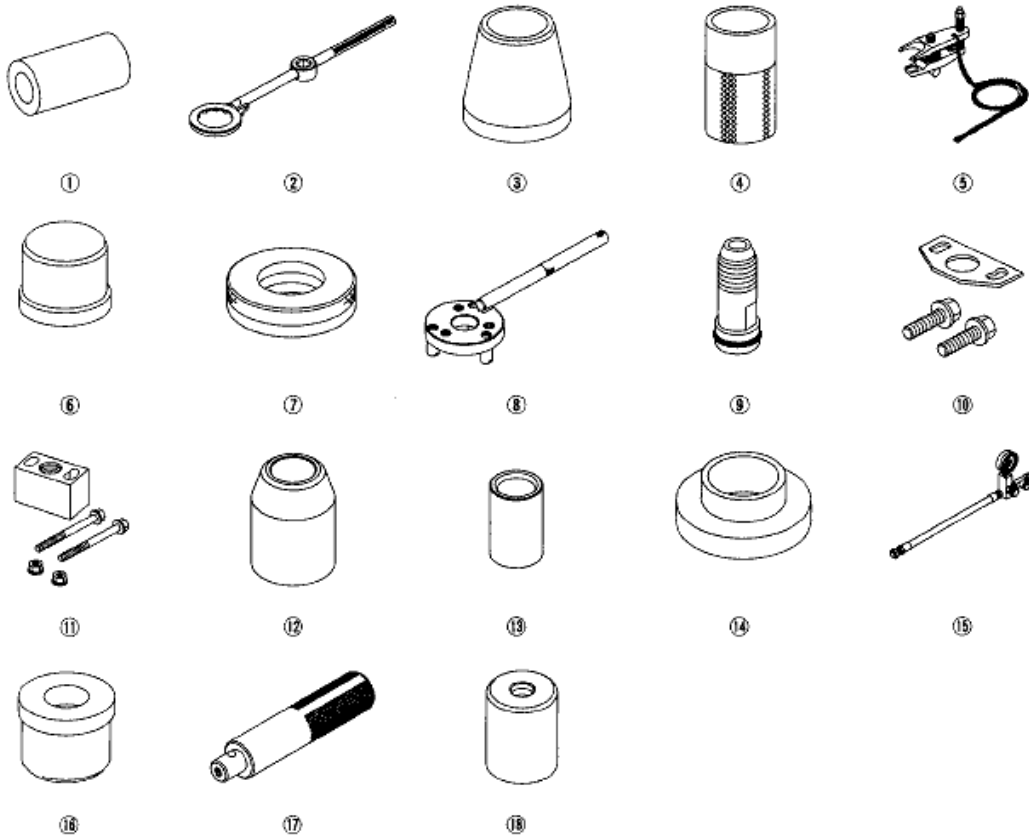


2007-08 STEERING

Power Steering - TL

SPECIAL TOOLS

Ref. No.	Tool Number	Description	Qty
①	07GAF-PH70100	Pilot Collar	1
②	07MAA-SL00100 or 07916-SA50001	Locknut Wrench, 40 mm	1
③	07HAG-SF10100	Piston Seal Ring Guide	1
④	07HAG-SF1020A or 07HAG-SF10200	Piston Seal Ring Sizing Tool	1
⑤	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑥	07NAD-SR3020A	Cylinder End Seal Remover Attachment	1
⑦	07NAG-SR3090A	Valve Seal Ring Sizing Tool	1
⑧	07ZAB-S5A0100	Pulley Holder	1
⑨	07VAK-P8A011A	P/S Joint Adapter (Pump)	1
⑩	07VAK-P8A012B	P/S Joint Adapter Plate (Pump)	1
⑪	07RAK-S040122	P/S Joint Adapter (Hose)	1
⑫	07YAG-S2X0100	Sleeve Seal Ring Guide	1
⑬	07ZAG-S5A0100	Sleeve Seal Ring Sizing Tool, 36 mm	1
⑭	07ZAG-S5A0300	Cylinder End Seal Slider	1
⑮	07406-0010001, 07406-001000A, or 07406-001A101	P/S Pressure Gauge	1
⑯	07746-0010100	Attachment, 32 x 35 mm	1
⑰	07749-0010000	Driver	1
⑱	07965-SA50500	Front Hub Dis/Assembly Tool	1

**Fig. 1: Identifying Special Tools**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT LOCATION INDEX

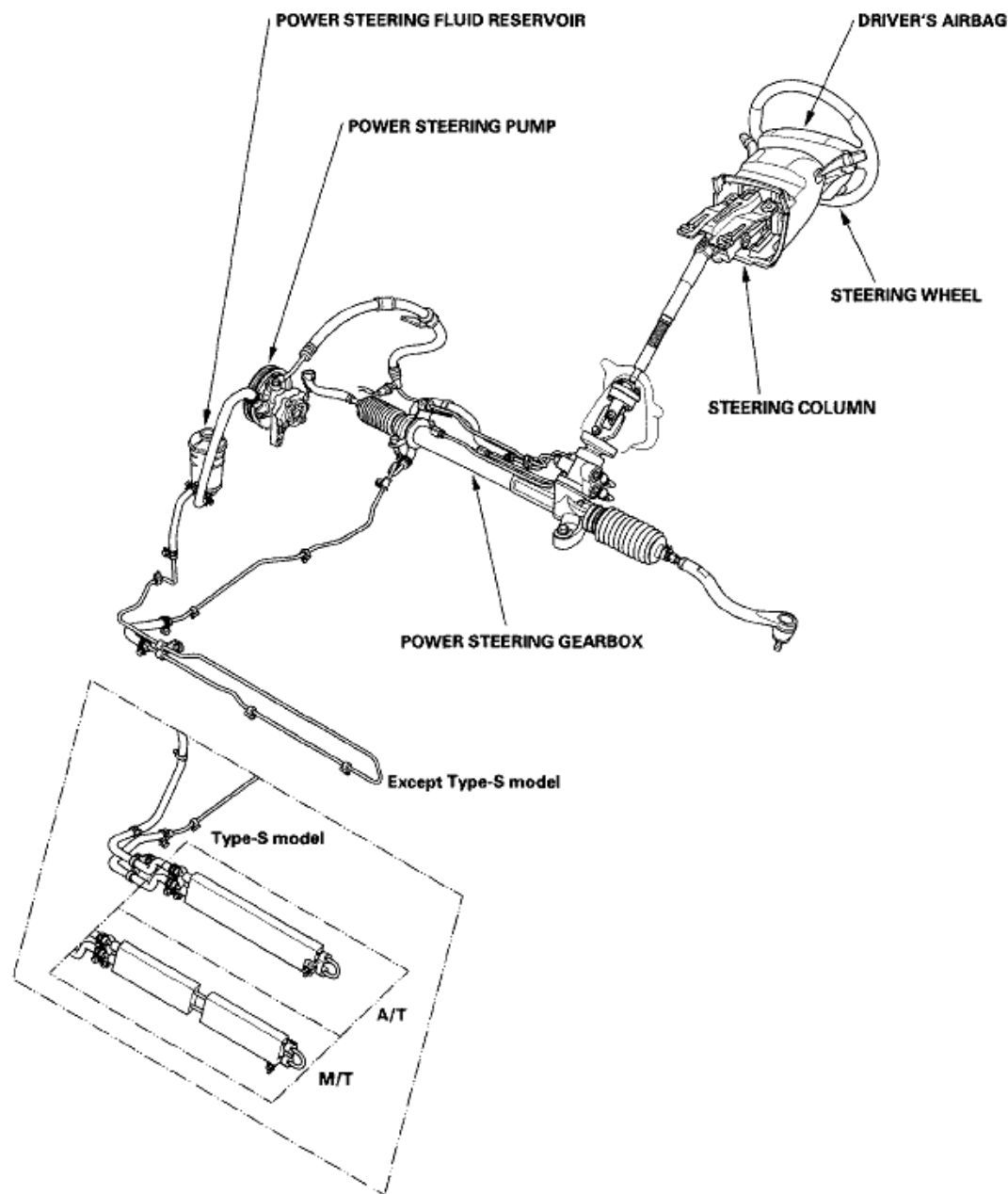


Fig. 2: Identifying Steering Component Location
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

SYMPTOM TROUBLESHOOTING INDEX

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

SYMPTOM TROUBLESHOOTING INDEX

Symptom	Procedure(s)	Also check for
Hard steering	Troubleshoot the system (see SYMPTOM	- Modified suspension - Damaged

	<u>TROUBLESHOOTING</u>).	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	1. Check the rack guide adjustment (see <u>RACK GUIDE ADJUSTMENT</u>). 2. Check the drive belt for slippage (see <u>DRIVE BELT INSPECTION</u>). 3. Check the power steering pump fluid pressure with T/N 07406-0010001 (see <u>PUMP PRESSURE TEST WITH T/N 07406-0010001</u>), 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. Overhaul the steering gearbox (see <u>STEERING GEARBOX OVERHAUL</u>).	
Steering wheel will not return smoothly	1. Check cylinder lines for deformation. 2. Check upper and lower ball joints for binding. 3. Check wheel alignment (see <u>WHEEL ALIGNMENT</u>). 4. Overhaul the steering gearbox (see step 1 on <u>REMOVAL</u>).	
Uneven or rough steering	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 air entering inlet side of pump. 5. Check for low fluid level in the power steering reservoir due to possible leaks in system (see <u>POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT</u>). 6. Overhaul the steering gearbox (see step 1 on <u>REMOVAL</u>).	
Steering wheel kicks back during wide turns	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>), 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>).	
Humming noise from the power steering system	- Check when the noise occurs: - If the noise is heard during the first 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. - Check for the high-pressure hose touching the subframe or body. - Check for automatic transmission converter noise. - Check for air bubbles in the power steering fluid, leak on inlet side of pump. - Check for particle contamination of fluid and restricted filter in the reservoir.	Pump pressure
Power steering rack rattle or chattering	- Check for loose steering components (tie-rod and ball joints). Tighten or replace as necessary. - Check the steering column shaft for wobbling. If the steering column wobbles, replace the steering column assembly (see <u>STEERING COLUMN REMOVAL AND INSTALLATION</u>). - Check the rack guide adjustment (see <u>RACK GUIDE ADJUSTMENT</u>). - Check the power steering pump pulley: - If the pulley is loose, tighten it (see step 33 on <u>DISASSEMBLY</u>). - If the pump shaft is loose, replace the pump (see <u>PUMP REPLACEMENT</u>).	
Hissing from the power steering system/foaming fluid	- Check the fluid level. If low, fill the reservoir to the proper level and check for leaks (see <u>FLUID CHECK/REPLACEMENT</u>). - Check the reservoir for leaks. - Check for crushed inlet hose or loose hose clamp allowing air into the suction side of the system (see <u>FLUID LEAKAGE INSPECTION</u>). - Check the power steering pump shaft oil seal for leaks.	Air in the P/S fluid
Noise from the power steering pump	- Compare the pump noise at normal operating temperature to another like vehicle (pump noise during the first 2-3 minutes after starting the engine in cold weather is normal). - Remove and inspect the pump for wear and damage (see <u>PUMP OVERHAUL</u>).	- P/S pump pressure - Air in the P/S fluid

Squeaking from the power steering pump	Check the drive belt (see <u>DRIVE BELT INSPECTION</u>).	
Fluid leaks from the steering gearbox	• Fluid leaks from the top of the valve body unit. Overhaul the valve body unit (see <u>STEERING GEARBOX OVERHAUL</u>). • 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. • Fluid leaks from pinion shaft near the lower steering joint bolt. Overhaul the valve body unit (see <u>STEERING GEARBOX OVERHAUL</u>). • Fluid leaks from the steering damping valve covers on the valve body unit. Replace the valve housing.	
Fluid leaks from the power steering line	• Fluid leaks from the cylinder line connections (flare nuts). Tighten the connection and retest (see <u>POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT</u>). • Fluid leaks from a damaged cylinder line(s). Replace the cylinder line (see <u>POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT</u>). • Fluid leaks from the pump outlet hose or return line fitting on the valve body unit (flare nuts). Tighten the fitting and retest. If it still leaks, replace the hose, the line, or valve body unit as necessary.	
Fluid leaks from the power steering pump	• Fluid leaks from the front oil seal. Replace the front oil seal. • Fluid leaks from the power steering pump housing. Replace the leaking O-rings or seals (see <u>PUMP OVERHAUL</u>), and if necessary replace the power steering pump (see <u>PUMP REPLACEMENT</u>).	
Fluid leaks from the power steering reservoir	• Fluid leaks from around the reservoir cap because fluid level is too high. Drain the reservoir to the proper level. If the fluid is aerated check for an air leak on the inlet side of the 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)	• 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	Check the hose for damage, deterioration, or improper	

pump inlet hose (low-pressure)	assembly. Replace or repair as necessary.	
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SYMPTOM TROUBLESHOOTING

HARD STEERING

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

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

YES -Go to step 2.

NO -Power assist is OK.

2. Connect the P/S joint adapter (pump), P/S joint adapter (hose), and pressure gauge T/N 07406-0010001 (see **PUMP PRESSURE TEST WITH T/N 07406-0010001**), T/N 07406-001000A or T/N 07406-001A101 (see **PUMP PRESSURE TEST WITH T/N 07406-001000A OR T/N 07406-001A101**) to the pump.

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

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

YES -Go to step 4.

NO -Go to step 8.

4. Measure the pump relief pressure at idle.

Is the pressure 7,940-8,630 kPa (81-88 kgf/cm² , 1,150-1,250 psi) or more?

YES -Go to step 5.

NO -Go to step 9.

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

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

YES -Go to step 6.

NO -Go to step 11.

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

Is the pressure 7,940-8,630 kPa (81-88 kgf/cm² , 1,150-1,250 psi) or more?

YES -Go to step 7.

NO -Faulty gearbox.

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

Is the steering OK?

YES -Repair is completed.

NO -Faulty gearbox.

8. Check the outlet and return hose and 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.

9. Disassemble the pump (see **DISASSEMBLY**).

10. Check the flow control valve for smooth movement and leaks (see step 11 on **DISASSEMBLY**).

Is the flow control valve OK?

YES -Faulty pump assembly.

NO -Faulty flow control valve.

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

Are the A or B lines deformed?

YES -Replace the deformed line.

NO -Go to step 12.

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

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

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

NO -Faulty valve body unit.

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 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**).

Rotational play: 0-10 mm (0-0.39 in.)

Rotational play: 0—10 mm (0—0.39 in.)

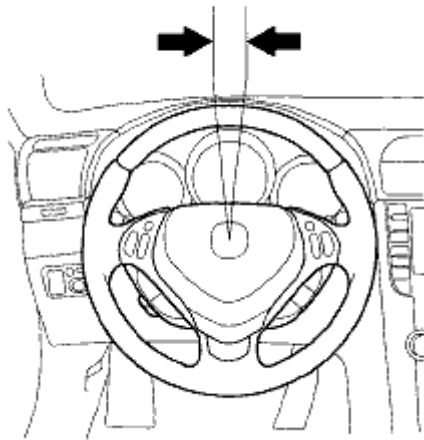


Fig. 3: Checking Steering Wheel Rotational Play
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 CHECK/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 the specification, the gearbox and pump are OK.
 - If the scale reads more than the specification, troubleshoot the steering system (see **SYMPTOM TROUBLESHOOTING**).

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

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

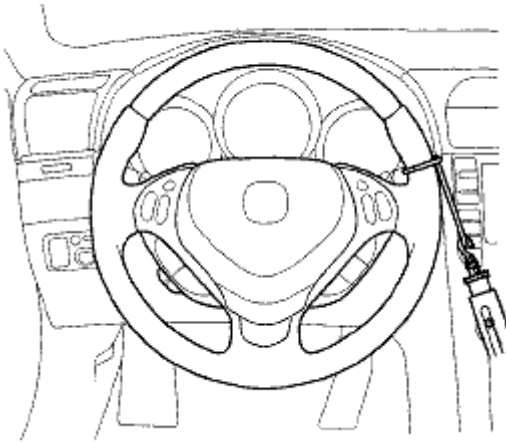


Fig. 4: Pulling Spring Scale To Steering Wheel
Courtesy of AMERICAN HONDA MOTOR CO., INC.

STEERING LINKAGE AND GEARBOX INSPECTION

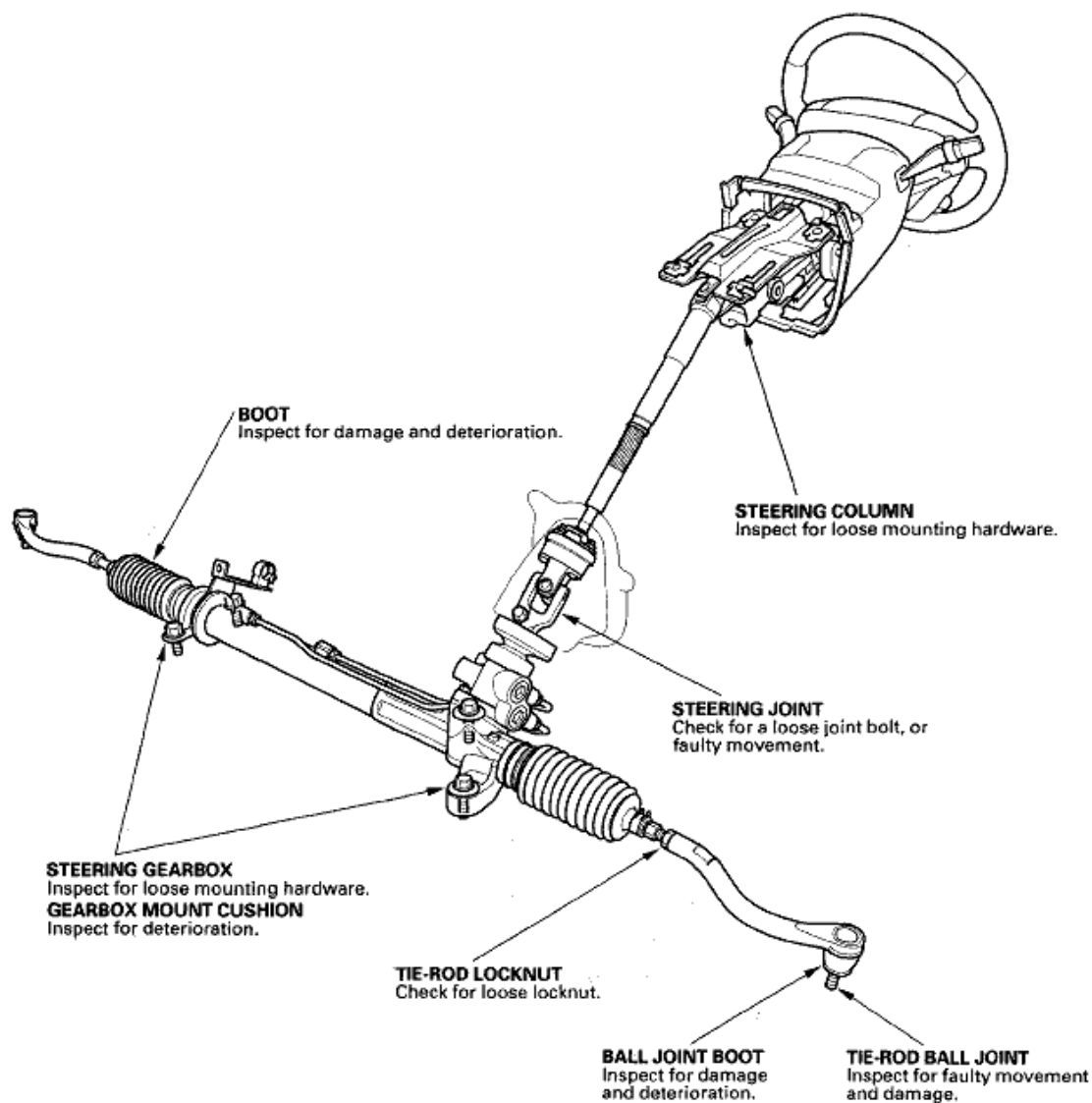


Fig. 5: Identifying Steering Linkage And Gearbox Components
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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. Remove the right side engine component cover (A).

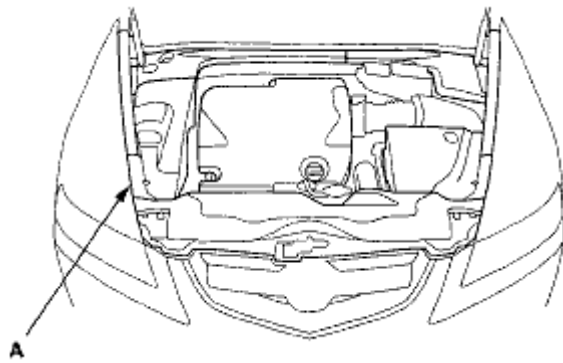


Fig. 6: Identifying Right Side Engine Component Cover
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the power steering fluid level (see **FLUID CHECK/REPLACEMENT**).
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.

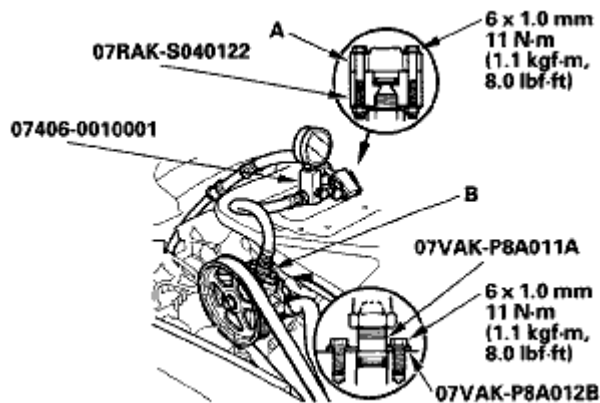


Fig. 7: Connecting P/S Joint Adapter (Hose) To P/S Pressure Gauge With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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).

