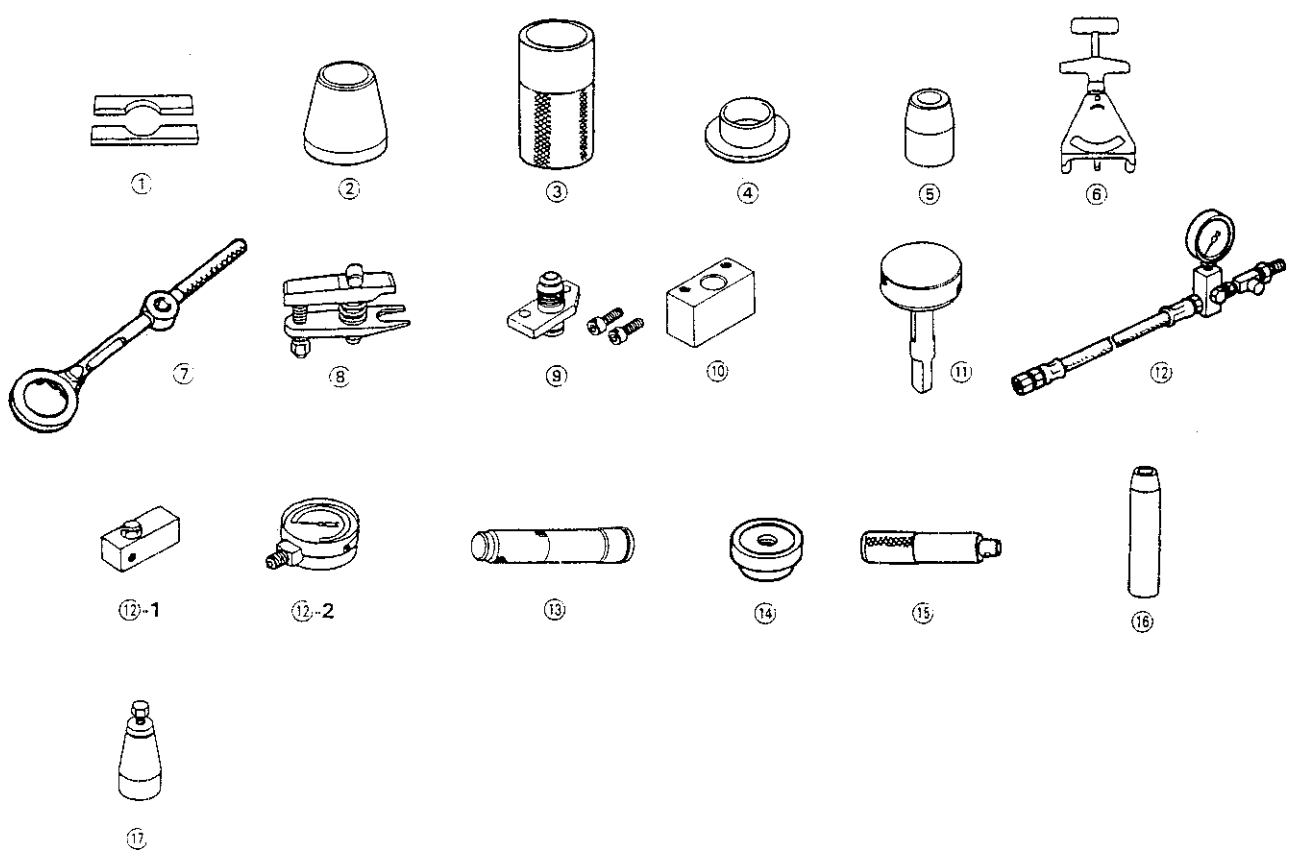
Power Steering

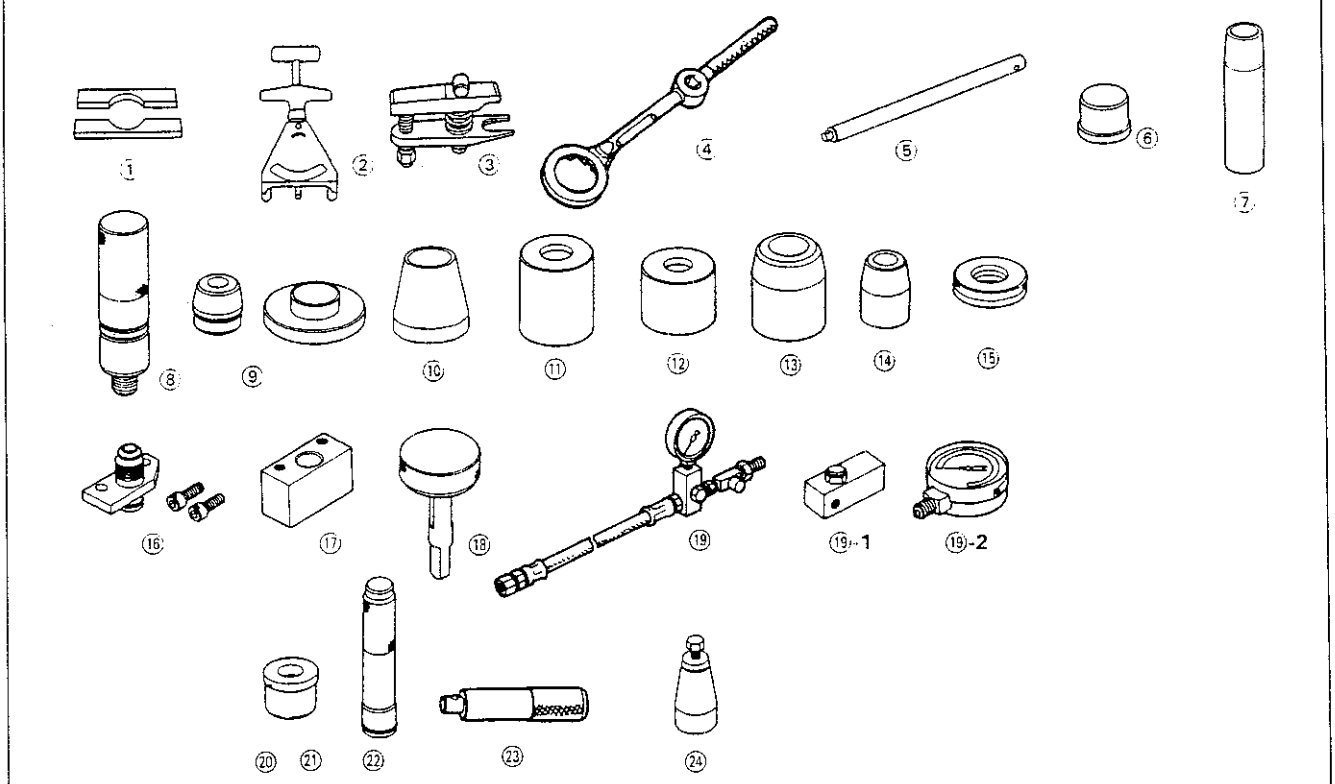
Special Tools

LHD

Ref No	Tool Number	Description	Q'ty	Page Reference
①	07GAF–SD40700	Hub Dis/Assembly Base	1	17-49, 62
②	07GAG–SD40100	Piston Seal Ring Guide	1	17-67
③	07GAG–SD40200	Piston Seal Ring Sizing Tool	1	17-67
④	07GAG–SD40300	Cylinder End Seal Slider	1	17-68
⑤	07GAG–SD40400	Cylinder End Seal Guide	1	17-68, 70
⑥	07JGG–0010100	Belt Tension Gauge Set	1	17-32
⑦	07MAA–SL00100	Locknut Wrench, 40 mm	1	17-33, 71
⑧	07MAC–SL00200	Ball Joint Remover, 28 mm	1	17-58
⑨	07NAK–SR3011A	P/S Joint Adapter (Pump)	1	17-35
⑩	07NAK–SR3012A	P/S Joint Adapter (Hose)	1	17-35
⑪	07NAZ–SR30100	Lockwasher Pilot Clinch	1	17-72
⑫	07406–0010200	P/S Pressure Gauge	1	17-35
⑫-1	07406–0010300	Pressure Control Valve	1	17-35
⑫-2	07406–0010400	Pressure Gauge	1	17-35
⑬	07746–0020100	Driver, 22 mm I.D.	1	17-50
⑭	07746–0010300	Attachment, 42 x 47 mm	1	17-62, 65
⑮	07749–0010000	Driver	1	17-65
⑯	07974–SA50600	Pinion Dust Seal Guide	1	17-56
⑰	07974–SA50800	Ball Joint Boot Clip Guide	1	17-100



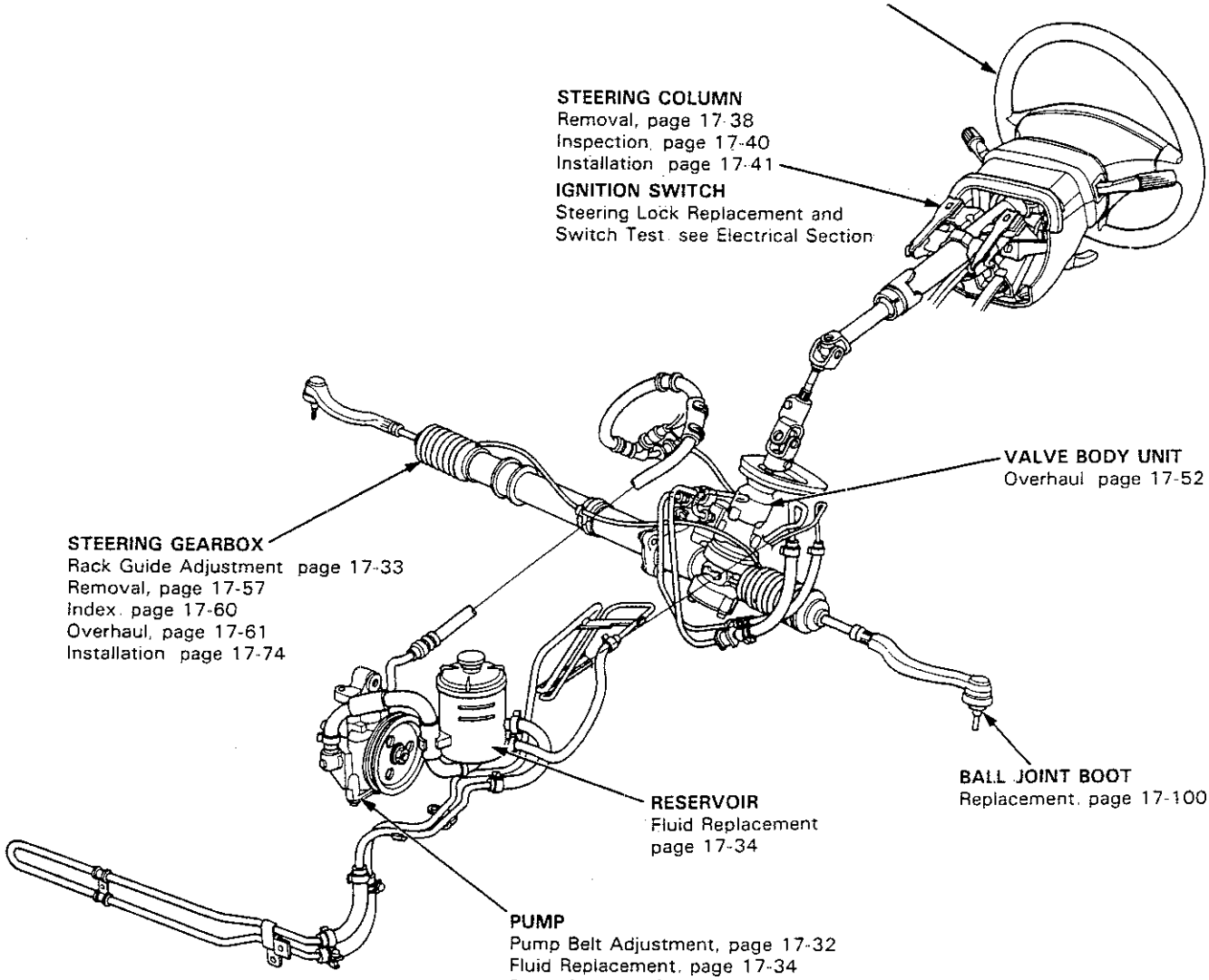
Ref. No.	Tool Number	Description	Q'ty	Page Reference
①	07GAF–SD40700	Hub Dis/Assembly Base	1	17-49, 85, 86
②	07JGG–0010100	Belt Tension Gauge Set	1	17-32
③	07MAC–SL00200	Ball Joint Remover, 28 mm	1	17-78
④	07NAA–SR30100	Locknut Wrench, 40 mm	1	17-33, 92
⑤	07NAD–SR30100	Driver Handle	1	17-84
⑥	07NAD–SR30200	End Packing Remover	1	17-84
⑦	07NAG–SR30100	Stub Seal Guide	1	17-88
⑧	07NAG–SR30200	End Packing Setting Tool	1	17-90
⑨	07NAG–SR30300	End Packing Slider	1	17-89
⑩	07NAG–SR30400	Piston Seal-Ring Guide	1	17-88
⑪	07NAG–SR30500	Piston Seal-Ring Sizing Tool	1	17-88
⑫	07NAG–SR30600	Sleeve Seal Sizing Tool	1	17-87
⑬	07NAG–SR30700	Sleeve Seal Guide	1	17-87
⑭	07NAG–SR30800	End Seal Guide	1	17-90
⑮	07NAG–SR30900	Valve Seal-Ring Sizing Tool	1	17-87
⑯	07NAK–SR3011A	P/S Joint Adapter (Pump)	1	17-35
⑰	07NAK–SR3012A	P/S Joint Adapter (Hose)	1	17-35
⑱	07NAZ–SR30100	Lockwasher Pilot Clinch	1	17-93
⑲	07406–0010200	P/S Pressure Gauge	1	17-35
⑲-1	07406–0010300	Pressure Control Valve	1	17-35
⑲-2	07406–0010400	Pressure Gauge	1	17-35
⑳	07746–0010100	Attachment, 32 x 35 mm	1	17-86
㉑	07746–0010700	Attachment, 24 x 26 mm	1	17-85
㉒	07746–0020100	Driver, 22 mm I.D.	1	17-50
㉓	07749–0010000	Driver	1	17-85, 86
㉔	07974–SA50800	Ball Joint Boot Clip Guide	1	17-100



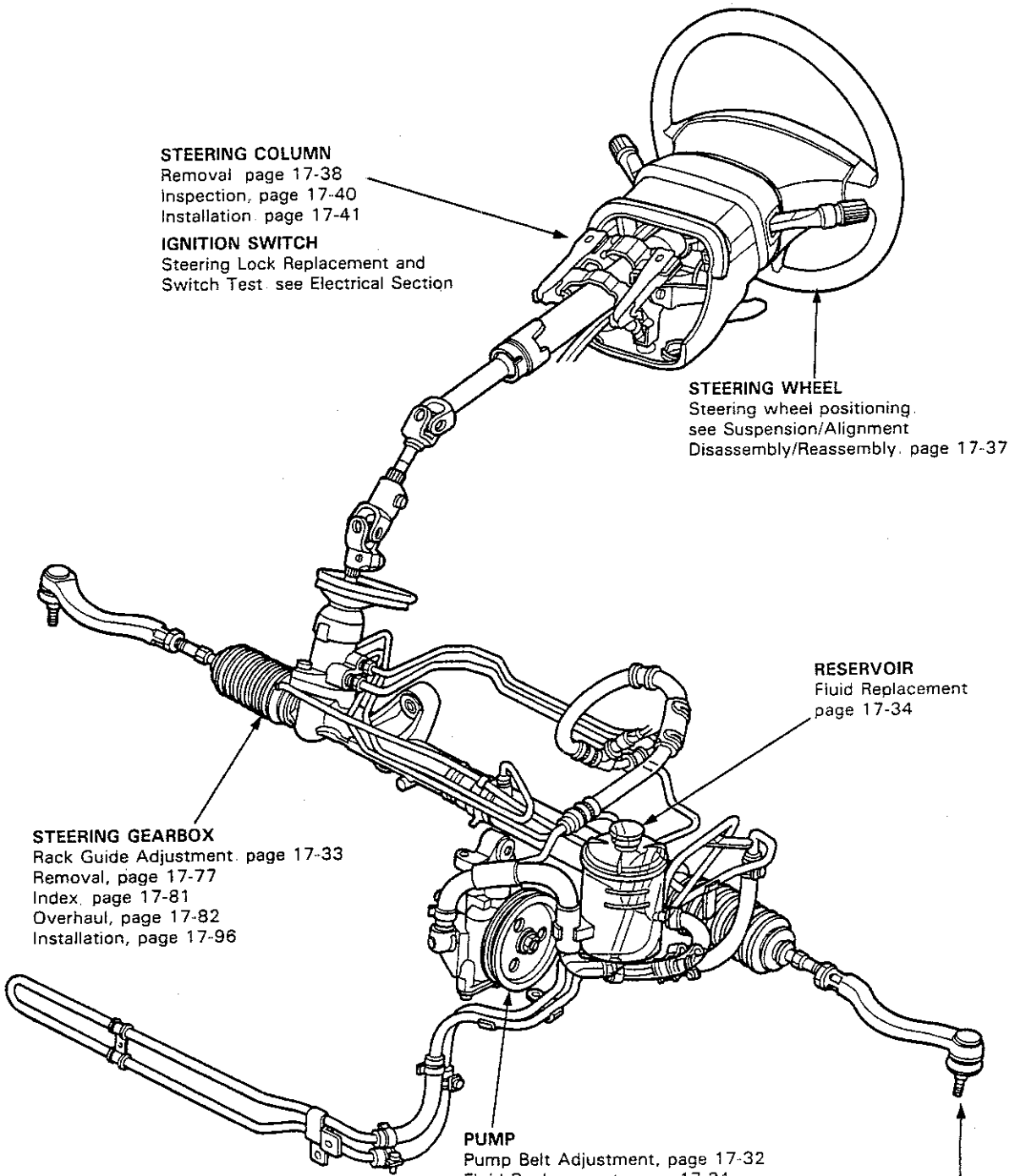
Component Location

Index (LHD)

NOTE:
- Before removing the gearbox, remove the ignition key to keep the steering shaft from turning
- After installing the gearbox, check the wheel alignment and adjust if necessary.



