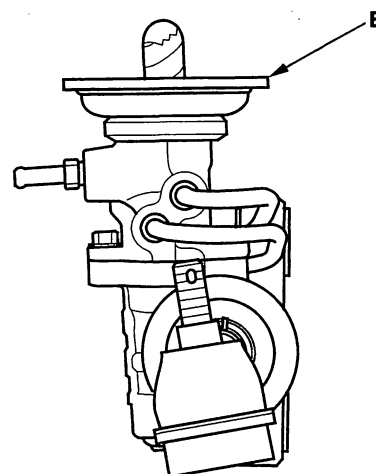
44. Carefully move the steering gearbox (A) toward the driver's side until the pinion shaft clears the wheelwell opening on the frame.



45. Remove the steering gearbox through the wheelwell opening on the driver's side.



46. Remove the pinion shaft grommet B from the top of the valve housing.

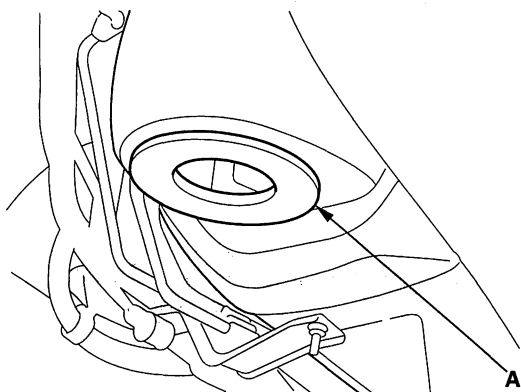


(cont'd)

Power Steering

Steering Gearbox Removal (cont'd)

47. Replace the pinion shaft grommet A if necessary.

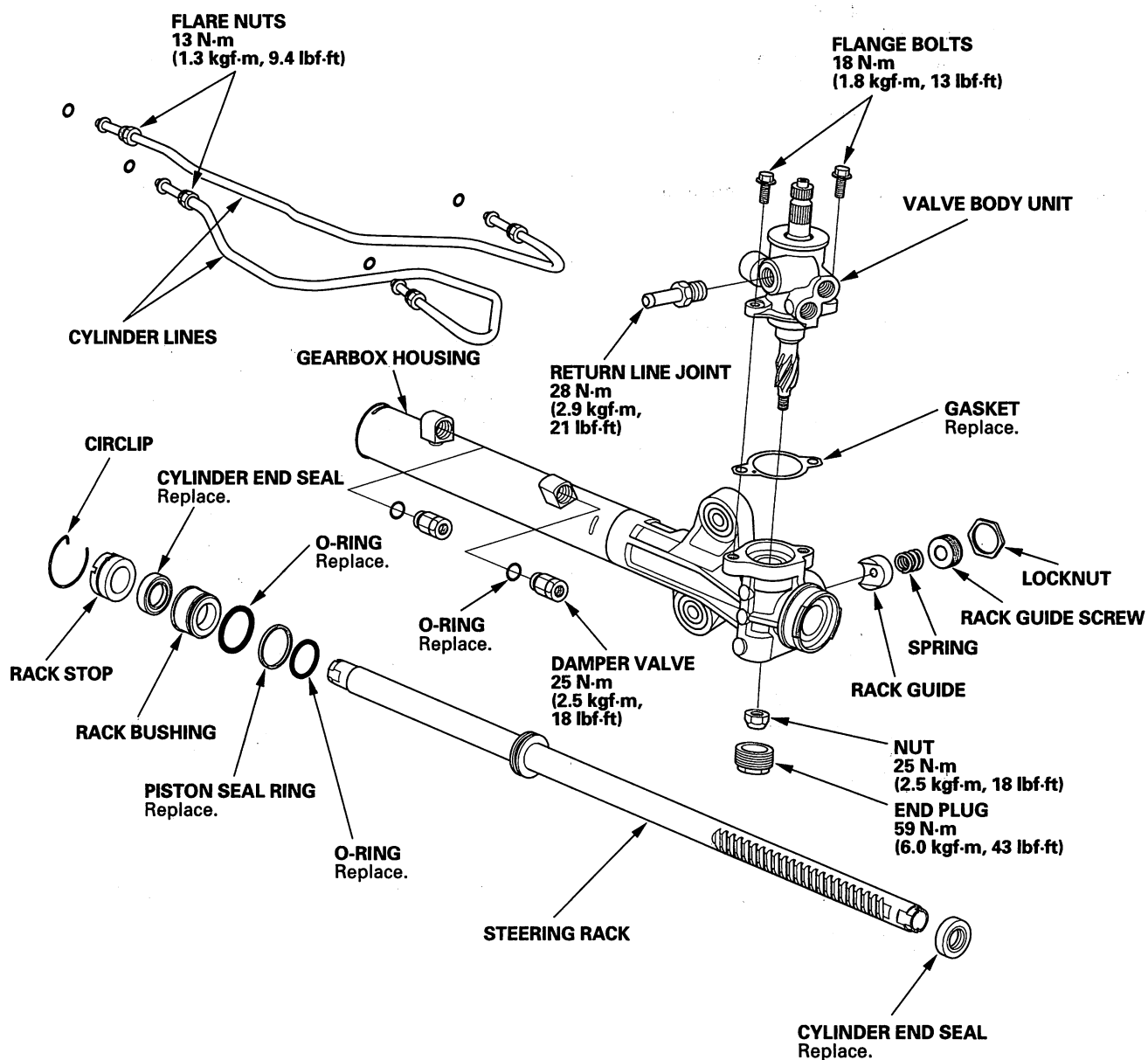


48. After removing the steering gearbox, make sure that no power steering fluid gets on the gearbox mount cushions, gearbox housing, surface of the front subframe and stiffener. Wipe off any spilled fluid at once.



Steering Gearbox Overhaul

Exploded View



(cont'd)

BACK

Power Steering

Steering Gearbox Overhaul (cont'd)

Special Tools Required

- Driver handle, 480 mm 070GD-0010100
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300
- Driver head 07946-MJ00201
- Piston seal ring guide 07LAG-SM40100
- Piston seal ring sizing tool 07LAG-SM40200
- Pincer Oetiker 1098, or equivalent, commercially available

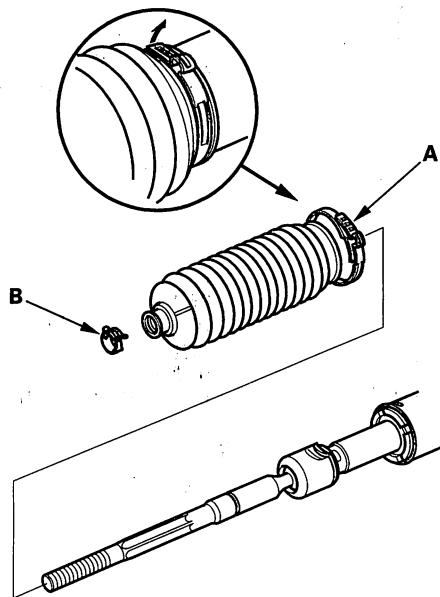
NOTE: Refer to the Exploded View as needed during the following procedure.

Removal

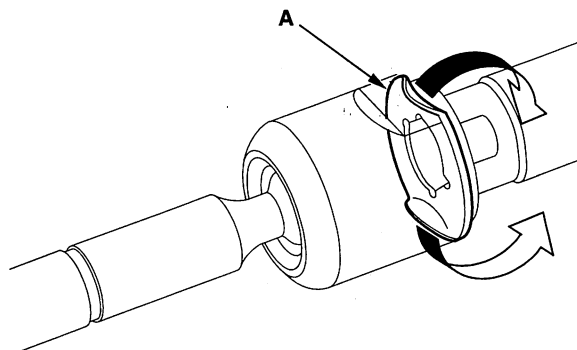
1. Remove the steering gearbox (see page 17-31).

Disassembly

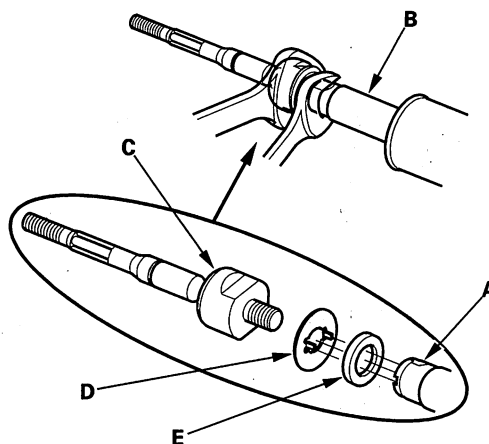
2. Remove the boot bands (A) and tie-rod clips (B). Pull the boots away from the ends of the steering gearbox.