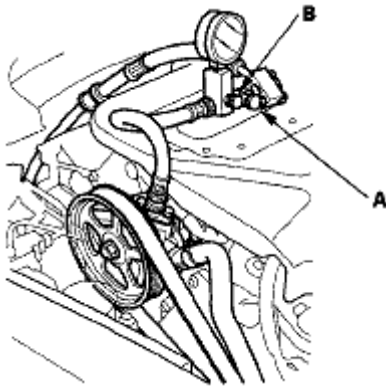


Fig. 8: Identifying Shut-Off Valve And Pressure Control Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.
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 kgf/cm² , 213 psi). If it reads high, check for:
 - Clogged or deformed inlet or return line and return or outlet hose 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 over-heating.**

12. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 7,940-8,630 kPa (81 -88 kgf/cm² , 1,150-1,250 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 07406-001 000A or 07406-001A101

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

1. Remove the right side engine compartment cover (A).

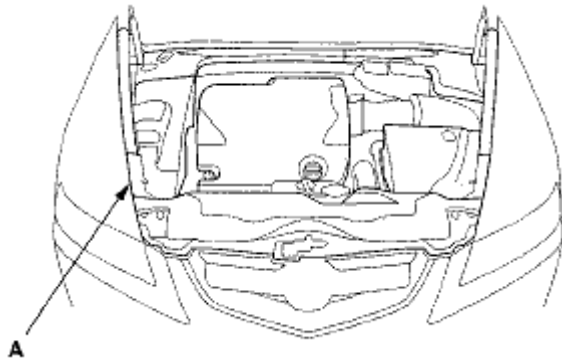


Fig. 9: Identifying Right Side Engine Compartment Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the power steering fluid level (see **FLUID CHECK/REPLACEMENT**).
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.

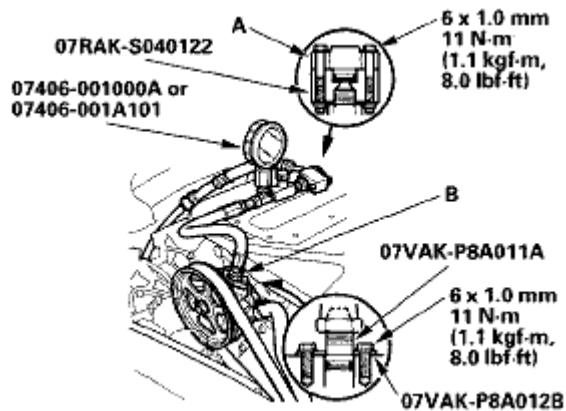


Fig. 10: Identifying P/S Joint Adapter (Pump) On Pump Outlet With P/S Joint Outlet Plate
With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.

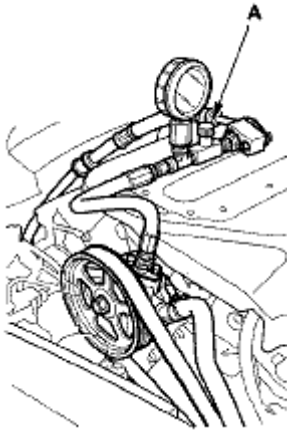


Fig. 11: Connecting P/S Joint Adapter (Hose) To P/S Pressure Gauge
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.
9. Measure steady-state fluid pressure while the engine is idling. If the pump is in good condition, the gauge should read no more than 1,470 kPa (15 kgf/cm² , 213 psi). If it reads high, check for:
 - Clogged or deformed inlet or return line and return and outlet hose between the pump and gearbox.
 - Clogged valve body unit.
10. Let the engine idle, and gradually close the shut-off valve and immediately read the pressure.

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

11. Immediately open the shut-off valve fully. If the pump is in good condition, the gauge should read at least 7,940-8,630 kPa (81-88 kgf/cm² , 1,150-1,250 psi). A low reading means pump output is too low for full assist. Repair or replace the pump.

FLUID LEAKAGE INSPECTION

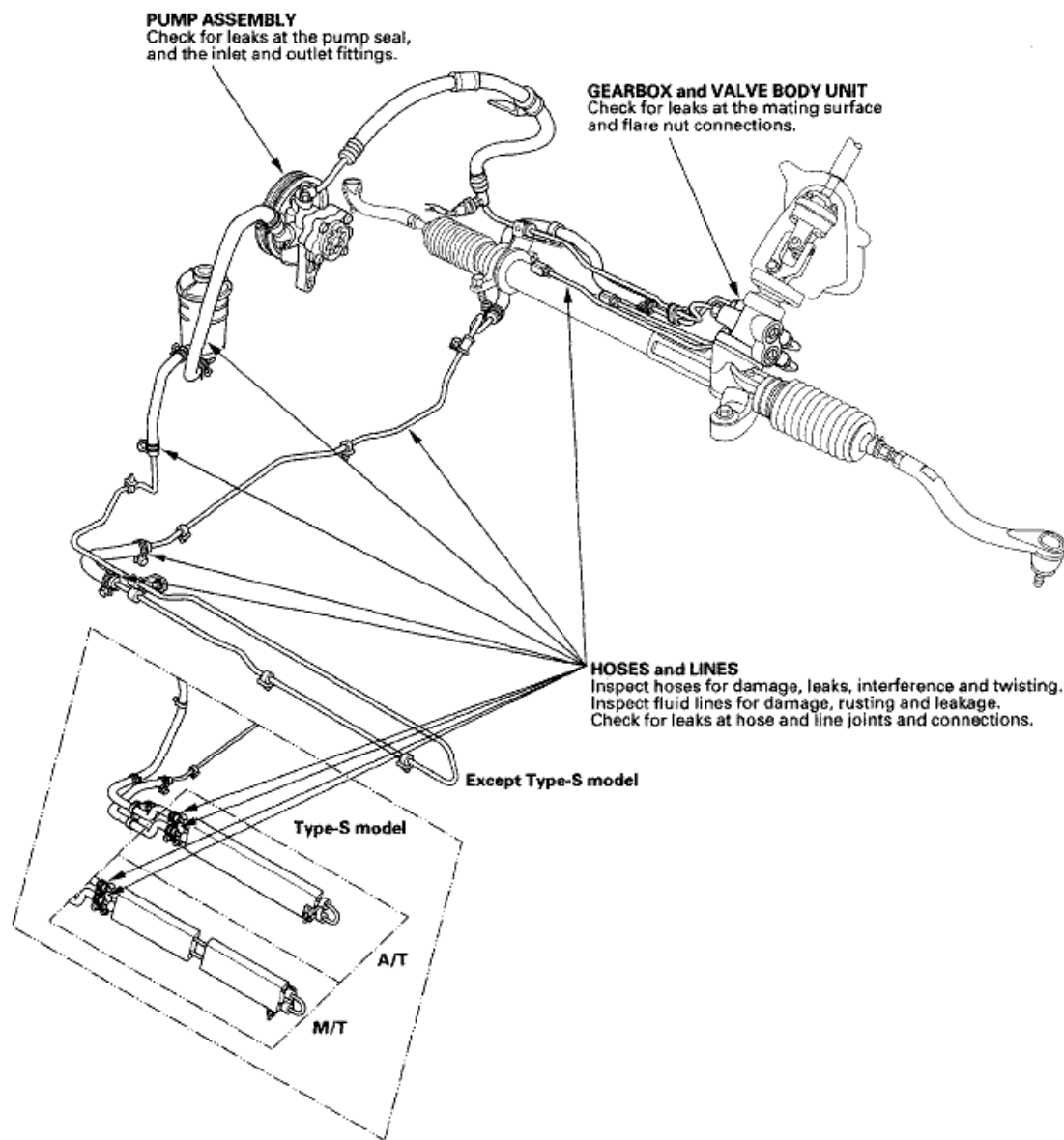


Fig. 12: Identifying Fluid Leakage Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

FLUID CHECK/REPLACEMENT

1. Remove the right side engine compartment cover (A).

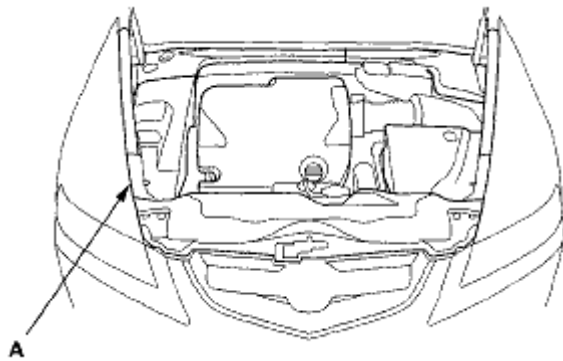


Fig. 13: Identifying Right Side Engine Compartment Cover
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the reservoir (A) at regular intervals, and add the recommended fluid as necessary. Always use Acura Power Steering Fluid. Use of 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:

1.1 L (1.16 US. qt) at disassembly

Reservoir capacity:

0.32 L (0.33 US. qt)

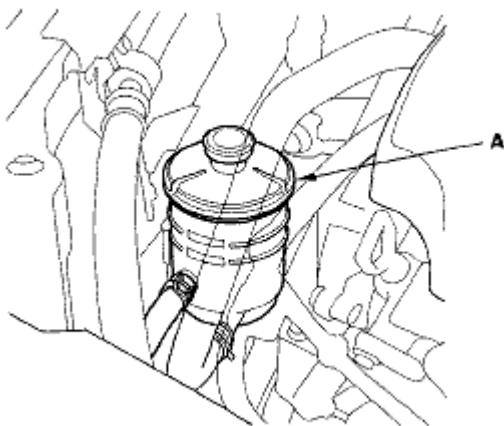


Fig. 14: Identifying Reservoir With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

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

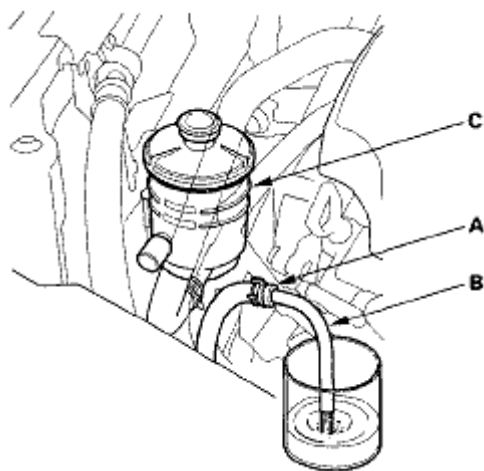


Fig. 15: Draining Reservoir Oil

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

POWER STEERING HOSE, LINE, AND PRESSURE SWITCH REPLACEMENT

Note these items during installation:

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

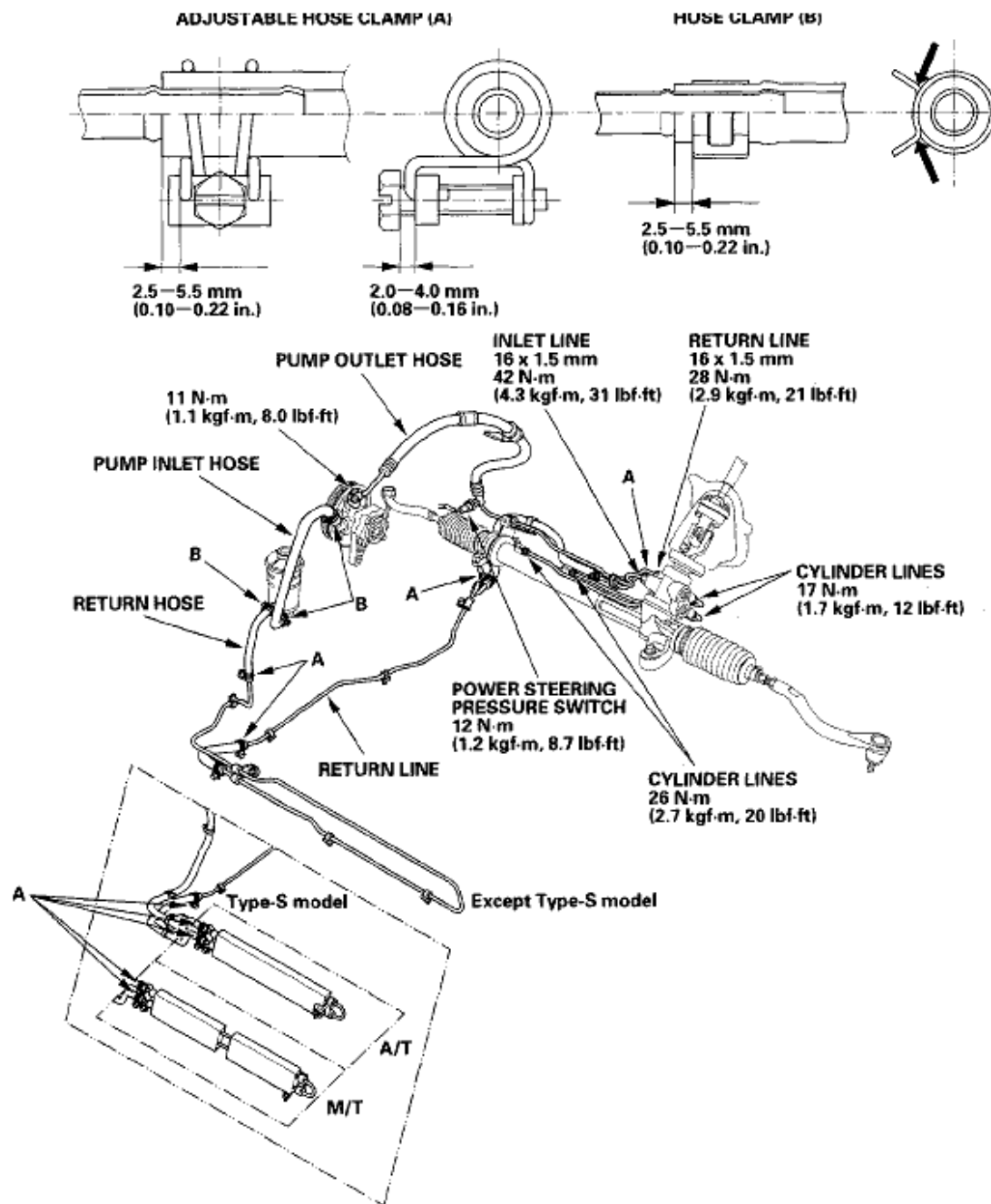


Fig. 16: Identifying Power Steering Hose Clamp Distance With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

PUMP REPLACEMENT

1. Place a suitable container under the vehicle.
2. Remove the right side engine component cover (A).

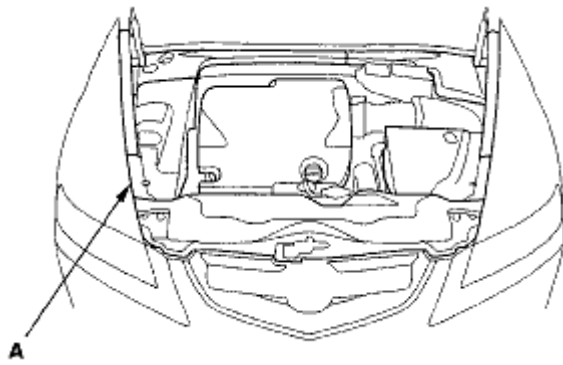


Fig. 17: Identifying Right Side Engine Component Cover
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Drain the power steering fluid from the reservoir (see **FLUID CHECK/REPLACEMENT**).
4. Remove the side engine mount bracket (A).

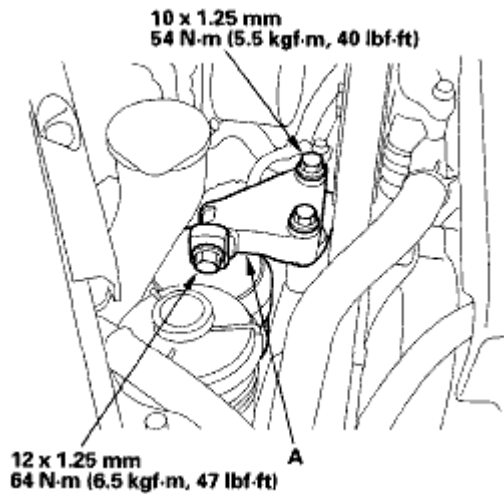


Fig. 18: Identifying Engine Mount Bracket With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the drive belt (A) from the pump pulley (see **DRIVE BELT INSPECTION**).

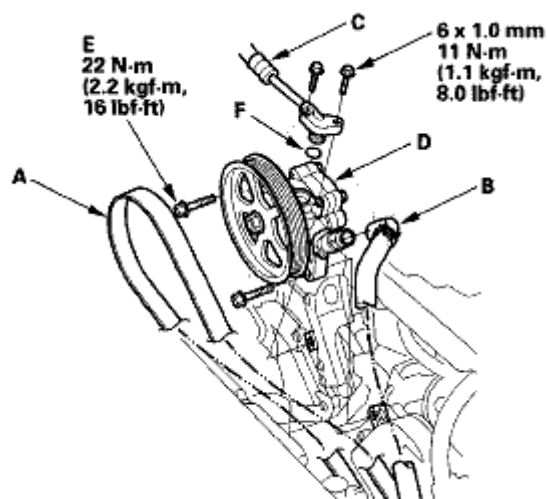


Fig. 19: Identifying Drive Belt From Pump Pulley With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Note these items during belt installation:

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

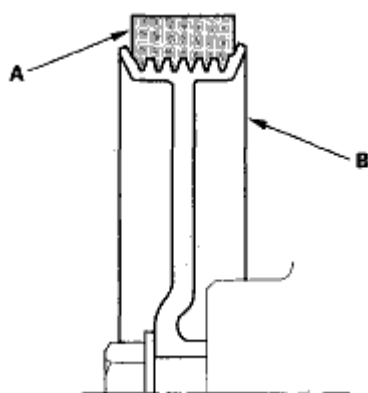


Fig. 20: Identifying Drive Belt Installation Position
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the side engine mount bracket. Tighten the bolts to the specified torque.
14. Fill the reservoir to the upper level line (see **FLUID CHECK/REPLACEMENT**).
15. Install the right side engine component cover.

PUMP OVERHAUL

EXPLODED VIEW

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

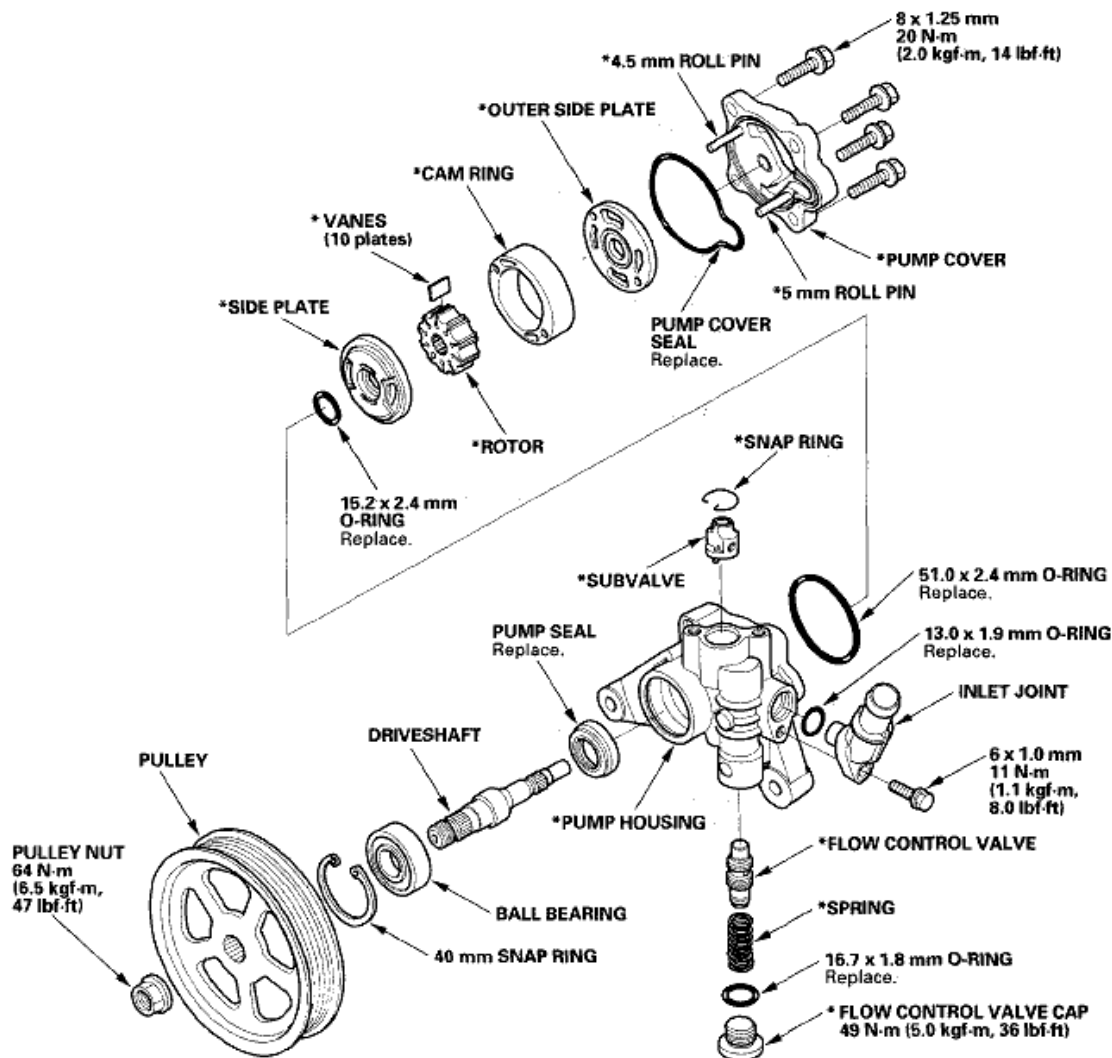


Fig. 21: Exploded View Of Pump Overhaul Components With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 power steering pump (see **FLUID CHECK/REPLACEMENT**).
2. Remove the power steering pump (see **PUMP REPLACEMENT**).
3. Hold the power steering pump (A) in a vise with soft jaws (B), then hold the pulley (C) with the pulley holder (D), and remove the pulley nut (E) and pulley. Be careful not to damage the pump housing with the jaws of the vise.