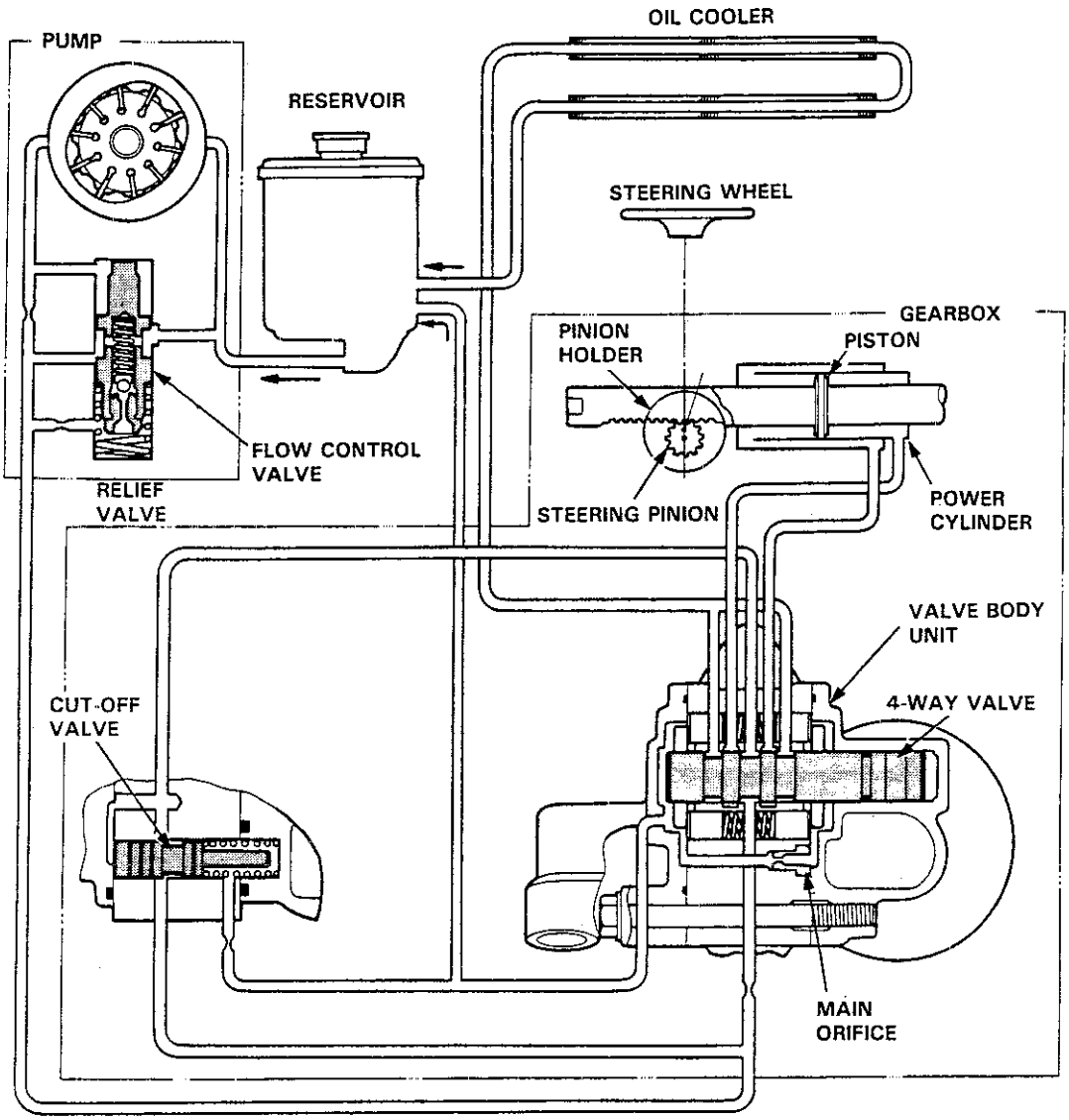
NOTE:
- Before removing the gearbox, remove the ignition key to keep the steering shaft from turning.
- After installing the gearbox, check the wheel alignment and adjust if necessary



System Description (LHD)

Fluid Flow Diagram

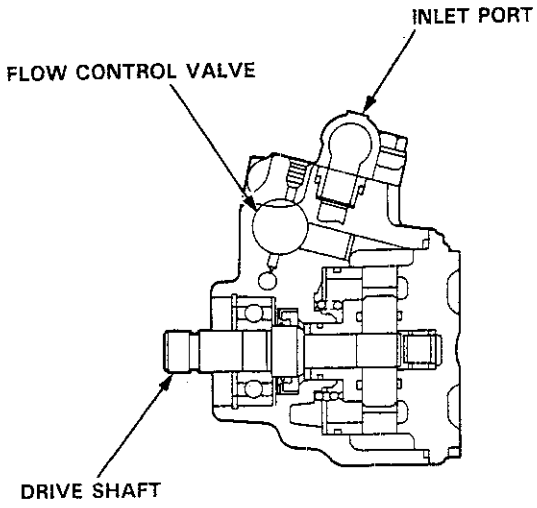
The reservoir supplies power steering fluid to the pump; the pump pressurizes the fluid to about 8,000 kPa (1,200 psi), and delivers it through a high pressure hose to the valve body unit on the gearbox.
The 4-way valve (in the valve body unit) controls the direction of the turn by shifting fluid to the left or right side of the piston on the rack (in the power cylinder) The cut-off valve, also in the valve body unit, controls the amount of assist by regulating the stroke of the 4-way valve.
Fluid returning from the power cylinder flows back through the 4-way valve and out to the reservoir through the oil cooler.

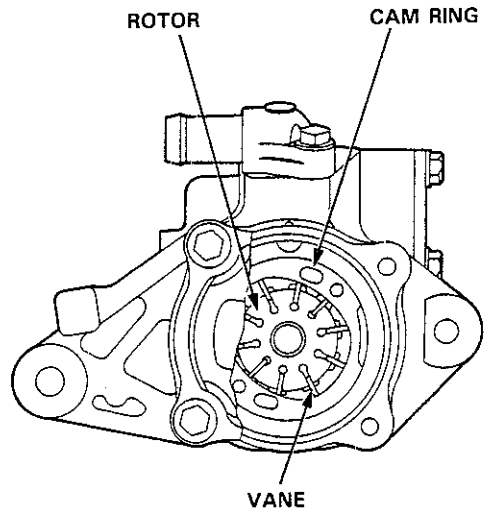


Steering Pump

Construction

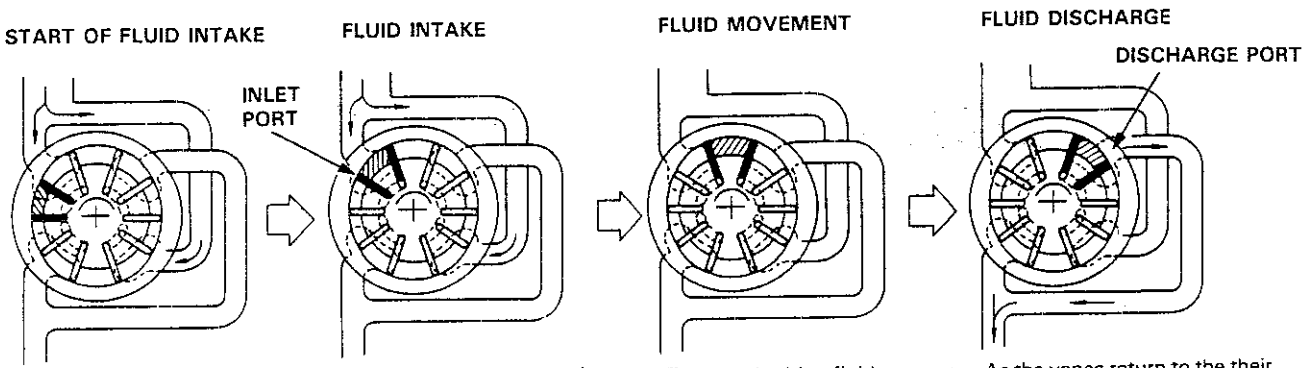
The pump is a vane-type incorporating a flow control valve (with an integrated relief valve) and is driven by a V-belt from the crank pulley. The pump features 10 vanes. Each vane performs two intake/discharge operations for every rotation of the rotor. This means that the hydraulic fluid pressure pulse becomes extremely small during discharge.





Operation

The belt-driven pulley rotates the rotor through the drive shaft. As the rotor rotates, the hydraulic pressure is applied to the vane chamber of the rotor and the vanes will rotate while being pushed onto the inner circumference of the cam ring. The inner circumference of the cam ring has an extended portion with respect to the center of the shaft, so the rollers move downward in the axial direction as the carrier rotates. As a result of this roller movement, the internal volume of the vane chamber will change, resulting in fluid intake and discharge.



The vanes are pushed onto the inner circumference of the cam ring

The volume of the vane chamber increases so that fluid is sucked in

The sucked-in fluid moves toward the discharge port

As the vanes return to the their original position on the inner side, the volume of the vane chamber decreases so the fluid is discharged from the discharge port

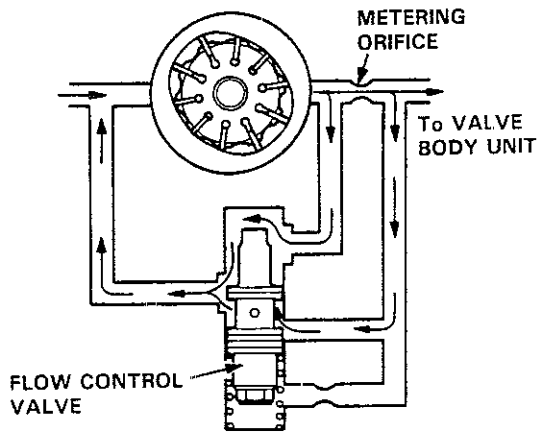
(cont'd)

System Description (LHD)

Steering Pump (cont'd)

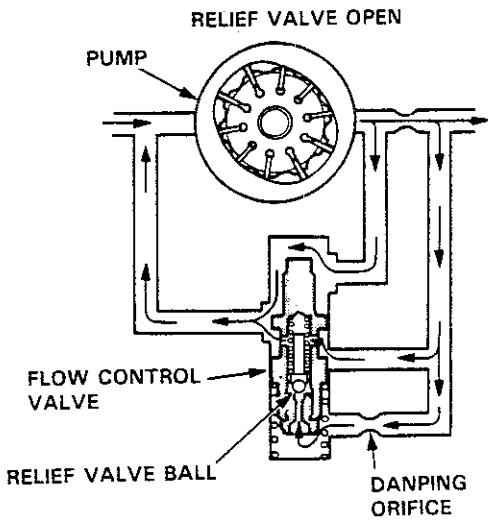
Flow Control

Fluid from the pump runs through a metering orifice to the valve body unit. This creates a pressure difference between the pump and valve body unit sides of the orifice. When pressure in the pump side is higher than the force of the spring holding the flow control valve closed, it pushes the valve down (open), and excess fluid returns to the pump inlet. The combined effect of the metering orifice and the flow control valve provides a relatively constant flow of fluid to the valve body unit.



Pressure Relief

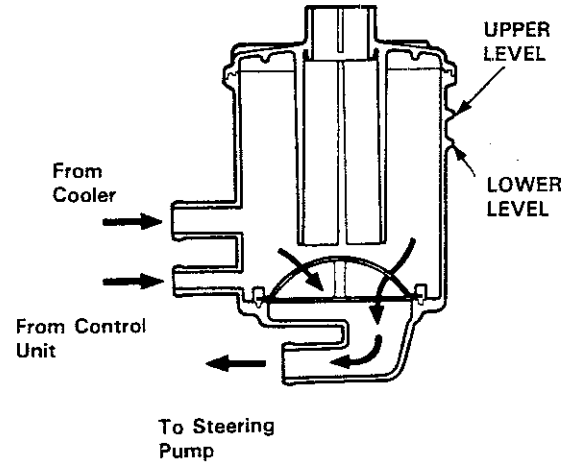
As pressure on the valve body unit side builds up it pushes the relief valve ball (inside the flow control valve) up against its spring, and excess fluid returns to the pump inlet. As the pressure under the flow control valve drops, the relief valve ball is closed by its spring, and the flow control valve is forced down again, allowing excess fluid from the pump side to return to the inlet. This flow control valve-relief valve cylinder keeps pump output pressure between 8,000–9,000 kPa (80–90 kg/cm², 1,138–1,280 psi).



Fluid Reservoir/Filter

A one piece reservoir and filter is attached to the fender apron on the left side of the engine compartment. The fluid and the filter/reservoir should be replaced if the system is opened for repairs, or if the fluid gets water or dirt in it.

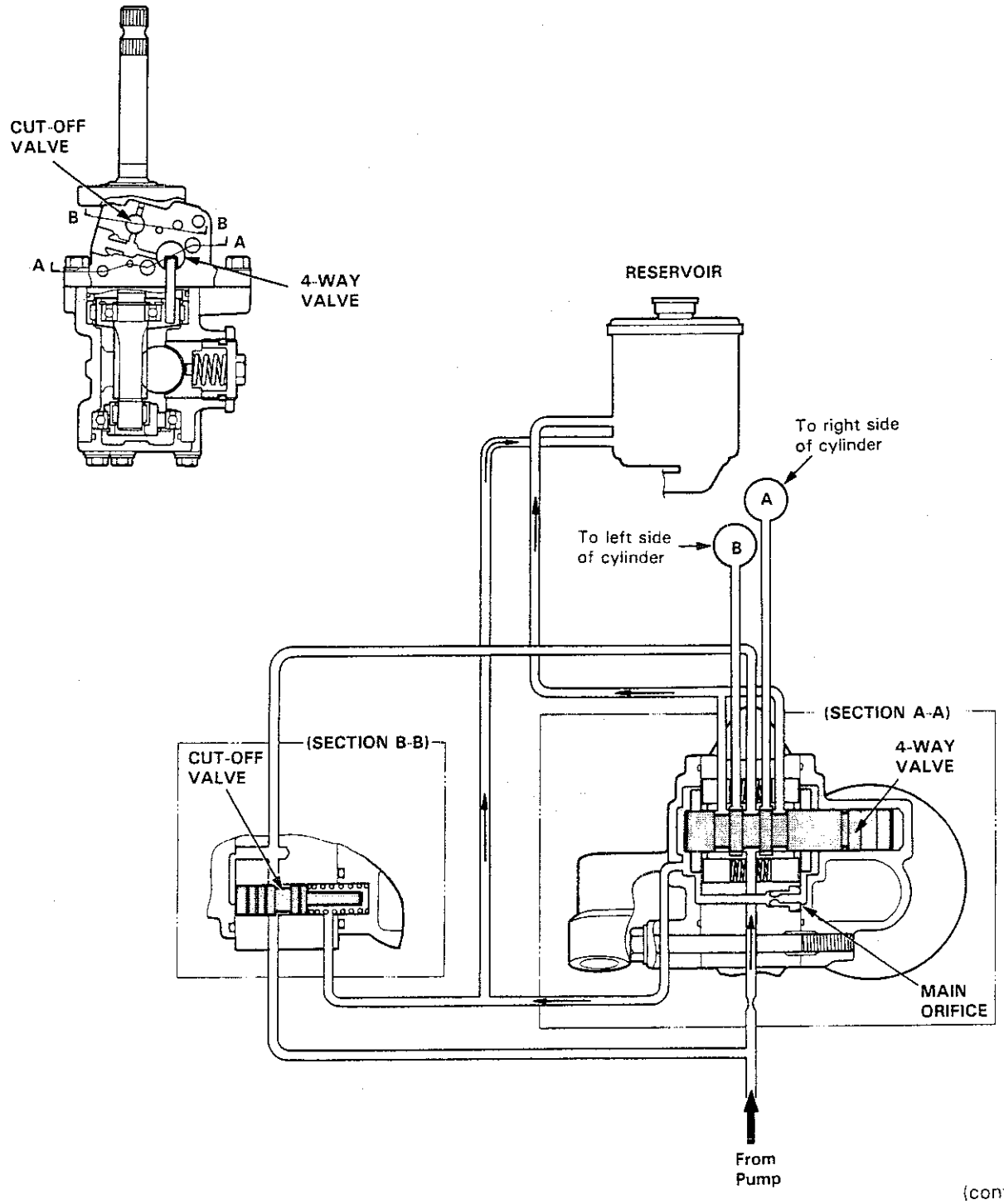
CAUTION: Use only Honda Power Steering Fluid-V. The use of other fluid such as A.T.F., or other manufacturer's power steering fluid will cause damage to the system.



Reservoir Capacity	0.4 liter (0.42 U.S. qt, 0.35 Imp. qt.)
System Capacity	1.1 liter (1.16 U.S. qt, 0.97 Imp. qt.)

4-Way Valve

Mounted on the upper side of the gearbox is a 4-way valve that is moved horizontally by a pin on the pinion holder to shift fluid pressure to the right or left side of the Power Cylinder when the steering wheel is turned. It has thrust pins at both ends and two inter-connected reaction chambers, one on each side.
Each reaction chamber contains a pair of spring loaded plungers that rise against right and left thrust pins. The valve body fluid passages are controlled by the 4-way valve.

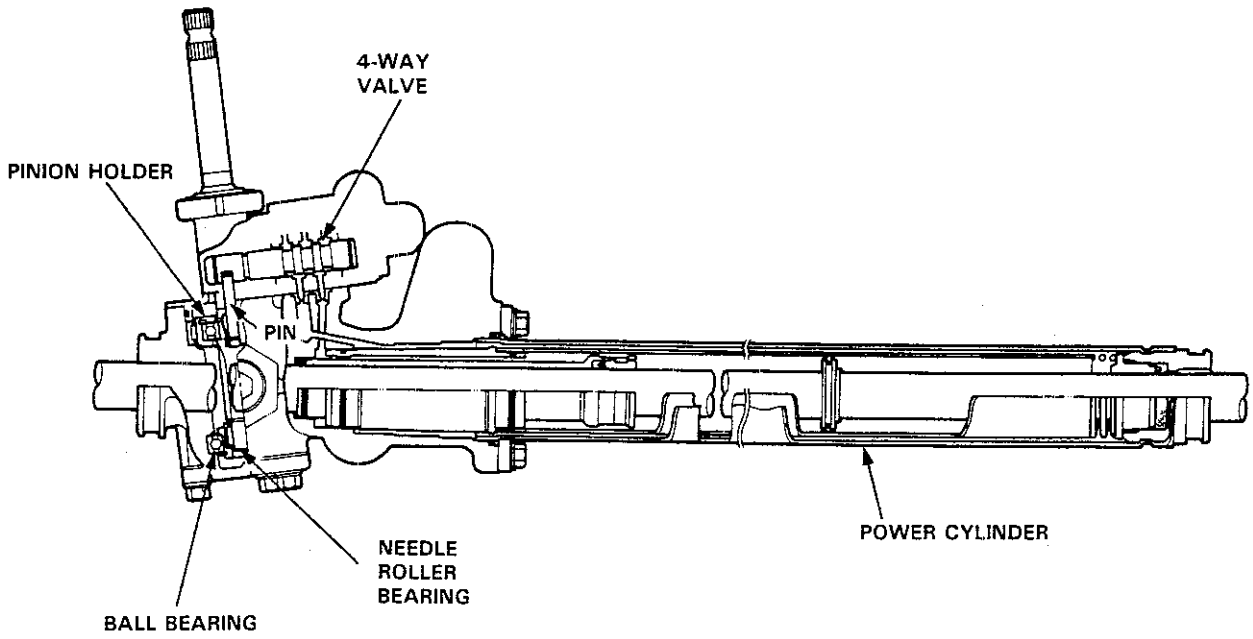


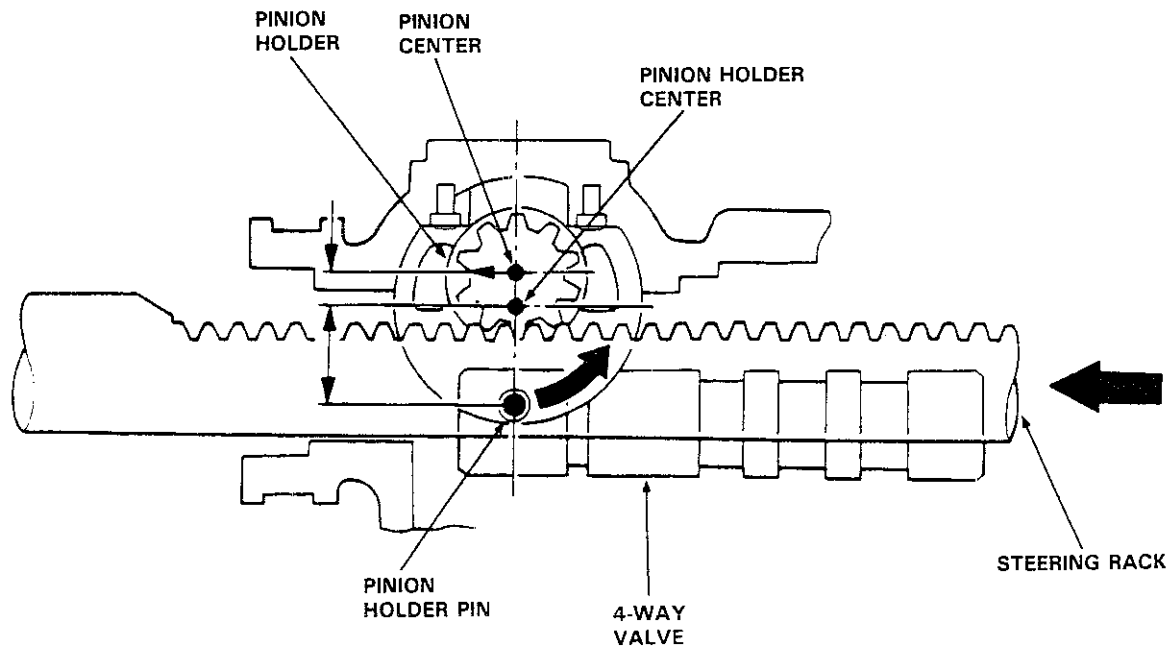
(cont'd)

System Description (LHD)

4-Way Valve (cont'd)

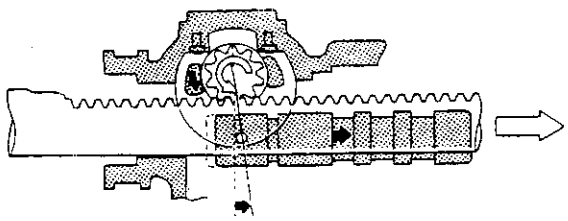
In the power steering unit, the method used to direct a single source of fluid pressure in either of two directions (for left or right turns) involves the pinion gear transferring a "message" of direction to the fluid 4-way valve.
The pinion is mounted slightly off-center in a pair of bearings, which are in turn mounted in a Pinion Holder cylinder that rotates, centered in its own outer bearings. At the top of the Pinion Holder is a pin, which fits in a slot in the 4-way valve. As the pinion is turned (to turn left or right), because it is off-center, it also moves slightly along the rack. This movement is transferred to the holder. The pin in the holder then moves the 4-way valve, to direct fluid pressure to either side of the rack in the Power Cylinder.
The back edges of the pinion holder (facing away from the rack) hit the stops cast into both sides of the gear housing to avoid pushing the 4-way valve too far in either direction. The front edge of the pinion holder cuts off assist at full lock as described on the next page.



