

2006 Acura MDX

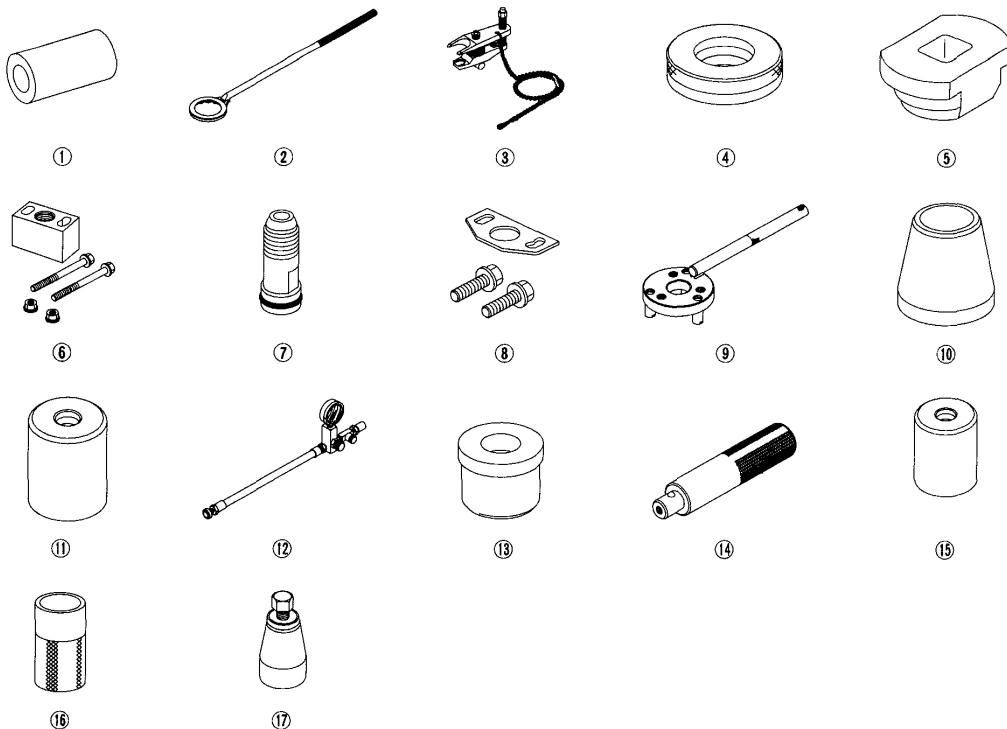
2003-06 STEERING Power Steering - MDX

2003-06 STEERING

Power Steering - MDX

SPECIAL TOOLS

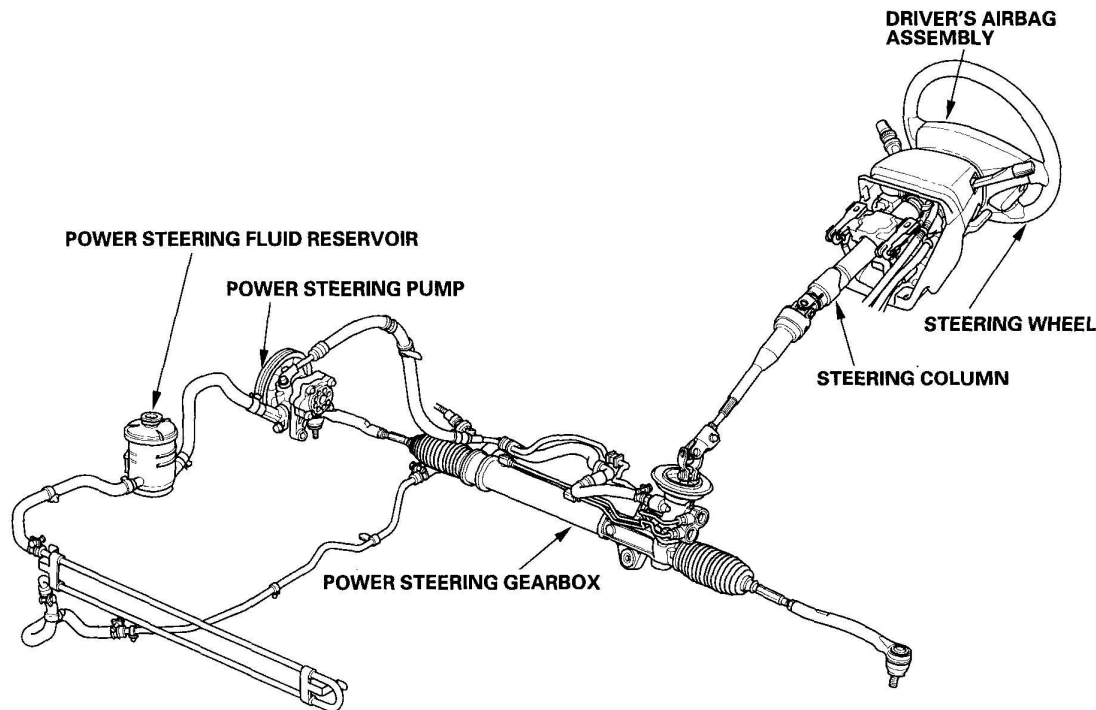
| Ref. No. | Tool Number | Description | Qty |
|----------|--|--------------------------------------|-----|
| ① | 07GAF-PH70100 | Pilot Collar | 1 |
| ② | 07916-SA50001 | Locknut Wrench, 40 mm | 1 |
| ③ | 07MAC-SL0A202 | Ball Joint Remover, 28 mm | 1 |
| ④ | 07NAG-SR3090A | Valve Seal Ring Sizing Tool | 1 |
| ⑤ | 07TAF-SZ50100 | Cylinder End Seal Remover Attachment | 1 |
| ⑥ | 07RAK-S040122 | P/S Joint Adapter (Hose) | 1 |
| ⑦ | 07VAK-P8A011A | P/S Joint Adapter (Pump) | 1 |
| ⑧ | 07VAK-P8A012B | P/S Joint Adapter Plate (Pump) | 1 |
| ⑨ | 07ZAB-S5A0100 | Pulley Holder | 1 |
| ⑩ | 07ZAG-S3VA100 | Piston Seal Ring Guide | 1 |
| ⑪ | 07ZAG-S3VA200 | Piston Seal Ring Sizing Tool | 1 |
| ⑫ | 07406-0010001 or 07406-001000A or 07406-001A101 | P/S Pressure Gauge | 1 |
| ⑬ | 07746-0010100 | Attachment, 32 x 35 mm | 1 |
| ⑭ | 07749-0010000 | Driver | 1 |
| ⑮ | 07965-SA50500 | Front Hub Disassembly Tool | 1 |
| ⑯ | 07974-SA5020A or 07974-SA50200 | Sleeve Seal Ring Sizing Tool | 1 |
| ⑰ | 07974-SA50800 | Ball Joint Boot Clip Guide | 1 |



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Fig. 1: Identifying Special Tools
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX



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Fig. 2: Identifying Power Steering Component Location
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

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

TROUBLESHOOTING SYMPTOMS

| Symptom | Procedure(s) | Also check for: |
|---|--|---|
| Hard steering | Troubleshoot the system (see <u>SYMPTOM TROUBLESHOOTING</u>). | <ul style="list-style-type: none"> Modified suspension Damaged suspension Tire sizes, tire varieties, and air pressure |
| Assist (excessively light steering at high speed) | Check the rack guide adjustment (see <u>RACK GUIDE ADJUSTMENT</u>). | Front wheel alignment (see <u>WHEEL ALIGNMENT</u>) |
| Shock or vibration when the steering wheel is turned to full lock | <ol style="list-style-type: none"> Check the rack guide adjustment (see <u>RACK GUIDE ADJUSTMENT</u>). Check the drive belt for slippage (see <u>DRIVE BELT INSPECTION</u>). | |

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| | | |
|---|--|--|
| | <ol style="list-style-type: none">3. Check the power steering pump fluid pressure with T/N 07406-0010001 (see <u>PUMP PRESSURE TEST WITH T/N 07406-0010001</u>) or T/N 07406-001000A or T/N 07406-001A101 (see <u>PUMP PRESSURE TEST WITH T/N 07406-001000A OR T/N 07406-001A101</u>).4. Replace the steering gearbox (see <u>STEERING GEARBOX REMOVAL</u>). | |
| Steering wheel will not return smoothly | <ol style="list-style-type: none">1. Check cylinder lines A and B for deformation.2. Check wheel alignment (see <u>WHEEL ALIGNMENT</u>).3. Overhaul the steering gearbox (see <u>STEERING GEARBOX OVERHAUL</u>).4. Check the ball joints for binding. | |
| Uneven or rough steering | <ol style="list-style-type: none">1. Check the rack guide adjustment (see <u>RACK GUIDE ADJUSTMENT</u>).2. Check the drive belt (see <u>DRIVE BELT INSPECTION</u>).3. Check for low or erratic engine idle speed (see <u>IDLE SPEED INSPECTION</u>).4. Check for air in the power steering system due to low fluid level or an air leak at the pump inlet hose.5. Check for low fluid level in the power steering reservoir due to possible leaks in system.6. Overhaul the steering gearbox (see <u>STEERING GEARBOX REMOVAL</u>). | |
| Steering wheel kicks back during wide turns | <ol style="list-style-type: none">1. Check the drive belt (see <u>DRIVE BELT INSPECTION</u>).2. Check the power steering pump fluid pressure with T/N 07406-0010001 (see <u>PUMP PRESSURE TEST WITH T/N 07406-0010001</u>) or T/N 07406-001000A or T/N 07406-001A101 (see <u>PUMP PRESSURE TEST WITH T/N 07406-001000A OR T/N 07406-001A101</u>). | |

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| | | |
|--|---|----------------------|
| Humming noise from the power steering system | <ol style="list-style-type: none">1. Check when the noise occurs:<ul style="list-style-type: none">• 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 or an air leak on inlet side pump.5. Check for particle contamination of the fluid and/or restricted filter in the reservoir. | Pump pressure |
| Power steering rack rattle or chattering | <ol style="list-style-type: none">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 shaft wobbles, replace the steering column assembly (see <u>STEERING COLUMN REMOVAL AND INSTALLATION</u>).3. Check the rack guide adjustment (see <u>RACK GUIDE ADJUSTMENT</u>).4. Check the power steering pump pulley:<ul style="list-style-type: none">• If the pulley is loose, tighten it (see step 33).• If the pump shaft is loose, replace the pump (see <u>PUMP REPLACEMENT</u>). | |
| Hissing noise/foaming fluid in reservoir | <ul style="list-style-type: none">• Check the fluid level. If low, fill the reservoir to the proper level and check for leaks.• Check the reservoir for leaks.• Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system.• Check the power steering pump shaft oil | Air in the P/S fluid |

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| | | |
|--|---|---|
| | seal for leaks. | |
| Noise from the power steering pump | <ul style="list-style-type: none"> Compare the pump noise at normal operating temperature to another similar vehicle, (pump noise up to 2-3 minutes after starting the engine in cold weather is normal). Remove and inspect the pump for wear and damage (see PUMP REPLACEMENT). | <ul style="list-style-type: none"> P/S pump pressure Air in the P/S fluid |
| Squeaking from the power steering pump | Check the drive belt (see DRIVE BELT INSPECTION). | |
| Fluid leaks from the steering gearbox | <ul style="list-style-type: none"> Fluid leaks from the top of the valve body unit: Overhaul the valve body unit. 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: Overhaul the valve body unit. Fluid leaks from the steering clamping valve covers on the valve body unit. Replace the valve housing. | |
| Fluid leaks from the power steering line | <ul style="list-style-type: none"> Fluid leaks from the cylinder line A or B connections (flare nuts): Tighten the connection and retest. Fluid leaks from damaged cylinder line A or B: Replace the cylinder line. 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 | <ul style="list-style-type: none"> 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 PUMP OVERHAUL) and if necessary replace the power steering pump (see PUMP | |

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| | <u>REPLACEMENT</u>). | |
|--|---|--|
| Fluid leaks from the power steering reservoir | <ul style="list-style-type: none">Fluid leaks from around the reservoir cap: Fluid level is too high; drain the reservoir to the proper level. Aerated fluid: Check for an air leak on the inlet side of pump.Fluid leaks from reservoir: Check the reservoir for cracks and replace as necessary. | |
| Fluid leaks from the power steering pump outlet hose (high-pressure) | <ul style="list-style-type: none">Check the fitting for loose bolts. If the bolts are tight, replace the fitting O-ring.Fluid leaks at the swagged joint: Replace the 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. | |

SYMPTOM TROUBLESHOOTING

HARD STEERING

1. Check the power assist (see **STEERING WHEEL ROTATIONAL PLAY CHECK**).

Is the power assist more than 29 N (3.0 kgf, 6.5 lbf)?

YES - Go to step 2.

NO - Power assist is OK.

2. Measure steady-state fluid pressure from the pump at idle with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or with T/N 07406-001000A or T/N 07406-001A101 (see **PUMP PRESSURE TEST WITH T/N 07406-001000A OR T/N 07406-001A101**).

Is the pressure 1,470 kPa (15.0 kgf/cm² , 213 psi) or less?

YES - Go to step 3.

NO - Go to step 7

3. Measure the pump relief pressure at idle with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or with T/N 07406-001000A or T/N 07406-001A101 (see **PUMP PRESSURE TEST WITH T/N 07406-001000A OR T/N 07406-001A101**).

Is the pressure 8,300-8,800 kPa (85-90 kgf/cm² , 1,210-1,280 psi) or less?

YES - Go to step 4.

NO - Go to step 8

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4. 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 5.

NO - Go to step 9

5. Measure the fluid pressure with T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**) or with T/N 07406-001000A or T/N 07406-001A101 (see **PUMP PRESSURE TEST WITH T/N 07406-001000A OR T/N 07406-001A101**) 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 8,300-8,800 kPa (85-90 kgf/cm² , 1,210-1,280 psi) or less?

YES - Go to step 6.

NO - Faulty gearbox.

6. Adjust the rack guide (see **RACK GUIDE ADJUSTMENT**) and retest.

Is the steering OK?

YES - Repair is completed.

NO - Faulty gearbox.

7. Check for feed and return lines between the pump and the gearbox for clogging and deformation.

Are the lines clogged or deformed?

YES - Repair or replace the lines.

NO - Faulty valve body unit.

8. Check the flow control valve (see step 10) for smooth movement and leaks.

Is the flow control valve OK?

YES - Faulty pump assembly.

NO - Faulty flow control valve.

9. Check the cylinder lines A and B for deformation (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).

Are the A or B lines deformed?

YES - Replace the lines.

NO - Go to step 10.

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

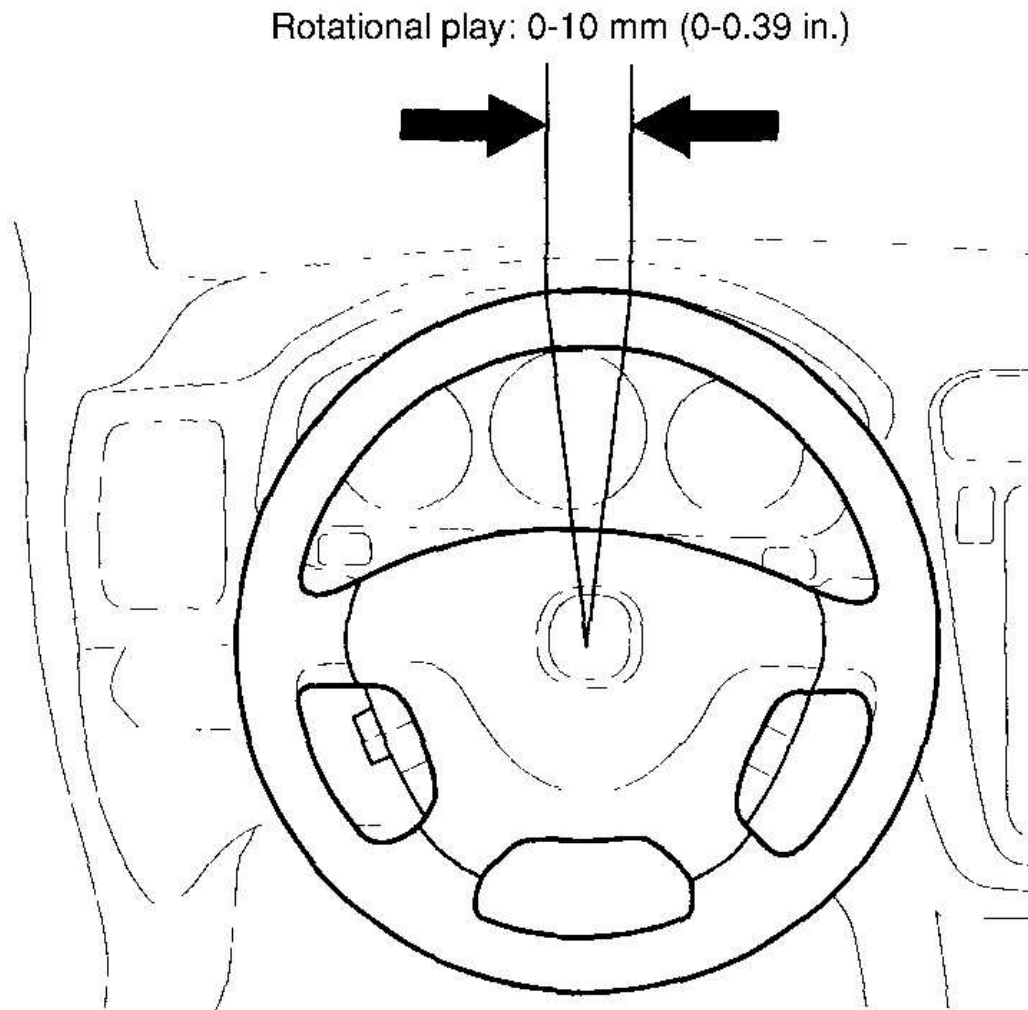
Is the rack shaft bent or the rack guide adjusted too tight?

YES - Replace the rack shaft or readjust the rack guide.

NO - Faulty valve body unit.

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 gearbox and steering linkages are OK.
 - If the play exceeds the limit, adjust the rack guide (see **RACK GUIDE ADJUSTMENT**). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see **STEERING LINKAGE AND GEARBOX INSPECTION**).



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Fig. 3: Identifying Steering Wheel Rotational Play Limit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

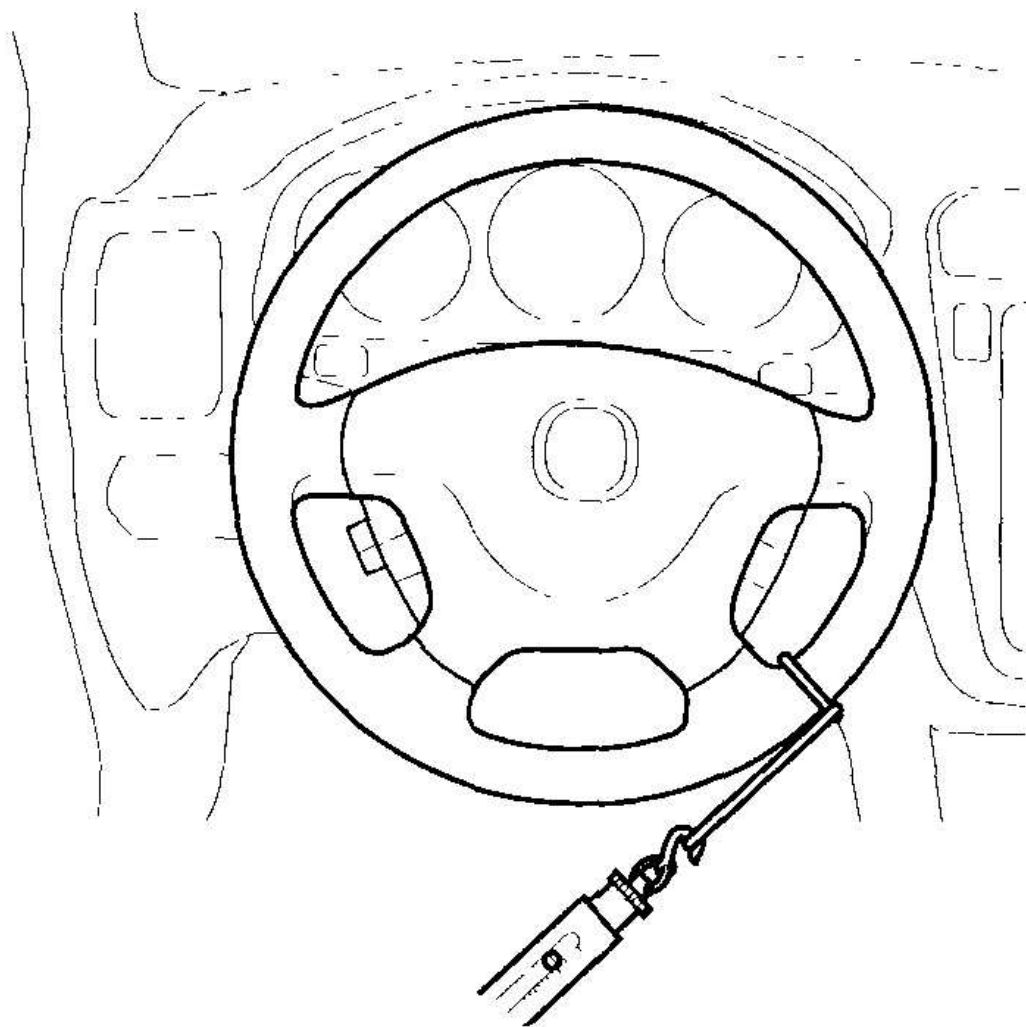
POWER ASSIST CHECK

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 **FLUID REPLACEMENT**).
2. Start the engine, let it idle, and turn the steering wheel from lock-to-lock several times to warm up the

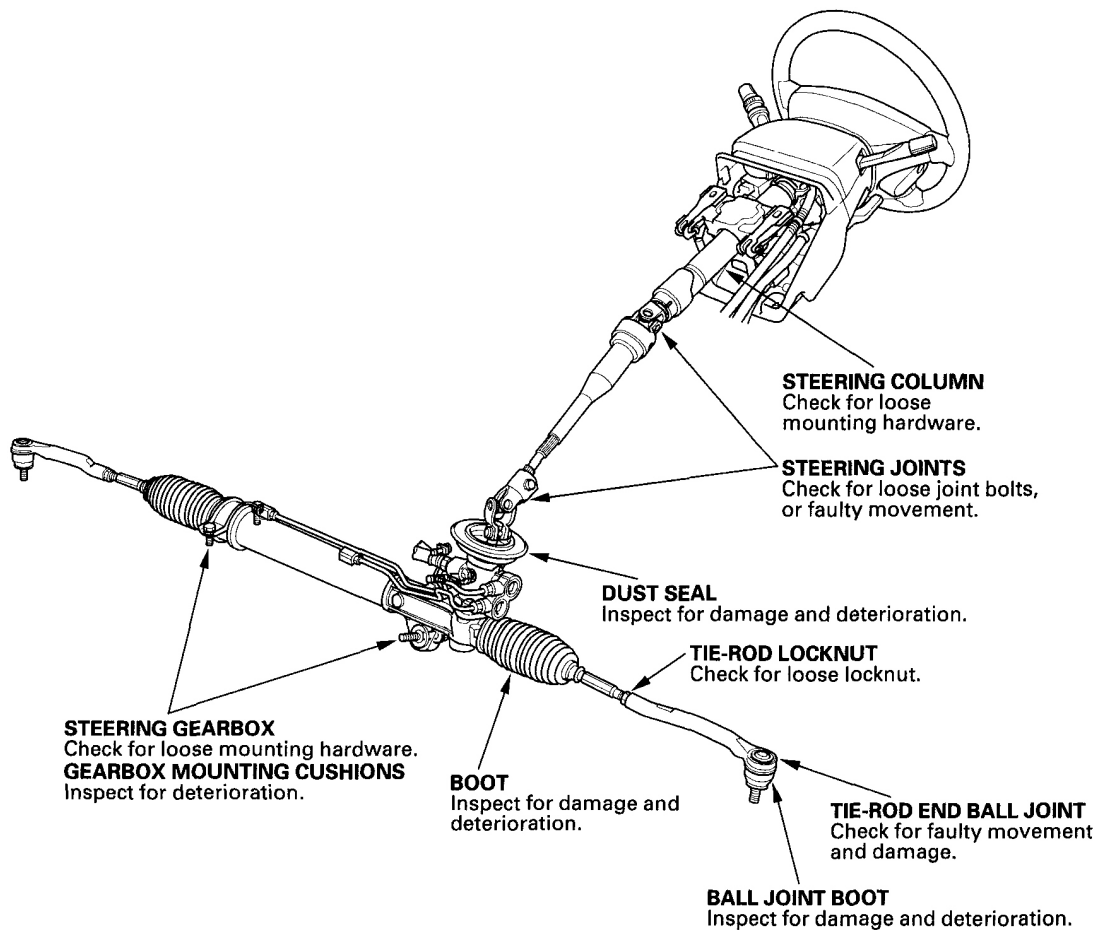
fluid.

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 29 N (3.0 kgf, 6.5 lbf) the gearbox and pump are OK.
 - If the scale reads more than 29 N (3.0 kgf, 6.5 lbf) check the gearbox and pump.



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Fig. 4: Attaching Spring Scale To Steering Wheel
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 5: Identifying Steering Linkage Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PUMP PRESSURE TEST WITH T/N 07406-0010001

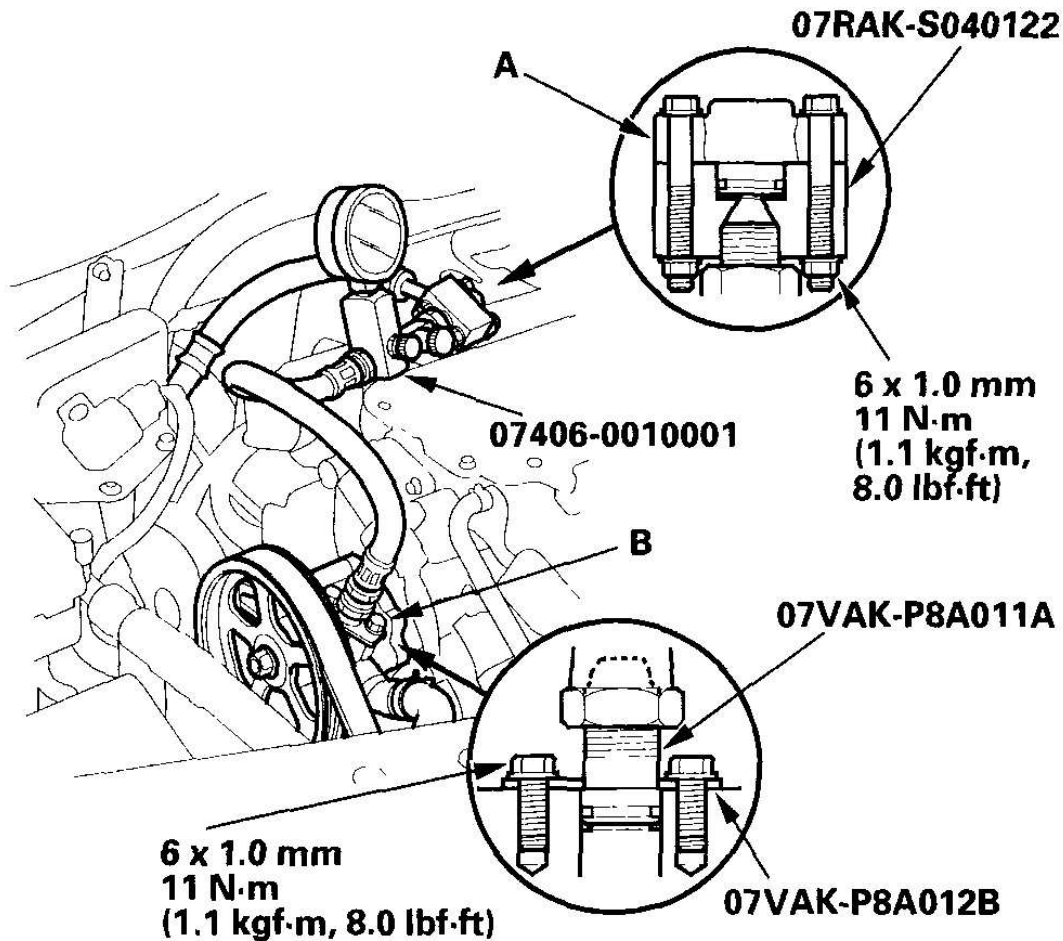
Special Tools Required

- 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 gearbox.

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Remove the intake manifold cover (see **INTAKE MANIFOLD REMOVAL AND INSTALLATION**).

3. 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.

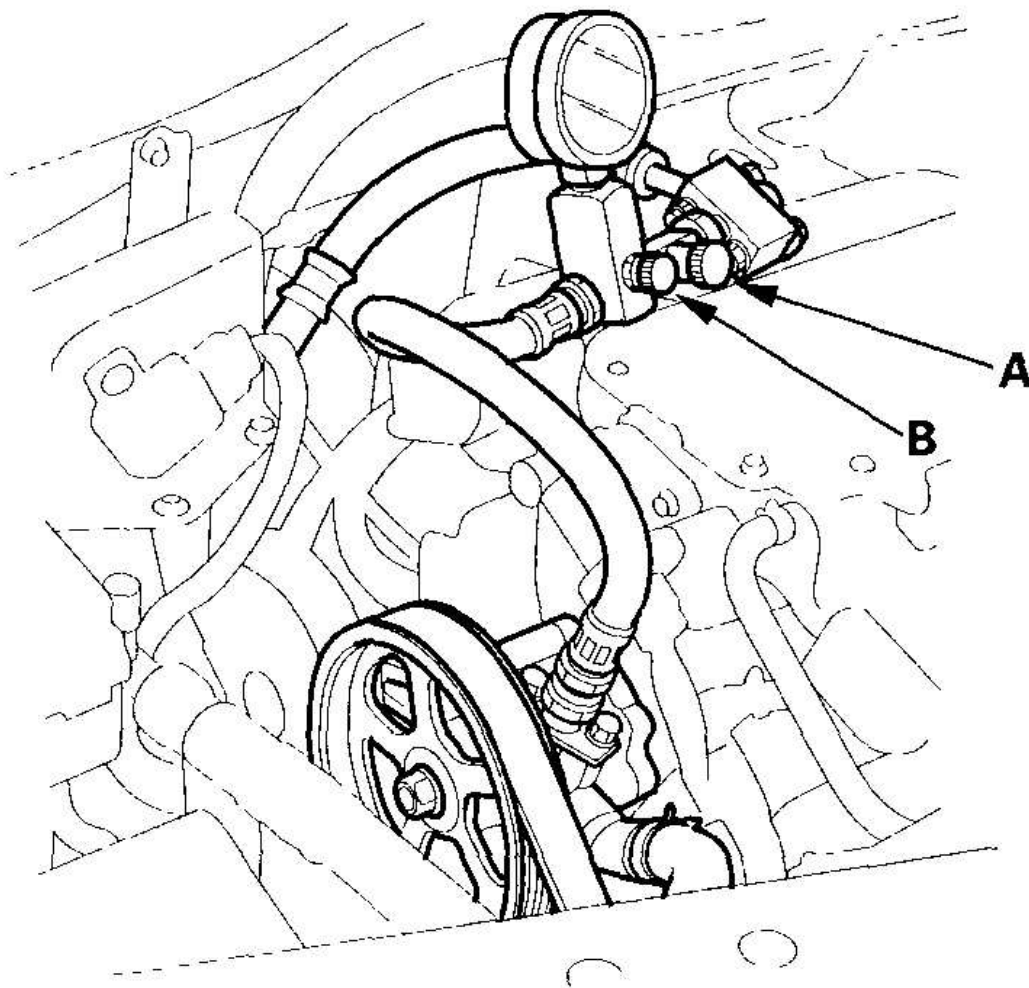


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Fig. 6: Checking Fluid Pressure

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. 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).
5. Install the P/S pressure gauge to the P/S joint adapter (pump).
6. Fully open the shut-off valve (A).



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Fig. 7: Identifying Shut-Off And Pressure Control Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Fully open the pressure control valve (B).
8. Start the engine and let it idle.
9. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature 158°F (70°C).
10. 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 (15.0 kgf/cm² , 213 psi).

If it reads high, check for:

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- Clogged or deformed feed or return line between the pump and gearbox.
 - Clogged valve body unit.
11. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure.

NOTE: **Do not keep the shut-off valve closed more than 5 seconds or the pump could be damaged by overheating.**

12. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,300-8,800 kPa (85-90 kgf/cm² , 1,210-1,280 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

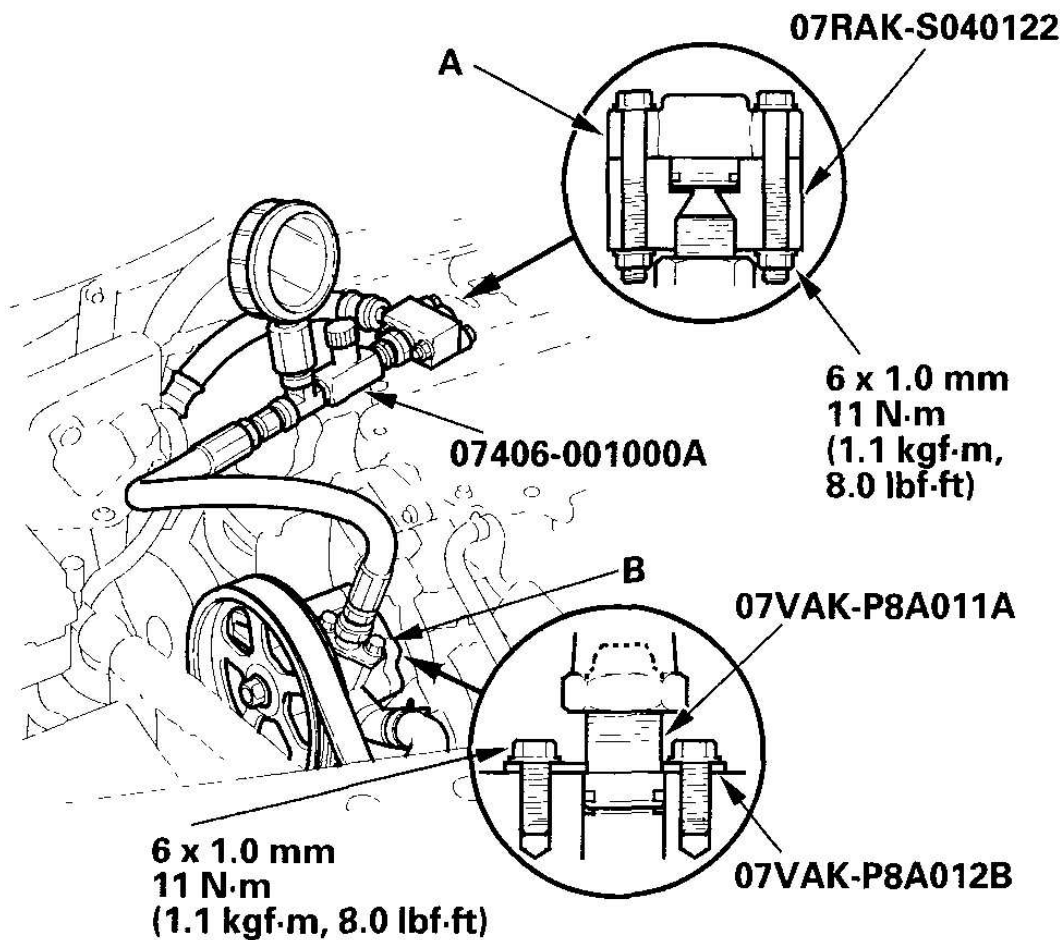
PUMP PRESSURE TEST WITH T/N 07406-001000A OR T/N 07406-001A101

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

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

1. Check the power steering fluid level (see **FLUID REPLACEMENT**).
2. Remove the intake manifold cover (see **INTAKE MANIFOLD REMOVAL AND INSTALLATION**).
3. 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.

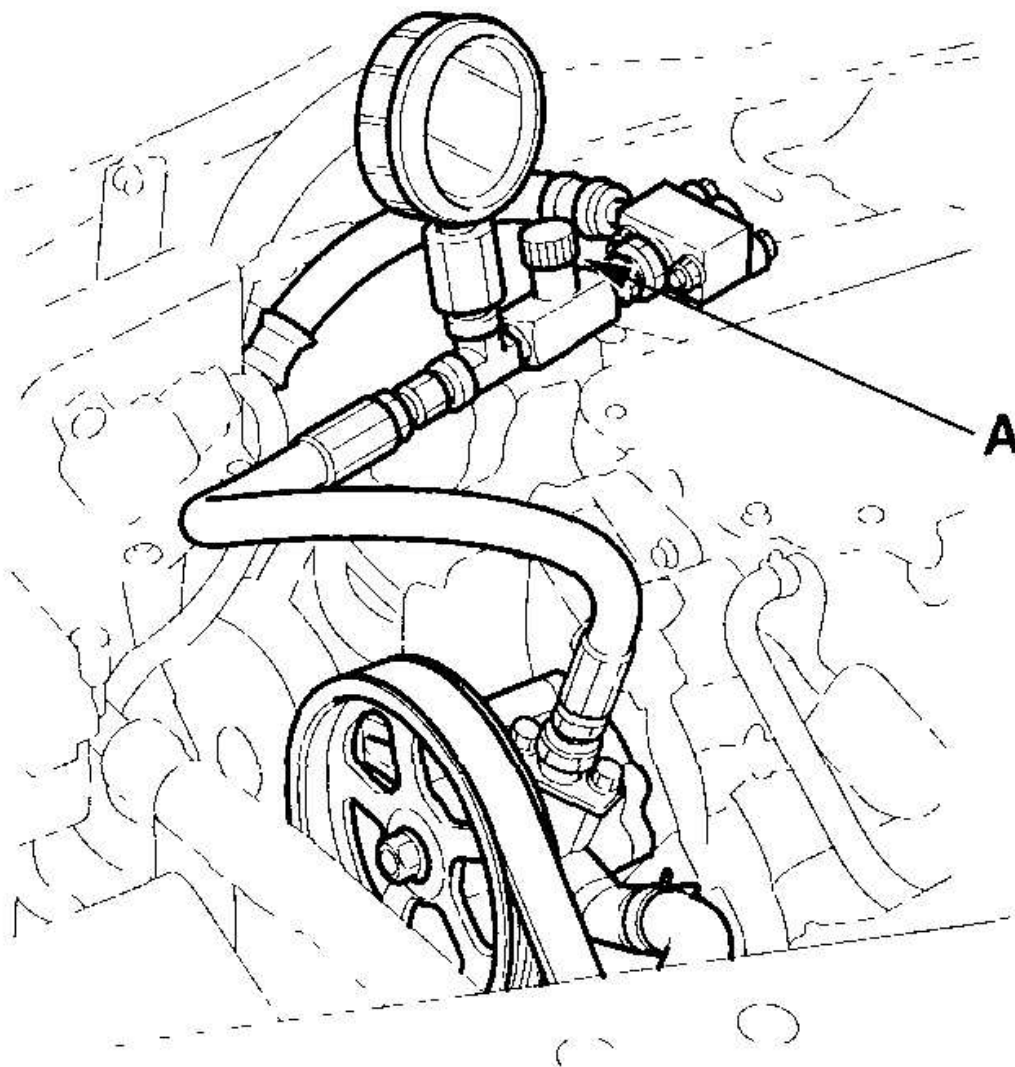


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Fig. 8: Checking Fluid Pressure

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. 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).
5. Install the P/S pressure gauge to the P/S joint adapter (pump).
6. Open the shut-off valve (A) fully.



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Fig. 9: Opening Shut-Off Valve

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 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 (15.0 kgf/cm² , 213 psi).

If it reads high, check for:

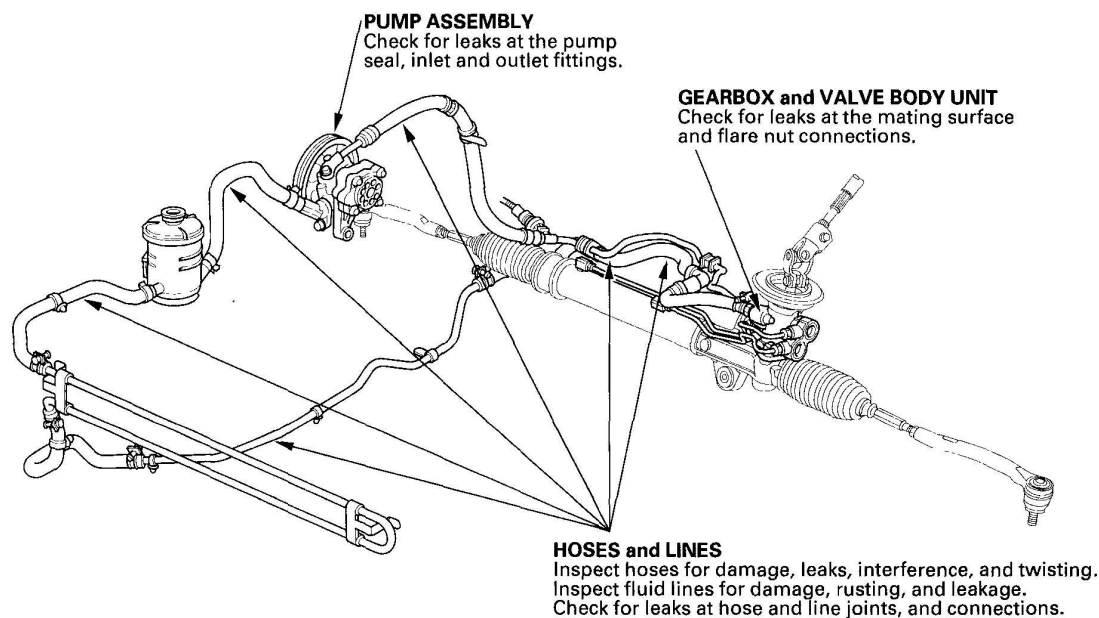
- Clogged or deformed feed or return line between the pump and gearbox.
- Clogged valve body unit.

10. Close the shut-off valve gradually and read the pressure.

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

11. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 8,300-8,800 kPa (85-90 kgf/cm², 1,210-1,280 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

FLUID LEAKAGE INSPECTION



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Fig. 10: Identifying Fluid Leakage Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FLUID REPLACEMENT

Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Honda 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.

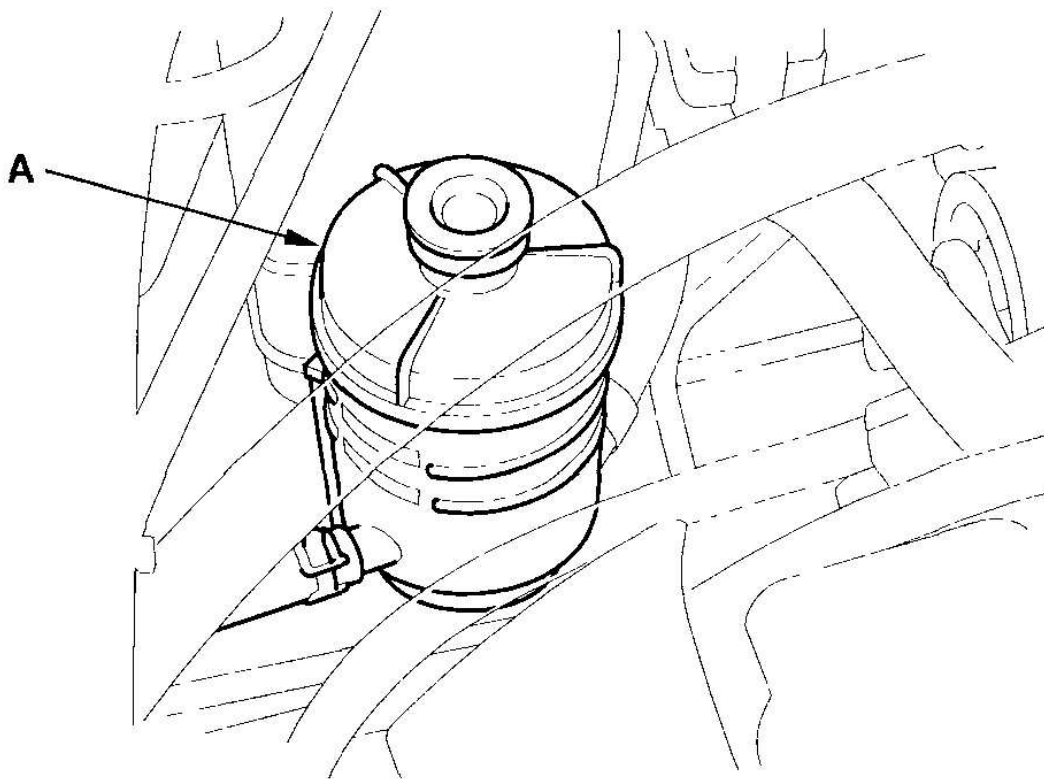
NOTE: If the fluid is contaminated, the screen in the reservoir may be partially blocked.

Replace the reservoir if necessary.

System capacity: 1.22 L (1.29 US.qt)

System capacity with accessory power steering cooler: 1.26 L (1.33 US.qt)

Reservoir capacity: 0.34 L (0.36 US.qt)

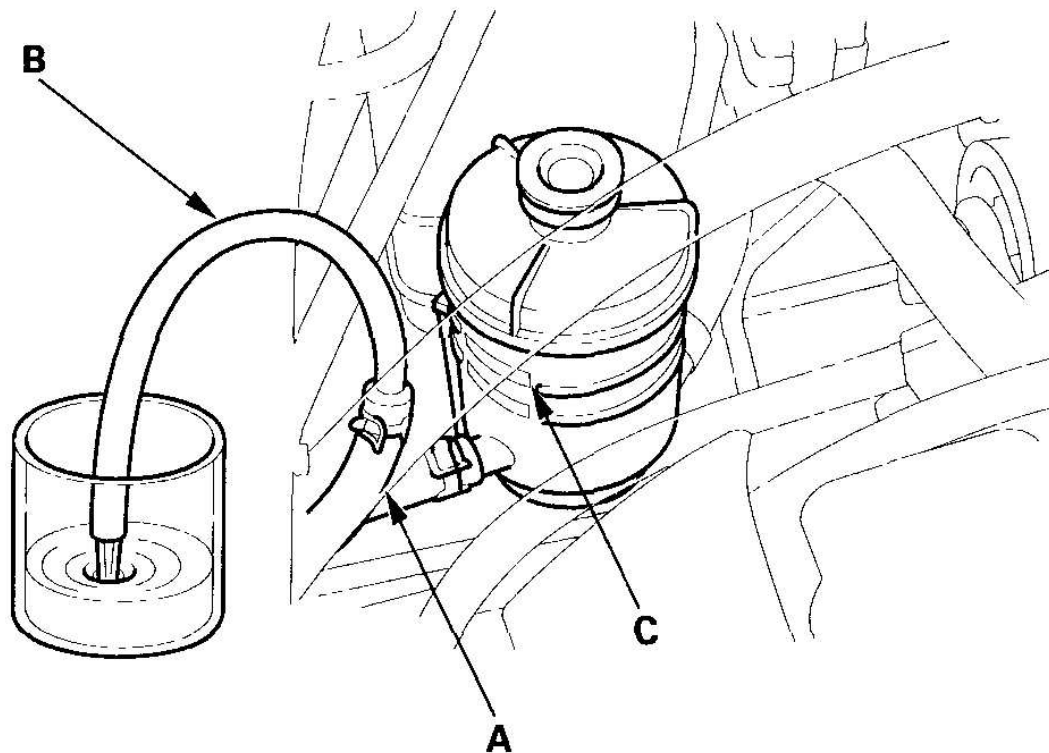


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Fig. 11: Identifying Reservoir

Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. Remove the power steering 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.



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Fig. 12: Connecting Hose Of Suitable Diameter To Disconnected Return Hose
Courtesy of AMERICAN HONDA MOTOR CO., INC.

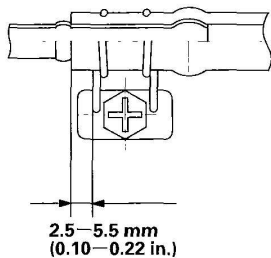
2. Connect a hose (B) of suitable diameter to the disconnected return hose, and put the hose end in a suitable container.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.
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 more, if necessary. Do not fill the reservoir beyond the upper level line.
8. If the fluid is contamination, dark, or discolored, repeat the procedure as necessary.

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

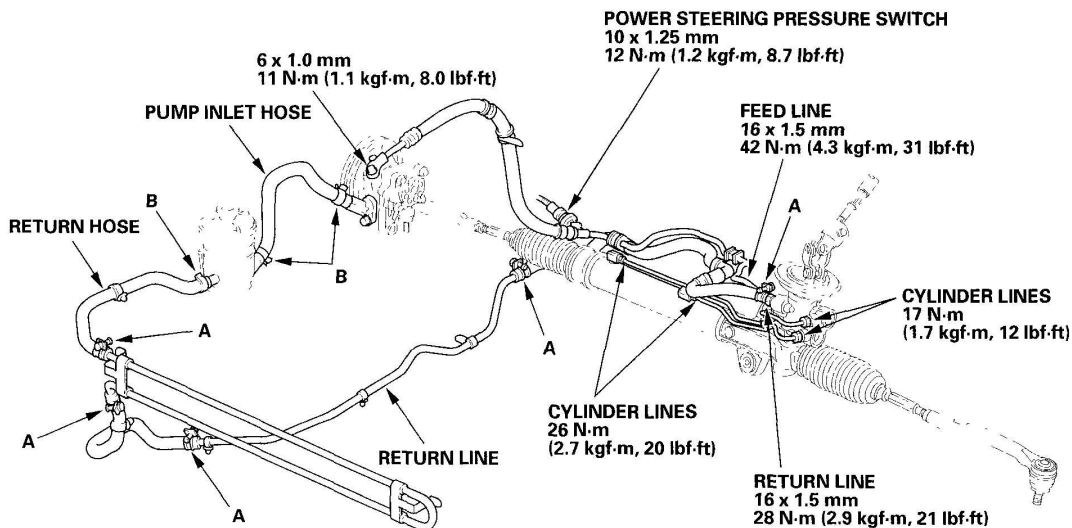
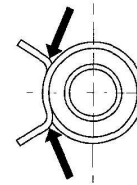
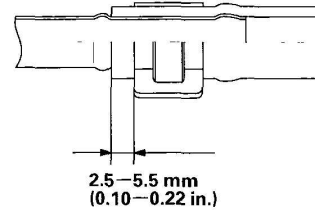
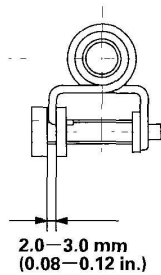
Note these items during installation:

- 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.

ADJUSTABLE HOSE CLAMP (A)



HOSE CLAMP (B)

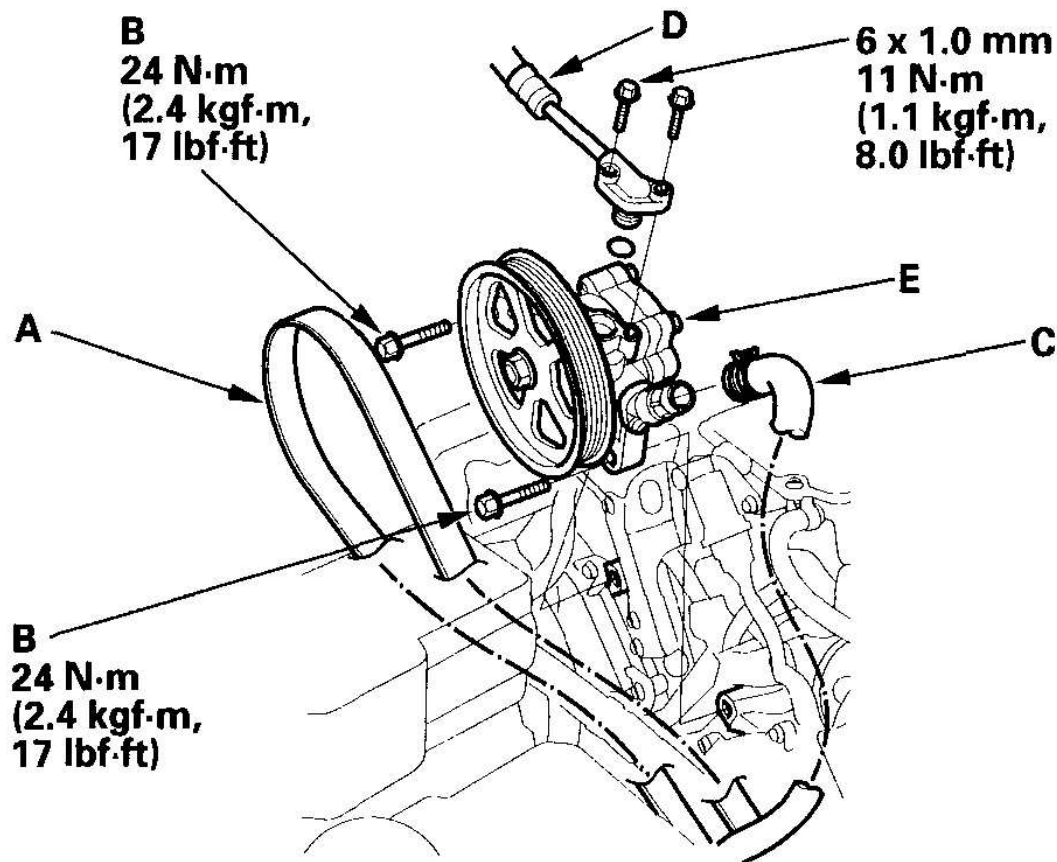


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Fig. 13: Identifying Adjustable Clamp Specified Distance From Hose End
Courtesy of AMERICAN HONDA MOTOR CO., INC.

PUMP REPLACEMENT

1. Place a suitable container under the vehicle.
2. Drain the power steering fluid from the reservoir.
3. Remove the drive belt (A) from the pump pulley (see **DRIVE BELT INSPECTION**).



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Fig. 14: Replacing Power Steering Pump

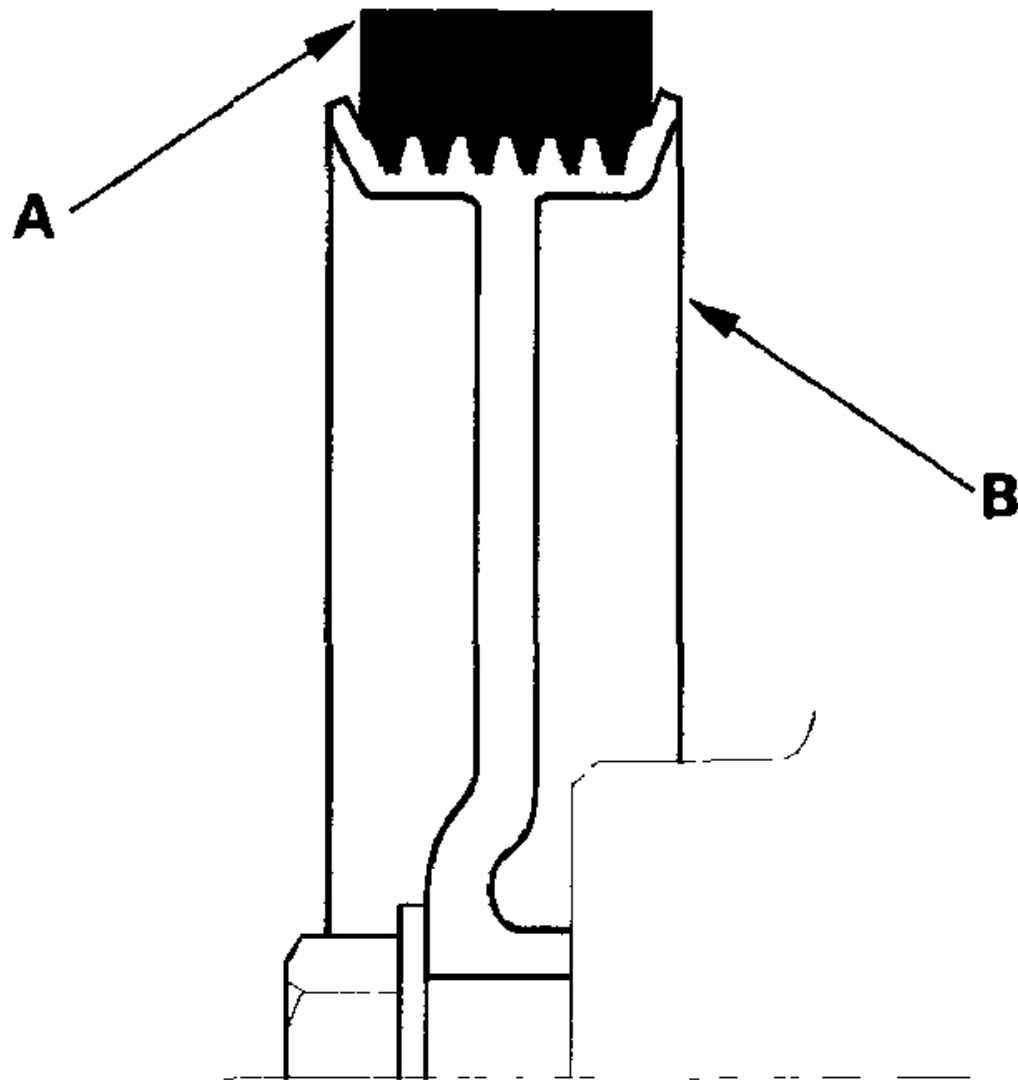
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the pump mounting bolts (B).
5. Cover the auto-tensioner, alternator, and A/C compressor with several shop towels to protect it from spilled power steering fluid. Disconnect the pump inlet hose (C) and pump outlet hose (D) from the pump (E), 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. Connect the pump outlet hose and inlet hose to the pump. Tighten the pump fittings securely.
7. Install the pump in the pump bracket with the mounting bolts.
8. Install the drive belt (A).