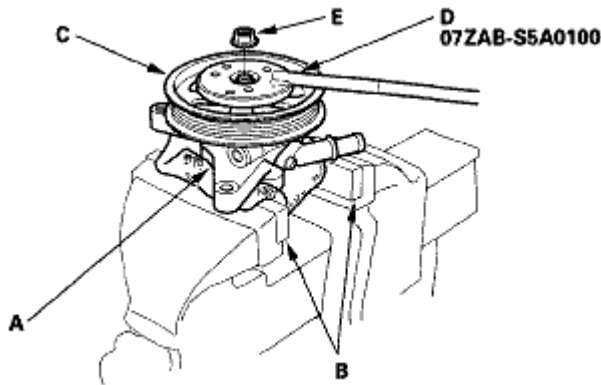


Fig. 22: Holding Power Steering Pump In Vise With Soft Jaws
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Inspection

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

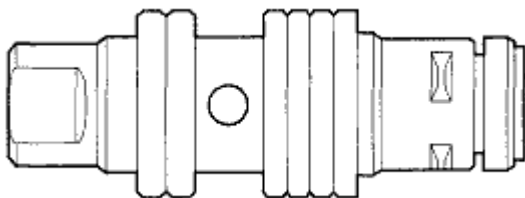


Fig. 23: Identifying Flow Control Valve
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

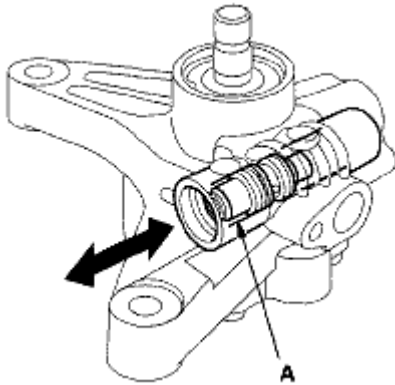


Fig. 24: Inspecting Bore Of Flow Control Valve On Pump Housing
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Attach a hose (A) to the end of the flow control valve (B) as shown. Then submerge the flow control valve in a container of power steering fluid or solvent (C), and apply compressed air in the hose.
 - If air bubbles leak through the valve at less than 98 kPa (1.0 kgf/cm² , 14.2 psi), replace the pump as an assembly. The flow control valve is not available separately.
 - If the flow control valve is OK, set it aside for reassembly later.

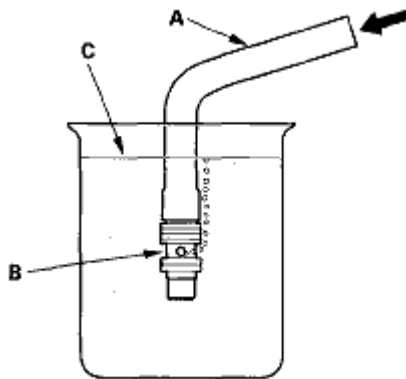


Fig. 25: Applying Compressed Air In Hose
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

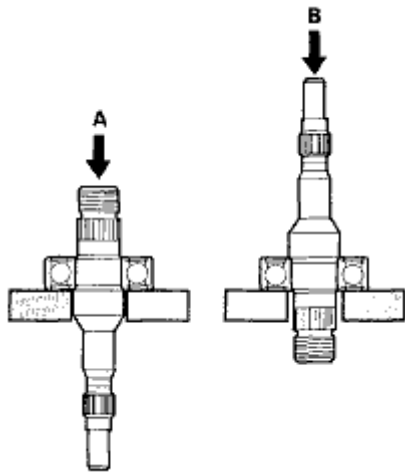


Fig. 26: Inspecting Ball Bearing By Rotating Outer Race Slowly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Reassembly

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

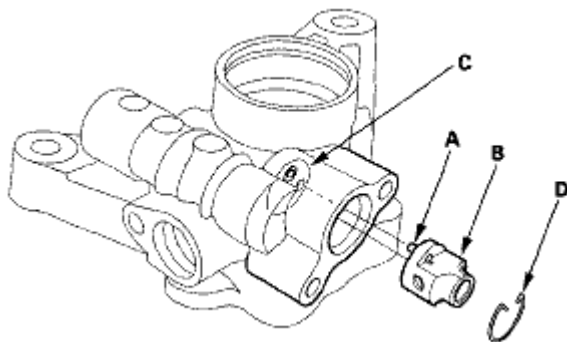


Fig. 27: Aligning Pin Of Sub Valve With Oil Passage In Pump Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the new pump seal (A) (with its grooved side facing in) into the pump housing by hand first, then position the driveshaft (B) in the pump housing. Press the driveshaft and pump seal with the appropriate size socket wrench (C) as shown.

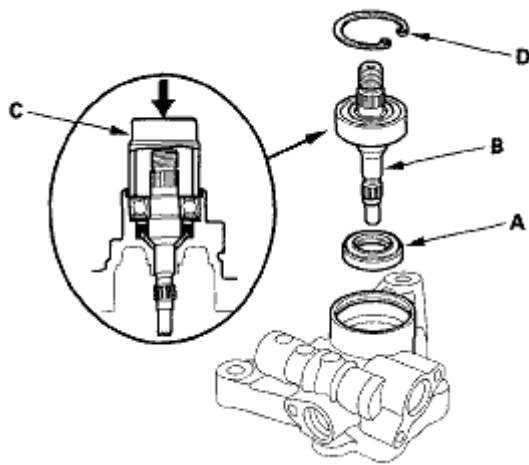


Fig. 28: Pressing Driveshaft And Pump Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the 40 mm snap ring (D) with its reduced edge facing out.
20. Coat the new pump cover seal (A) with power steering fluid, and install it into the groove in the pump cover (B).

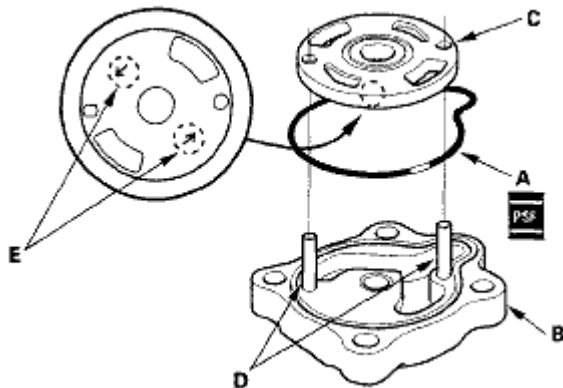


Fig. 29: Identifying Pump Cover Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the outer side plate (C) over the two roll pins (D) with its arrow marks stamped (E) facing down.
22. Set the pump cam ring (A) over the two roll pins with its "•" mark (B) facing down.

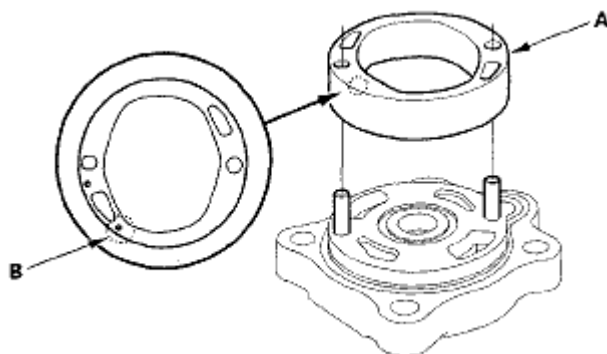
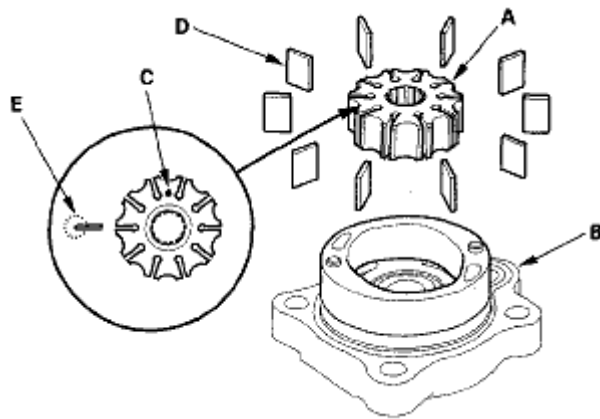


Fig. 30: Identifying Pump Cam Ring

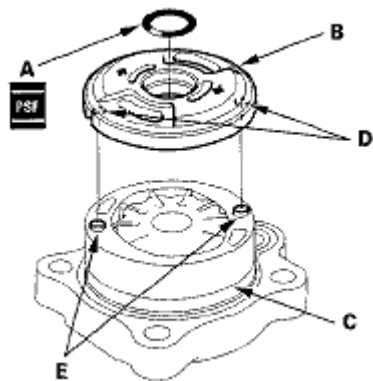
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 31: Setting Vanes In Grooves In Rotor**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Set the 10 vanes (D) in the grooves in the rotor. Make sure that the round ends (E) of the vanes are in contact with the sliding surface of the cam ring.
25. Coat the new 15.2 mm O-ring (A) with power steering fluid, and install it into the groove in the side plate (B).

**Fig. 32: Identifying O-Ring Into Groove In Side Plate**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Install the side plate on the cam ring (C) by aligning the roll pin set holes (D) in the side plate with the roll pins (E).
27. Coat the new 51.0 mm O-ring (A) with power steering fluid, and position it in the bottom of the pump housing.

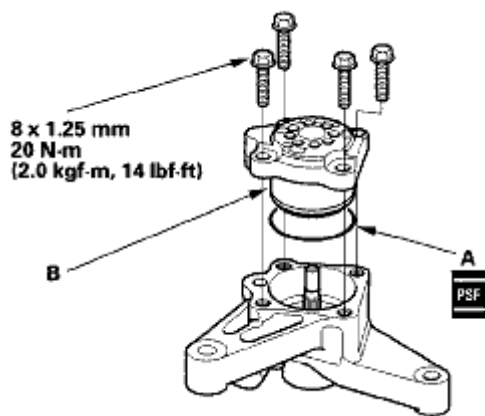


Fig. 33: Identifying O-Ring With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

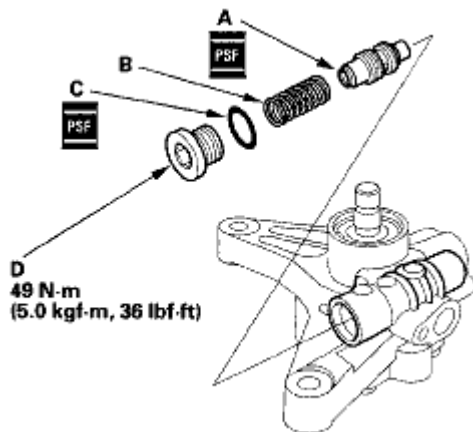


Fig. 34: Identifying Flow Control Valve With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Coat the new 16.7 mm O-ring (C) with power steering fluid, and install it on the flow control valve cap (D), then install the cap on the pump housing. Tighten it to the specified torque.
31. Coat the new 13.0 mm O-ring (A) with power steering fluid, and install it on the inlet joint (B). Install the inlet joint on the pump housing.

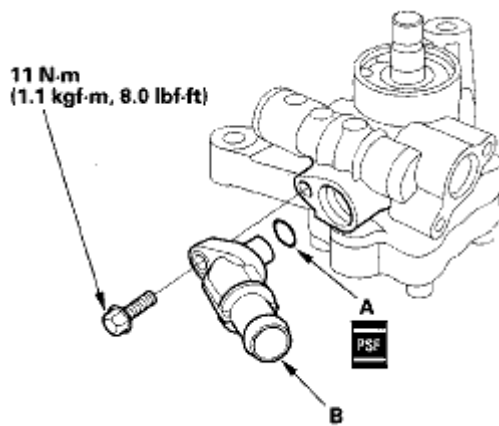


Fig. 35: Identifying Inlet Joint On Pump Housing With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

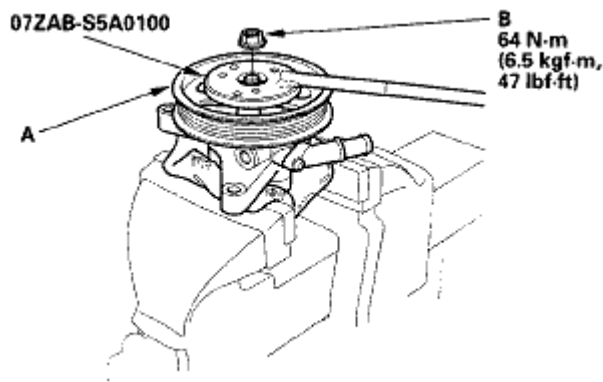


Fig. 36: Holding Steering Pump In Vise With Soft Jaws With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Hold the pulley with the pulley holder, and tighten the pulley nut to the specified torque.
34. Check that the pump turns smoothly by turning the pulley by hand. If it is hard to turn, loosen the four flange bolts on the cover, then retighten them in the same manner as in step 28. Retest. If the pump is still hard to turn, replace the pump.
35. Reinstall the power steering pump (see **PUMP REPLACEMENT**).

STEERING WHEEL REMOVAL

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) before doing repairs or service.

1. Make sure you have the anti-theft codes for the audio or the navigation system (if equipped).
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see **DRIVER'S AIRBAG REPLACEMENT**).

4. Disconnect the cable reel subharness connector (A) from the cable reel.

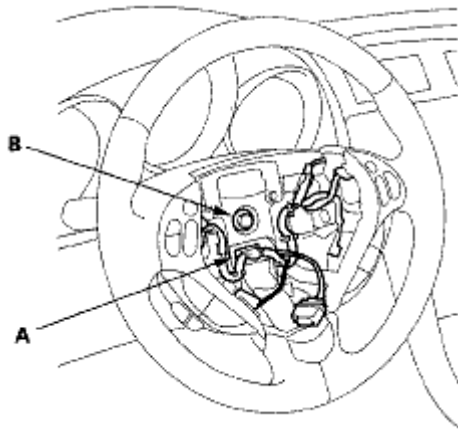


Fig. 37: Identifying Cable Reel Subharness Connector Steering Wheel Bolt
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Note these items when removing the steering wheel:

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

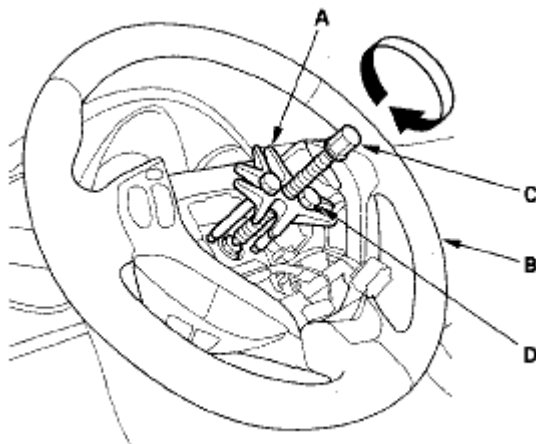


Fig. 38: Identifying Steering Wheel Puller On Steering Wheel
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

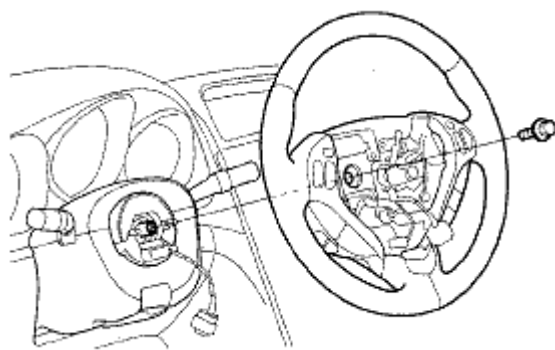


Fig. 39: Identifying Steering Wheel Bolt And Steering Wheel
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

STEERING WHEEL DISASSEMBLY/REASSEMBLY

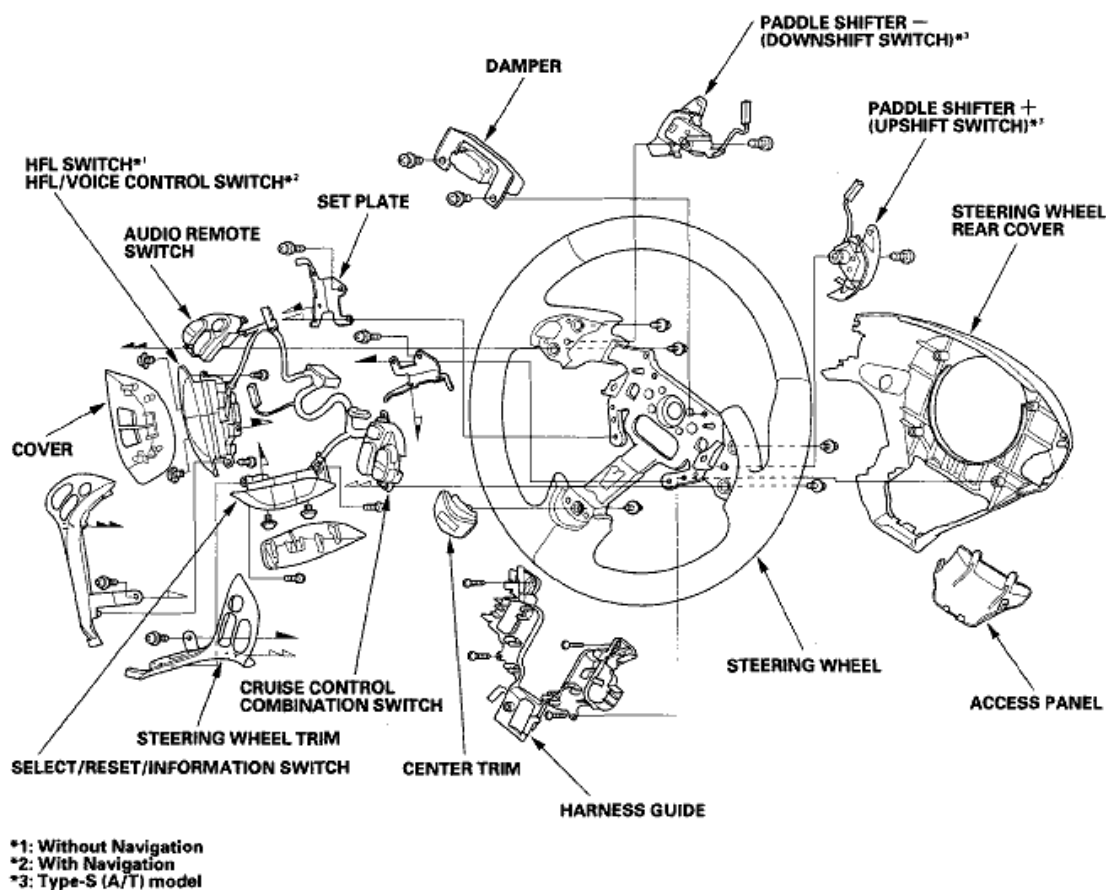


Fig. 40: Exploded View Of Steering Wheel Components
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 three full turns. The arrow mark (B) on the cable reel label point should point straight up.

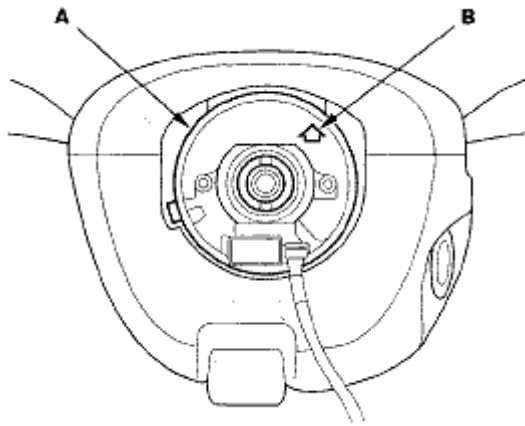


Fig. 41: Identifying Steering Wheel Installation Positions
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

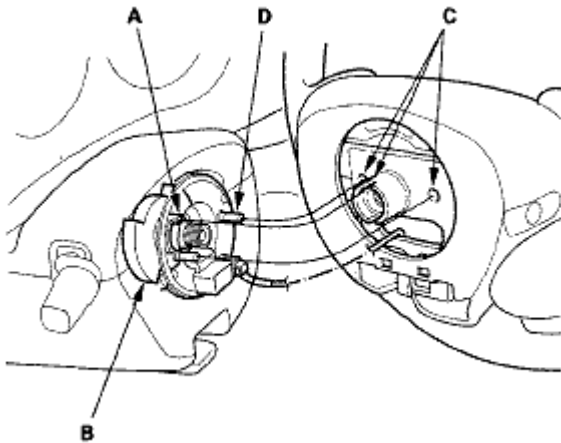


Fig. 42: Identifying Steering Wheel On Steering Column Shaft
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

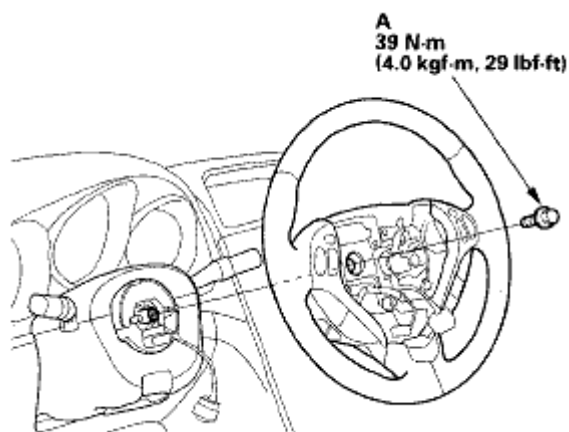


Fig. 43: Identifying Steering Wheel Bolt With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the driver's airbag, and confirm that the system is operating properly (see **DRIVER'S AIRBAG REPLACEMENT**).
5. Reconnect the negative battery cable to the battery, and do these tasks:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - Enter the anti-theft code for the audio or the navigation system (if equipped).
 - Set the clock (on vehicles without navigation).
 - Make sure the horn and turn signal switches work properly.
 - Make sure the steering wheel switches work properly.
6. After installation, do these checks.
 - Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations.
 - Set the steering column to the center tilt position, and to the center telescopic position, then do the front toe inspection (see **WHEEL ALIGNMENT**).

STEERING COLUMN REMOVAL AND INSTALLATION

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX**) and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES**) before doing repairs or service.

REMOVAL

1. Make sure you have the anti-theft codes for the audio or the navigation system (if equipped).
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Remove the driver's airbag and the steering wheel (see **STEERING WHEEL REMOVAL**).
4. Remove the column covers.
5. Remove the steering joint cover A.

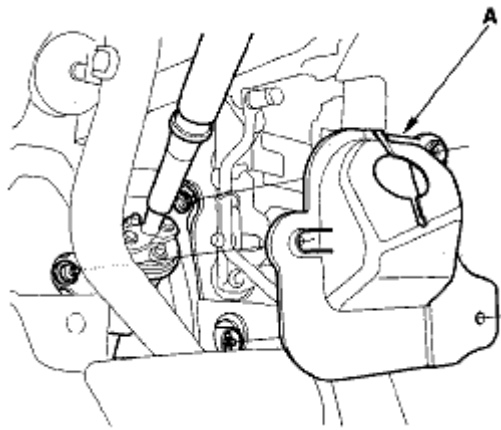


Fig. 44: Identifying Steering Joint Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Release the lock lever, and adjust the steering column to the full tilt up position, and to the full telescopic in position.
7. Tighten the lock lever.
8. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

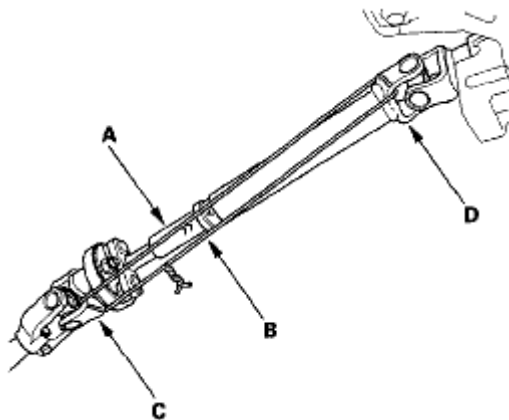


Fig. 45: Holding Lower Slide Shaft On Column

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.
10. Disconnect the wire harness connectors from the combination switch assembly and cable reel (A).