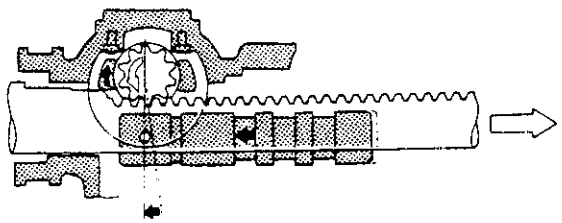


Full-Lock Unloader System

The 4-way valve shifts the direction of fluid flow when the steering wheel is turned right or left. However, when the wheel is turned to the right or left lock at parking speed, the edge of the pinion holder rides up on the end of the rack, moving the pin in the opposite direction which pulls the 4-way valve back to neutral.
This keeps pump pressure from building up (which could cause idle speed to drop), and improves steering feel by increasing resistance at left and right lock.



Control in "assist" position



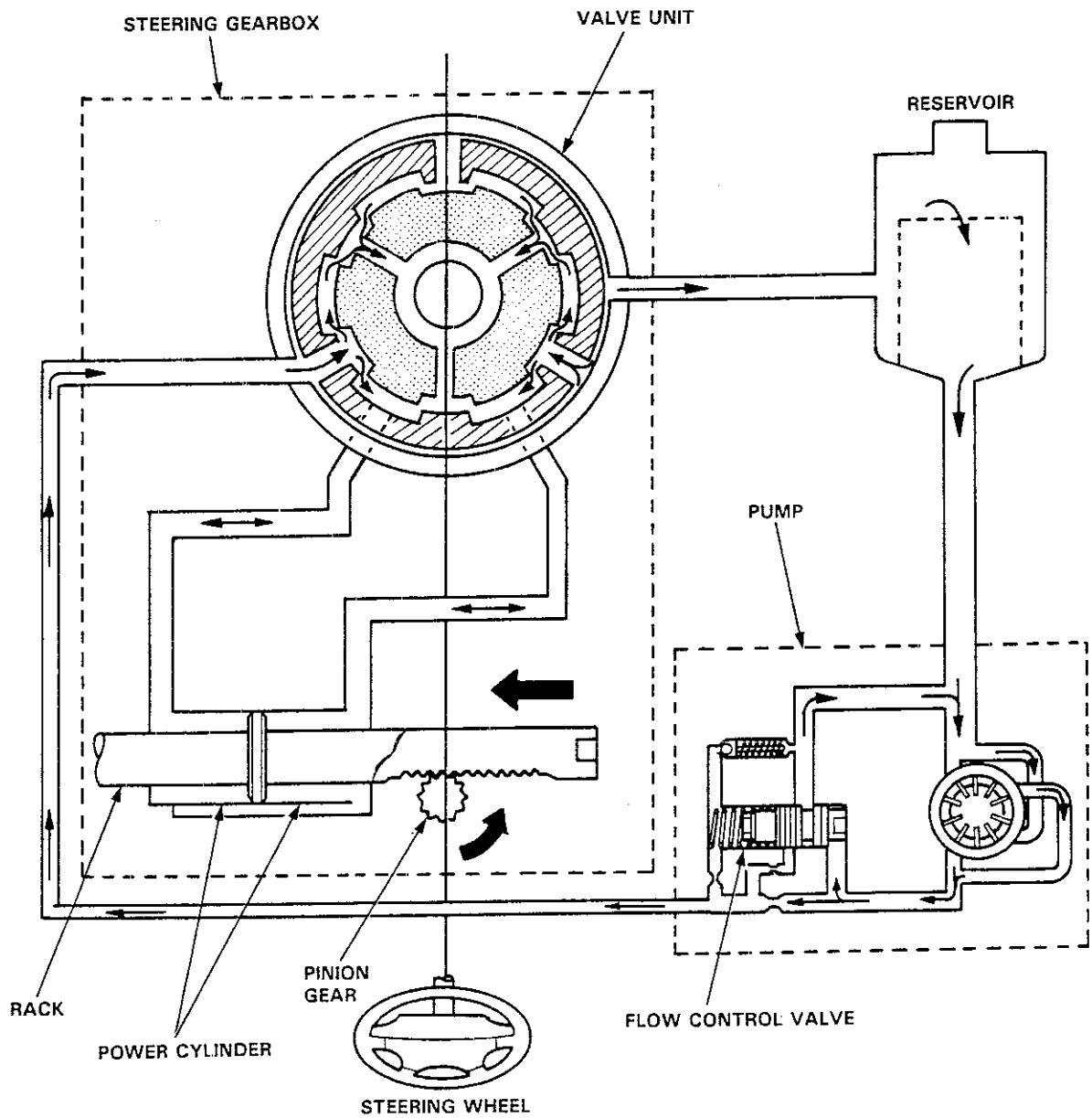
4-way valve moves back to "neutral" position

System Description (RHD)

Fluid Flow Diagram

The power steering of this car controls the power assistance with no stage. It is a compact rotary valve-type power steering which is excellent in hydraulic pressure sensing performance with the gearbox built in and equipped with the vane-type pump.
As the power assistance is automatically controled in compliance with the reaction force of the road surface and car speed, i e. the system makes the steering wheel light to turn when driving at low speed or when turning the wheel with the car stopped and it makes the steering wheel rather heavy to turn when driving at high speed, the driver feels the best and natural steering responses at all speeds. In addition, the driver can grasp the road condition well, too, as the reaction force of the road surface is adequately transmitted to the steering wheel.

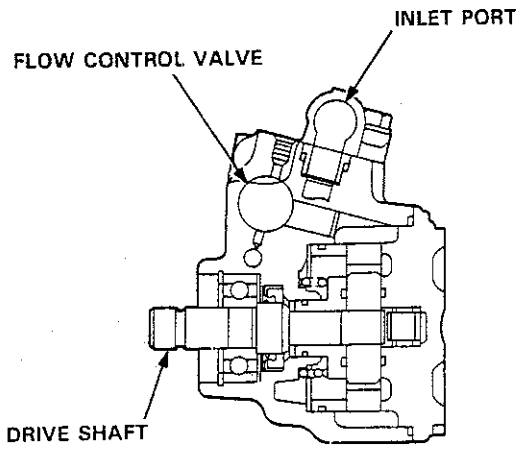
The pump driven by the crank pulley pressurizes the steering fluid and delivers it is the valve unit around the pinion of the steering gearbox with the amount of fluid and pressure regulated by the flow control valve built in the pump. The rotary valve of the valve unit controls the hydraulic pressure and changes the direction of the flow, and the fluid flows to the power cylinder where rack thrust is generated. Fluid returning from the power cylinder flows back to the reservoir, where the fluid is "filtered" and supplied to the pump again.

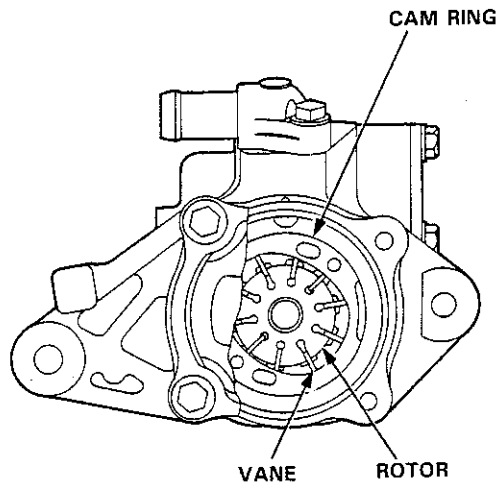


Steering Pump

Construction

The pump is a vane-type which gives the driver better steering response thanks to the large discharge volume of the pump and it has small hydraulic fluid pressure pulse during discharge. This reduced the "beat" noise caused by the pressure pulse during discharge making the pump being quiet while operation. The pump is incorporated with the flow control valve and controls the discharge volume and pressure in the pump



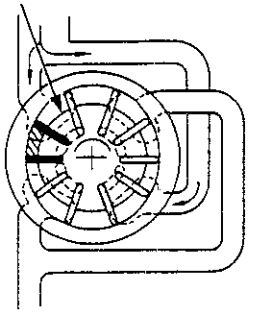


The vane-type pump consists of the vanes moving around the rotating rotor and the cam ring fixed outside the vanes. As the rotor rotates, the hydraulic pressure is applied to the vane chamber of the rotor and the vanes will rotate while being pushed onto the inner circumference of the cam ring. The vane chambers move in the rotating direction of the rotor changing the internal volume of the vane chambers according to the shape of the inner circumference of the cam ring, resulting in fluid intake and discharge.

The following drawings show the sequential movement of vane chambers from the intake to discharge operations. The same operation is made at the two facing vane chamber: in other words, each vane chamber performs two intake/discharge operations for every rotation of the rotor

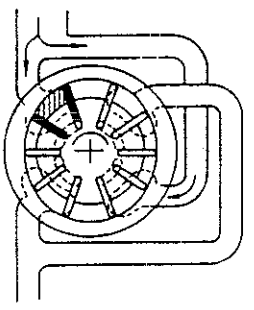
START OF FLUID INTAKE

INLET PORT



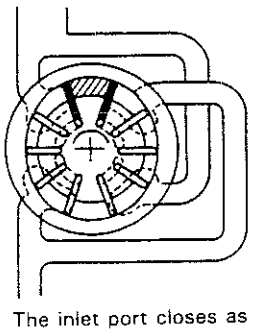
The internal volume of a vane chamber starts to increase and a vane chamber comes to the inlet port

FLUID INTAKE



The internal volume of a vane chamber keeps increasing and the steering fluid is sucked into the chamber through the inlet port

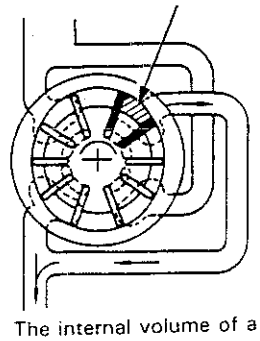
FLUID MOVEMENT



The inlet port closes as the vane chamber moves and the sucked-in fluid moves toward the discharge port

FLUID DISCHARGE

DISCHARGE PORT

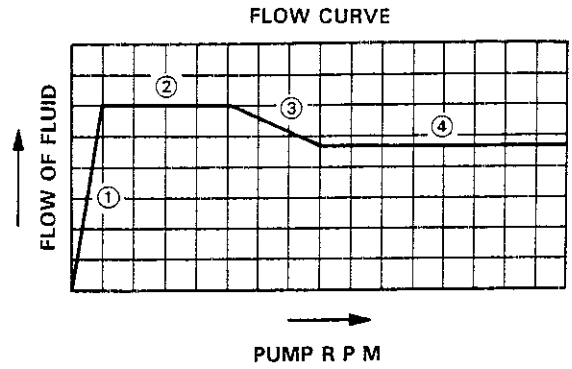


The internal volume of a vane chamber decreases according to the shape of the cam ring and the fluid in the vane chamber is pressurized and discharged from the discharge port

Steering Pump (cont'd)

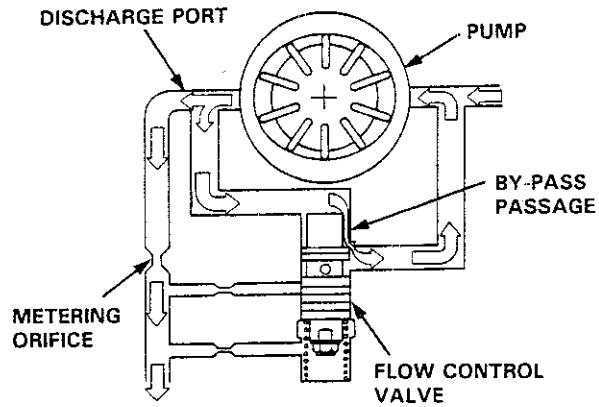
Flow Control

The flow control valve in the pump performs the following steps ① through ④ to control the flow of fluid, i e. to increase the discharge volume when engine speed is low and to decrease it when the engine speed increases. The assistance thrist of the steering gearbox changes in compliance with the change in the discharge volume.



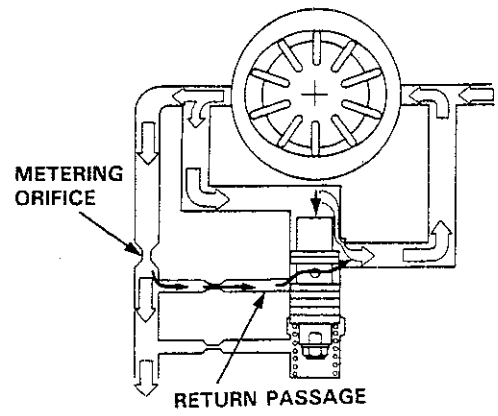
① When the engine starts, fluid discharged from the discharge port starts to run through the metering orifice in the pump. The discharge volume increases as the engine speed increases.

② As the flow has already been regulated by the metering orifice when the engine speed is at or near the idle speed, a constant and regulared amount of fluid is discharged until the engine speed reaches the middle speed range. As the engine speed increases, pressure difference between the ends of the metring orifice increases. The pressure difference is created between the top and bottom ends of the flow control valve, too, pushing the flow control valve to open the by-pass passage. This allows the excess fluid to return to the inlet port preventing pressure at the discharge port from rising excessively.



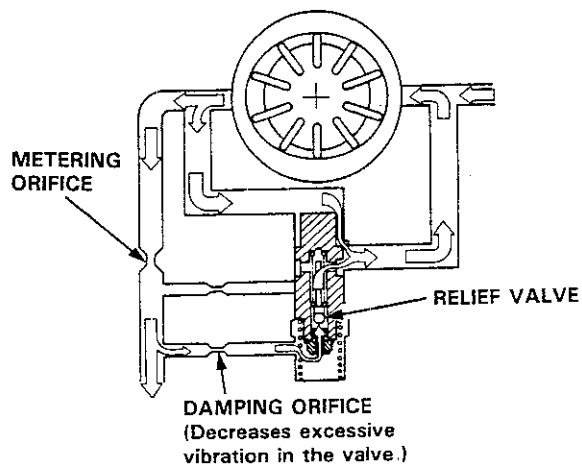
③ As the engine speed increases more, the flow control valve is pushed back further. With the engine speed reached at a given speed, the return passage outside the metering orifice is connected to the inlet port and the opening to the inlet port widens in proportion to increase of the engine speed. This makes part of fluid regulated by the metering orifice return to the inlet port of the pump; thereby discharged fluid from the pump is decreased slowly by this amount.

④ The flow of fluid discharged from the pump is regulated and maintained at a given level until and engine speed reaches to the high speed range thanks to the orifice in the return passage.



Pressure Relief

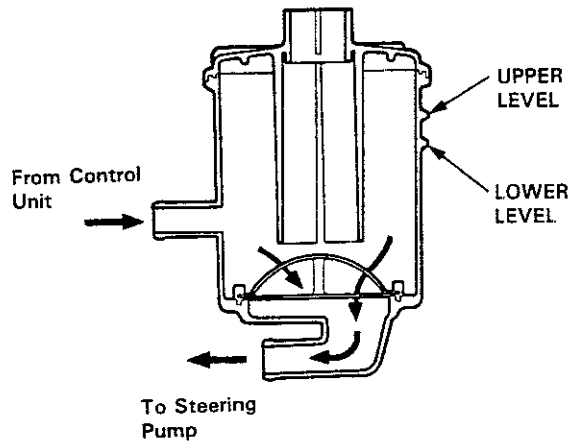
Pressure outside of the metering orifice is directed to the bottom of the flow control valve When the pressure builds up, the relief valve in the flow control valve opens to relieve the pressure. As the flow control valve is pushed back by the pressure difference this time, the flow of fluid in the bypass passage increases controlling the pressure outside the metering orifice The above operations are repeated to provide constant discharge pressure from the pump



Fluid Reservoir/Filter

A one piece reservoir and filter is attached to the fender apron on the left side of the engine compartment. The fluid and the filter/reservoir should be replaced if the system is opened for repairs, or if the fluid gets water or dirt in it.

CAUTION: Use only Honda Power Steering Fluid-V The use of other fluid such as A.T.F., or other manufacturer's power steering fluid will cause damage to the system.

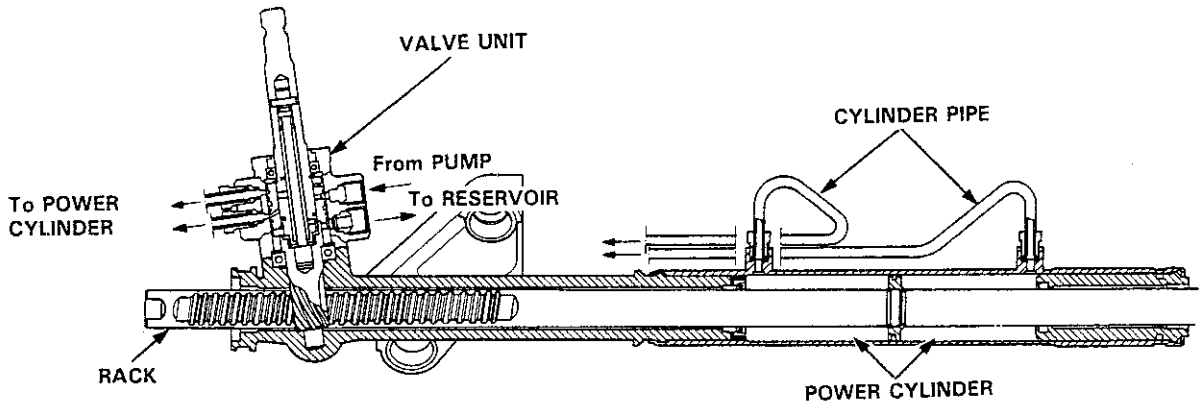


Reservoir Capacity	0.4 liter (0.42 U.S. qt., 0.35 Imp. qt.)
System Capacity	1.0 liter (1.06 U.S. qt., 0.88 Imp. qt.)

Steering System

Steering Gearbox

The rack-and-pinion type steering gearbox is simple in structure which has the valve unit controlling the steering fluid pressure incorporated with the pinion. Steering fluid from the pump is regulated by the valve unit and is sent through the cylinder pipe to the power cylinder, where the rack thrust is generated. While, steering fluid in another power cylinder returns through the cylinder pipe and valve unit to the reservoir.



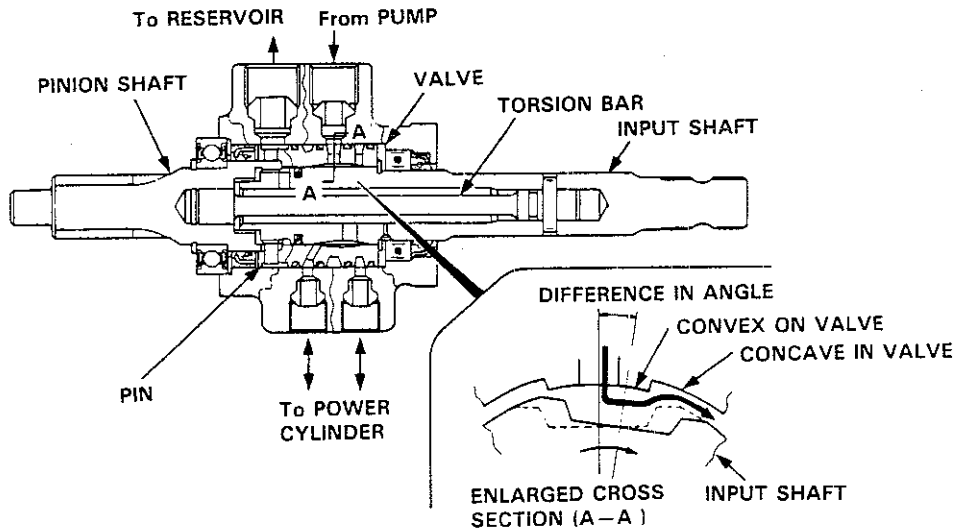
Valve Unit

Inside the valve unit is the valve which is coaxial with the pinion and controls the steering fluid pressure. The valve unit case is connected with the oil pipe from the pump. return pipe to the pump, and the two cylinder pipes from the respective power cylinder

The pinion is double structured with the input shaft connected to the steering shaft equipped with the pinion gear both of which are interconnected with the torsion bar

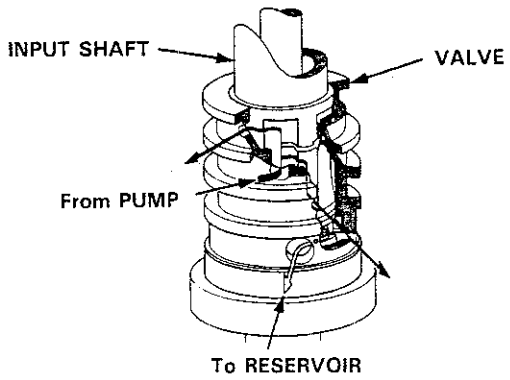
The pin inserted in the valve and the pinion shaft groove engage: this allows the pinion shaft to rotate together with the valve. Becomes of this construction. difference in angle in the circumferential direction between the input shaft and valve becomes large according to the torsional strength of the pinion or reaction force of the road However, maximum torsion between the shafts is regulated by the engaged splines of the shafts at the pin engagement section to hold the torsion bar within the set value.