3. Unbend the lock washer (A).



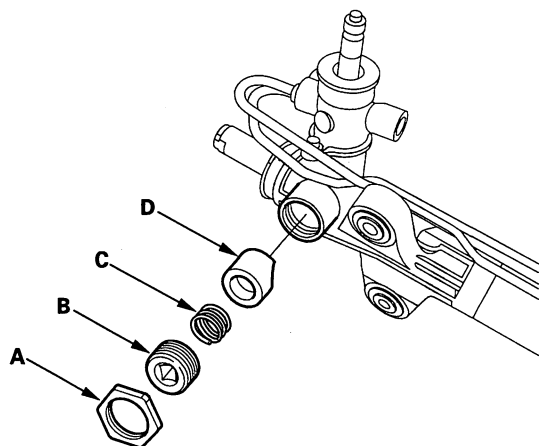
4. Hold the flat surface sections (A) of the steering rack (B) with a wrench, and unscrew both rack ends (C) with a wrench. Be careful not to damage the rack surface with the wrench.



5. Remove the lock washer (D) and stop washer (E).



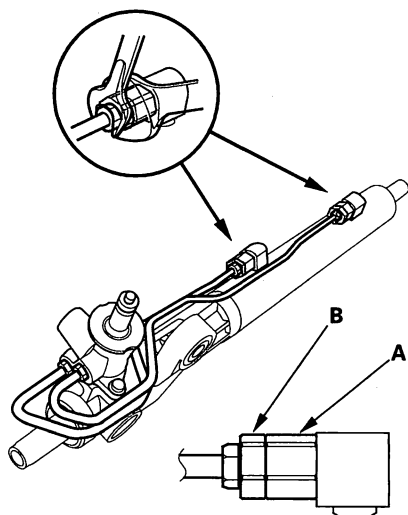
6. Loosen the locknut (A), then remove the rack guide screw (B).



7. Remove the spring (C) and the rack guide (D) from the gearbox housing.

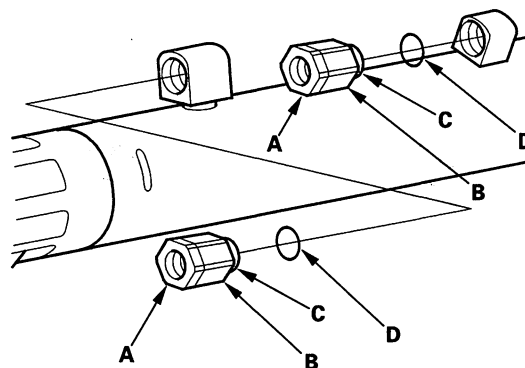
8. Remove the cylinder lines from the steering gearbox.

NOTE: Use a second wrench when loosening the cylinder lines to avoid damage to the fittings on the steering gearbox. Do not loosen the A and B connectors.



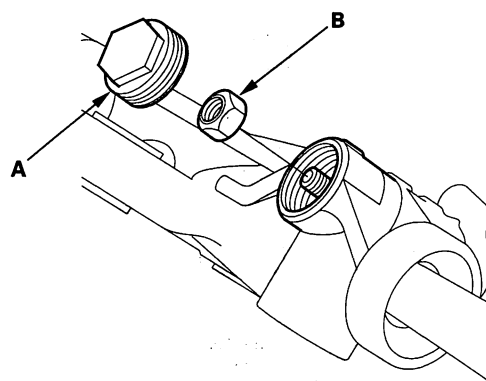
9. Remove the damper valves (C) and O-rings (D) from the steering gearbox.

NOTE: Do not loosen the A and B connectors.



10. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.

11. Remove the end plug (A) from the gearbox housing, then remove the nut (B) from the pinion shaft end.

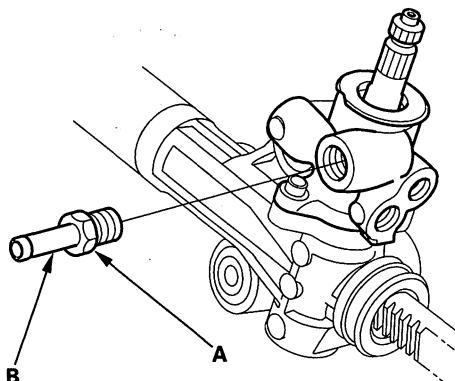


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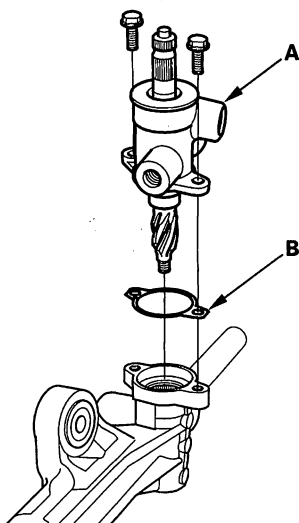
Power Steering

Steering Gearbox Overhaul (cont'd)

12. Loosen the 16 mm flare nut (A), and remove the return line joint (B).

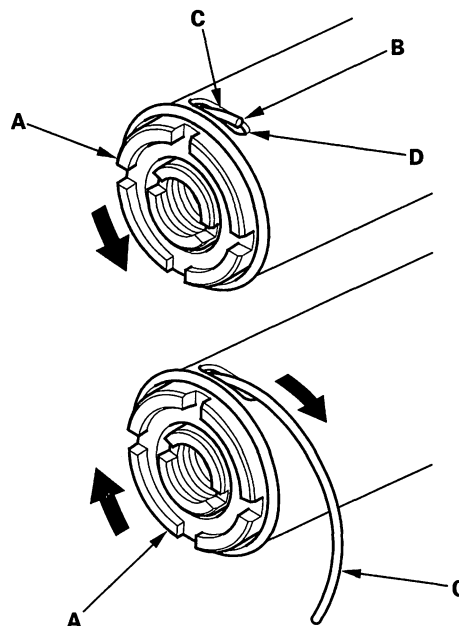


13. Remove the two flange bolts, the valve body unit (A), and gasket (B) from the steering gearbox. Check that the valve turns smoothly by turning the pinion shaft. If any play or roughness is felt, replace the valve body unit with a new part. Do not try to disassemble the valve body unit.

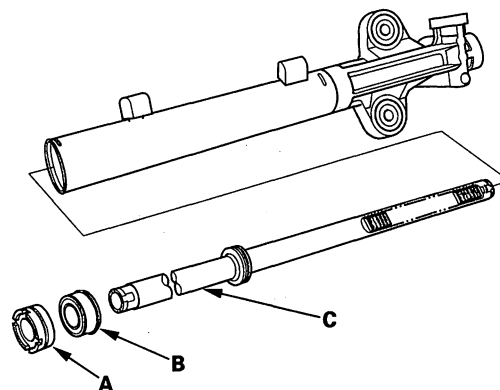


14. Slide the steering rack all the way towards the valve body end of the gearbox housing.

15. Turn the rack stop (A) counterclockwise until the end (B) of the circlip (C) sticks out from the hole (D) in the cylinder housing. Then turn it clockwise to remove the circlip.

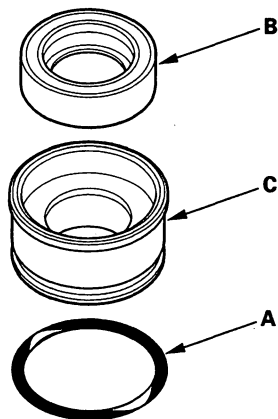


16. Remove the rack stop (A), rack bushing (B), and steering rack (C) from the steering gearbox.

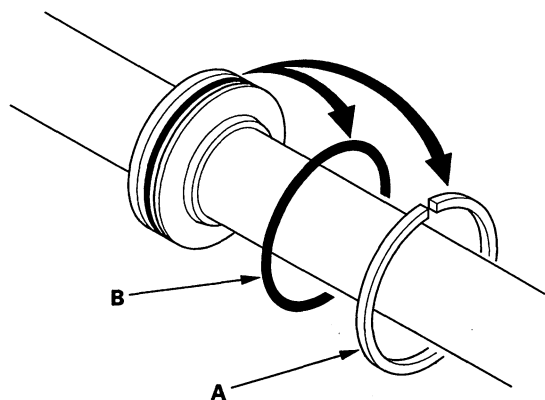




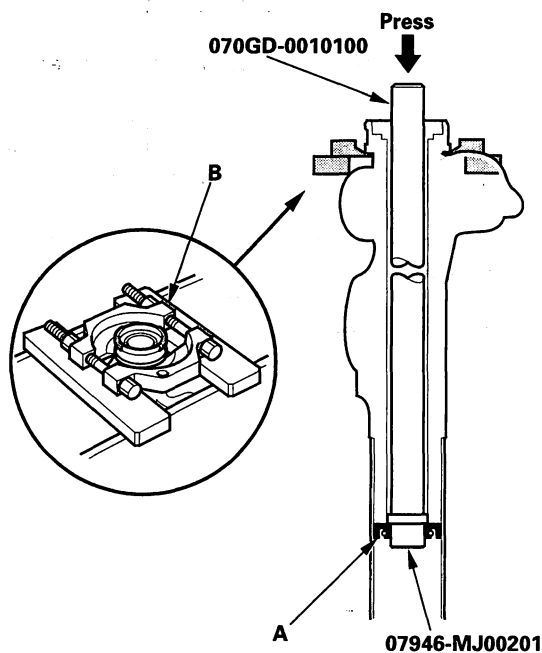
17. Remove the O-ring (A) and cylinder end seal (B) from the rack bushing (C).



18. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.



19. Insert the driver handle and driver head, and carefully place them on the cylinder end seal (A) as shown. Make sure that the driver head is securely positioned on the cylinder end seal.



20. Install the bearing separator (B) on the gearbox housing. Set the steering gearbox in a press so the gearbox housing points upward, then push out the cylinder end seal by pressing on the end of the driver handle and driver head.

(cont'd)

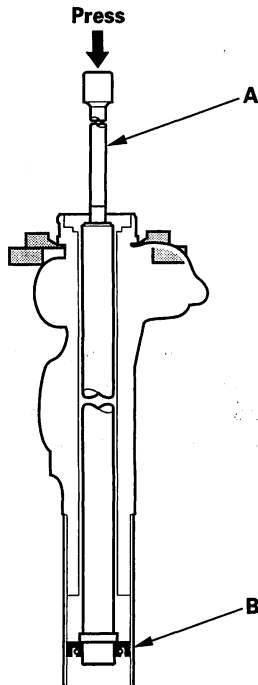
Power Steering

Steering Gearbox Overhaul (cont'd)

21. Remove the steering gearbox from the press, and set a driver extension (A) on the driver handle. Place the steering gearbox in a press, then remove the cylinder end seal (B) from the gearbox housing by pressing on the end of the extension.

Note these items when pressing the cylinder end seal:

- Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.
- Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the cylinder end seal, and the seal would remain in the gearbox.

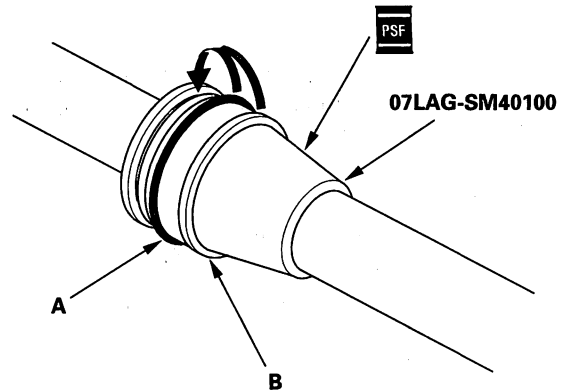


Reassembly

22. Coat the piston seal ring guide with power steering fluid, then slide it onto the rack, big end first.
23. Position the new O-ring (A) and new piston seal ring (B) on the ring guide, then slide them down toward the big end of the tool.

Note these items during reassembly:

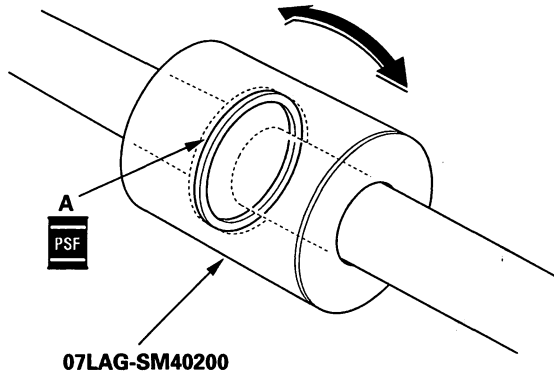
- Do not over expand the resin seal rings. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal ring using the sizing tool.
- Replace the piston's O-ring and seal ring as a set.



24. Pull the O-ring off into the piston groove, then pull the piston seal ring off into the piston groove on top of the O-ring.

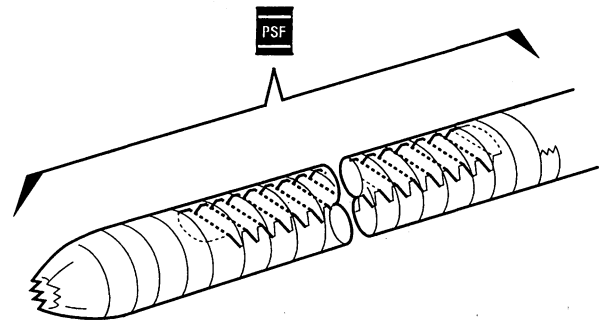


25. Coat the piston seal ring (A) and the inside of the piston seal ring sizing tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.

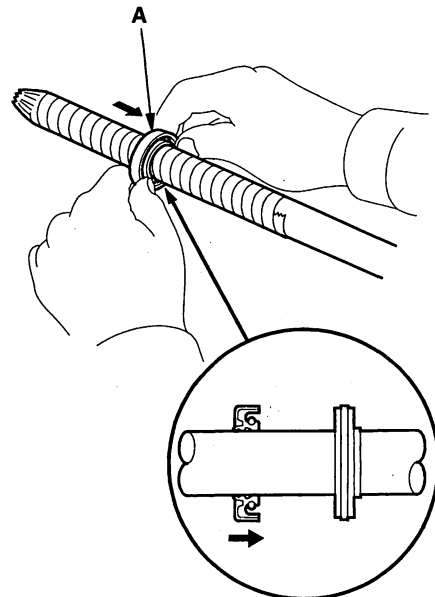


26. Move the sizing tool back and forth several times to make sure the piston seal ring fits snugly in the piston.

27. Wrap vinyl tape around the rack teeth and rack end edges, then coat the surface of the tape with power steering fluid. Make sure that the vinyl tape is wrapped carefully so that there is no stepped portion.



28. Coat the inside surface of the new cylinder end seal (A) with power steering fluid, then install it onto the steering rack with its grooved side toward the piston. When installing the cylinder end seal, be careful not to damage the lip of the seal with the edges or teeth of the steering rack.



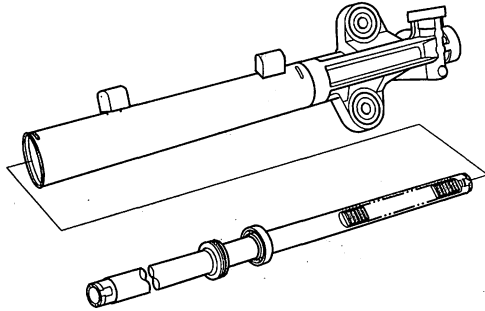
29. Remove the vinyl tape from the steering rack, then remove any adhesive residue.

(cont'd)

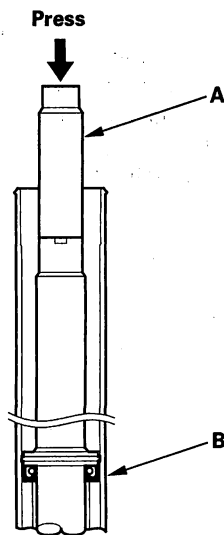
Power Steering

Steering Gearbox Overhaul (cont'd)

30. Apply multipurpose grease to the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.



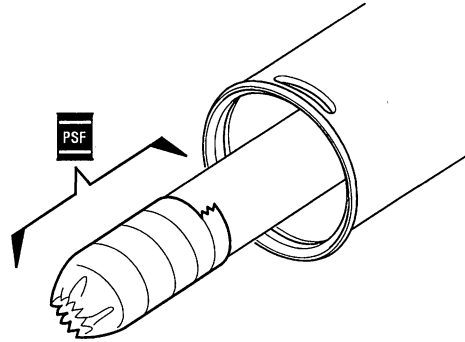
31. Insert an appropriate sized deep socket (A) onto the steering rack as shown.