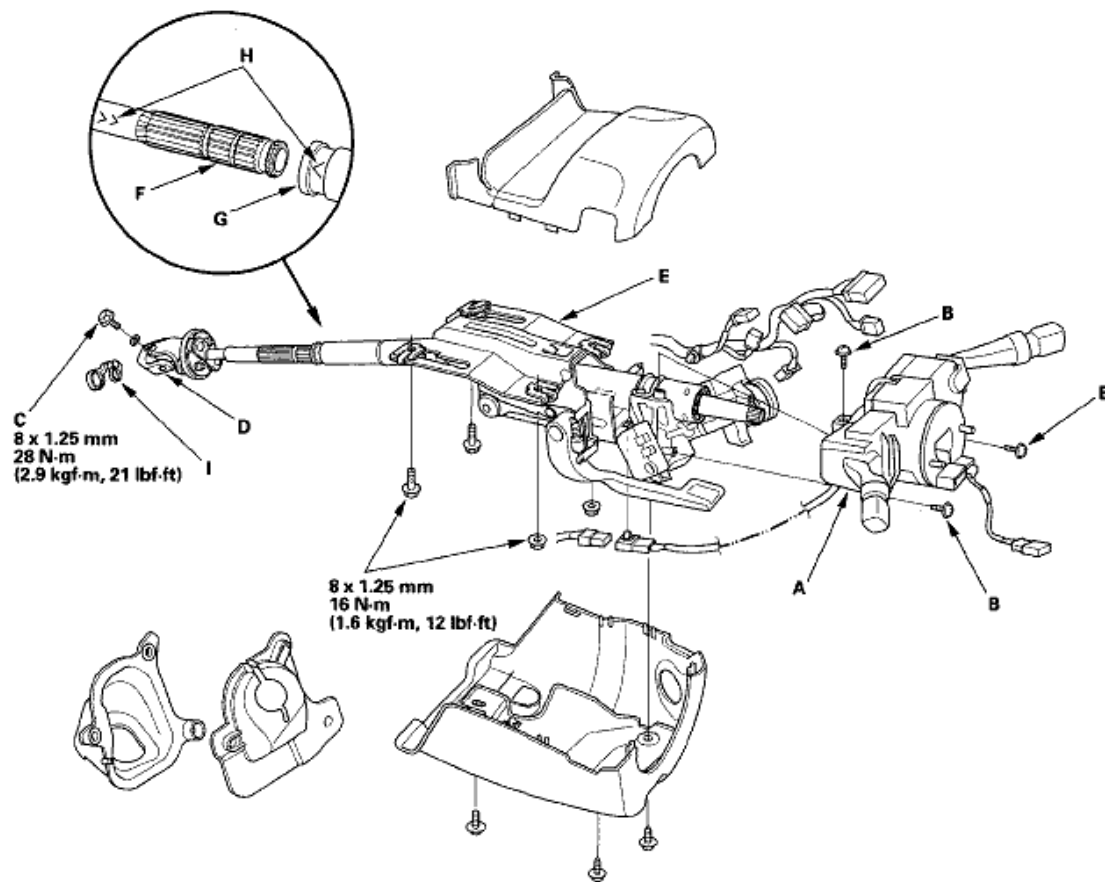


Fig. 46: Identifying Steering Column Components With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Remove the combination switch assembly from the steering column shaft by removing the screws (B).
12. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.
13. Remove the steering joint bolt (C), then disconnect the steering joint (D) from the pinion shaft.
14. Remove the steering column (E) by removing the attaching nuts and bolts. If the lower slide shaft (F) is removed, slip it into the upper shaft (G) by aligning the marks (H).
15. Remove the center guide (I) (if equipped) from the top of the pinion shaft, and discard it. The center guide is for factory assembly use only.

INSTALLATION

1. Install the steering column in the reverse order of removal, and note these items:
 - Make sure the wires are not caught or pinched by any parts.
 - Take care not to let the sliding capsules fall out of position during column installation.
2. Center the steering rack within its stroke in steering joint connection.
3. Install the steering column joint (A) on to the pinion shaft (B).

NOTE:

- **Pinion shaft with center guide; install the steering joint by aligning the slit (C) of the steering joint with the tab (D) of the center guide. Position the angle of the center guide as shown if necessary.**

- Pinion shaft without center guide; position the steering column joint so the bolt (E) near to the notch (F) is within the range shown.

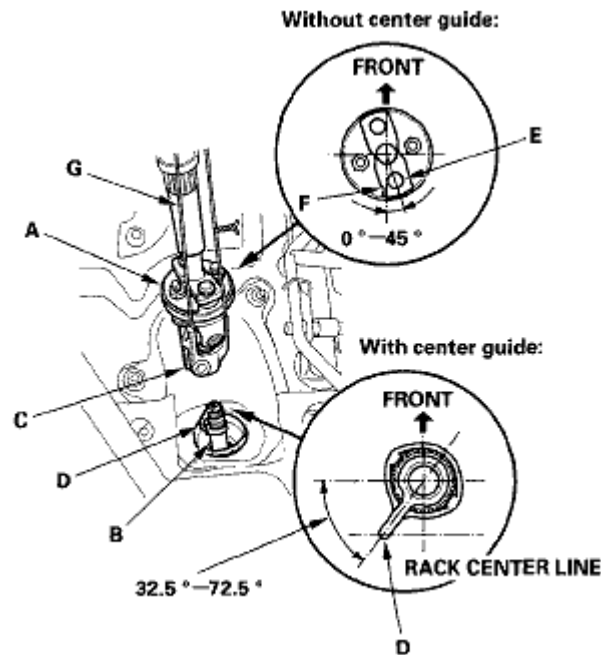


Fig. 47: Positioning Steering Column Joint
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. With the rack in the straight ahead driving position, cut the wire (G) and slip the lower end of the steering joint onto the pinion shaft.
5. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the 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. Tighten the steering joint bolt to the specified torque.

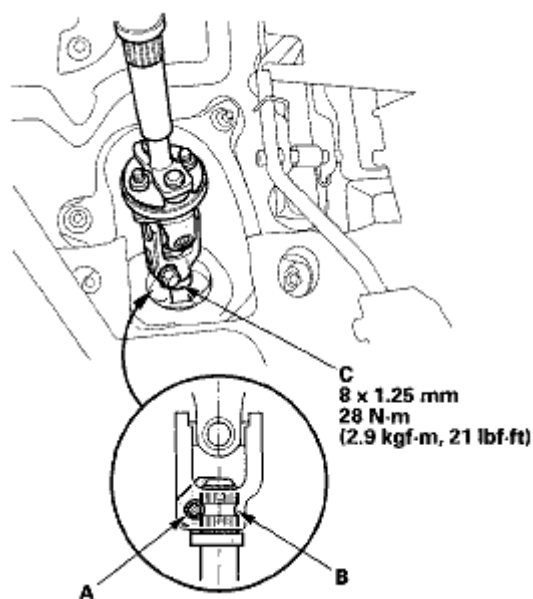


Fig. 48: Aligning Bolt Hole On Steering Joint With Groove With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the steering joint cover A.

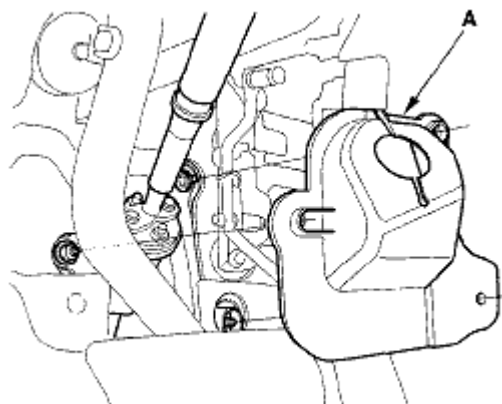


Fig. 49: Identifying Steering Joint Cover
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the steering wheel (see **STEERING WHEEL INSTALLATION**).
8. Install the column covers.
9. Reconnect the negative battery cable to the battery, and do these tasks:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - Enter the anti-theft code for the audio or the navigation system (if equipped).
 - Set the clock (on vehicles without navigation).
 - Make sure the horn and turn signal switches work properly.
 - Make sure the steering wheel switches work properly.
10. After installation, do these checks.

- Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations.
- Set the steering column to the center tilt position, and to the center telescopic position, then do the front toe inspection (see **WHEEL ALIGNMENT**).

STEERING COLUMN INSPECTION

- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the lower slide shaft (C) for smooth movement in and out. If the lower slide shaft is removed, slip it into the upper shaft by aligning the marks (D). If it sticks or binds, replace the steering column as an assembly.
- Check the sliding capsules (E) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.
- Check the tilt mechanism and telescopic mechanism for movement and damage.

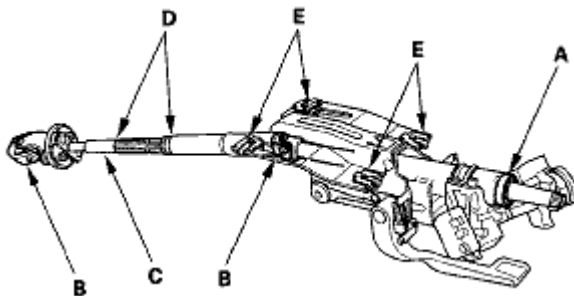


Fig. 50: Identifying Steering Column Components
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 (3/16 in.) drill bit. Be careful not to damage the switch body and steering column when removing the shear bolts.

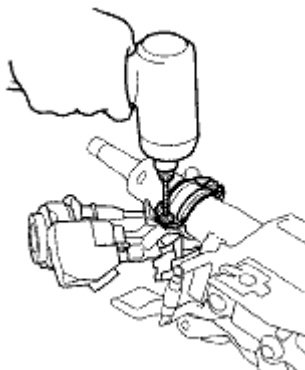


Fig. 51: Drilling Shear Bolts
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

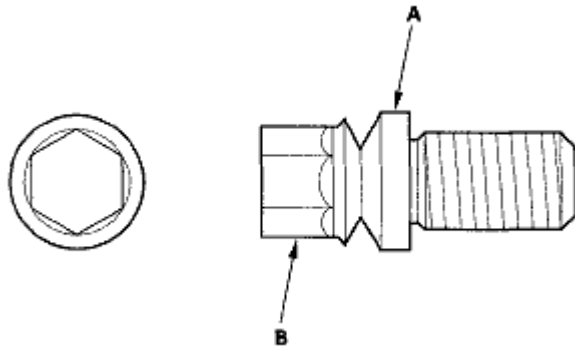


Fig. 52: Identifying Shear Bolts And Hex Heads
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Register the immobilizer control unit-receiver (see IMMOBILIZER KEY REGISTRATION) and make sure the immobilizer system works properly.

RACK GUIDE ADJUSTMENT

Special Tools Required

Locknut wrench, 40 mm 07MAA-SL00100 or 07916-SA50001

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

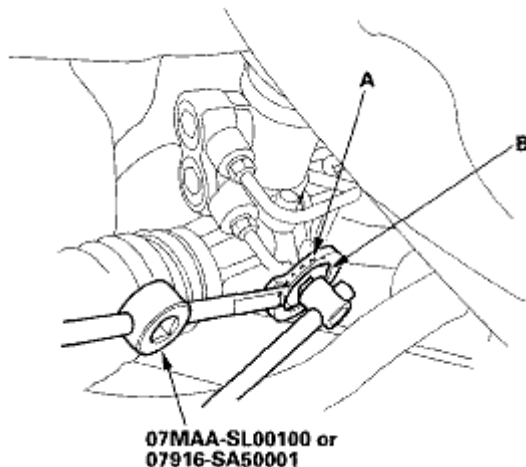


Fig. 53: Loosening Rack Guide Screw Locknut

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the old sealant from the rack guide screw (A), and apply new sealant (Three Bond 1215 or Loctite 5699) to the middle of the threads (B). Loosely install the rack guide screw on the steering gearbox.

NOTE: If more than 5 minutes has passed after applying the sealant, remove the old sealant and residue, and reapply new sealant.

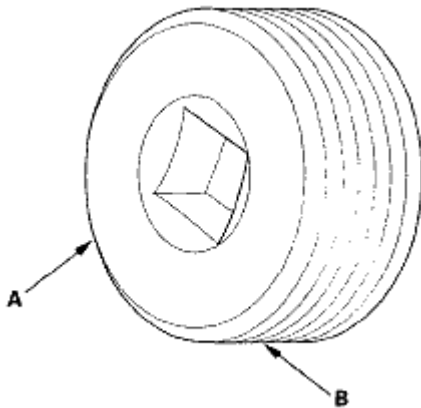


Fig. 54: Identifying Rack Guide Screw

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

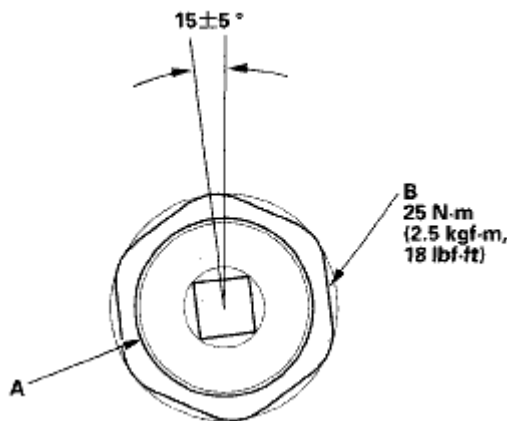


Fig. 55: Tightening Rack Guide Screw With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Retighten the rack guide screw to 3.9 N.m (0.4 kgf.m, 3.0 lbf.ft), then back it off to the specified angle.

Specified return angle: $15 \pm 5^\circ$

6. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.
7. Install the locknut wrench on the locknut (B), and hold the rack guide screw stationary with a wrench.

Tighten the locknut an additional 30° with the locknut wrench.

8. Check for unusual steering effort through the complete turning range.
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
- Front subframe adapter VSB02C000016 *
- Engine support hanger, A and Reds AAR-T-12566 *
- Engine hanger balance bar VSB02C000019 *
- Available through the Acura Tool and Equipment program 888-424-6857

Note these items during removal:

- Using solvent and a brush, wash any oil and dirt off the valve body unit, its 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.
1. Remove the right side engine compartment cover (A), right rear engine compartment cover (B) and left rear engine compartment cover (C).

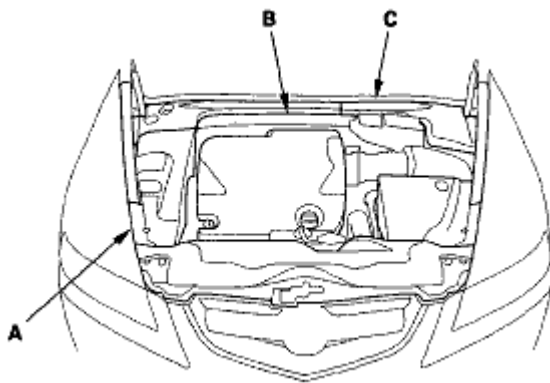


Fig. 56: Identifying Right Side Engine Compartment Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Drain the power steering fluid (see step 3 on **FLUID CHECK/REPLACEMENT**).
3. Make sure you have the anti-theft codes for the audio or the navigation system (if equipped).
4. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
5. Raise the front of the vehicle, and support it with safety stands in the proper locations (see **LIFT AND SUPPORT POINTS**).
6. Remove the front wheels, taking care not to scratch the calipers on Type-S model.
7. Remove the steering wheel (see **STEERING WHEEL REMOVAL**).

8. Remove the steering joint cover A.

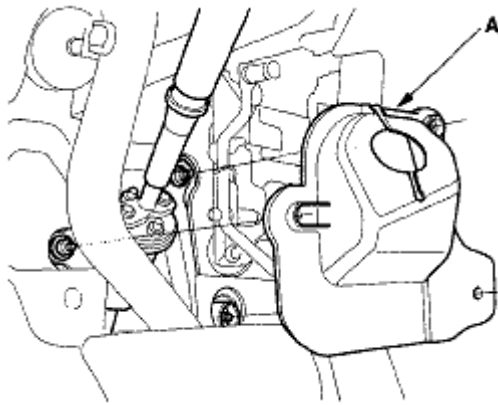


Fig. 57: Identifying Steering Joint Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Hold the lower slide shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the lower slide shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.

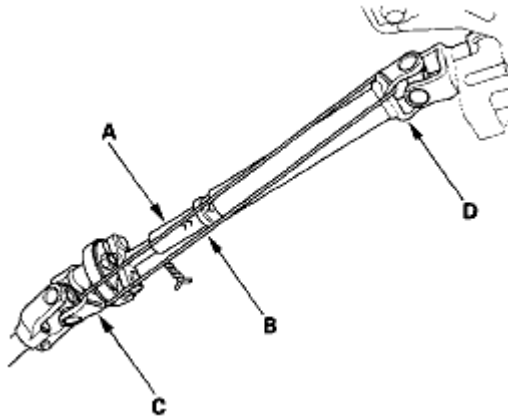


Fig. 58: Identifying Lower Slide Shaft And Joint Yoke

Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Release the lock lever, and adjust the steering column to the full telescopic out position, then tighten the lock lever.
11. Remove the steering joint bolt (A), and disconnect the steering joint by moving the steering joint (B) toward the column.

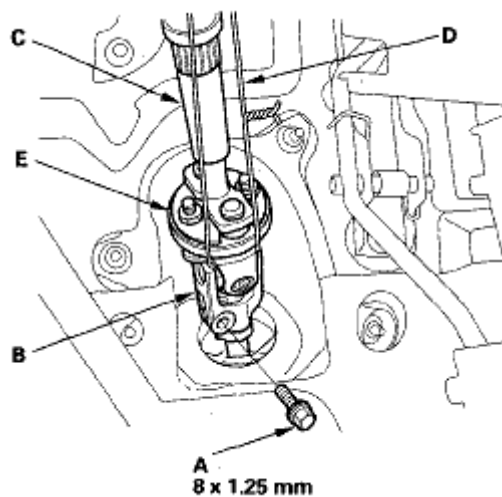


Fig. 59: Identifying Steering Joint Bolt

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

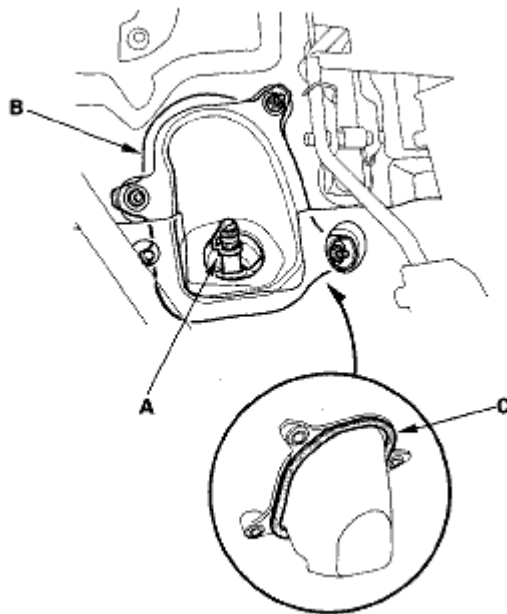


Fig. 60: Identifying Cover Seal

Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Remove the steering joint cover B. Be careful not to damage the mating surface on the joint cover B and the pinion shaft grommet. Replace the cover seal (C) if necessary.
14. Install the engine hanger balancer bar (VSB02C 000019); attach the front arm (A) to the front cylinder head with a spacer (B) and 10 x 1.25 mm bolt (C), attach the rear arm (D) to the rear cylinder head with 8 x 1.25 mm bolt (E).

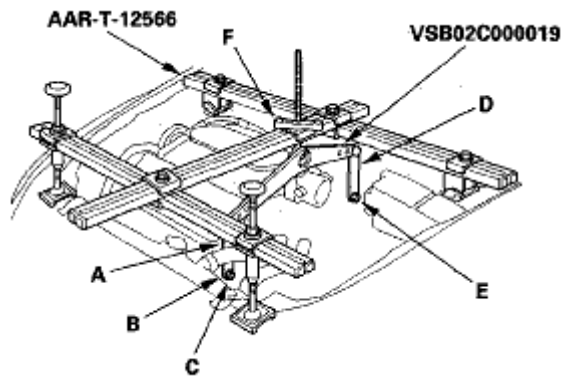


Fig. 61: Identifying Engine Hanger Balancer Bar (VSB02C 000019)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook to the slotted hole in the engine hanger balancer bar. Tighten the wing nut (F) by hand to lift and support the engine/ transmission.
16. Remove and discard the cotter pin (A) from the tie-rod ball joint nut (B), and loosen the nut.

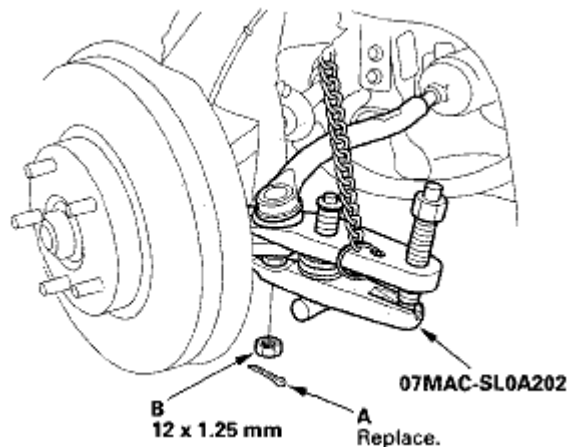


Fig. 62: Identifying Cotter Pin From Tie-Rod Ball Joint Nut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Separate the tie-rod ball joint and knuckle using the ball joint remover (see **BALL JOINT REMOVAL**).
18. Disconnect the power steering pressure switch connector (A).