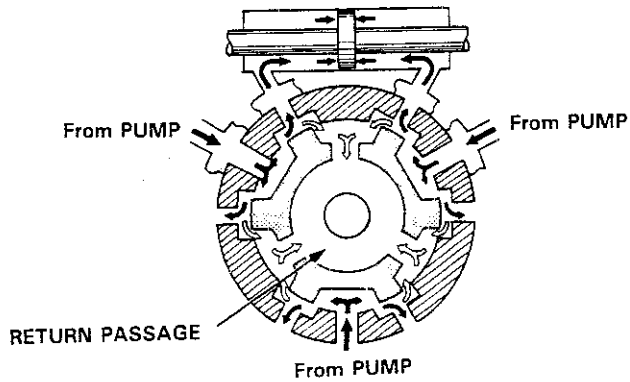
This allows the steering system to function as the ordinal rack-and-pinion type steering when steering fluid is not pressurized because of the faulty pump



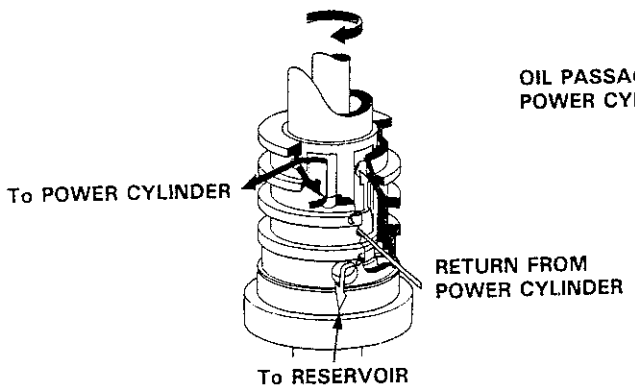
Pressure Control

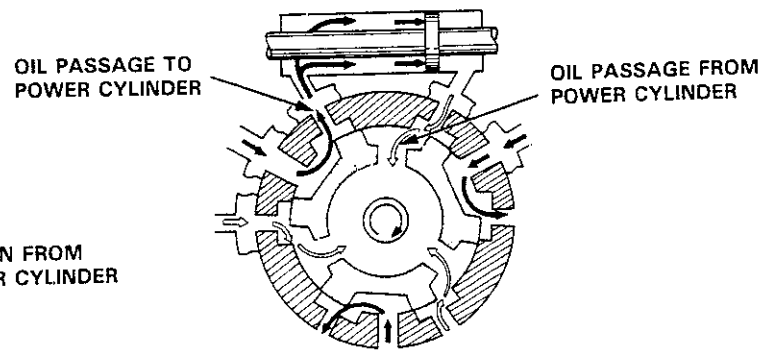
No reaction force of the road surface:
When there is no reaction force of the road surface, the input shaft is in the neutral position, i e. right and left orifices between the input shaft and the valve are equal.
As each orifice is equal in length and fully open, feed pressure from the pump is bypassed to the reservoir. Because of this operation, pressure in the power cylinder does not increase, resulting in small power assistance when reaction force of the road surface is small such as when driving at high speed or when driving straight forward.





Large reaction force of the road surface:
When reaction force of the road surface is large such as when driving at low speed or when turning the wheel with the car stopped, difference in angle is created between the input shaft and valve opening the oil passages of one side and closing the oil passages of the other side.
Oil pressure in the power cylinder of the enlarged oil passage side increases to produce the rack thrust; thereby the steering wheel can be operated with light force. While, the return passage from another power cylinder opens to return the steering fluid in the return passage in the input shaft to the reservoir.
The oil passages to the power cylinder automatically changes in size according to the reaction force of the road surface; in other words, the passages enlarge and power assistance increases when reaction force of the road surface is large. While the passages become small and power assistance decreases when reaction force of the road surface is small.





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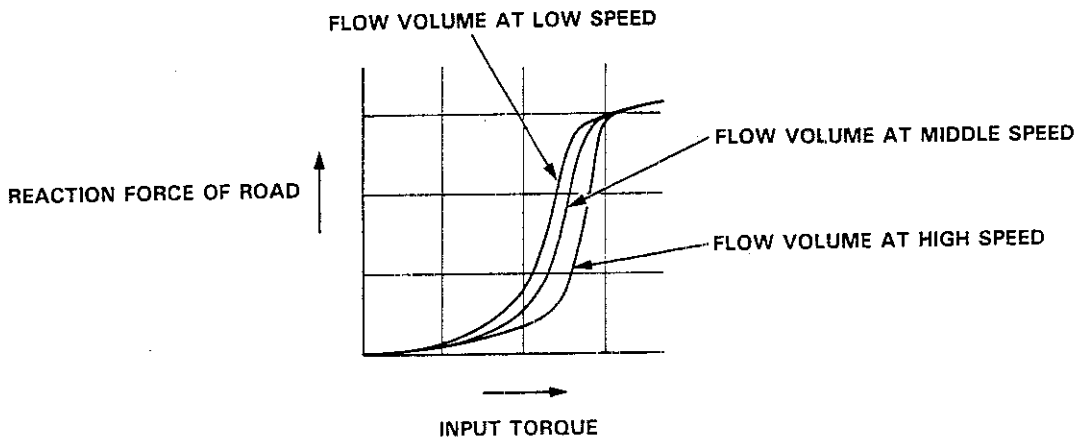
Steering System (cont'd)

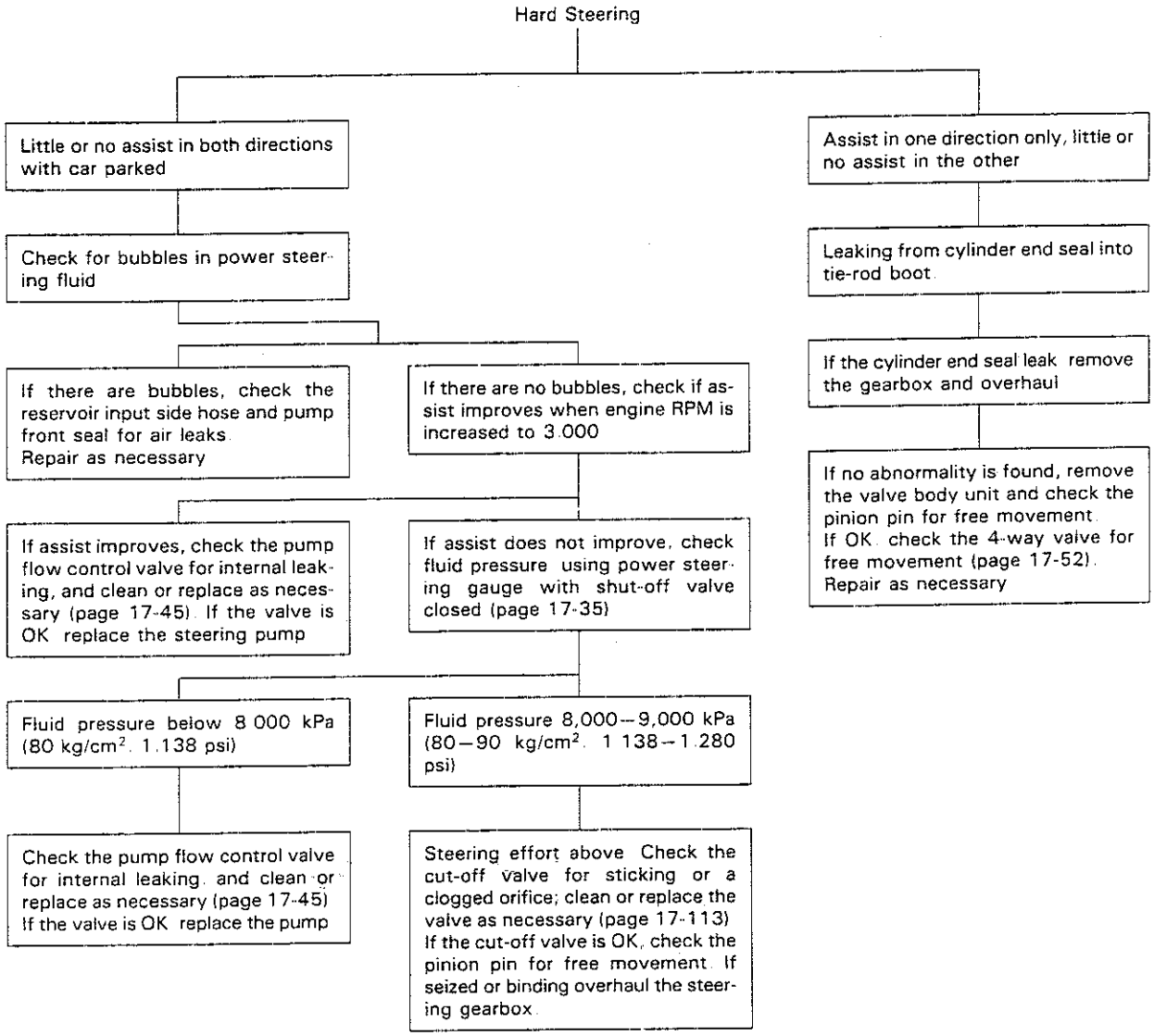
Hydraulic performance of power cylinder:
Though pressure from the pump is maintained at a constant valve, the steering system is designed to discharge large volume of fluid when pump speed. This change in discharge volume changes the hydraulic performance of the power cylinder, too. Where the areas of orifice of the valve unit are equal, pressure in the power cylinder is proportional to the pump discharge volume squared
Therefore, the steering response is light when the discharge volume is large and the steering response is heavy when the discharge volume is small. The combined effect of these characteristics provides the best steering performance



General Troubleshooting

Check the following before you begin:

- Has the suspension been modified in a way that would affect steering?
- Are tire sizes and air pressure correct?
- Is the steering wheel original equipment or equivalent?
- Is the power steering pump belt properly adjusted?
- Is steering fluid reservoir filled to proper level?
- Is the engine idle speed correct and steady?



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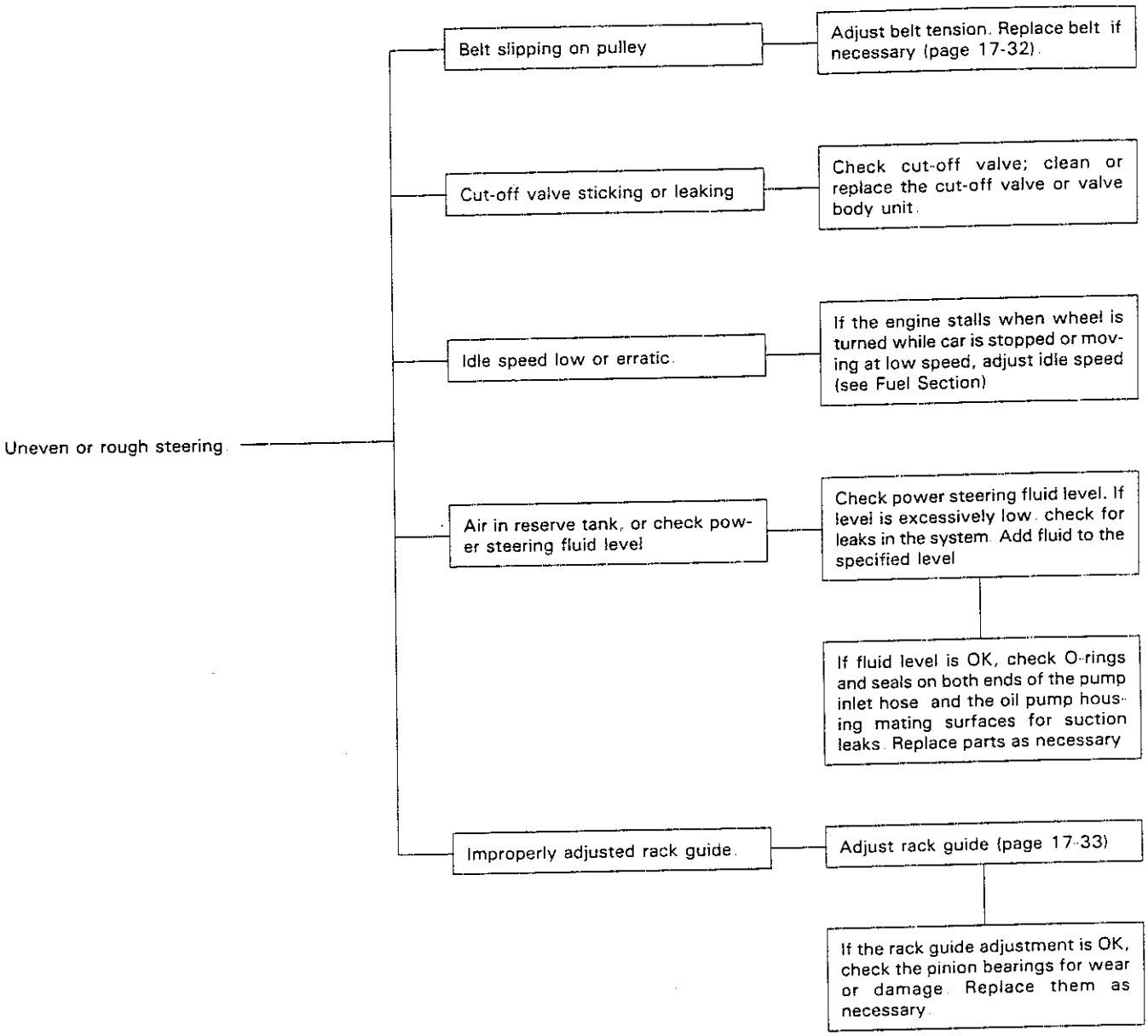
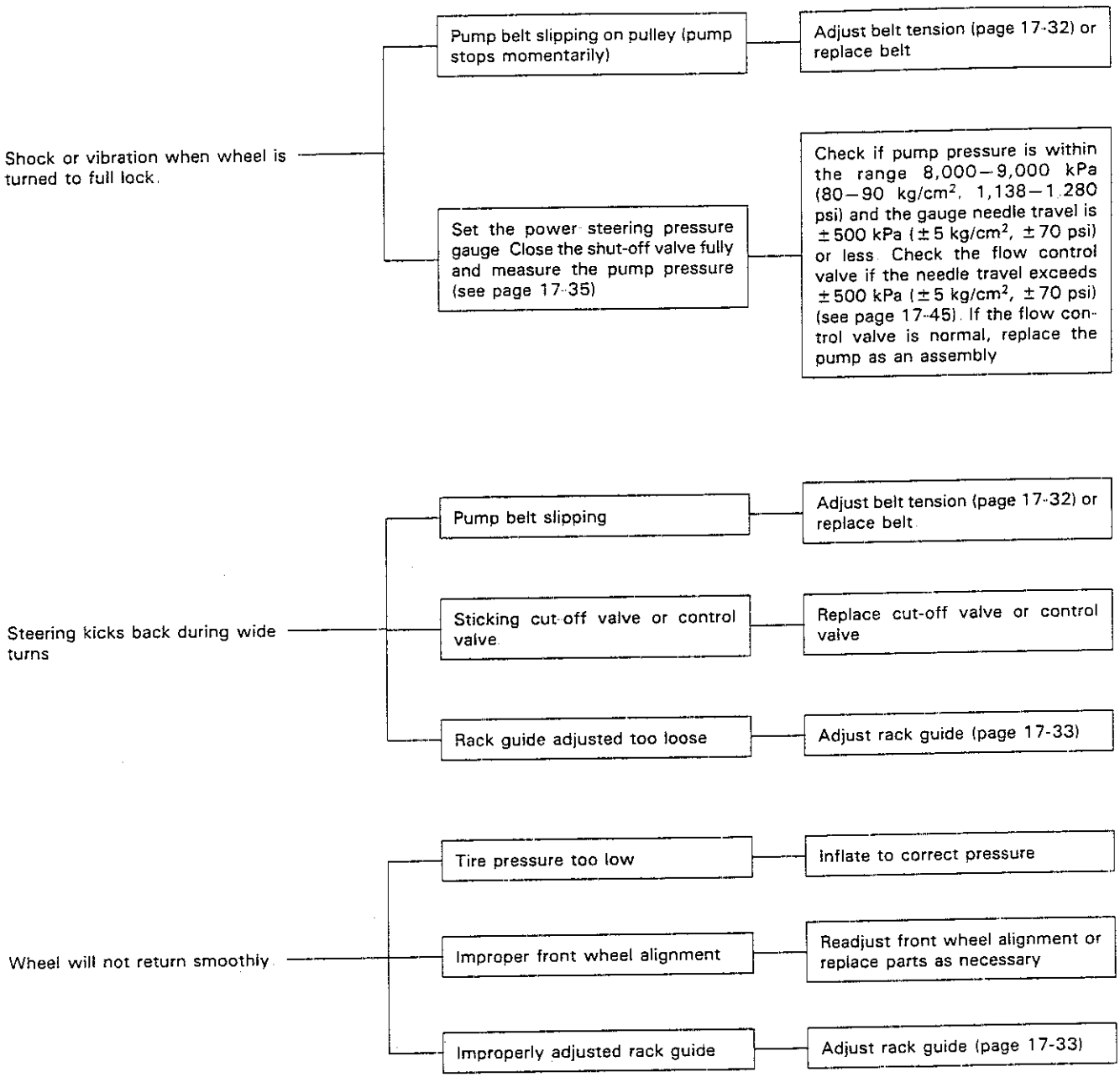
General Troubleshooting (cont'd)

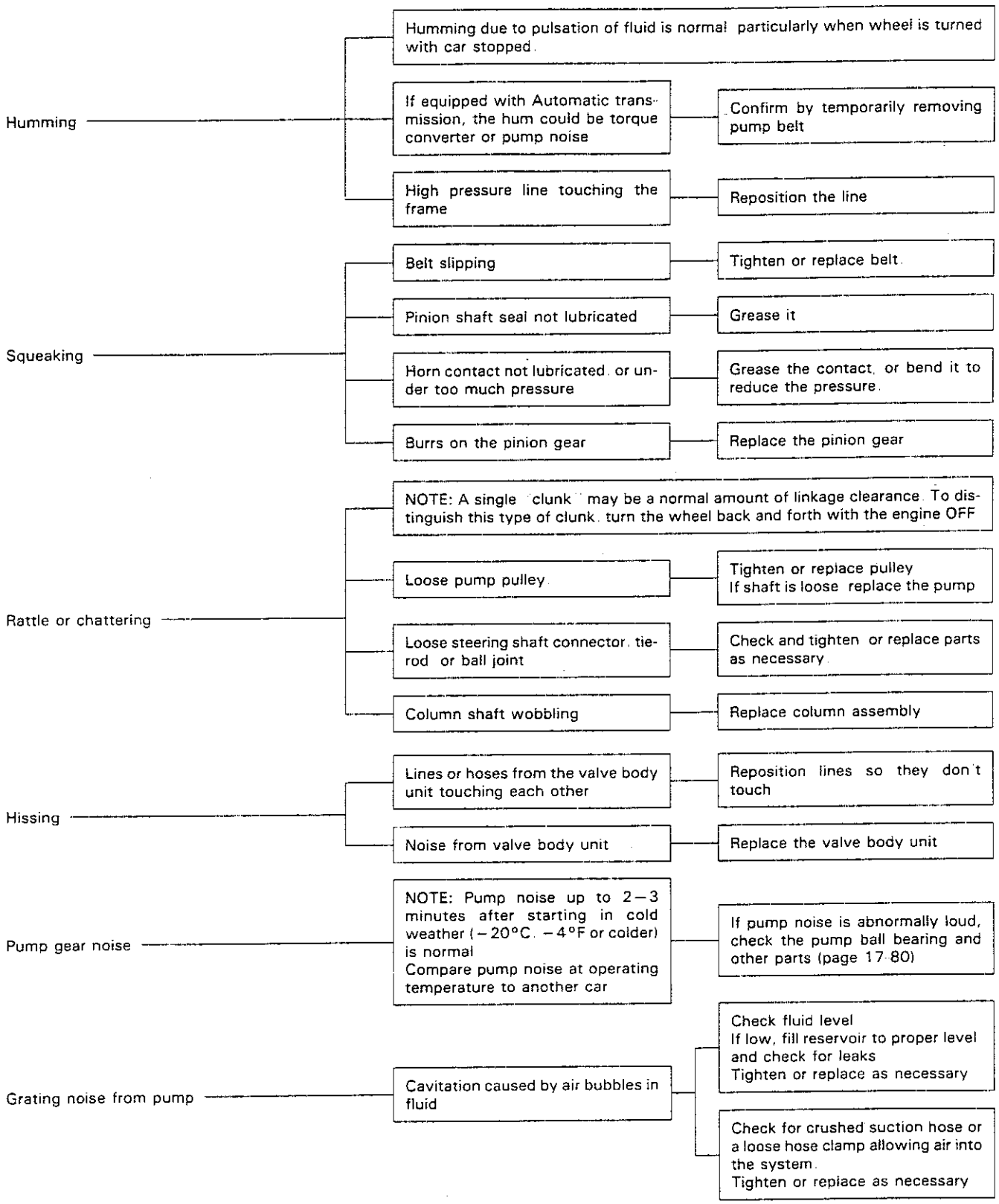



Shock or vibration when wheel is turned to full lock
Pump belt slipping on pulley (pump stops momentarily)
Adjust belt tension (page 17-32) or replace belt
Set the power steering pressure gauge Close the shut-off valve fully and measure the pump pressure (see page 17-35)
Check if pump pressure is within the range 8,000—9,000 kPa (80—90 kg/cm², 1,138—1,280 psi) and the gauge needle travel is ±500 kPa (±5 kg/cm², ±70 psi) or less. Check the flow control valve if the needle travel exceeds ±500 kPa (±5 kg/cm², ±70 psi) (see page 17-45). If the flow control valve is normal, replace the pump as an assembly
Steering kicks back during wide turns
Pump belt slipping
Adjust belt tension (page 17-32) or replace belt
Sticking cut-off valve or control valve
Replace cut-off valve or control valve
Rack guide adjusted too loose
Adjust rack guide (page 17-33)
Wheel will not return smoothly
Tire pressure too low
Inflate to correct pressure
Improper front wheel alignment
Readjust front wheel alignment or replace parts as necessary
Improperly adjusted rack guide
Adjust rack guide (page 17-33)