Note these items during drive belt installation:

- Make sure that the drive belt is properly positioned on the pulleys (B).

- Do not get the 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.



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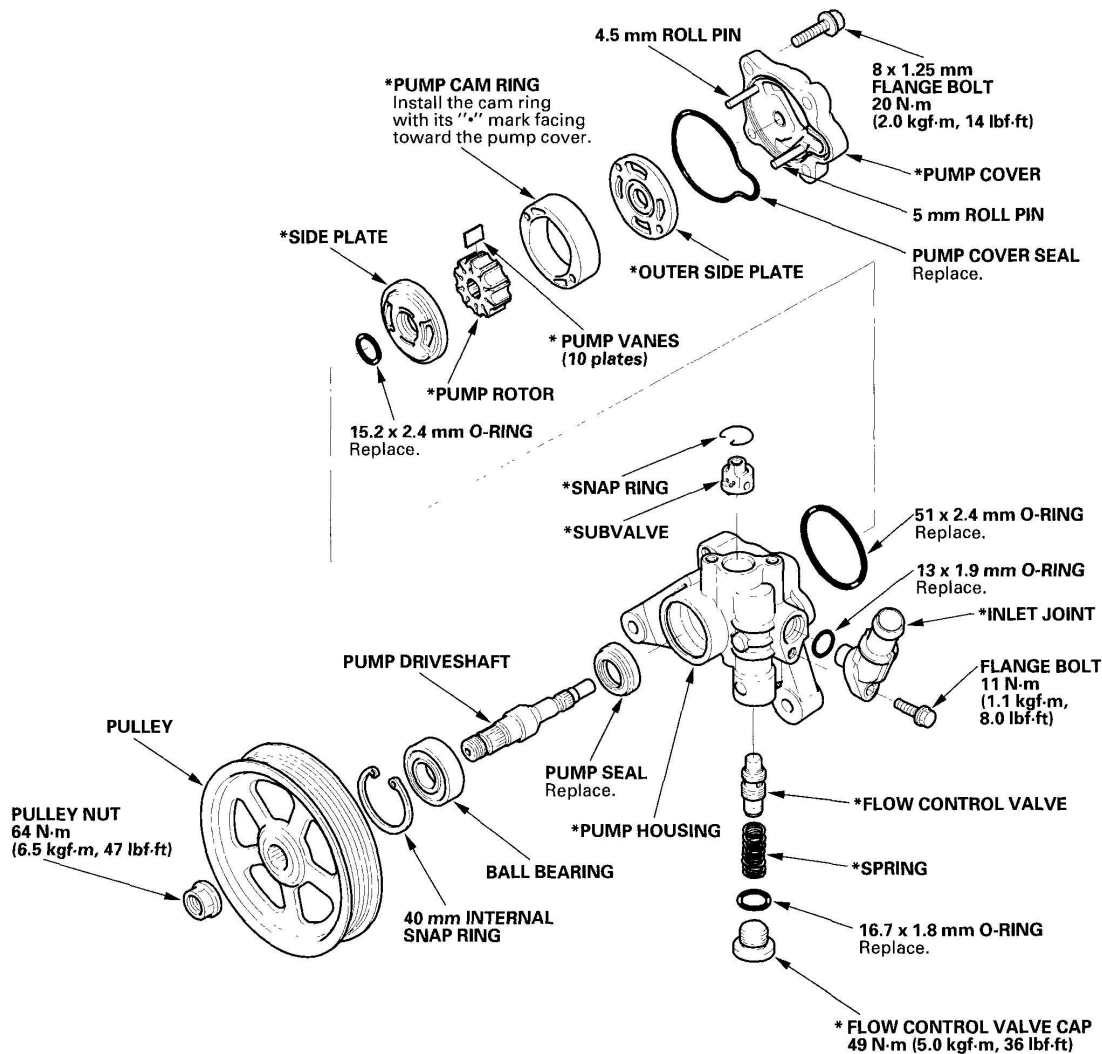
Fig. 15: Installing Drive Belt
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Fill the reservoir to the upper level line (see **FLUID REPLACEMENT**).

PUMP OVERHAUL

EXPLODED VIEW

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



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Fig. 16: Exploded View Of Power Steering Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

Pulley holder 07ZAB-S5A0100

Disassembly

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

1. Drain the fluid from the pump by turning the pulley.
2. Remove the power steering pump (see **PUMP REPLACEMENT**).
3. Hold the power steering pump (A) in a vise with soft jaws (B), hold the pulley (C) with the special tool, and remove the pulley nut (D) and pulley. Be careful not to damage the pump housing with the jaws of the vise.

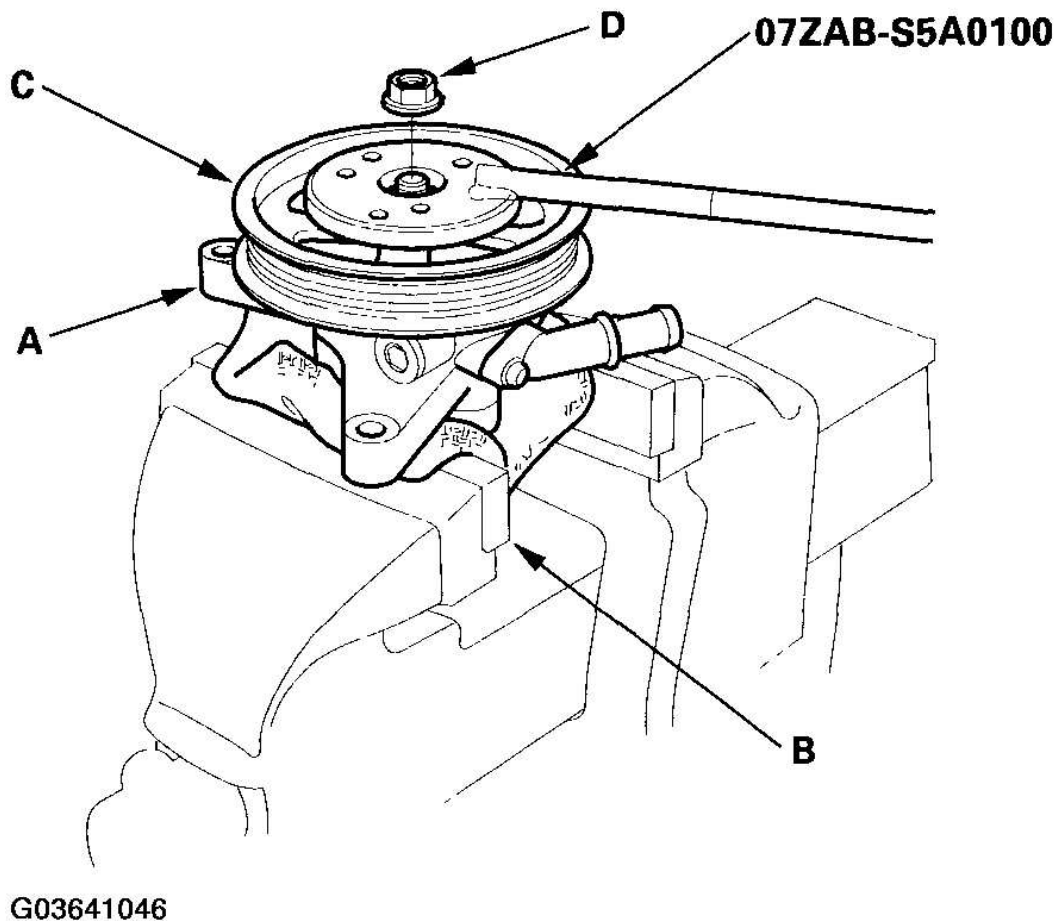


Fig. 17: Disassembling Power Steering Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the inlet joint and O-ring.
5. Loosen the flow control valve cap with a hex wrench, and remove it, the O-ring, the flow control valve, and spring.
6. Remove the pump cover and pump cover seal.

7. Remove the outer side plate, pump cam ring, pump rotor, pump vanes, side plate, and O-rings.
8. Remove the internal snap ring, then remove the pump driveshaft by tapping on the shaft end with the plastic hammer. Remove the pump seal.
9. Remove the snap ring and subvalve.

Inspection

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

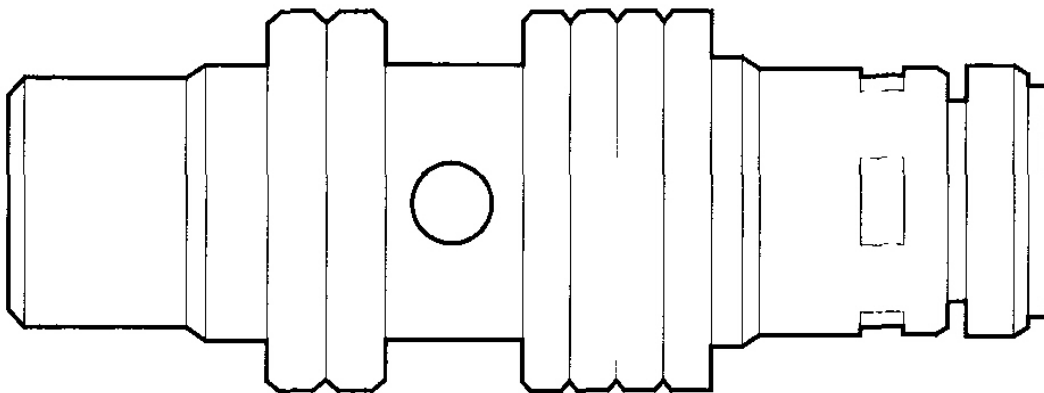
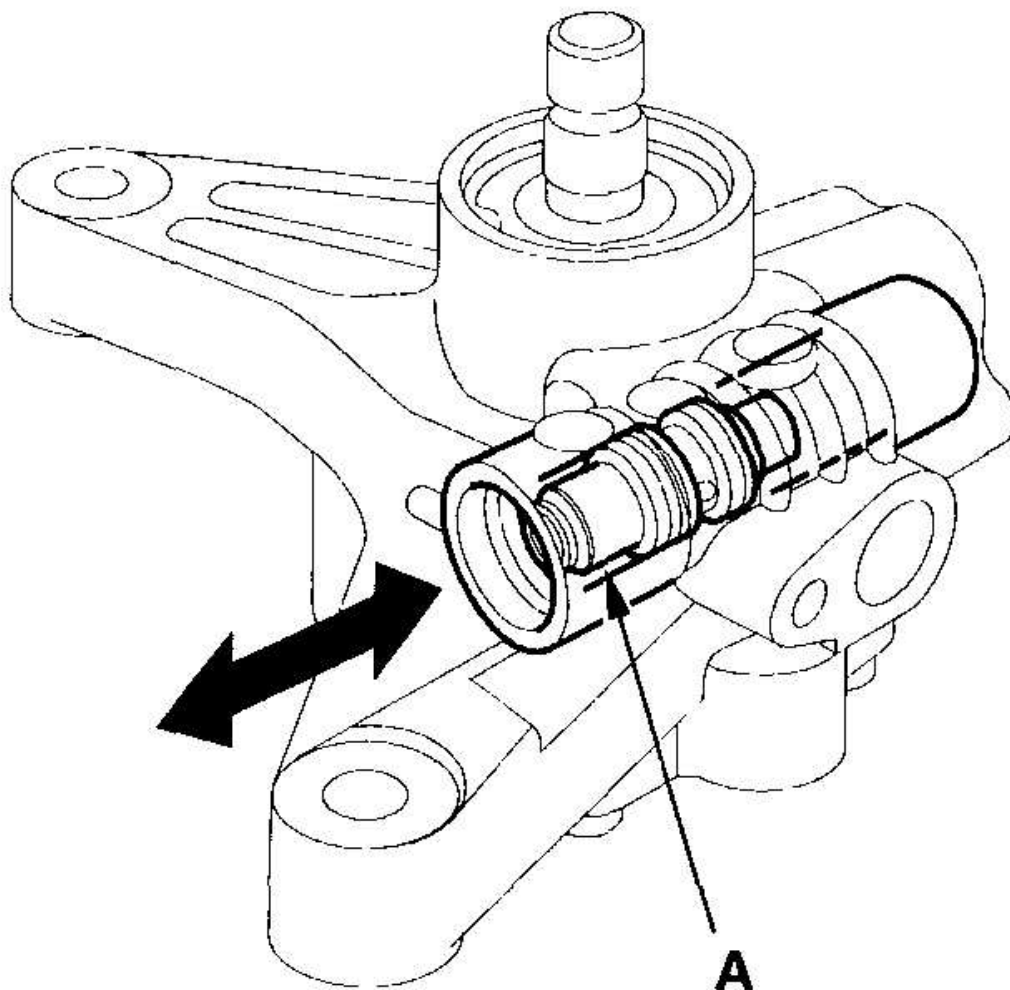
**G03641047**

Fig. 18: Identifying Flow Control Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



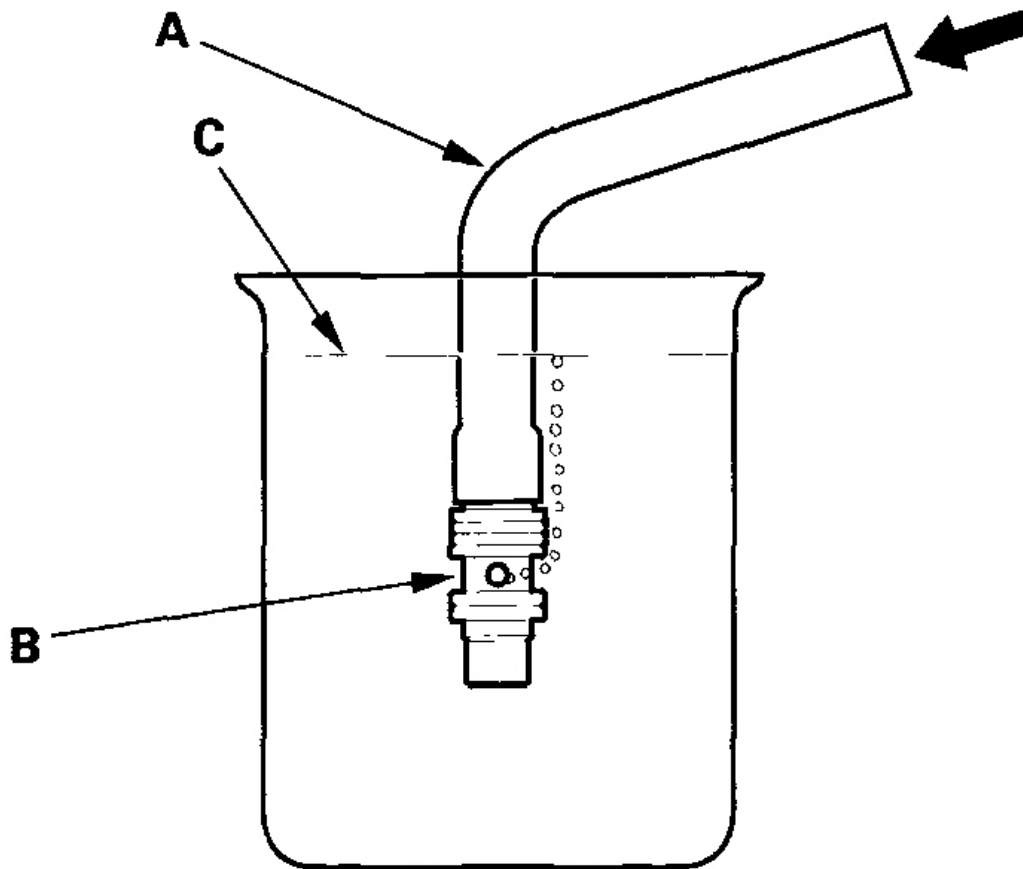
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Fig. 19: Inspecting Flow Control Valve

Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. 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.

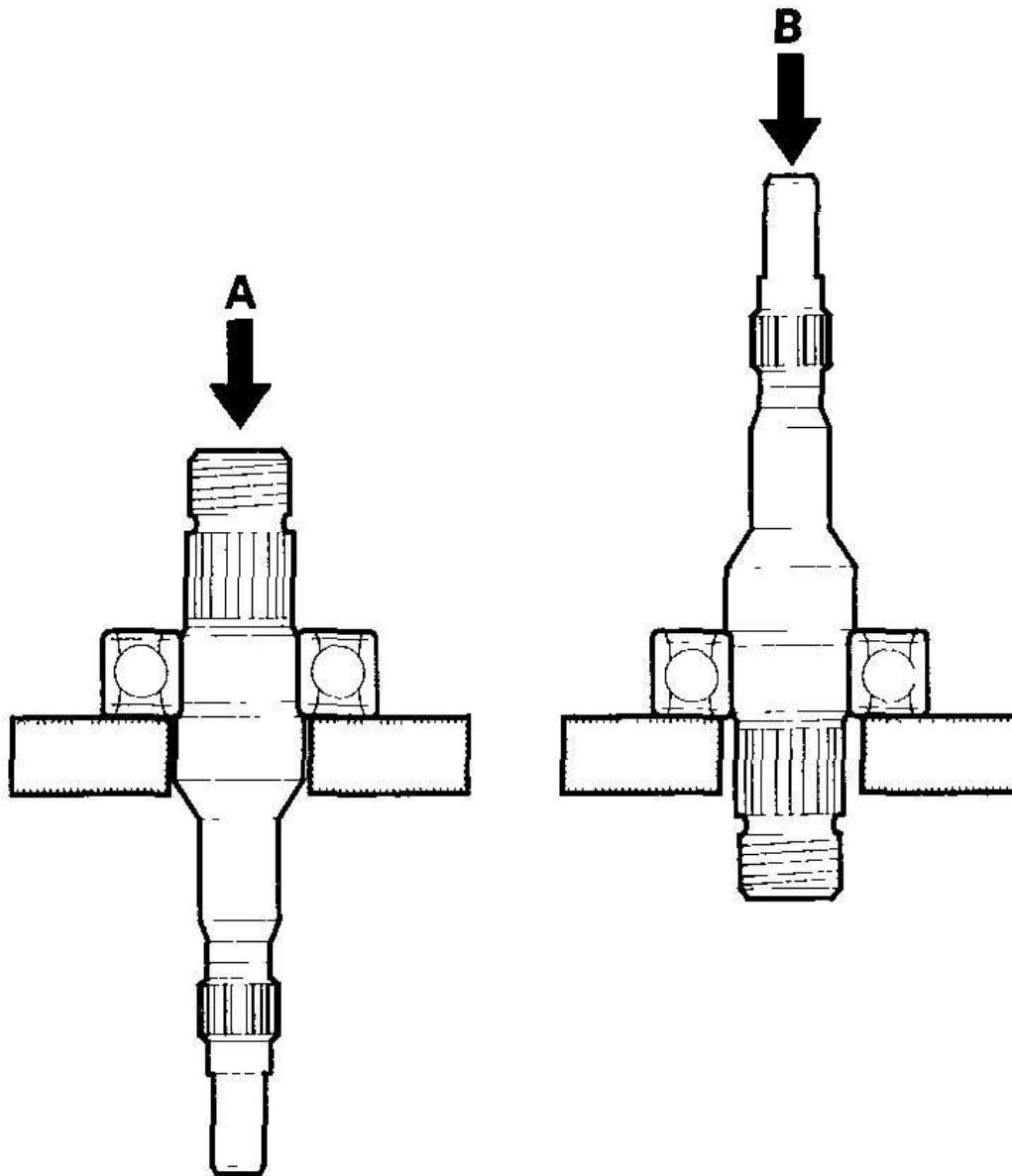
- If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm², 14.2 psi), replace the pump as an assembly. The flow control valve is not available separately.
- If the flow control valve tests OK, set it aside for reassembly later.



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Fig. 20: Attaching Hose To End Of Flow Control Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. 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).



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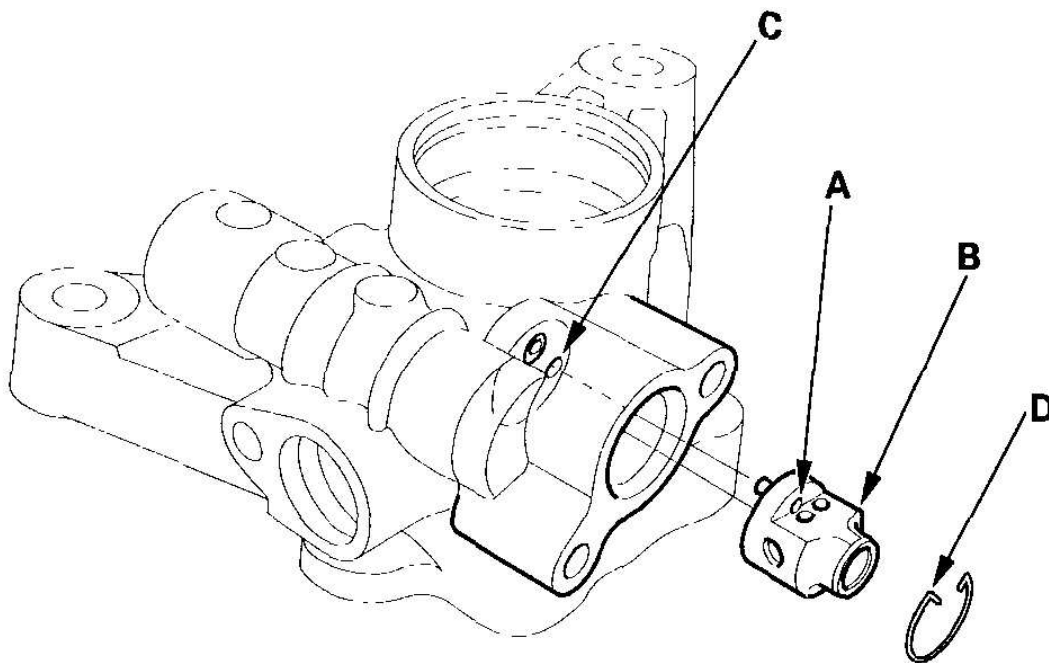
Fig. 21: Installing Ball Bearing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. 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

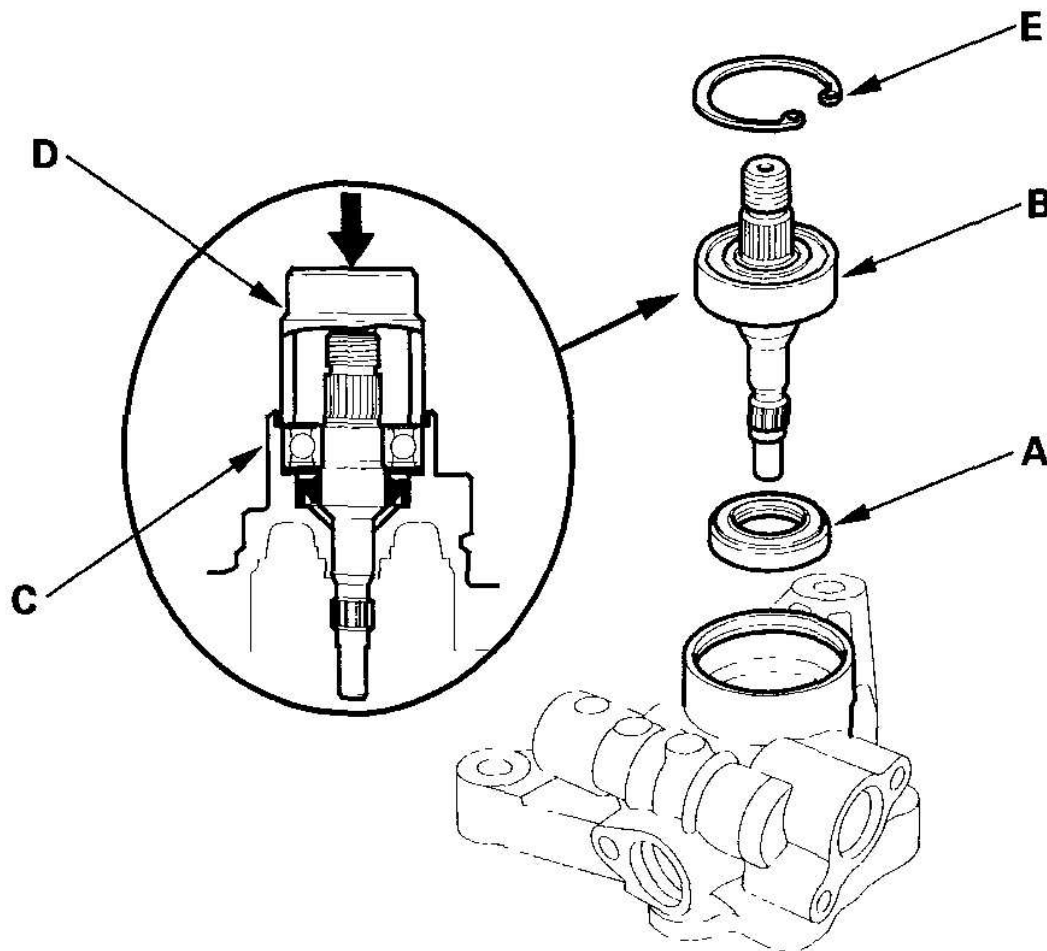
16. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in solvent.
17. Align the pin (A) of the subvalve (B) with the oil passage (C) in the pump housing, and push the subvalve into place, then install the snap ring (D).



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Fig. 22: Aligning Pin Of Subvalve With Oil Passage In Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the new pump seal (A) (with its grooved side facing in) into the pump housing by hand first.



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Fig. 23: Installing New Pump Seal**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

19. Position the pump driveshaft (B) in the pump housing (C), then drive it in using an appropriately sized socket wrench (D) (ball bearing O.D. 40 mm).
20. Install the 40 mm internal snap ring (E) with its radius edge facing out.
21. Coat the new pump cover seal (A) with power steering fluid, and install it into the groove in the pump cover (B).

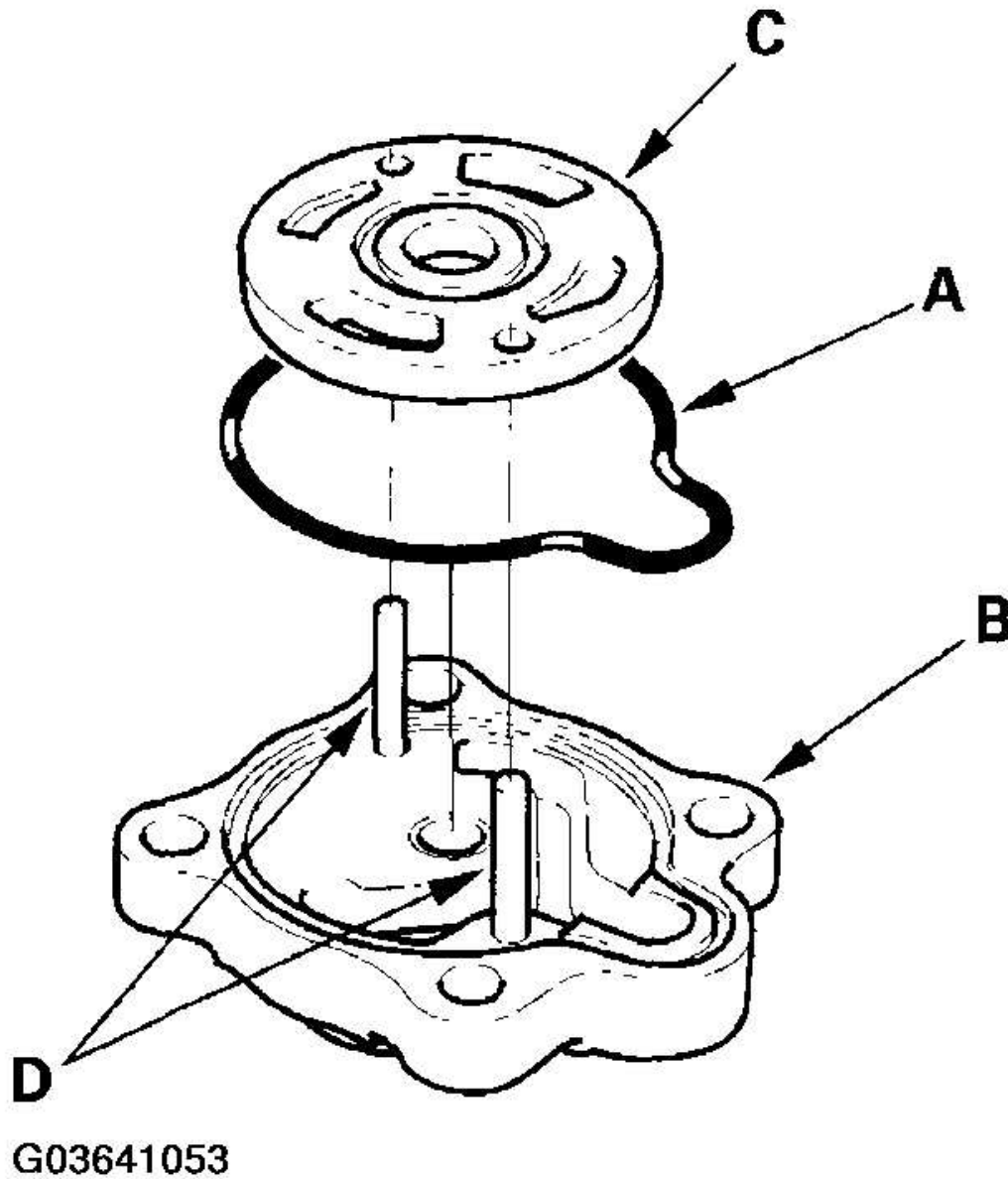
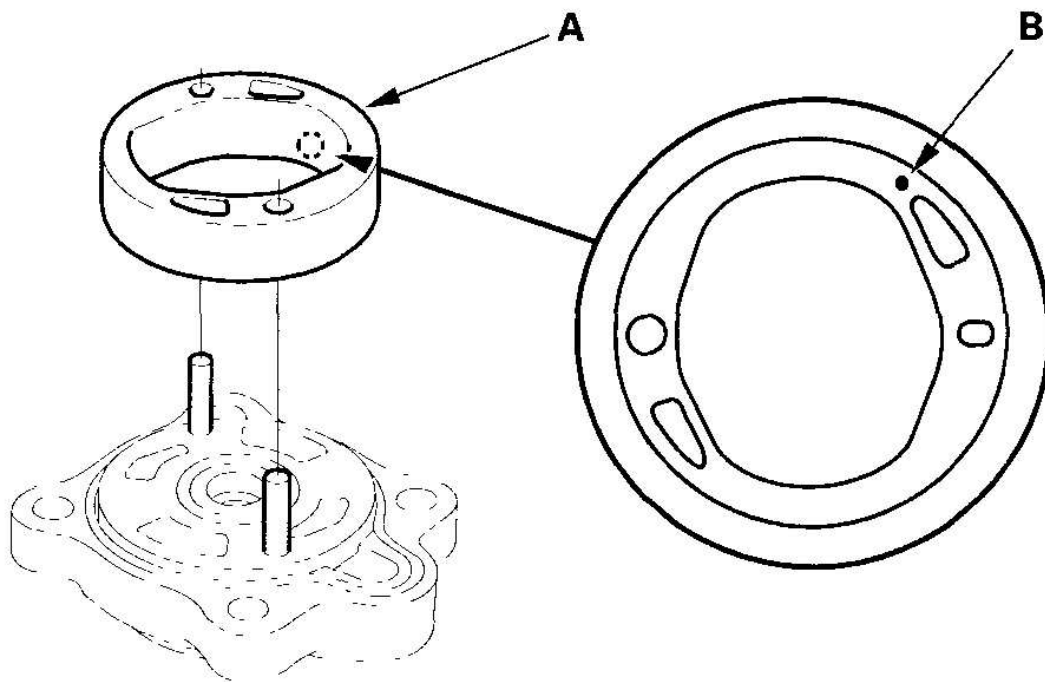


Fig. 24: Installing Outer Side Plate Over Two Roll Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

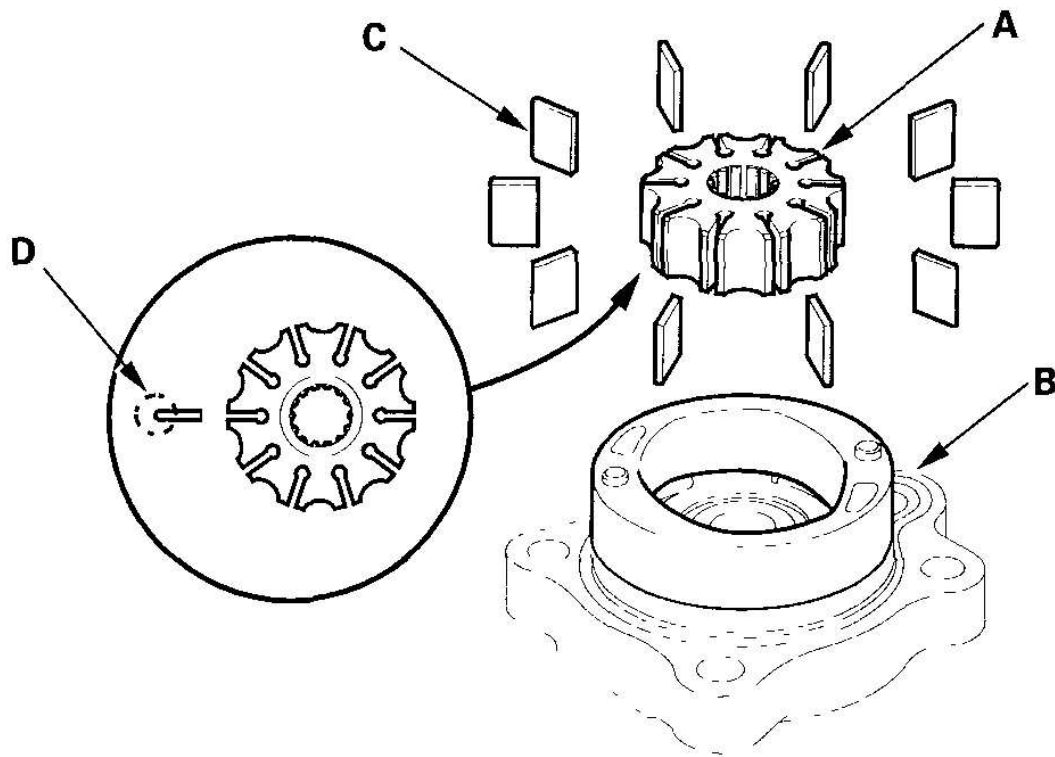
22. Install the outer side plate (C) over the two roll pins (D).
23. Set the pump cam ring (A) over the two roll pins with its "BULLET" mark (B) facing down.



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Fig. 25: Setting Pump Cam Ring Over Two Roll Pins
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Assemble pump rotor (A) to the pump cover (B).

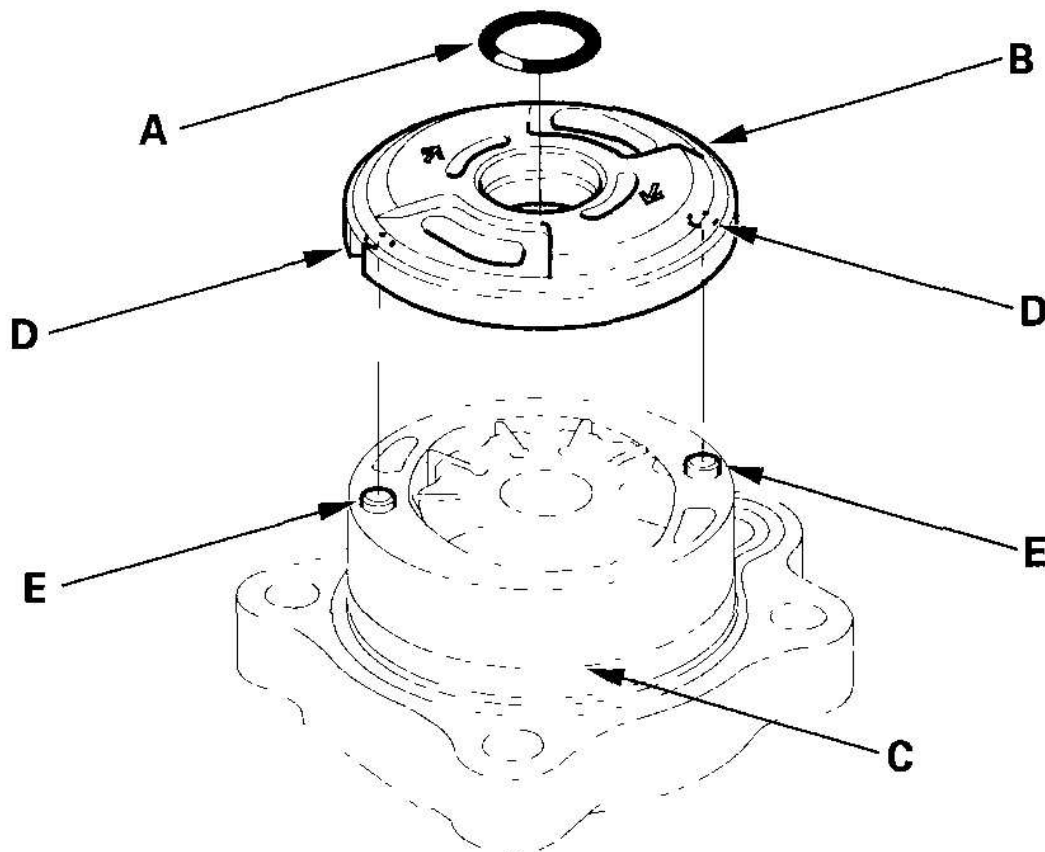


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Fig. 26: Assembling Pump Rotor To Pump Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Set the 10 vanes (C) in the grooves in the rotor. Make sure that the round ends (D) 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).



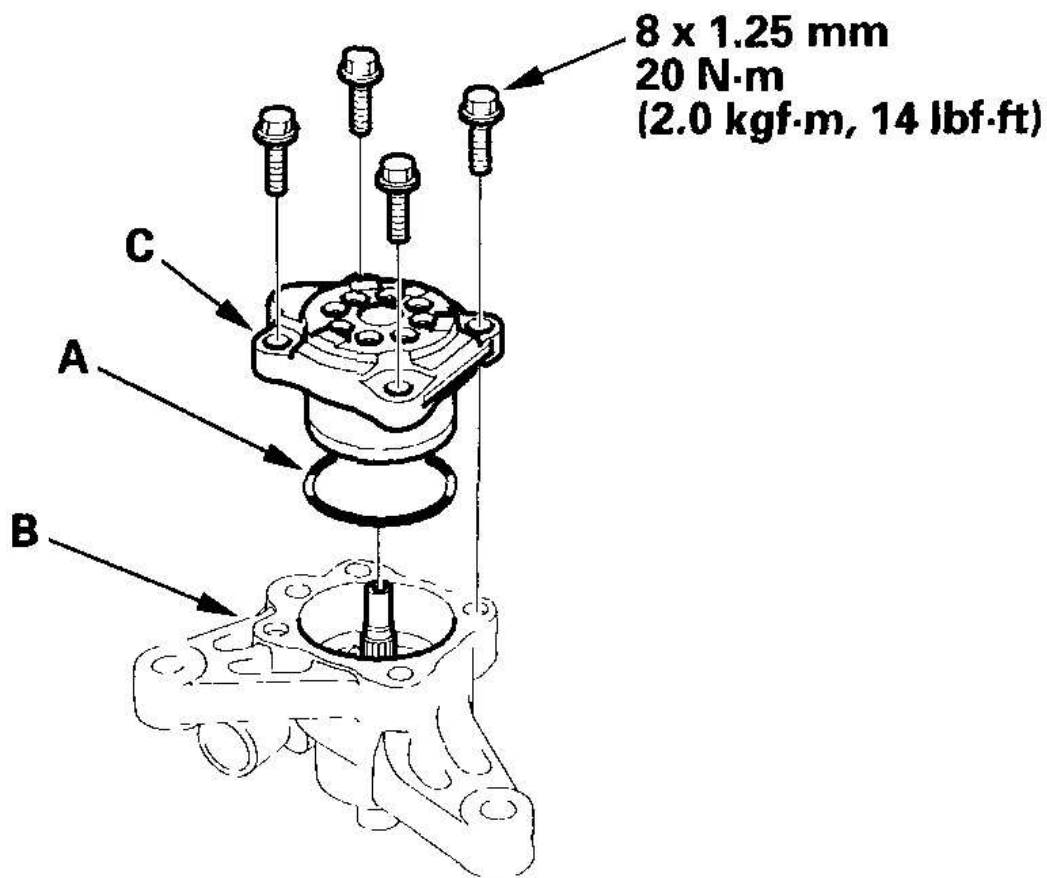
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Fig. 27: Installing O-Ring

Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Install the side plate on the cam ring (C) by aligning the roll pins 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 (B).



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Fig. 28: Positioning O-Ring In Bottom Of Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Install the pump cover assembly (C) in the pump housing.
30. Coat the flow control valve (A) with power steering fluid, then install it and the spring (B) in the pump housing.

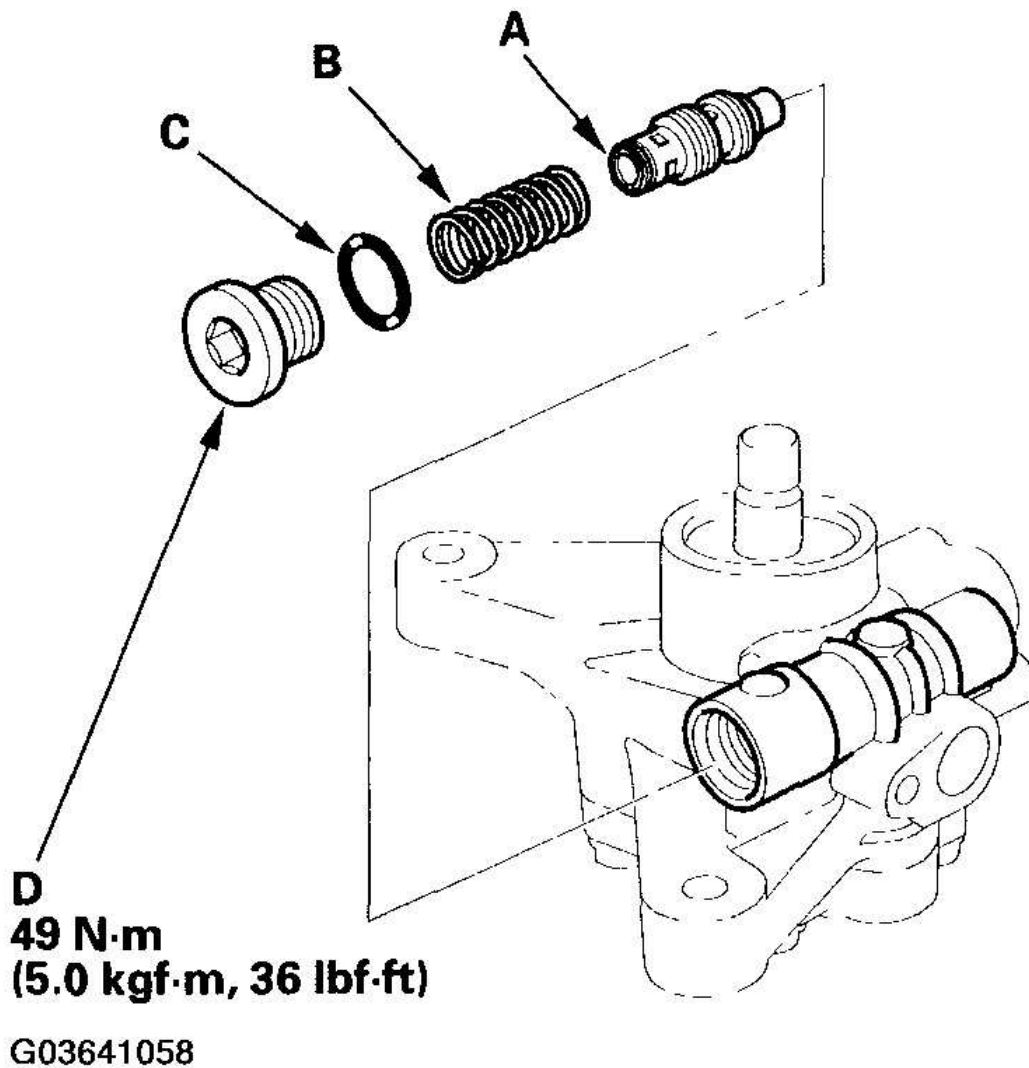
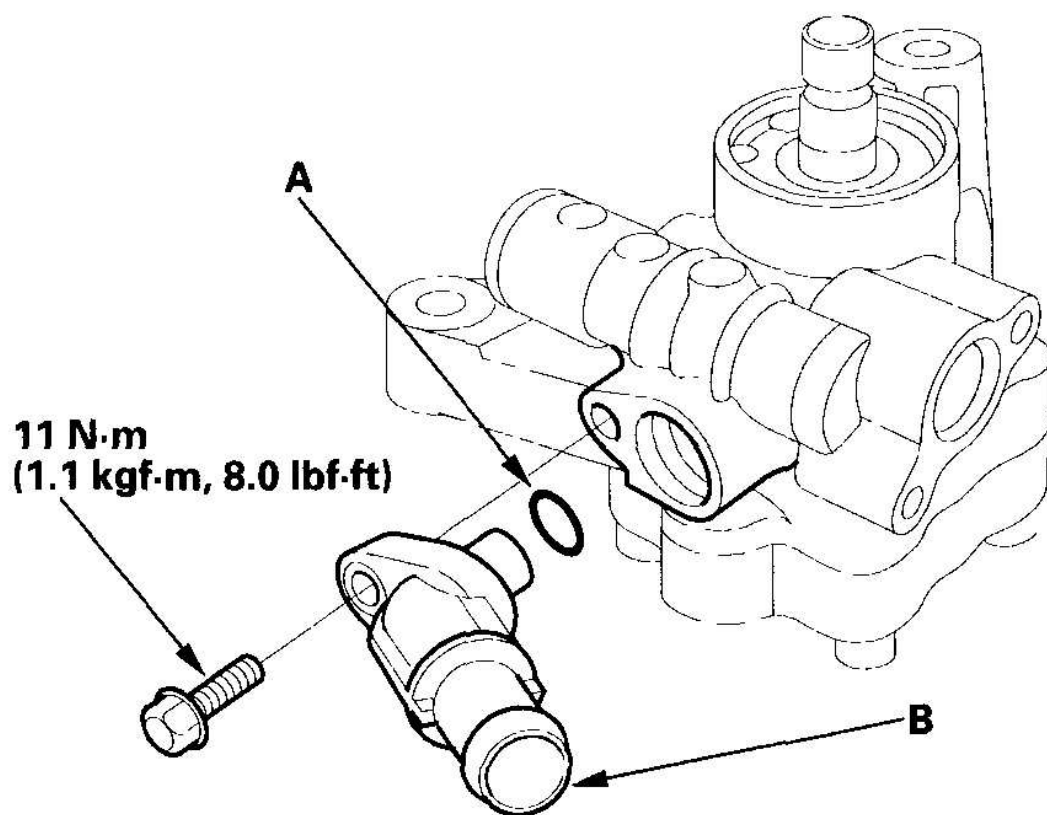


Fig. 29: Installing Flow Control Valve And Spring In Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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, and tighten it.

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, and tighten the flange bolt.



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Fig. 30: Installing Inlet Joint On Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

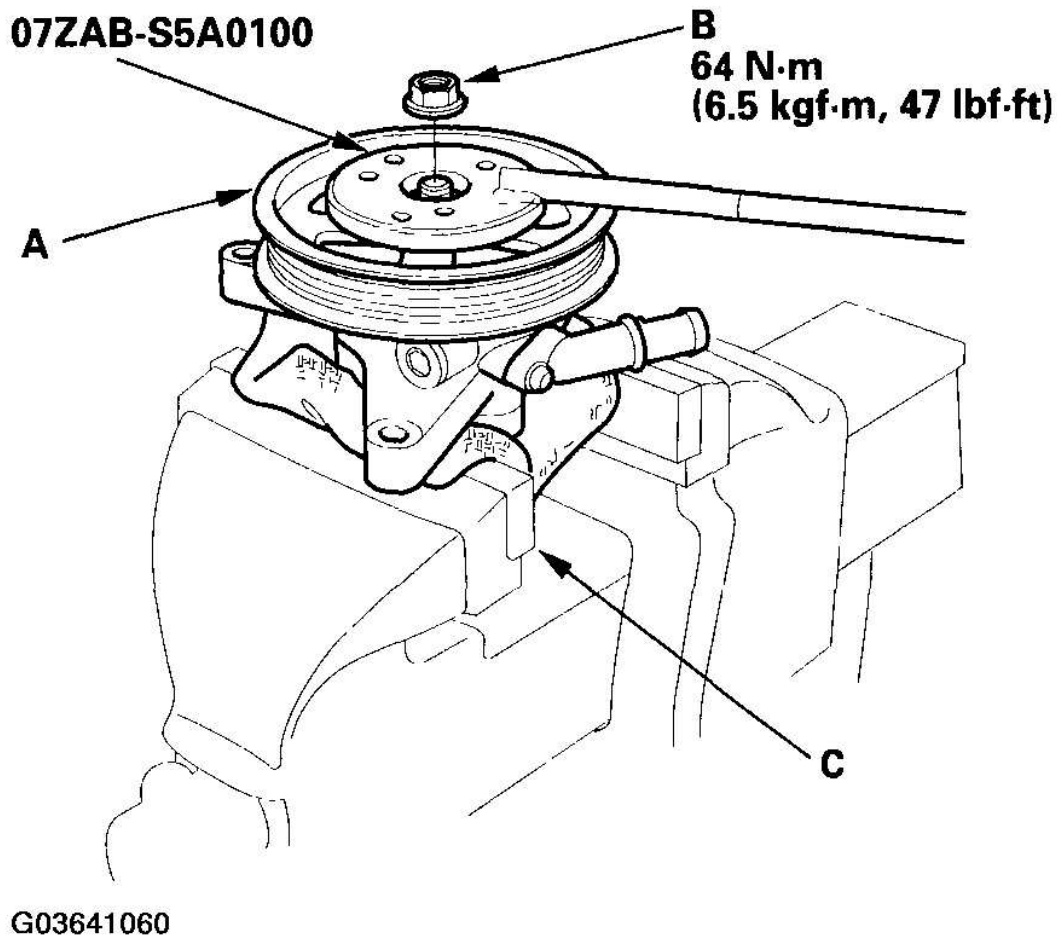


Fig. 31: Installing Pulley

Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Hold the pulley with the special tool, and tighten the pulley nut.

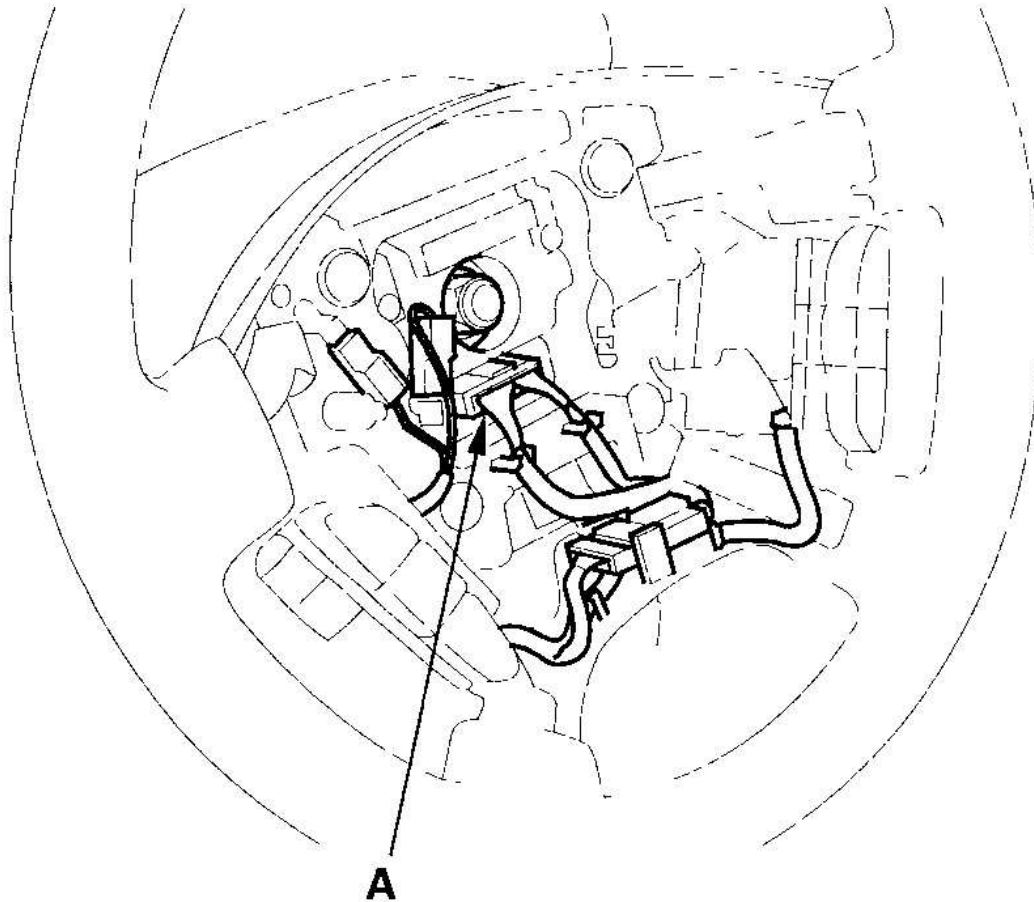
35. Check that the pump turns smoothly by turning the pulley by hand. If the pump doesn't turn smoothly, loosen the four pump cover bolts, and retorque to the specification.

STEERING WHEEL REMOVAL

SRS components are located in this area. Review the SRS component locations, '03 model (see **COMPONENT LOCATION INDEX**) '04-06 models (see **2004-2006 MODELS**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) before performing repairs or service.

1. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see **DRIVER'S AIRBAG REPLACEMENT**).

2. Disconnect the radio remote switch connector and cruise control switch connector (A) from the cable reel.



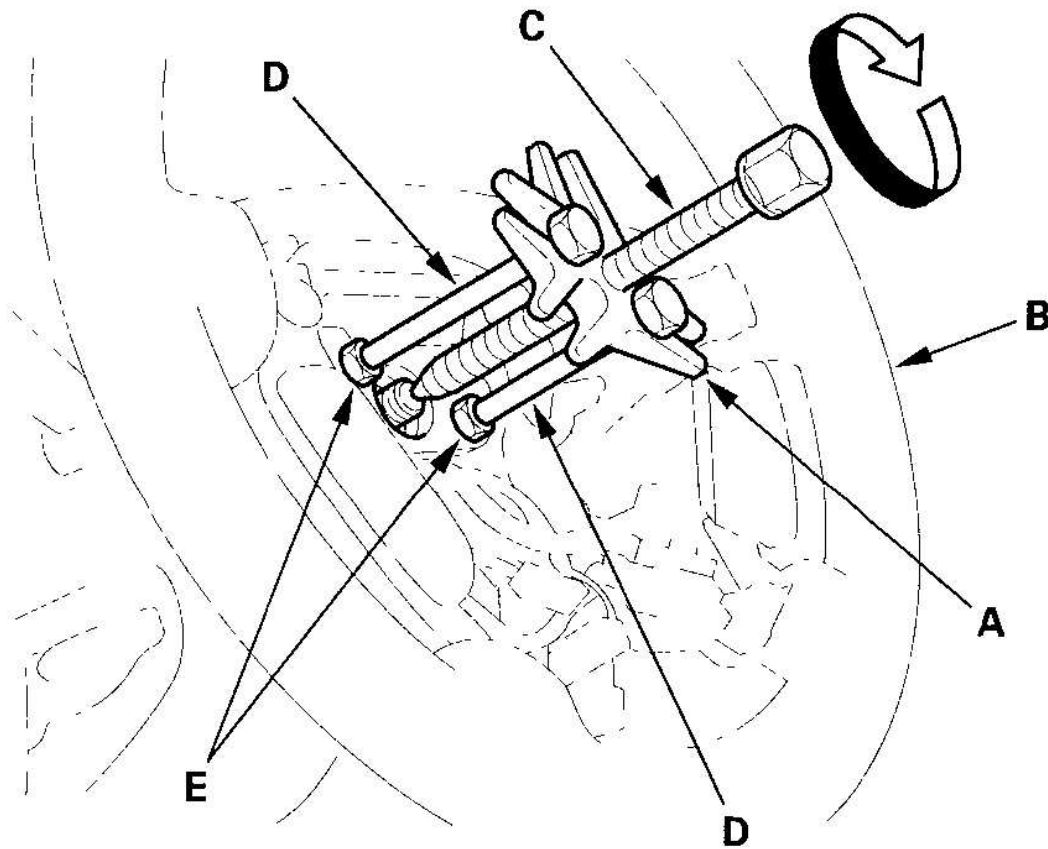
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Fig. 32: Identifying Cruise Control Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the steering wheel nut. Install a steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column by turning the pressure bolt (C) of the puller.