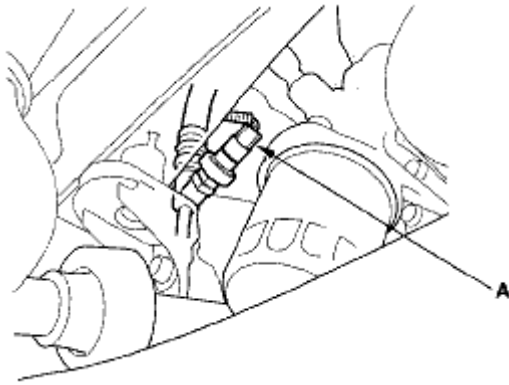


Fig. 63: Identifying Power Steering Pressure Switch Connector
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Remove the splash shield (A) (see **SPLASH SHIELD REPLACEMENT**).

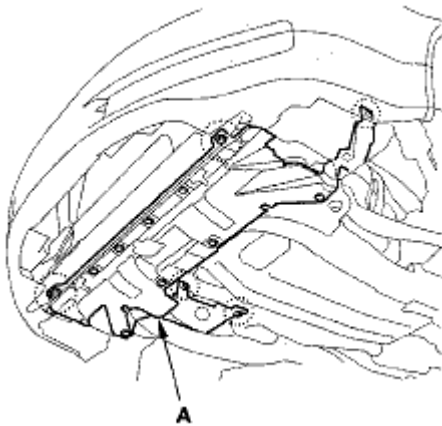


Fig. 64: Identifying Splash Shield
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Remove the engine undercover (A) (see step 32 on **ENGINE REMOVAL**).

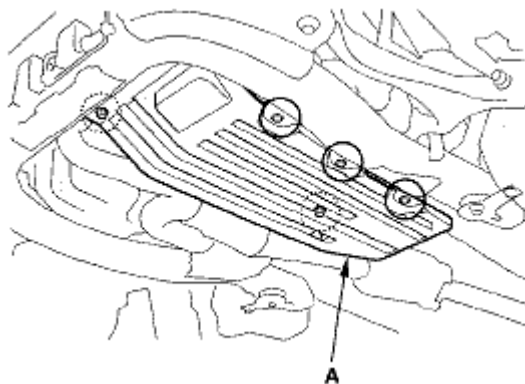


Fig. 65: Identifying Engine Undercover
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Attach the front subframe adapter to the front suspension subframe (A) hang the hook of the front subframe adapter over the front of the subframe. then tighten the front subframe adapter screw.

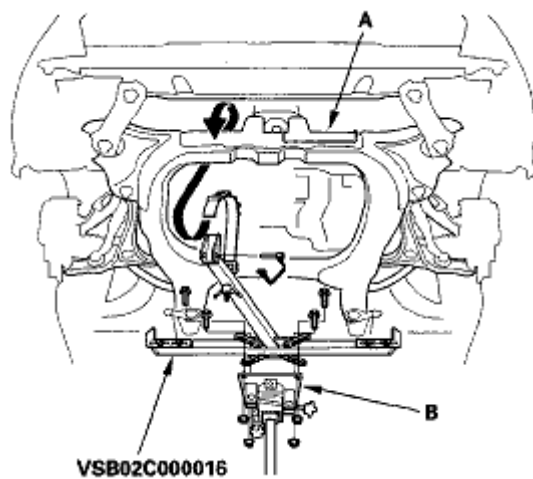


Fig. 66: Identifying Front Suspension Subframe
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Raise the jack (B) and line up the slots in the arms with the bolt holes on the corner of the jack base, then attach them with bolts securely.
23. Remove the rear engine mount base bracket bolts (A).

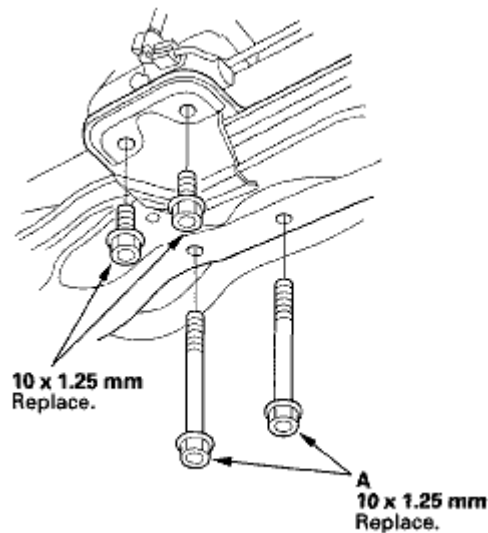


Fig. 67: Identifying Rear Engine Mount Base Bracket Bolts
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. Remove the front suspension subframe right middle mounting bolts (A).

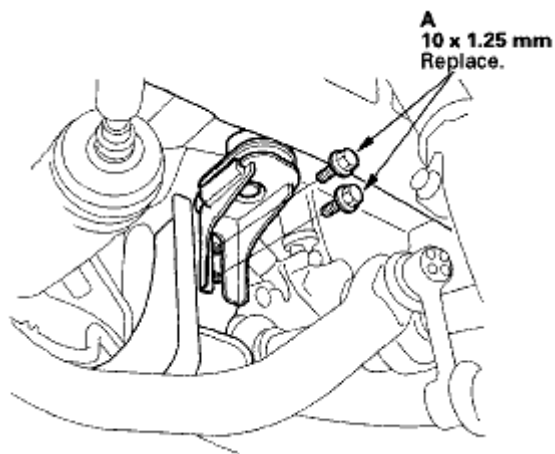


Fig. 68: Identifying Front Suspension Subframe Right Middle Mounting Bolts
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Remove the front suspension subframe left middle mounting (A).

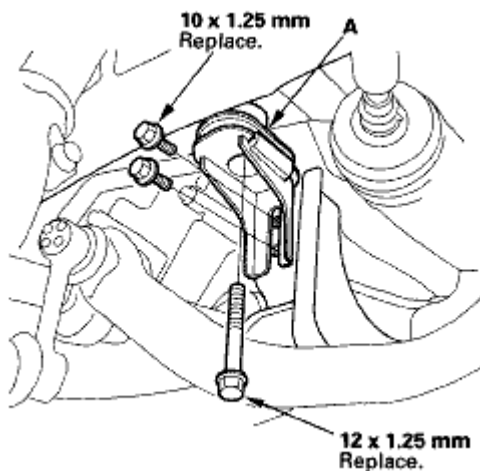


Fig. 69: Identifying Front Suspension Subframe Left Middle Mounting
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Loosen the front suspension subframe front bracket (A) mounting bolts on the right and left of the vehicle so they are about, 30 mm (1 3/16 in.) from the mounting surface.

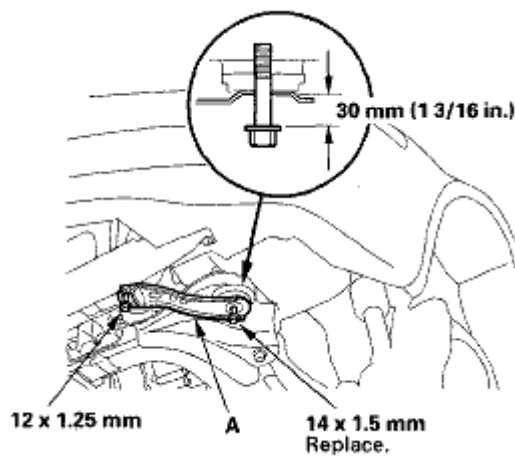


Fig. 70: Identifying Front Suspension Subframe Front Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Remove the front suspension subframe rear bracket (A) on the right and left of the vehicle from the front suspension subframe (B).

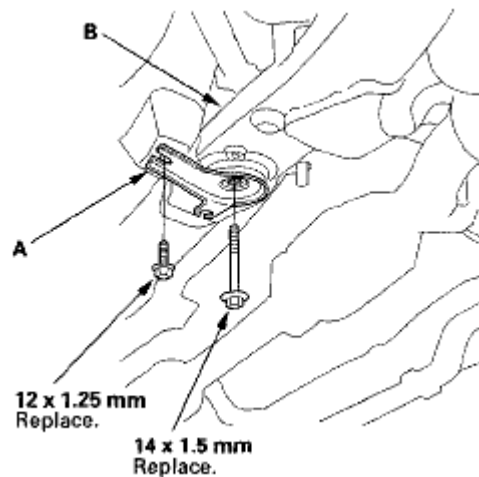


Fig. 71: Identifying Front Suspension Subframe Rear Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Lower the jack supporting the front suspension subframe (A) with the front subframe adapter, slowly until the front suspension subframe has dropped about 50 mm (1 15/16 in.).

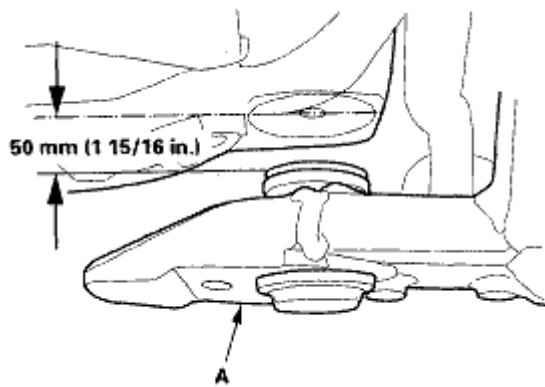


Fig. 72: Supporting Front Suspension Subframe
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Remove the P/S heat shield (A).

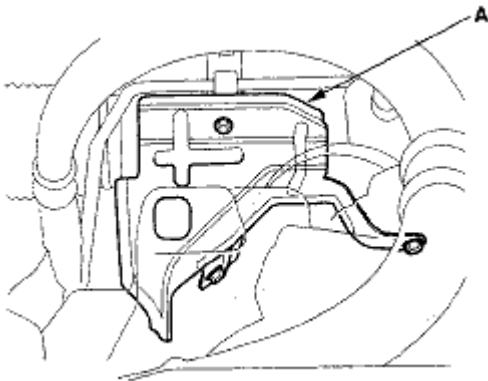


Fig. 73: Identifying P/S Heat Shield
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Remove the inlet line holder mounting bolt (A) on the front suspension subframe.

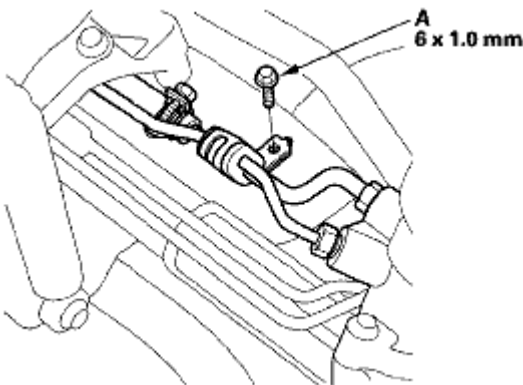


Fig. 74: Identifying Inlet Line Holder Mounting Bolt On Front Suspension Subframe
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Remove the inlet line holder mounting bolt (A) and return hose (B) from the gearbox mounting bracket (C).

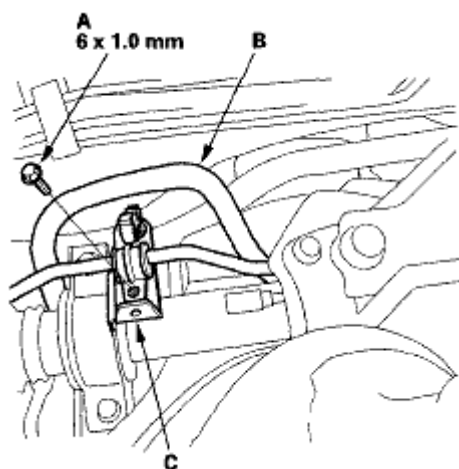


Fig. 75: Identifying Inlet Line Holder Mounting Bolt
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

32. Place several shop towels under the line connections, and cover the gearbox mounting part to protect it from the power steering fluid. Loosen the flare nut (A), and disconnect the inlet line (B).

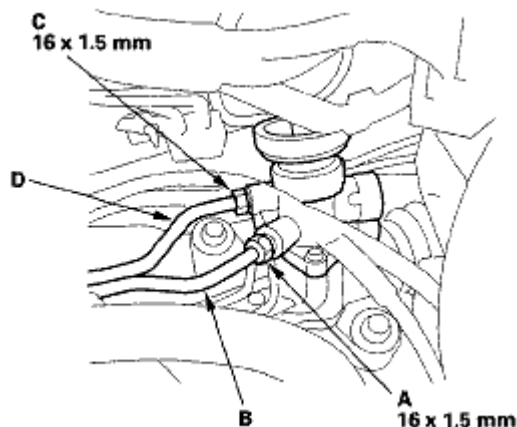


Fig. 76: Identifying Inlet Line And Return Line
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. Loosen the flare nut (C), and disconnect the return line (D).
34. After disconnecting the lines or pipe, plug or seal them with a piece of tape or equivalent to prevent foreign materials from entering.
35. Remove and discard the steering gearbox mounting bolts (A) and washers (B) on the left gearbox mount.

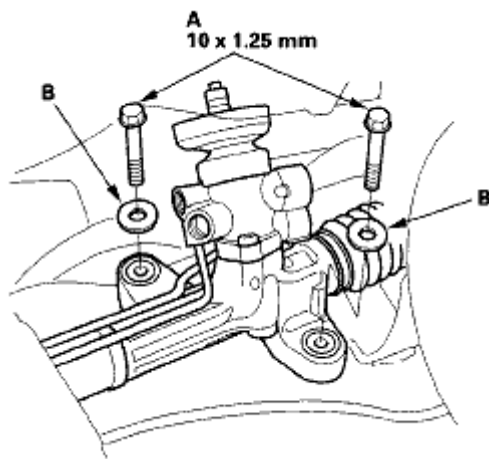


Fig. 77: Identifying Steering Gearbox Mounting Bolts And Washers On Left Gearbox Mount
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

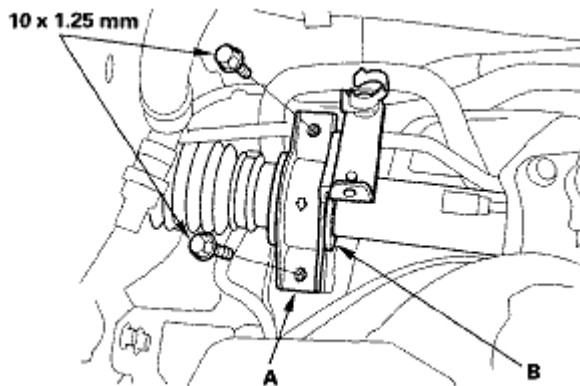


Fig. 78: Identifying Gearbox Mounting Bracket And Cushion
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Move the steering gearbox toward the front, and remove the pinion shaft grommet (A) from the top of the valve body unit.

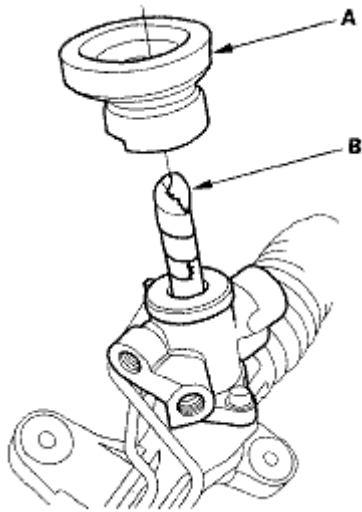


Fig. 79: Identifying Pinion Shaft Grommet
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Apply vinyl tape (B) to the splines on the pinion shaft.
39. Apply vinyl tape or equivalent material (A) to brake lines (B) to protect if from the pinion shaft.

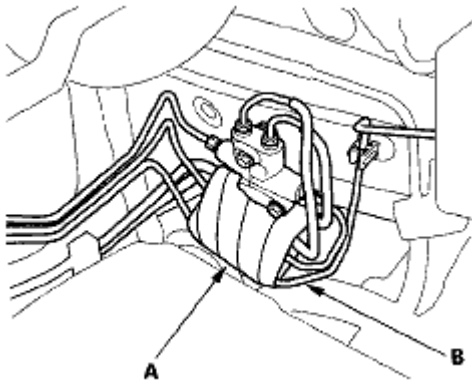


Fig. 80: Applying Vinyl Tape To Brake Lines
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Move the steering gearbox to the driver's side, and rotate it so the pinion shaft points toward the front of the vehicle.
41. Carefully move the steering gearbox as an assembly toward the left side of the vehicle until the pinion shaft clears the wheel well opening. Be careful not to damage the brake lines with the pinion shaft.

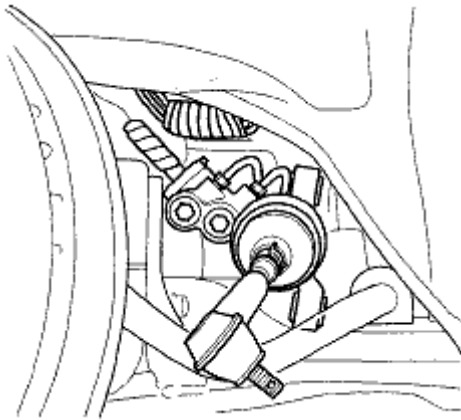


Fig. 81: Identifying Steering Gearbox

Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. Remove the steering gearbox through the wheel well opening on the driver's side.

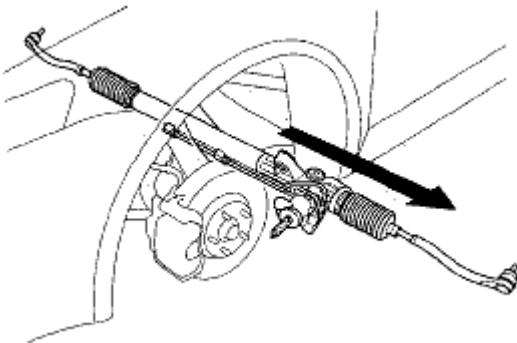


Fig. 82: Removing Steering Gearbox

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

STEERING GEARBOX OVERHAUL

EXPLODED VIEW

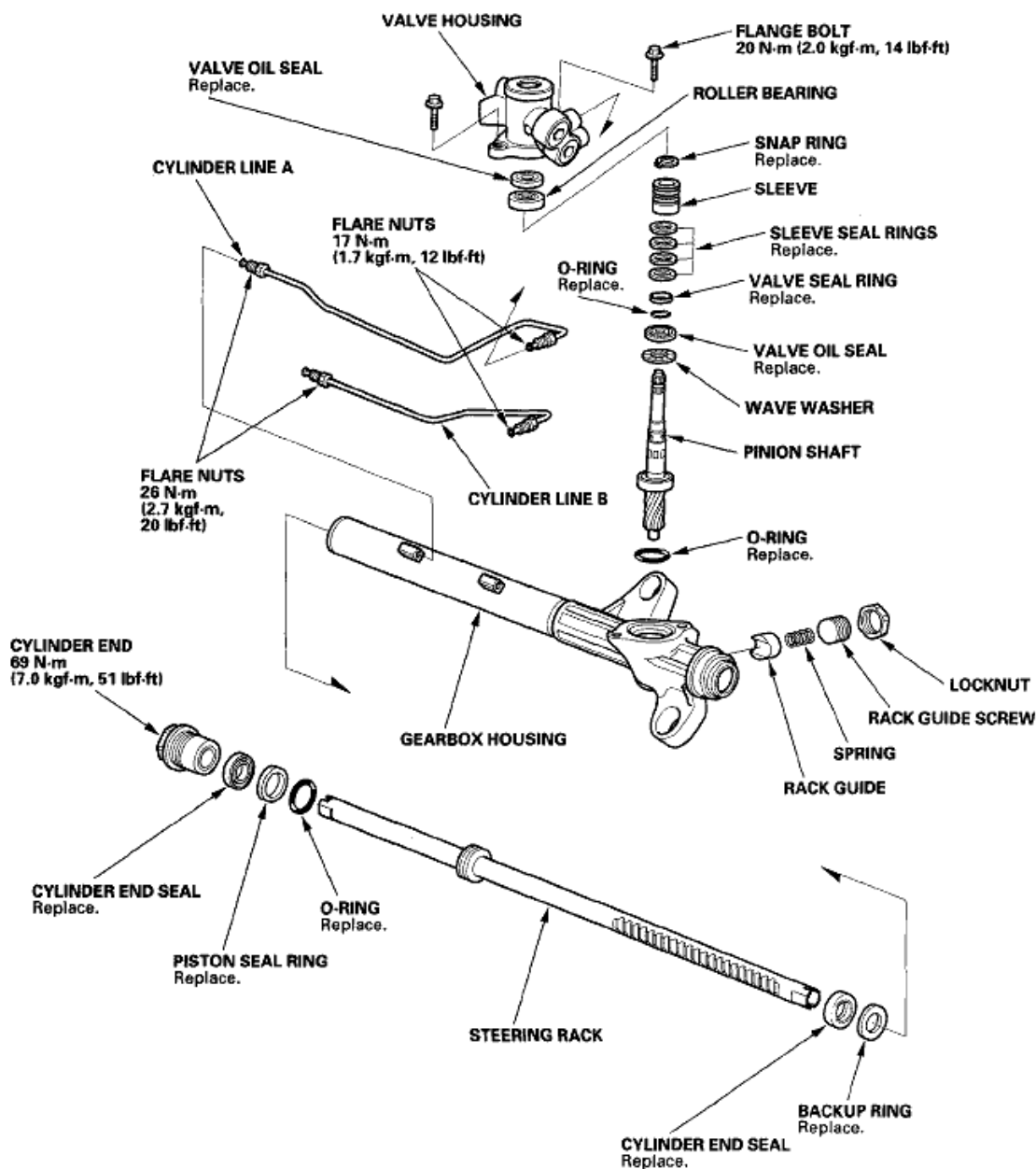


Fig. 83: Exploded View Of Steering Gearbox Overhaul Components With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Cylinder end seal remover attachment 07NAD-SR3020A
- Pilot collar 07GAF-PH70100
- Valve seal ring sizing tool 07NAG-SR3090A
- Sleeve seal ring guide 07YAG-S2X0100
- Sleeve seal ring sizing tool, 36 mm 07ZAG-S5A0100
- Attachment, 32 x 35 mm 07746-0010100
- Driver 07749-0010000
- Piston seal ring guide 07HAG-SF10100

- Piston seal ring sizing tool 07HAG-SF1020A or 07HAG-SF10200
- Cylinder end seal slider 07ZAG-S5A0300
- 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 boot away from the ends of the steering gearbox.