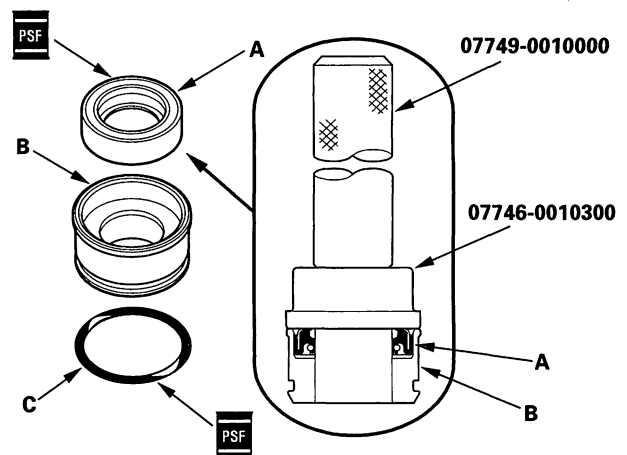
32. Install the cylinder end seal (B) into the bottom of the cylinder by pressing on the tool with a press. Do not push on the tool with excessive force as it may damage the cylinder end seal.

33. Remove the tool, and center the steering rack.

34. Wrap vinyl tape around the rack end edges, and coat the surface of the tape with power steering fluid. Make sure that the vinyl tape is wrapped carefully so that there is no stepped portion.



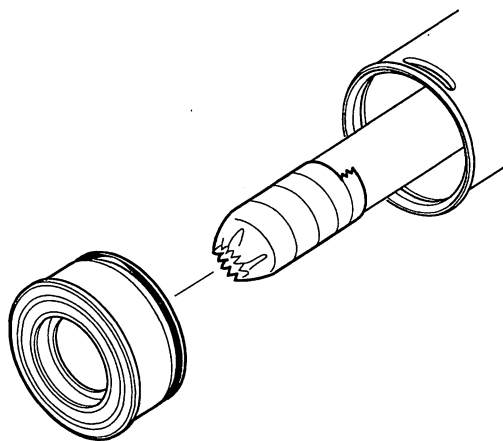
35. Coat the inside surface of the new cylinder end seal (A) with power steering fluid, then press it into the rack bushing (B) using the driver and attachment.



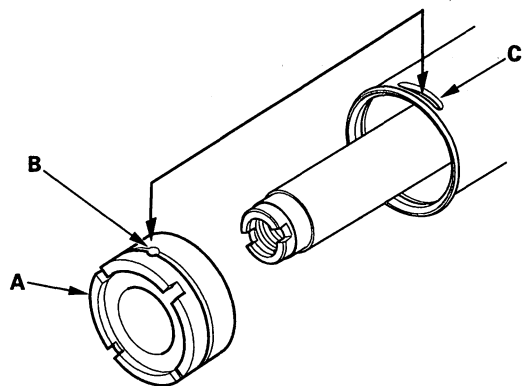
36. Coat the new O-ring (C) with power steering fluid, and carefully fit it in the groove of the rack bushing.



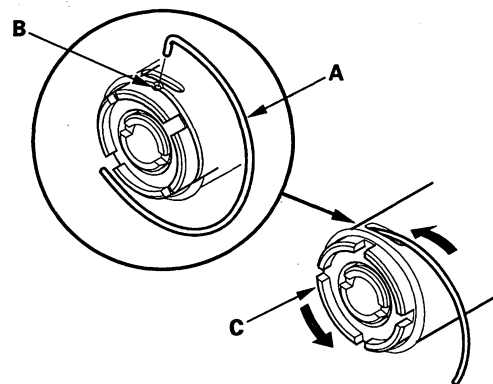
37. Install the rack bushing onto the steering rack with the cylinder end seal grooved side toward the piston. Push in the rack bushing with your finger.



38. Remove the vinyl tape from the steering rack, then remove any adhesive residue.
39. Install the rack stop (A) onto the steering rack so the hole (B) is aligned with the slot (C) on the cylinder housing.



40. Insert the end of the circlip (A) into the hole (B) of the rack stop (C). Turn the rack stop counterclockwise until the circlip is fully seated in the rack stop.

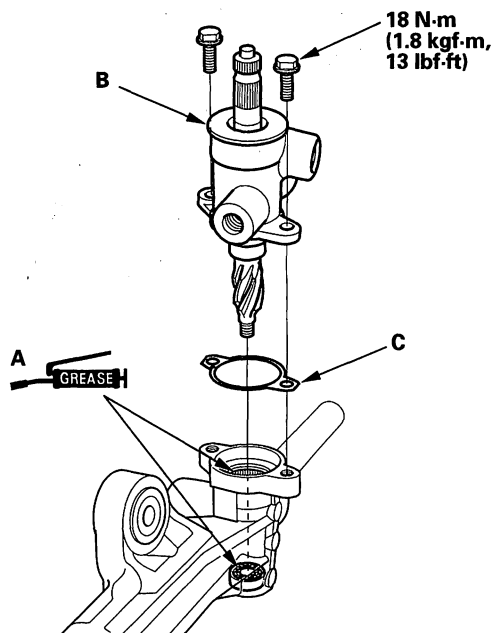


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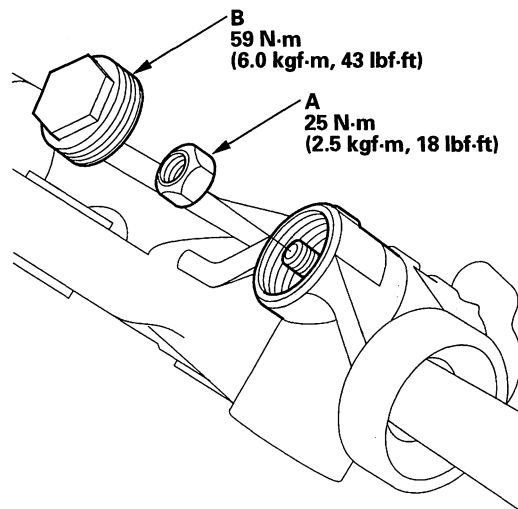
Power Steering

Steering Gearbox Overhaul (cont'd)

41. Apply multipurpose grease to the bearings (A) in the gearbox housing, and install the valve body unit (B) and new gasket (C) by engaging the gears. Note the valve body unit installation position (direction of line connections). Then loosely install the two flange bolts.



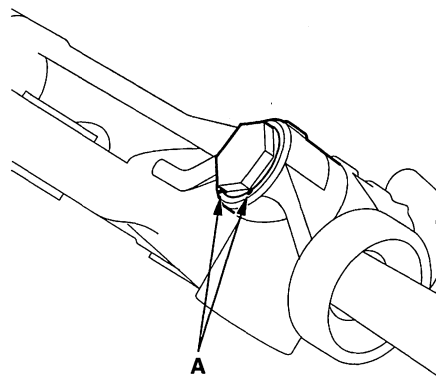
42. Install the new self-locking nut (A) onto the pinion shaft end, and tighten to the specified torque.



43. Tighten the flange bolts to the specified torque.

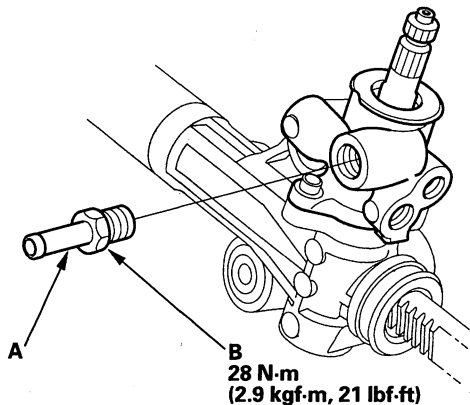
44. Apply new sealant (Loctite 565) all the way around the threads on the end plug (B), install the end plug onto the gearbox housing, and tighten it to the specified torque.

45. After tightening, use a drift to stake (A) the end plug shoulder against the gearbox housing.

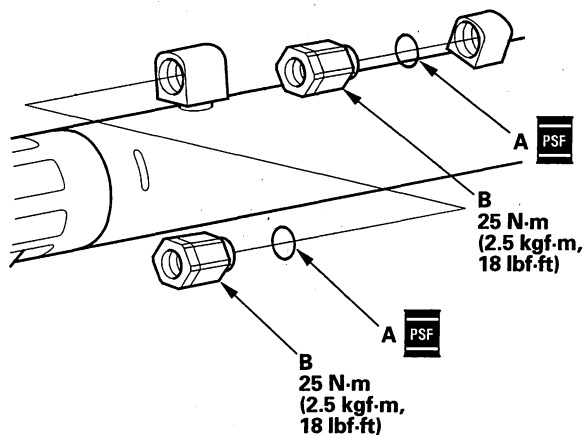




46. Install the return line joint (A), and tighten the 16 mm flare nut (B).



47. Coat the new O-rings (A) with power steering fluid, then install the damper valves (B).



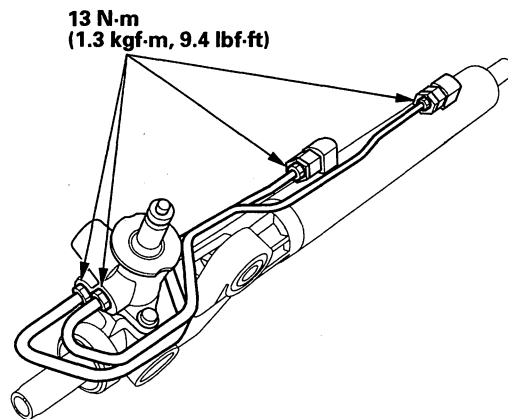
48. Install the damper valve to the steering gearbox.