Note these items when removing the steering wheel:

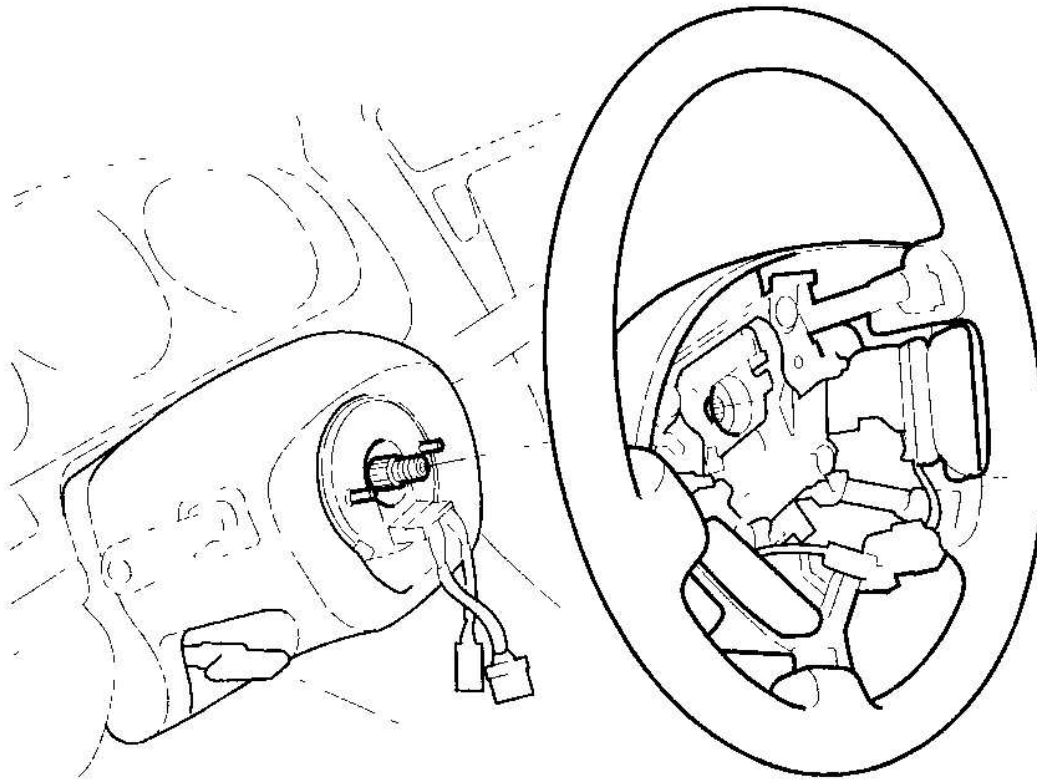
- Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
- If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts (E) five threads up on each puller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



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Fig. 33: Installing Steering Wheel Puller On Steering Wheel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the steering wheel puller, then remove the steering wheel from the steering column.

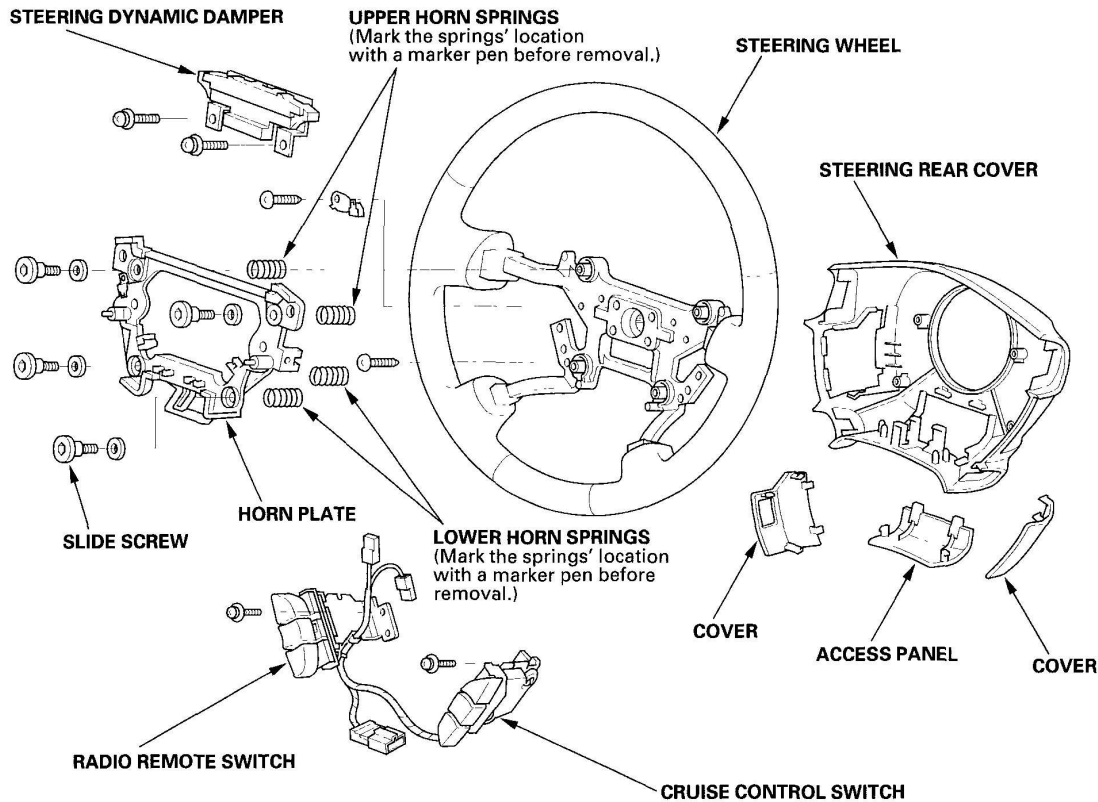


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Fig. 34: Removing Steering Wheel From Steering Column
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STEERING WHEEL DISASSEMBLY/REASSEMBLY

NOTE: The horn springs on some models are the same color, but not the same length. Be sure to mark the springs' location with a marker pen before removal.

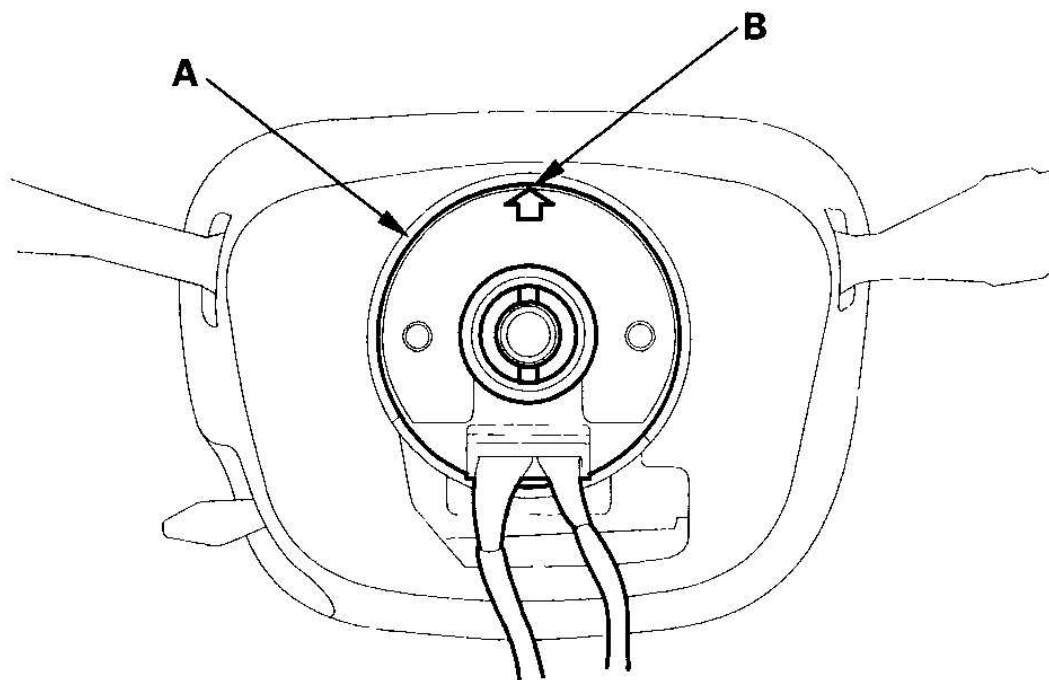


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Fig. 35: Exploded View Of Steering Wheel Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STEERING WHEEL INSTALLATION

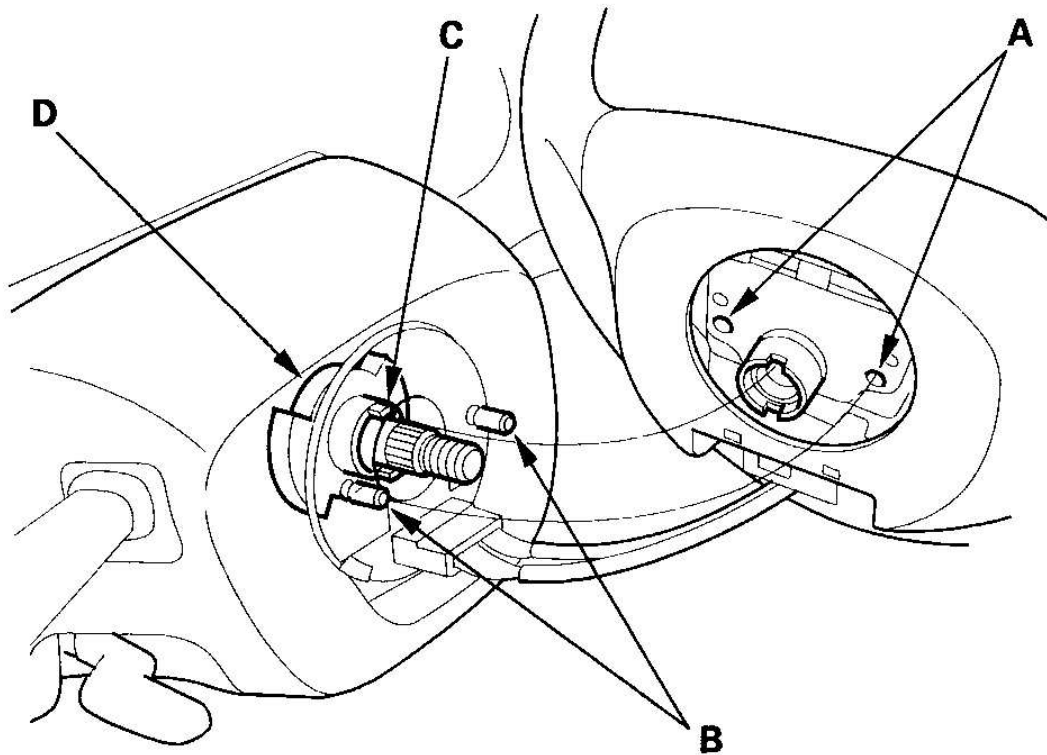
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about two and a half turns. The arrow mark (B) on the cable reel label point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



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Fig. 36: Identifying Arrow Mark On Cable Reel Label Point
Courtesy of AMERICAN HONDA MOTOR CO., INC.

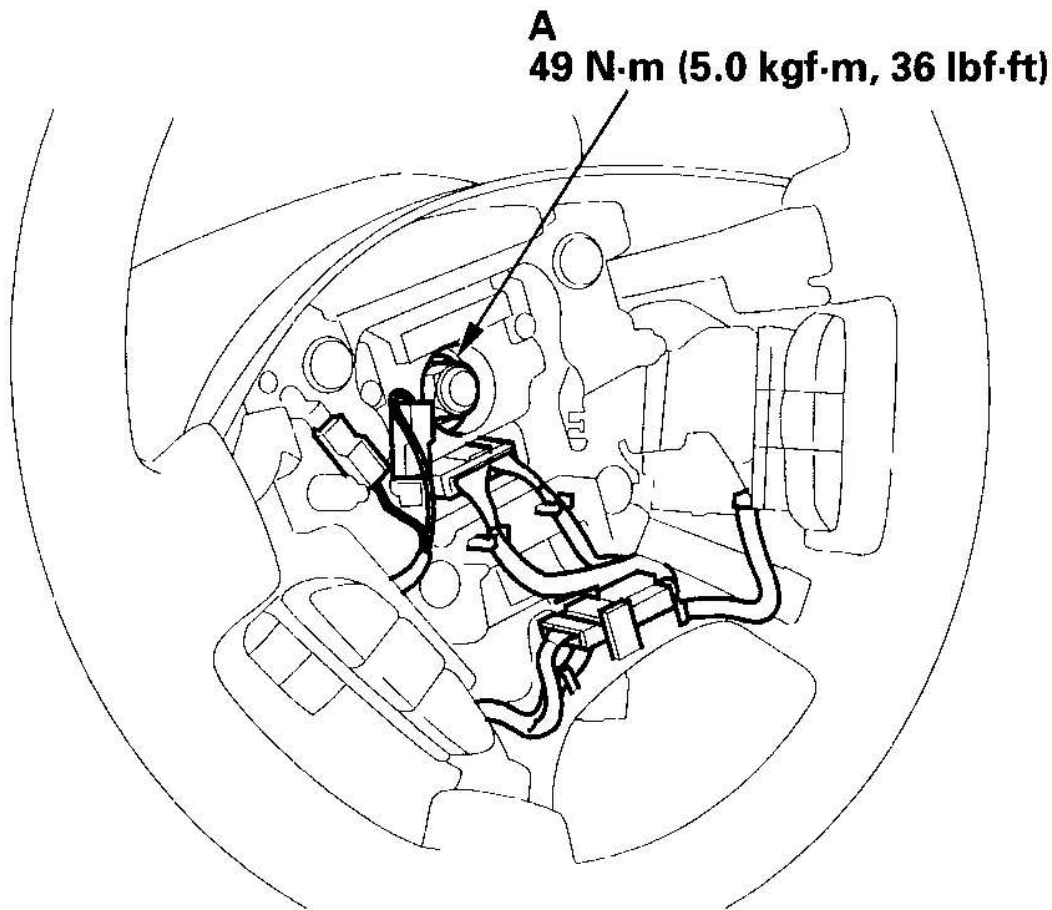
2. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (A) engages the pins (B) of the cable reel and tabs (C) of the canceling sleeve (D). Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



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Fig. 37: Installing Steering Wheel On To Steering Column Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the steering wheel nut (A) and tighten it to specified torque.



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Fig. 38: Installing Steering Wheel Nut
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Connect the radio remote switch and the cruise control switch connector to the cable reel.
5. Install the driver's airbag (see **DRIVER'S AIRBAG REPLACEMENT**).
6. Connect the battery cable.
 - Confirm that the SRS system is operating properly (see **SEAT BELT TENSIONER**).
 - Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).
 - Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).
 - Enter the anti-theft codes for the radio and the navigation system, then the customer's radio station presets.
 - Check the horn, radio remote switch, cruise control set/resume switch and turn signal canceling for

proper operation.

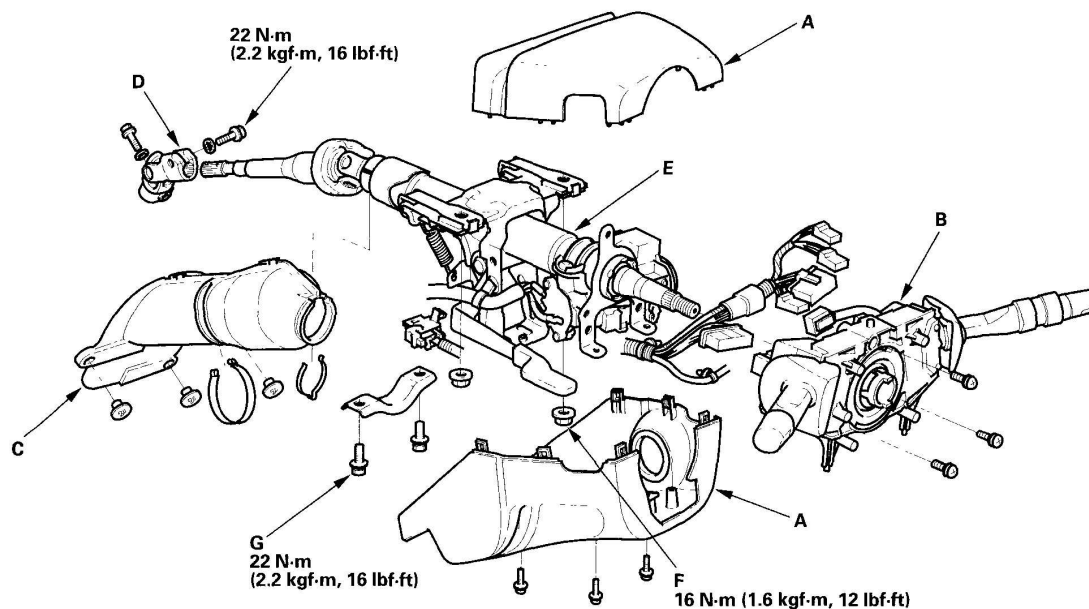
- Set the clock.

STEERING COLUMN REMOVAL AND INSTALLATION

SRS components are located in this area. Review the SRS component locations, '03 model (see **COMPONENT LOCATION INDEX**) '04-06 models (see **2004-2006 MODELS**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) before performing repairs or service.

REMOVAL

1. Write down the radio station presets, and disconnect the battery negative cable.
2. Remove the driver's airbag assembly and steering wheel (see **STEERING WHEEL REMOVAL**).
3. Remove the column covers (A).



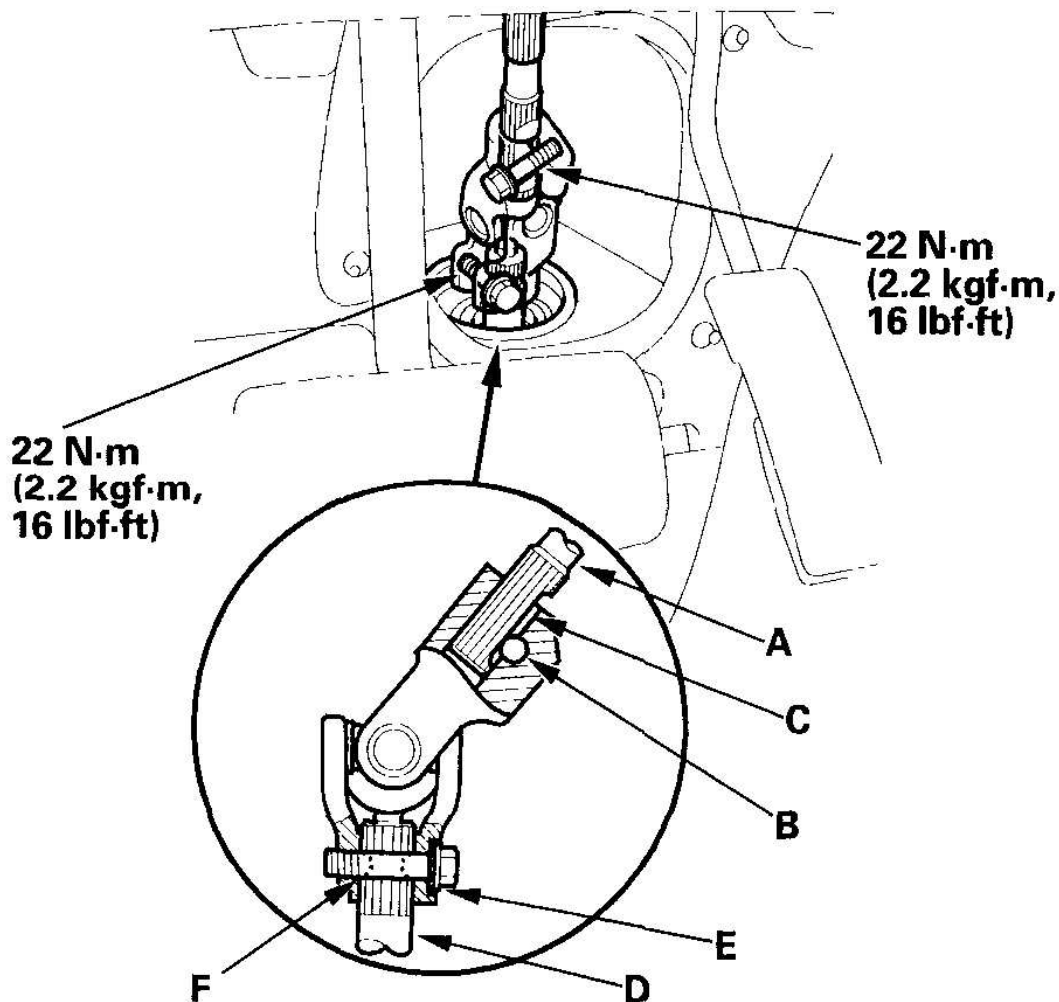
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Fig. 39: Removing View Of Steering Column
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the cable reel (see **CABLE REEL REPLACEMENT**).
5. Remove the combination switch assembly (B) from the steering column shaft by removing the three mounting screws, and disconnecting the connectors.
6. Disconnect the ignition switch connectors, and remove the harness clips.
7. Remove the steering joint cover (C).
8. Disconnect the steering joint (D), and remove it from the column shaft.
9. Remove the steering column (E) by removing the attaching nuts (F) and bolts (G).

INSTALLATION

1. Install the steering column and make sure the wires are not caught or pinched by any parts.
 - Take care not to let the sliding plates fall out of position during column installation.
 - Make sure the wires are not caught or pinched by any parts.
2. 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).



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Fig. 40: Inserting Upper End Of Steering Joint Onto Steering Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

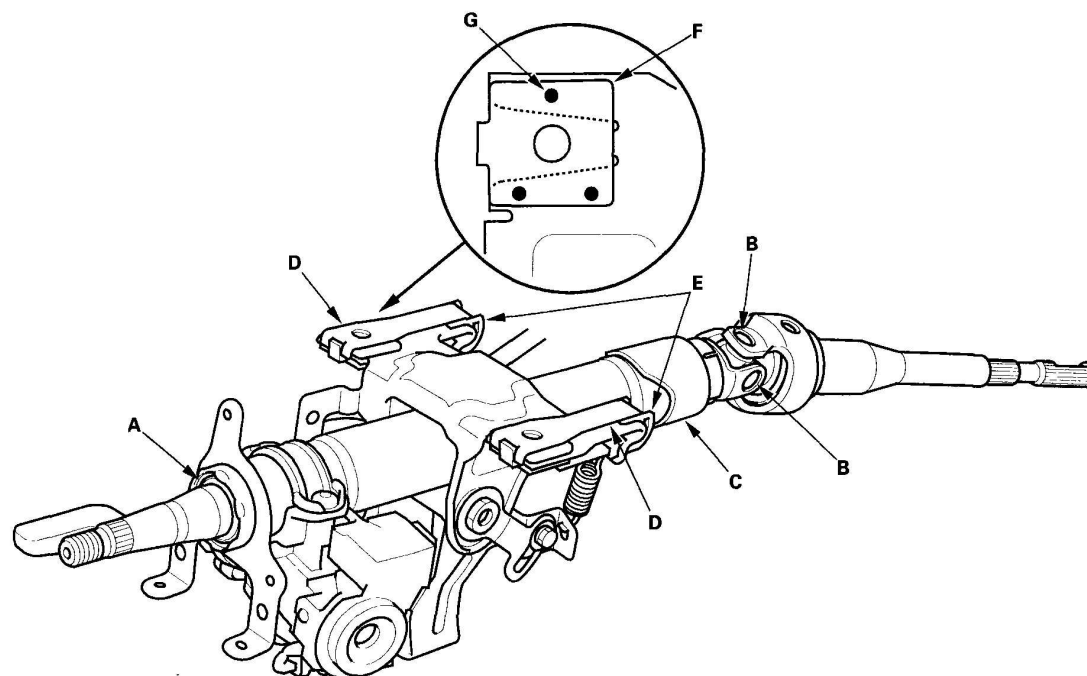
3. Slip the lower end of the steering joint onto the pinion shaft (D) (line up the bolt hole (E) with the groove

(F) around the shaft), and loosely install the lower joint bolt. Be sure that the lower joint bolt is securely in the groove in the pinion shaft.

4. Pull on the steering joint to make sure that the steering joint is fully seated. Then install the upper joint bolt and tighten it. Tighten the lower joint bolt to the specified torque.
5. Finish the installation in the reverse order of disassembly, and note these items:
 - Make sure the wire harness is routed and fastened properly.
 - Make sure the connectors are properly connected.
 - Reinstall the steering wheel (see **STEERING WHEEL INSTALLATION**).
 - Reconnect the battery.
 - Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).
 - Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).
 - Enter the anti-theft codes for the radio and the navigation system, then the customer's radio station preset.
 - Set the clock.
 - Verify cruise control, horn, radio remote, and turn signal switch operation.
 - Make sure the steering wheel is centered.

STEERING COLUMN/TILT LEVER INSPECTION/ADJUSTMENT

- 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 retaining collar (C) for damage. If it is damaged, replace the steering column as an assembly.
- Check the absorbing plates (D), absorbing plate guides (E), and sliding capsules (F) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly. The sliding capsule is attached to the column bracket with the plastic injections (G).



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Fig. 41: Identifying Steering Column Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. Move the tilt lever (A) from the loose position to the lock position three to five times. With the tilt lever in the loose position measure the tilt lever preload 10 mm (0.39 in.) from the end of the tilt lever.

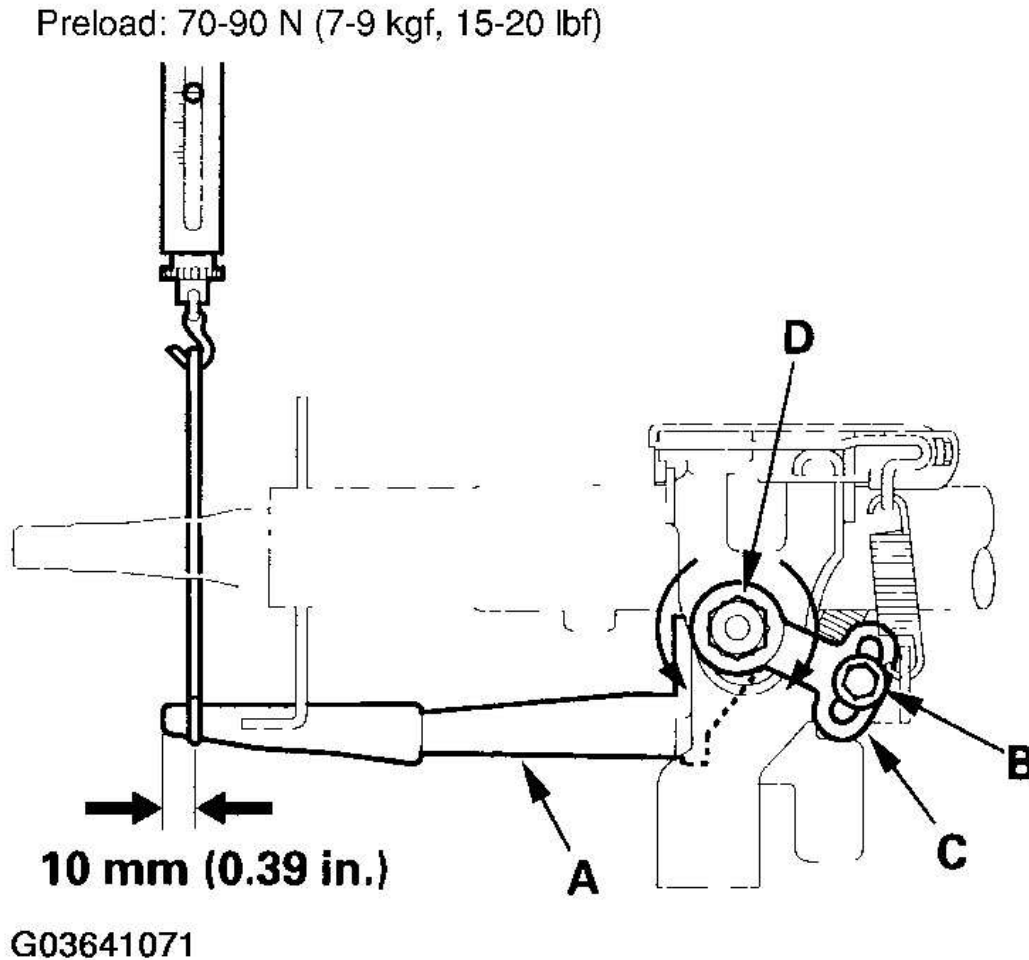


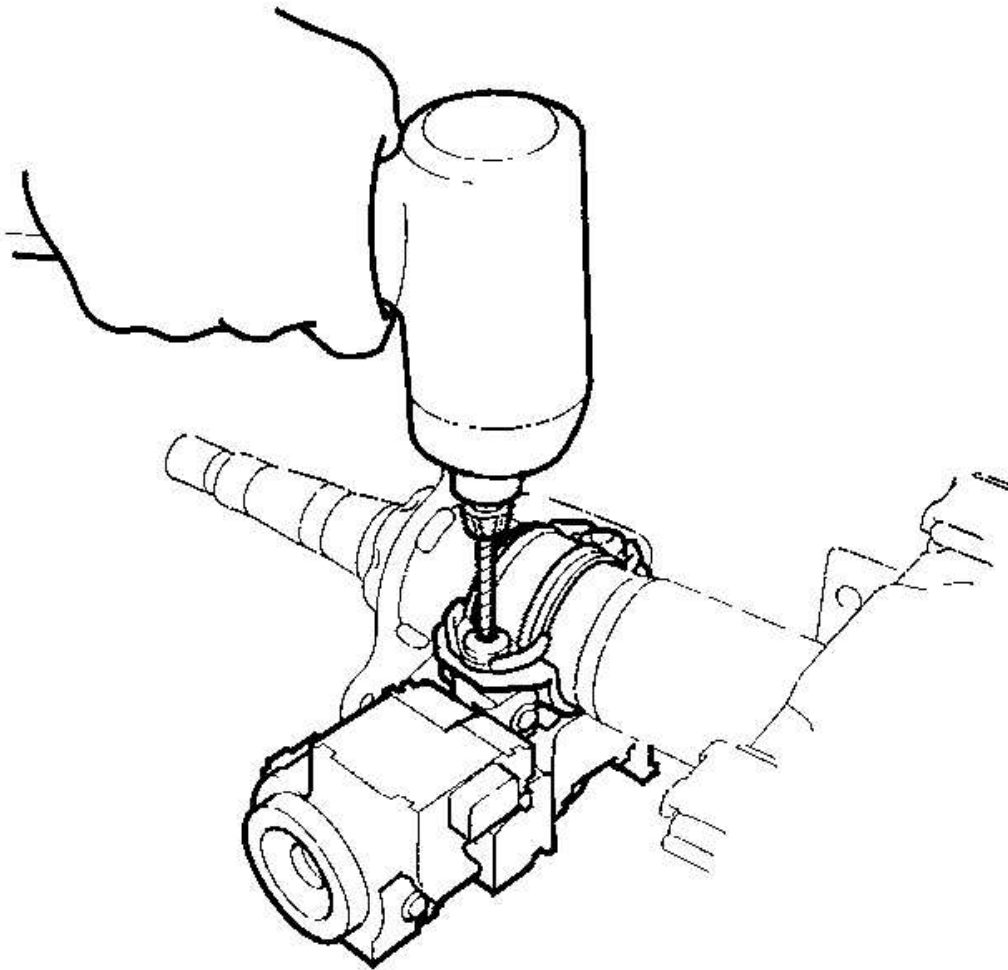
Fig. 42: Measuring Tilt Lever Preload

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the measurement is out of the specification, adjust the preload using the following procedures.
 - Loosen the tilt lever, and free the steering column between upper position and lower position.
 - Remove the 6 mm lock bolt (B), and remove the stop (C). Be careful not to loosen the tilt lever when installing the stop or tightening the 6 mm lock bolt.
 - Adjust the preload by turning the tilt lock bolt (D) left or right.
 - Pull up the tilt lever to the uppermost position, and install the stop. Be careful not to loosen the tilt lever when installing the stop or tightening the 6 mm lock bolt. Check the preload again. If the measurement is still out of specification, repeat the above procedures to adjust.

STEERING LOCK REPLACEMENT

1. Remove the steering column (see **STEERING COLUMN REMOVAL AND INSTALLATION**).
2. Center punch each of the two shear bolts, and drill their heads off with a 5 mm (0.20 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.



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Fig. 43: Drilling Heads Of Shear Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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. Make sure that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.

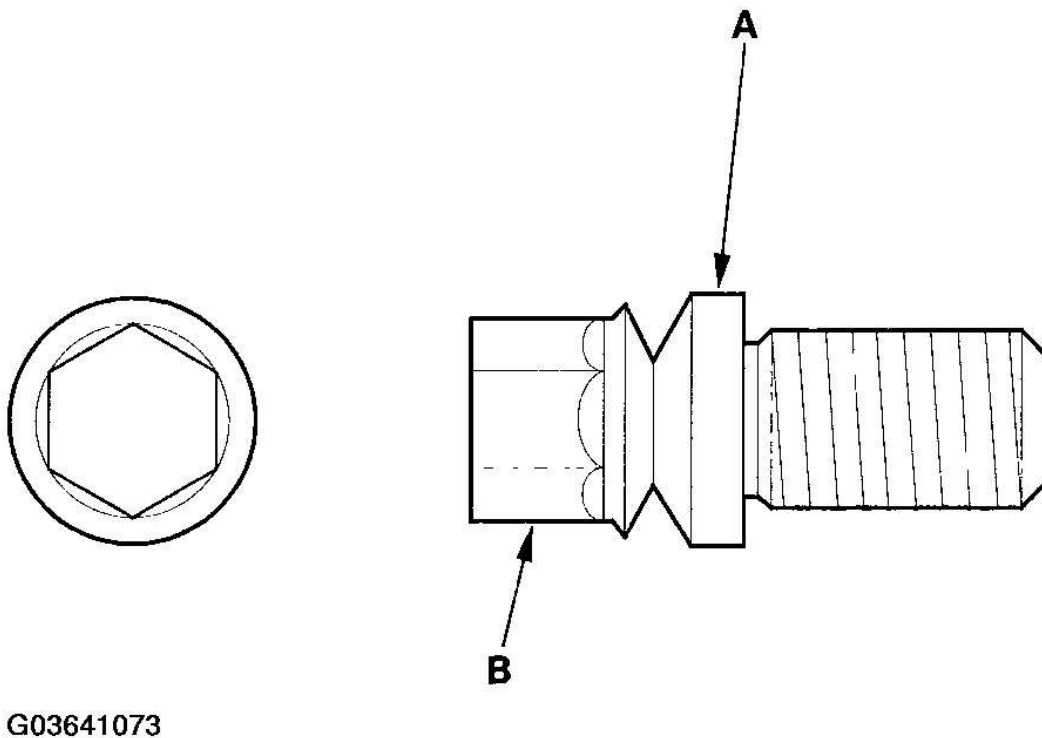


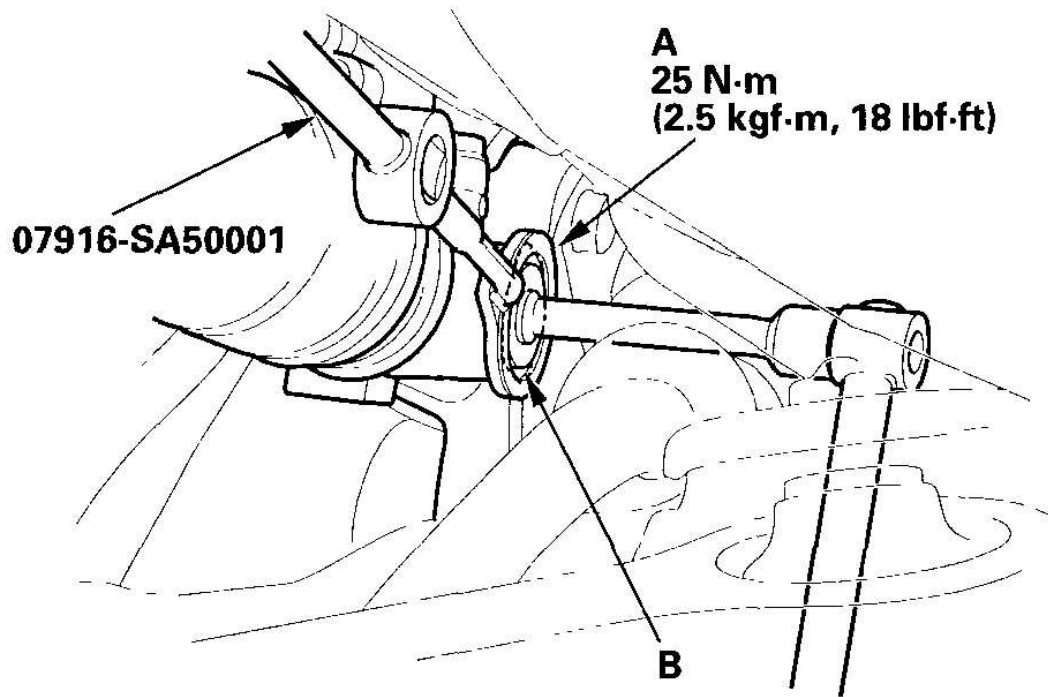
Fig. 44: Identifying Shear Bolts And Hex Heads
Courtesy of AMERICAN HONDA MOTOR CO., INC.

RACK GUIDE ADJUSTMENT

Special Tools Required

Locknut wrench, 40 mm 07916-SA50001

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

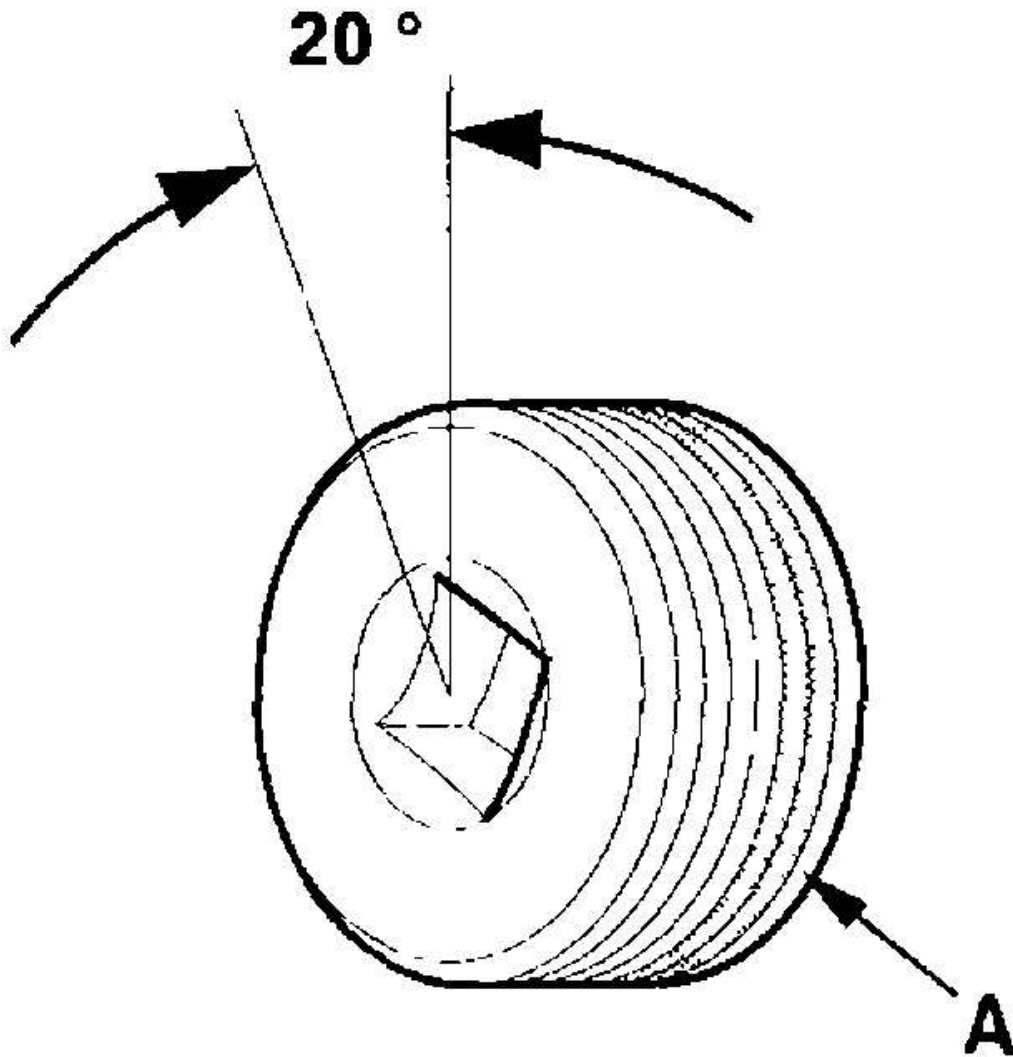


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Fig. 45: Removing Rack Guide Screw

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the old sealant from the rack guide screw threaded section, and apply new sealant (Three Bond 1215 or LOCTITE 5699) around the threads (A). Loosely install the rack guide screw on the steering gearbox.



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Fig. 46: Identifying Rack Guide Screw Return Angle
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Tighten the rack guide screw 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, 2.9 lbf.ft), then back it off to the specified angle.

Specified return angle: 20 ° max.

6. Hold the rack guide screw stationary with a wrench, and install the locknut by hand until it's fully seated.
7. Install the special tool on the locknut, 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 travel.
9. Check the steering wheel rotational play (see **STEERING WHEEL ROTATIONAL PLAY CHECK**) and the power assist (see **STEERING WHEEL ROTATIONAL PLAY CHECK**).

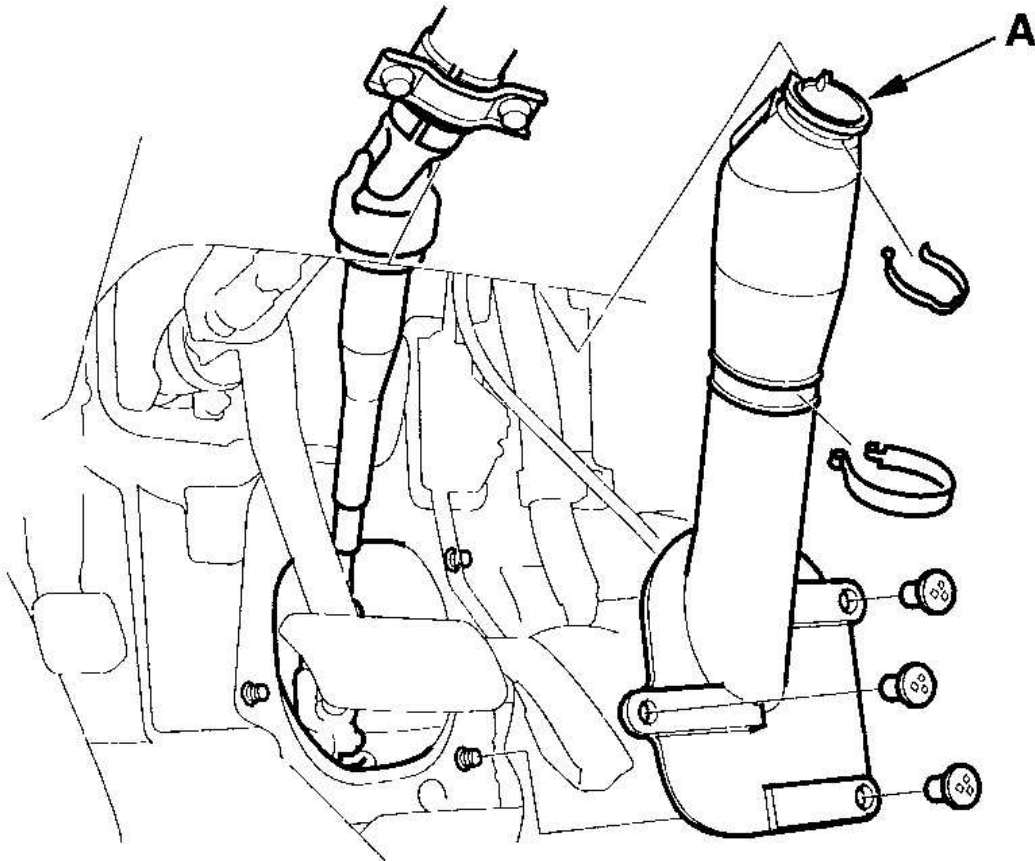
STEERING GEARBOX REMOVAL

Special Tools Required

Ball joint remover, 28 mm 07MAC-SL0A202

Note these items during removal:

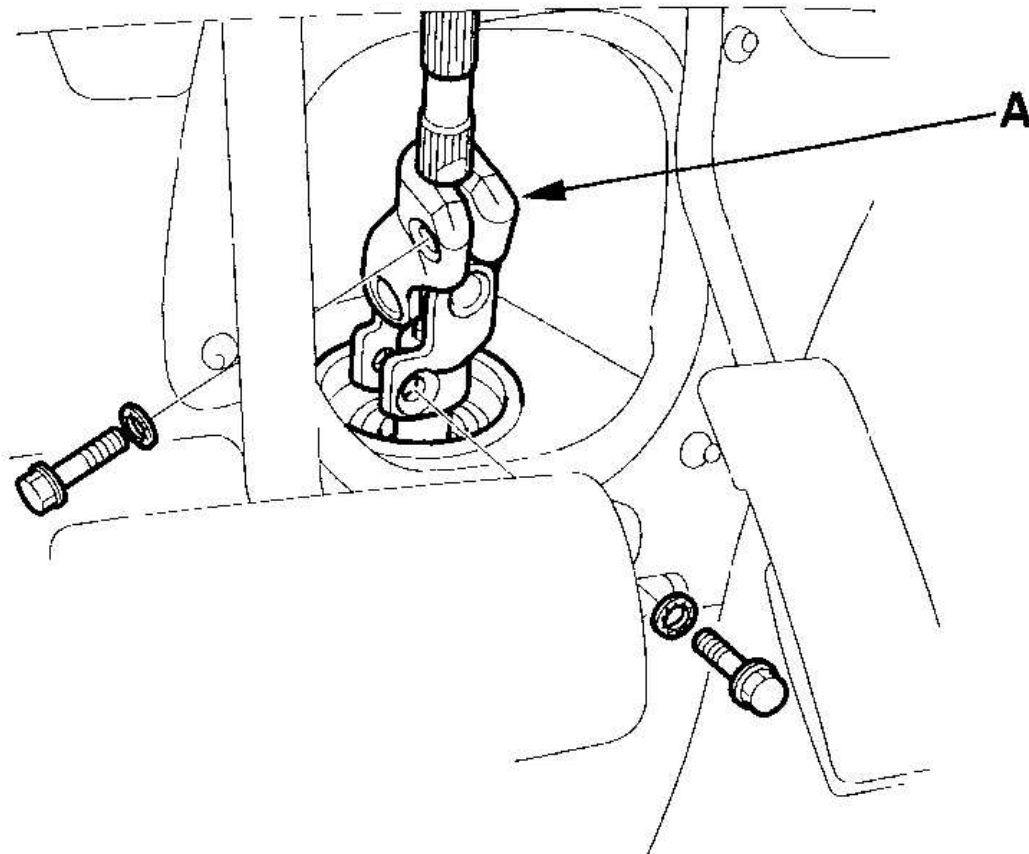
- Using solvent and a brush, wash any oil and dirt off the valve body unit, it's lines, and the end of the gearbox. Blow dry with compressed air.
 - Be sure to remove the steering wheel before disconnecting the steering joint. Damage to the cable reel can occur.
 - Lower the front subframe from the body and remove the steering gearbox through the gap produced by lowering the front subframe.
1. Drain the power steering fluid (see **FLUID REPLACEMENT**).
 2. Record the customer's radio station preset, then disconnect the negative battery cable.
 3. Remove the driver's airbag assembly (see **DRIVER'S AIRBAG REPLACEMENT**).
 4. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).
 5. Remove the steering joint cover (A).



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Fig. 47: Removing Steering Joint Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

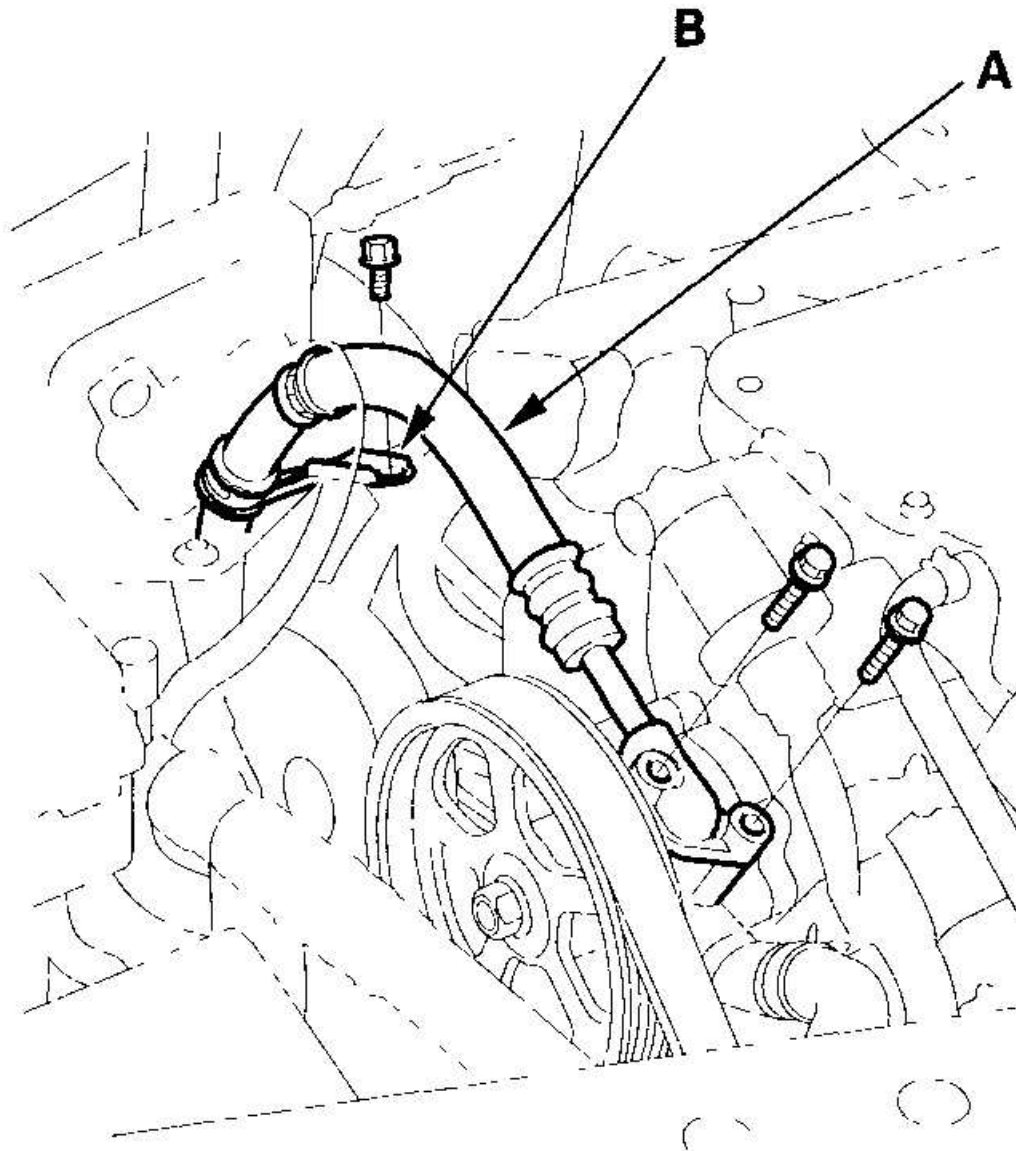


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Fig. 48: Identifying Steering Joint

Courtesy of AMERICAN HONDA MOTOR CO., INC.

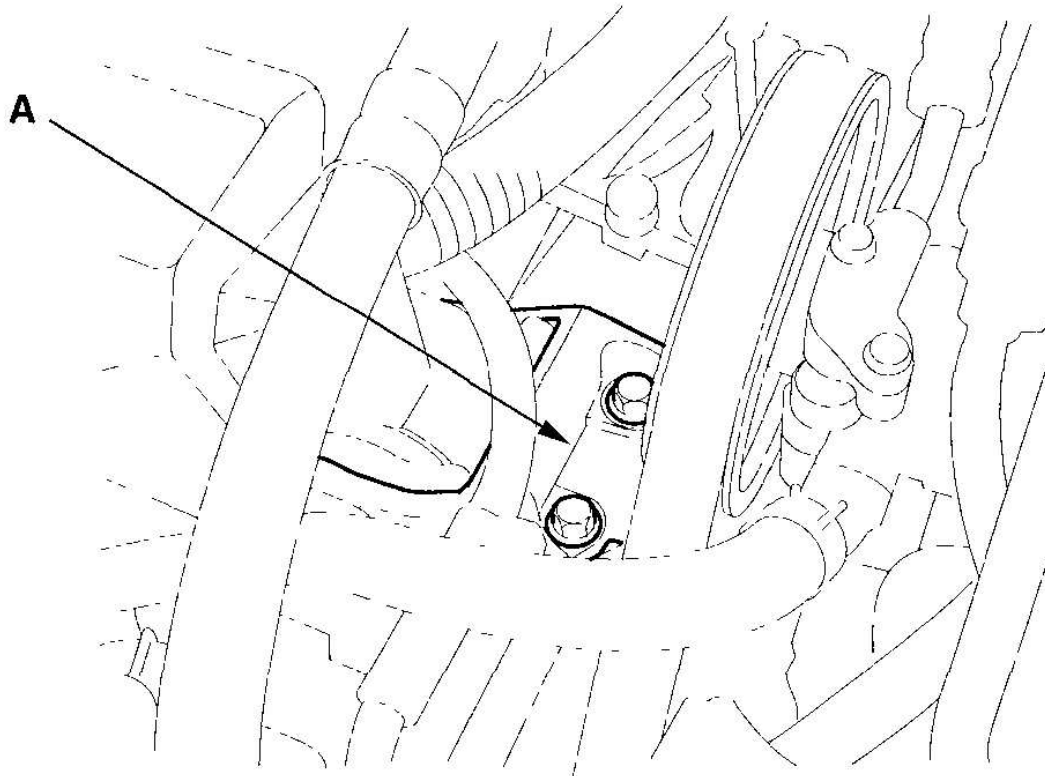
7. Disconnect the pump outlet hose (A) from the power steering pump, and remove the clamp (B).



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Fig. 49: Identifying Pump Outlet Hose And Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

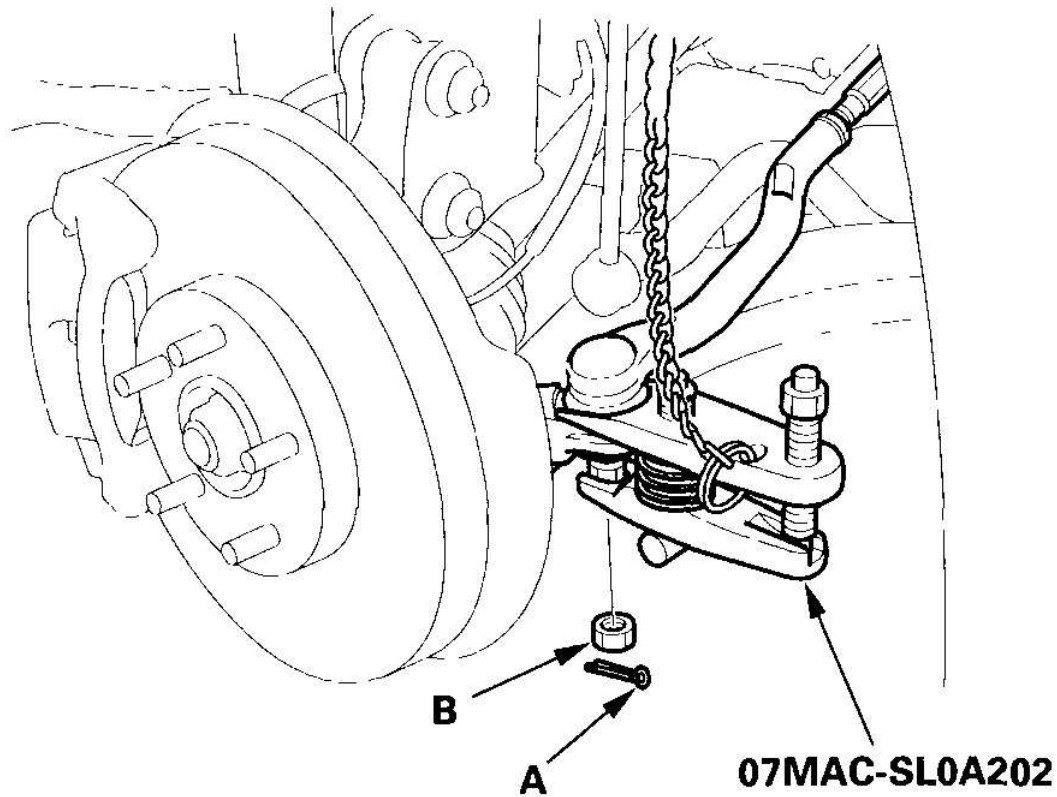
8. Remove the 10 mm flange bolts on the engine side mount bracket (A).