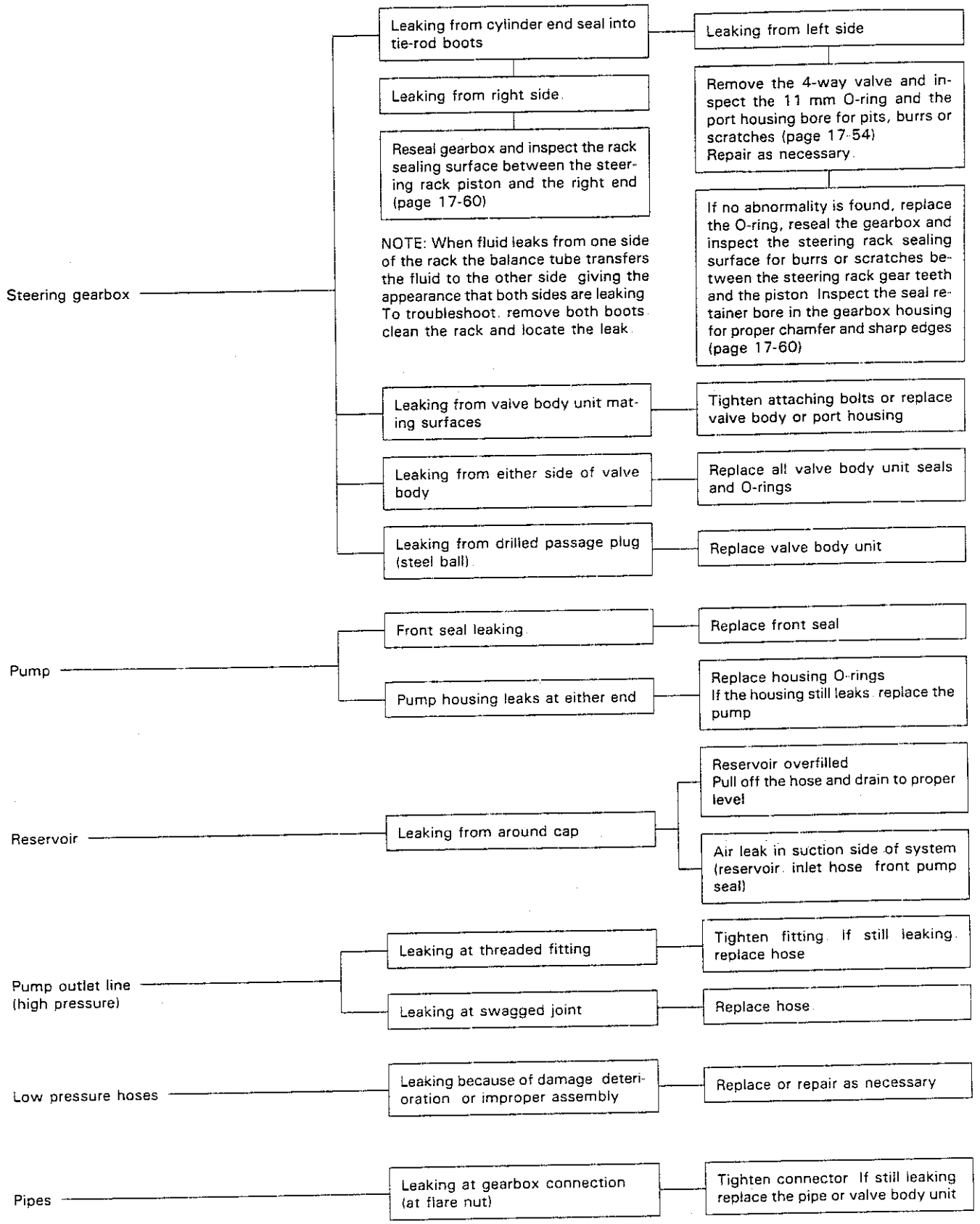
Troubleshooting (LHD)

Noise and Vibration

NOTE: Pump noise in first 2–3 minutes after starting in cold weather (–20°C, –4°F or colder) is normal



Fluid Leaks

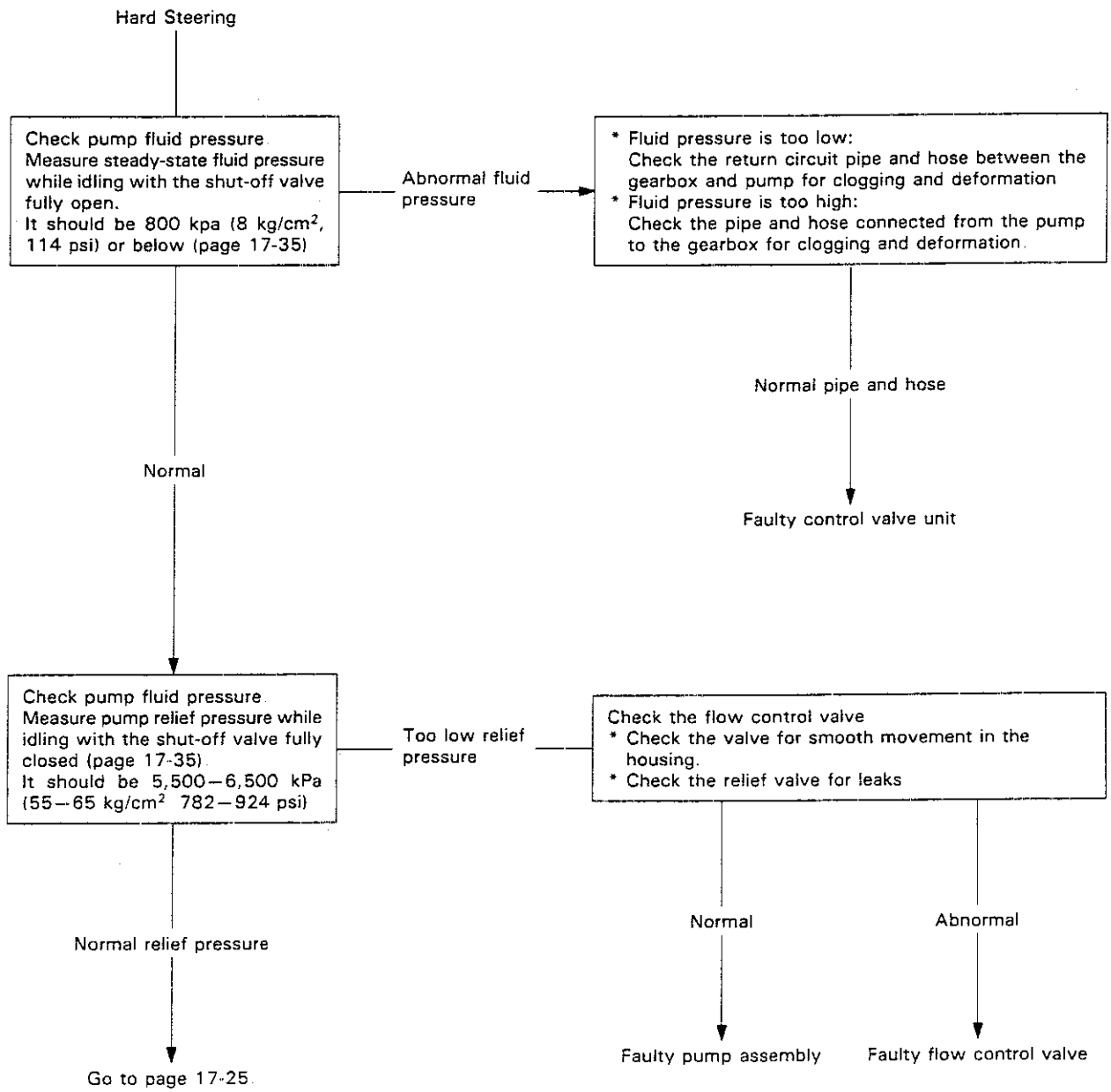

Steering gearbox
Leaking from cylinder end seal into tie-rod boots
Leaking from left side
Remove the 4-way valve and inspect the 11 mm O-ring and the port housing bore for pits, burrs or scratches (page 17-54)
Repair as necessary.
If no abnormality is found, replace the O-ring, reseal the gearbox and inspect the steering rack sealing surface for burrs or scratches between the steering rack gear teeth and the piston. Inspect the seal retainer bore in the gearbox housing for proper chamfer and sharp edges (page 17-60)
Leaking from right side.
Reseal gearbox and inspect the rack sealing surface between the steering rack piston and the right end (page 17-60)
NOTE: When fluid leaks from one side of the rack the balance tube transfers the fluid to the other side giving the appearance that both sides are leaking. To troubleshoot, remove both boots, clean the rack and locate the leak.
Leaking from valve body unit mating surfaces
Tighten attaching bolts or replace valve body or port housing
Leaking from either side of valve body
Replace all valve body unit seals and O-rings
Leaking from drilled passage plug (steel ball)
Replace valve body unit
Pump
Front seal leaking
Replace front seal
Pump housing leaks at either end
Replace housing O-rings
If the housing still leaks, replace the pump
Reservoir
Leaking from around cap
Reservoir overfilled
Pull off the hose and drain to proper level
Air leak in suction side of system (reservoir, inlet hose, front pump seal)
Pump outlet line (high pressure)
Leaking at threaded fitting
Tighten fitting. If still leaking, replace hose
Leaking at swagged joint
Replace hose.
Low pressure hoses
Leaking because of damage, deterioration, or improper assembly
Replace or repair as necessary
Pipes
Leaking at gearbox connection (at flare nut)
Tighten connector. If still leaking, replace the pipe or valve body unit

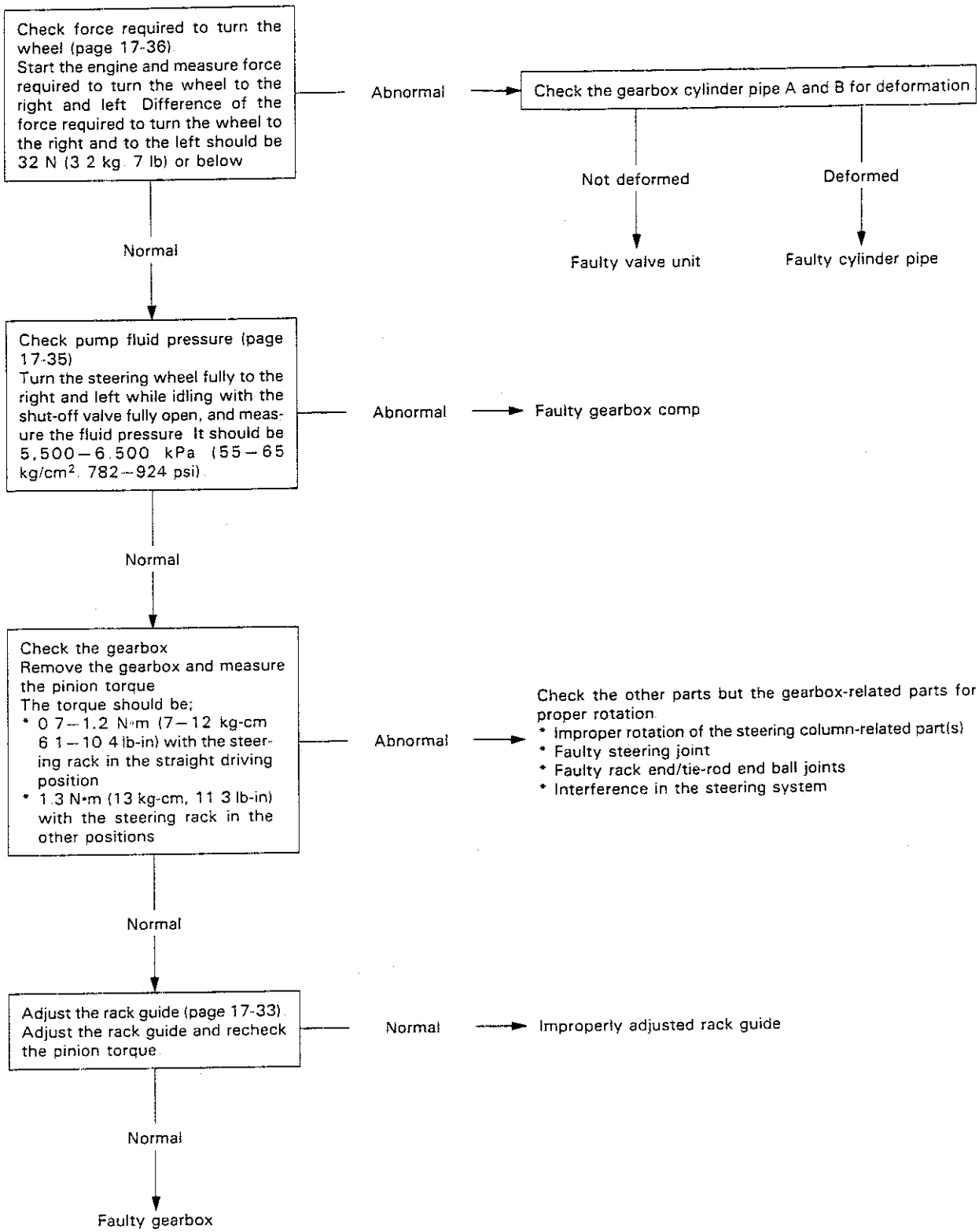
Troubleshooting (RHD)

General Troubleshooting

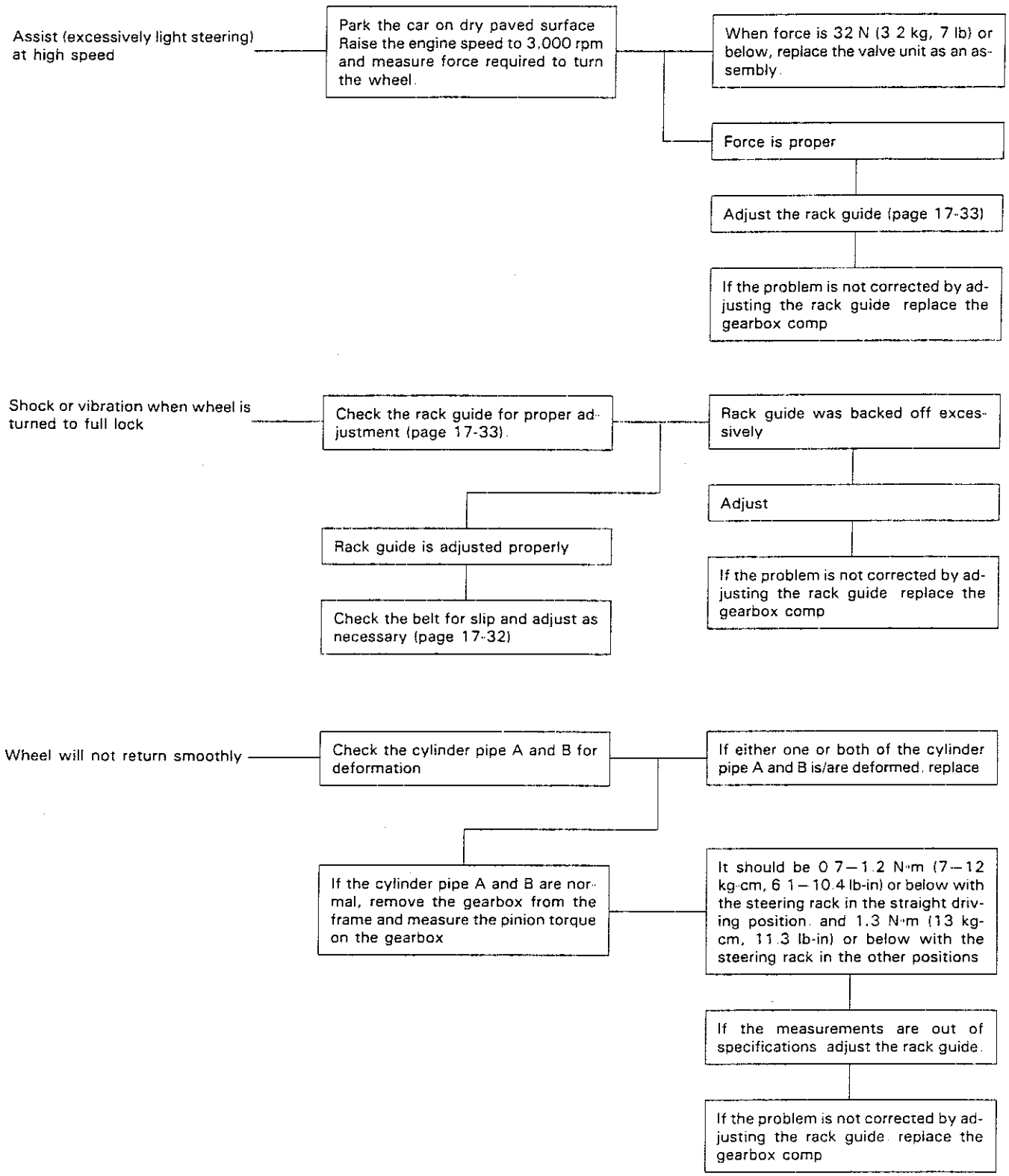
Check the following before you begin:

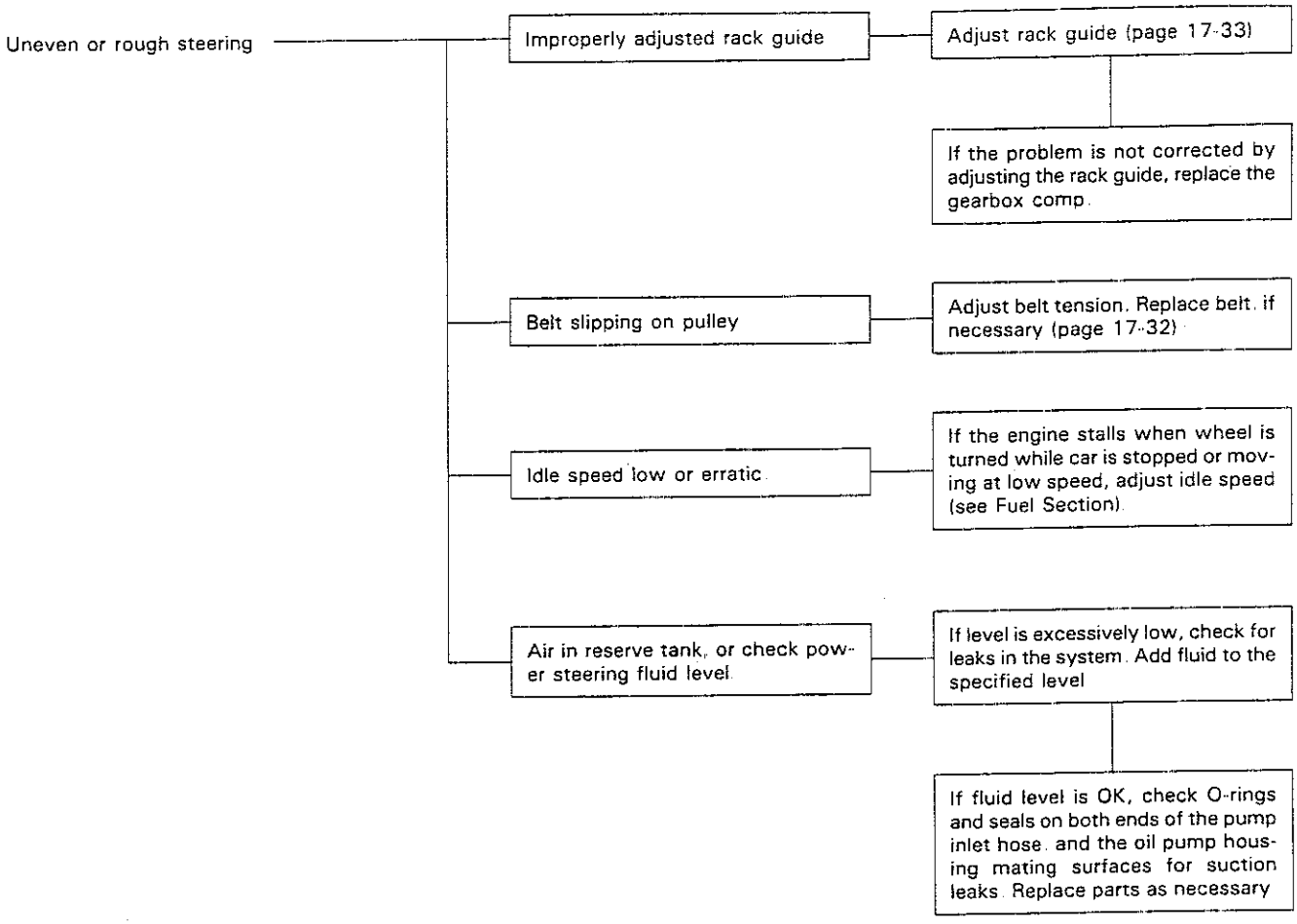
- Has the suspension been modified in a way that would affect steering?
- Are tire sizes and air pressure correct?
- Is the steering wheel original equipment or equivalent?
- Is the power steering pump belt properly adjusted?
- Is steering fluid reservoir filled to proper level?
- Is the engine idle speed correct and steady?