49. Before installing the cylinder lines, coat the new O-rings with power steering fluid, then install the lines.

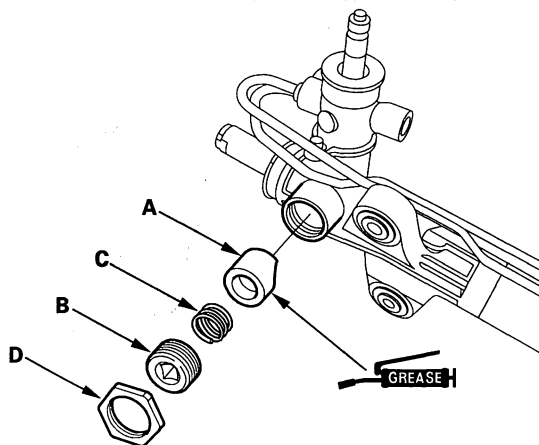
Note these items during reassembly:

- Thoroughly clean the joints of the cylinder lines. The joints must be free of foreign material.
- Install the cylinder lines by tightening the flare nuts by hand first, then tighten the flare nuts to the specified torque.

NOTE: Use a second wrench when tightening the cylinder lines to avoid damaging the fittings on the steering gearbox.



50. Apply multipurpose grease to the sliding surface of the rack guide (A), and install it onto the gearbox housing.



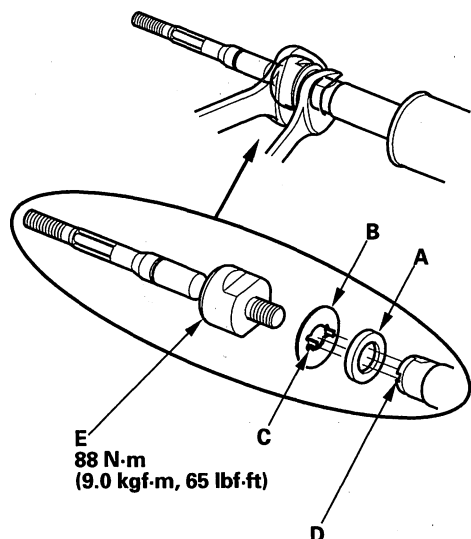
51. Apply new sealant (Loctite 565) to the middle of the threads of the rack guide screw (B), then install the spring (C), rack guide screw, and locknut (D).

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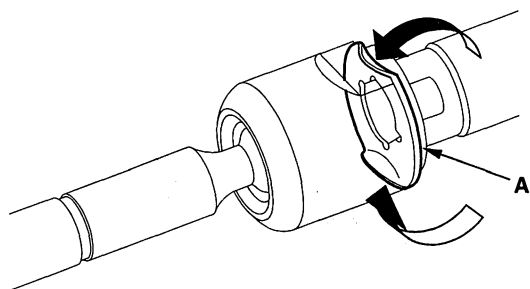
Power Steering

Steering Gearbox Overhaul (cont'd)

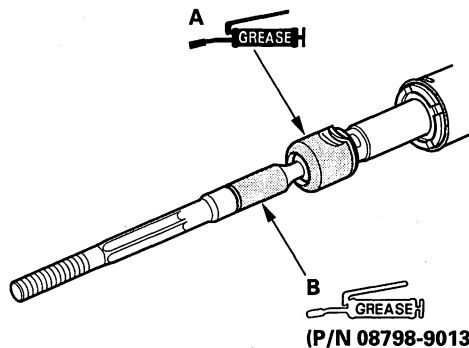
52. Adjust the rack guide screw (see page 17-30). After adjusting, check that the rack moves smoothly by sliding it right and left.
53. Install the new stop washer (A) and lock washer (B). Align the lock washer tabs (C) with the slots (D). Install the rack end (E) while holding the lock washer in place. Repeat this step for the other side of the rack.



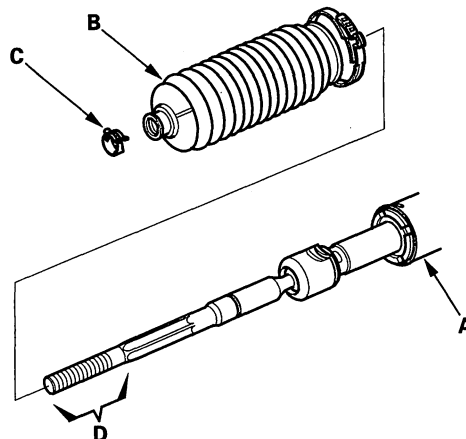
54. Hold the flat surface sections of the steering rack with a wrench, and tighten both rack ends. Be careful not to damage the rack surface with the wrench.
55. Bend the lock washer (A) back against the flat spots on the rack end joint housing.



56. Apply multipurpose grease to the circumference of the rack end joint housing (A).



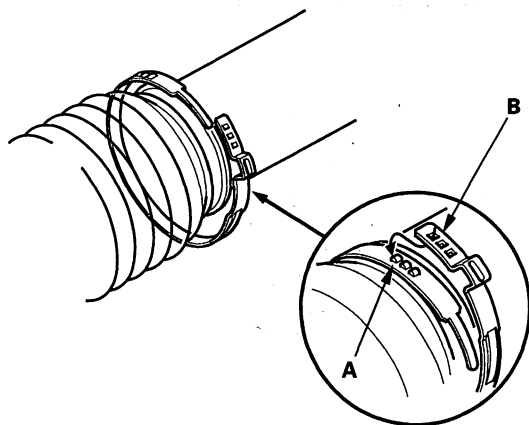
57. Apply a light coat of silicone grease to the boot grooves (B) on the rack ends.
58. Center the steering rack within its stroke.
59. Clean off any grease or contamination from the boot installation surfaces (A) on the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end on the housing properly.



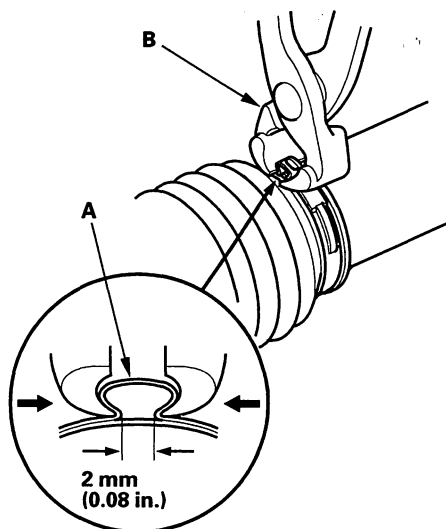
60. After installing the boots, wipe the grease off the threaded section (D) of the rack end.