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Fig. 50: Identifying Engine Side Mount Bracket Flange Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

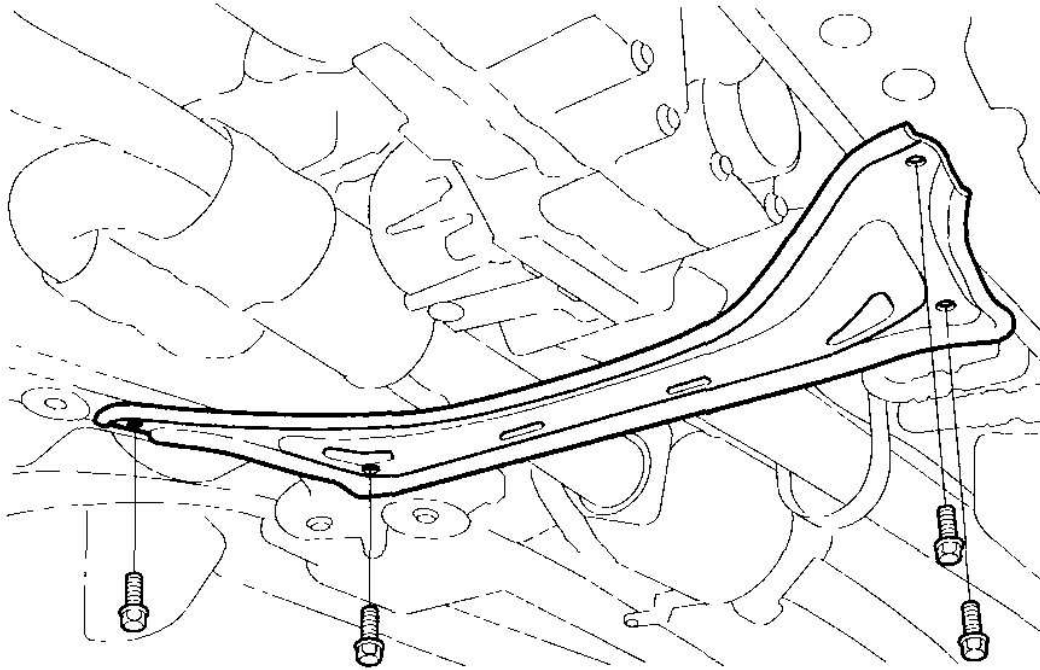
9. Raise the vehicle, and make sure it is securely supported.
10. Remove the front wheels.
11. Remove the cotter pin (A) from the 12 mm nut (B), and loosen the nut.



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Fig. 51: Removing Cotter Pin From 12 mm Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

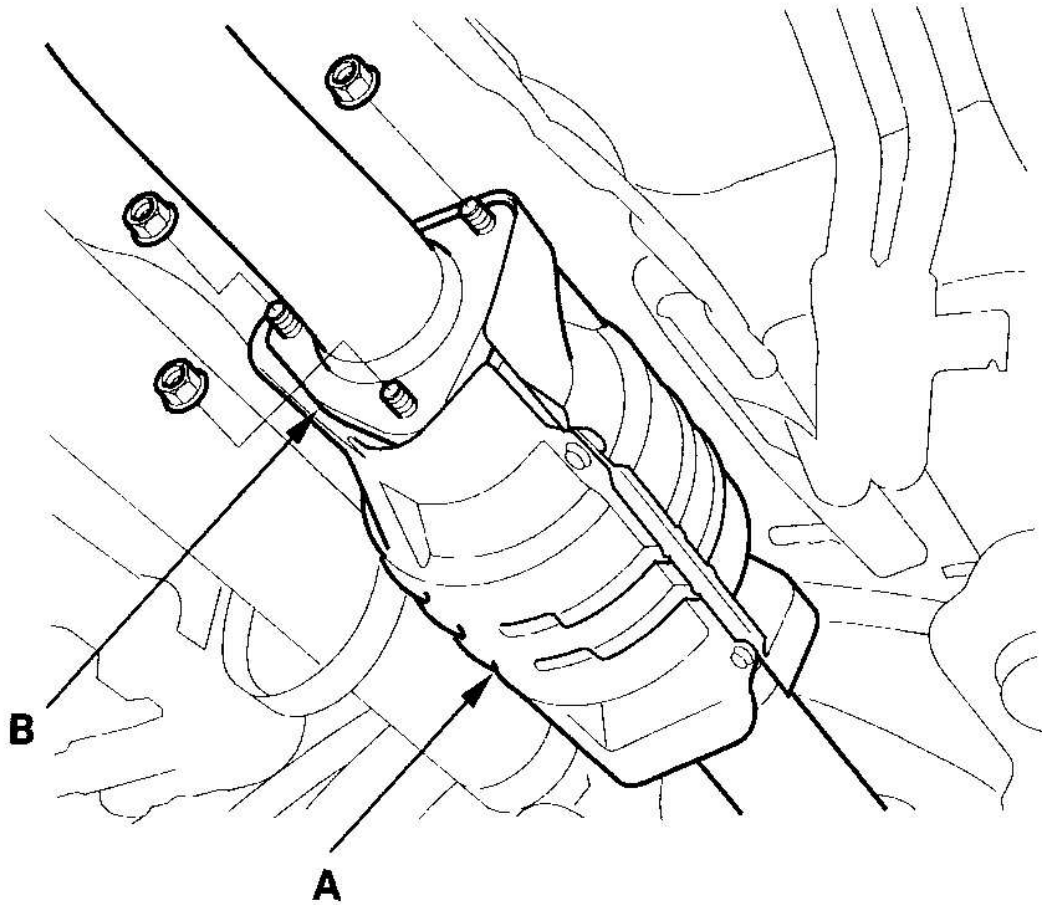
12. Separate the tie-rod ball joint and knuckle using the special tool (see **BALL JOINT REMOVAL**).
13. Remove the front suspension subframe stiffener plate.



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Fig. 52: Removing Front Suspension Subframe Stiffener Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

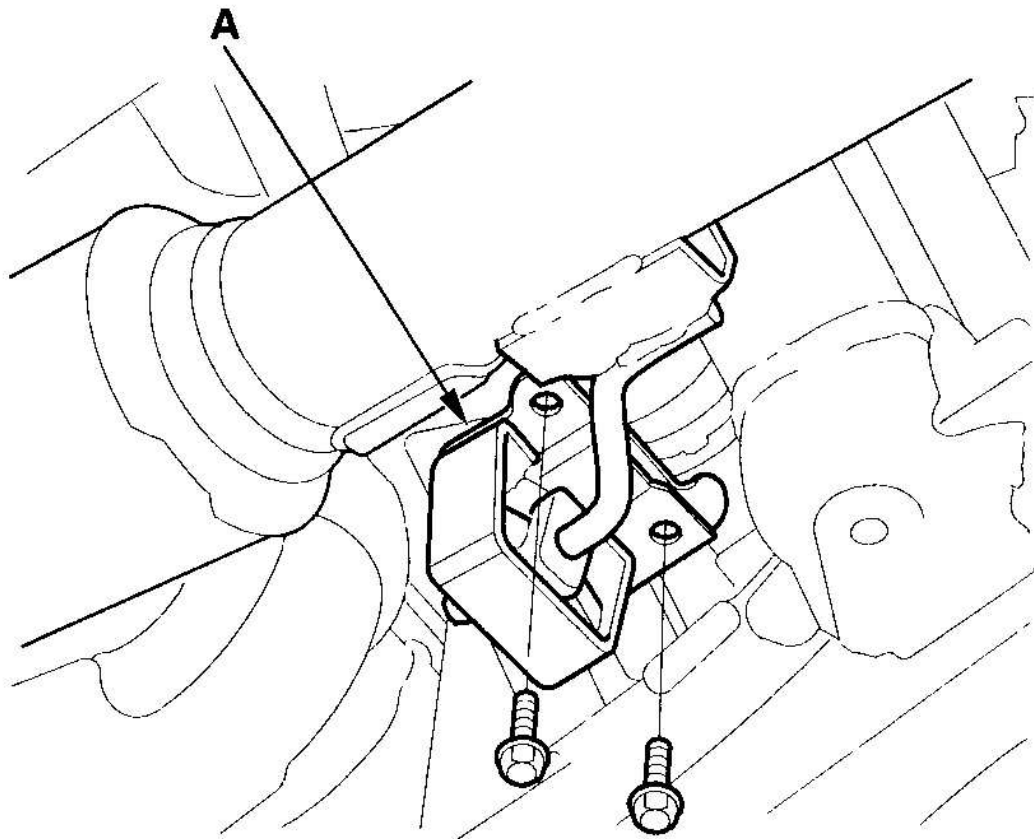
14. Remove the three self-locking nuts, and disconnect the three-way catalytic converter (TWC) (A) from the mufflers (B) (see **EXHAUST PIPE AND MUFFLER REPLACEMENT**).



G03641082

Fig. 53: Disconnecting Three-Way Catalytic Converter (TWC) From Mufflers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

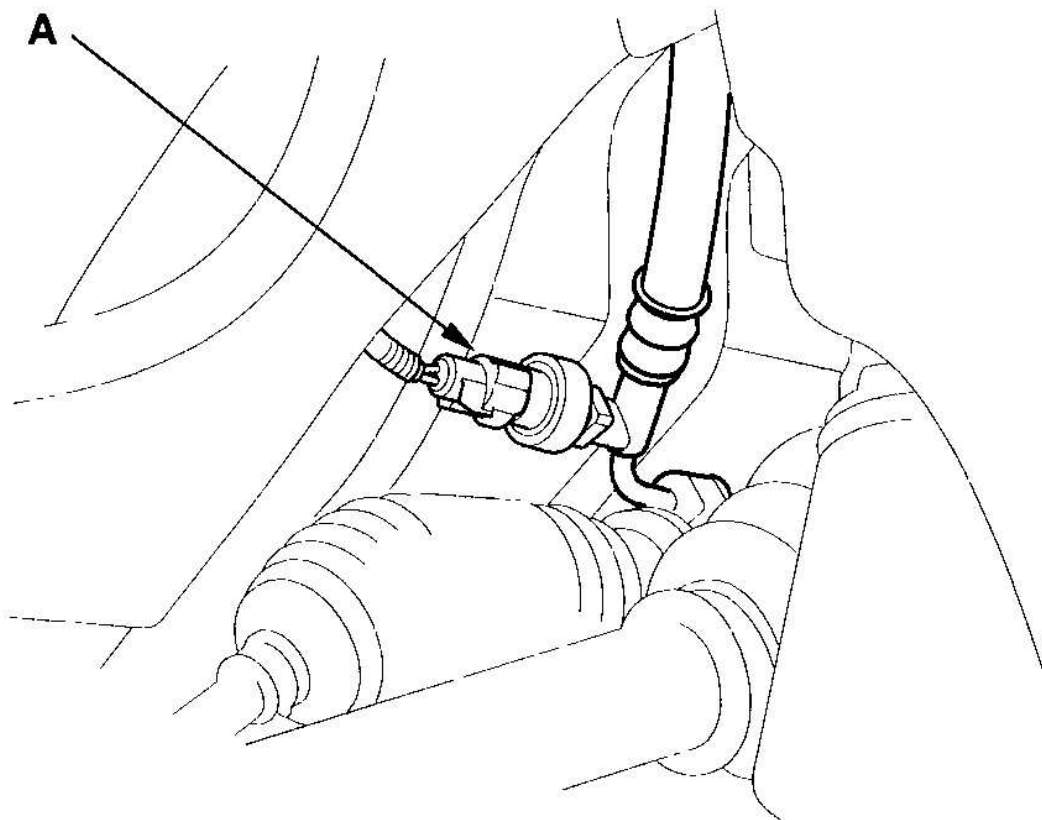
15. Remove the 10 mm flange bolts of the exhaust rubber mount (A).



G03641083

Fig. 54: Removing 10 mm Flange Bolts Of Exhaust Rubber Mount
Courtesy of AMERICAN HONDA MOTOR CO., INC.

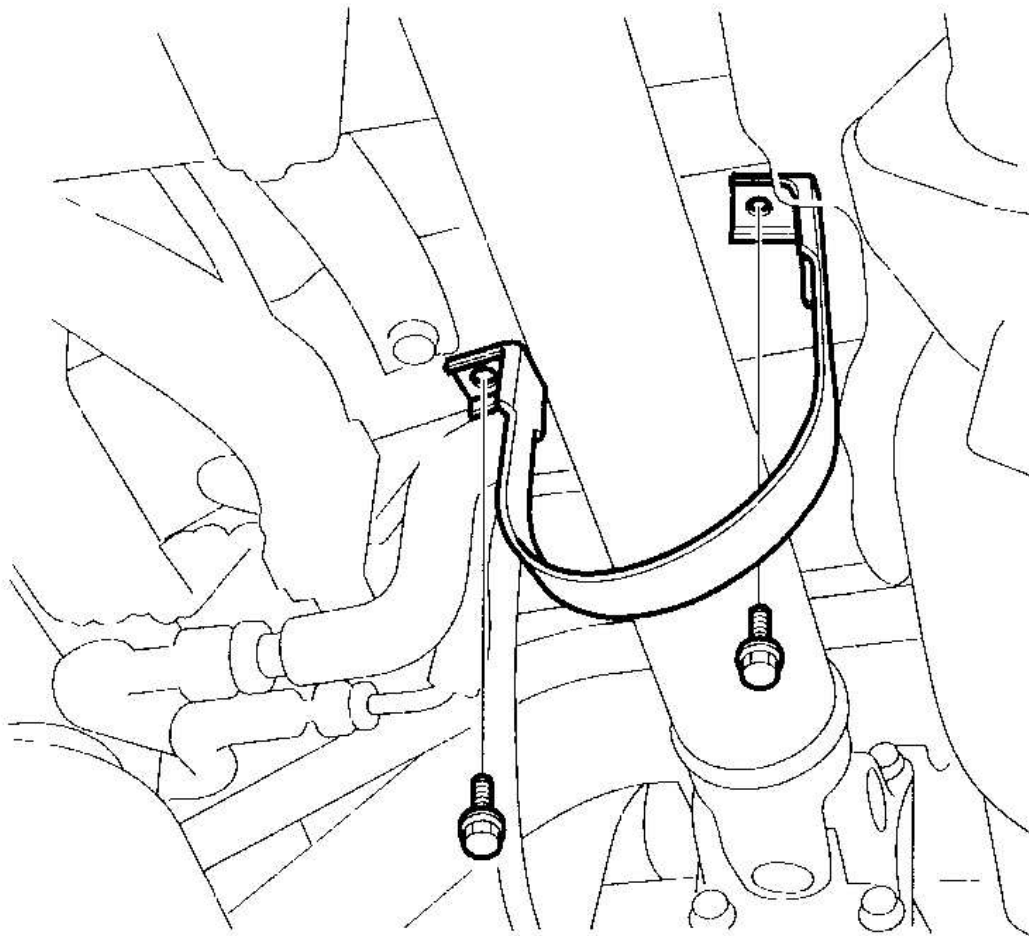
16. Disconnect the power steering pressure (PSP) switch connector (A).



G03641084

Fig. 55: Identifying Power Steering Pressure (PSP) Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

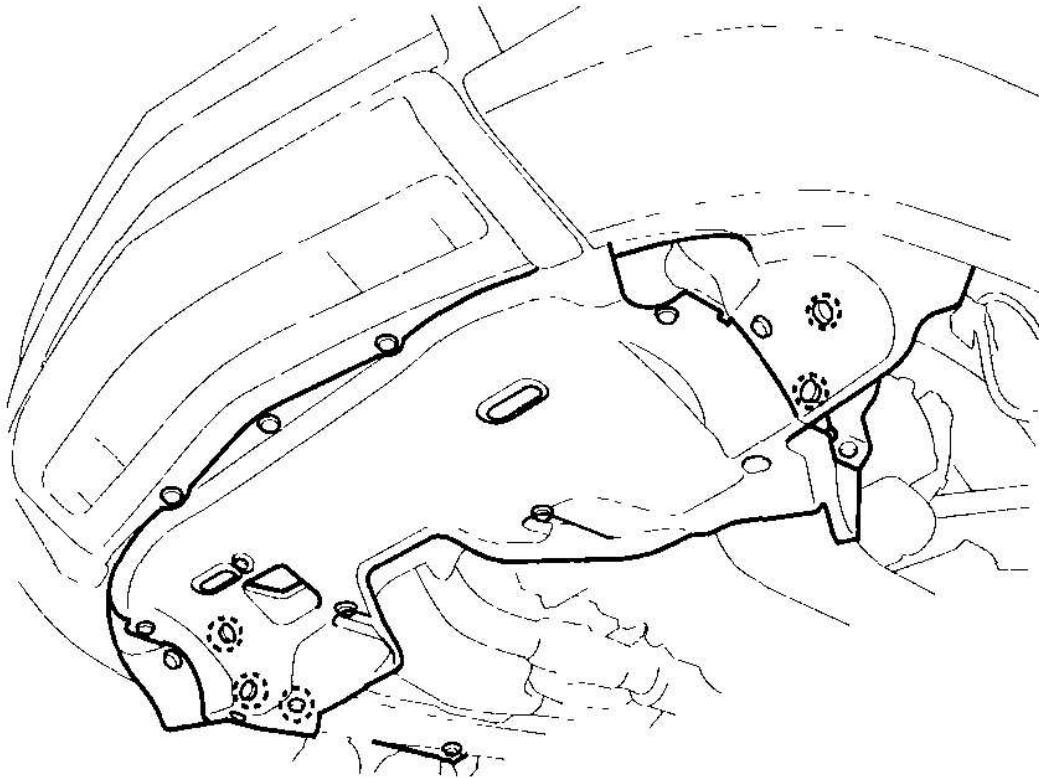
17. Remove the propeller shaft protector.



G03641085

Fig. 56: Removing Propeller Shaft Protector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Remove the splash shield.

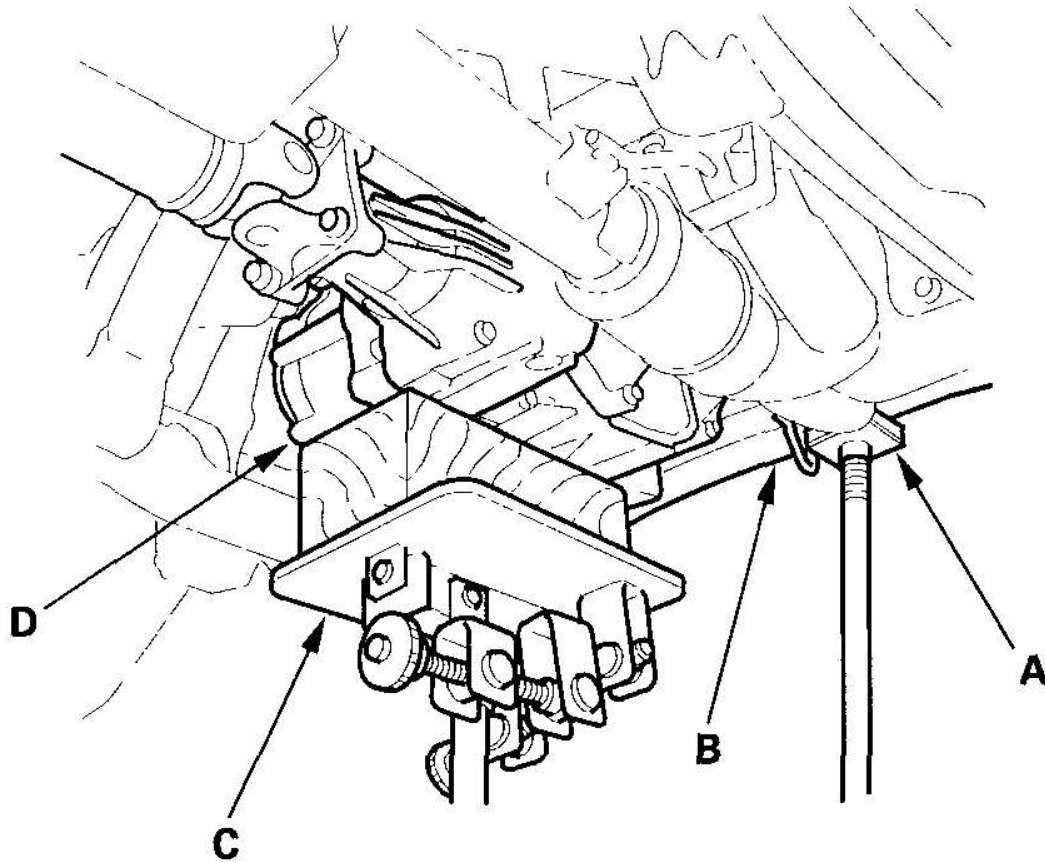


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Fig. 57: Removing Splash Shield

Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Place a jack (A) under the front tube of the front suspension subframe (B), and support it by raising the jack. Place a transmission jack (C) under the center of the transfer case (D).



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Fig. 58: Placing Transmission Jack Under Center Of Transfer Case
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Loosen the two 14 mm flange bolts (A) on the front suspension subframe so they are about 30 mm (13/16 in.) from the mounting surface. Do not loosen the 14 mm flange bolts more than necessary.

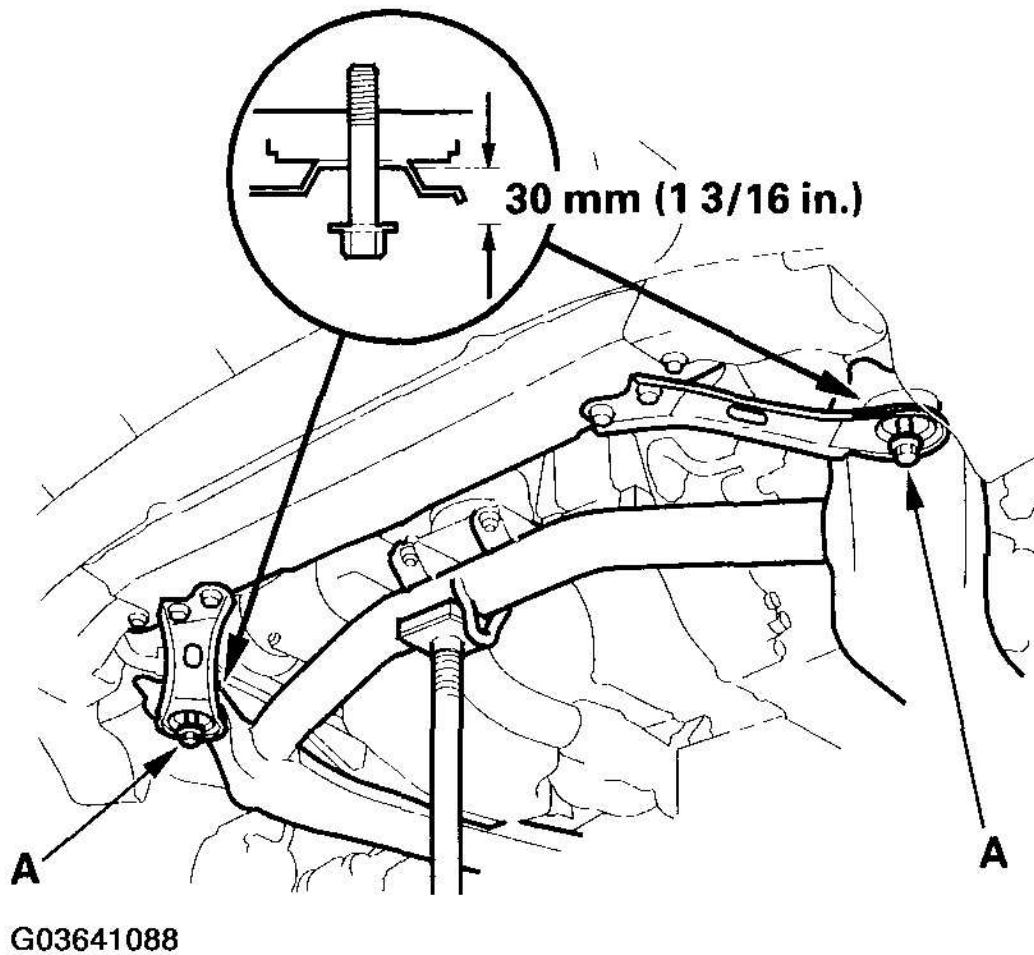
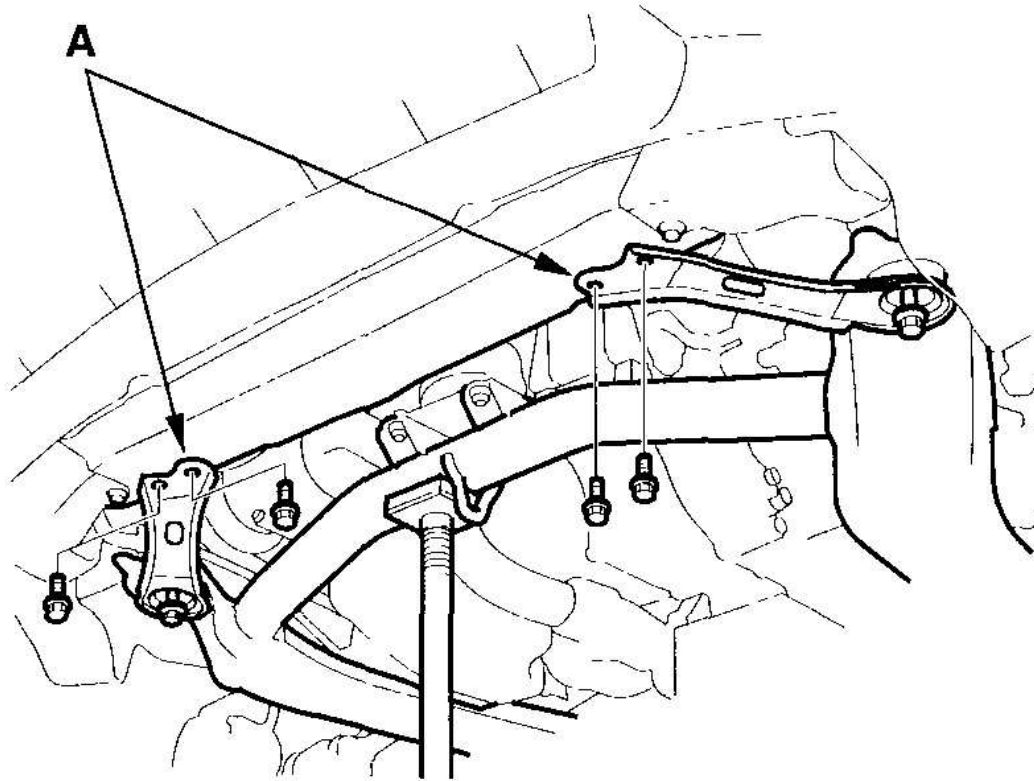


Fig. 59: Identifying 14 mm Flange Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

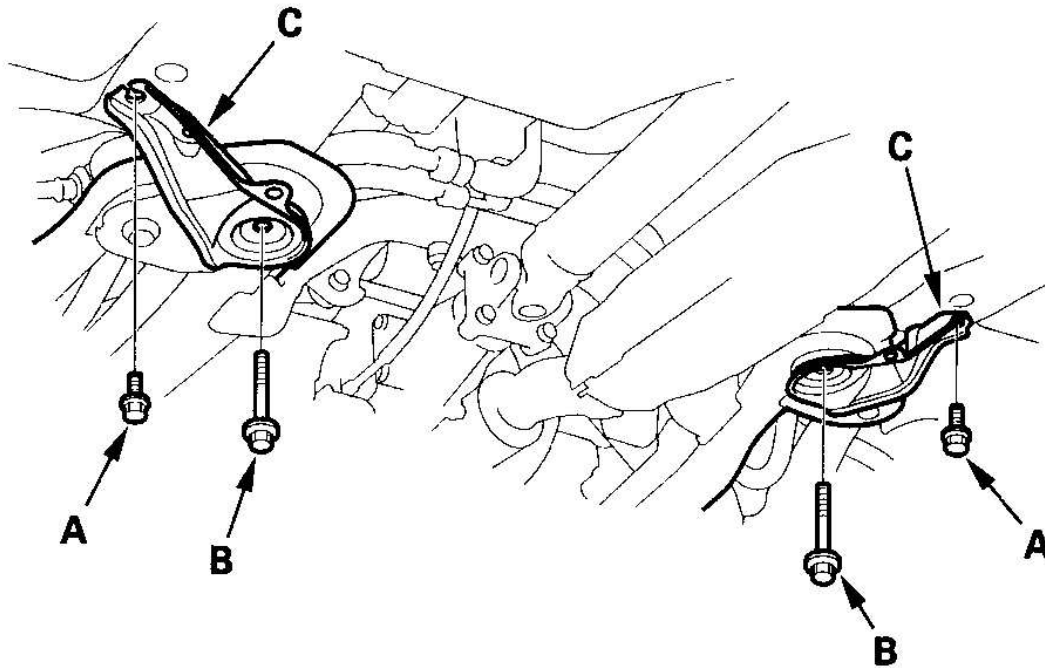
21. Remove the four 12 mm flange bolts from the front suspension subframe front brackets (A).



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Fig. 60: Removing Four 12 mm Flange Bolts From Front Suspension Subframe Front Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

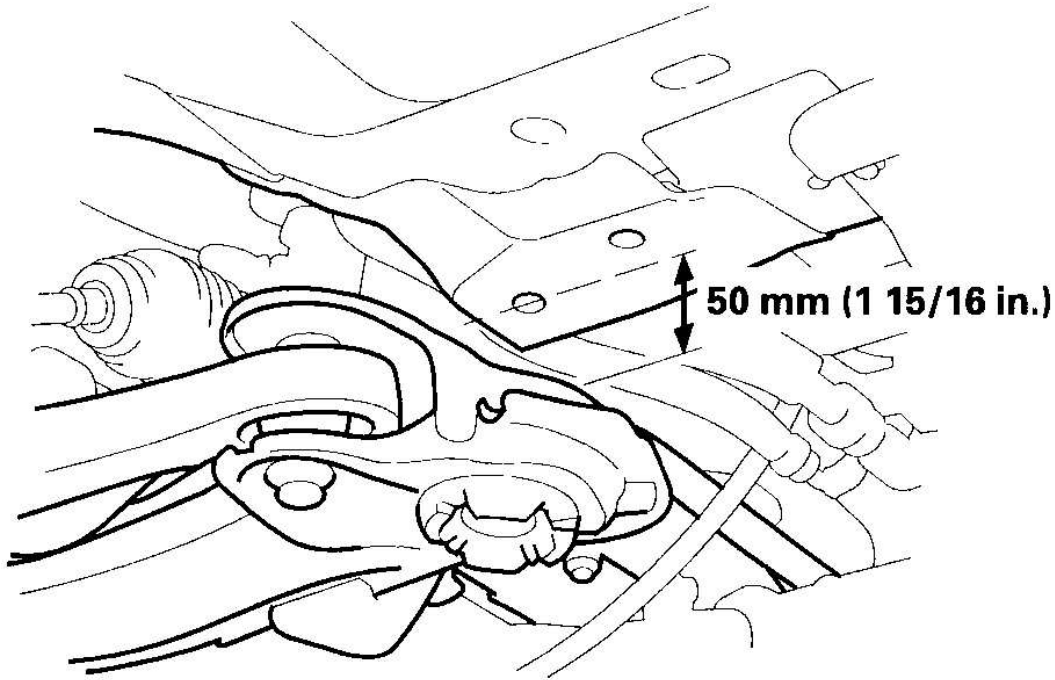
22. Support the transfer case securely by raising the transmission jack, then remove the two 12 mm flange bolts (A).



G03641090

Fig. 61: Removing 12 mm Flange Bolts And 14 mm Special Bolts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

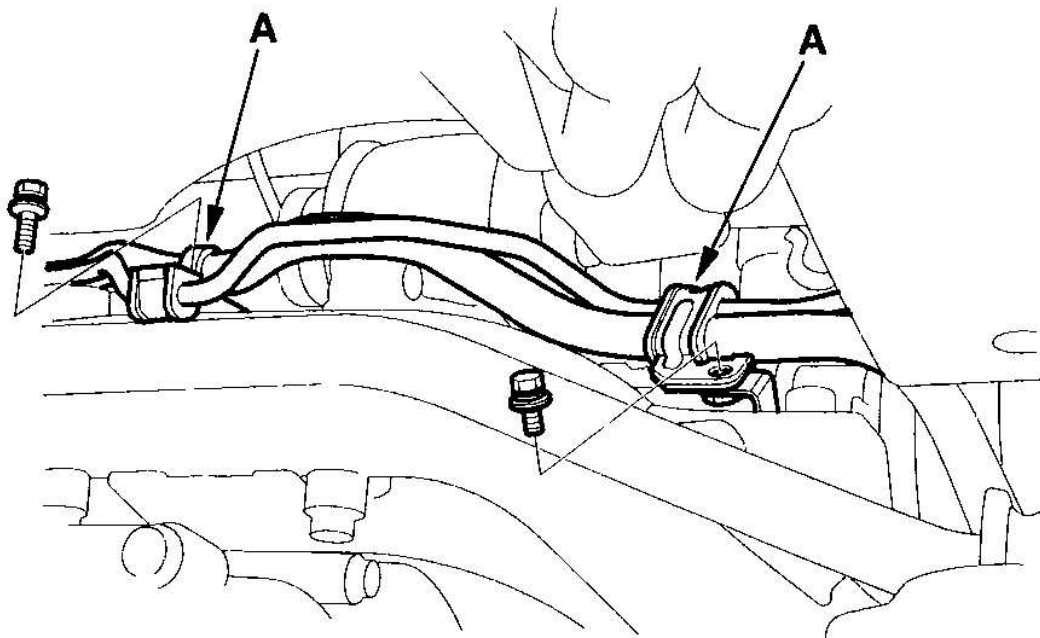
23. Remove the two 14 mm special bolts (B) and front suspension subframe rear brackets (C) from the front subframe.
24. Lower the transmission jack slowly until the front suspension subframe has dropped about 50 mm (1 15/16 in.).



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Fig. 62: Identifying Front Suspension Subframe Dropped Specification
Courtesy of AMERICAN HONDA MOTOR CO., INC.

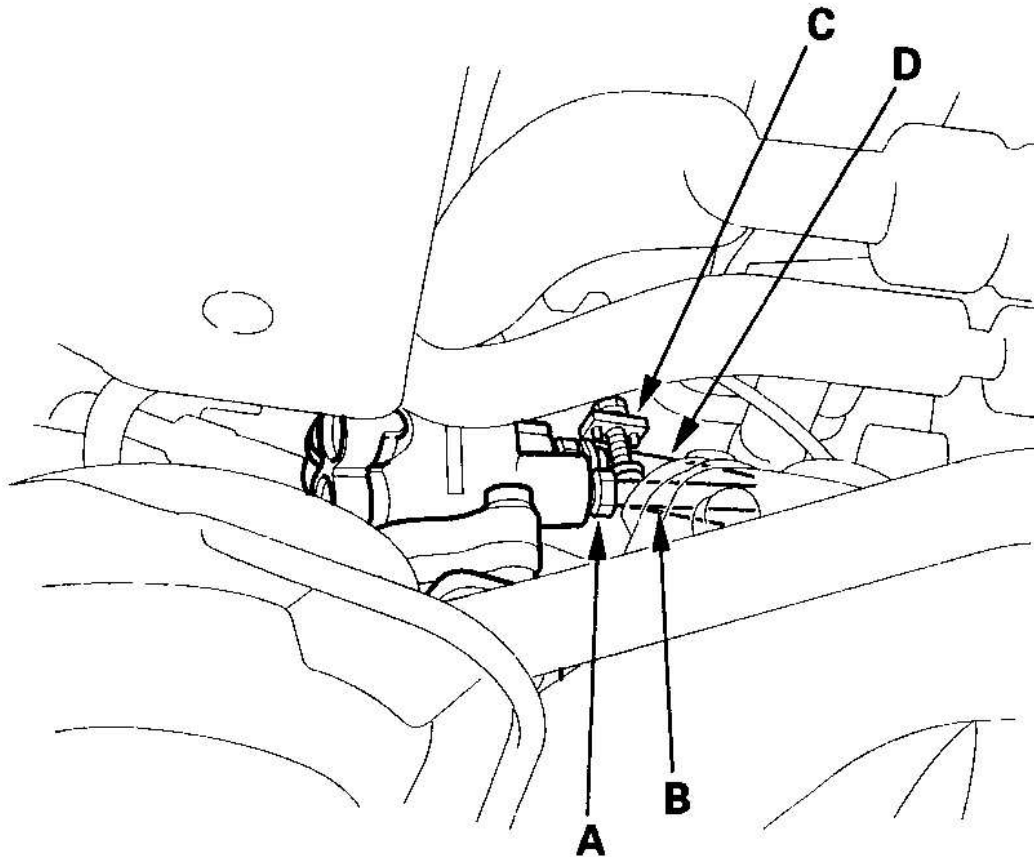
25. Remove the P/S line mounting brackets (A) from the front suspension subframe and gearbox mounting bracket.



G03641092

Fig. 63: Removing P/S Line Mounting Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Loosen the 16 mm flare nut (A), and disconnect the feed line (B).

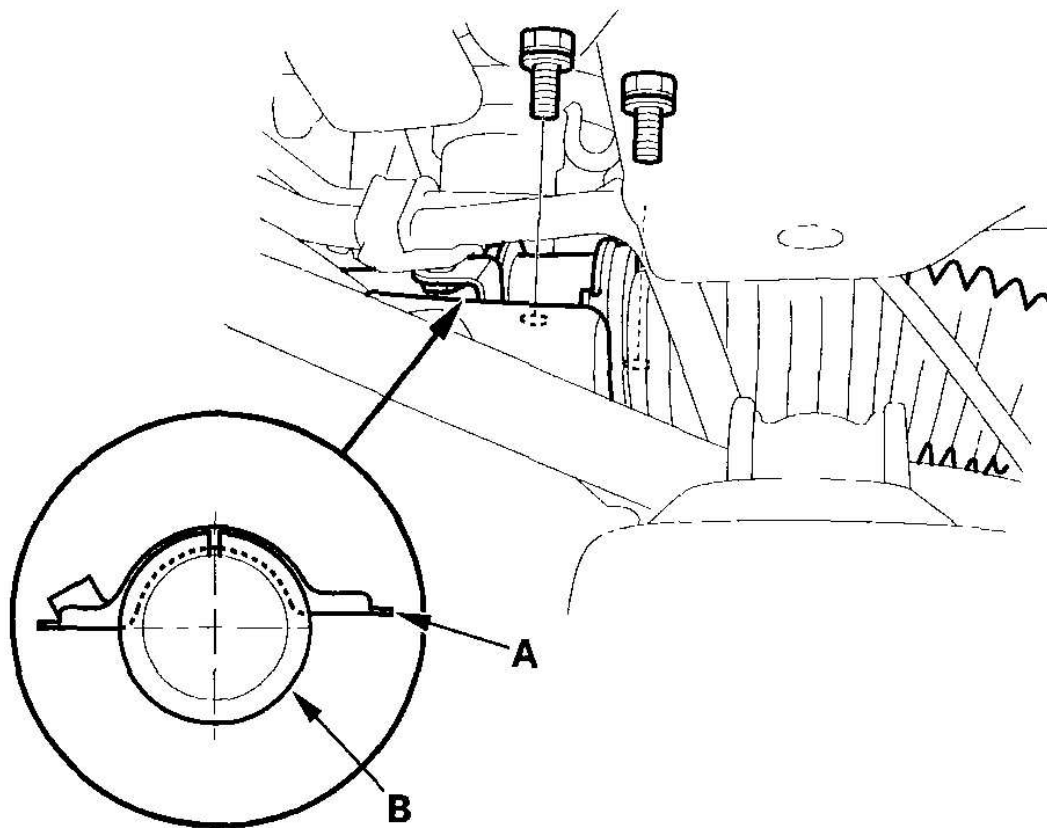


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Fig. 64: Disconnecting Feed Line

Courtesy of AMERICAN HONDA MOTOR CO., INC.

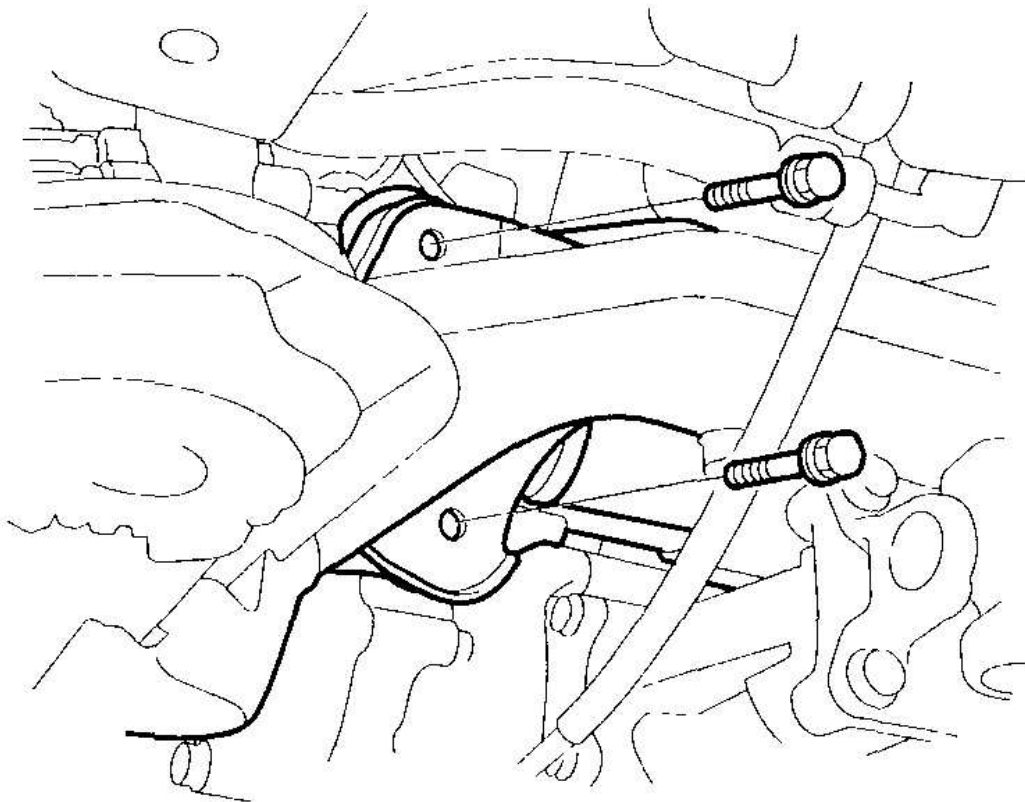
27. Loosen the adjustable hose clamp (C) and disconnect the return hose (D).
28. Remove the two 10 mm flange bolts from the right side of the steering gearbox, then remove the mounting bracket (A) and cushion (B).



G03641094

Fig. 65: Removing Mounting Bracket And Cushion
Courtesy of AMERICAN HONDA MOTOR CO., INC.

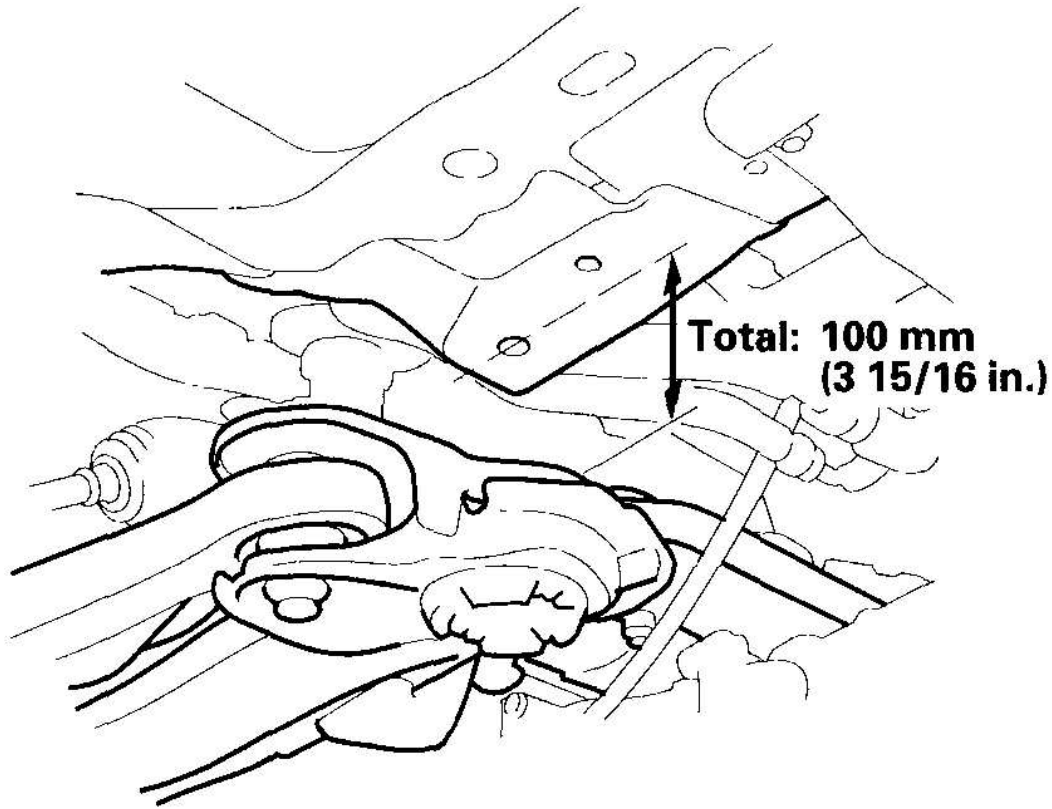
29. Remove the two 10 mm flange bolts from the left side of the gearbox.



G03641095

Fig. 66: Removing Two 10 mm Flange Bolts From Left Side Of Gearbox
Courtesy of AMERICAN HONDA MOTOR CO., INC.

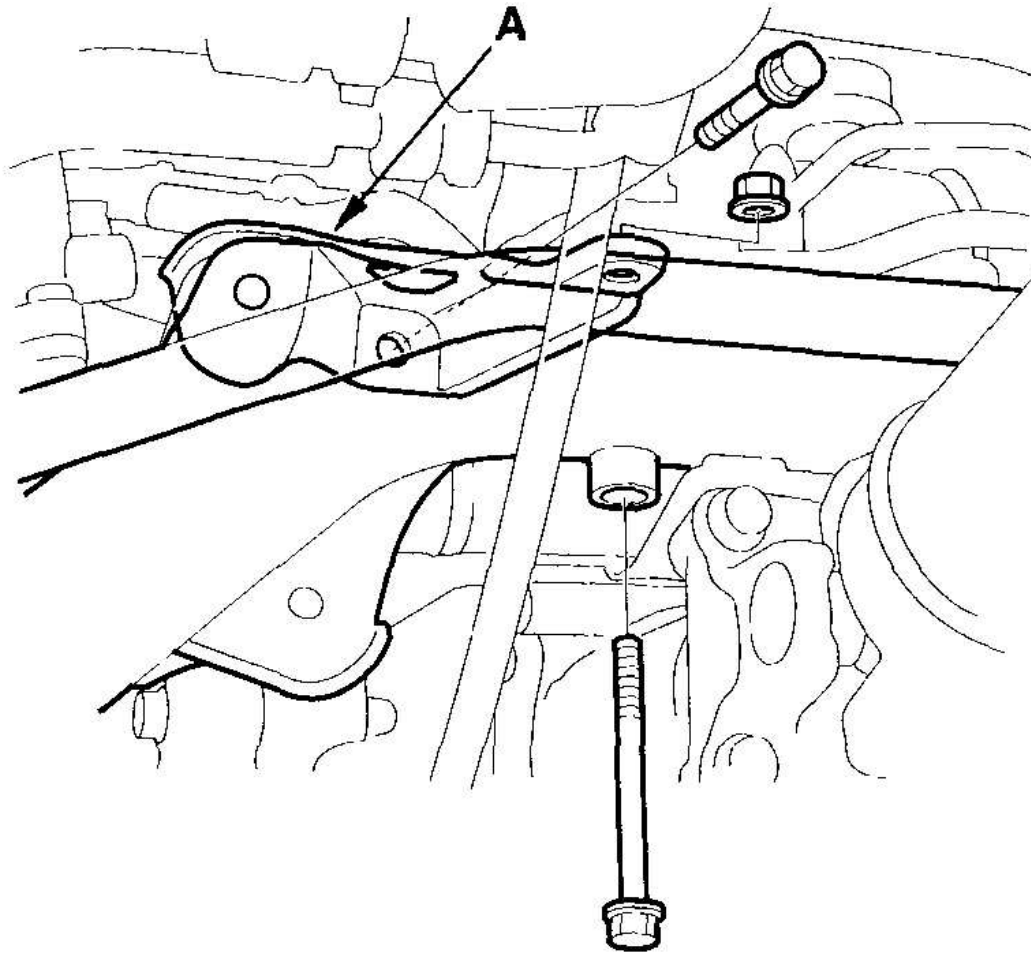
30. Lower the transmission jack slowly until the front suspension subframe has dropped 100 mm (3 15/16 in.) total.



G03641096

Fig. 67: Identifying Front Suspension Subframe Dropping Dimension
Courtesy of AMERICAN HONDA MOTOR CO., INC.

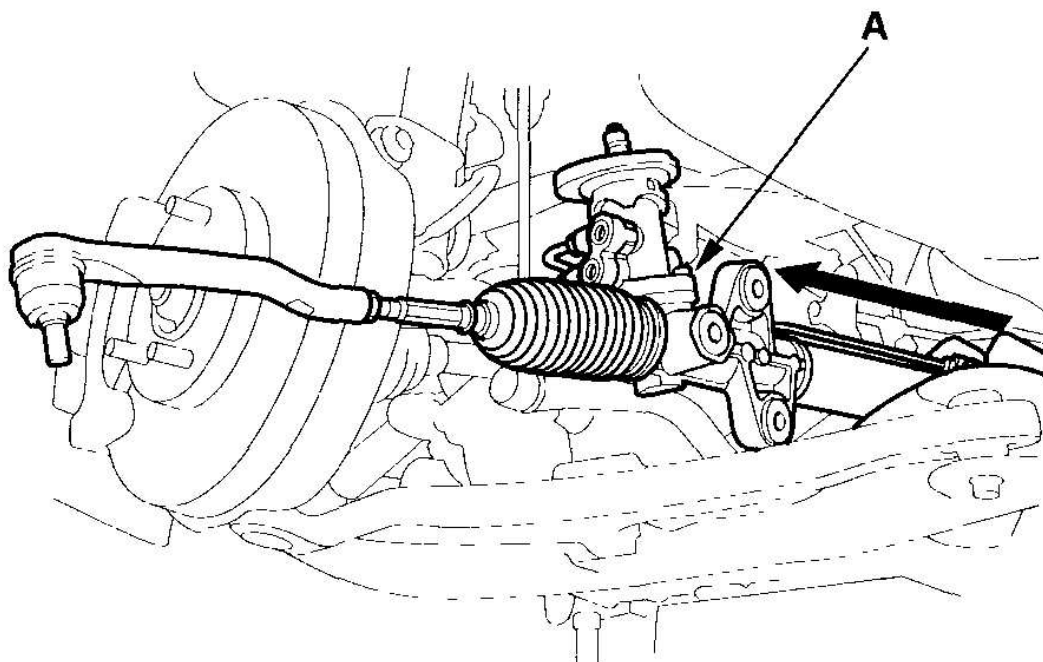
31. Remove the gearbox stiffener bracket (A) from the left side of the front suspension subframe.



G03641097

Fig. 68: Removing Gearbox Stiffener Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Slide the steering gearbox (A) between the body and front suspension subframe toward the left, and remove the steering gearbox.



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Fig. 69: Identifying Steering Gearbox

Courtesy of AMERICAN HONDA MOTOR CO., INC.

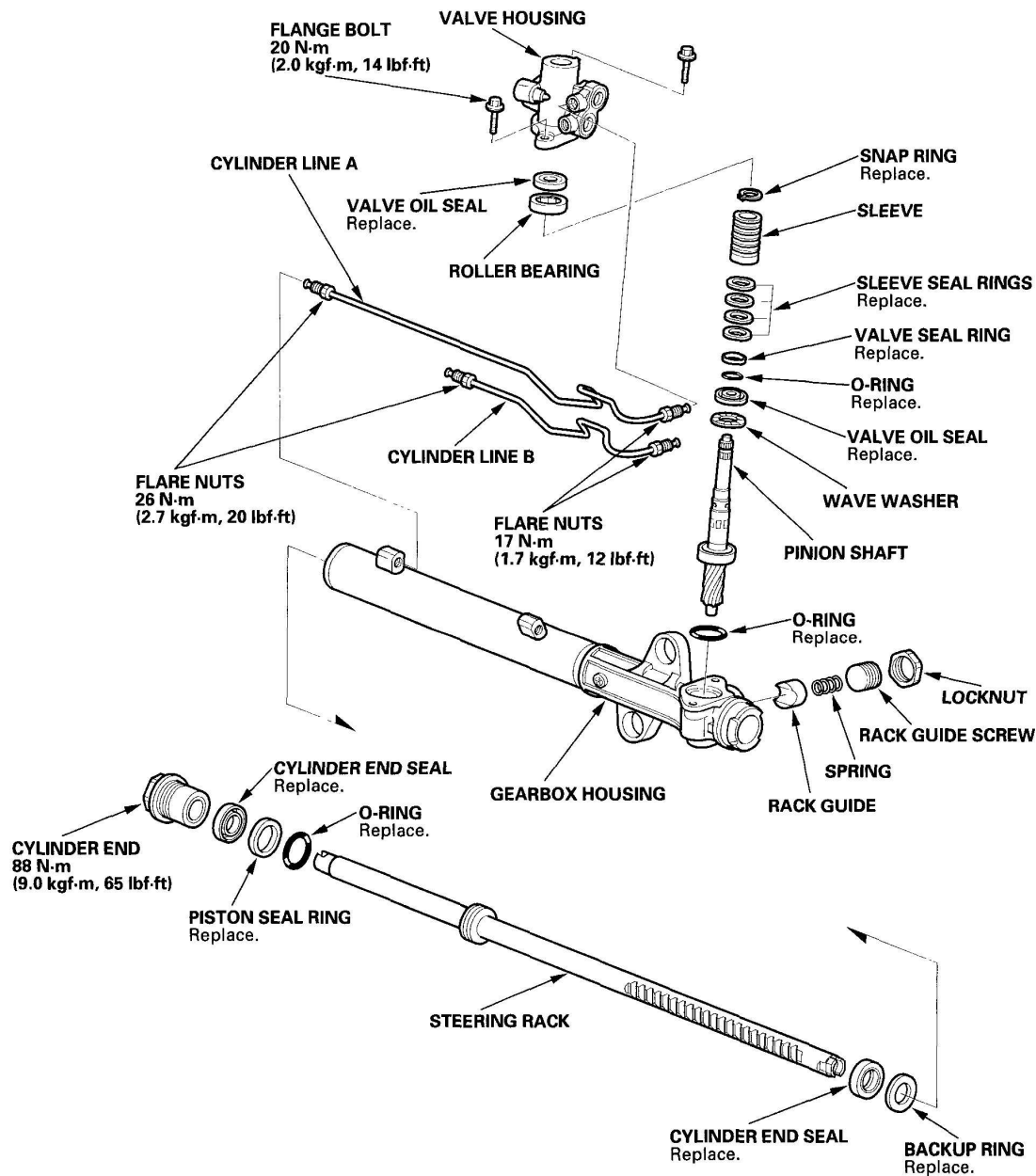
33. After removing the steering gearbox, make sure that no power steering fluid gets on the gearbox mount cushions, gearbox housing, surface of the front subframe and stiffener. Wipe off any spilled fluid at once.