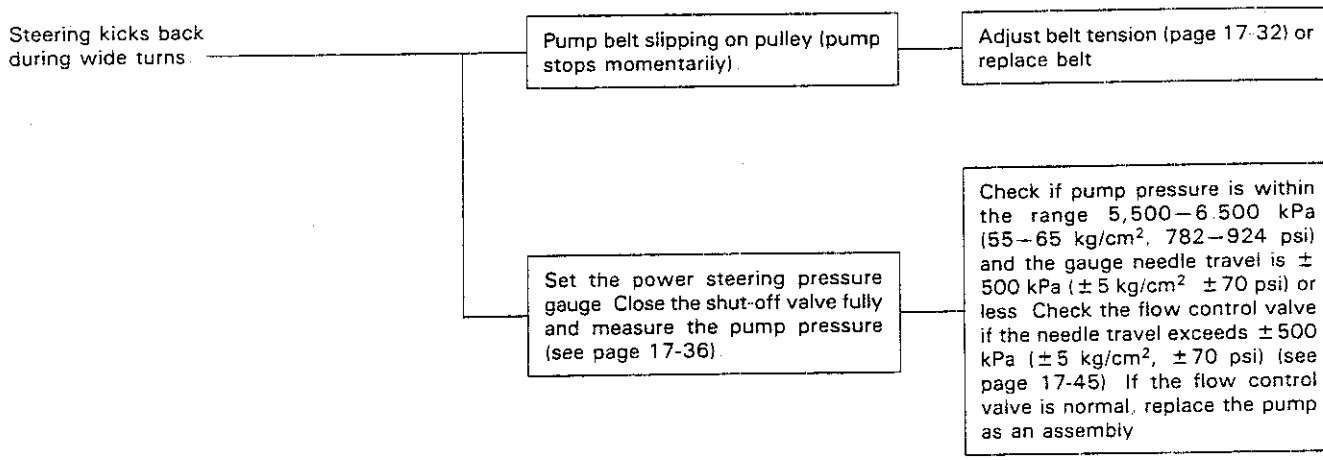



Check force required to turn the wheel (page 17-36)
Start the engine and measure force required to turn the wheel to the right and left Difference of the force required to turn the wheel to the right and to the left should be 32 N (3 2 kg 7 lb) or below
Abnormal
Check the gearbox cylinder pipe A and B for deformation
Not deformed
Deformed
Faulty valve unit
Faulty cylinder pipe
Normal
Check pump fluid pressure (page 17-35)
Turn the steering wheel fully to the right and left while idling with the shut-off valve fully open, and measure the fluid pressure It should be 5,500—6,500 kPa (55—65 kg/cm2, 782—924 psi)
Abnormal
Faulty gearbox comp
Normal
Check the gearbox
Remove the gearbox and measure the pinion torque
The torque should be;
* 0 7—1.2 N·m (7—12 kg-cm 6 1—10 4 lb-in) with the steering rack in the straight driving position
* 1 3 N·m (13 kg-cm, 11 3 lb-in) with the steering rack in the other positions
Abnormal
Check the other parts but the gearbox-related parts for proper rotation
* Improper rotation of the steering column-related part(s)
* Faulty steering joint
* Faulty rack end/tie-rod end ball joints
* Interference in the steering system
Normal
Adjust the rack guide (page 17-33)
Adjust the rack guide and recheck the pinion torque
Normal
Improperly adjusted rack guide
Normal
Faulty gearbox

General Troubleshooting (cont'd)




Uneven or rough steering
Improperly adjusted rack guide
Adjust rack guide (page 17-33)
If the problem is not corrected by adjusting the rack guide, replace the gearbox comp.
Belt slipping on pulley
Adjust belt tension. Replace belt, if necessary (page 17-32)
Idle speed low or erratic
If the engine stalls when wheel is turned while car is stopped or moving at low speed, adjust idle speed (see Fuel Section)
Air in reserve tank, or check power steering fluid level
If level is excessively low, check for leaks in the system. Add fluid to the specified level
If fluid level is OK, check O-rings and seals on both ends of the pump inlet hose, and the oil pump housing mating surfaces for suction leaks. Replace parts as necessary

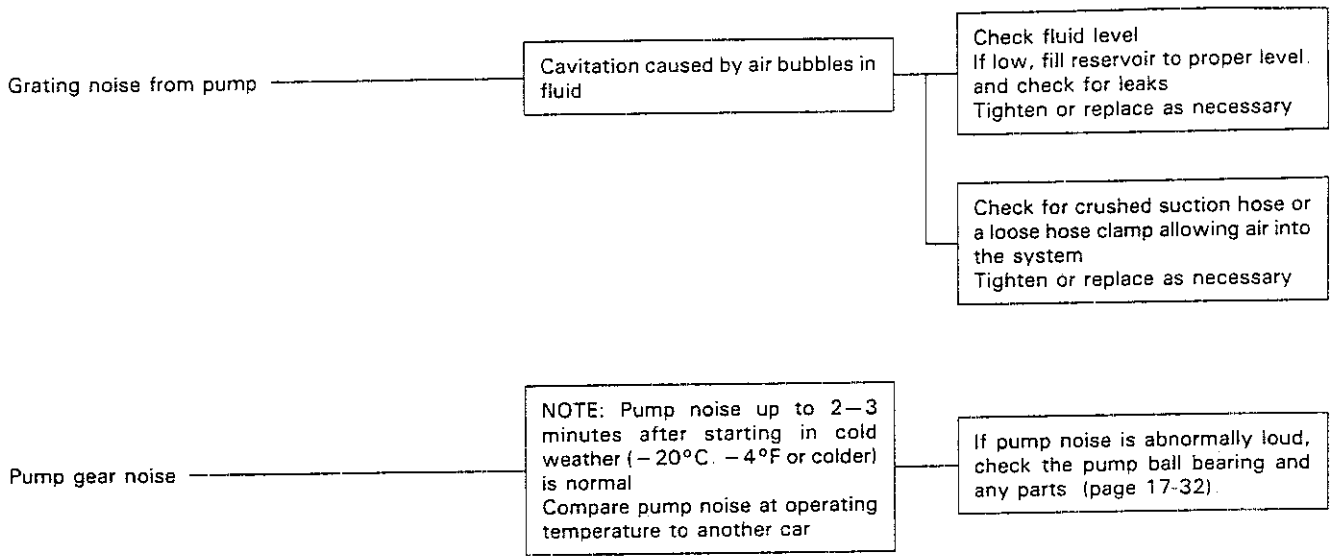

Steering kicks back during wide turns
Pump belt slipping on pulley (pump stops momentarily)
Adjust belt tension (page 17-32) or replace belt
Set the power steering pressure gauge. Close the shut-off valve fully and measure the pump pressure (see page 17-36)
Check if pump pressure is within the range 5,500–6,500 kPa (55–65 kg/cm², 782–924 psi) and the gauge needle travel is ± 500 kPa (± 5 kg/cm² ± 70 psi) or less. Check the flow control valve if the needle travel exceeds ± 500 kPa (± 5 kg/cm², ± 70 psi) (see page 17-45). If the flow control valve is normal, replace the pump as an assembly

Troubleshooting (RHD)

Noise and Vibration

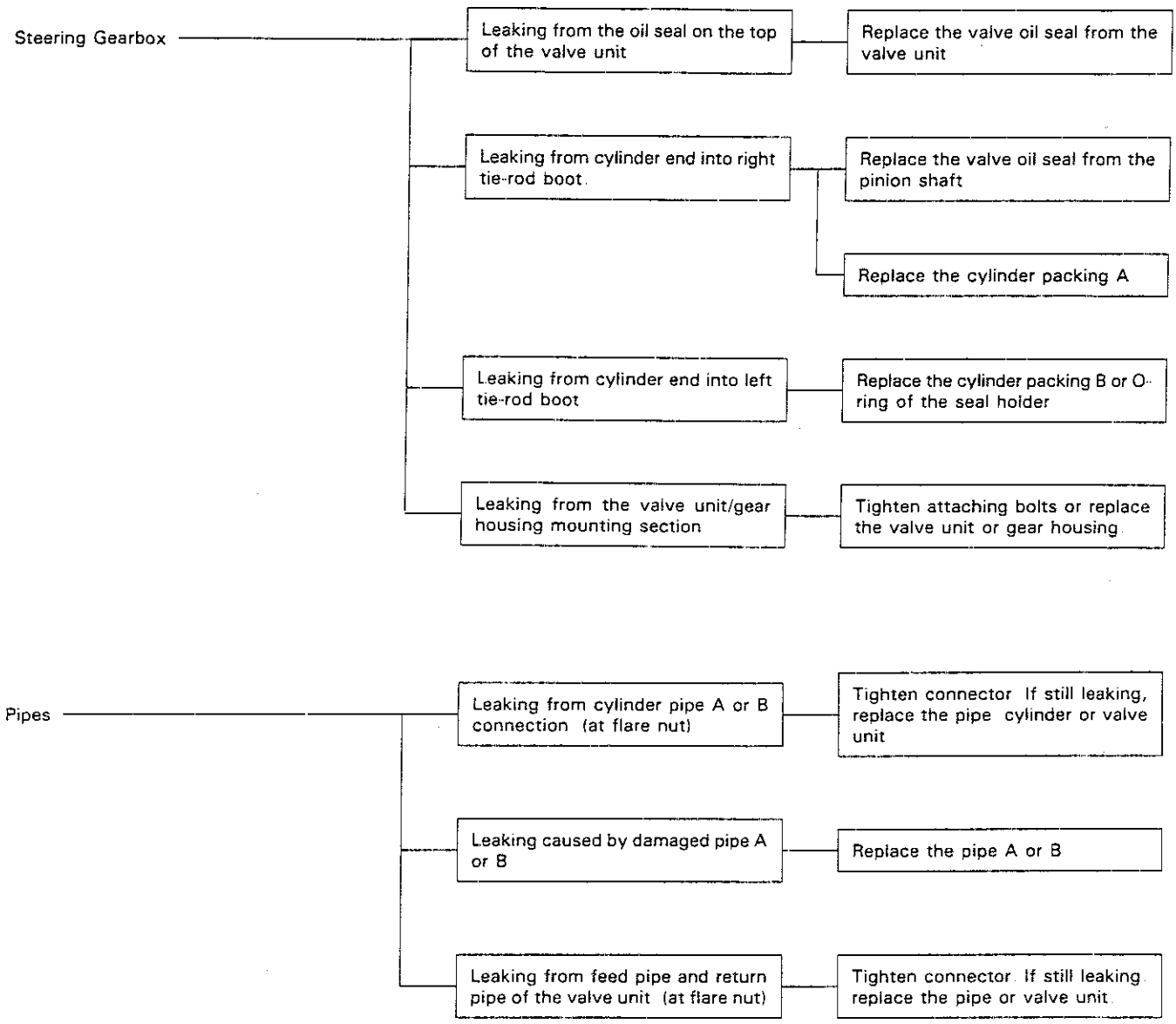
NOTE: Pump noise in first 2—3 minutes after starting in cold weather (−20°C, −4°F or colder) is normal.

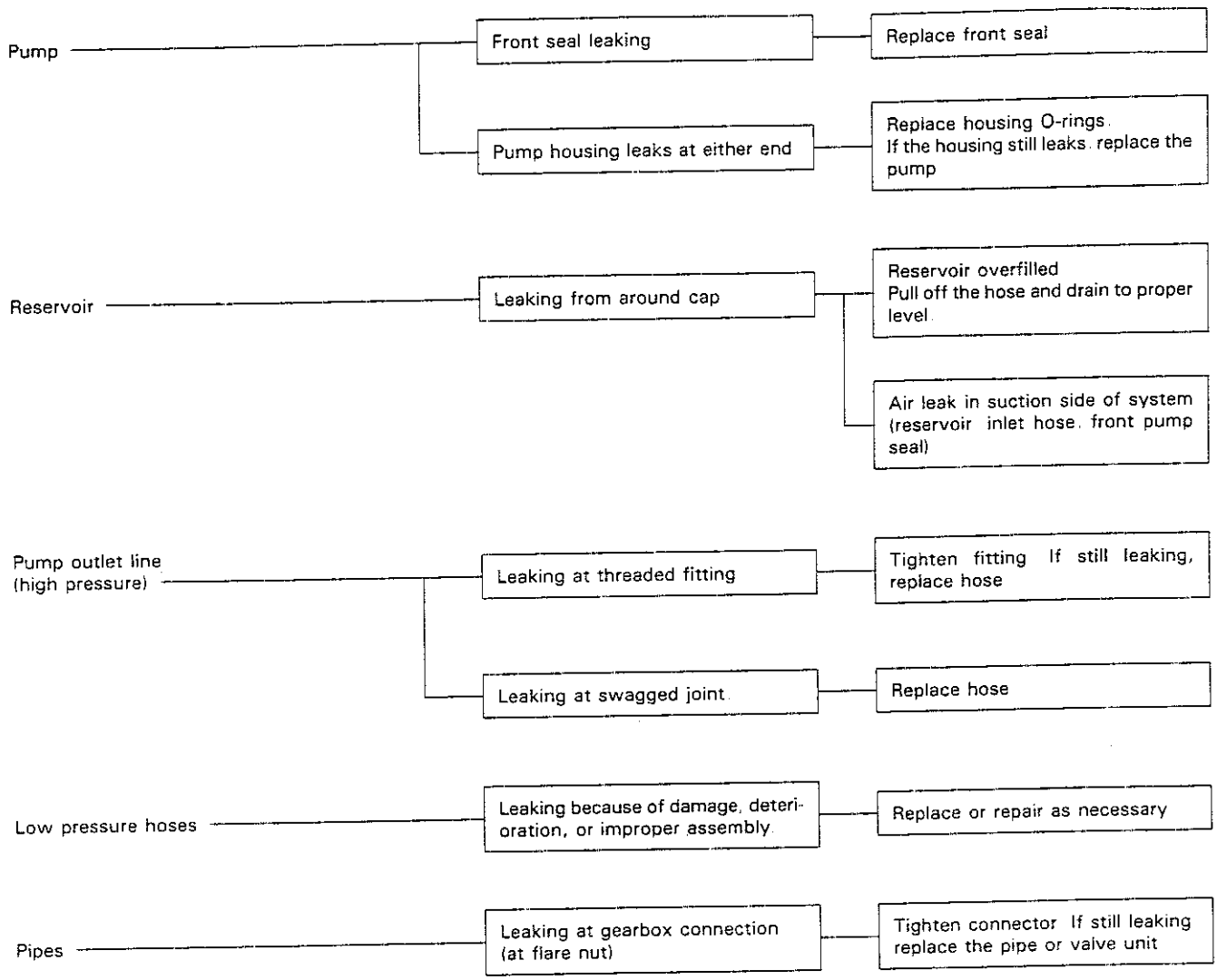
Humming	Humming due to pulsation of fluid is normal, particularly when wheel is turned with car stopped.	
	If equipped with Automatic transmission, the hum could be torque converter or pump noise	Confirm by temporarily removing pump belt
	High pressure line touching the frame	Reposition the line.
Squeaking	Pinion shaft seal not lubricated	Grease it
	Horn contact not lubricated or under too much pressure	Grease the contact, or bend it to reduce the pressure
Rattle or chattering	Loose steering shaft connector tie-rod or ball joint	Check and tighten, or replace parts as necessary
	Column shaft wobbling	Replace column assembly.
	Check the rack guide for proper adjustment (page 17-33)	Adjust if necessary
	Rattling sound and feeling when turning the steering wheel right and left with the engine OFF is a sound when the valve unit contacts the stopper. This is normal	
	Striking sound when turning the steering wheel fully right or left is a sound when the rack end contacts the stopper. This is normal	
Hissing	Pump noise, though not loud, from the valve unit can be heard when turning the steering wheel right or left. This is normal	


Grating noise from pump
Cavitation caused by air bubbles in fluid
Check fluid level
If low, fill reservoir to proper level, and check for leaks
Tighten or replace as necessary
Check for crushed suction hose or a loose hose clamp allowing air into the system
Tighten or replace as necessary
Pump gear noise
NOTE: Pump noise up to 2—3 minutes after starting in cold weather (−20°C, −4°F or colder) is normal
Compare pump noise at operating temperature to another car
If pump noise is abnormally loud, check the pump ball bearing and any parts (page 17-32)

Fluid Leaks

- Check the gearbox assembly for oil leaks carefully. Oil can leak out of various points, depending on location of the faulty oil seals/seal rings. Check the following before removing the gearbox from the frame



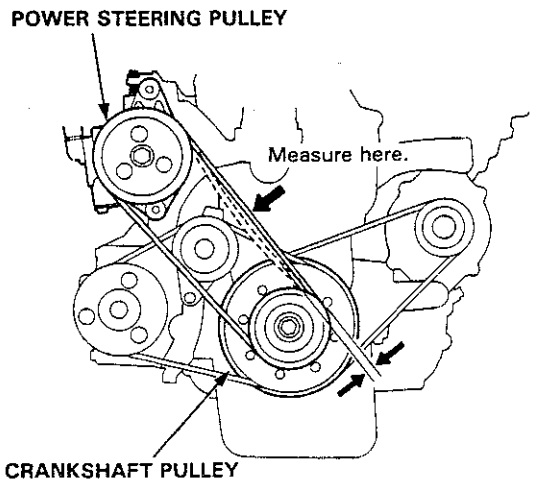

Pump
Front seal leaking
Replace front seal
Pump housing leaks at either end
Replace housing O-rings.
If the housing still leaks, replace the pump
Reservoir
Leaking from around cap
Reservoir overfilled
Pull off the hose and drain to proper level.
Air leak in suction side of system (reservoir inlet hose, front pump seal)
Pump outlet line (high pressure)
Leaking at threaded fitting
Tighten fitting. If still leaking, replace hose
Leaking at swagged joint.
Replace hose
Low pressure hoses
Leaking because of damage, deterioration, or improper assembly.
Replace or repair as necessary
Pipes
Leaking at gearbox connection (at flare nut)
Tighten connector. If still leaking replace the pipe or valve unit

Pump Belt Adjustment

1. Apply a force of 100 N (10 kg, 22 lb) and measure the deflection between the power steering pump and the crankshaft pulleys.