61. Install the new boot bands by aligning the tabs (A) with the holes (B) of the band.



62. Close the ear portion (A) of the band with a commercially available Oetiker 1098 pincer or equivalent (B).

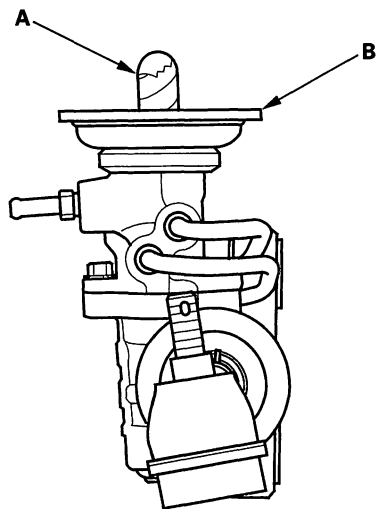


63. Slide the rack right and left to be certain that the boots are not deformed or twisted.

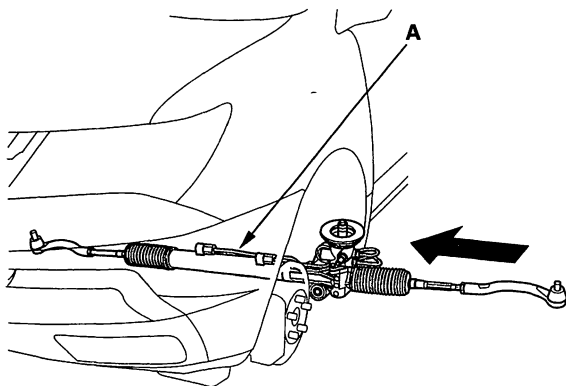
Power Steering

Steering Gearbox Installation

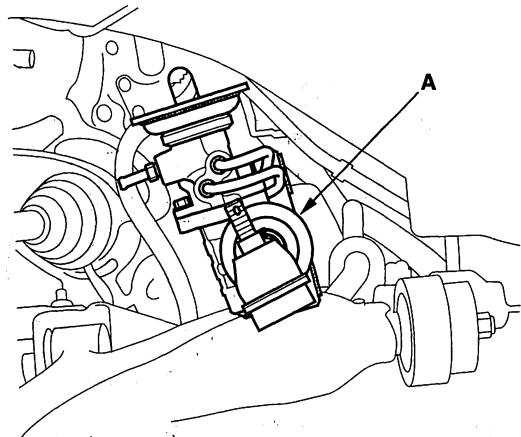
1. Before installing the steering gearbox, make sure that no power steering fluid is on the mating surface of the steering gearbox and front subframe. To prevent the gearbox mounting bolts from loosening after the installation, remove any power steering fluid from the mount cushions and bolt holes.
2. Apply vinyl tape to the splines on the pinion shaft (A).



3. Install the pinion shaft grommet B on the top of the valve housing.
4. Slide the steering gearbox (A) between the front subframe and body from the driver's side.



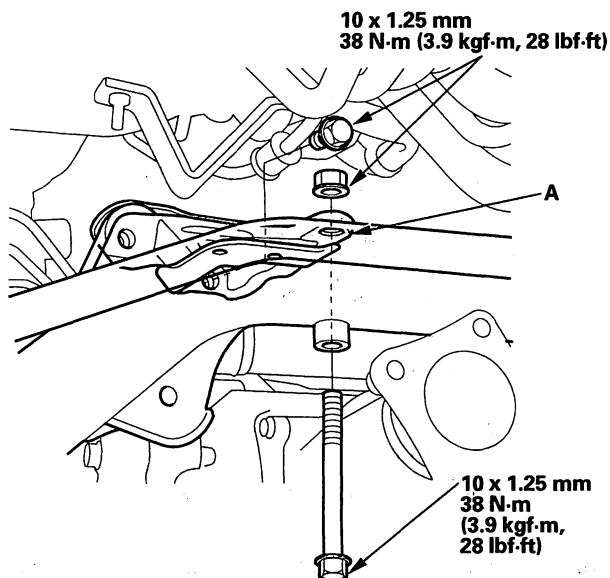
5. Carefully move the steering gearbox (A) toward the passenger's side until the pinion shaft clears the wheelwell opening on the body.



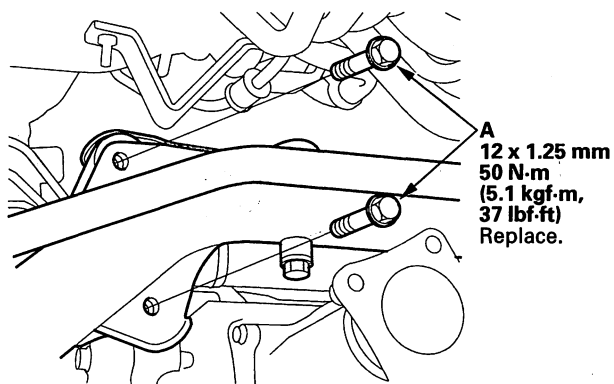
6. Continue moving the gearbox toward the passenger's side until the steering gearbox is in position.



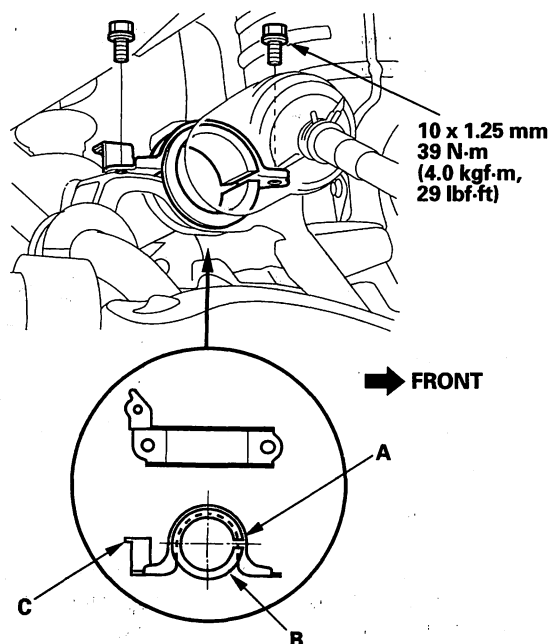
7. Install the gearbox stiffener bracket (A) on the left side of the front subframe, and tighten the bolts and nut to the specified torque.



8. Loosely install the new mounting bolts (A) on the left side of the steering gearbox.



9. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the right side of the steering gearbox.



10. Install the gearbox mounting bracket (C) over the mounting cushion, and loosely install the mounting bolts.

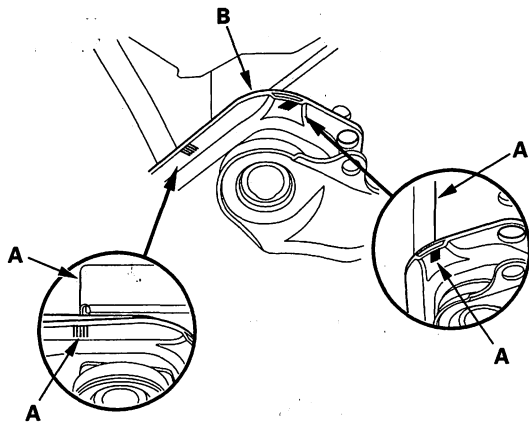
11. Tighten the mounting bolts on the both sides of the steering gearbox to specified torque alternately in two or more steps.

(cont'd)

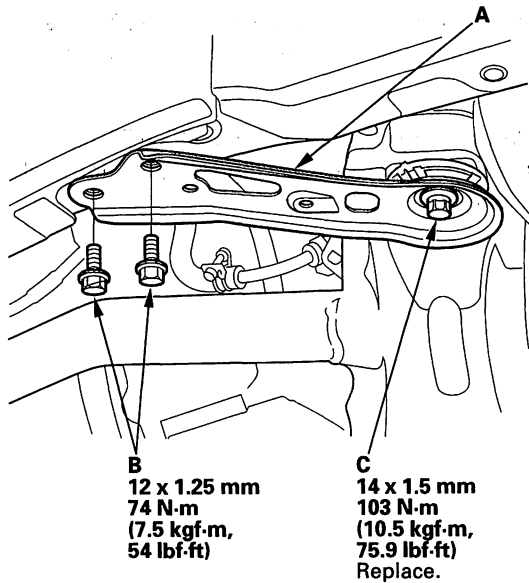
Power Steering

Steering Gearbox Installation (cont'd)

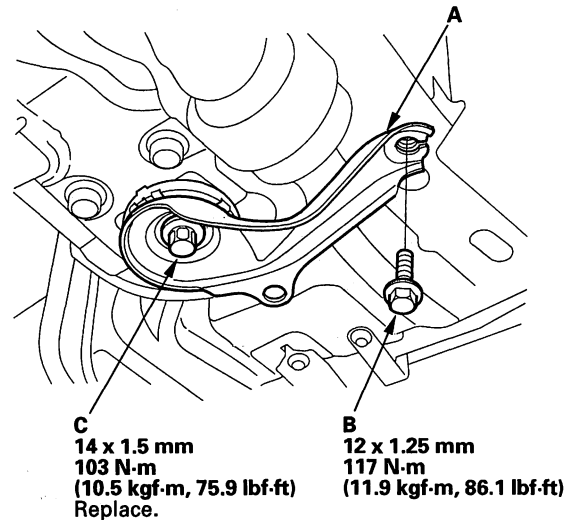
12. Carefully raise the front subframe with the subframe adapter and the transmission jack or the powertrain lift until the subframe is in position.
13. Align all reference marks (A) on the front subframe (B) with the body.