STEERING GEARBOX OVERHAUL

EXPLODED VIEW

2006 Acura MDX

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G03641099

Fig. 70: Exploded View Of Steering Gearbox Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Cylinder end seal remover attachment 07TAF-SZ50100
- Pilot collar 07GAF-PH70100
- Valve seal ring sizing tool 07NAG-SR3090A

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- Ball joint boot clip guide 07974-SA50800
- Sleeve seal ring sizing tool 07974-SA5020A or 07974-SA50200
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Piston seal ring guide 07ZAG-S3VA100
- Piston seal ring sizing tool 07ZAG-S3VA200
- Pincers, Oetiker 1098 or equivalent, commercially available

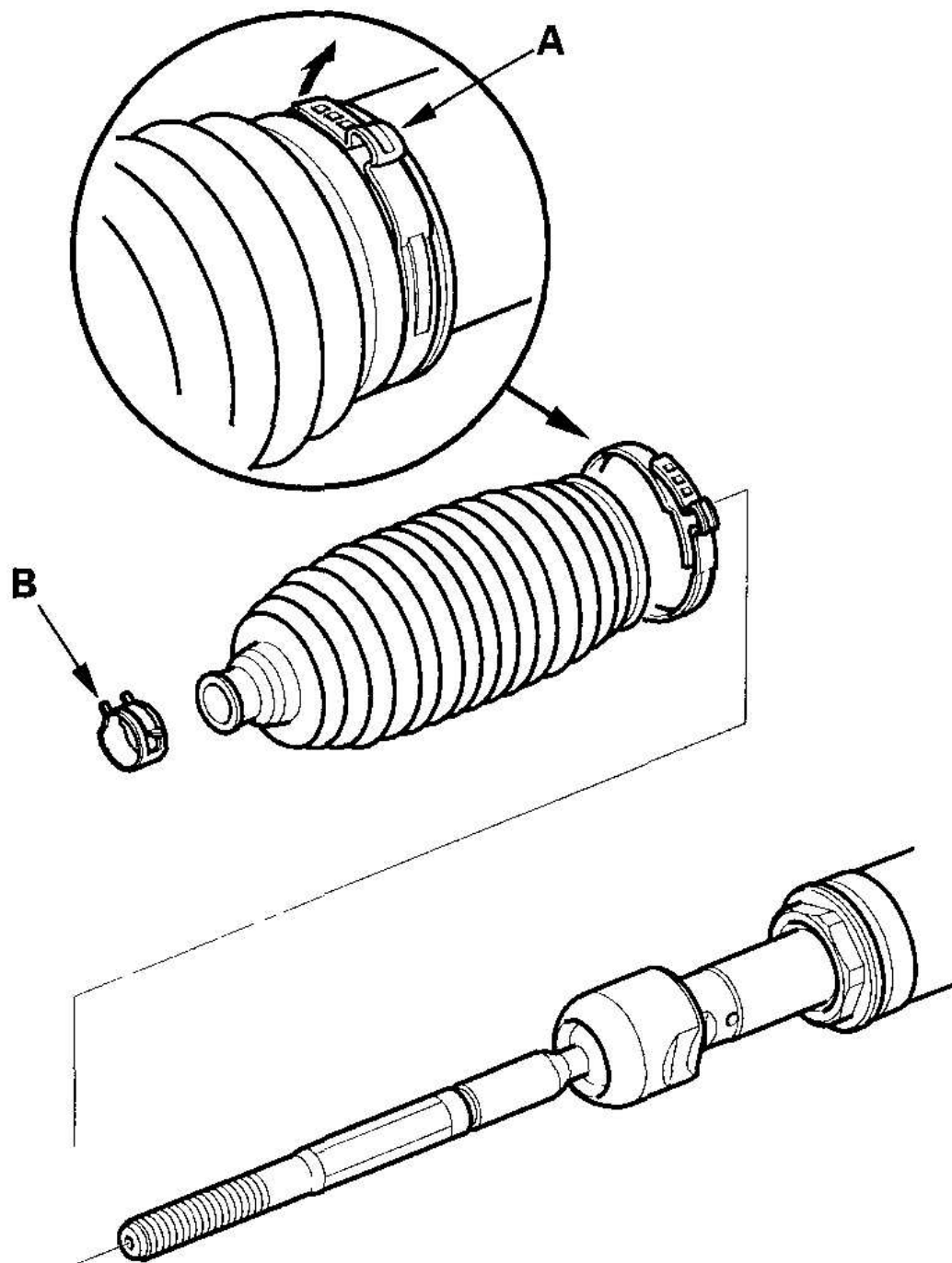
NOTE: Refer to the Exploded View as needed during this procedure.

Removal

1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL**).

Disassembly

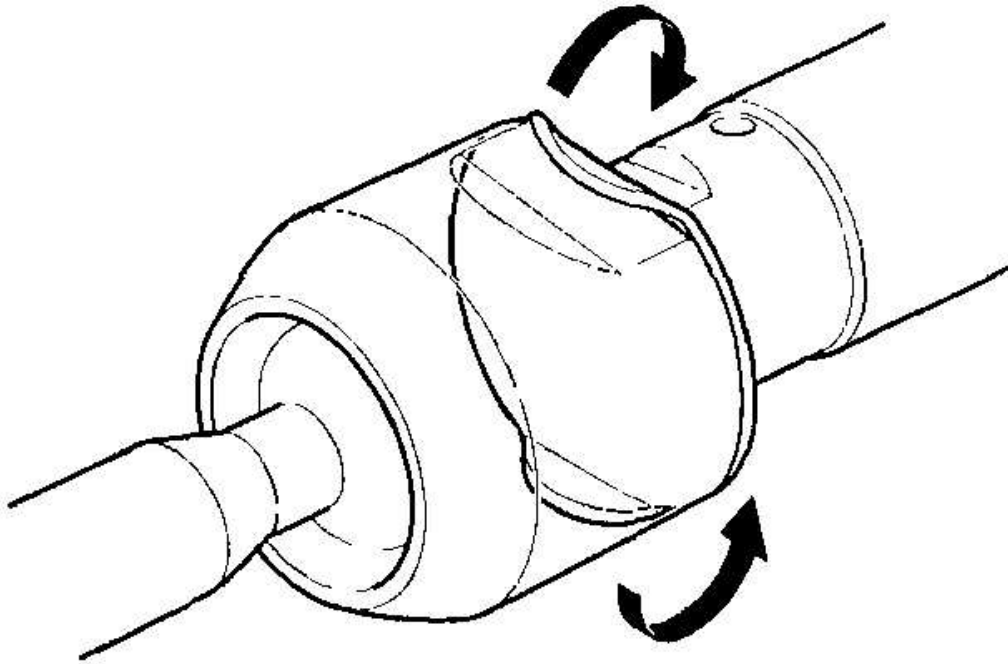
2. Remove the boot bands (A) and tie-rod clips (B). Pull the boots away from the ends of the steering gearbox.



G03641100

Fig. 71: Removing Boot Bands And Tie-Rod Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Unbend the lock washer.

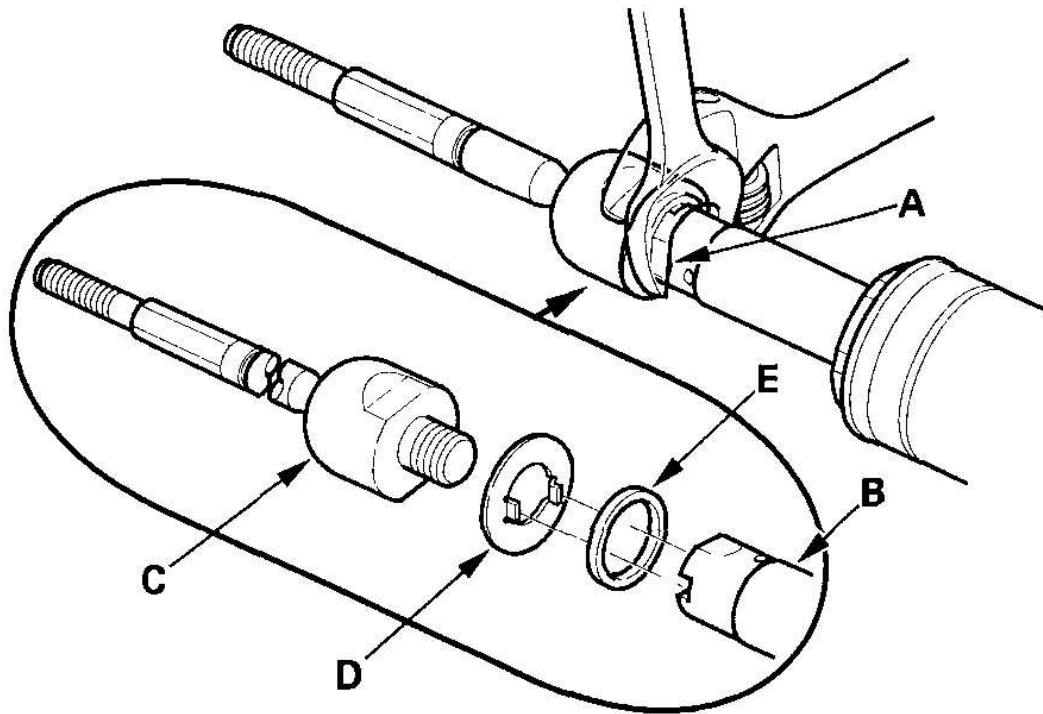


G03641101

Fig. 72: Unbending Lock Washer

Courtesy of AMERICAN HONDA MOTOR CO., INC.

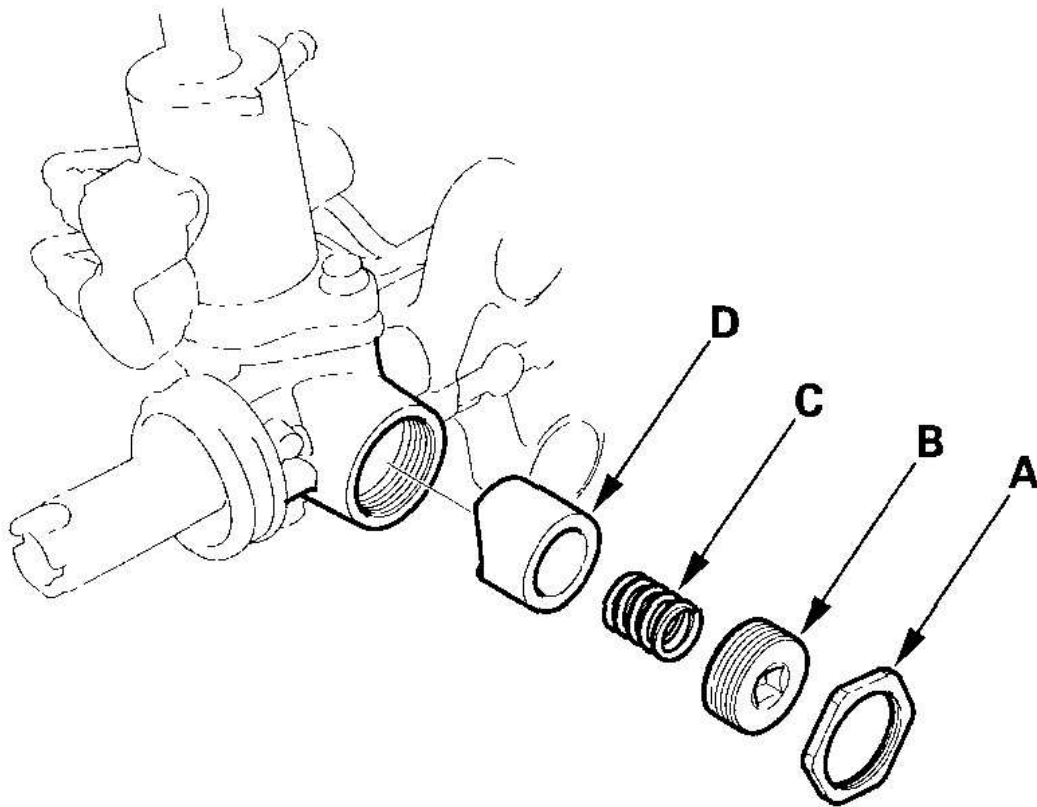
4. Hold the flat surface sections (A) of the steering rack (B) with a wrench, and unscrew both rack ends (C) with another wrench. Be careful not to damage the rack surface with the wrench. Remove the lock washer (D) and stop rubber (E).



G03641102

Fig. 73: Holding Flat Surface Sections Of Steering Rack Using Wrench
Courtesy of AMERICAN HONDA MOTOR CO., INC.

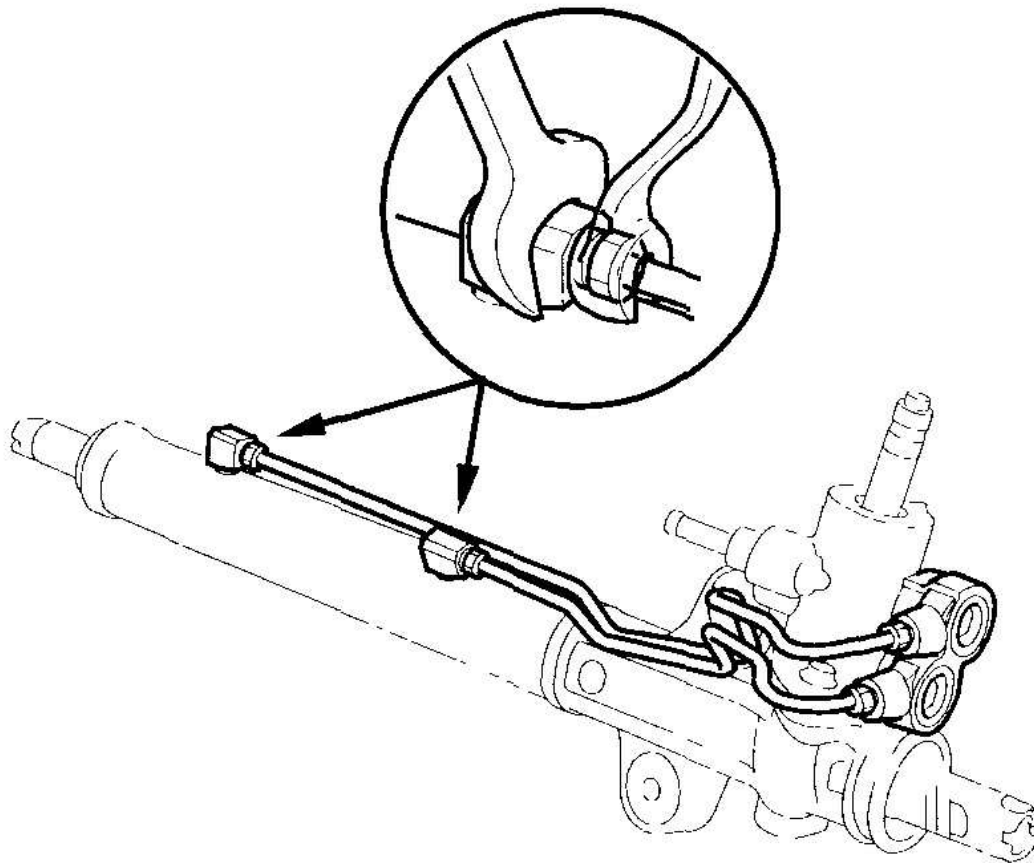
5. Loosen the locknut (A), then remove the rack guide screw (B).



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Fig. 74: Removing Spring And Rack Guide From Steering Gearbox
Courtesy of AMERICAN HONDA MOTOR CO., INC.

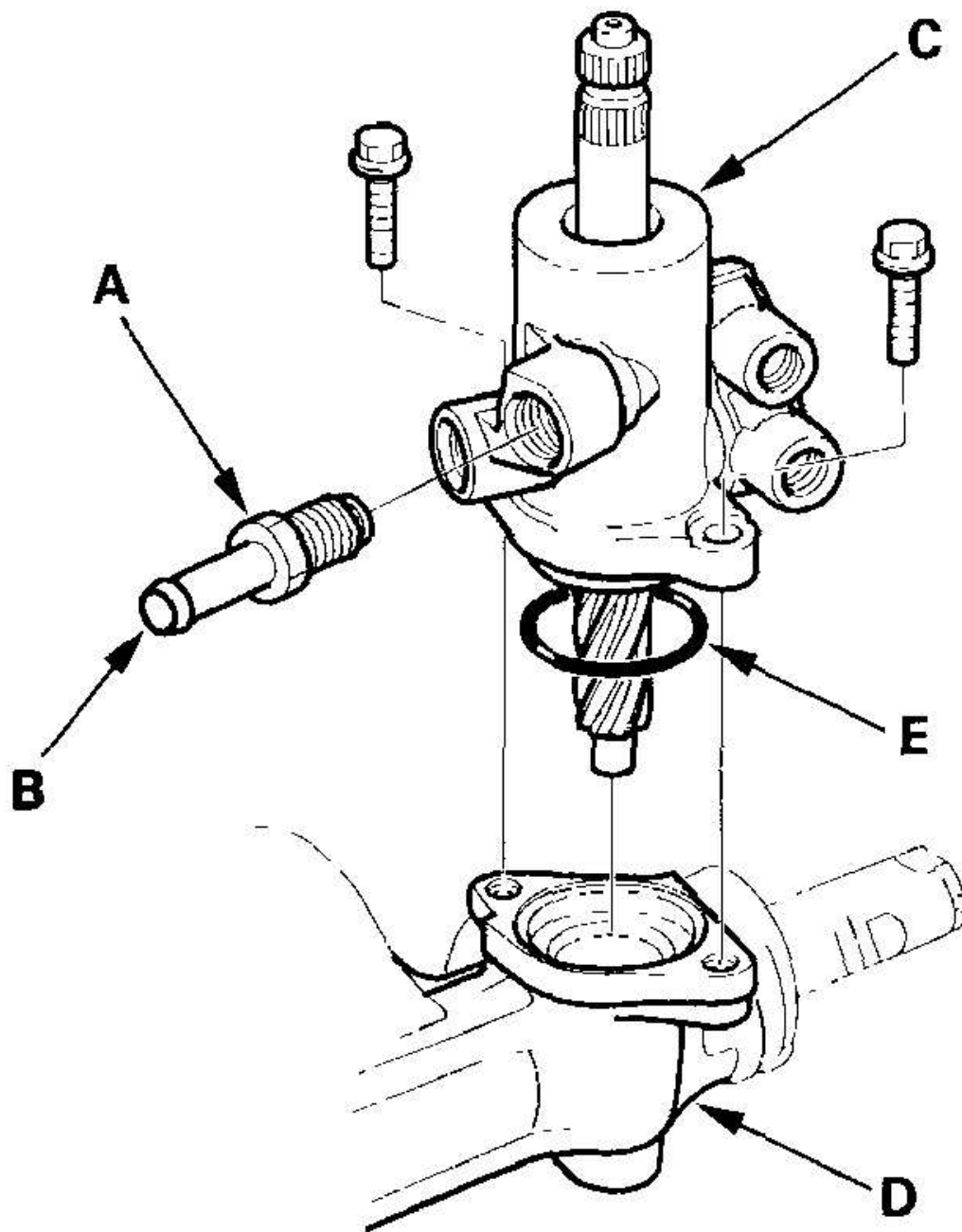
6. Remove the spring (C) and the rack guide (D) from the steering gearbox.
7. Remove the cylinder lines from the steering gearbox.



G03641104

Fig. 75: Removing Cylinder Lines From Steering Gearbox
Courtesy of AMERICAN HONDA MOTOR CO., INC.

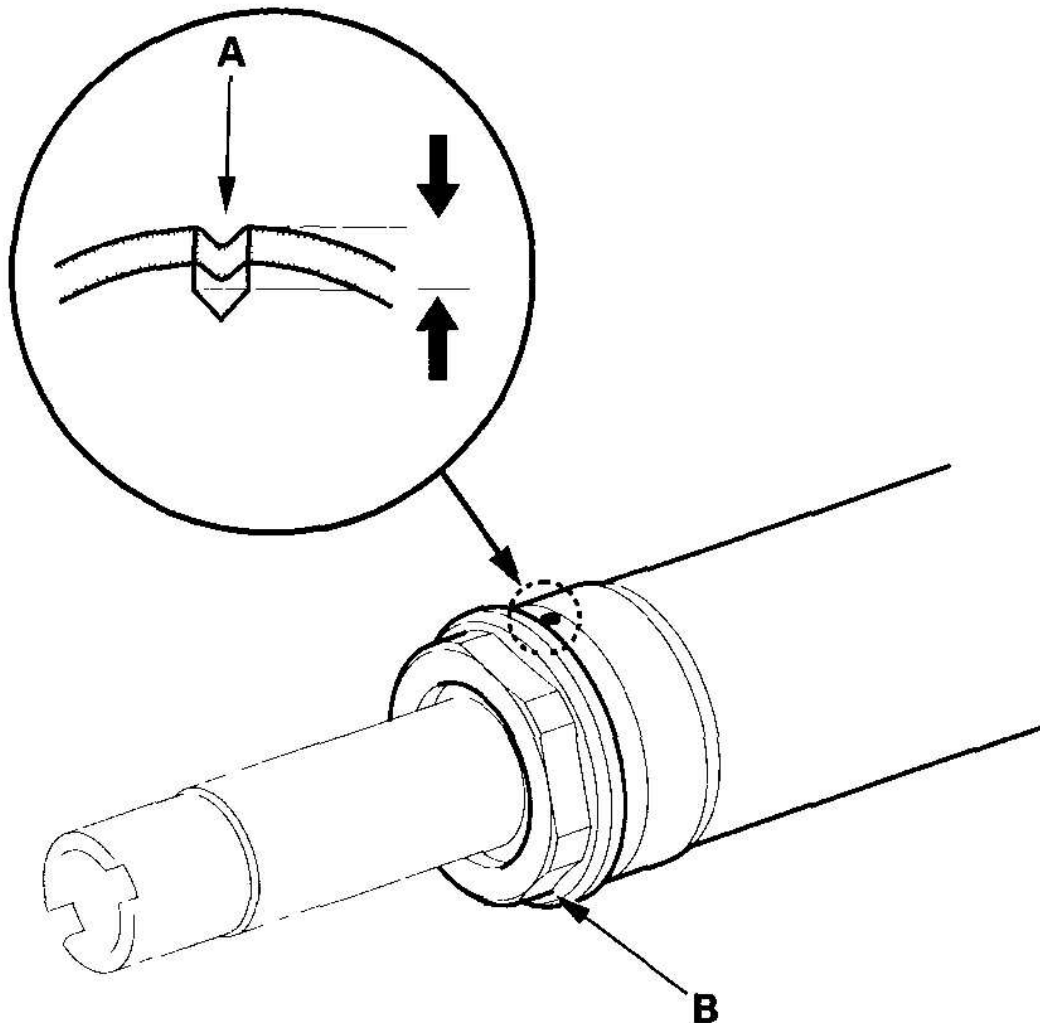
8. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.
9. Loosen the 16 mm flare nut (A), and remove the return line joint (B).



G03641105

Fig. 76: Removing Return Line Joint And Valve Body Unit
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the two flange bolts, then remove the valve body unit (C) from the steering gearbox (D). Remove the O-ring (E), and discard it.
11. Drill a 3 mm (0.12 in.) diameter hole about 2.5-3.0 mm (0.10-0.12 in.) in depth in the staked point (A) on the cylinder. Do not allow metal shavings to enter the cylinder housing. After removing the cylinder end (B), remove any burrs at the staked point.

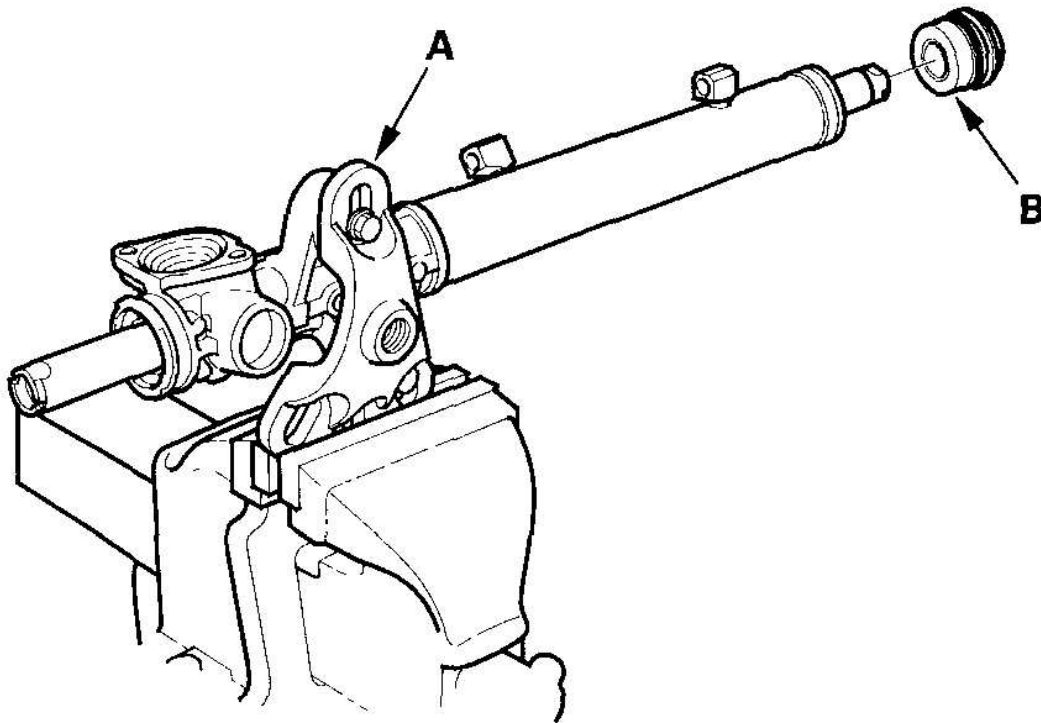


G03641106

Fig. 77: Identifying Staked Point On Cylinder
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Attach the yoke of a universal puller (commercially available) (A) to the steering gearbox mounts with bolts. Clamp the yoke in a vise with soft jaws as shown, then loosen and remove the cylinder end

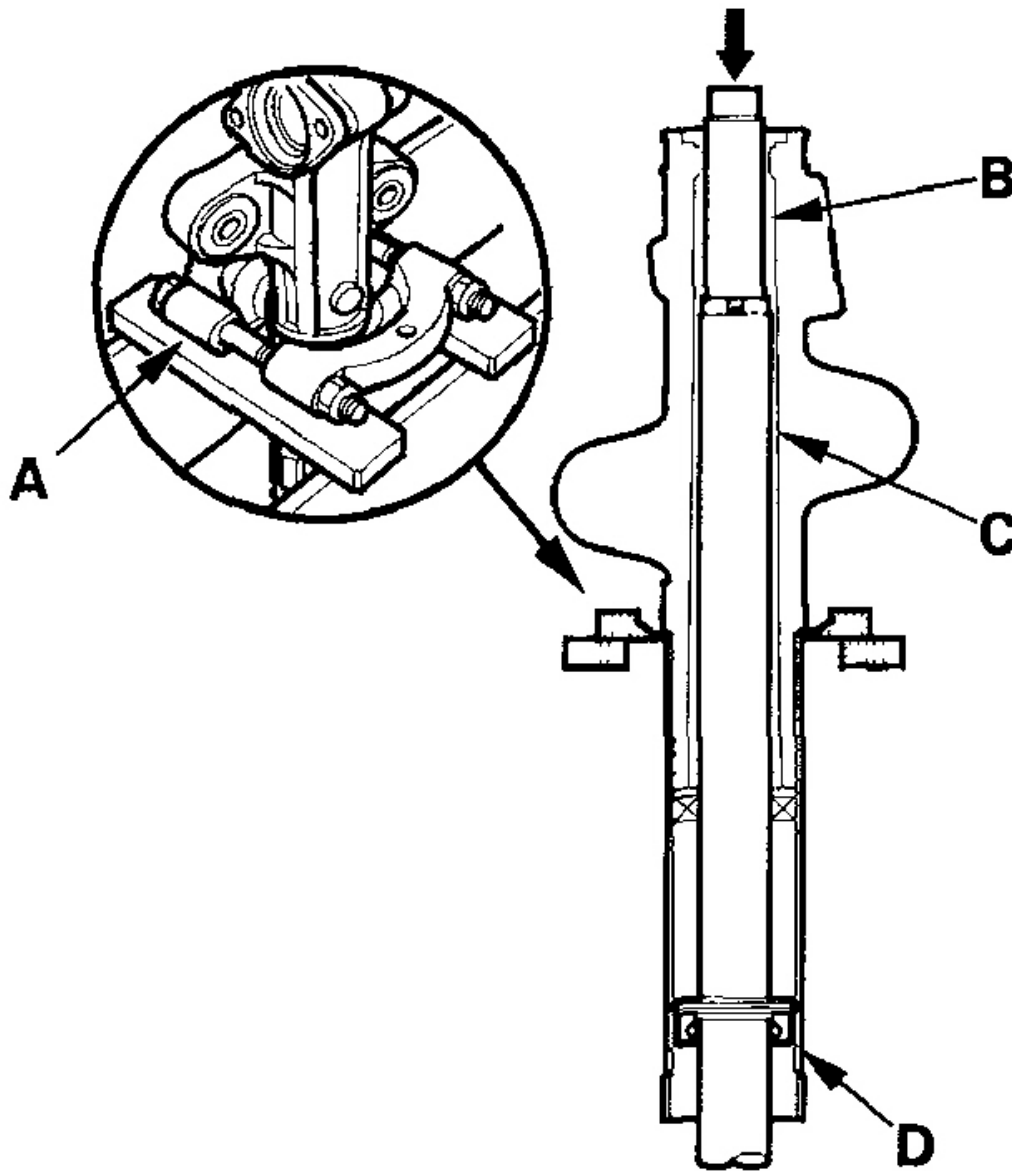
(B). Do not clamp the cylinder housing or gearbox housing in the vise.



G03641107

Fig. 78: Clamping Yoke In Vise Using Soft Jaws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install a commercially available bearing separator (A) on the gearbox housing as shown.



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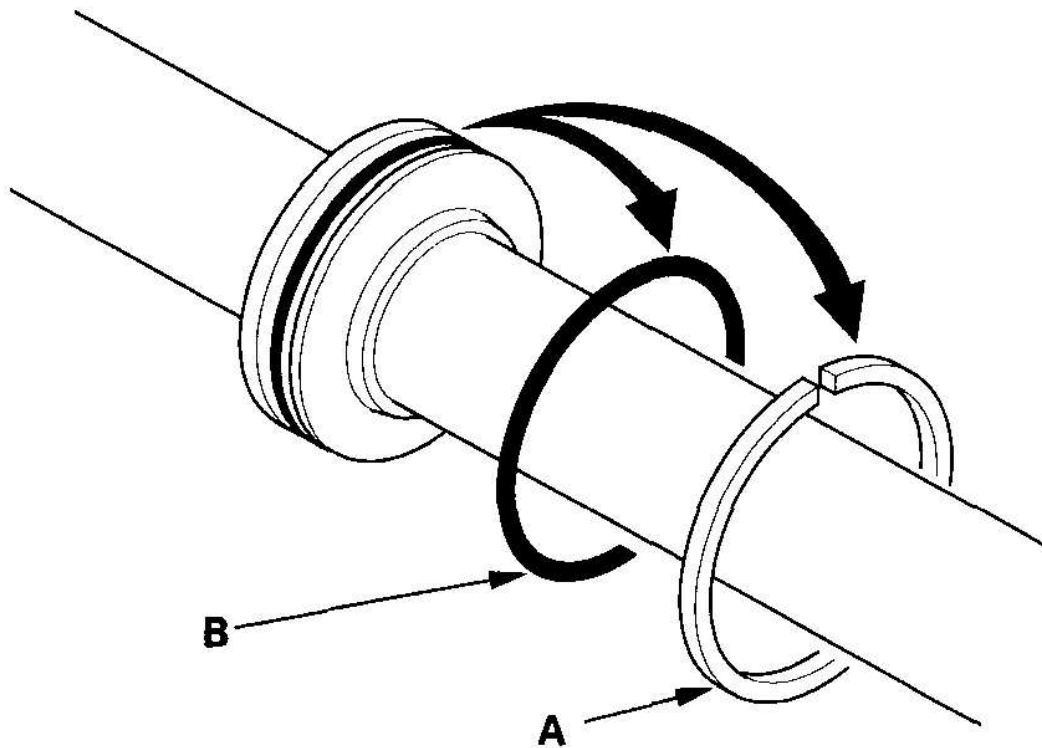
Fig. 79: Installing Bearing Separator On Gearbox Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Place an appropriately sized deep socket wrench (B) on the steering rack (C).
15. Set the steering gearbox in a press so the gearbox housing points upward, then press the cylinder end

seal (D) and steering rack out of the gearbox. Hold the steering rack to keep it from falling when pressed clear. Be careful not to damage the inner surface of the cylinder housing with the tool.

16. Remove the cylinder end seal from the steering rack.

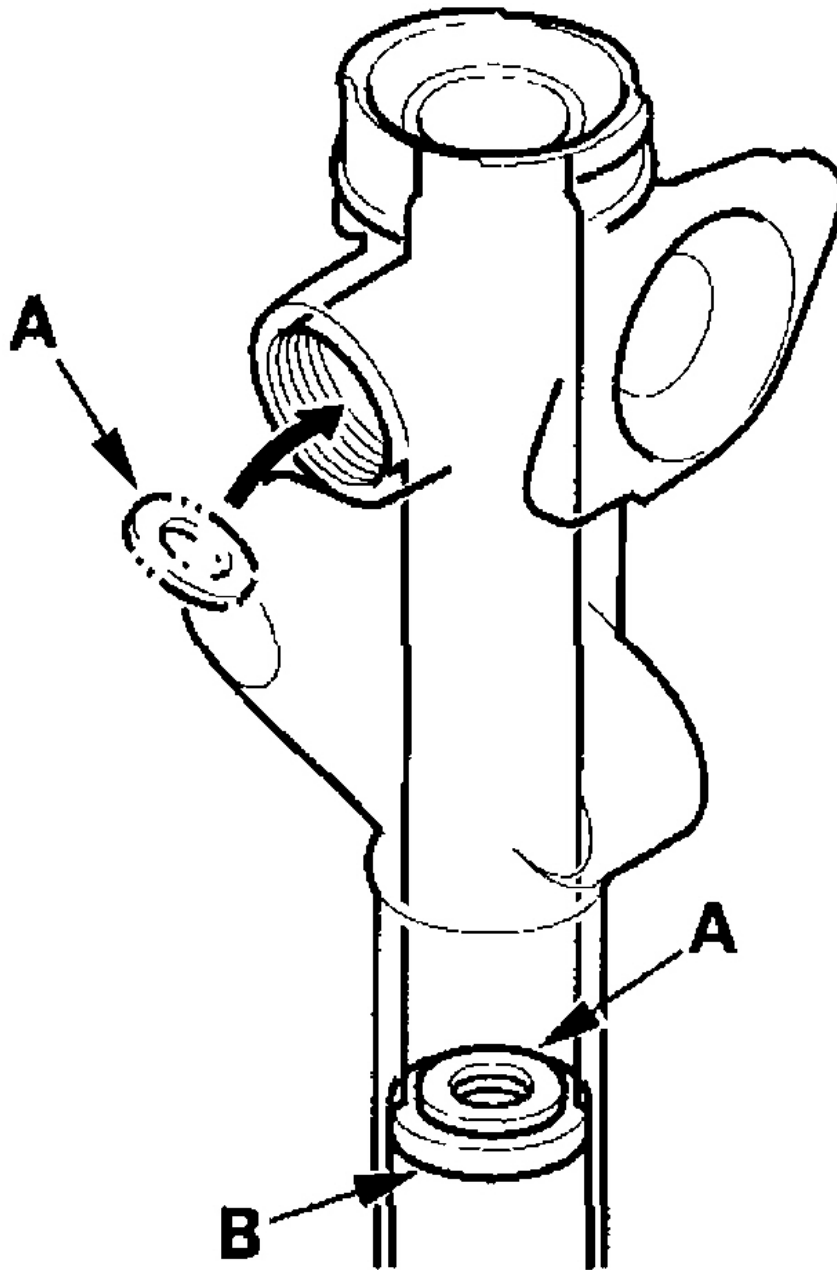
17. Carefully pry the piston seal ring (A) and O-ring (B) off the rack piston. Be careful not to damage the inside of the seal ring groove and piston edges when removing the seal ring.



G03641109

Fig. 80: Prying Piston Seal Ring And O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install a washer (O.D. 27.5 mm, P/N 94103-10400) (A) so it will fit through the rack guide hole of the gearbox housing, then position the washer on the cylinder end seal (B). Make sure that the washer is securely positioned on the cylinder end seal edges.



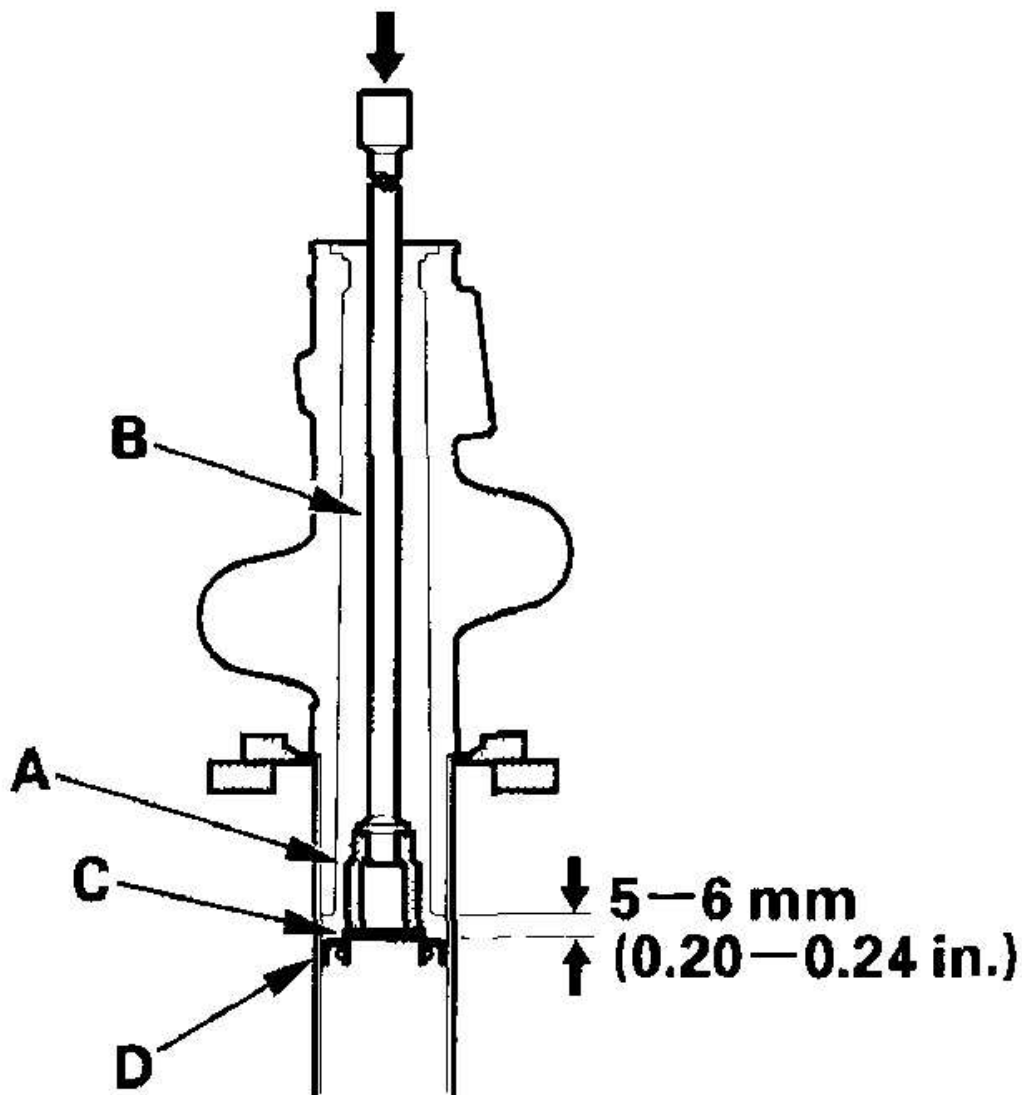
G03641110

Fig. 81: Installing Washer

Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the socket wrench with a 27.5 mm O.D. (A) onto the 24 "long 3/8" drive extension (B), and

carefully place it on the washer (C).



G03641111

Fig. 82: Installing Socket Wrench On Drive Extension
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Set the steering gearbox in a press so the gearbox housing points upward, then push out the cylinder end seal (D) 5-6 mm (0.20-0.24 in.) by pressing on the 24 "long 3/8" drive extension end.

21. Remove the steering gearbox from the press, and remove the washer from the gearbox inside.
22. Turn the special tool so it will fit through the rack guide hole of the steering gearbox, then position the special tool on the cylinder end seal (A). Make sure that the special tool is securely positioned on the seal edges.

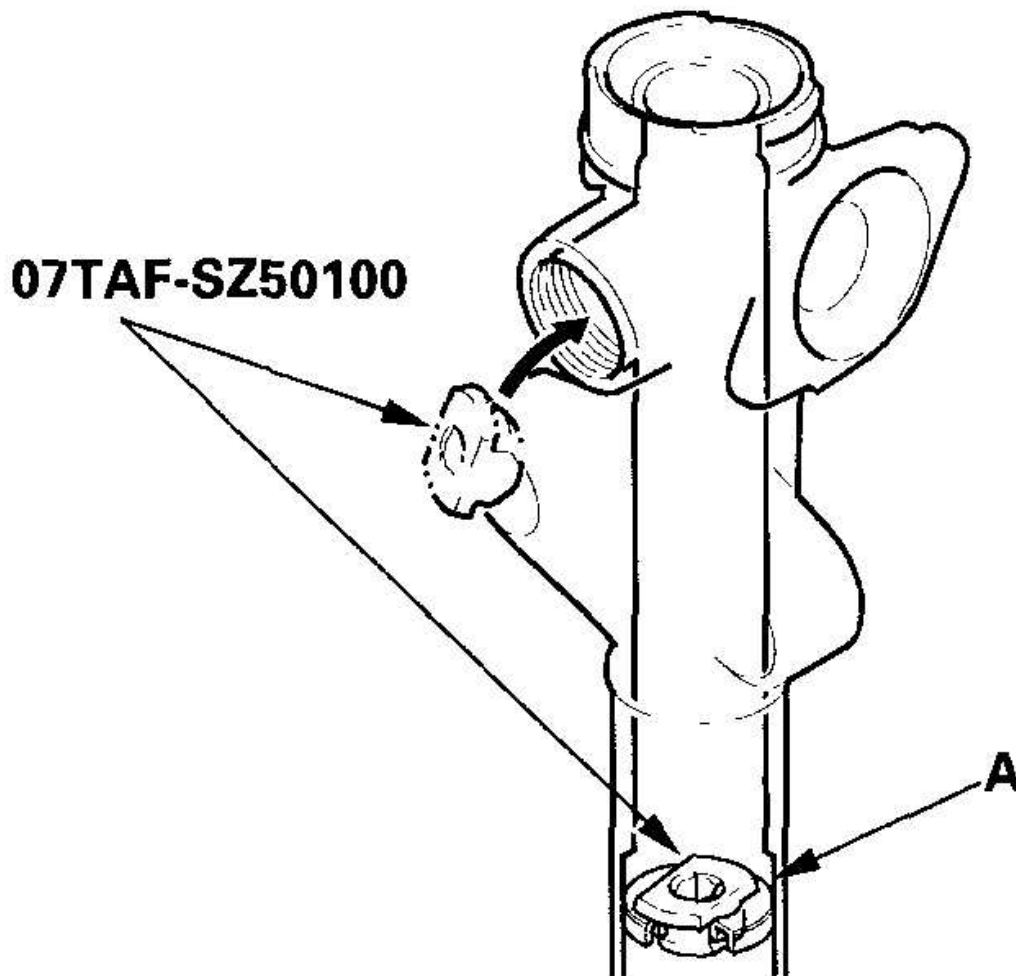
**G03641112**

Fig. 83: Positioning Special Tool On Cylinder End Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

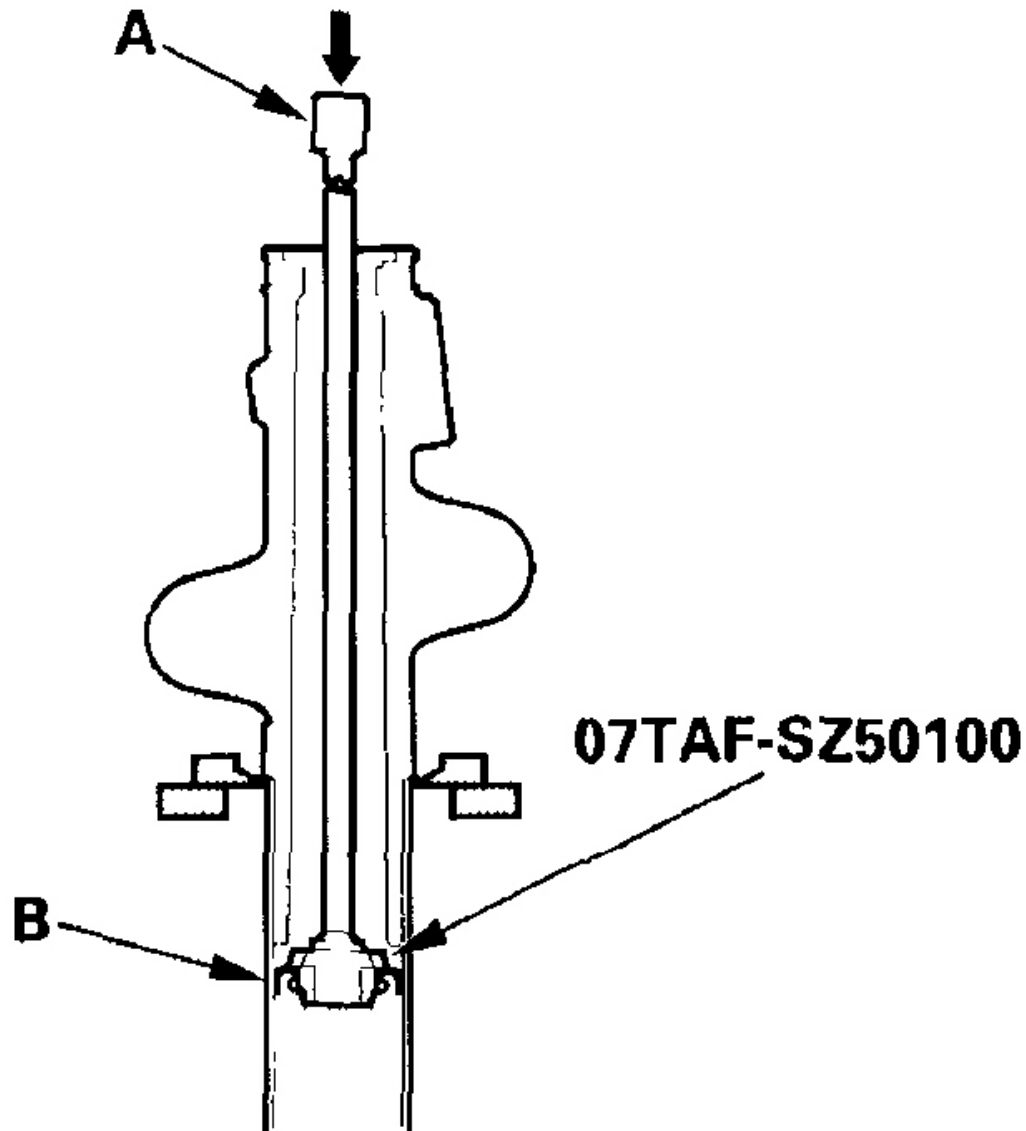
23. Insert a 24 "long 3/8" drive extension (A), on the special tool. Place the steering gearbox in a press, then remove the cylinder end seal (B) from the gearbox by pressing on the 24 "long 3/8" drive extension.

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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 steering gearbox.

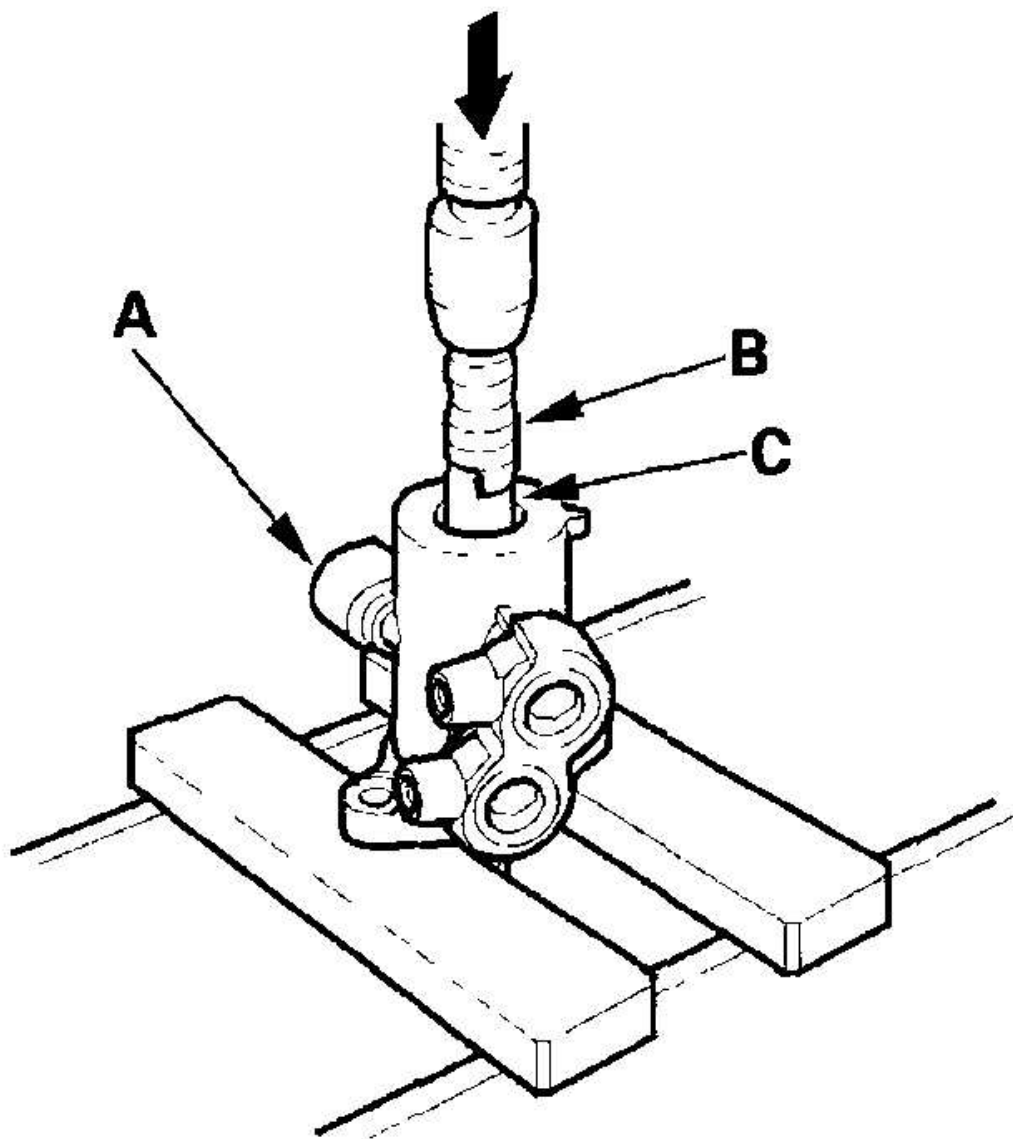


G03641113

Fig. 84: Removing Cylinder End Seal

Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Before removing the valve housing (A), apply vinyl tape (B) to the splines on the pinion shaft (C).

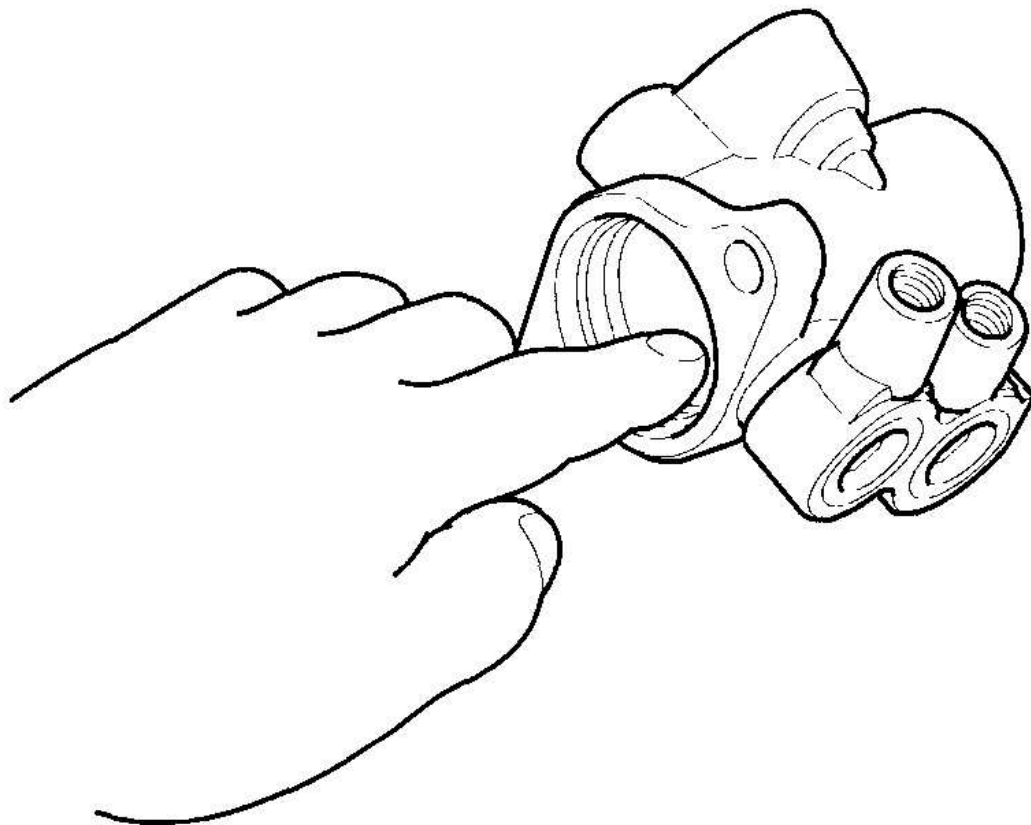


G03641114

Fig. 85: Applying Vinyl Tape To Splines On Pinion Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Separate the valve housing from the pinion shaft/valve using a press.
26. With your finger, check the inner wall of the valve housing where the seal ring slides. If there is a step in the wall, the housing is worn. Replace it.

NOTE: There may be sliding marks from the seal ring on the wall of the valve housing. Replace the valve housing only if the wall is stepped.

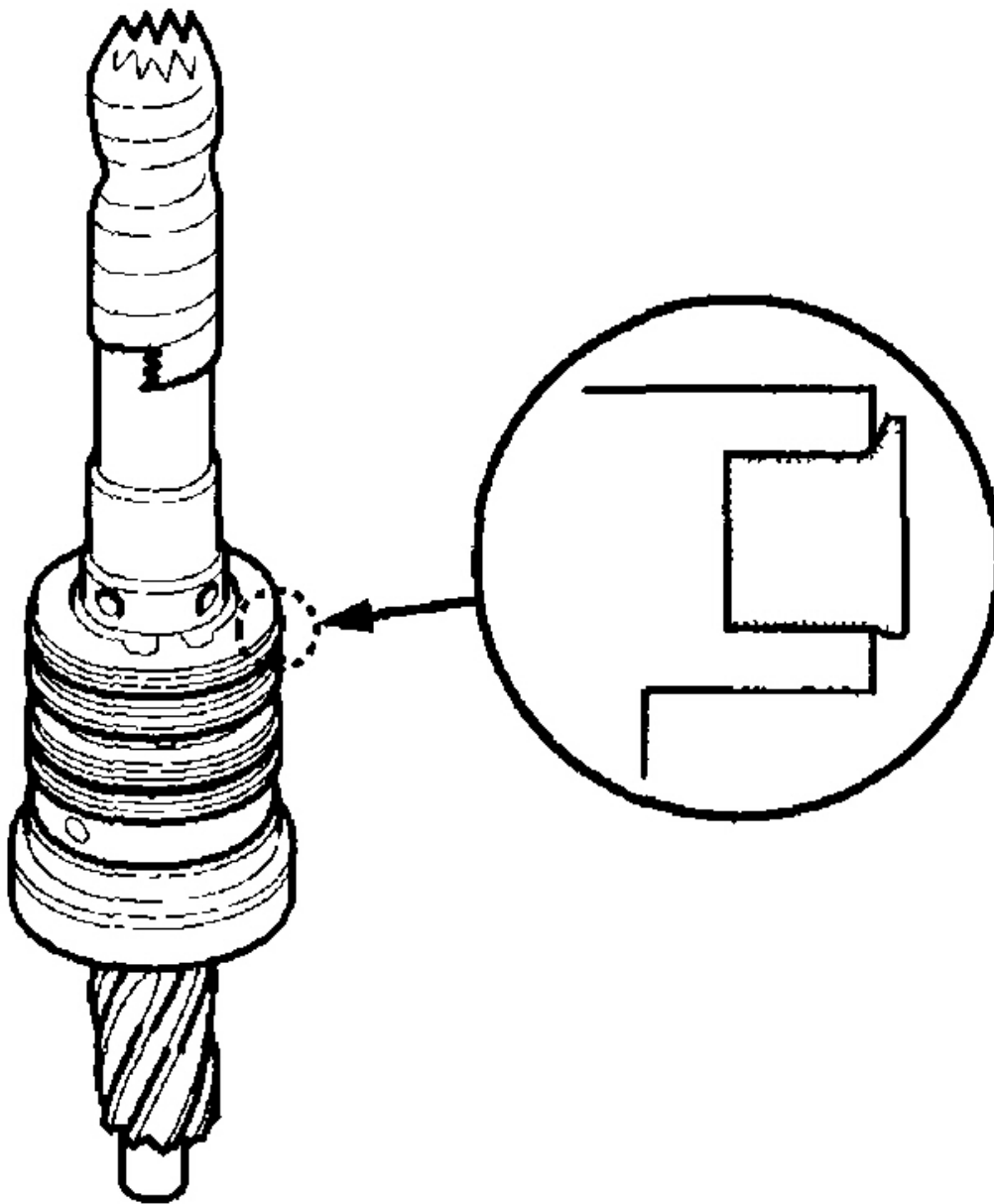


G03641115

Fig. 86: Checking Inner Wall Of Valve Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Check for wear, burrs and other damage to the edges of the grooves in the sleeve.