Deflection:
Used Belt: 8.0—12.0 mm (0.31—0.47 in)
New Belt:
D16A Engine 5.5—9.0 mm (0.22—0.35 in)
Other engine 6.0—9.5 mm (0.24—0.37 in)

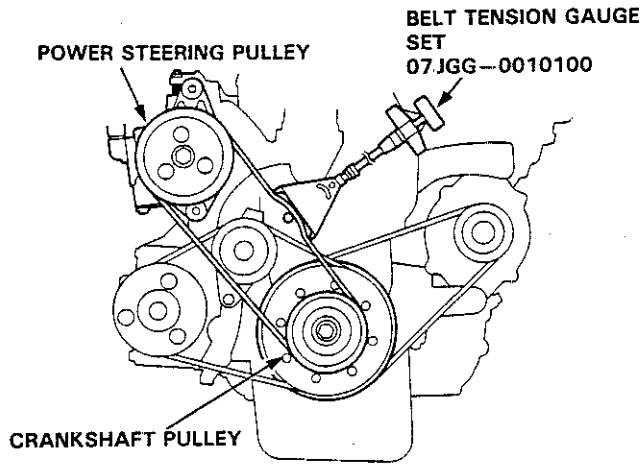
NOTE: If there are cracks or any damage evident on the belt, replace it with a new one.



Test by the Belt Tension Gauge Set; 07JGG—0010100 Attach the tension gauge to the belt and measure the tension of the belt.

Tension:
Used Belt: 350—500 N
(35—50 kg, 77—110 lb)
New Belt:
D16A Engine 550—750 N
(55—75 kg, 121—165 lb)
Other engine 500—700 N
(50—70 kg, 110—154 lb)

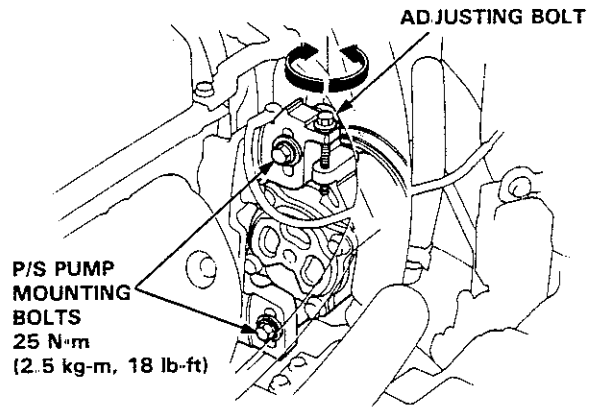
NOTE:
- If there are cracks or any damage evident on the belt, replace it with a new one.
- See the instructions for the tension gauge.



2. Loosen the P/S pump mounting bolts.

3 Turn the adjusting bolt to get the proper belt tension, then retighten the bolts

4 Start the engine and turn the steering wheel from lock-to-lock several times, then stop the engine and recheck the deflection of the belt.



Rack Guide Adjustment

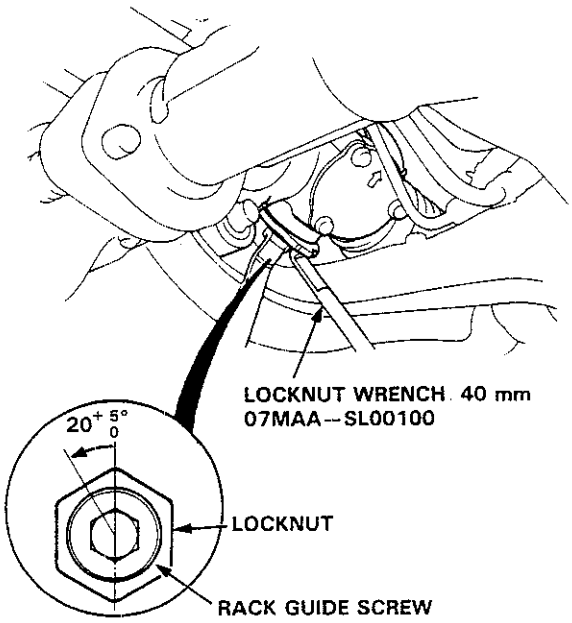
1. Loosen the rack guide screw locknut with the special tool, and loosen the rack guide screw

2. Tighten, loosen and retighten the rack guide screw two times to specified torque

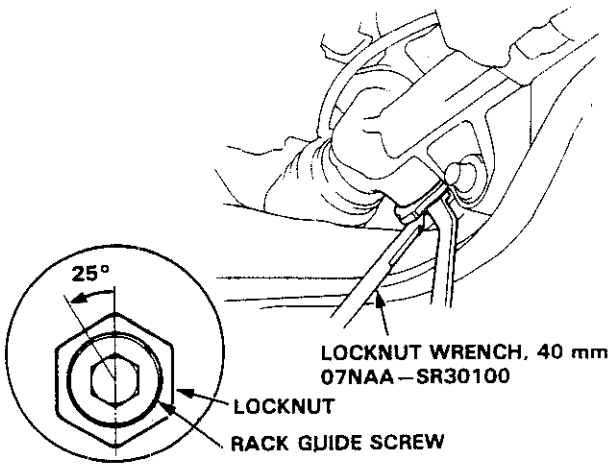
   LHD: 4 N·m (0.4 kg-m, 2.9 lb-ft)
   RHD: 5 N·m (0.5 kg-m, 3.6 lb-ft)

3 Back the rack guide screw off specified angle.

LHD:



RHD:

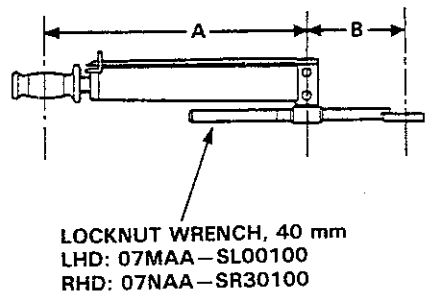


4 Hold the rack guide screw and tighten the locknut to a torque wrench reading (indicated) of Reading Torque below:

Reading Torque:
LHD: 17 N·m (1.7 kg-m, 12 lb-ft)
RHD: 47 N·m (4.7 kg-m, 34 lb-ft)

NOTE: The above Reading Torque specification is the torque wrench reading (indicated) when the locknut is tightened using a torque wrench 345 mm (13.6 in) long. If you tighten the locknut using a torque wrench of the different length, obtain the indicated torque value (torque wrench reading) using the following formulas.

Formulas:
A/(A + B) = Y
Y x Actual torque (kg-m) = Torque wrench reading (kg-m)



A: Torque wrench length (0.345 meters)
B: Tool length (0.15 meters)

Actual Torque:
LHD: 25 N·m (2.5 kg-m, 18 lb-ft)
RHD: 68 N·m (6.8 kg-m, 49 lb-ft)

5 Check for tight or loose steering through the complete turning travel

6 Recheck steering assist (page 17-36).

Fluid Replacement

Check the reservoir at regular intervals, and add fluid as necessary.

CAUTION: Use only Honda Power Steering Fluid-V. Using other fluids such as ATF or other manufacturer's power steering fluid will damage the system.

Fluid Replacement

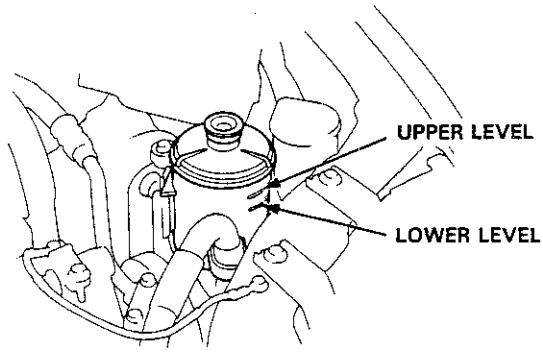
SYSTEM CAPACITY:

LHD: 1.1 liter (1.16 U.S.qt, 0.97 Imp qt)

RHD: 1.0 liter (1.06 U.S.qt, 0.88 Imp qt)

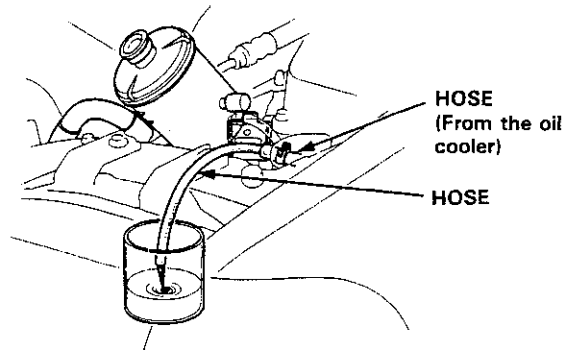
RESERVOIR CAPACITY:

0.4 liter (0.42 U.S.qt, 0.35 Imp qt)



1. Raise the reservoir and disconnect the hose that goes to the oil cooler.
2. Connect a hose of suitable diameter to the disconnected hose that goes to the oil cooler and put the hose end in a suitable container

   CAUTION: Take care not to spill the fluid on the body and parts. Wipe off the spilled fluid at once.
3. Start the engine, let it run at idle, and turn the steering wheel from lock-to-lock several times. When fluid stops running out of the hose, shut off the engine. Discard the fluid.



4. Refit the return hose on the reservoir.
5. Fill the reservoir to the upper level mark.
6. Start the engine and run it at fast idle, then turn the steering from lock-to-lock several times to bleed air from the system.
7. Recheck the fluid level and add some if necessary.

   CAUTION: Do not fill the reservoir beyond the upper level mark.

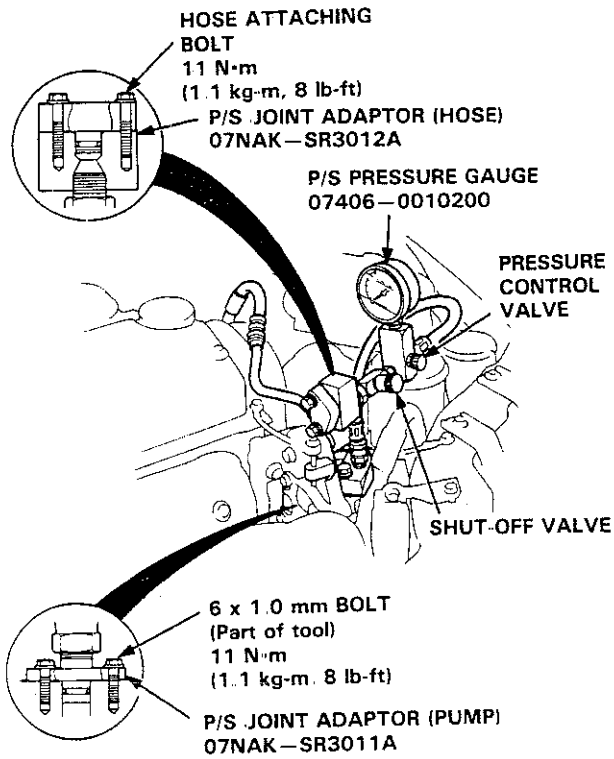
Pump Pressure Check

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

NOTE: First check the power steering fluid level and pump belt tension.

CAUTION: Disconnect the high pressure hose with care so as not to spill the power steering fluid on the frame and other parts.

1. Disconnect the outlet hose from the pump outlet fitting, and install the pump joint adaptor on the pump outlet.
2. Connect the hose joint adaptor to the power steering pressure gauge, then connect the outlet hose to the adaptor.
3. Install the power steering pressure gauge to the pump joint adaptor as shown

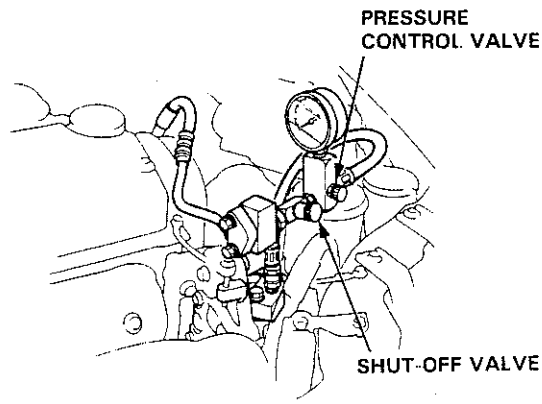


4. Open the shut-off valve fully.
5. Open the pressure control valve fully
6. Start the engine and let it idle
7. Turn the steering wheel from lock-to-lock several times to warm the fluid to operating temperature.
8. Close the shut-off valve, then close the pressure control valve gradually until the pressure gauge needle is stable. Read the pressure
9. Immediately open the shut-off valve fully

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

If the pump is in good condition, the gauge should read at least A low reading means pump output is too low for full assist Repair or replace the pump.

LHD: 8,000—9,000 kPa
(80—90 kg/cm², 1,138—1,280 psi)
RHD: 5,500—6,500 kPa
(55—65 kg/cm², 782—924 psi)

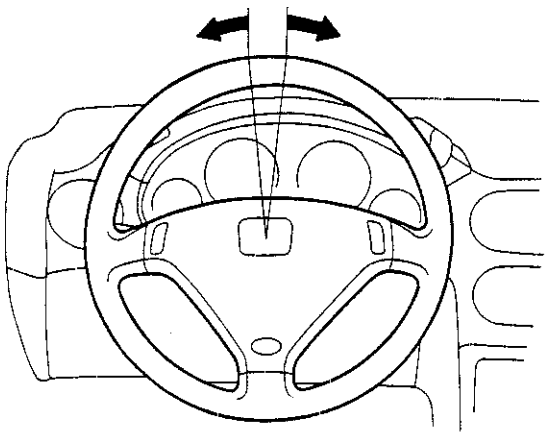


Steering Wheel Rotational Play

1. Place the front wheels in a straight ahead position and measure the distance the steering wheel can be turned without moving the front wheels

2 If the play exceeds the service limit, check all steering components.

0—10 mm (0—0.4 in)

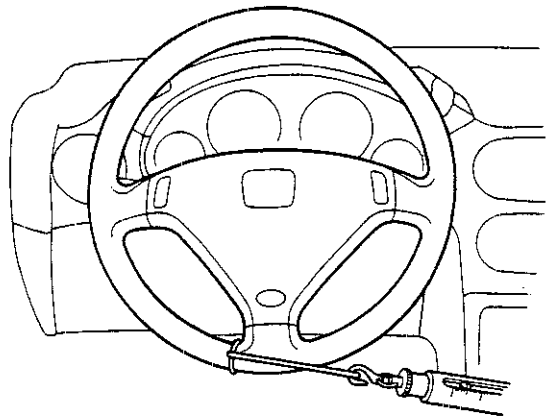


Power Assist Check with Car Parked

1. Check the power steering fluid level and pump belt tension.

2. Start the engine, allow it to idle, and turn the steering wheel from lock-to-lock several times to warm up the fluid.

3 Attach a spring scale to the steering wheel. With the engine idling and the car on a clean, dry floor, pull the scale as shown and read it as soon as the tires begin to turn



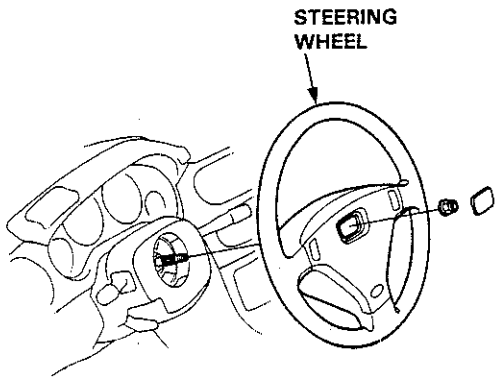
Specifications: 32 N (3.2 kg, 7 lb) maximum

4. If the reading is out of specifications, check the gearbox and pump.

Steering Wheel

Removal

1. Remove the center pad
2. Remove the steering wheel nut.
3. Remove the steering wheel by rocking it slightly from side-to-side as you pull steadily with both hands.

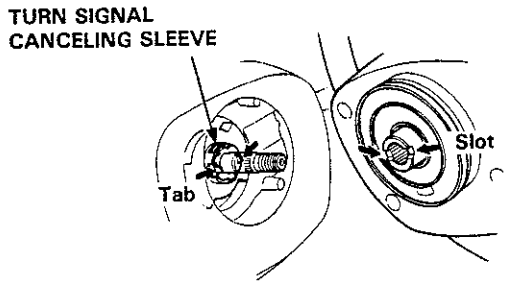


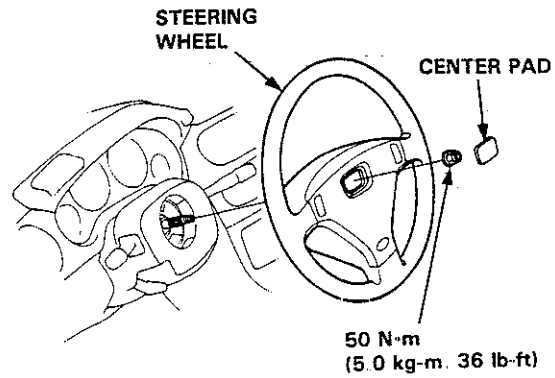
Installation

1. Install the steering wheel.

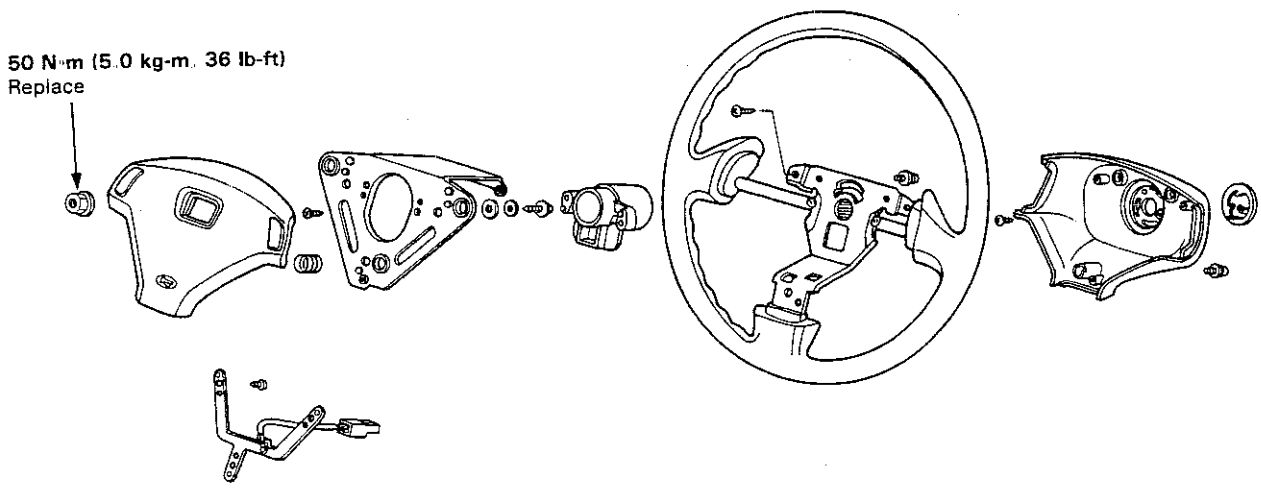
   NOTE: Be sure the steering wheel shaft engages the turn signal canceling sleeve.

2. Install the center pad.





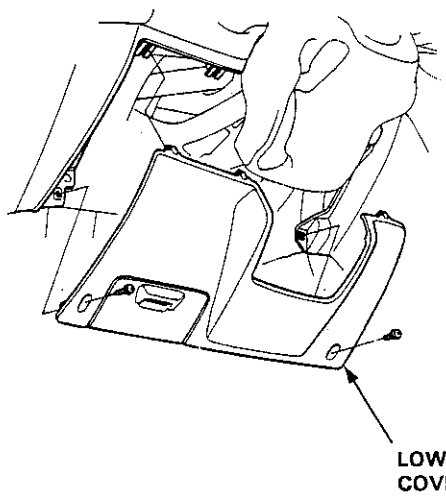
Disassembly/Reassembly



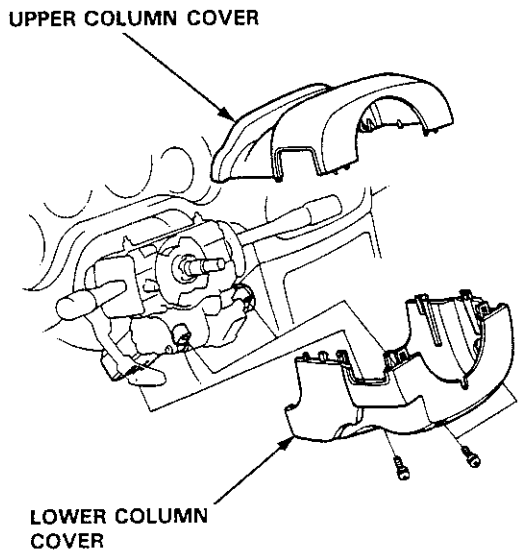
Removal

NOTE: LH drive shown. RH drive is similar.