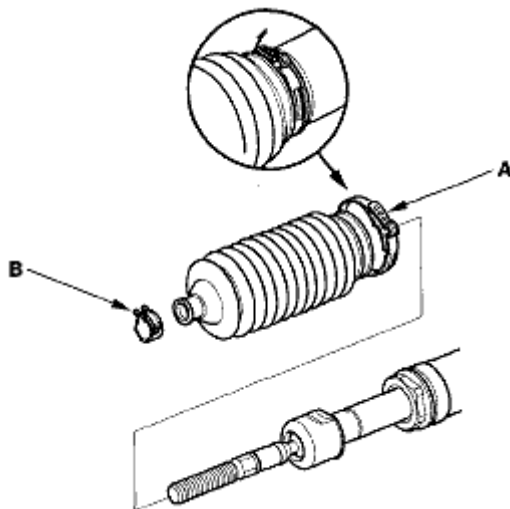


Fig. 84: Identifying Boot Bands And Tie-Rod Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Unbend the lock washer (A).

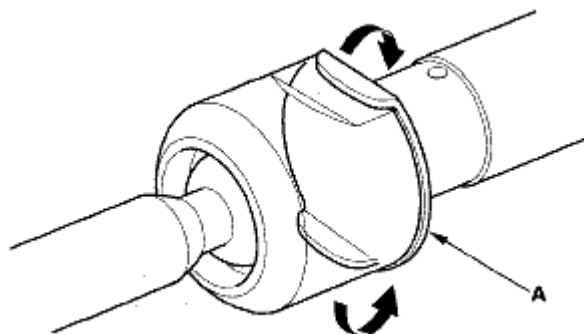


Fig. 85: Identifying Lock Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Hold the flat surface sections (A) of the steering rack (B) with one wrench, and unscrew both rack

ends (C) with another wrench. Be careful not to damage the rack surface with the wrench.

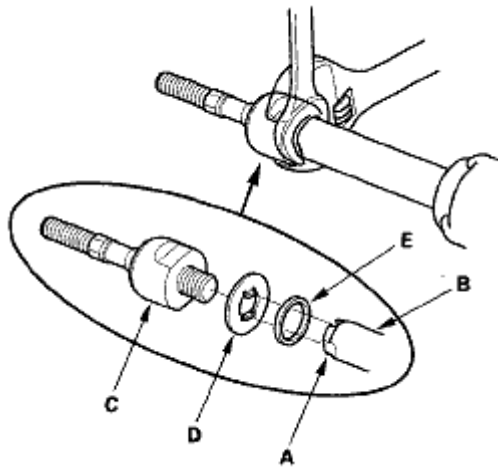


Fig. 86: Holding Flat Surface Sections Of Steering Rack
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Remove the lock washer (D) and rubber stop (E).
6. Loosen the locknut (A), then remove the rack guide screw (B).

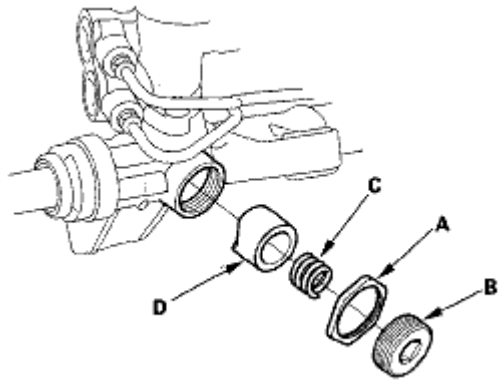


Fig. 87: Identifying Rack Guide Screw
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

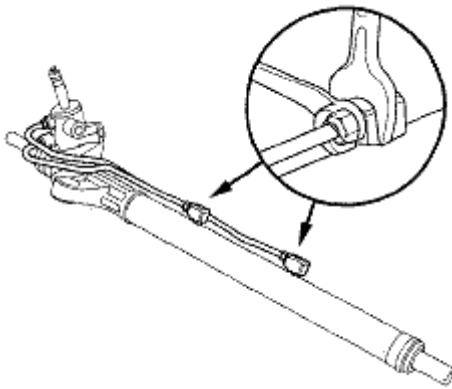


Fig. 88: Removing Cylinder Lines From Gearbox
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Drain the fluid from the cylinder fittings by slowly moving the steering rack back and forth.
10. Remove the two flange bolts, then remove the valve body unit (A) from the gearbox housing (B). Remove the O-ring (C).

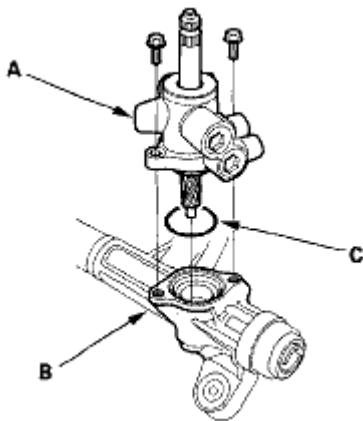


Fig. 89: Removing Valve Body Unit From Gearbox Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.

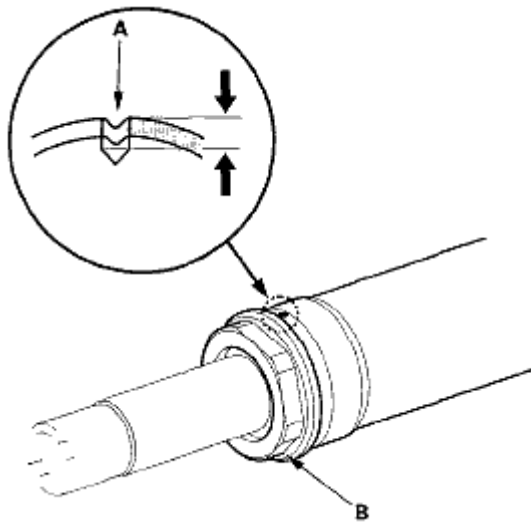


Fig. 90: Drilling Hole

Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Hold the gearbox housing using a C-clamp (commercially available) (A) and the wooden blocks (B) as shown. Do not clamp the cylinder part of the gearbox housing in the vise. Then remove the cylinder end (C).

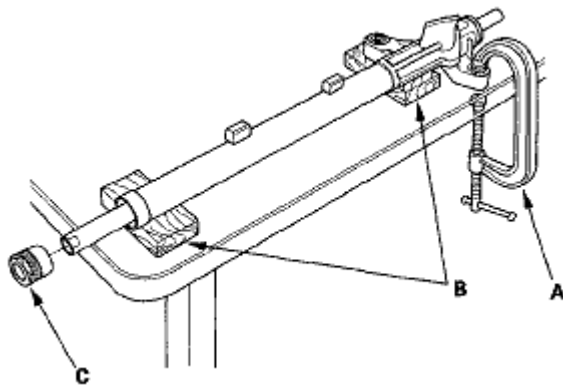


Fig. 91: Holding Gearbox Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

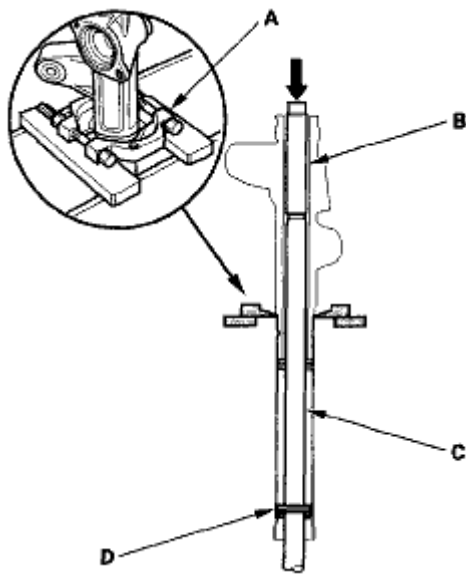


Fig. 92: Identifying Commercially Available Bearing Separator On Gearbox Housing
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Place an appropriate size deep socket wrench (B) on the steering rack (C).
15. Set the steering gearbox in a press so the gearbox housing side 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. Install the cylinder end seal remover attachment so it will fit through the rack guide hole of the gearbox housing. Insert a 24" long, 3/8" drive extension (A), and install it on the attachment. Make sure the seal remover is securely positioned on the backup ring edges. Be careful not to damage the inner surface of the cylinder with the attachment.

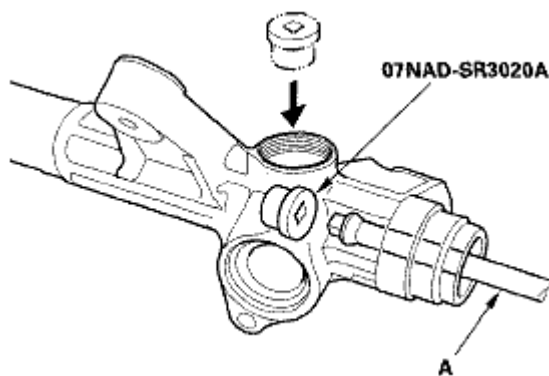


Fig. 93: Installing Cylinder Seal
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Place the steering gearbox in a press, then remove the cylinder end seal (A) and backup ring (B) from the gearbox housing by pressing on the 24" long, 3/8" drive extension.

Note these items when pressing the cylinder end seal:

- Keep the tool straight to avoid damaging the cylinder wall. Check the tool angle, and correct it if necessary, when removing the cylinder end seal.

- Use a press to remove the cylinder end seal. Do not try to remove the seal by striking the tool; striking the tool would break the backup ring, and the cylinder end seal would remain in the gearbox housing.

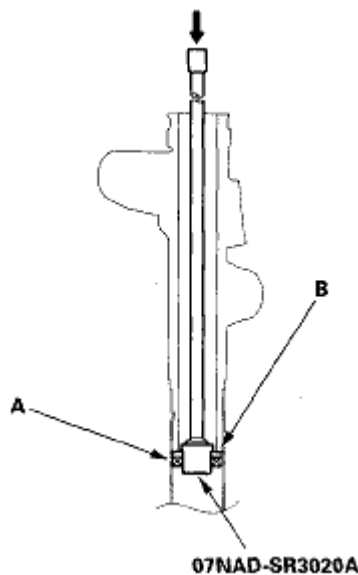


Fig. 94: Pressing Steering Gearbox

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

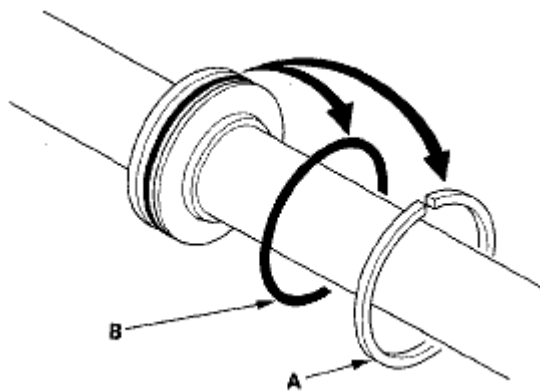


Fig. 95: Identifying Piston Seal Ring

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

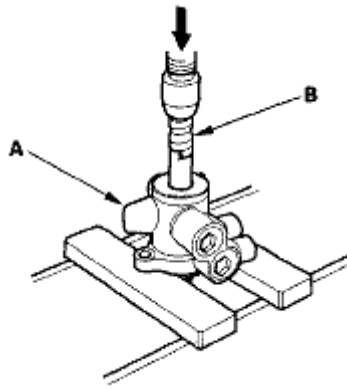


Fig. 96: Applying Vinyl Tape To Splines On Pinion Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Separate the valve housing from the pinion shaft/ valve using a press.
21. 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.

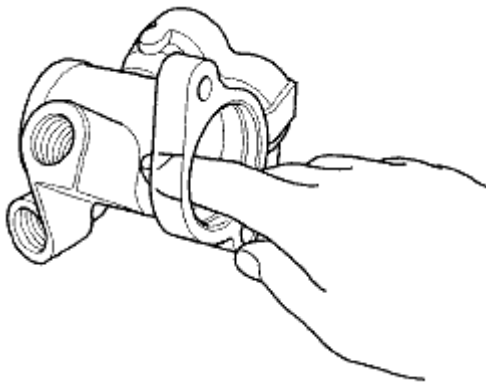


Fig. 97: Checking Inner Wall Of Valve Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. 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.

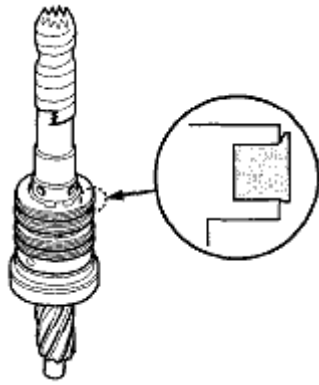


Fig. 98: Identifying Wear, Burrs, And Other Damage To Grooves In Sleeve
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

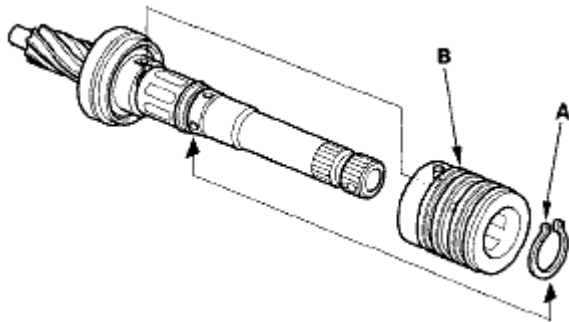


Fig. 99: Identifying Snap Ring And Sleeve From Pinion Shaft
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. 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.

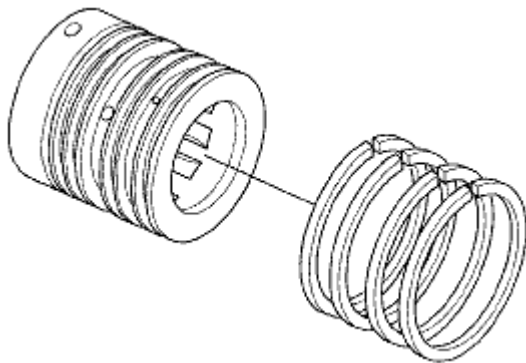


Fig. 100: Identifying Seal Rings
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. 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.

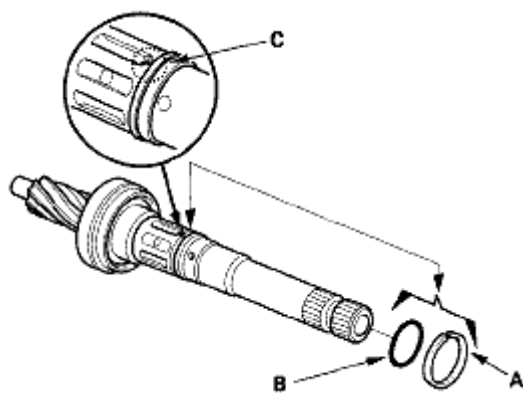


Fig. 101: Identifying Valve Seal Ring And O-Ring
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. 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.

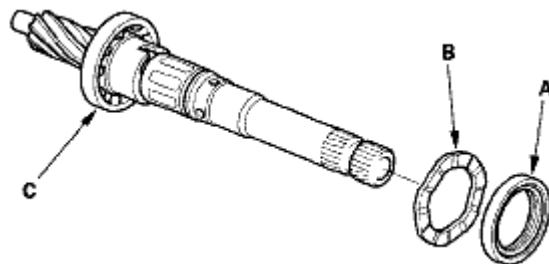


Fig. 102: Identifying Valve Oil Seal And Wave Washer From Pinion Shaft
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Remove the valve oil seal (A) and roller bearing (B) out of the valve housing using a hydraulic press and pilot collar.

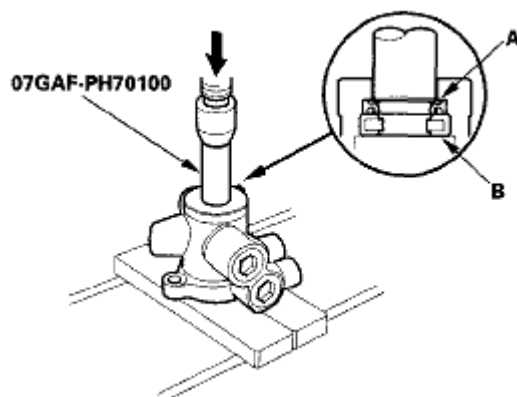


Fig. 103: Removing Valve Oil Seal And Roller Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Reassembly

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

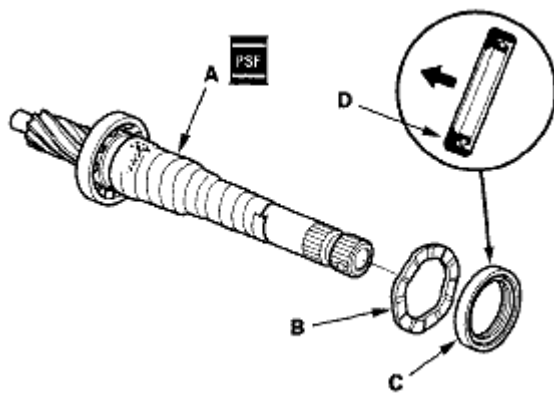


Fig. 104: Applying Vinyl Tape To Stepped Portion Of Pinion Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Install the wave washer (B).
31. 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). Remove vinyl tape.
32. 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.

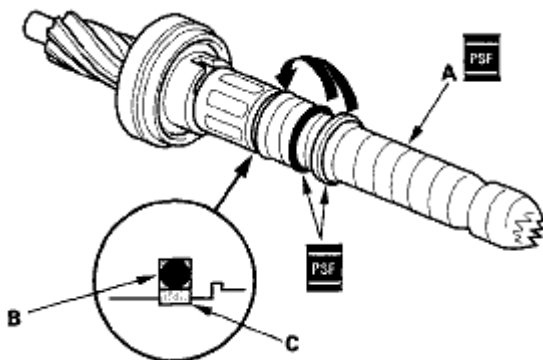


Fig. 105: Applying Vinyl Tape To Splines And Stepped Portion Of Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

33. 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.
34. Remove the tape, and apply power steering fluid to the surface of the valve seal ring (A).

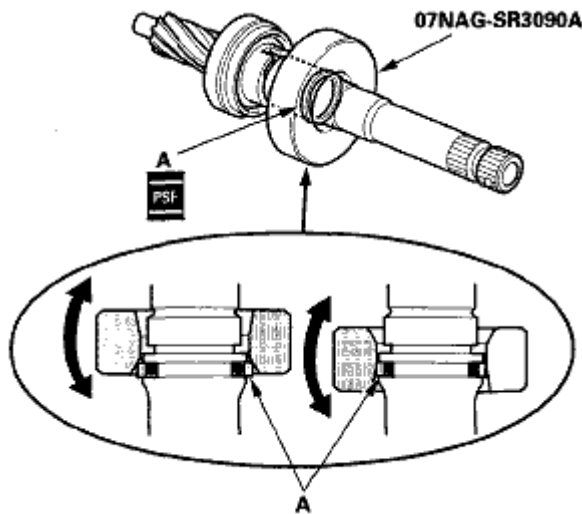


Fig. 106: Applying Power Steering Fluid To Surface Of Valve Seal Ring
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Apply power steering fluid to the inside of the valve seal ring sizing tool. Set the larger diameter end of the sizing tool over the valve seal ring, and move the sizing tool up and down several times to make the valve seal ring fit in the pinion shaft groove.
36. Remove the sizing tool, turn it over, slide the smaller diameter end over the valve seal ring. Move it up and down several times to make sure the valve seal ring fits snugly in the pinion shaft groove.
37. Apply power steering fluid to the surface of the sleeve seal ring guide. Slip two new seal rings (A) over the ring guide 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 sizing tool.
- There are two types of sleeve seal rings: black and brown. Do not mix the different types of seal rings as they are not compatible.

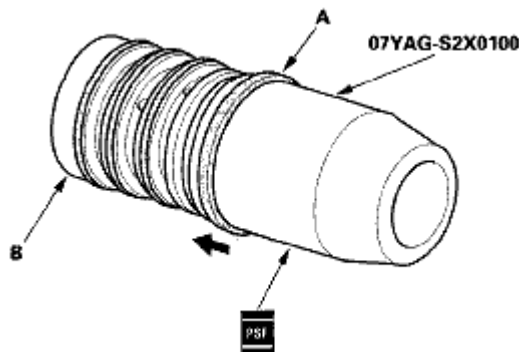


Fig. 107: Identifying Seal Rings And Pinion Shaft Sleeve
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Align the ring guide 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.

39. Apply power steering fluid to the seal rings on the sleeve, and to the entire inside surface of the sleeve seal ring sizing tool, then slowly insert the sleeve into the sizing tool.

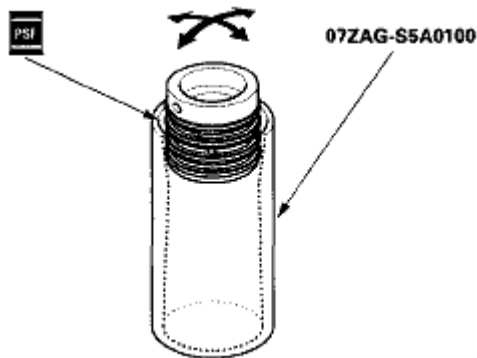


Fig. 108: Applying Power Steering Fluid To Seal Rings On Sleeve
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Move the sleeve back and forth several times to make the seal rings snugly fit in the sleeve. Make sure the seal rings are not twisted.
41. 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.

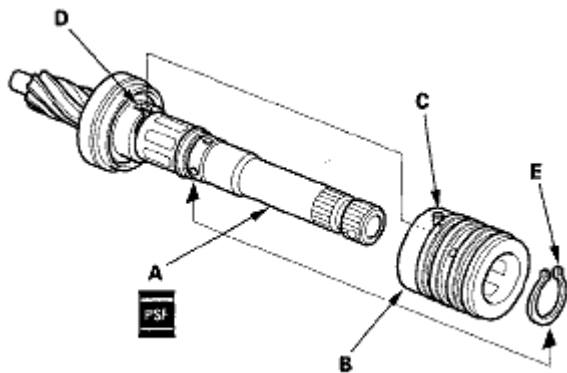


Fig. 109: Applying Power Steering Fluid To Surface Of Pinion Shaft
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

42. 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, the driver, and the attachment. Install the seal with its grooved side facing the tool.

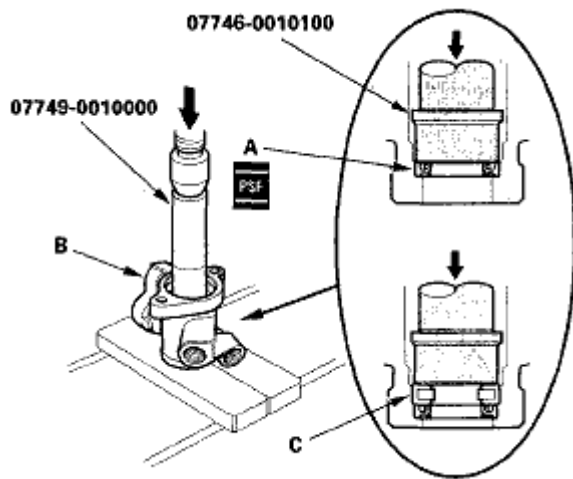


Fig. 110: Applying Power Steering Fluid To Seal Ring Lip Of Valve Oil Seal
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

43. Press the roller bearing (C) into the valve housing with a hydraulic press, the driver, and the attachment.
44. Apply vinyl tape (A) to the pinion shaft/then coat the vinyl tape with power steering fluid.