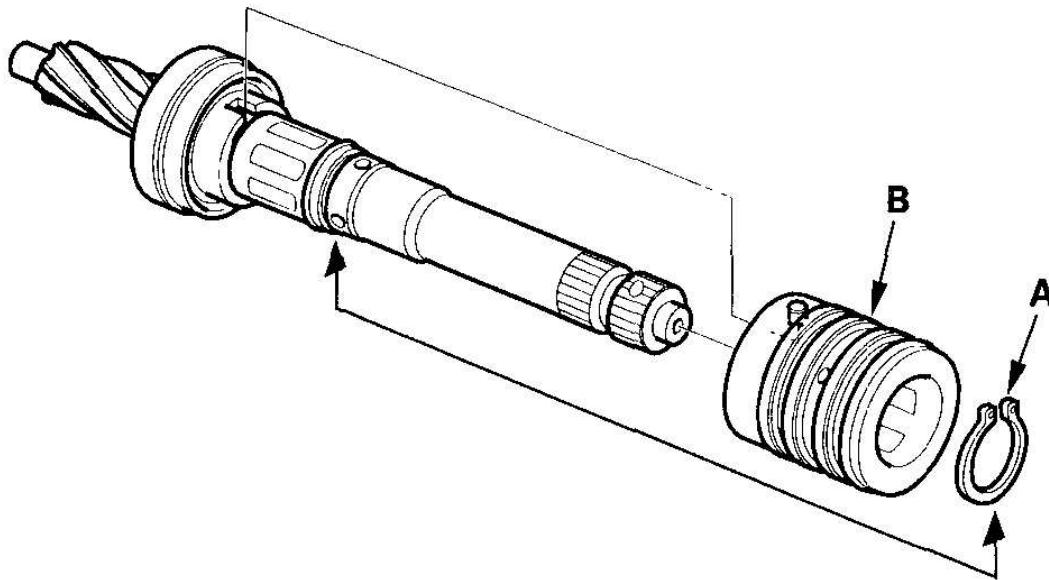
NOTE: The pinion shaft and sleeve are a precision matched set. If either the pinion shaft or sleeve must be replaced, replace both parts as a set.



G03641116

Fig. 87: Identifying Edges Of Grooves In Sleeve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

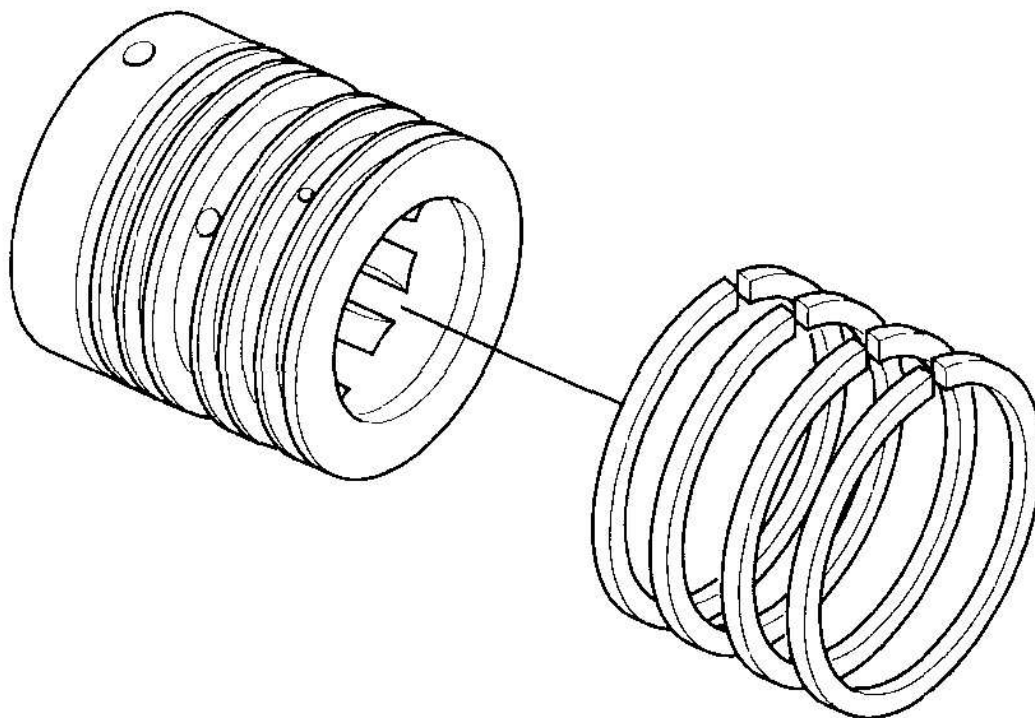
28. Remove the snap ring (A) and sleeve (B) from the pinion shaft.



G03641117

Fig. 88: Removing Snap Ring And Sleeve From Pinion Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

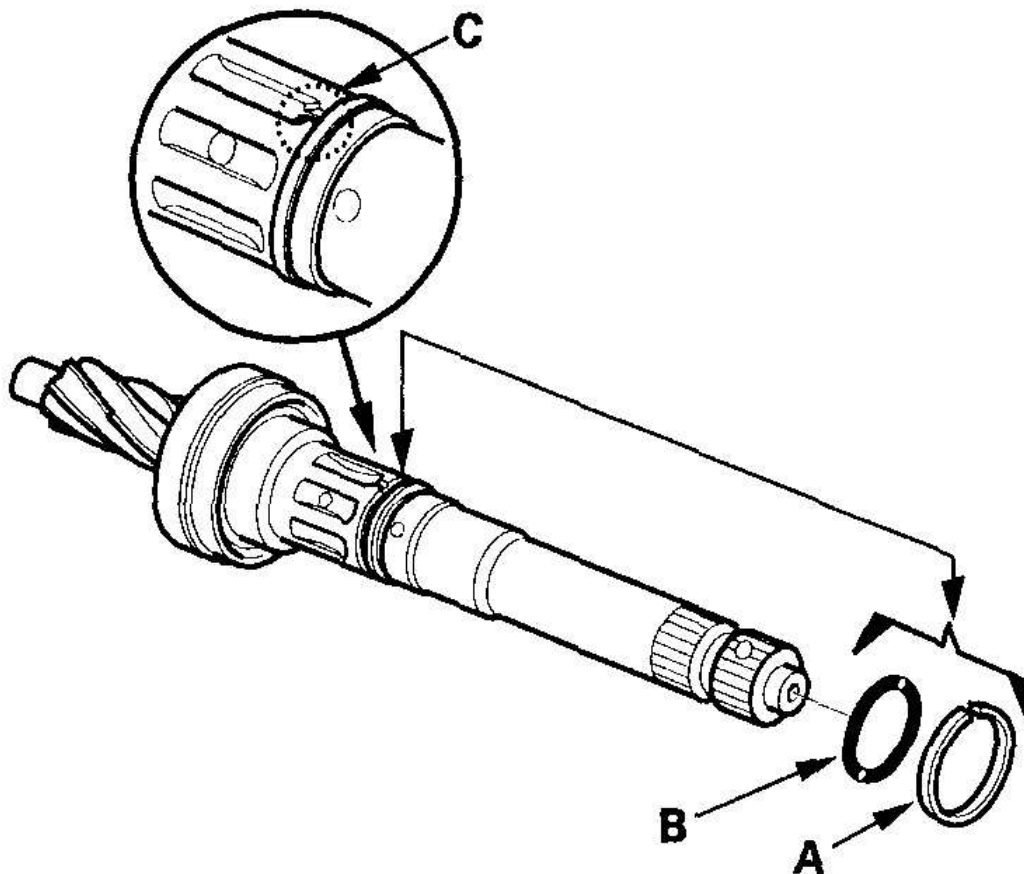
29. Using a cutter or an equivalent tool, cut and remove the four seal rings from the sleeve. Be careful not to damage the edges of the sleeve grooves and outer surface when removing the seal rings.



G03641118

Fig. 89: Removing Four Seal Rings From Sleeve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Using a cutter or an equivalent tool, cut the valve seal ring (A) and O-ring (B) at the cutting groove position (C) in the pinion shaft. Remove the valve seal ring and O-ring. Be careful not to damage the edges of the pinion shaft groove and outer surface when removing the valve seal ring and O-ring.



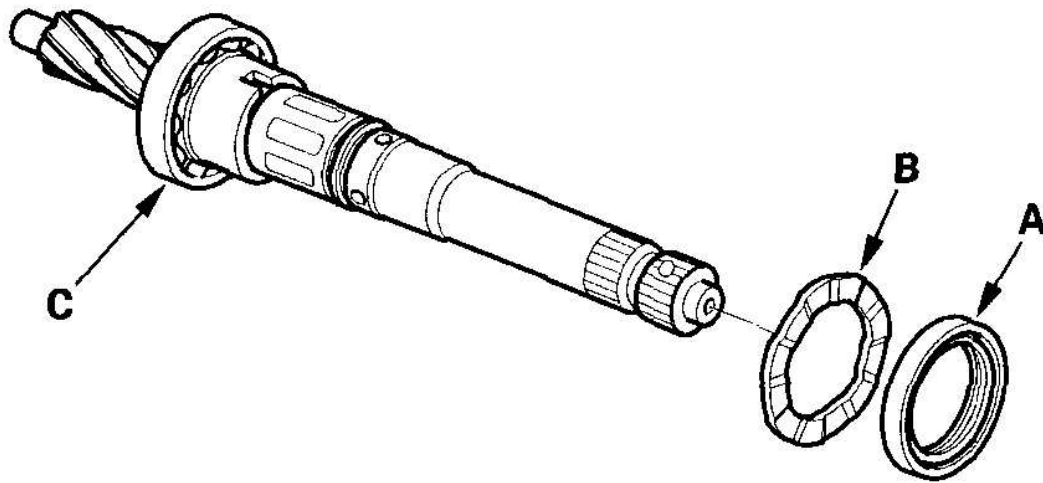
G03641119

Fig. 90: Removing Valve Seal Ring And O-Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Remove the valve oil seal (A) and wave washer (B) from the pinion shaft.

Note these items during disassembly:

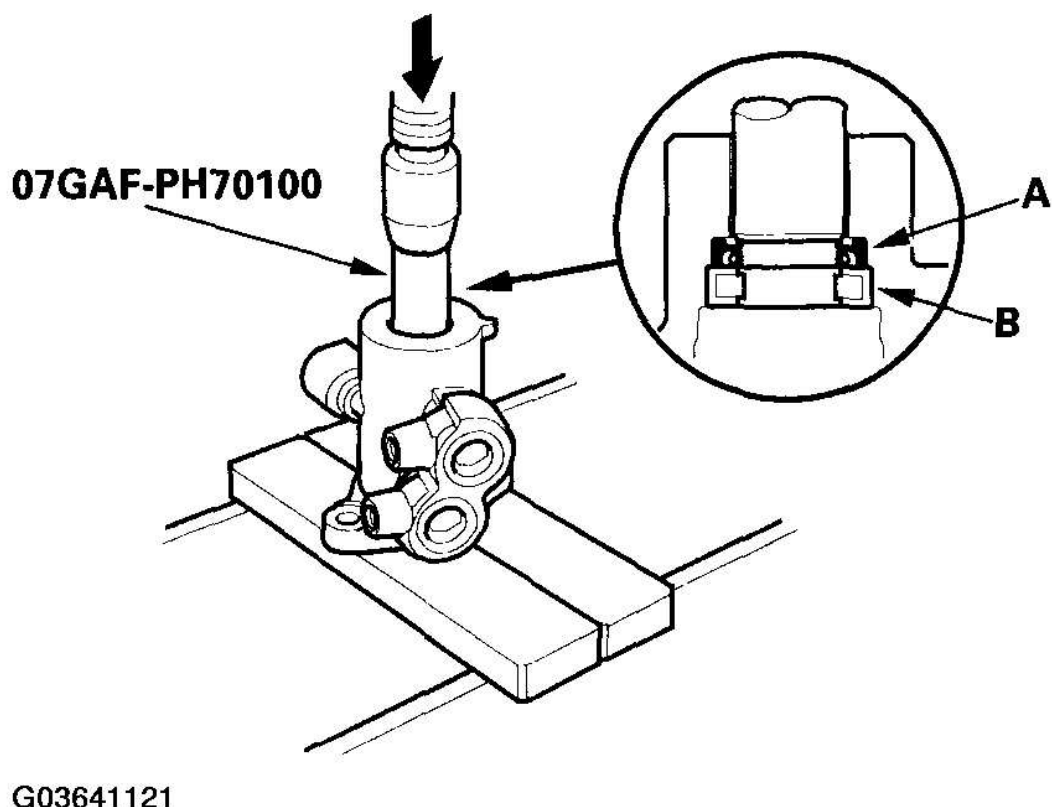
- Inspect the ball bearing (C) by rotating the outer race slowly. If there is any excessive play or wear, replace the pinion shaft and sleeve as an assembly.
- The pinion shaft and sleeve are a precise fit; do not intermix old and new pinion shafts and sleeves.



G03641120

Fig. 91: Removing Valve Oil Seal And Wave Washer From Pinion Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Press the valve oil seal (A) and roller bearing (B) out of the valve housing using a hydraulic press and special tool.



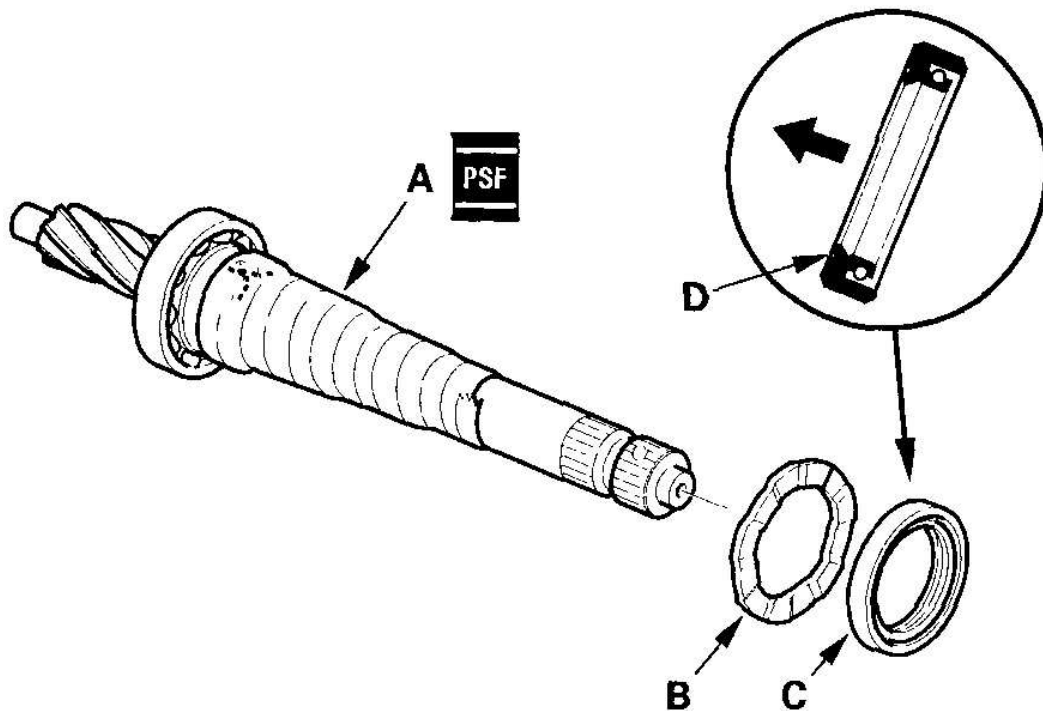
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Fig. 92: Pressing Valve Oil Seal And Roller Bearing
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Clean the disassembled parts with solvent, and dry them with compressed air. Do not dip rubber parts in the solvent.

Reassembly

34. Apply vinyl tape (A) to the stepped portion of the pinion shaft, and coat the surface of the vinyl tape with power steering fluid.



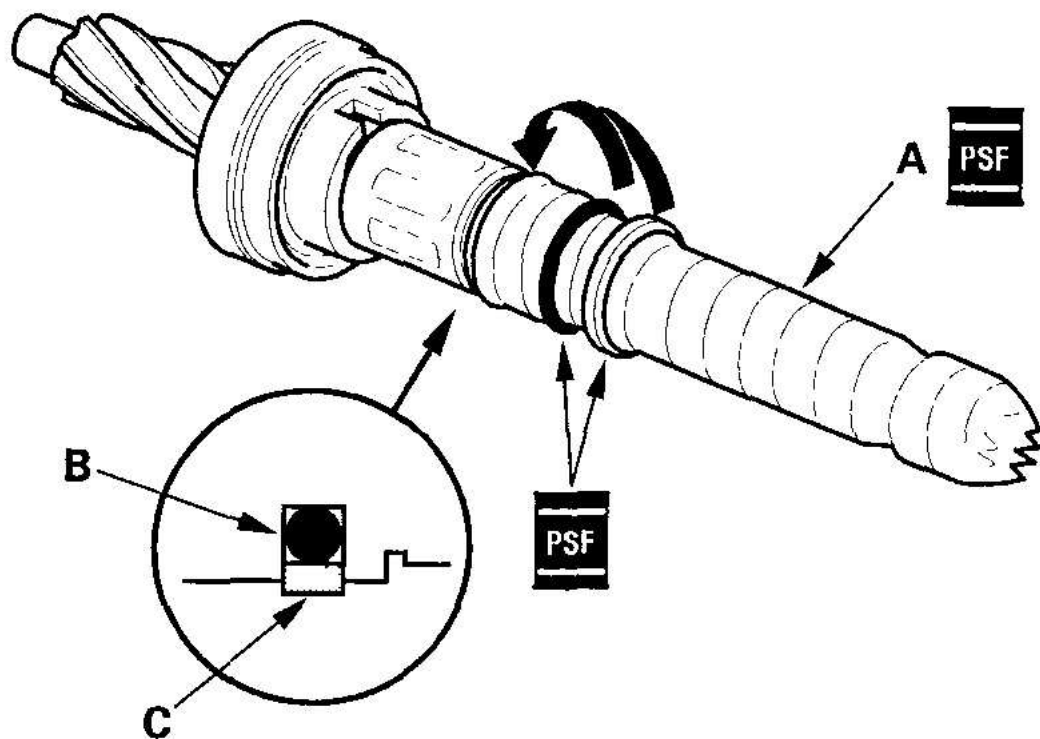
G03641122

Fig. 93: Applying Vinyl Tape To Stepped Portion Of Pinion Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Install the wave washer (B).

36. Coat the inside surface of the new valve oil seal (C) with power steering fluid, and install the seal with its grooved side facing opposite the bearing, then slide it over the pinion shaft, being careful not to damage its sealing lip (D).

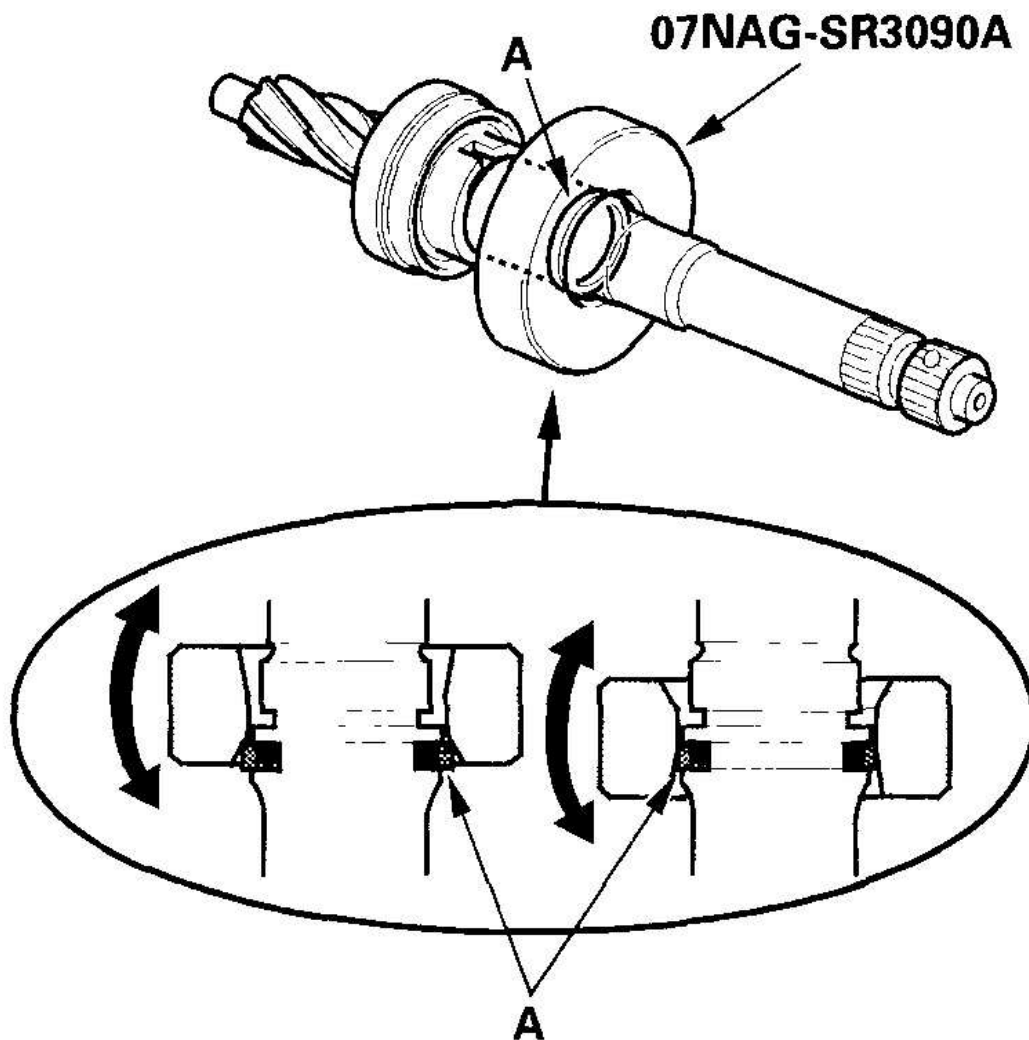
37. Apply vinyl tape (A) to the splines and stepped portion of the shaft, and coat the surface of the vinyl tape with power steering fluid.



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Fig. 94: Coating Surface Of Vinyl Tape With Power Steering Fluid
Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Fit the new O-ring (B) in the groove of the pinion shaft. Then slide the new valve seal ring (C) over the shaft and in the groove on the pinion shaft.
39. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).



G03641124

Fig. 95: Identifying Valve Seal Ring

Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Apply power steering fluid to the inside of the special tool. Set the larger diameter end of the special tool over the valve seal ring, and move the special tool up and down several times to make the valve seal ring fit in the pinion shaft groove.

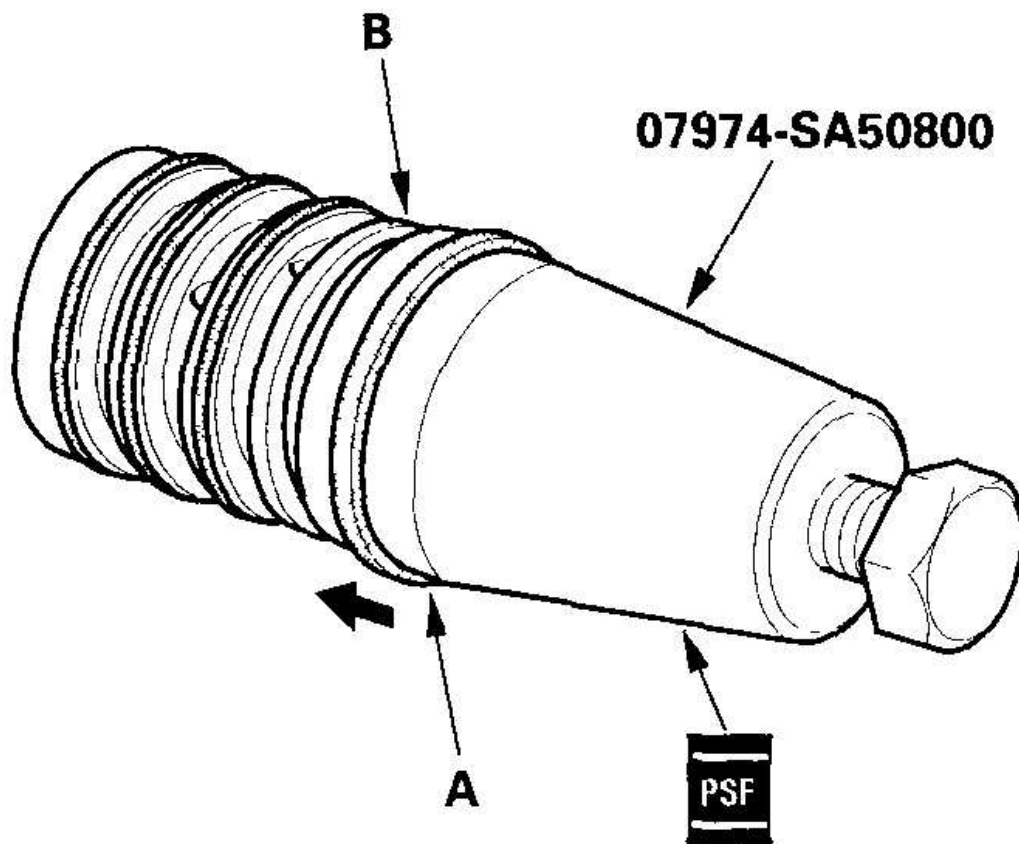
41. Remove the special tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make the valve seal ring fits snugly in the pinion shaft groove.

42. Apply power steering fluid to the surface of the special tool. Slip two new seal rings (A) over the special tool from the smaller diameter end, and expand them. Install only two rings at a time from each

end of the pinion shaft sleeve (B).

Note these items when installing the seal ring:

- Do not over-expand the seal ring. Install the resin seal rings with care so as not to damage them. After installation, make sure you contract the seal rings using the special tool (sizing tool).
- There are two types of sleeve seal rings: black and brown. Do not mix the different types of rings as they are not compatible.



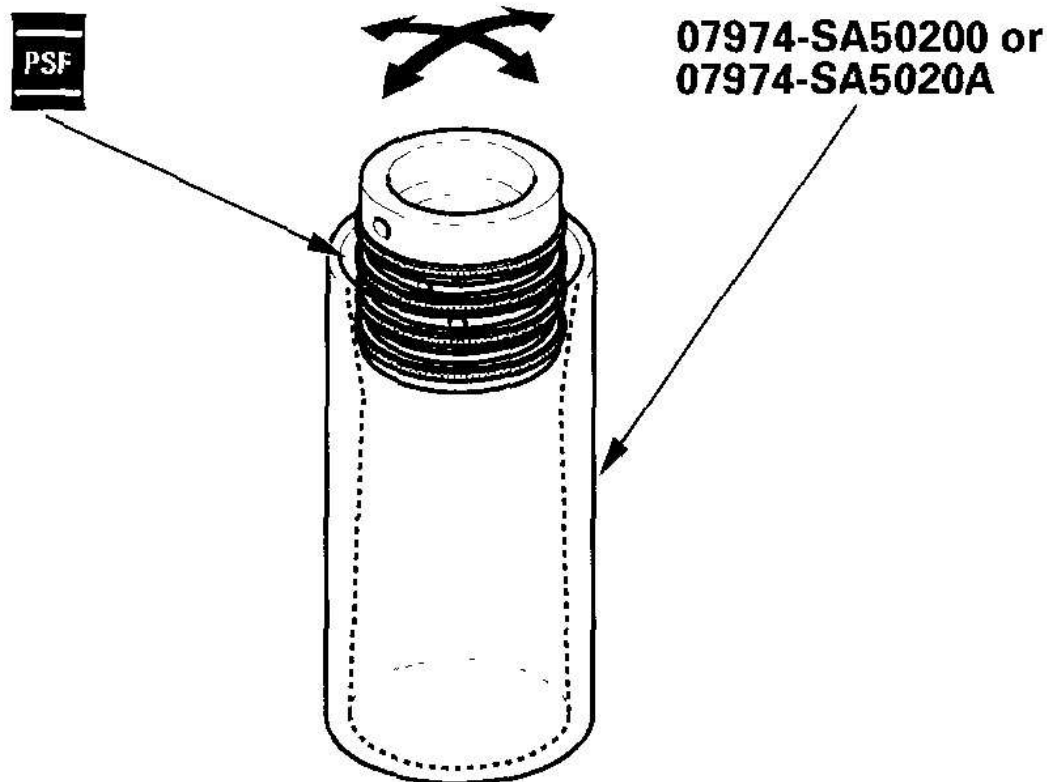
G03641125

Fig. 96: Applying Power Steering Fluid To Surface Of Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

43. Align the special tool with each groove in the sleeve, and slide a sleeve seal ring into each groove. After installation, compress the seal rings with your fingers temporarily.

44. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the

special tool, then slowly insert the sleeve into the special tool.



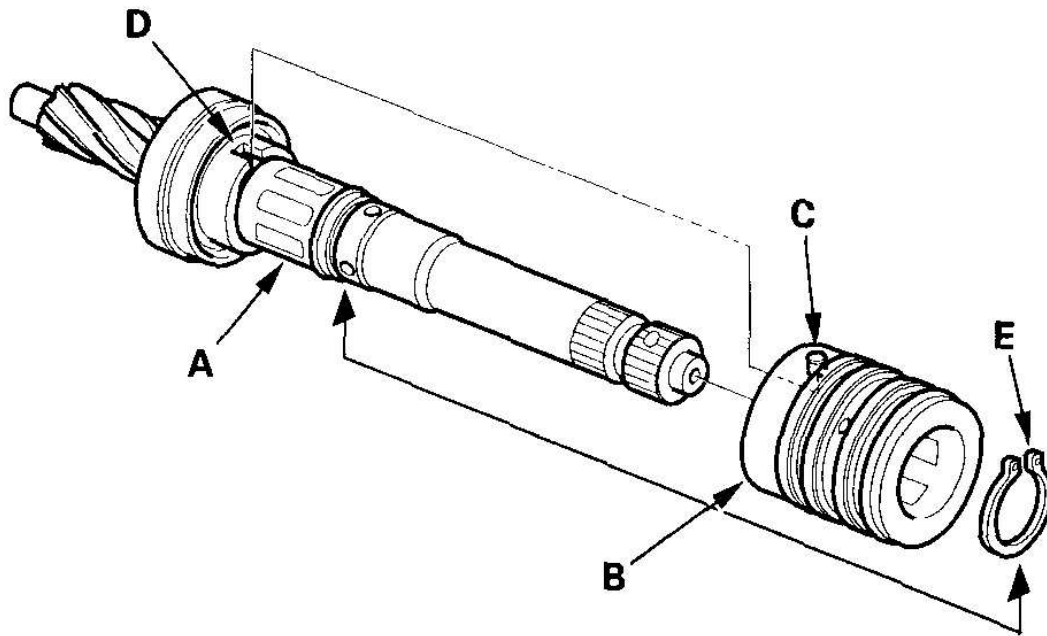
G03641126

Fig. 97: Inserting Sleeve Into Special Tool

Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Move the sleeve back and forth several times to make the seal rings fit snugly in the sleeve. Make sure the seal rings are not twisted.

46. Apply power steering fluid to the surface of the pinion shaft (A). Slide the sleeve (B) onto the pinion shaft by aligning the locating pin (C) on the inside of the sleeve with the cutout (D) in the shaft. Then install the new snap ring (E) securely in the pinion shaft groove. Be careful not to damage the valve seal ring when inserting the sleeve.

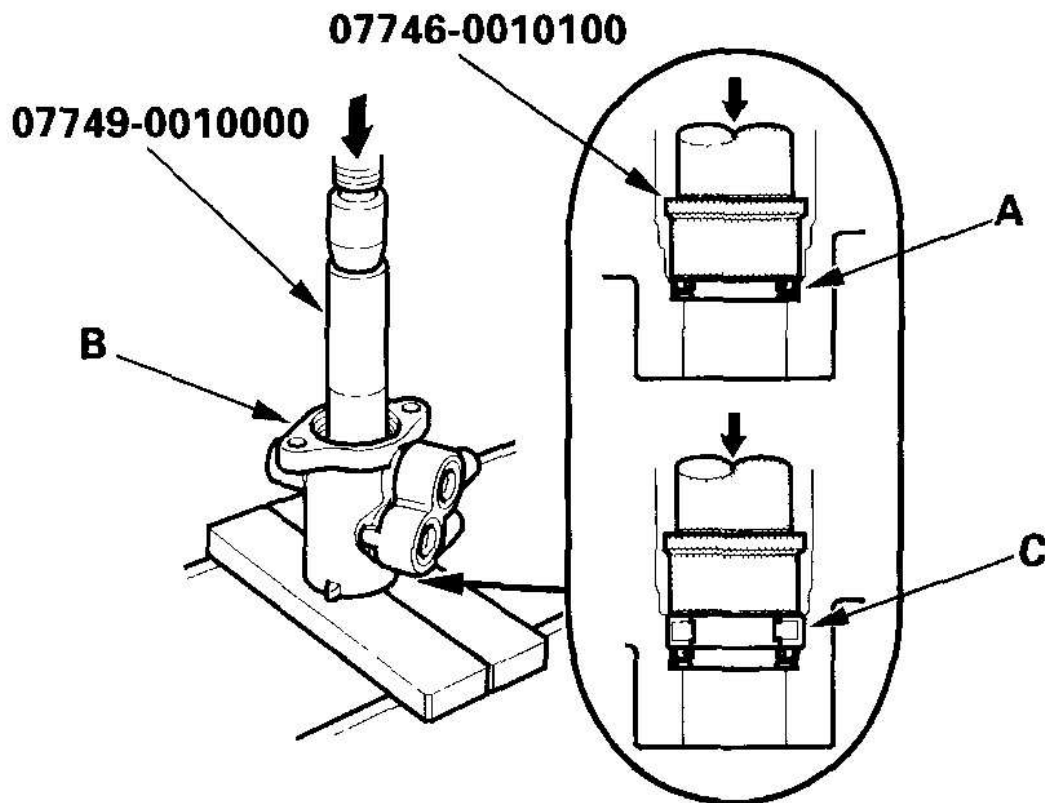


G03641127

Fig. 98: Installing Sleeve

Courtesy of AMERICAN HONDA MOTOR CO., INC.

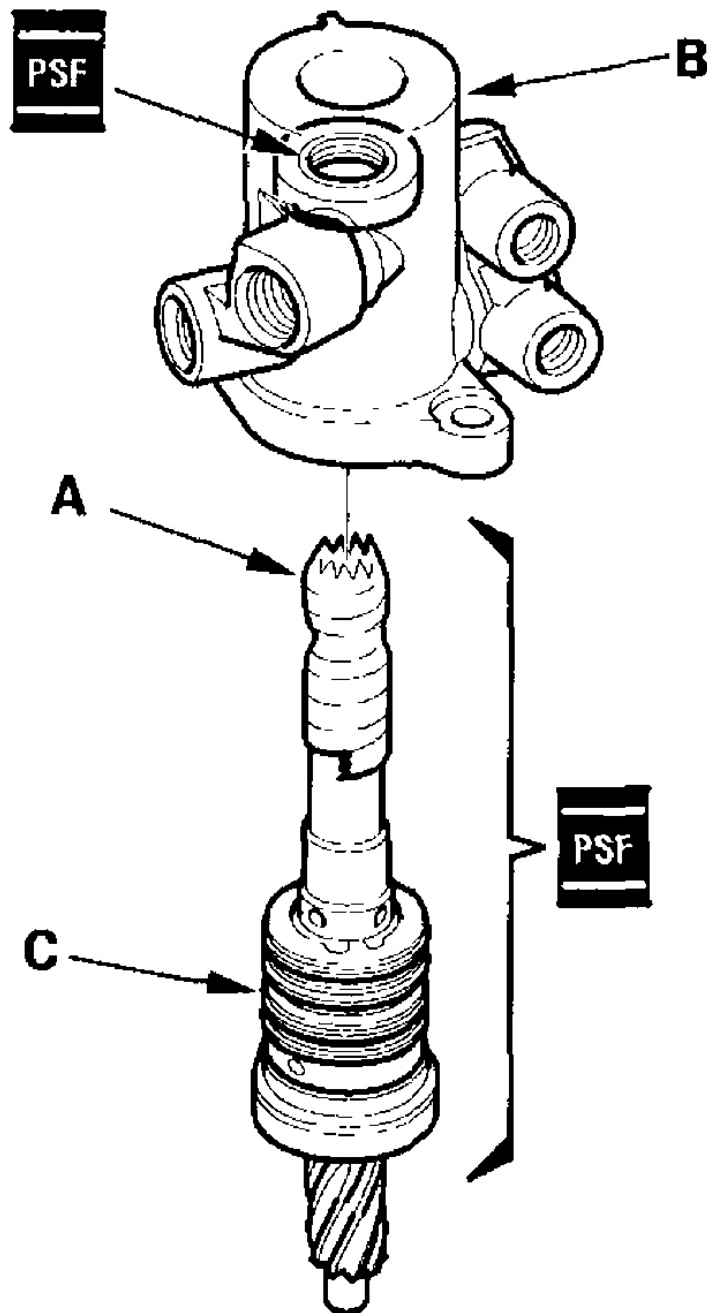
47. Apply power steering fluid to the seal ring lip of the new valve oil seal (A), then install the seal in the valve housing (B) using a hydraulic press and special tools. Install the seal with its grooved side facing the tool.



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Fig. 99: Installing Valve Oil Seal In Valve Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Press the roller bearing (C) into the valve housing with a hydraulic press and special tools.
49. Apply vinyl tape (A) to the pinion shaft, then coat the vinyl tape with power steering fluid.

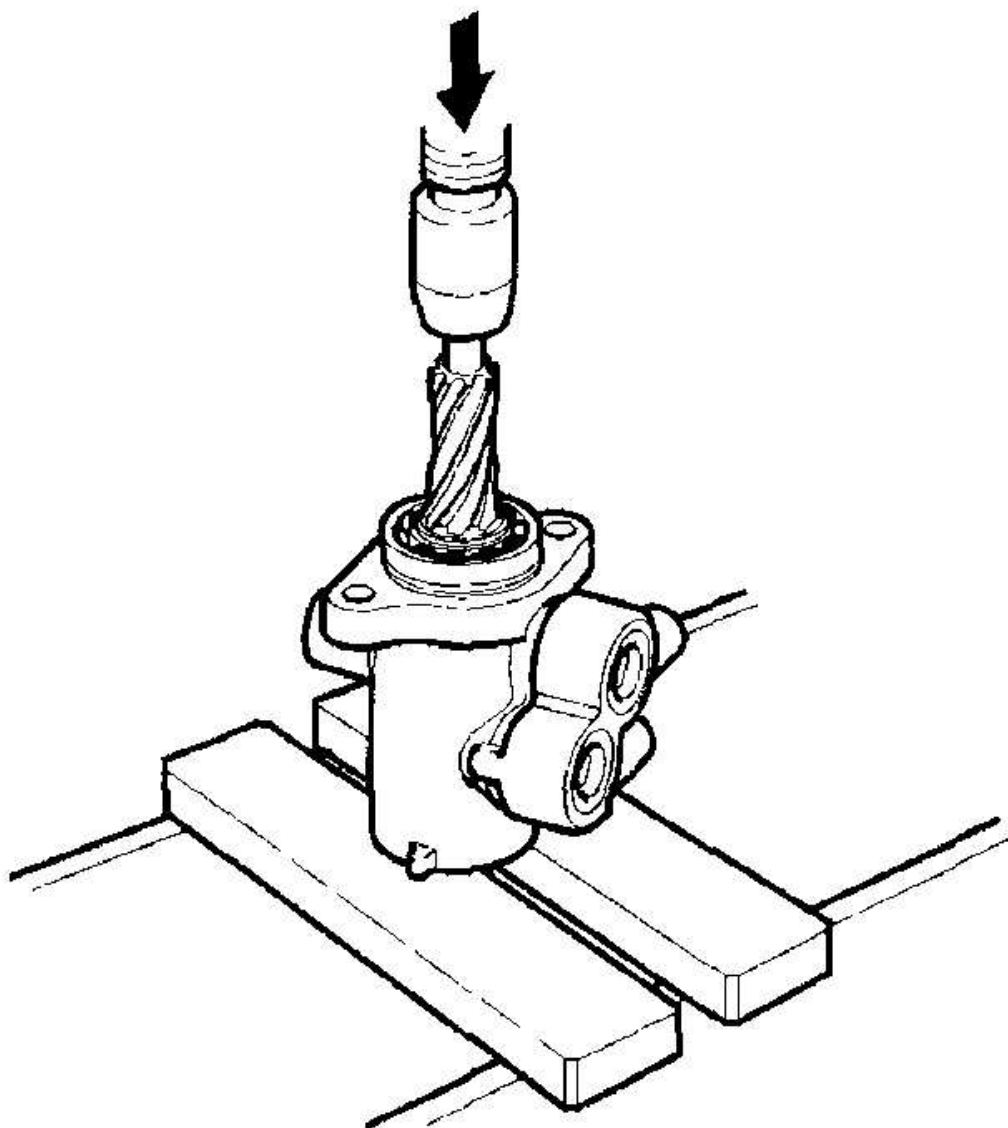


G03641129

Fig. 100: Inserting Pinion Shaft Into Valve Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

50. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C).

51. Remove the vinyl tape from the pinion shaft, then remove any residue from the tape adhesive.
52. Press the pinion shaft/sleeve into the valve housing with a hydraulic press. Check that the pinion shaft/sleeve turns smoothly by hand after installing it.

**G03641130**

53. Coat the special tool with power steering fluid, then slide it onto the rack, big end first.

54. Position the new O-ring (A) and new piston seal ring (B) on the special tool, 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 special tool (sizing tool).
- Replace piston's O-ring and seal ring as a set.

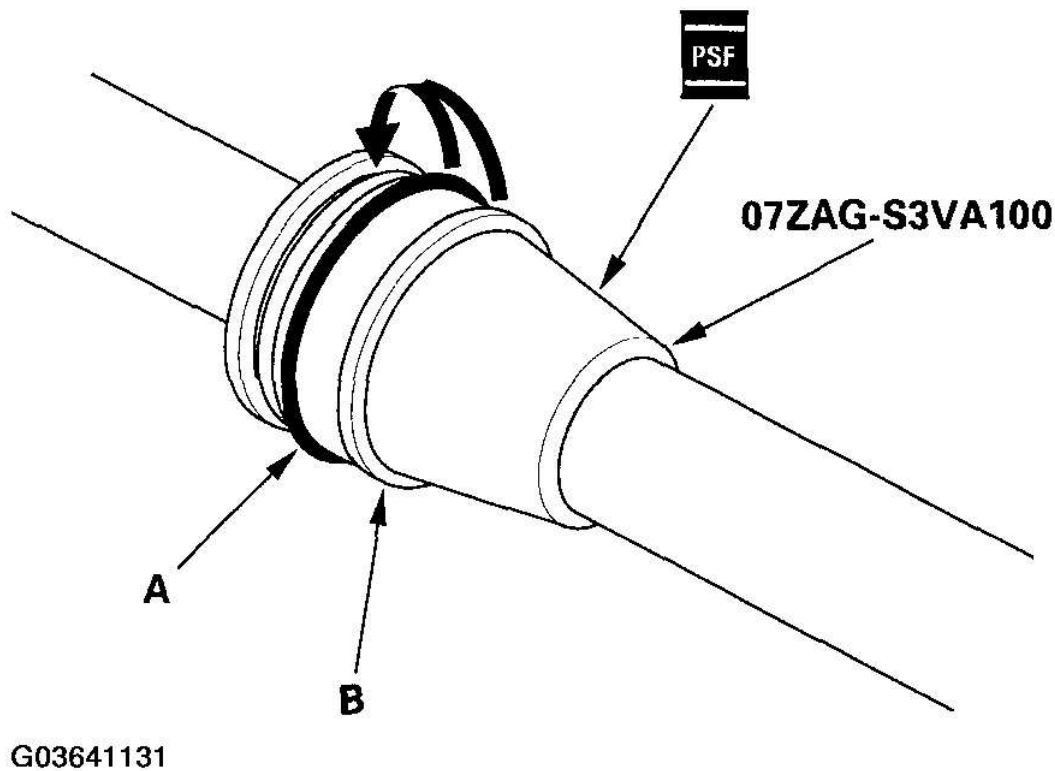


Fig. 102: Positioning New O-Ring And Piston Seal Ring On Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

55. 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.

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

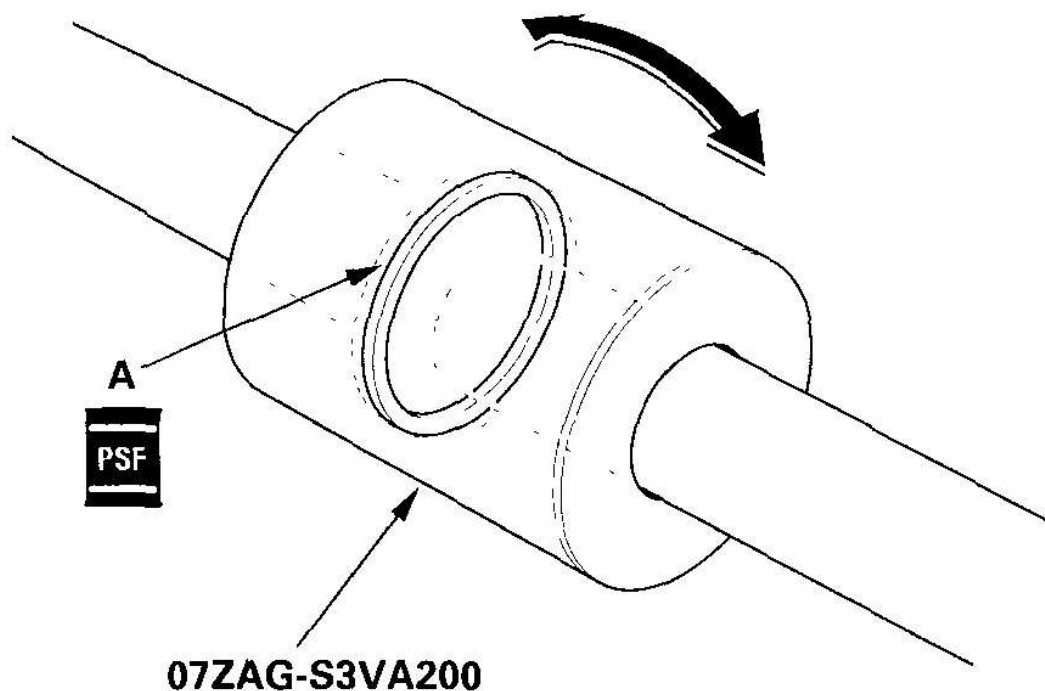
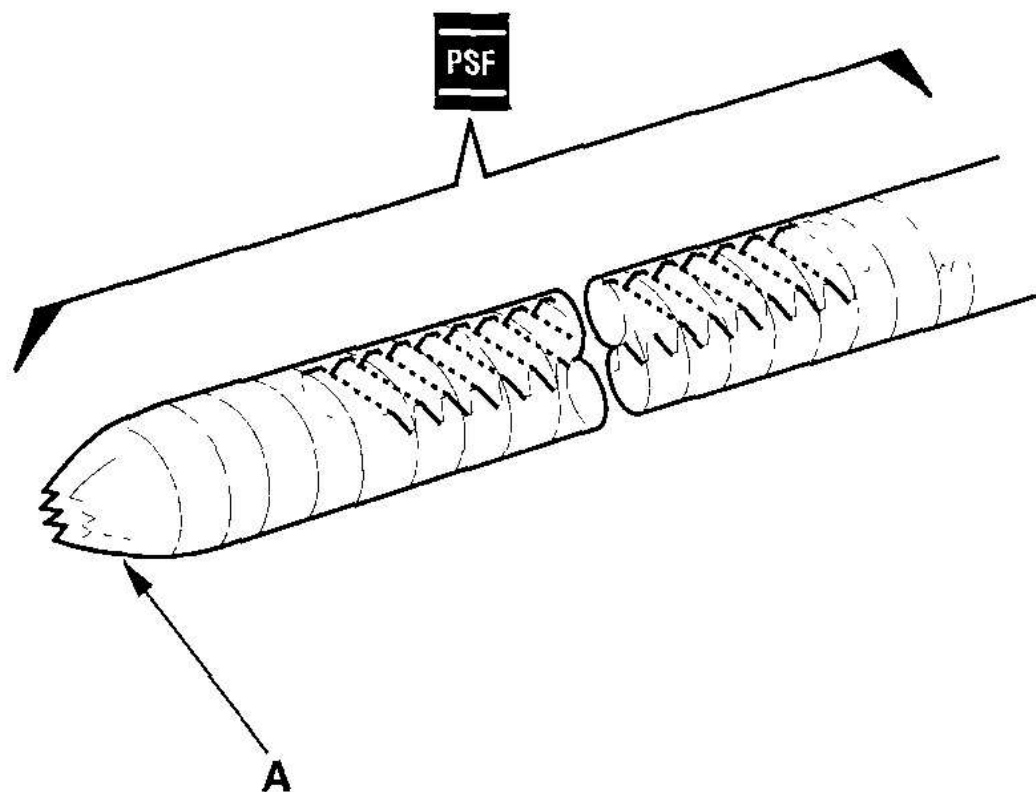


Fig. 103: Sliding Tool Onto Rack And Over Piston Seal Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

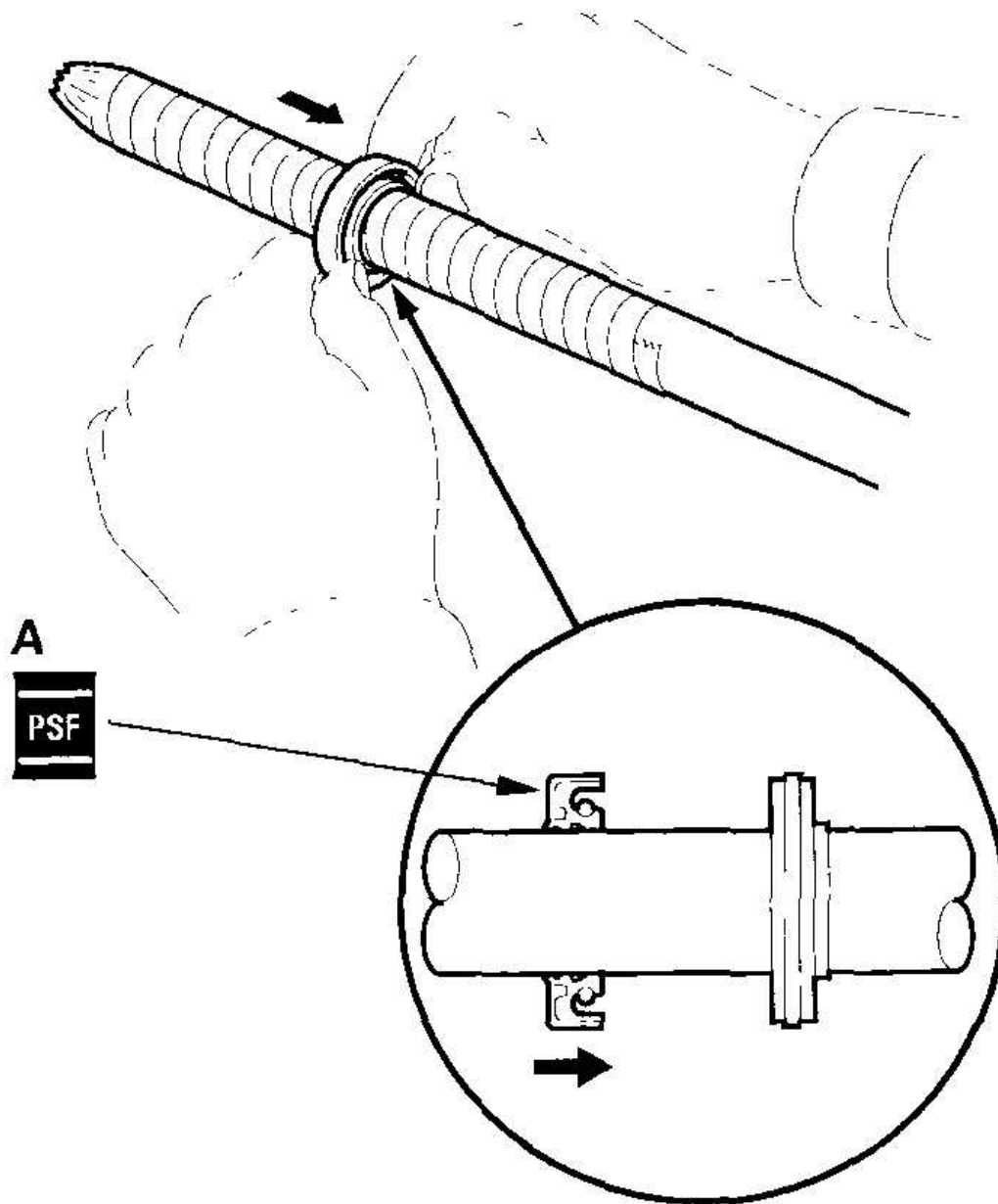
57. Move the special tool back and forth several times to make the piston seal ring fit snugly in the piston.
58. Wrap vinyl tape (A) around the rack teeth and rack end edges, then coat the surface of the tape with power steering fluid. Make sure that the vinyl tape is wrapped carefully so there is no stepped portion.



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Fig. 104: Wrapping Vinyl Tape Around Rack Teeth And Rack End Edges
Courtesy of AMERICAN HONDA MOTOR CO., INC.

59. 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.



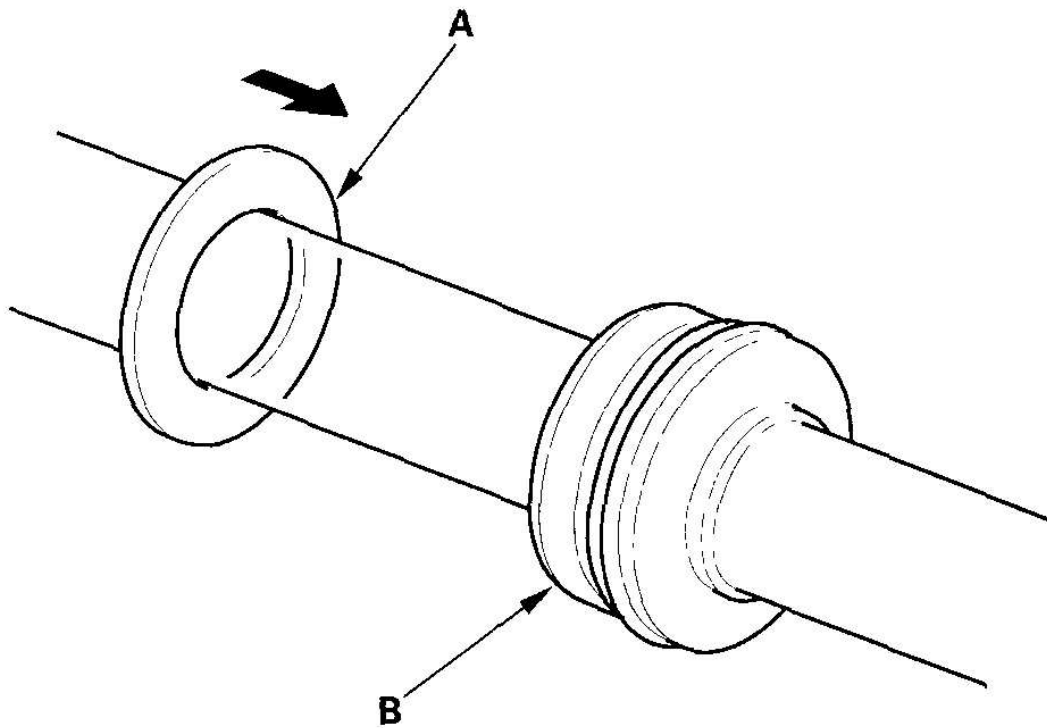
G03641134

Fig. 105: Installing Seal On Steering Rack
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

61. Install the new backup ring (A) on the steering rack, then place the cylinder end seal (B) against the

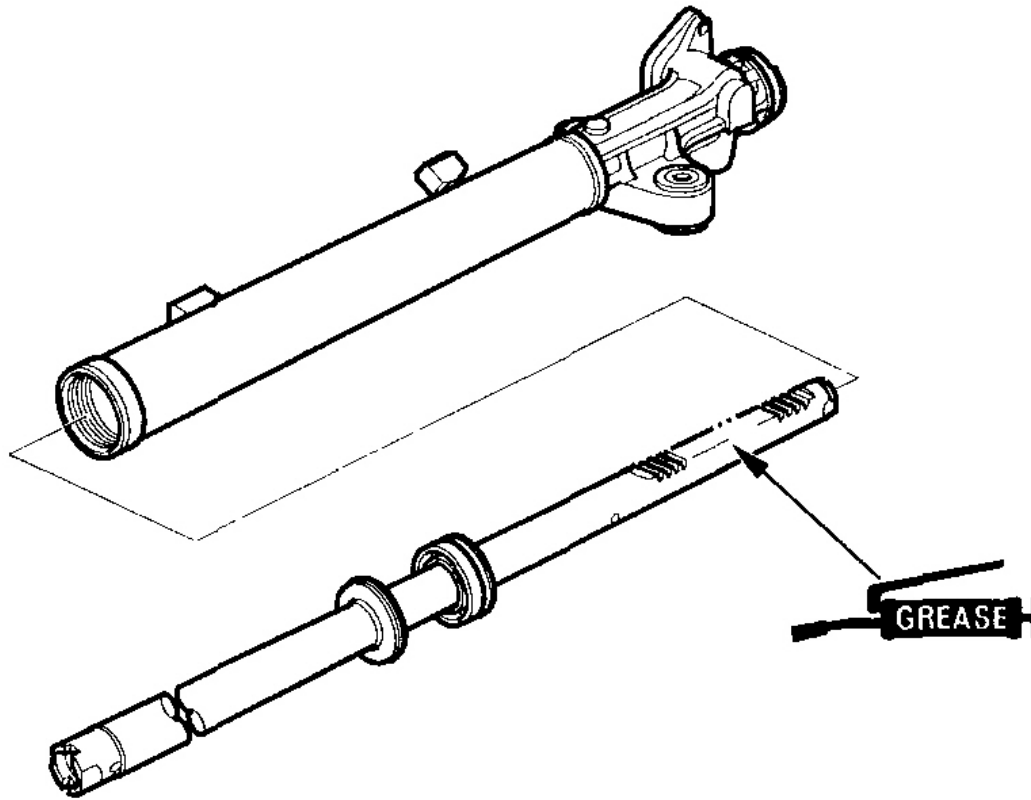
piston.