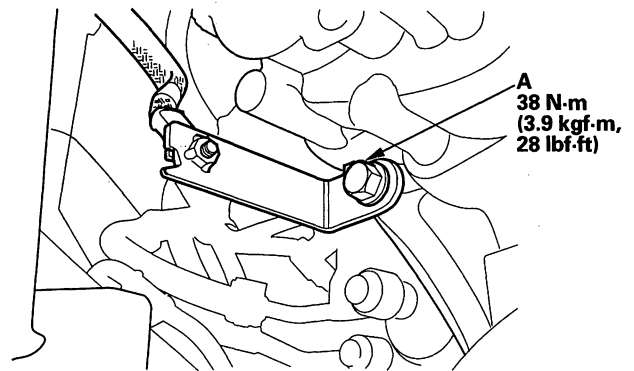
14. Install the front subframe front brackets (A) with mounting bolts (B) and the new special bolts (C), and tighten to the specified torque.



15. Install the front subframe rear brackets (A) with mounting bolts (B) and the new special bolts (C), and tighten to the specified torque.

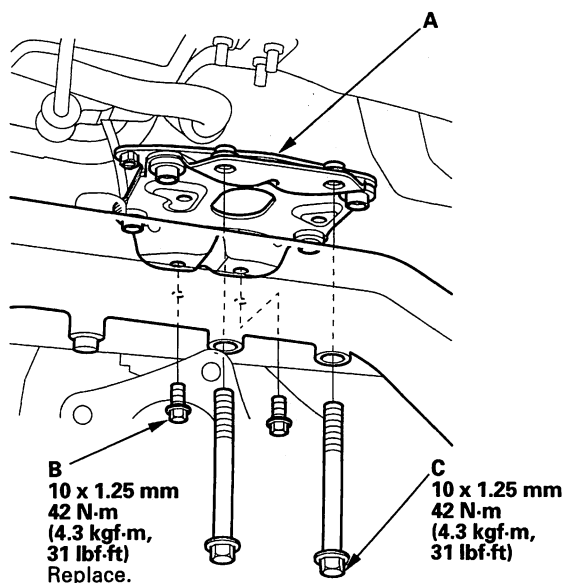


16. Lower the transmission jack supporting the front subframe.
17. Install the ground cable bolt (A) to the transmission.

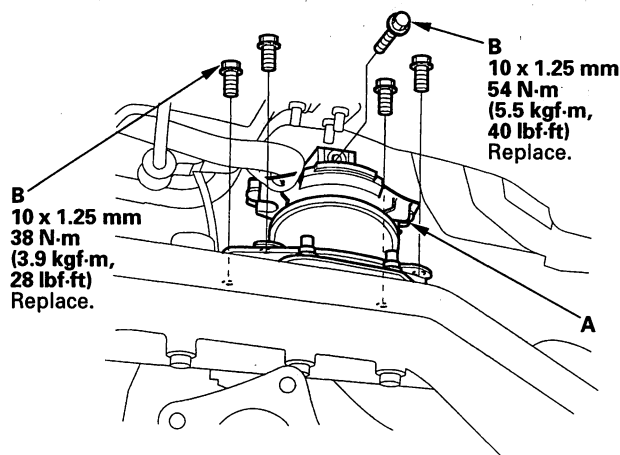




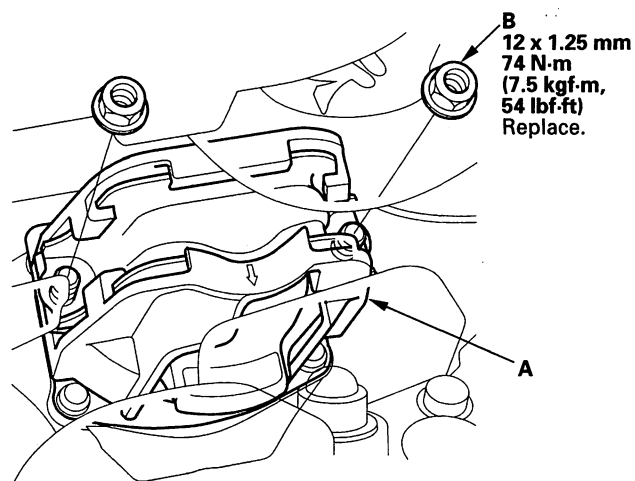
18. Install the base bracket (A) with new mounting bolts (B) and mounting bolts (C), and tighten to the specified torque.



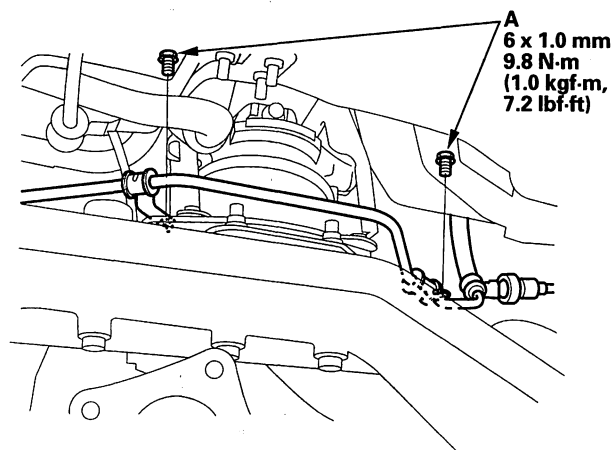
19. Install the rear engine mount (A) with new mounting bolts (B), and tighten to the specified torque.



20. Install the rear mount stop (A) with new mounting nuts (B), and tighten to the specified torque.



21. Install the inlet line clamp bolts (A), and tighten to the specified torque.



22. Install exhaust pipe B (see page 9-9).

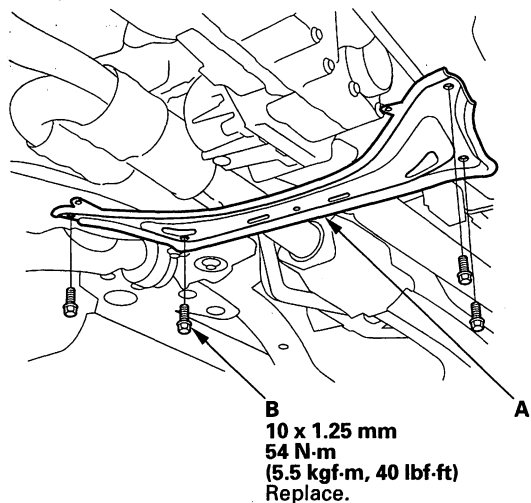
23. Install the propeller shaft and propeller shaft protectors (see page 16-39).

(cont'd)

Power Steering

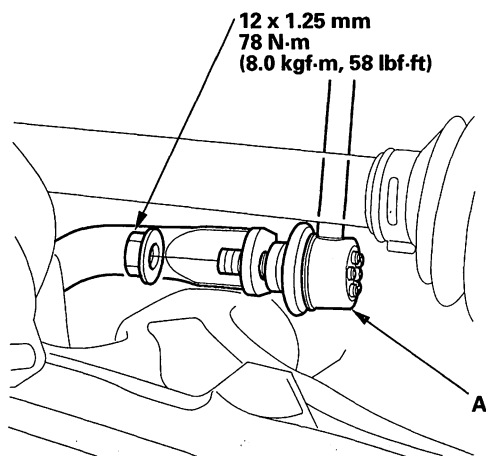
Steering Gearbox Installation (cont'd)

24. Install the front subframe stiffener plate (A) with new mounting bolts (B), and tighten to the specified torque.



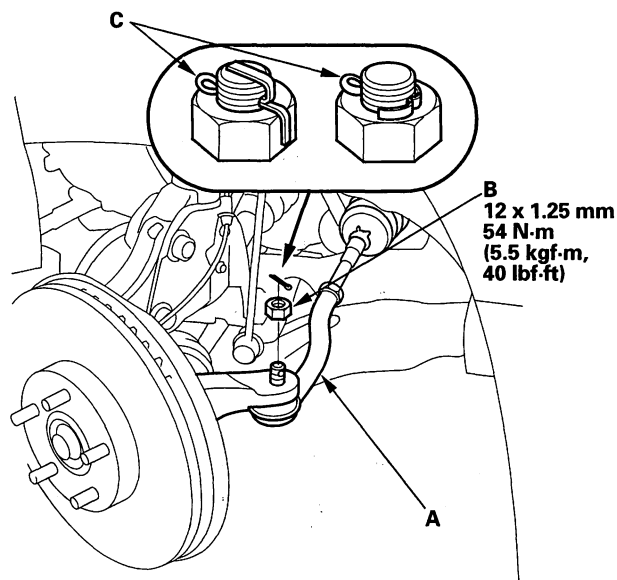
25. Install the front undercover (see page 20-219) and the front splash shield (see page 20-218).