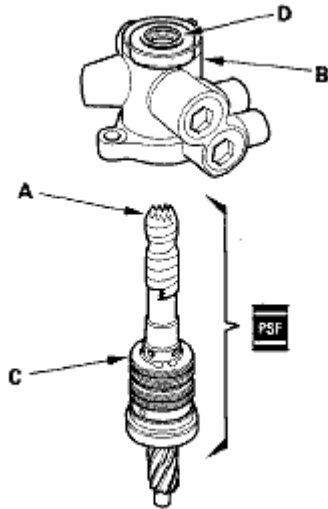


Fig. 111: Applying Vinyl Tape To Pinion Shaft
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Insert the pinion shaft into the valve housing (B). Be careful not to damage the valve seal rings (C) and valve oil seal sealing lip (D).
46. Remove the vinyl tape from the pinion shaft, then remove any residue of the tape adhesive.
47. 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.

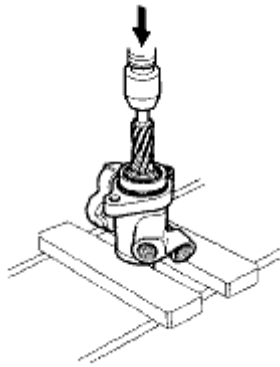


Fig. 112: Pressing Pinion Shaft/Sleeve Into Valve Housing
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

Note these items during reassembly:

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

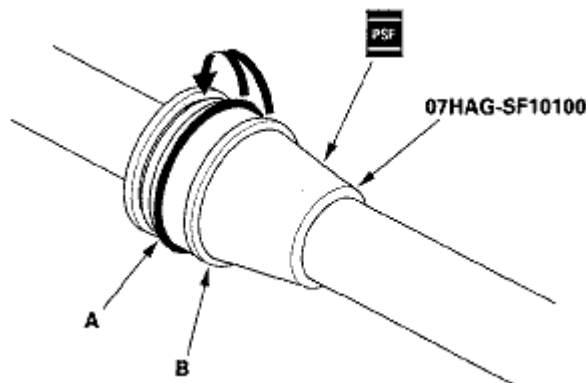


Fig. 113: Identifying Piston's O-Ring And Seal Ring
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

50. 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.
51. Coat the piston seal ring (A) and the inside of the piston seal ring sizing tool with power steering fluid, then carefully slide the tool onto the rack and over the piston seal ring.

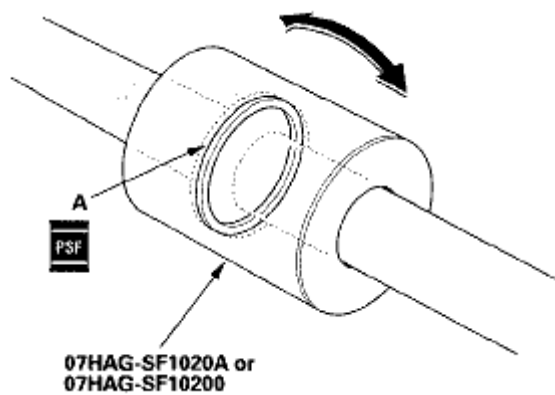


Fig. 114: Identifying Piston Seal Ring

Courtesy of AMERICAN HONDA MOTOR CO., INC.

52. Move the sizing tool back and forth several times to make sure the piston seal ring fits snugly in the piston.
53. Coat the sliding surface of the cylinder end seal slider (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the seal slider with its grooved side (C) facing opposite the seal slider.

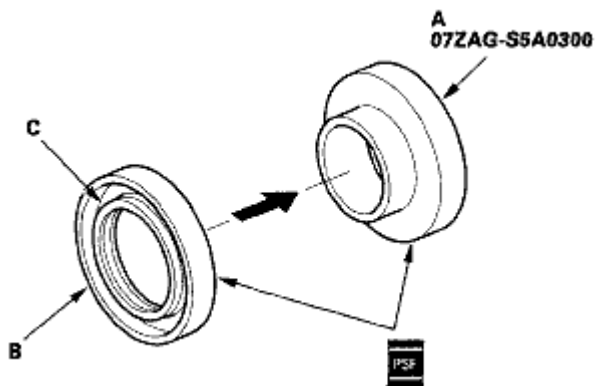


Fig. 115: Placing Seal On Seal Slider With Grooved Side

Courtesy of AMERICAN HONDA MOTOR CO., INC.

54. Coat the surface of the steering rack (A) with power steering fluid.

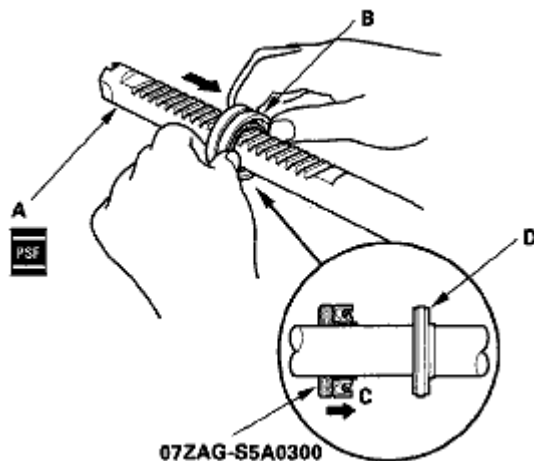


Fig. 116: Identifying Cylinder Seal Onto Steering Rack With Grooved Side
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

55. Install the cylinder end seal (B) onto the steering rack with its grooved side (C) toward the piston (D).
56. Separate the cylinder end seal from the cylinder end seal slider, then remove the seal slider.
57. Install the new backup ring (A) on the steering rack, then place the backup ring and cylinder end seal (B) against the piston (C).

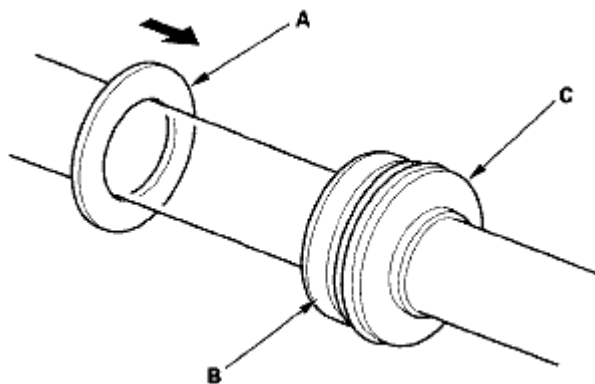


Fig. 117: Identifying Backup Ring On Steering Rack
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

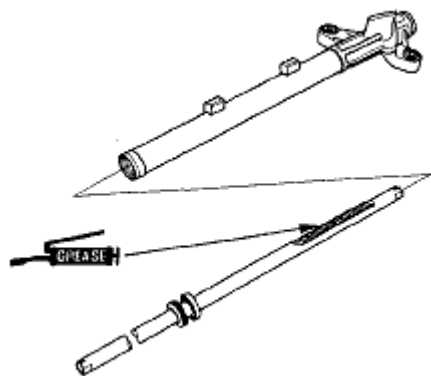


Fig. 118: Applying Multipurpose Grease To Steering Rack Teeth
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

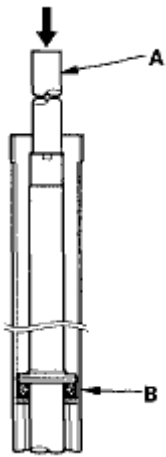


Fig. 119: Inserting Deep Socket Wrench Onto Steering Rack
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

60. 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.
61. Remove the tool, and center the steering rack.
62. Coat the sliding surface of the cylinder end seal slider (A) and new cylinder end seal (B) with power steering fluid. Place the seal on the seal slider with its grooved side (C) facing opposite the seal slider.

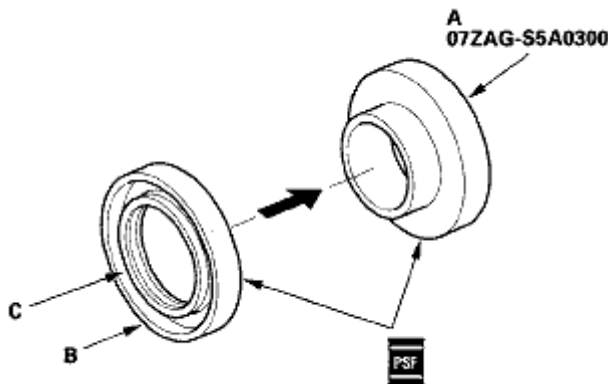


Fig. 120: Placing Seal On Seal Slider With Grooved Side
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

63. Coat the inside surface of the cylinder end seal slider and steering rack with power steering fluid, then install the cylinder end seal (A) onto the steering rack with its grooved side toward the cylinder.

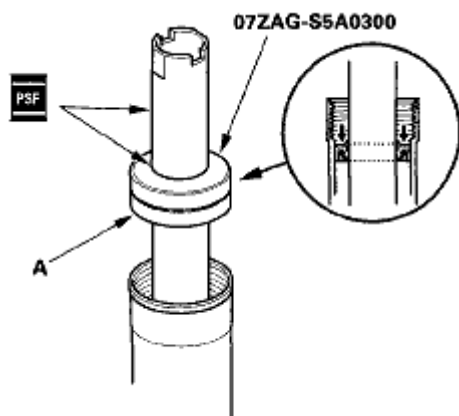


Fig. 121: Identifying Cylinder Seal Onto Steering Rack With Grooved Side
Courtesy of AMERICAN HONDA MOTOR CO., INC.

64. Separate the cylinder end seal from the seal slider, then remove the seal slider.
65. 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.
66. Hold the gearbox housing using a C-clamp (commercially available) (A) and the wooden blocks (B). Do not clamp the cylinder part of the gearbox housing in the vise.

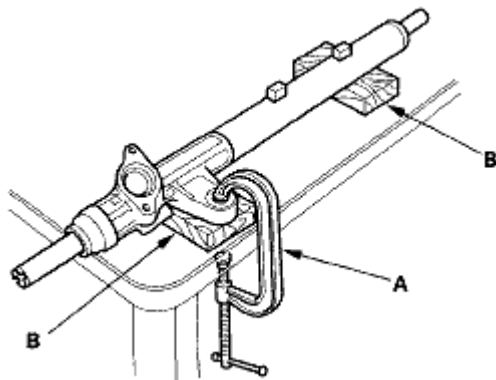


Fig. 122: Holding Gearbox Housing Using C-Clamp
Courtesy of AMERICAN HONDA MOTOR CO., INC.

67. 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). Tighten the cylinder end to the specified torque.

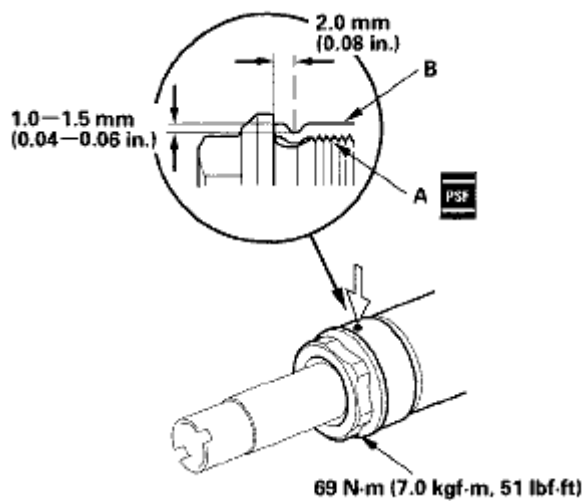


Fig. 123: Tightening Cylinder Nut - Specified Torque
Courtesy of AMERICAN HONDA MOTOR CO., INC.

68. Stake the point of the cylinder shown (opposite from where the stake was removed during disassembly).
69. Coat the new O-ring (A) with multipurpose grease, and carefully fit it on the valve housing.

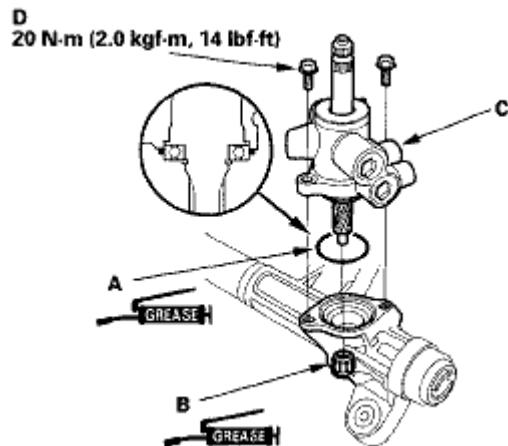


Fig. 124: Identifying Multipurpose Grease Applying Area With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

70. 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).
71. Tighten the flange bolts (D) to the specified torque.
72. 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.

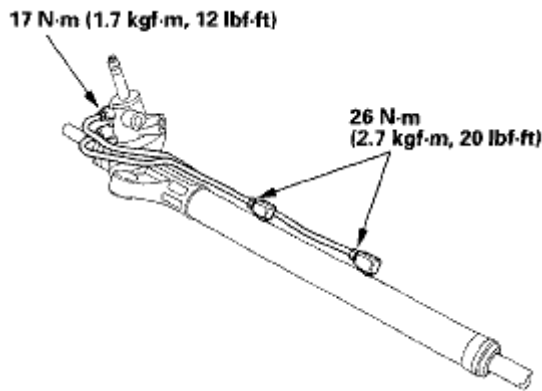


Fig. 125: Identifying Flange Nuts With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

73. Apply multipurpose grease to the sliding surface and circumference of the rack guide (A), and install it onto the gearbox housing. Wipe the grease off the threaded section of the housing.

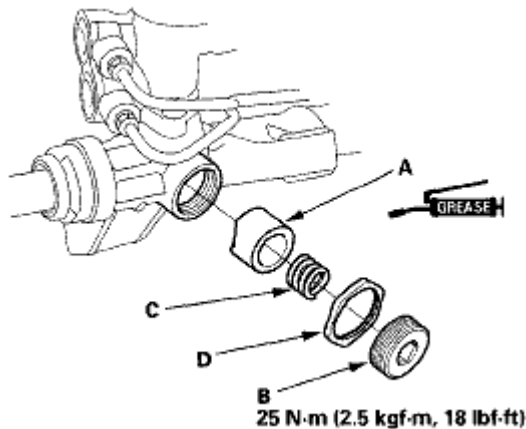


Fig. 126: Applying Multipurpose Grease To Sliding Surface And Circumference Of Rack Guide
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

74. 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 rack guide, the spring (C), rack guide screw, and locknut (D).

NOTE: If more than 5 minutes has passed after applying the sealant, remove the old sealant and residue, and reapply new sealant.

75. Adjust the rack guide screw (see **RACK GUIDE ADJUSTMENT**). After adjusting, check that the rack moves smoothly by sliding it right and left.
76. Install a new rubber stop (A) and a new lock washer (B). Align the lock washer tabs (C) with the slots (D) on the rack end (E) while holding the lock washer in place. Repeat this step for the other side of the rack.

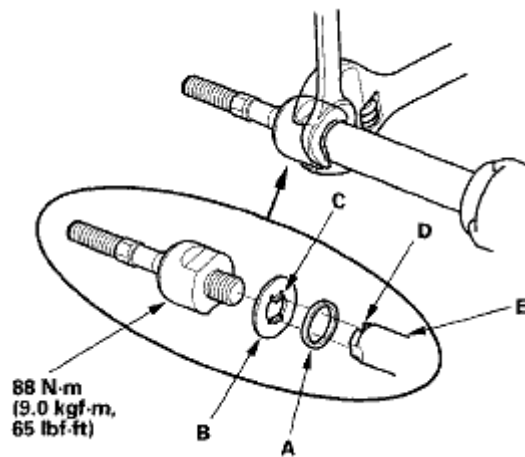


Fig. 127: Holding Lock Washer With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

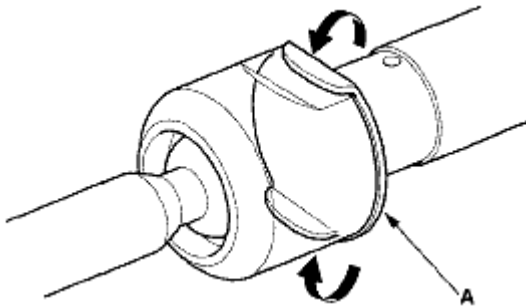


Fig. 128: Bending Lock Washer
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

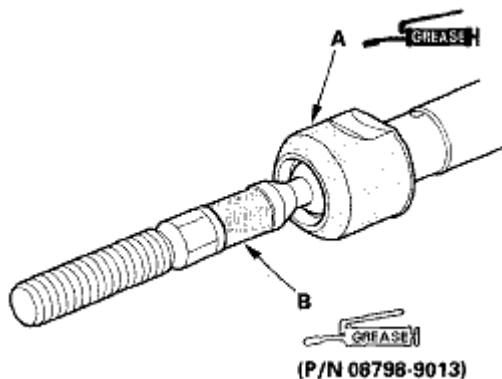


Fig. 129: Applying Multipurpose Grease To Circumference Of Rack Joint Housing (A)
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

80. Apply a light coat of silicone grease to the boot grooves (B) on the rack ends.

81. Center the steering rack within its stroke.
82. Clean off any grease or contamination from the boot installation grooves (A) and around the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.

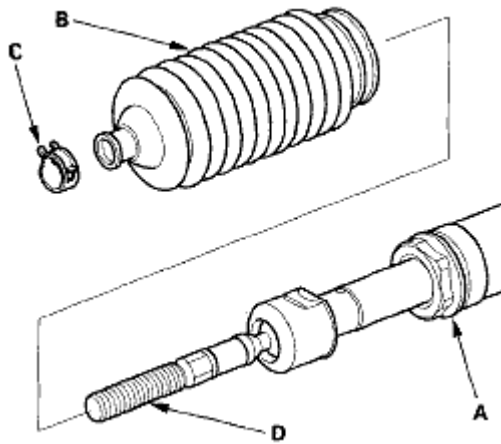


Fig. 130: Identifying Boots Installation Rack End
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

83. After installing the boots, wipe any grease off the threaded section (D) of the rack end.
84. Install the new boot bands by aligning the tabs (A) with the holes (B) of the band.

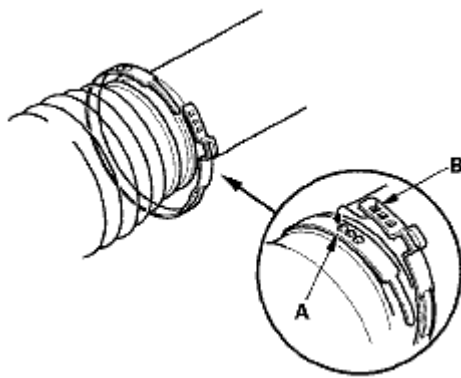


Fig. 131: Aligning Tabs With Holes Of Band
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

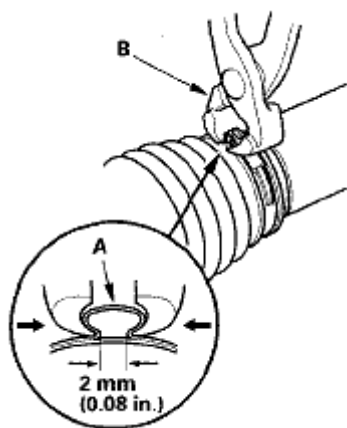


Fig. 132: Closing Ear Portion Of Band

Courtesy of AMERICAN HONDA MOTOR CO., INC.

86. Slide the rack right and left to be certain that the boots are not deformed or twisted.
87. Reinstall the steering gearbox (see **STEERING GEARBOX INSTALLATION**).

STEERING GEARBOX INSTALLATION

1. Before installing the steering gearbox, make sure that no power steering fluid is on the mating surface of the gearbox and front suspension subframe. To prevent the gearbox mounting bolts from loosening after the installation, remove any power steering fluid from the mount cushions and bolt holes. Wrap vinyl tape on the pinion shaft.
2. Apply a mild soap and water solution to both sides of the mount cushion mating surfaces (A).

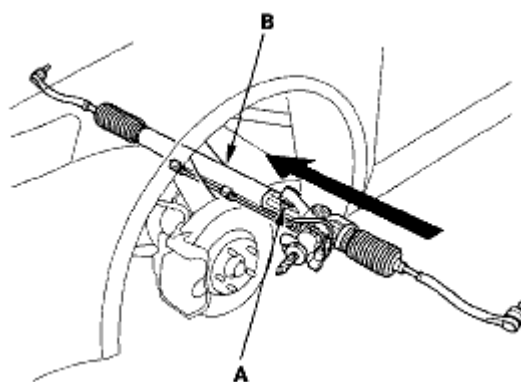


Fig. 133: Passing Cylinder Of Steering Gearbox

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Pass the cylinder of the steering gearbox (B) through the wheel well opening on the driver's side.
4. Carefully move the steering gearbox toward the passenger's side until the pinion shaft clears the wheel well opening on the body.
5. Rotate the steering gearbox so the pinion shaft (A) points upward.

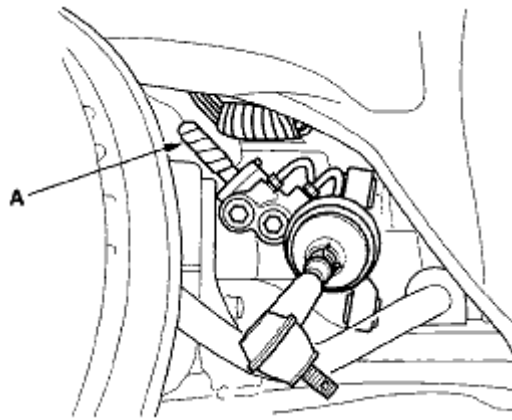


Fig. 134: Identifying Pinion Shaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Continue moving the gearbox toward the passenger's side until the steering gearbox is in position. Make sure the power steering return line and inlet line are routed above the gearbox.
7. Remove the vinyl tape from the pinion shaft, and install the pinion shaft grommet (A). Align the slot in the pinion shaft grommet with the lug portion (B) on the valve housing.