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Fig. 106: Installing New Backup Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

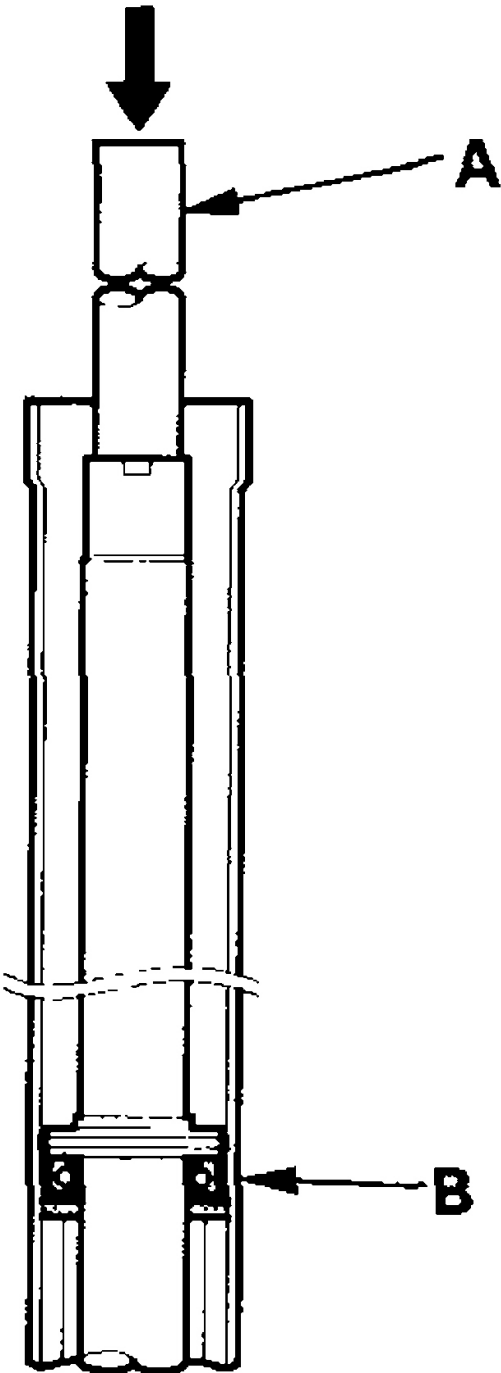
62. Apply multipurpose grease the steering rack teeth, then insert the steering rack into the gearbox housing. Be careful not to damage the inner surface of the cylinder wall with the rack edges.



G03641136

Fig. 107: Inserting Steering Rack Into Gearbox Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

63. Insert an appropriate size deep socket wrench (A) onto the steering rack as shown.



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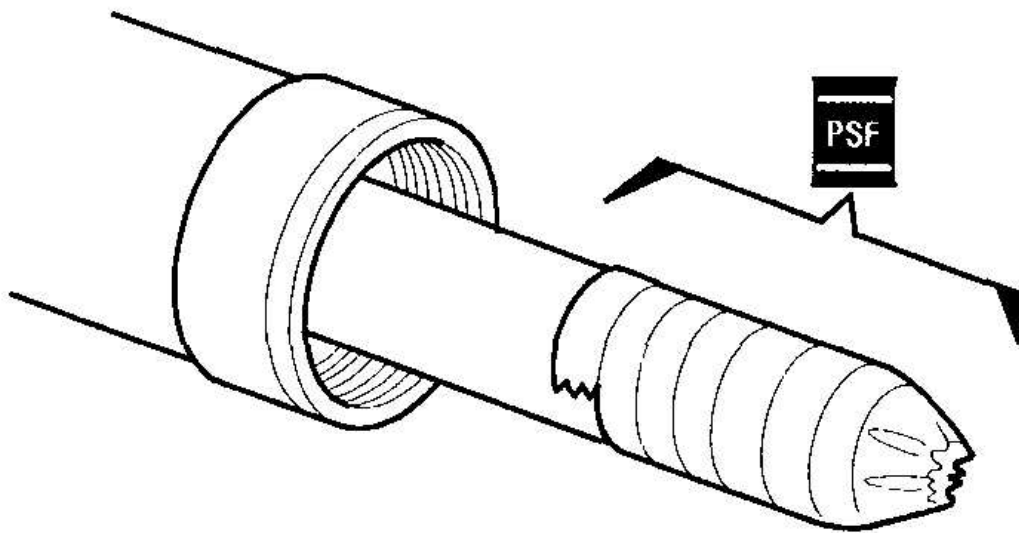
Fig. 108: Inserting Deep Socket Wrench Onto Steering Rack
Courtesy of AMERICAN HONDA MOTOR CO., INC.

64. 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.

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

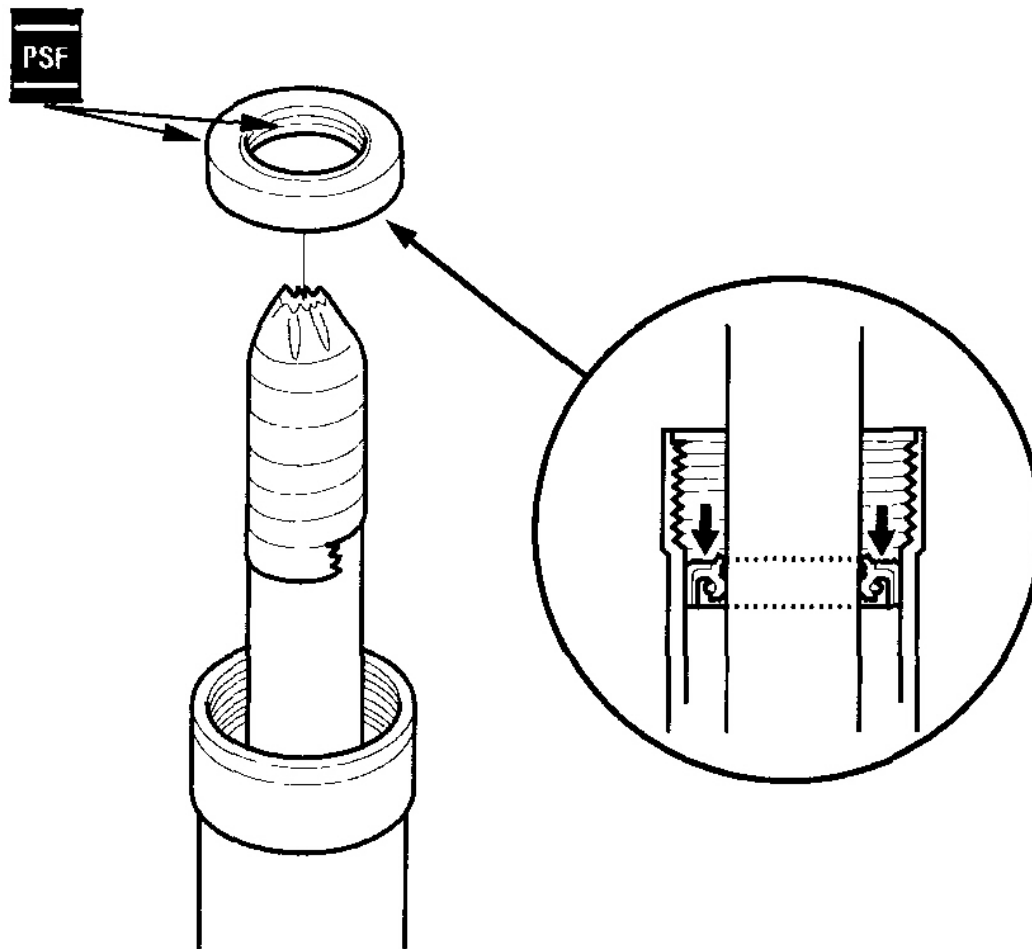
66. Wrap vinyl tape around the rack end edges, and coat the surface of the tape with the power steering fluid. Make sure that the vinyl tape is wrapped carefully so there is no stepped portion.



G03641138

Fig. 109: Coating Surface Of Tape With Power Steering Fluid
Courtesy of AMERICAN HONDA MOTOR CO., INC.

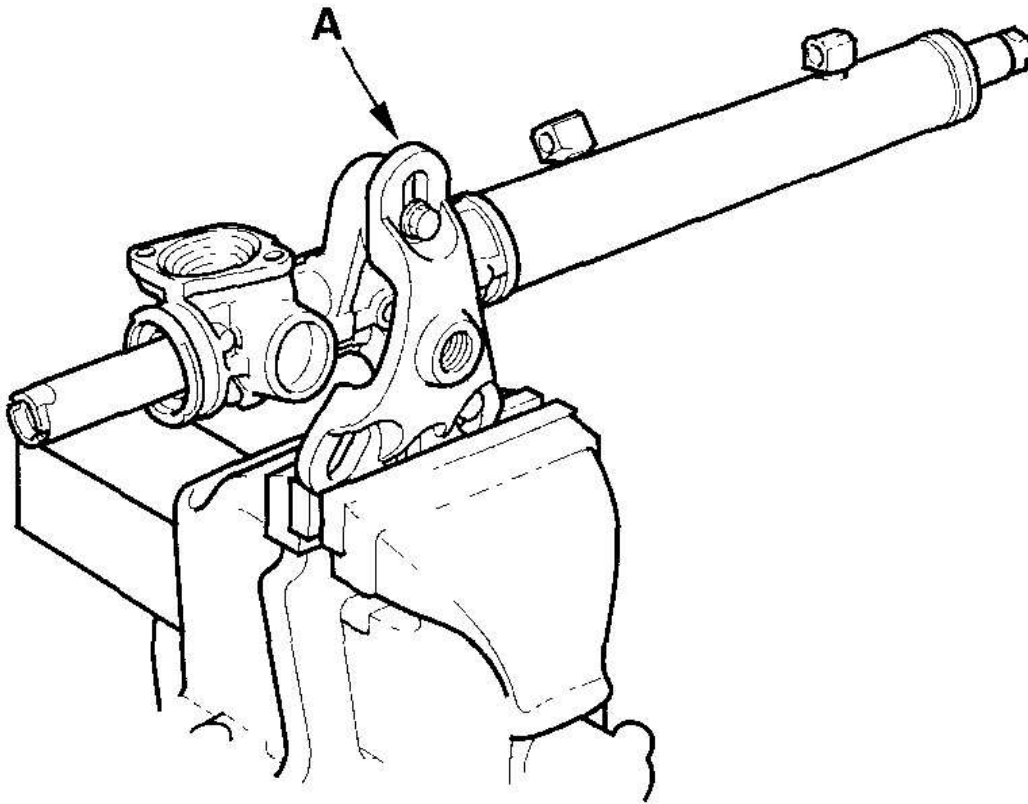
67. Coat the inside surface of the new cylinder end seal with power steering fluid, then install the seal onto the steering rack with its grooved side toward the piston.



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Fig. 110: Installing Seal Onto Steering Rack
Courtesy of AMERICAN HONDA MOTOR CO., INC.

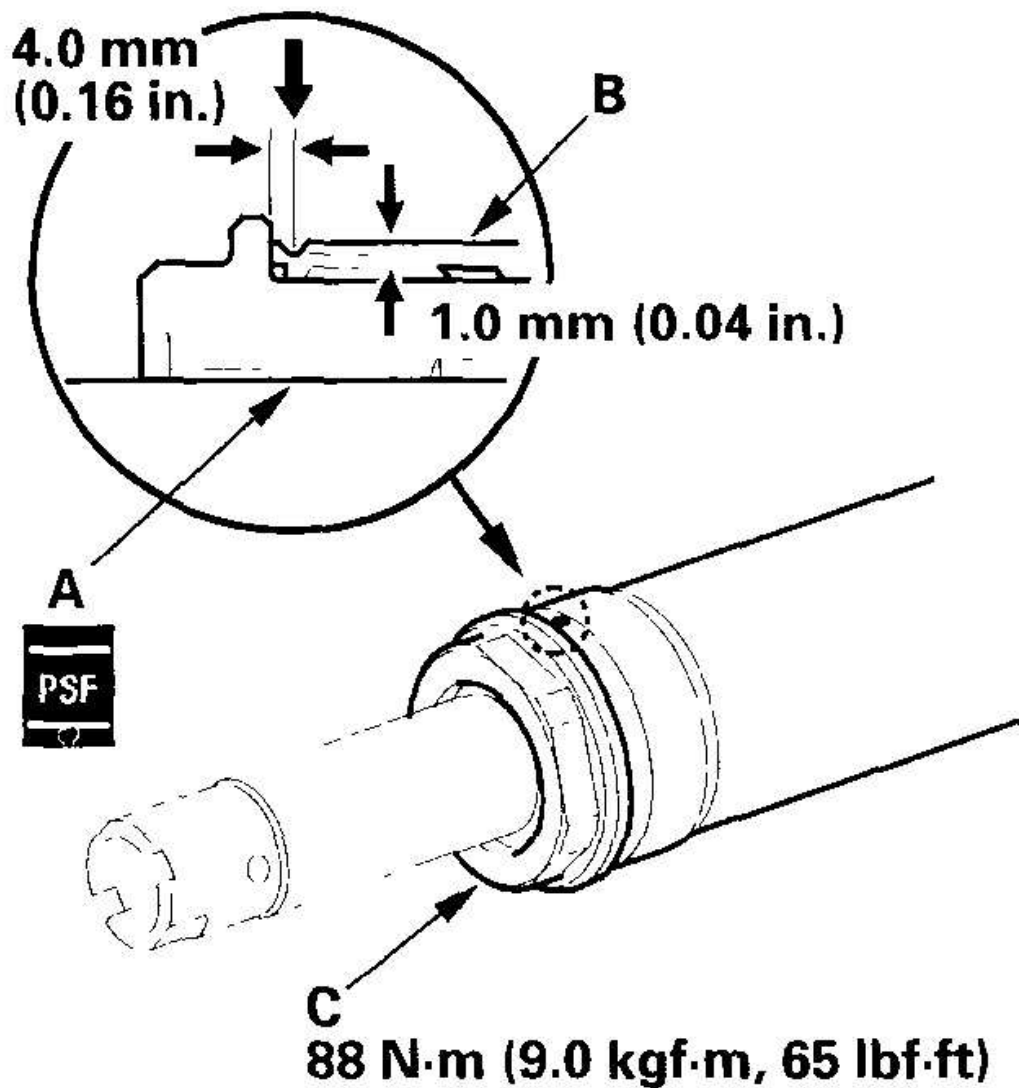
68. Push in the cylinder end seal with your finger. Be careful not to damage the face of the seal with the threads and burrs at the staked position of the cylinder housing.
69. Remove the vinyl tape from the steering rack, then remove any adhesive residue.
70. Attach the yoke of a universal puller (commercially available) (A) to the steering gearbox mounts with bolts, then clamp the yoke in a vise with soft jaws. Do not clamp the cylinder housing or gearbox housing in the vise.



G03641140

Fig. 111: Clamping Yoke In Vise Using Soft Jaws
Courtesy of AMERICAN HONDA MOTOR CO., INC.

71. Coat the inside surface of the cylinder end (A) with power steering fluid, then install the cylinder end by screwing it into the cylinder (B).



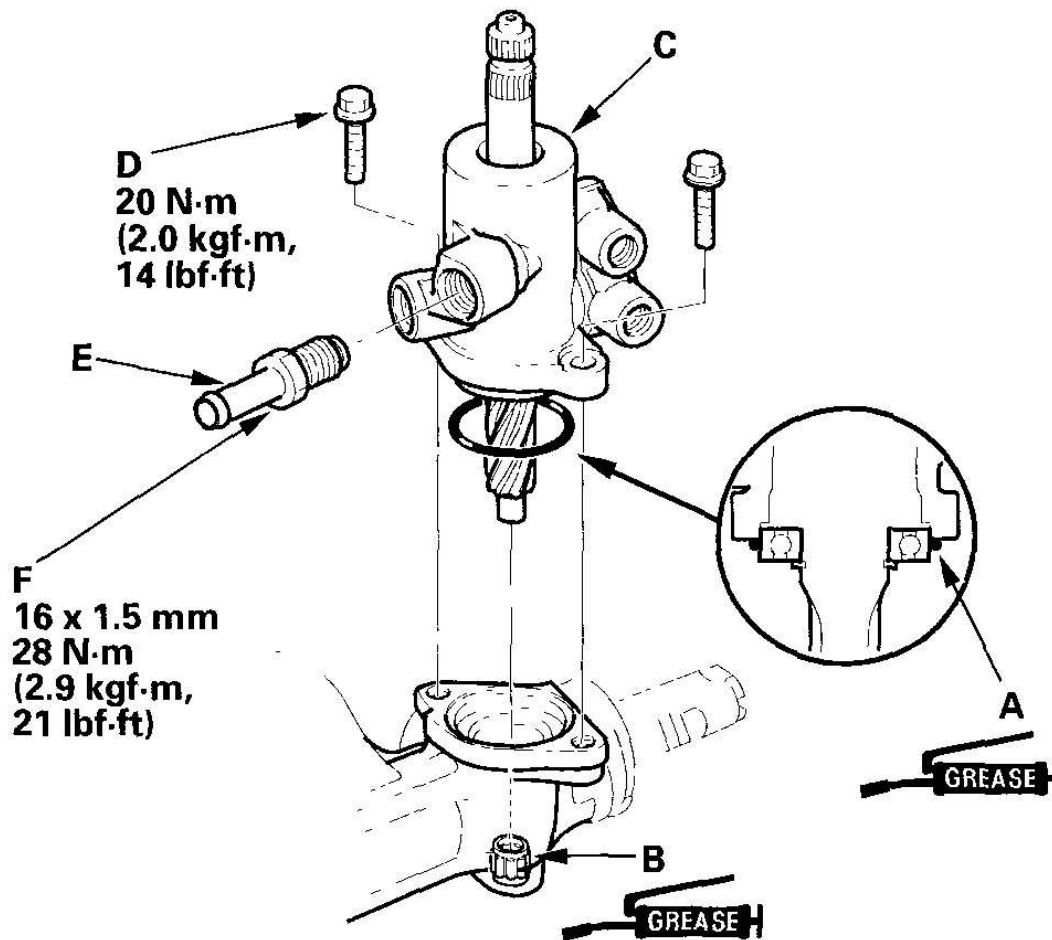
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Fig. 112: Installing Cylinder End

Courtesy of AMERICAN HONDA MOTOR CO., INC.

72. Remove the yoke from the gearbox. After tightening the cylinder end (C), stake the point of the cylinder shown (opposite from where the stake was removed during disassembly).

73. Coat the new O-ring (A) with steering grease (08C35-B0534L), and carefully fit it on the valve housing.



G03641142

Fig. 113: Installing O-Ring On Valve Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

74. Apply multipurpose grease to the needle bearing (B) in the gearbox housing, then install the valve body unit (C) by engaging the gears. Note the valve body unit installation position (direction of the line connections).

75. Tighten the flange bolts (D) to the specified torque.

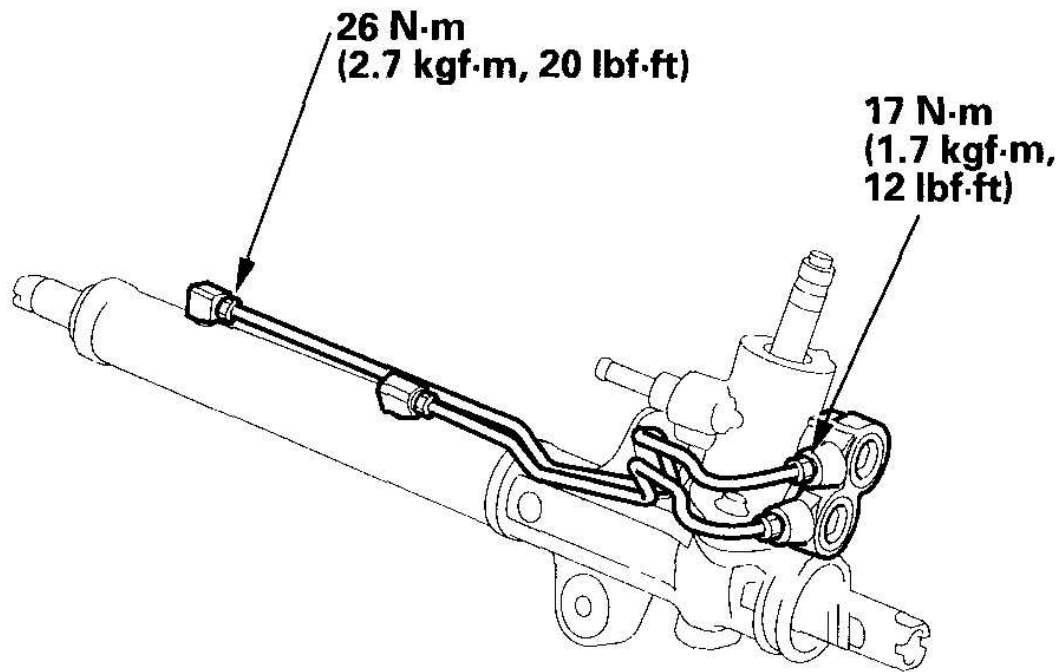
76. Install the return line joint (E), and tighten the 16 mm flare nut (F).

77. Install the cylinder 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.

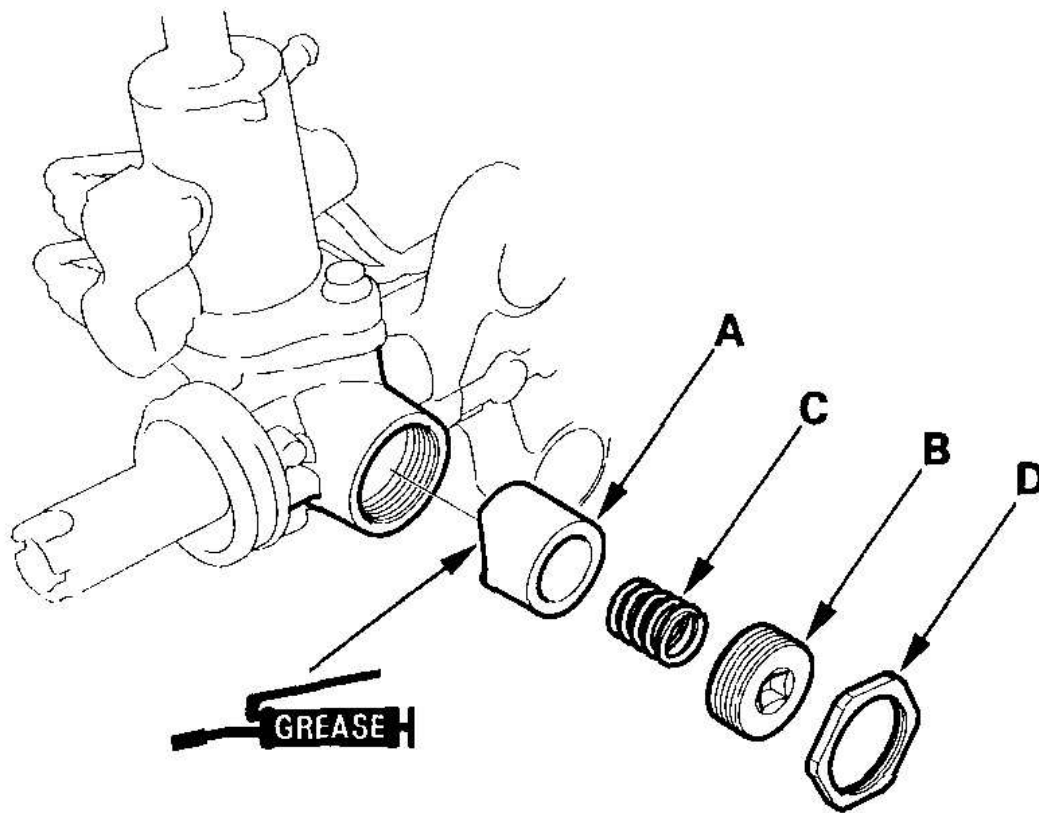


G03641143

Fig. 114: Installing Cylinder Lines

Courtesy of AMERICAN HONDA MOTOR CO., INC.

78. Apply steering grease (08C35-B0534L) to the sliding surface of the rack guide (A), and install it onto the gearbox housing.



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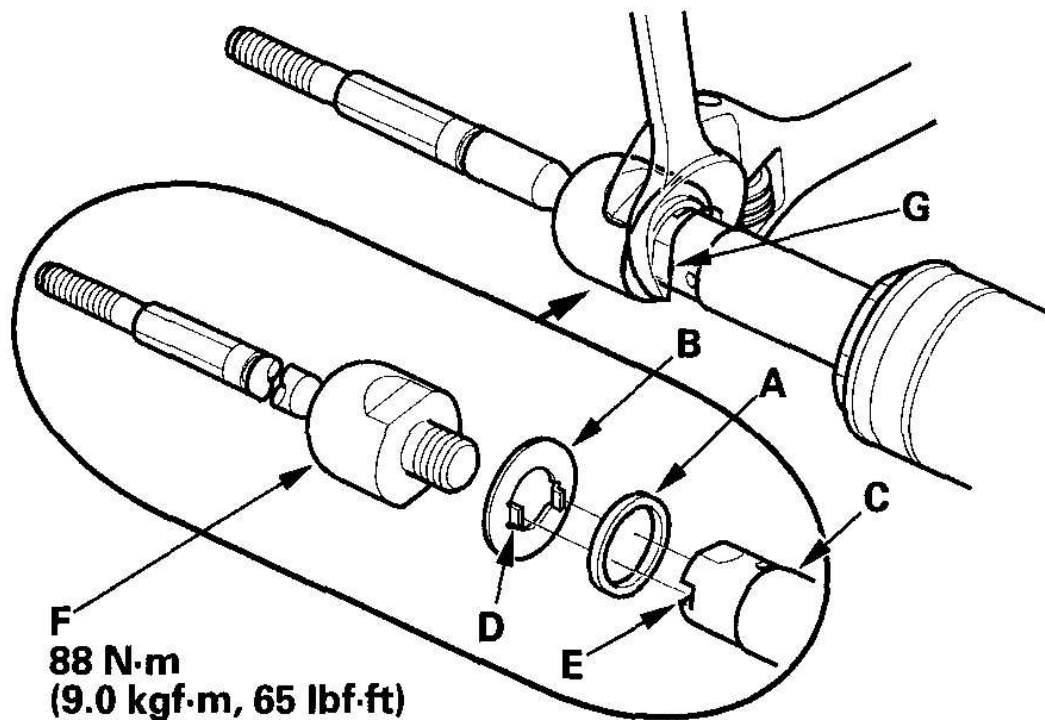
Fig. 115: Installing Rack Guide

Courtesy of AMERICAN HONDA MOTOR CO., INC.

79. Remove the old sealant from the rack guide screw (B), then apply new sealant (Three Bond 1215 or LOCTITE 5699) to the middle of the threads. Install the spring (C), rack guide screw and locknut (D).

80. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.

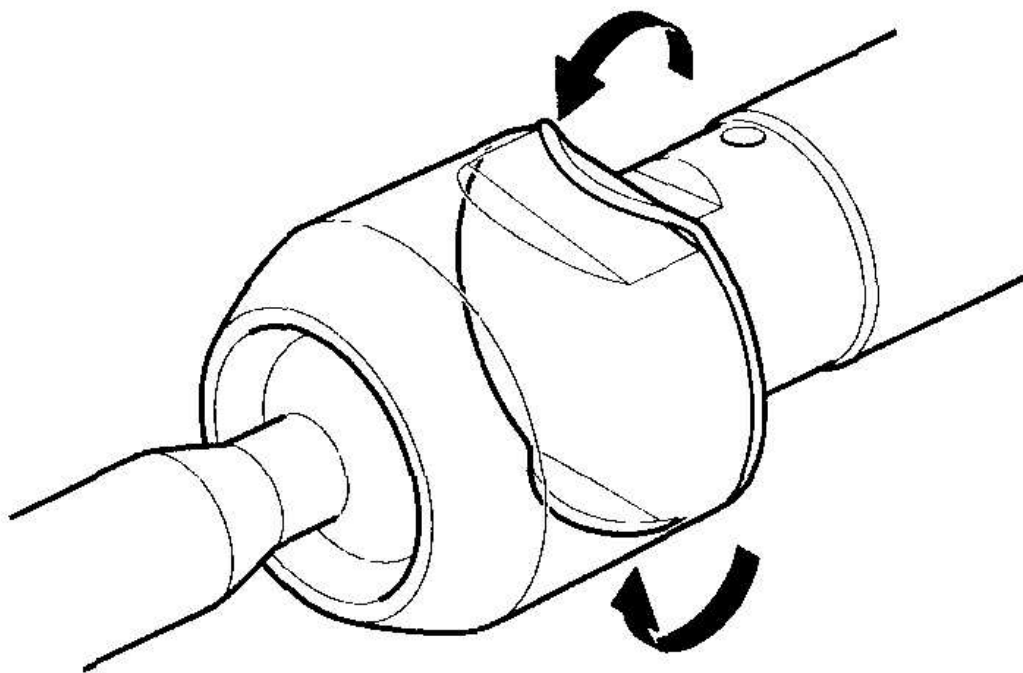
81. Install the new stop rubber (A) and lock washer (B) on the rack end (C) in the rack. Align the lock washer tabs (D) with the slots (E). Install the rack end (F) while holding the lock washer in place. Repeat this step for the other side of the rack.



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Fig. 116: Installing Stop Rubber And Lock Washer On Rack End In Rack
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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



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Fig. 117: Bending Lock Washer

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

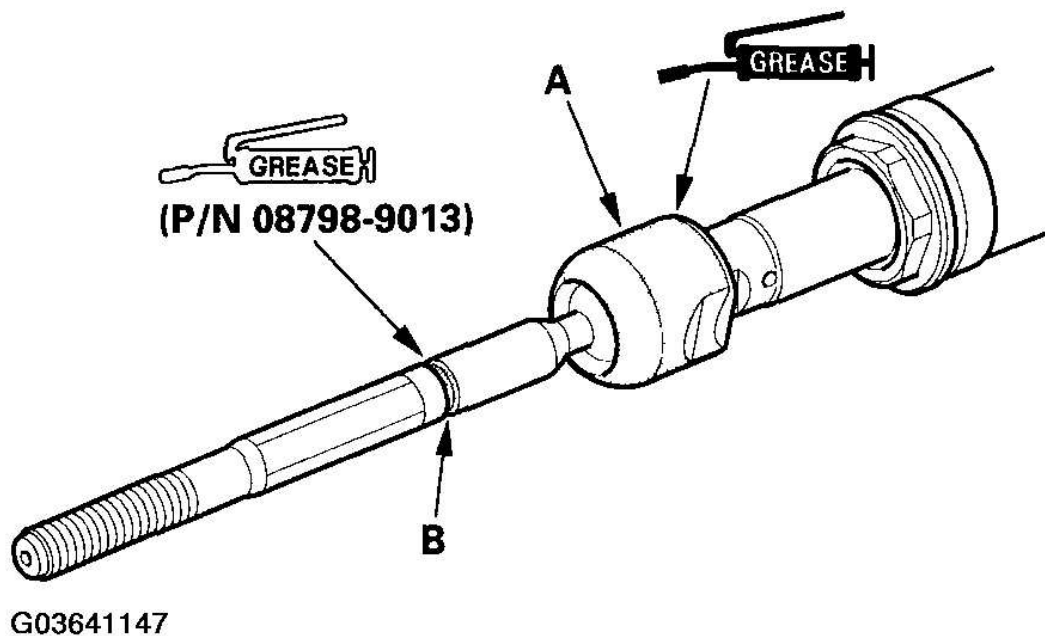
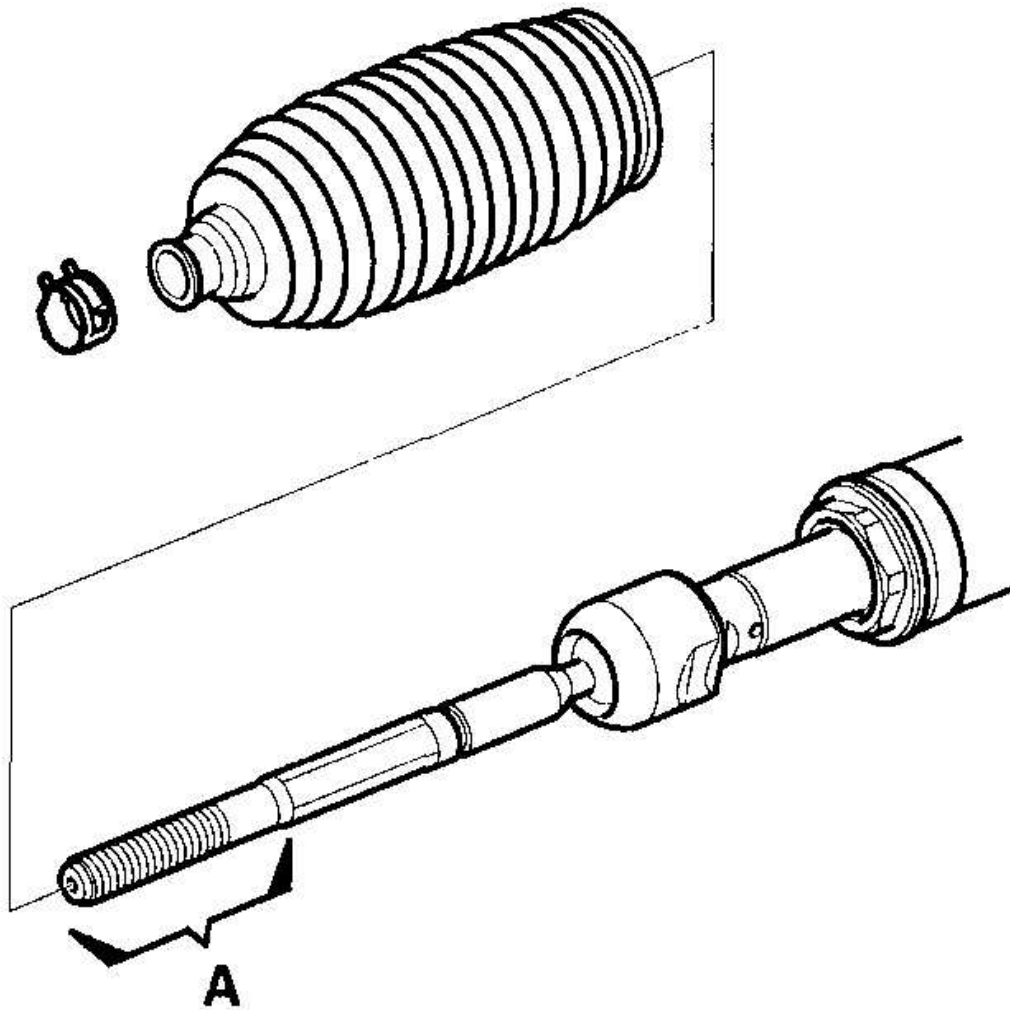


Fig. 118: Applying Grease To Rack End Joint Housing And Boot Grooves
Courtesy of AMERICAN HONDA MOTOR CO., INC.

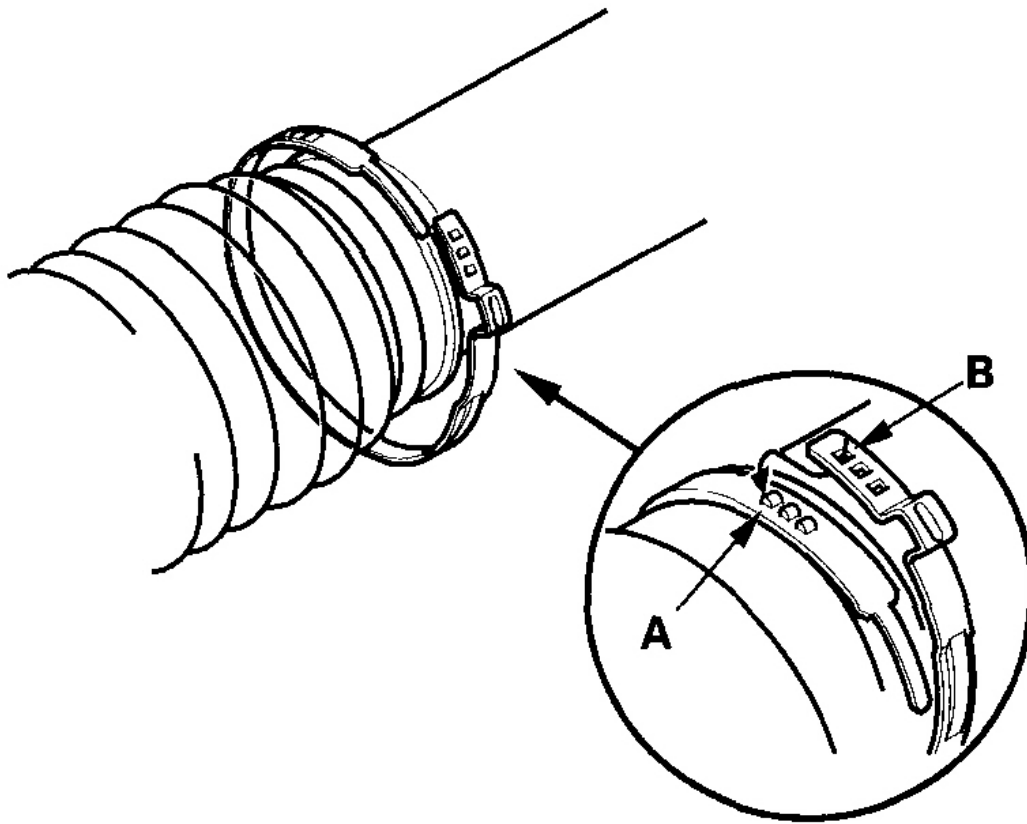
85. Apply a light coat of silicone grease (P/N 08798-9013) to the boot grooves (B) on the rack end.
86. Center the steering rack within its stroke. Install the boots on the rack ends with the tie-rod clips. After installing the boots, wipe the grease off the threaded section (A) of the rack end.



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Fig. 119: Installing Boots On Rack Ends With Tie-Rod Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

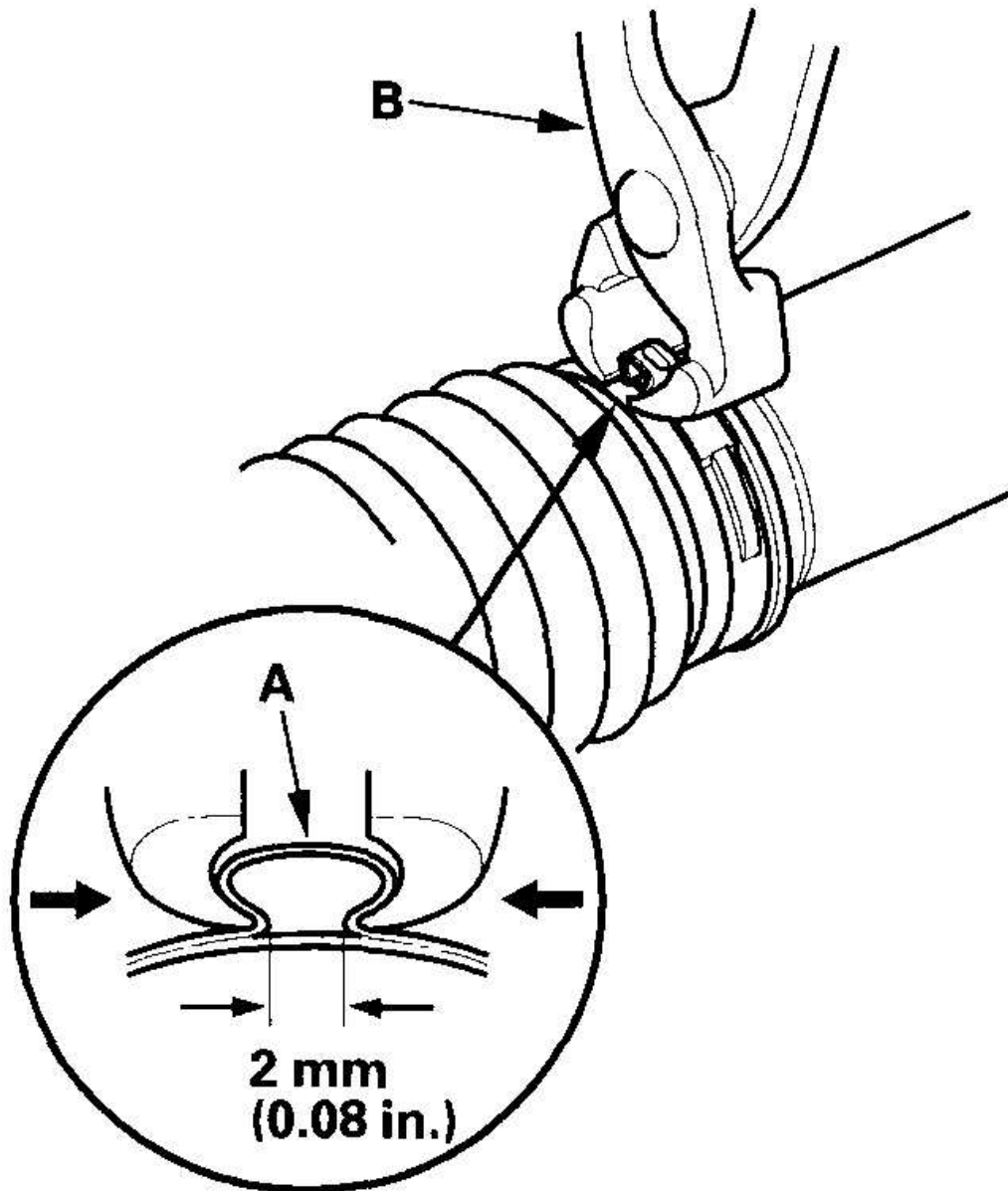
87. Install the new boot bands by aligning the tabs (A) with the holes (B) on the band.



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Fig. 120: Installing New Boot Bands By Aligning Tabs With Holes On Band
Courtesy of AMERICAN HONDA MOTOR CO., INC.

88. Close the ear portion (A) of the band with commercially available pincers Oetiker 1098 or equivalent (B).



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Fig. 121: Closing Ear Portion Of Band Using Pincers Oetiker
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

90. Reinstall the steering gearbox (see **STEERING GEARBOX INSTALLATION**).

91. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**).

STEERING GEARBOX INSTALLATION

1. Install the pinion shaft grommet (A) on the valve housing.

NOTE: If the return line fitting (B) is removed, install it.

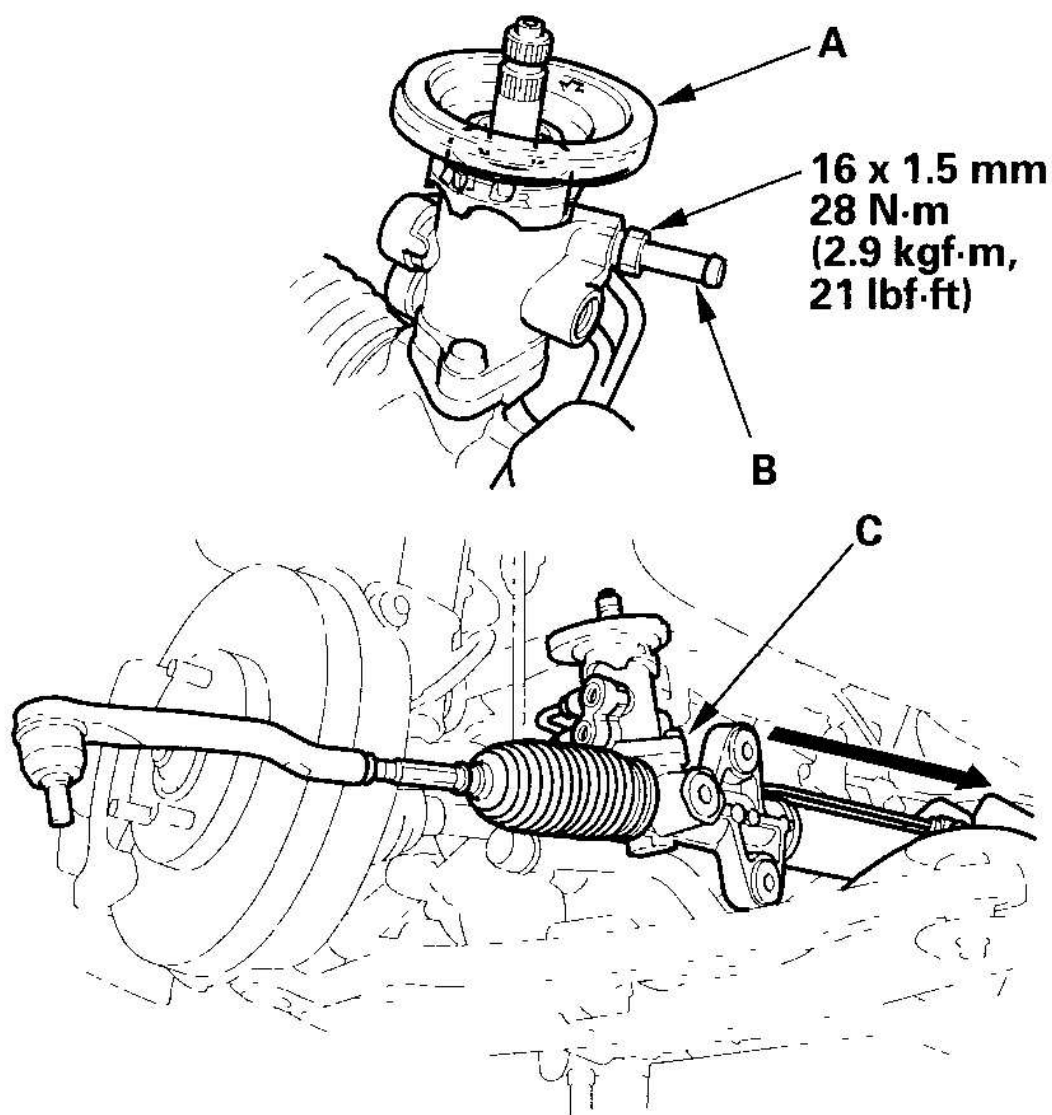
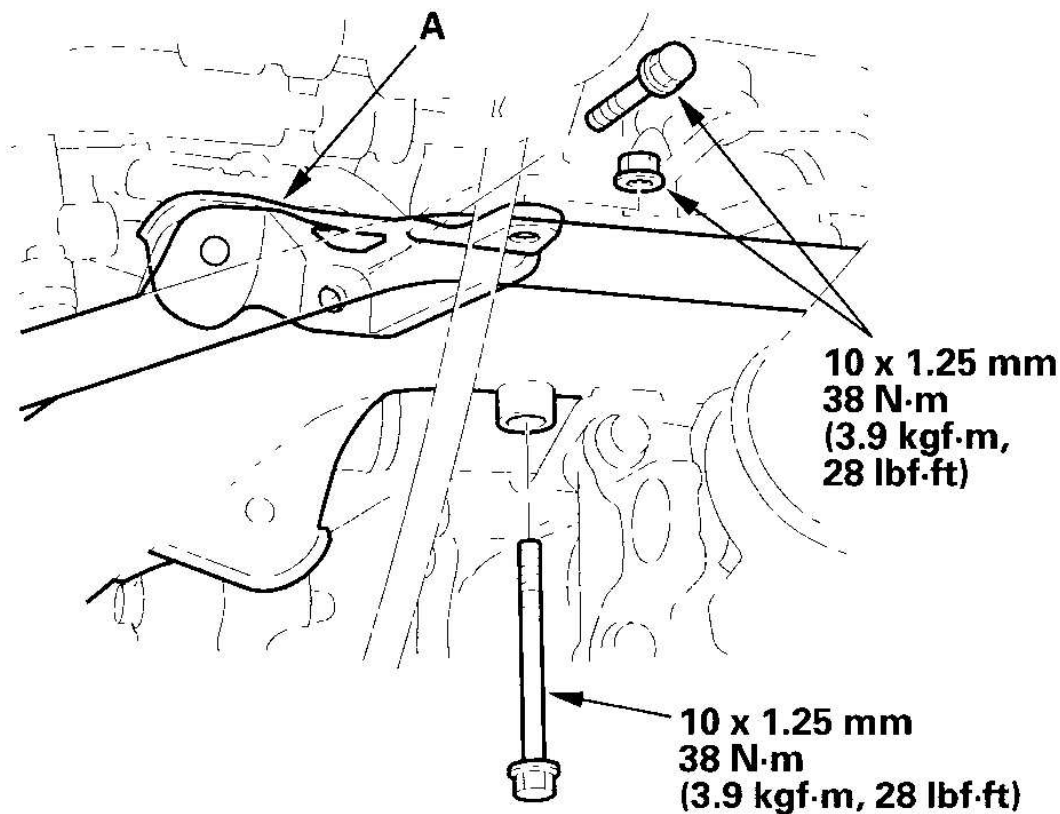


Fig. 122: Installing Pinion Shaft Grommet And Return Line Fitting
Courtesy of AMERICAN HONDA MOTOR CO., INC.

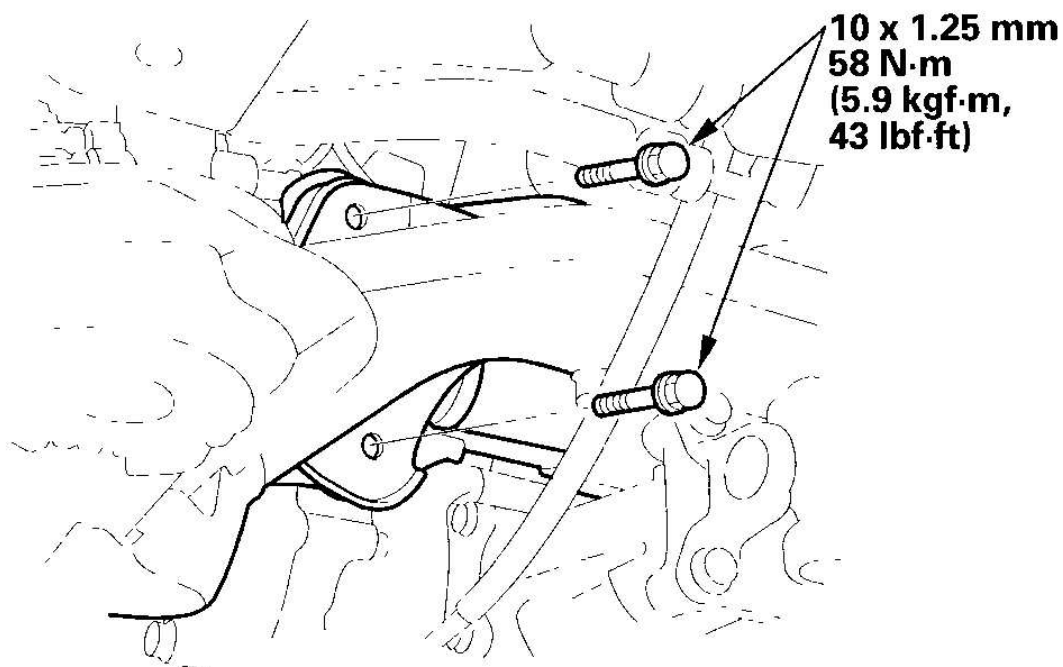
2. Slide the steering gearbox (C) between the front suspension subframe and body from the driver's side. Place the gearbox in position on the front suspension subframe.
3. Install the gearbox stiffener bracket (A) on the front suspension subframe, and tighten the bolt and nut to the specified torque.



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Fig. 123: Installing Gearbox Stiffener Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

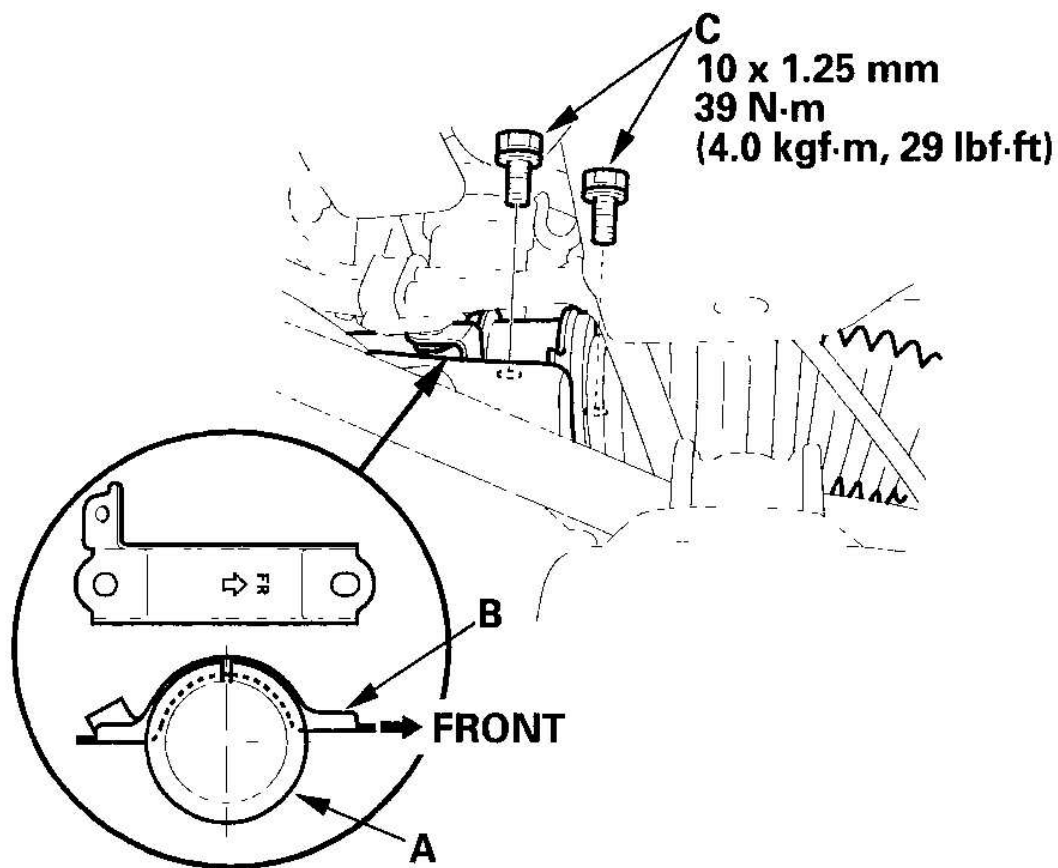
4. Loosely install the two 10 mm flange bolts on the left side of the gearbox.



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Fig. 124: Installing Two 10 mm Flange Bolts On Left Side Of Gearbox
Courtesy of AMERICAN HONDA MOTOR CO., INC.

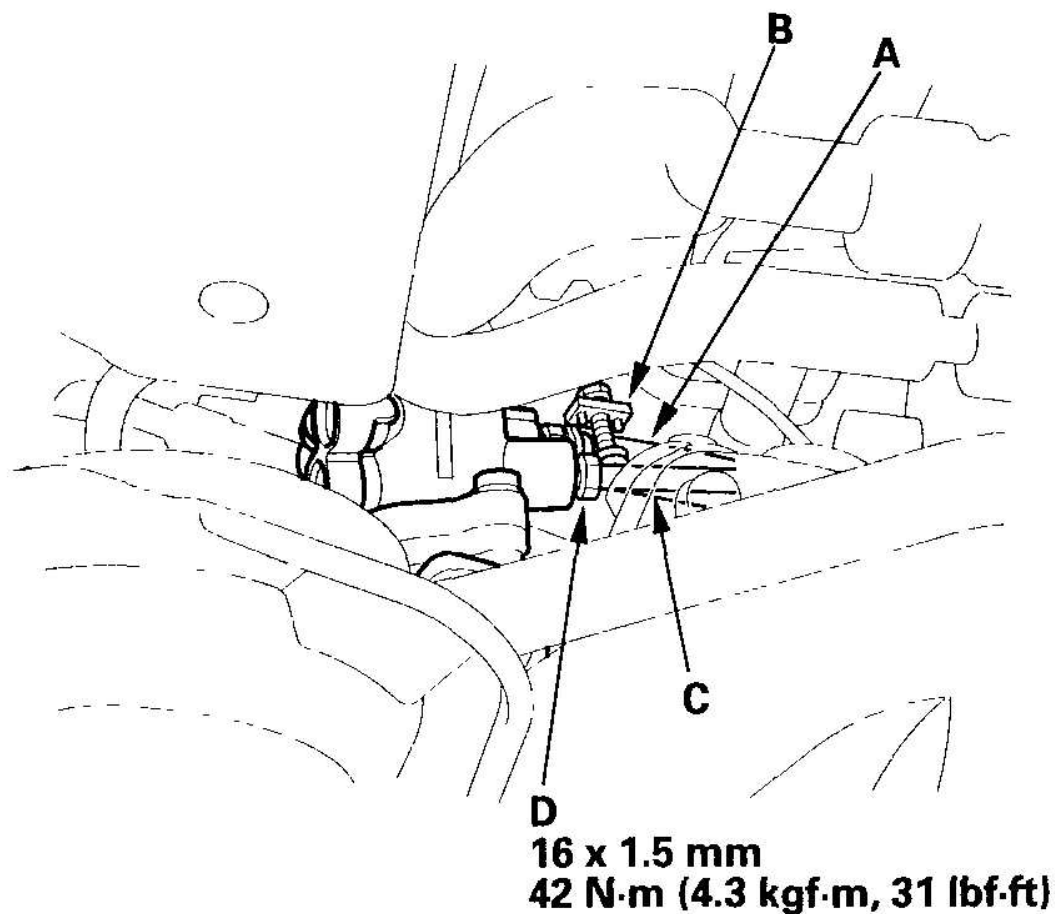
5. Install the mounting cushion (A) on the right side of the gearbox.