26. Connect the stabilizer links (A) to the lower arm (see page 18-20).



27. Connect the lower arm ball joints (see page 18-17).

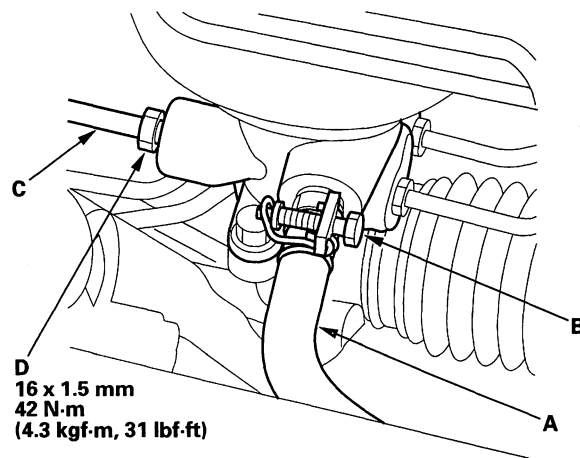
28. Wipe off any grease contamination from the ball joint tapered section and threads. Reconnect the tie-rod ends (A) to the steering knuckles. Install the 12 mm nut (B) and tighten it.



29. Install the new cotter pin (C) and bend it as shown.

30. Remove the engine support hanger, the hanger balance bar, and the hanger adapter set.

31. Connect the return hose (A) securely, and tighten the adjustable hose clamp (B) (see page 17-14).

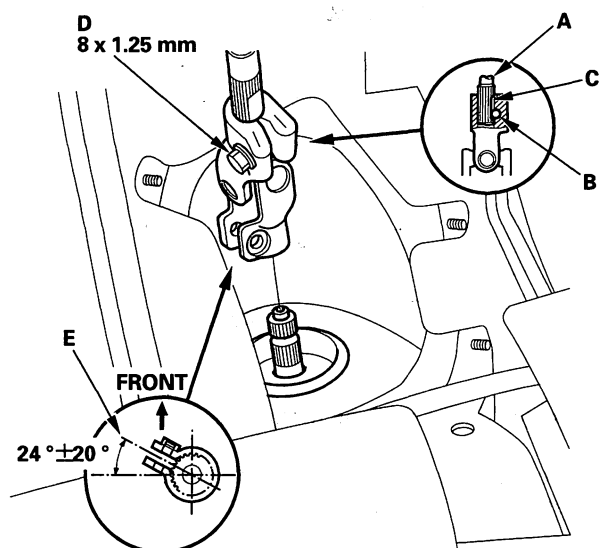


32. Connect the inlet line (C), and tighten the 16 mm flare nut (D) to the specified torque.



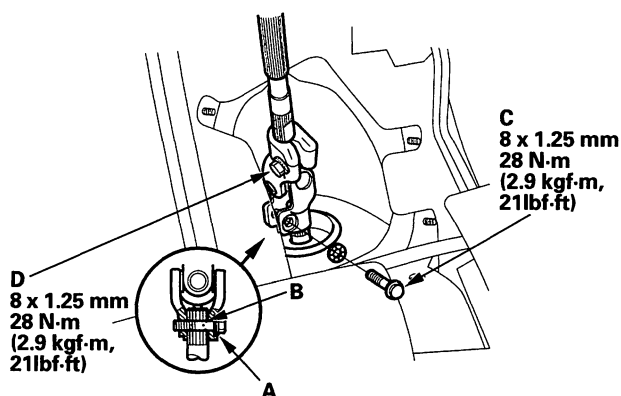
33. Center the steering rack within its stroke.

34. Insert the upper end of the steering joint onto the steering shaft (A) (line up the bolt hole (B) with the flat portion (C) on the shaft), and loosely install the upper joint bolt (D).



35. Slip the lower end of the steering joint onto the pinion shaft taking care to align the gap (E) within the angle.

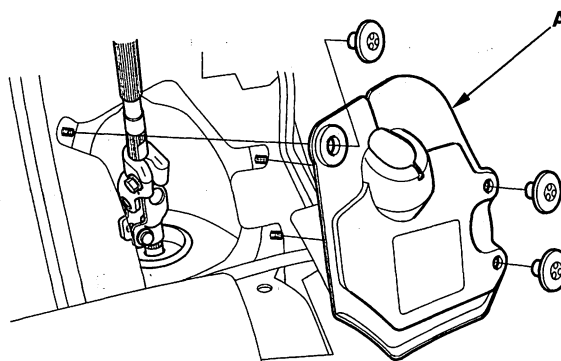
36. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft then loosely install the joint bolt (C).



37. Pull on the steering joint to make sure that the steering joint is fully seated, then tighten the lower joint bolt to the specified torque.

38. Tighten the upper joint bolt (D) to the specified torque.

39. Install the steering joint cover (A).



40. Install the front wheel, then set the wheels in the straight ahead position.

41. Install the steering wheel (see page 17-24).

42. Reconnect the negative battery cable to the battery, and do these tasks:

- Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
- Enter the anti-theft code for the audio system and the navigation system (if equipped).
- Make sure the horn and turn signal switches work properly.
- Make sure the steering wheel switches work properly.
- Make sure the steering wheel is centered.
- Do the steering column position memorization (see page 17-28).

43. Fill the system with power steering fluid, and bleed air from the system (see page 17-13).

44. After installation, do these checks.

- Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid. Check the gearbox for leaks (see page 17-12).
- Do the front toe inspection (see page 18-5).
- Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.

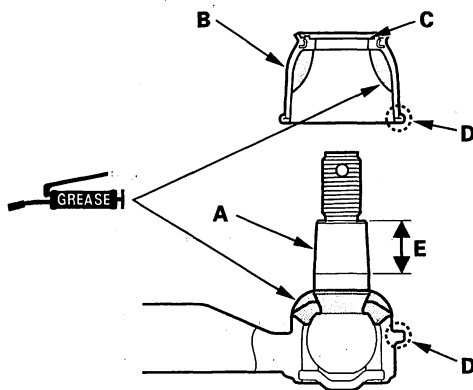
Power Steering

Tie-rod Ball Joint Boot Replacement

Special Tools Required

Front hub dis/assembly tool 07965-SA50500

1. Disconnect the tie-rod ball joint from the knuckle (see step 18 on page 17-33).
2. Remove the tie-rod end from the rack end.
3. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
4. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

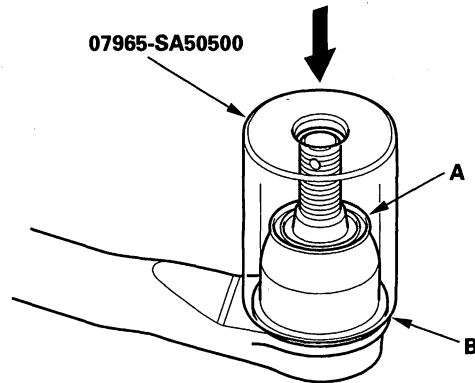


5. Pack the interior of a new boot (B) and lip (C) with fresh multipurpose grease.

Note these items when installing new grease:

- Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
- Do not allow dust, dirt, or other foreign materials to enter the boot.

6. Install a new boot (A) using the front hub dis/assembly tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

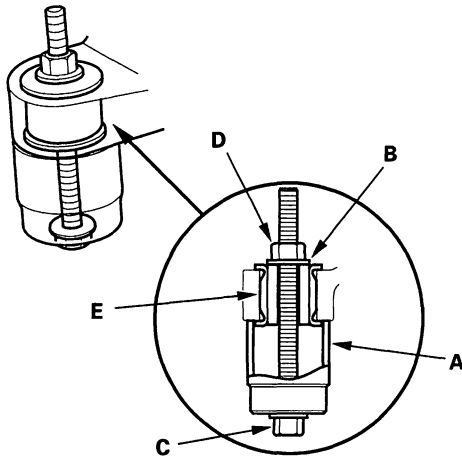


7. Install the tie-rod end to the rack end.
8. Connect the tie-rod ball joint to the knuckle (see step 28 on page 17-56).
9. Check the wheel alignment, and adjust it if necessary (see page 18-5).

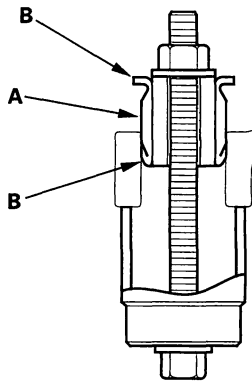


Gearbox Mount Cushion Replacement

1. Remove the steering gearbox (see page 17-31).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), a 10 x 105 mm flange bolt (C) and a 10 mm nut (D) as shown.



3. Hold the flange bolt with a wrench, and tighten the nut with a wrench. Remove the gearbox mount cushion (E).
4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place it on the gearbox mounting cushion hole.



5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, a flange bolt, and a nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) contact the gearbox flange surface.
7. Install the steering gearbox (see page 17-52).

BACK