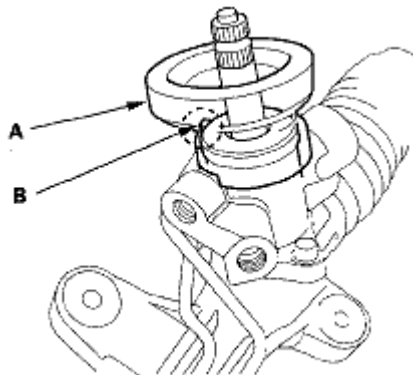


Fig. 135: Aligning Slot In Pinion Shaft Grommet With Lug Portion On Valve Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the cylinder of the gearbox securely.

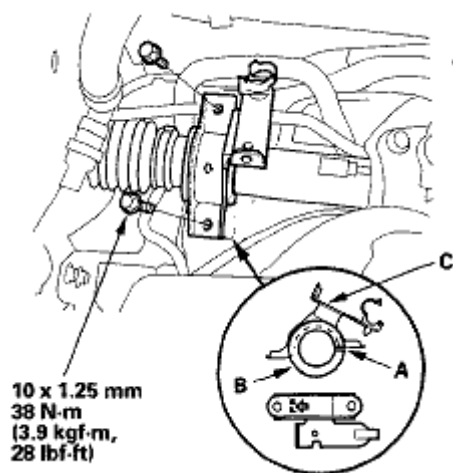


Fig. 136: Identifying Gearbox Mounting Bracket With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the new gearbox mounting bracket (C) over the mounting cushion, and loosely install the two flange bolts.
10. Install the new gearbox mounting bolts (A) and washers (B) on the left side of the gearbox, then tighten them to the specified torque.

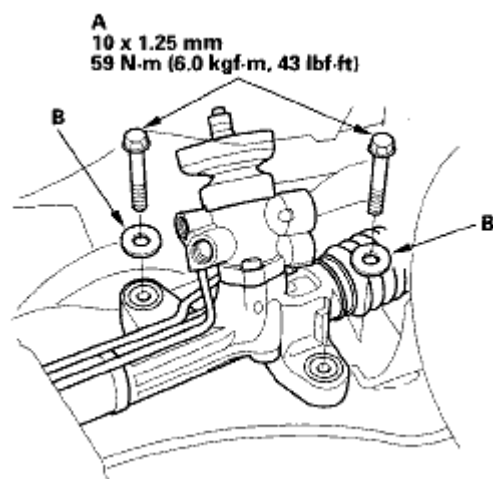


Fig. 137: Identifying Gearbox Mounting Bolts And Washers On Left Side Of Gearbox With Torque Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Tighten the flange bolts on the right side of the gearbox to the specified torque alternately in two or more steps.
12. Loosely connect the return line and inlet line by hand.
13. Install the inlet line holder (A) and return hose (B) on the gearbox mounting bracket (C).

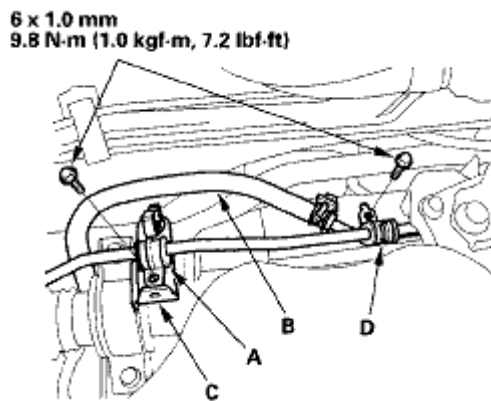


Fig. 138: Identifying Inlet Line Holder And Return Hose On Gearbox Mounting Bracket With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the inlet line holder (D) on the front suspension subframe. Make sure that there is no interference between the inlet and return lines and any other parts.
15. Tighten the return line flare nut (A) to the specified torque.

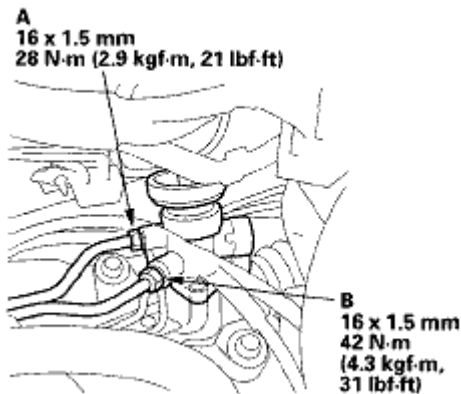


Fig. 139: Tightening Return Line Flare Nut With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Tighten the inlet line flare nut (B) to the specified torque.
17. Install the P/S heat shield (A).

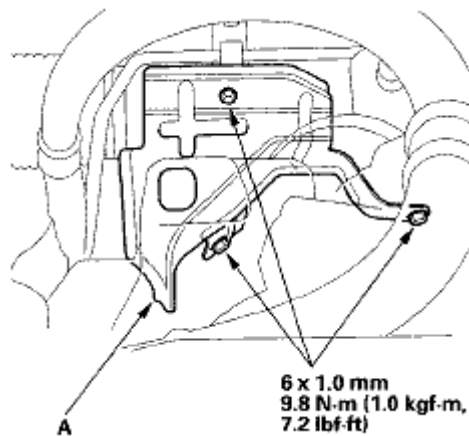


Fig. 140: Identifying P/S Heat Shield With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Raise the jack supporting the front suspension subframe with the front subframe adapter until the subframe is in position (see **SUBFRAME REPLACEMENT**).
19. Install the front suspension subframe rear bracket (A). Tighten a new 12 mm flange bolts (B) and a new 14 mm bolts (C) to the specified torque.

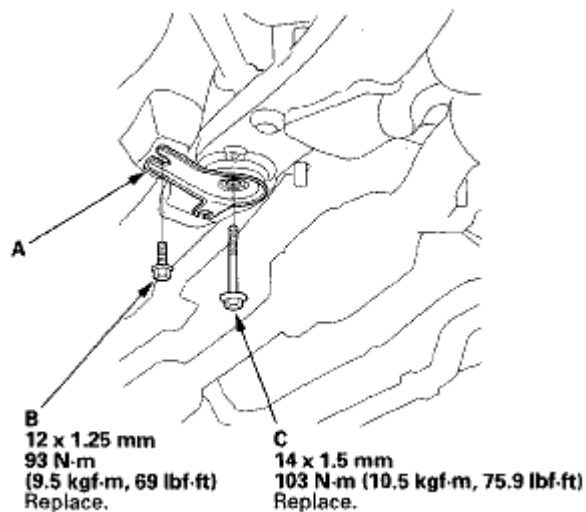


Fig. 141: Tightening Flange Bolts With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

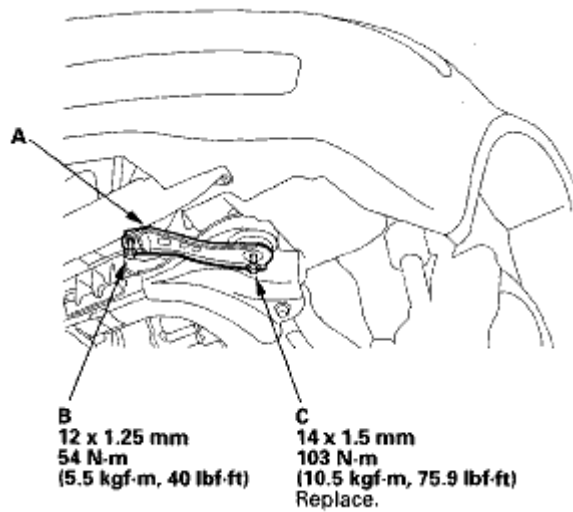


Fig. 142: Identifying Front Suspension Subframe Front Bracket With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Install the new front suspension subframe left mid mount bolts.

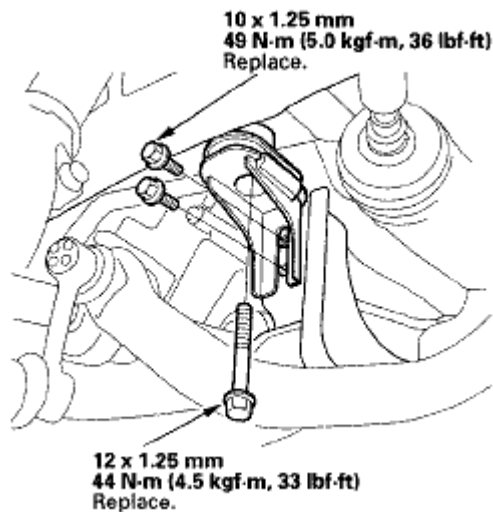


Fig. 143: Identifying Front Suspension Subframe Left Mid Mount Bolts With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the new front suspension subframe right mid mount bolts.

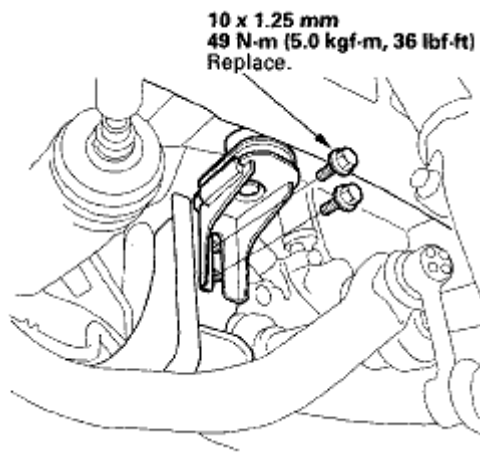


Fig. 144: Identifying Front Suspension Subframe Right Mid Mount Bolts With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Remove the front suspension subframe supporting the front subframe adapter, and lower the jack.
24. Install the new rear engine mount bracket bolts.

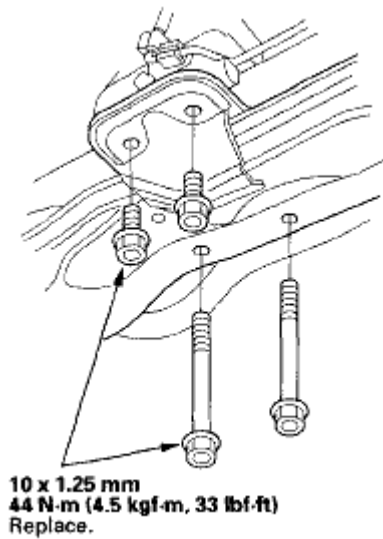


Fig. 145: Identifying Rear Engine Mount Bracket Bolts With Torque Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

25. Install the engine undercover (A) (see step 32 on **ENGINE REMOVAL**).

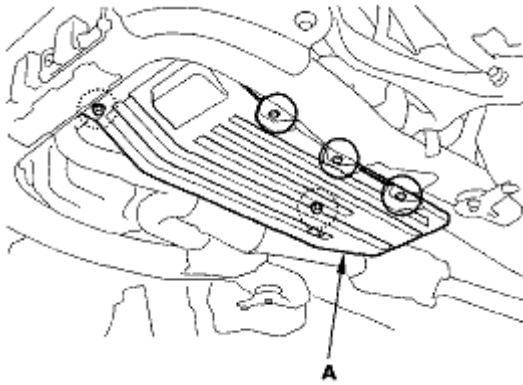


Fig. 146: Identifying Engine Undercover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Install the splash shield (A) (see **SPLASH SHIELD REPLACEMENT**).

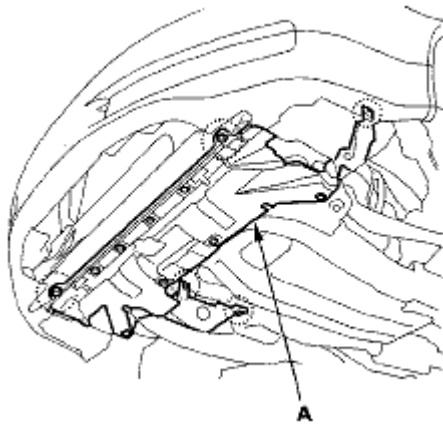


Fig. 147: Identifying Splash Shield

Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Connect the power steering pressure switch connector (A).

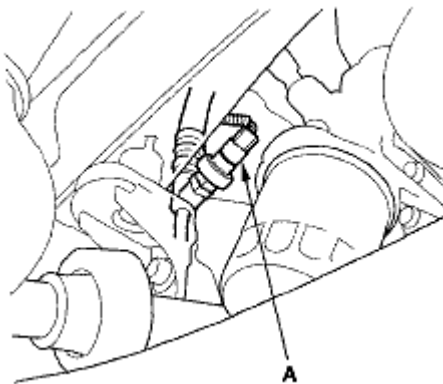


Fig. 148: Identifying Power Steering Pressure Switch Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

28. Wipe off any grease contamination from the ball joint tapered section and threads. Reconnect the tie-rod end (A) to the knuckle arms.

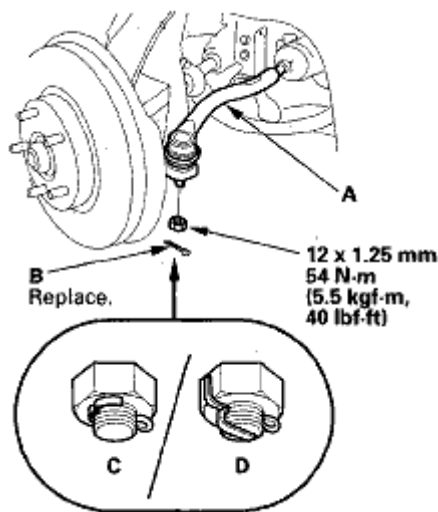


Fig. 149: Identifying Tie-Rod End To Knuckle Arms With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Install the tie-rod end ball joint nut, and tighten it to the specified torque. Install the new cotter pin (B), and bend it as shown (C) or (D).
30. Remove the engine support hanger, the hanger balance bar; and the hanger adapter set.
31. Install the front wheel, then set the wheels in the straight ahead position.

NOTE: Before installing the wheel, clean the mating surfaces of the brake disc and inside of the wheel.

32. Lower the vehicle.
33. Install the new cover seal (A) all the way around in the steering joint cover B. Make sure there are no wrinkles in the seal, then install the steering joint cover B.

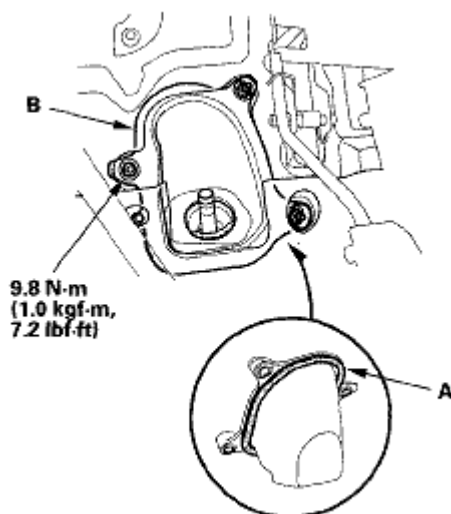


Fig. 150: Identifying Cover Seal With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

34. Center the steering rack within its stroke in steering joint connection.

35. Position the steering column joint (A) so the bolt (B) near to the notch (C) is within the range shown.

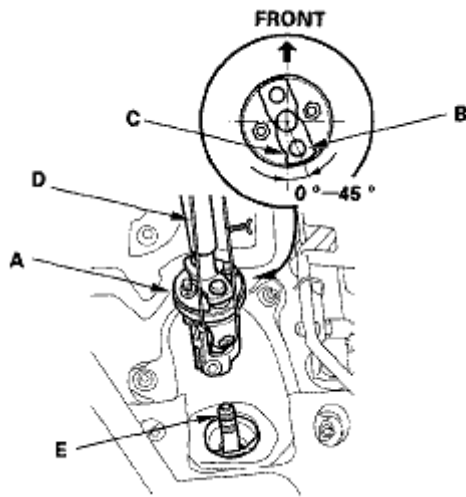


Fig. 151: Identifying Steering Column Joint Position
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. With the rack in the straight ahead driving position, cut the wire (D) and slip the lower end of the steering joint on to pinion shaft (E).
37. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Make sure the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure the steering joint is fully seated.

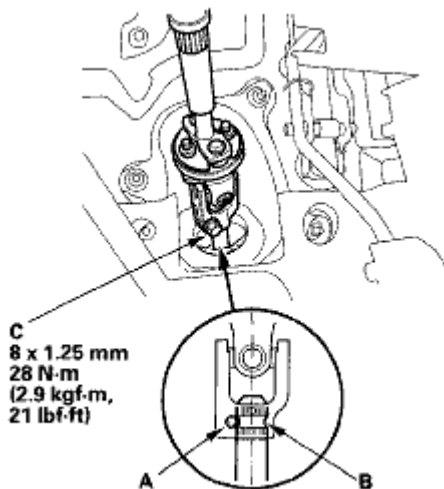


Fig. 152: Aligning Bolt Hole On Steering Joint With Groove With Torque Specifications
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

38. Tighten the steering joint bolt to the specified torque.
39. Install the steering joint cover A.

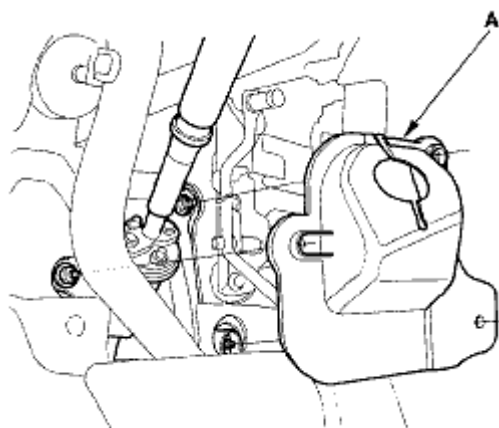


Fig. 153: Identifying Steering Joint Cover

Courtesy of AMERICAN HONDA MOTOR CO., INC.

40. Install the steering wheel (see **STEERING WHEEL REMOVAL**).
41. Install the driver's airbag (see **DRIVER'S AIRBAG REPLACEMENT**).
42. Reconnect the negative battery cable to the battery, and do these tasks:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - Enter the anti-theft code for the audio or the navigation system (if equipped).
 - Set the clock (on vehicles without navigation).
 - Make sure the horn and turn signal switches work properly.
 - Make sure the steering wheel switches work properly.
43. Fill the system with power steering fluid, and bleed air from the system (see **FLUID CHECK/REPLACEMENT**).
44. After installation, do these checks.
 - Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid. Check the gearbox for leaks (see **FLUID LEAKAGE INSPECTION**).
 - Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations.
 - Set the steering column to the center tilt position, and to the center telescopic position, then do the front toe inspection (see **WHEEL ALIGNMENT**).
45. Install the right side engine component cover, passenger's and driver's cowl top extensions.

TIE-ROD BALL JOINT BOOT REPLACEMENT

Special Tools Required

Front hub dis/assembly tool 07965-SA50500

1. Disconnect the tie-rod ball joint from the knuckle (see step 16 on **STEERING GEARBOX REMOVAL**).
2. Remove the tie-rod end from the rack end.
3. Remove the tie-rod ball joint boot from the tie-rod end, and wipe the old grease off the ball pin.

4. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

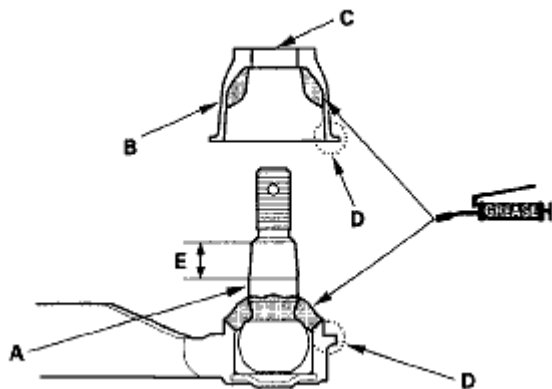


Fig. 154: Identifying Multipurpose Grease Applying Area
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Pack the interior of the new tie-rod ball joint boot (B) and lip (C) with fresh multipurpose grease.

Note these items when installing new grease:

- Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
 - Do not allow dust, dirt, or other foreign materials to enter the boot.
6. Install the new boot (A) using the hub dis/assembly tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

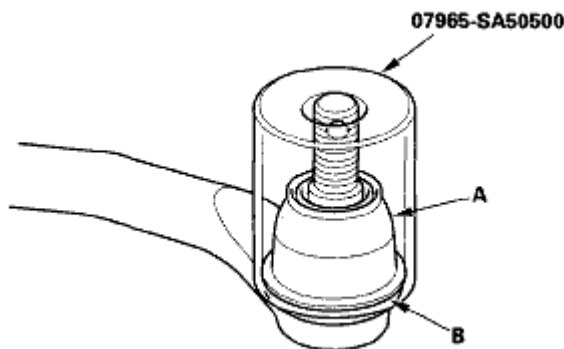


Fig. 155: Identifying Boot
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Install the tie-rod end to the rack end.
8. Connect the tie-rod ball joint to the knuckle (see step 29 on **STEERING GEARBOX INSTALLATION**).
9. Check the wheel alignment, and adjust it if necessary (see **WHEEL ALIGNMENT**).

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), a 10 x 105 mm flange bolt (C) and a 10 mm nut (D) as shown.

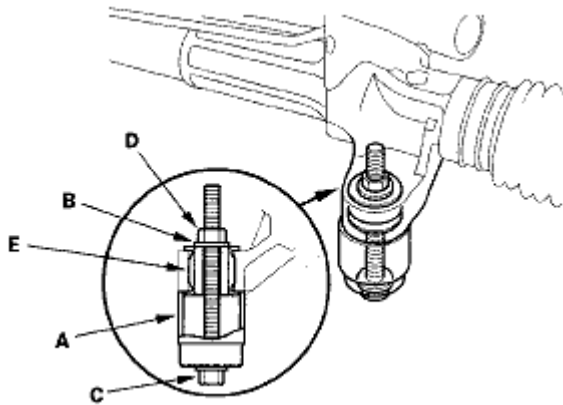


Fig. 156: Identifying Flange Bolt And Nut

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

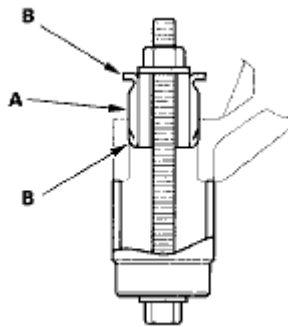


Fig. 157: Identifying Gearbox Mounting Cushion Hole

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, a flange bolt, and a nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) contact the gearbox flange surface.
7. Install the steering gearbox (see **STEERING GEARBOX INSTALLATION**).