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Fig. 125: Installing Mounting Cushion On Right Side Of Gearbox
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the mounting bracket (B) over the mounting cushion, then install the two 10 mm flange bolts (C). Tighten the four 10 mm flange bolts for the gearbox to the specified torque.
7. Connect the return hose (A) securely, and tighten the adjustable hose clamp (B) (see **POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT**).



G03641155

Fig. 126: Connecting Return Hose

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Connect the feed line (C), and tighten the 16 mm flare nut (D) to the specified torque.
9. Install the P/S line mounting brackets (A) on the front suspension subframe and gearbox mounting bracket.

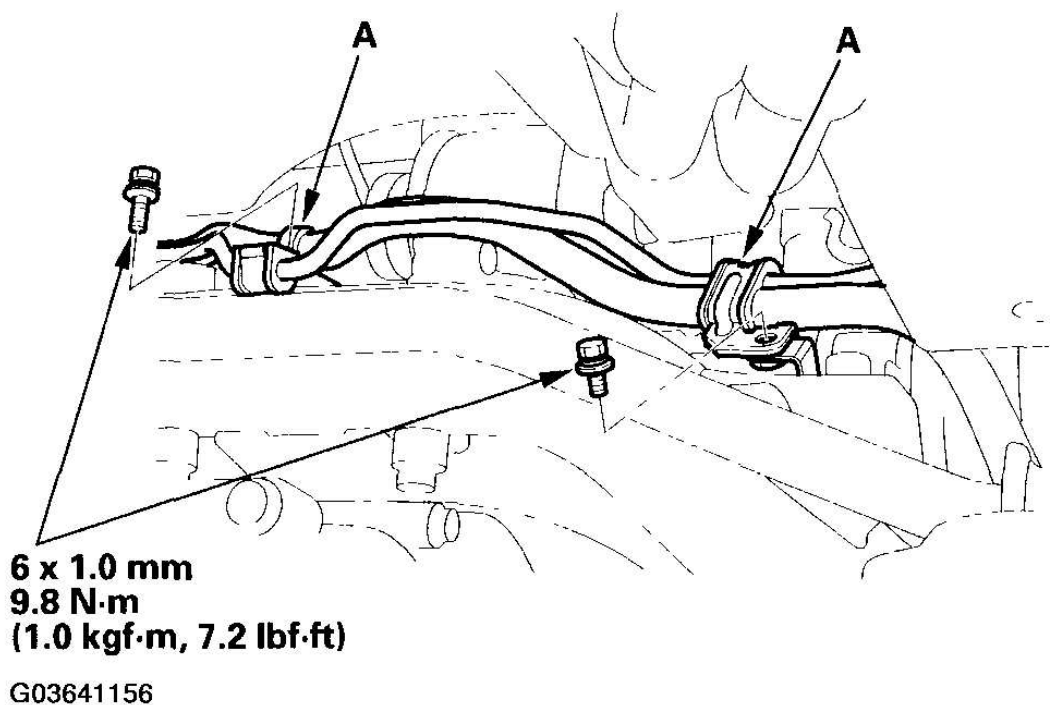


Fig. 127: Installing P/S Line Mounting Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Carefully raise the front suspension subframe with the transmission jack (transfer case supporting jack).
11. Install the front suspension subframe rear brackets (A). Tighten the 12 mm flange bolts (B) and 14 mm special bolts (C) to the specified torque.

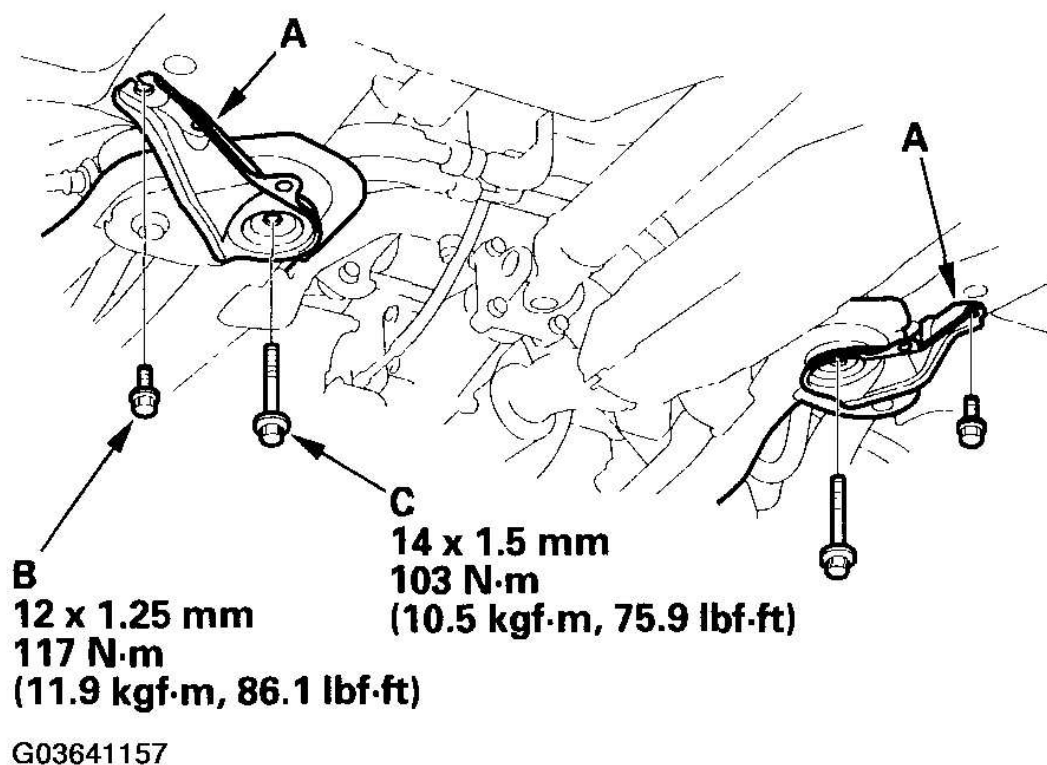
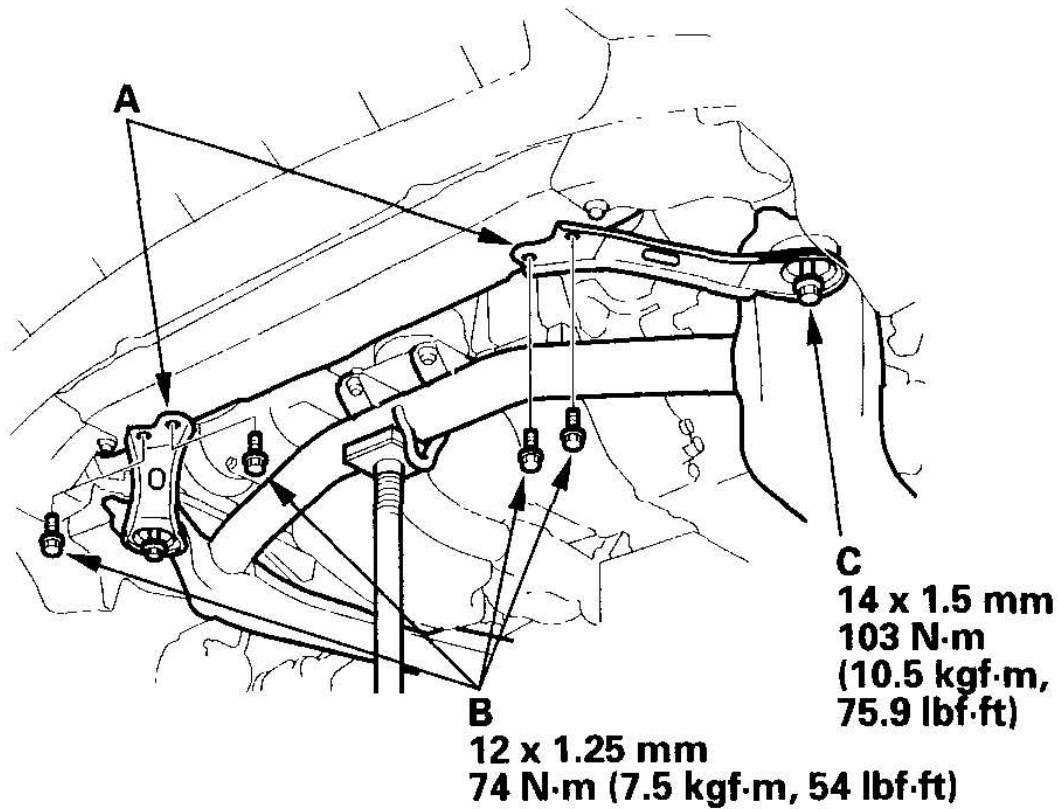


Fig. 128: Installing Front Suspension Subframe Rear Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

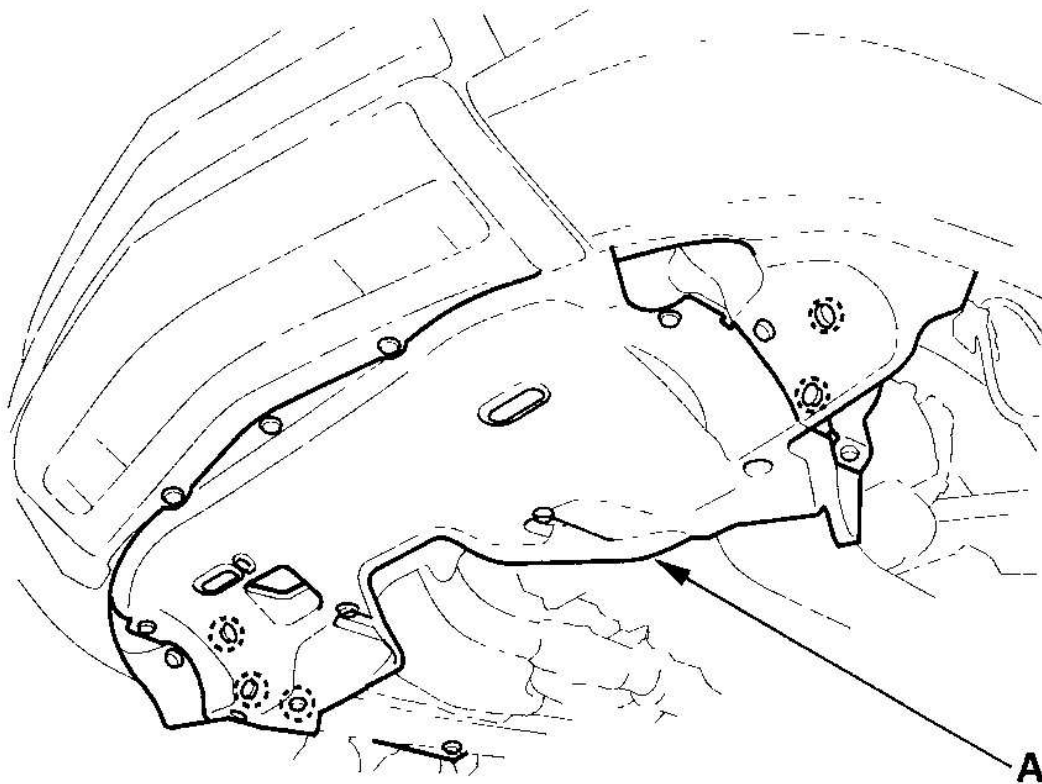
12. Install the front suspension subframe front brackets (A) with 12 mm flange bolts (B) and 14 mm special bolts (C), and tighten to the specified torque.



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Fig. 129: Installing Front Suspension Subframe Front Brackets
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Lower the front suspension subframe supporting jack and the transmission jack.
14. Install the splash shield (A).

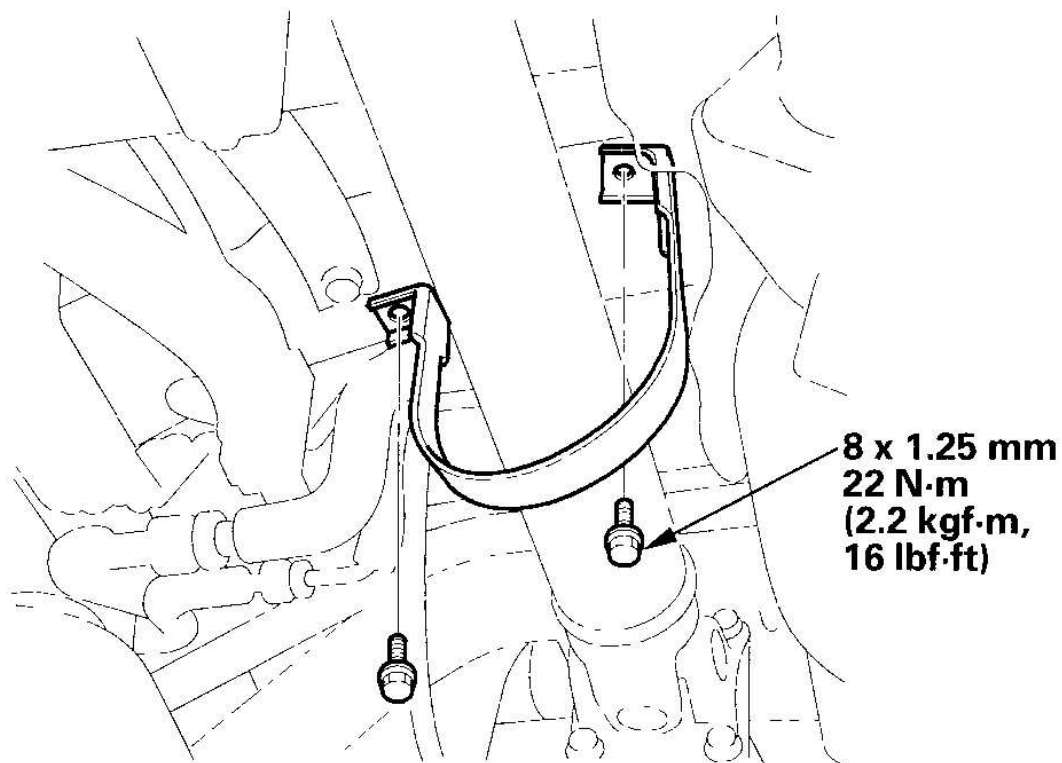


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Fig. 130: Installing Splash Shield

Courtesy of AMERICAN HONDA MOTOR CO., INC.

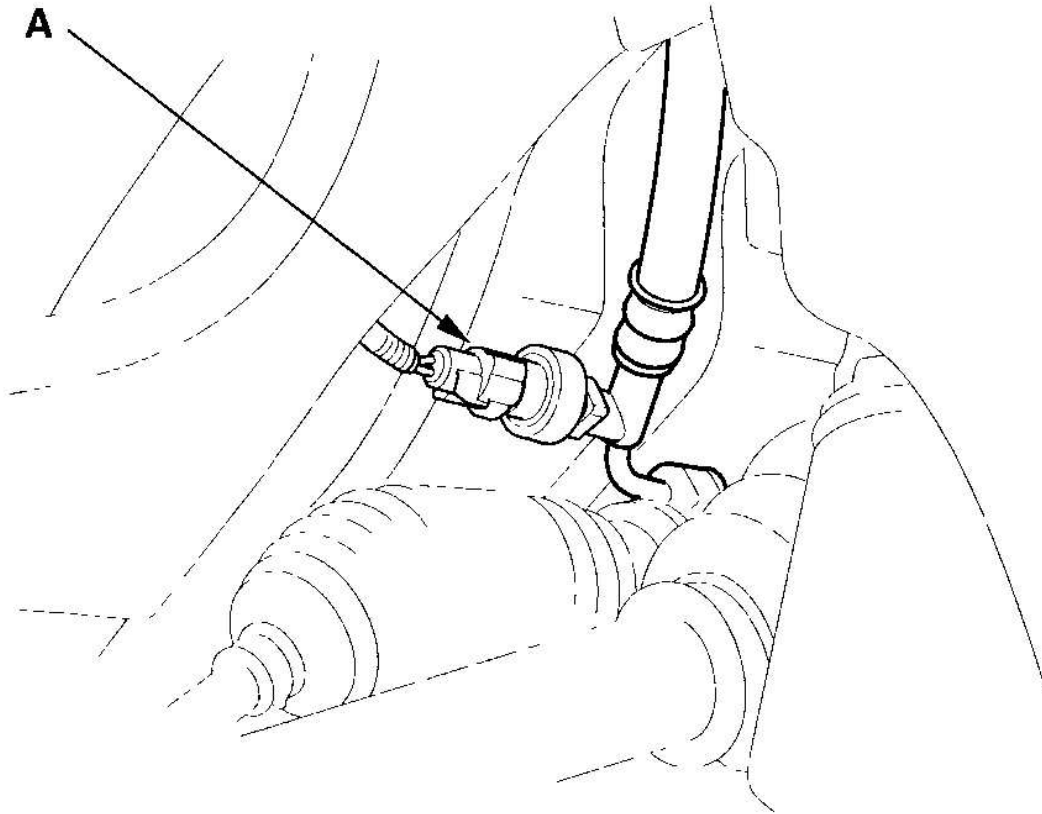
15. Install the propeller shaft protector.



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Fig. 131: Installing Propeller Shaft Protector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

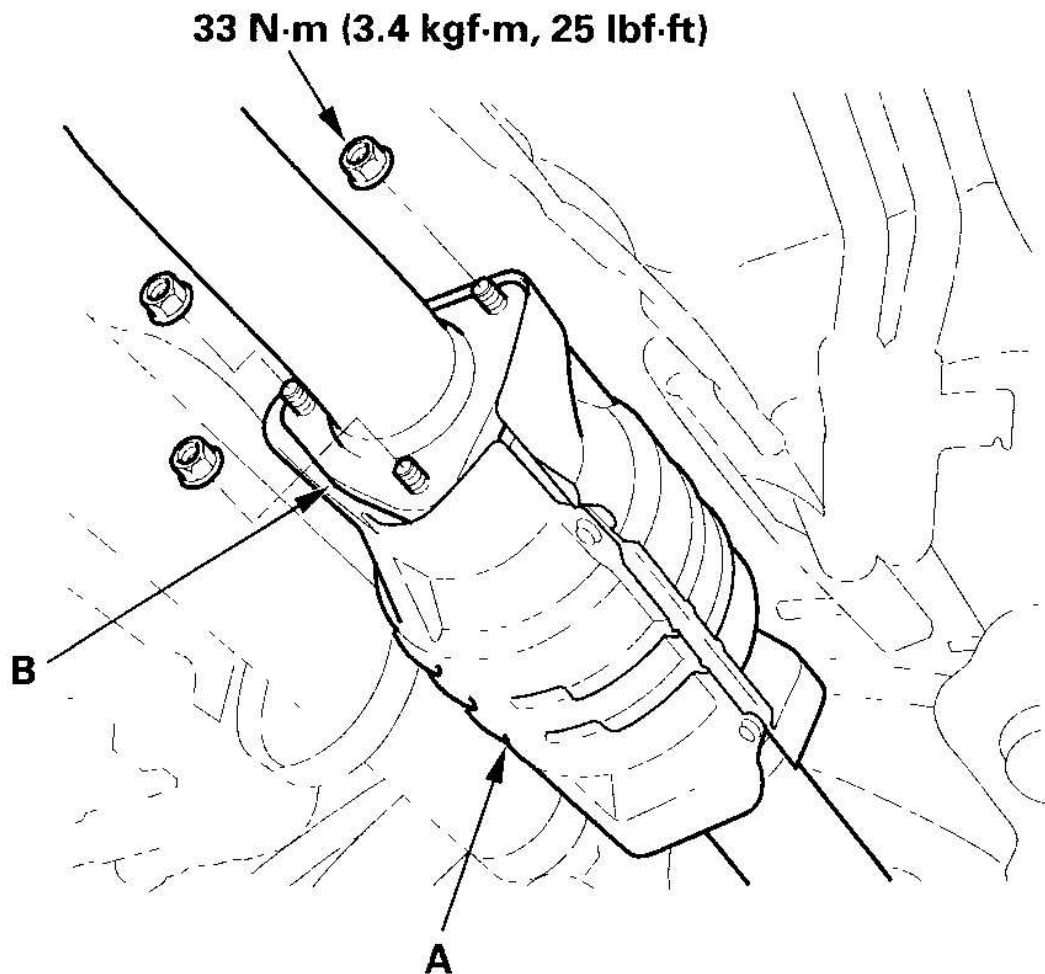
16. Connect the power steering pressure (PSP) switch connector (A).



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Fig. 132: Connecting Power Steering Pressure (PSP) Switch Connector
Courtesy of AMERICAN HONDA MOTOR CO., INC.

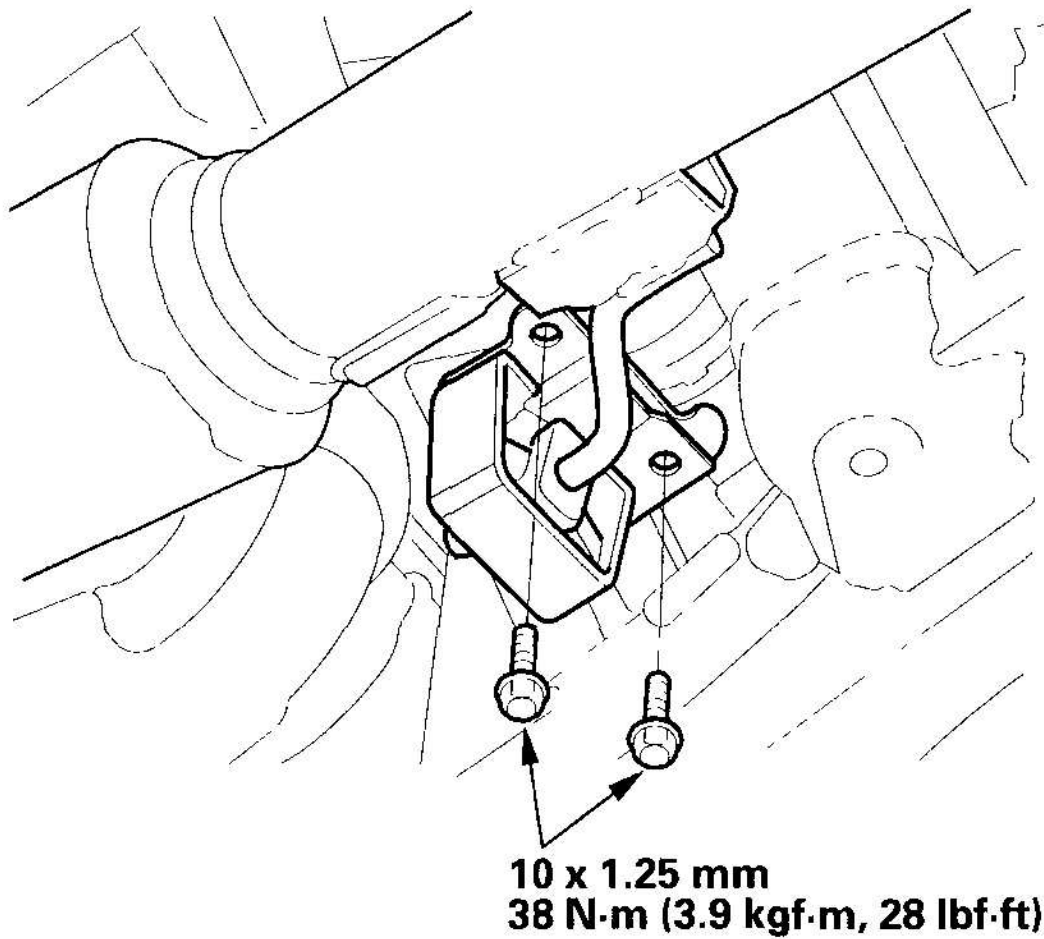
17. Connect the three way catalytic converter (TWC) (A) to the mufflers (B). Install the new 10 mm self-locking nuts and tighten them to the specified torque.



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Fig. 133: Connecting Three Way Catalytic Converter (TWC) To Mufflers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

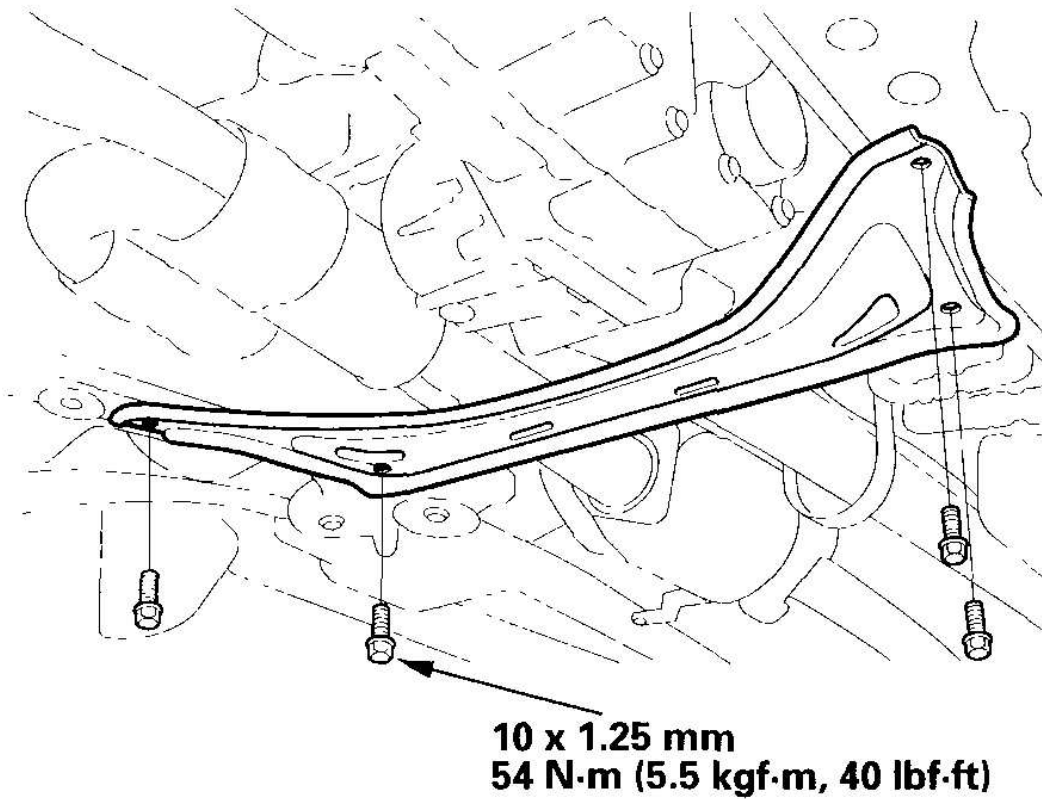
18. Install the exhaust rubber mount on the frame.



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Fig. 134: Installing Exhaust Rubber Mount On Frame
Courtesy of AMERICAN HONDA MOTOR CO., INC.

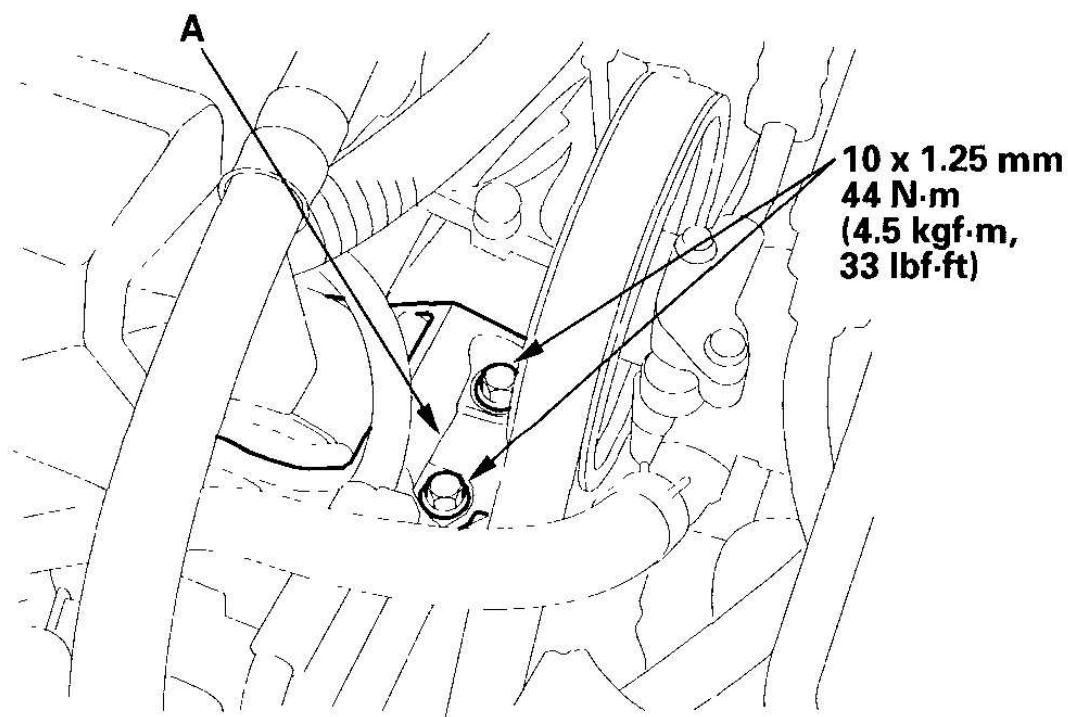
19. Install the front suspension subframe stiffener plate.



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Fig. 135: Installing Front Suspension Subframe Stiffener Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the 10 mm flange bolts on the engine side mount bracket (A).



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Fig. 136: Installing 10 mm Flange Bolts On Engine Side Mount Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Connect the pump outlet hose (A) from the power steering pump, and install the feed hose clamp (B).

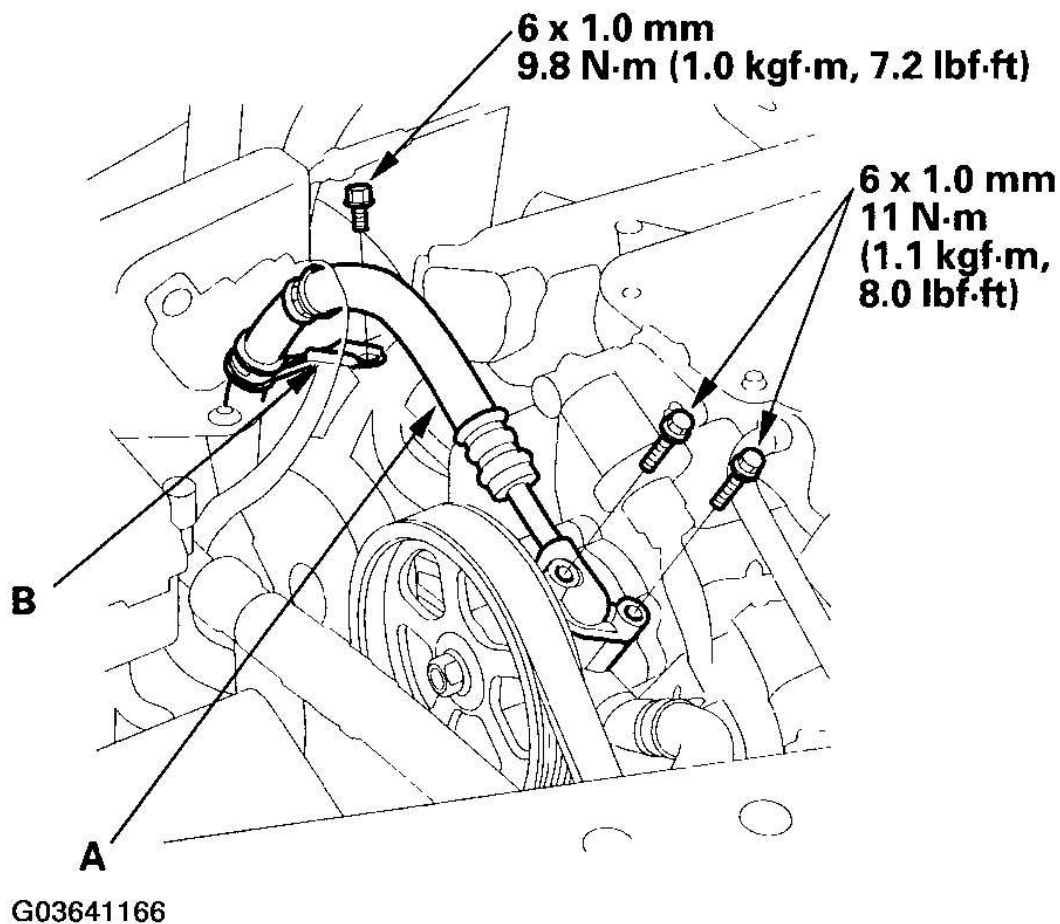
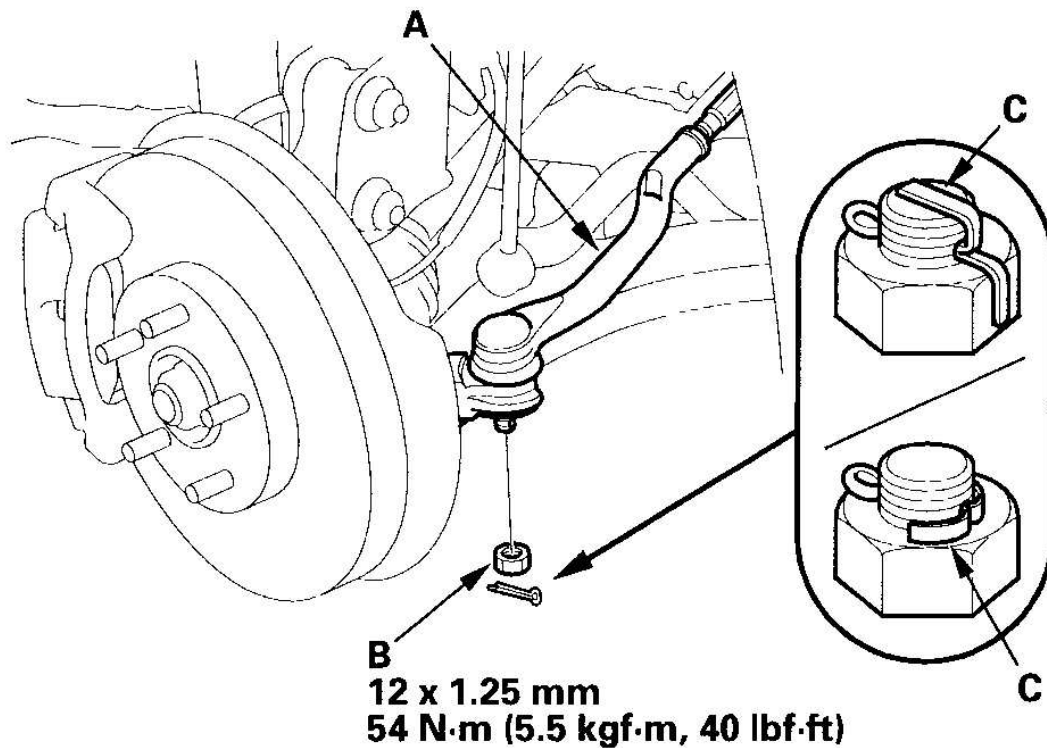


Fig. 137: Connecting Pump Outlet Hose From Power Steering Pump
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. 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.



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Fig. 138: Reconnecting Tie Rod Ends To Steering Knuckles
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Install the new cotter pin (C) and bend it as shown.
24. Center the steering rack within its stroke, then install the steering joint (A), and reconnect the steering shaft (B) and pinion shaft (C). Make sure the steering joint is connected as follows:
 - Insert the upper end of the steering joint onto the steering shaft (line up the bolt hole (D) with the flat portion (E) on the shaft).
 - Slip the lower end of the steering joint onto the pinion shaft (line up the bolt hole (F) with the groove (G) around the shaft), and loosely install the lower joint bolt. Be sure that the lower joint bolt is securely in the groove in the pinion shaft.
 - Pull on the steering joint to make sure that the steering joint is fully seated. Then install the upper joint bolt and tighten it. Tighten the lower joint bolt to the specified torque.

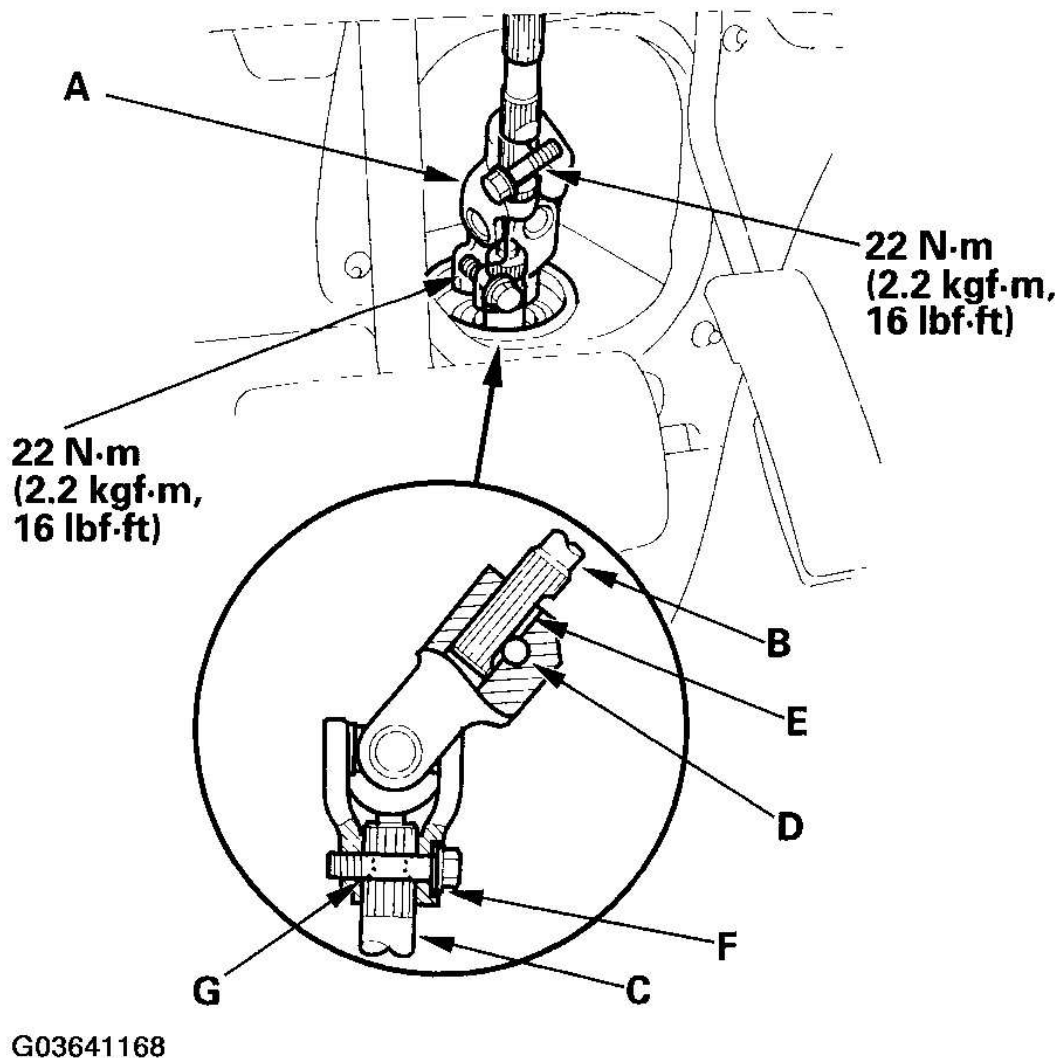


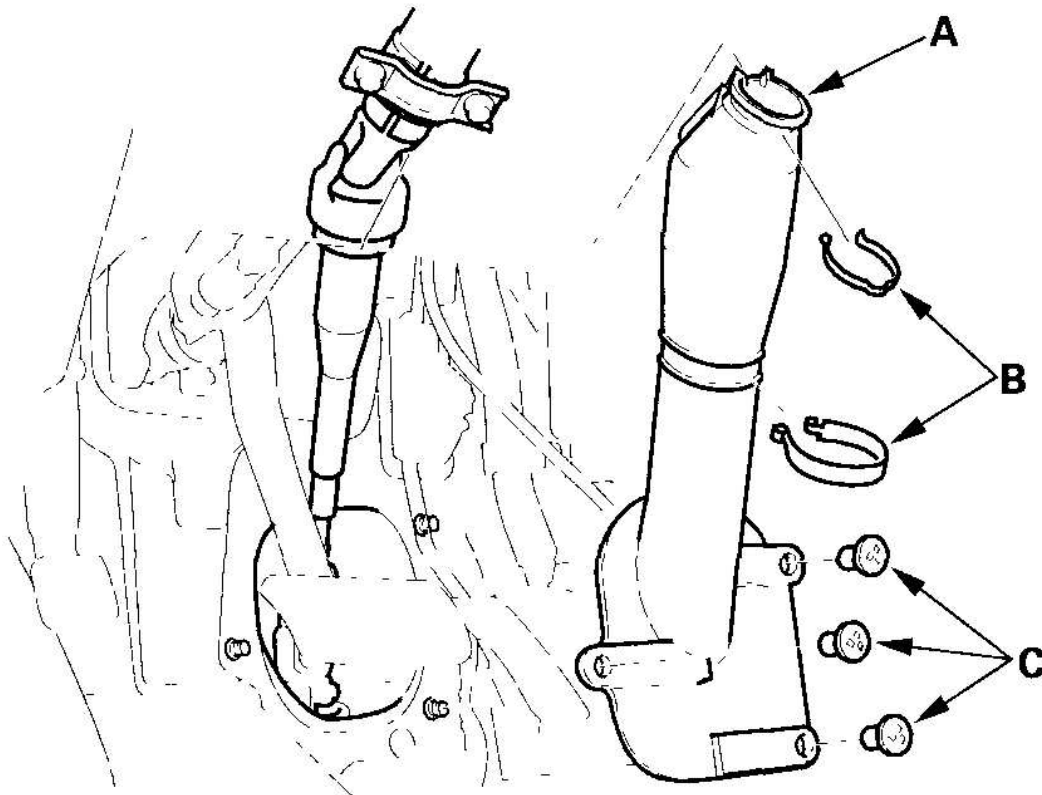
Fig. 139: Installing Steering Joint

Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Center the cable reel first by rotating it clockwise until it stops. Then rotate it counterclockwise (about two and half turns) until the arrow mark on the label points straight up.

Reinstall the steering wheel (see **STEERING WHEEL INSTALLATION**).

26. Install the steering joint cover (A) with the clamps (B) and clips (C).



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Fig. 140: Installing Steering Joint Cover Using Clamps And Clips
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Install the front wheels.
28. Connect the negative battery cable.
 - Do the PCM idle learn procedure (see **PCM IDLE LEARN PROCEDURE**).
 - Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT**).
 - Enter the anti-theft codes for the radio and the navigation system, then the customer's radio station preset.
 - Set the clock.
29. Fill the system with power steering fluid, and bleed air from the system (see **FLUID REPLACEMENT**).
30. After installation, perform the following:
 - 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 **FLUID LEAKAGE INSPECTION**).

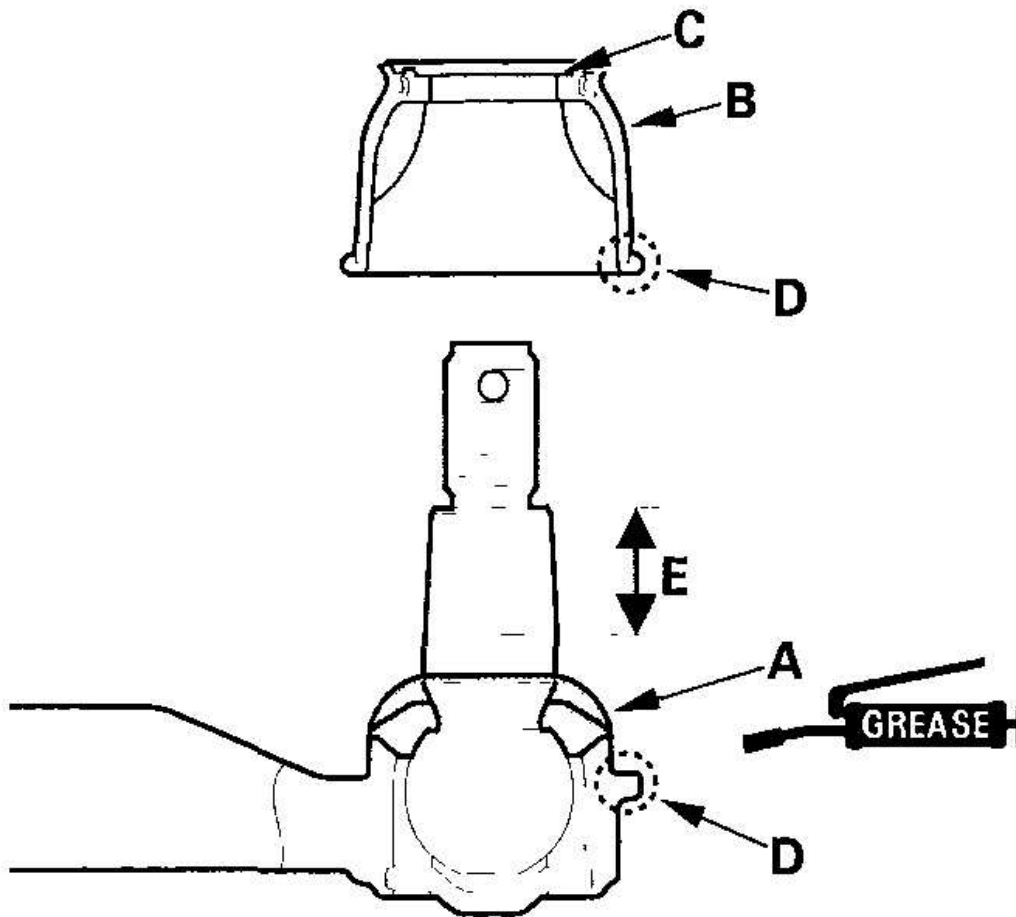
- Adjust the front toe (see **WHEEL ALIGNMENT**).
- Check the steering wheel spoke angle. Adjust by turning the right and left tie-rods equally, if necessary.

TIE-ROD BALL JOINT BOOT REPLACEMENT

Special Tools Required

Front hub disassembly tool 07965-SA50500

1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.



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Fig. 141: Packing Lower Area Of Ball Pin And Interior Of New Boot And Lip With Multipurpose Grease

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Note these items when installing new grease:

- Keep grease off the boot installation section (D) and the tapered section (E) of the ball pin.
 - Do not allow dust, dirt, or other foreign materials to enter the boot.
4. Install the new boot (A) using the special 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.

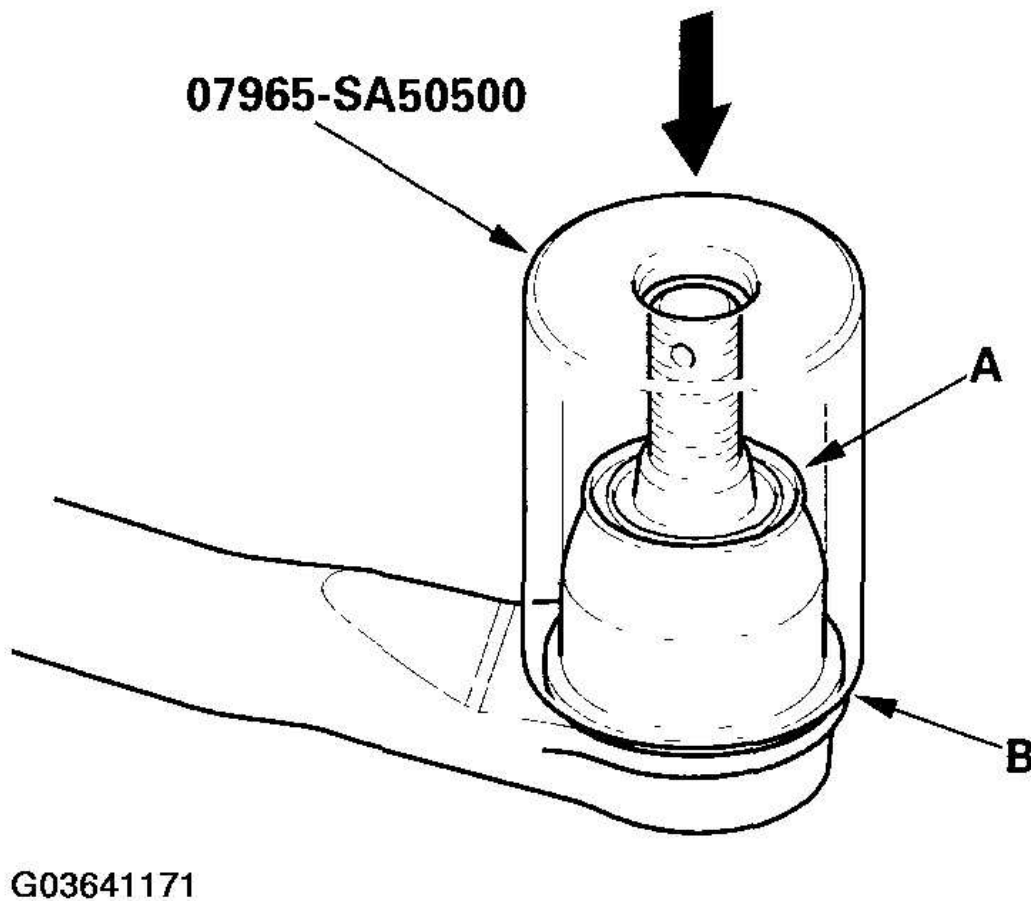
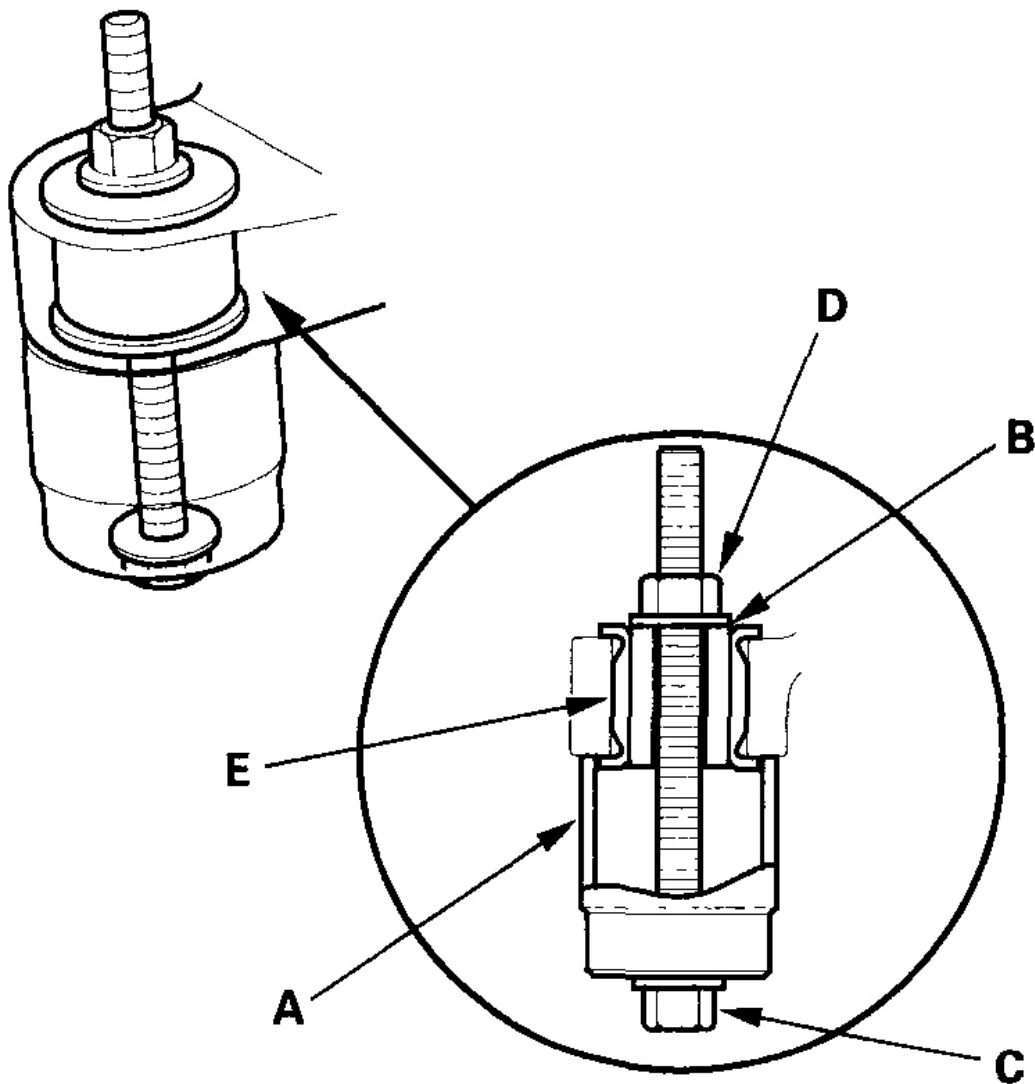


Fig. 142: Installing New Boot Using Special Tool
Courtesy of AMERICAN HONDA MOTOR CO., INC.

GEARBOX MOUNT CUSHION REPLACEMENT

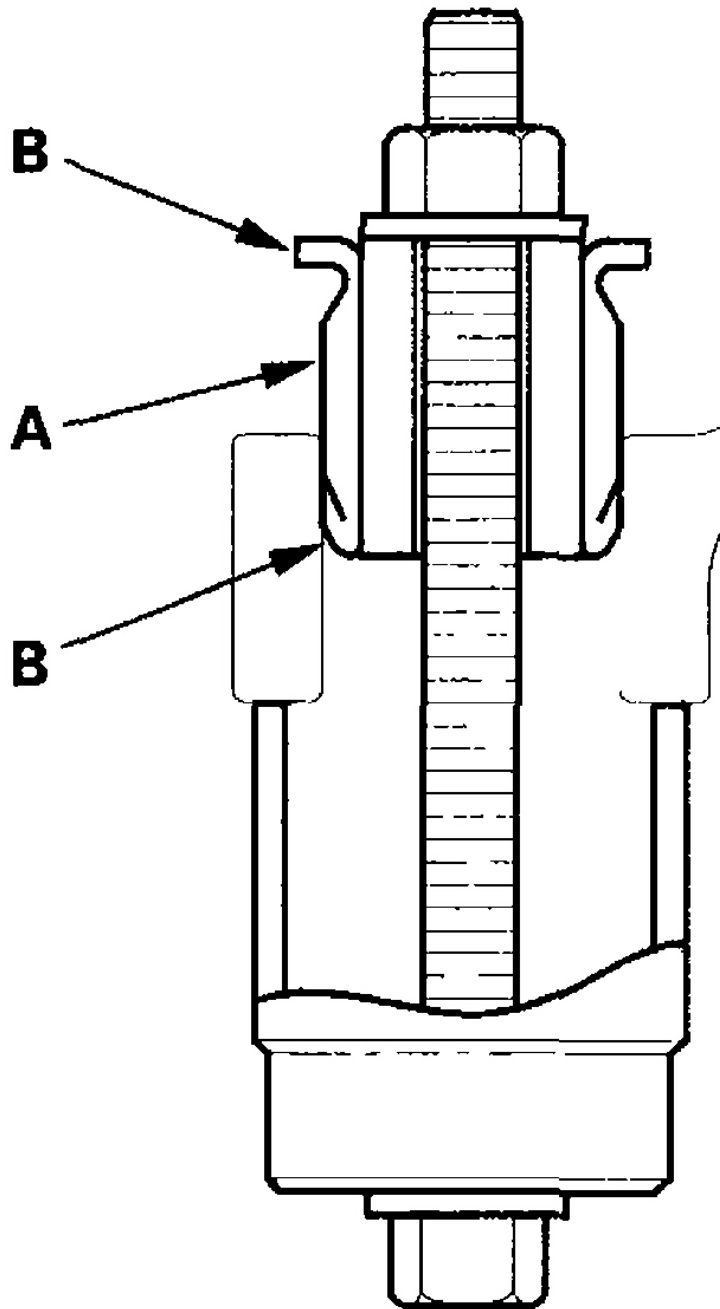
1. Remove the steering gearbox (see **STEERING GEARBOX REMOVAL**).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.



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Fig. 143: Positioning 34 mm Socket Wrench On Flange Part Of Gearbox Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Hold the nut with a wrench, and tighten the flange bolt with another 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.



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Fig. 144: Positioning 34 mm Socket Wrench On Flange Part Of Gearbox Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt,

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and the nut as shown.

6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) properly fit on the gearbox flange surface.