1. Remove the steering wheel (17-37).
2. Remove the lower cover

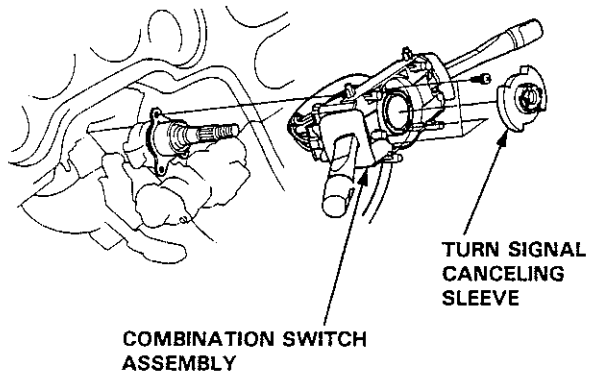


3 Remove the upper column and lower column covers.

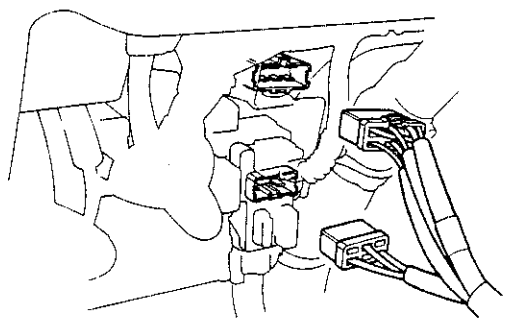


4. Remove the turn signal caceling sleeve and the combination switch assembly.

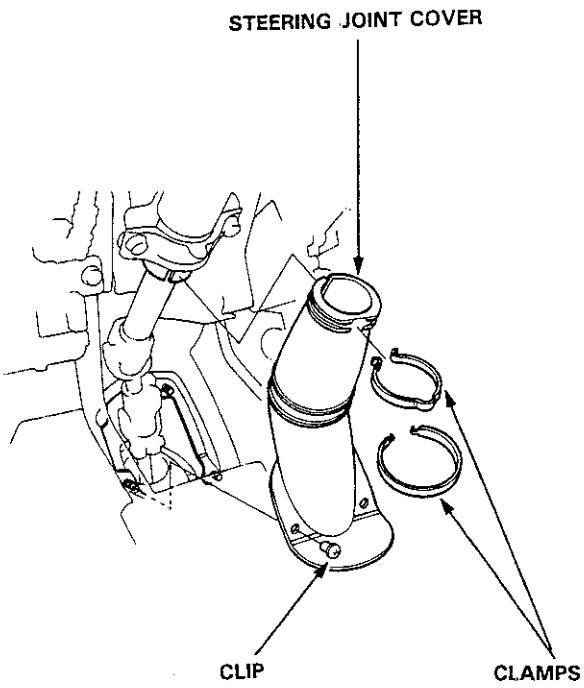
NOTE: After removing the combination switch assembly, place it on the floor gently so that it does not hinder you in service. Do not disconnect the harnesses from the combination switch assembly.



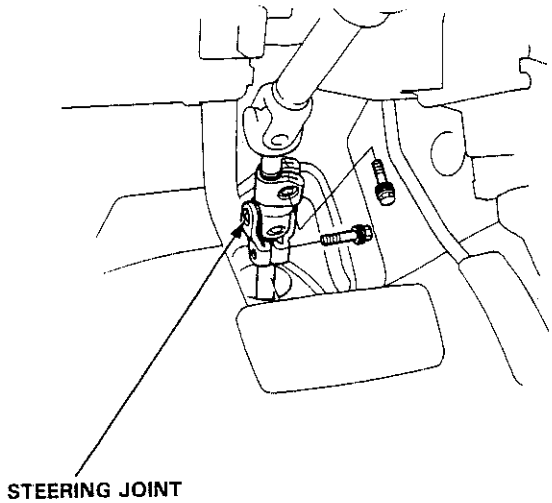
5 Disconnect the ignition switch connectors from the under-dash fuse box.



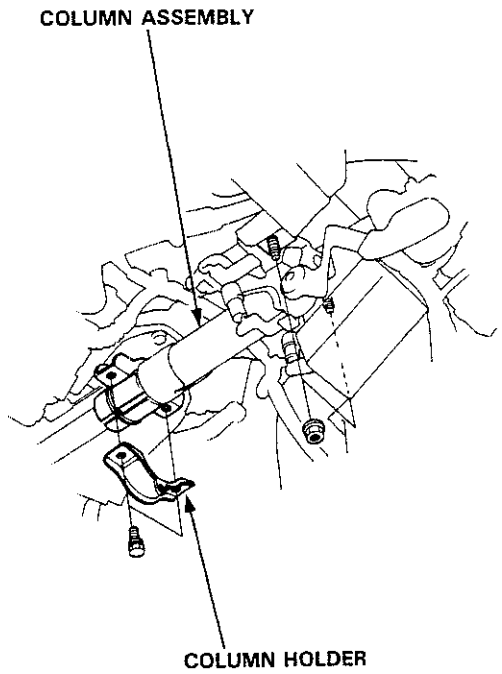
6. Remove the steering joint cover



7 Remove the steering joint bolts, and move the joint toward the column



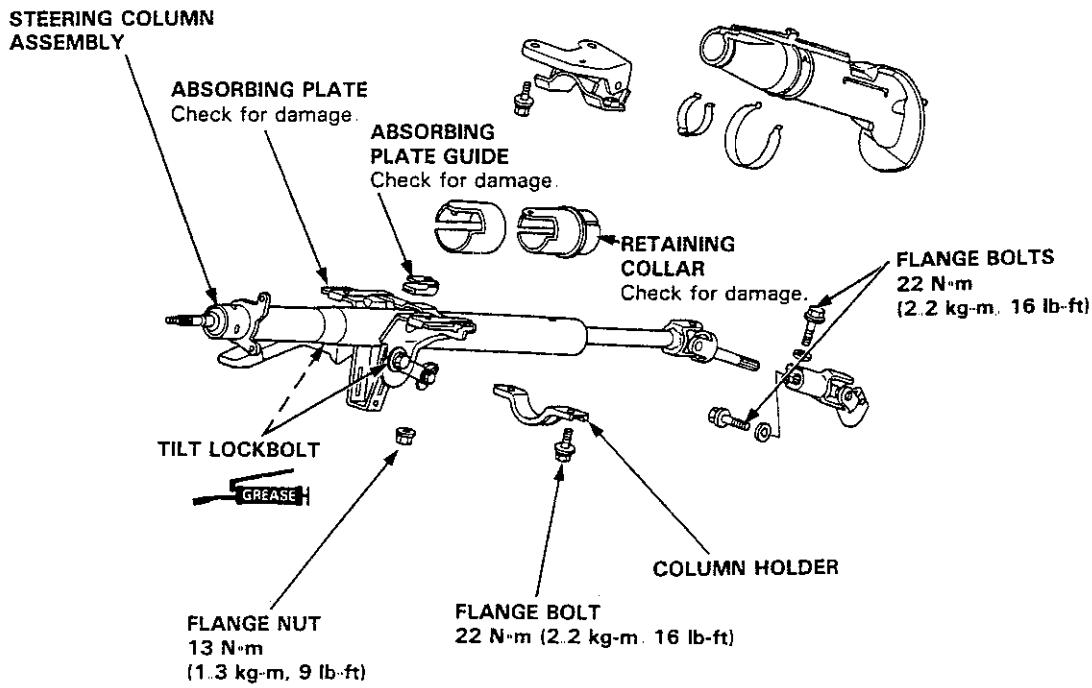
8. Remove the steering column assembly by removing the attaching nuts and bolts



Steering Column

Inspection

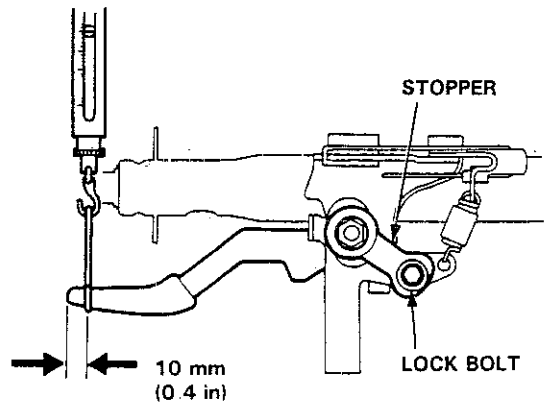
NOTE: Check the tilt mechanism, steering joint bearings and steering shaft for proper movement and damage. Replace as an assembly if damaged or faulty.



- Attach a spring scale to the knob of the tilt lever Measure the force required to move the lever

  Preload: 70—90 N (7—9 kg, 15—20 lbs)

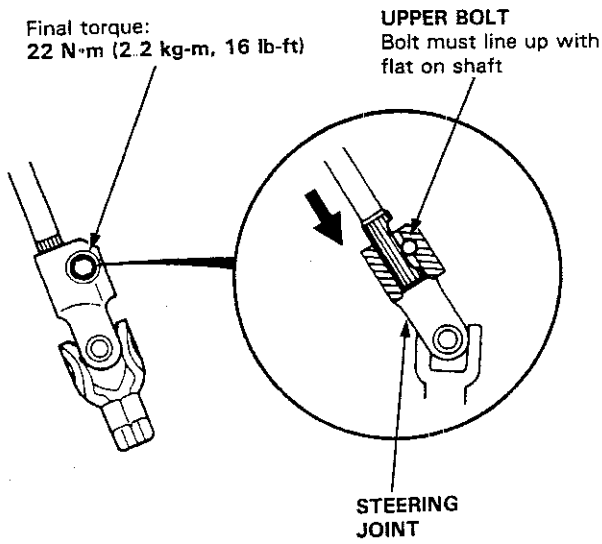
  If the force measured is not within the specification loosen the lock bolt, then the stopper, until the correct force can be obtained.



Installation

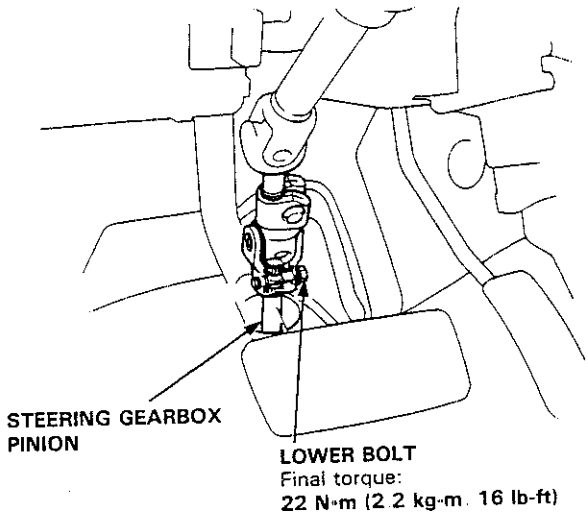
CAUTION: After reassembly, confirm that the wheels are still straight ahead and that the steering wheel spoke angle is correct. If minor spoke angle adjustment is necessary do so only by adjustment of the tie rods, not by removing and repositioning the steering wheel.

1 Slip the upper end of the steering joint onto the column shaft (line up the bolt hole with the flat on the shaft) and loosely install the upper bolt.



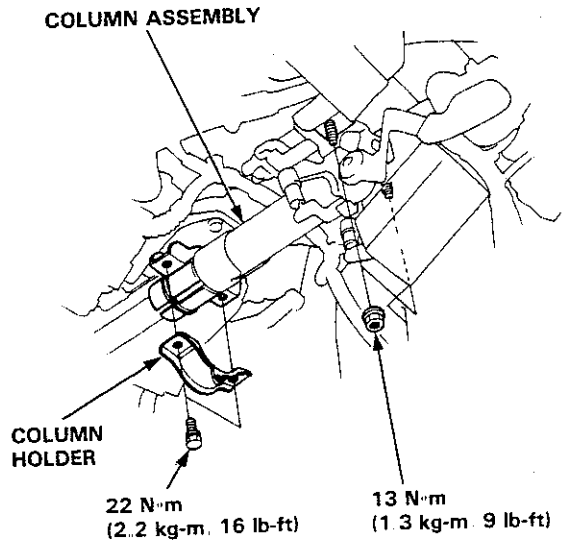
2 Slip the lower end of the steering joint onto the pinion shaft (line up the bolt hole with the groove around the shaft) and loosely install the lower bolt.

NOTE: Be sure that the lower bolt is securely in the groove in the steering gearbox pinion.

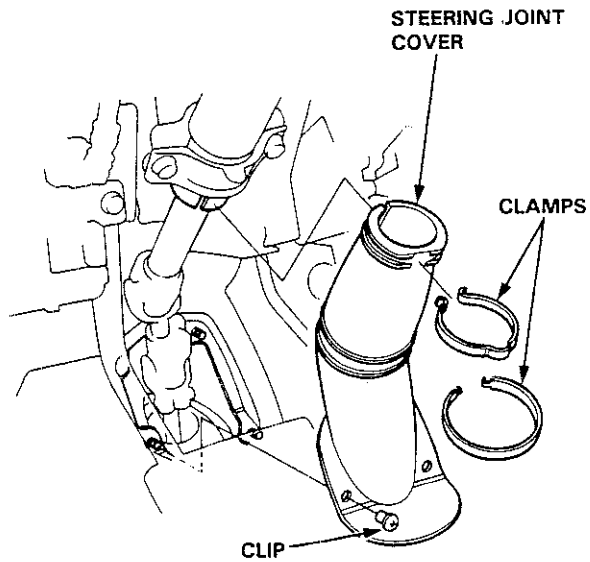


3 Install the steering column assembly with the nuts and column holder.

4 Tighten the upper and lower steering joint bolts loosely installed in step 2.



5 Install the steering joint cover with the clamps and clip.



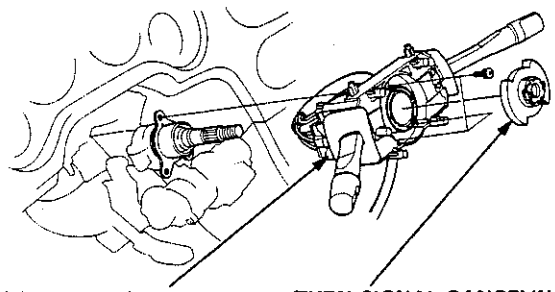
(cont'd)

Installation (cont'd)

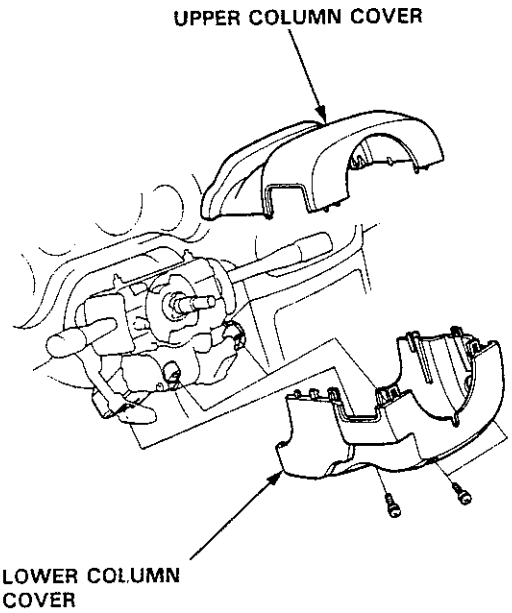
6. Connect the wire connectors from the ignition switch to the under-dash fuse box.

7. Install the combination switch assembly and turn signal canceling sleeve onto the steering column

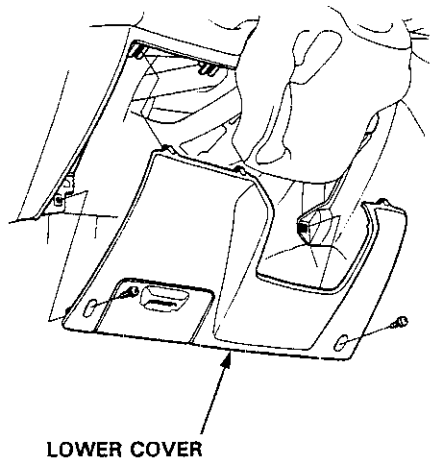
   NOTE: Be sure the wires are not caught or pinched by any parts when installing the combination switch.



8 Install the upper column cover and lower column cover



9. Install the lower cover.



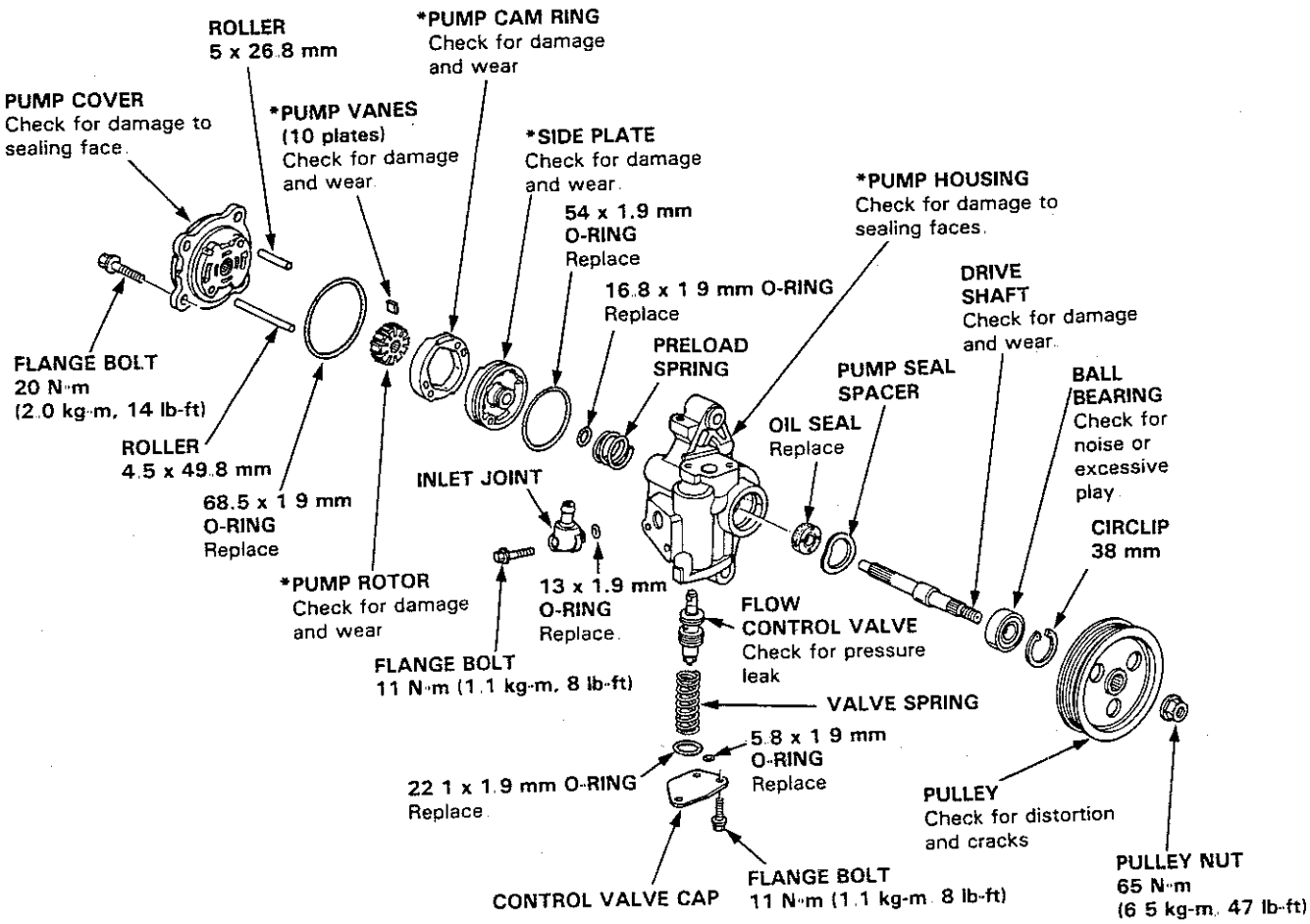
10. Install the steering wheel (page 17-37)

Steering Pump

Illustrated Index

NOTE:
- Clean all of the disassembled parts thoroughly
- Replace all O-rings and seals. Do not dip new O-rings and seals in solvent; coat O-rings with steering grease before installation and make sure they stay in place during reassembly.
- If any part denoted with an asterisk is worn or damaged, replace the complete pump

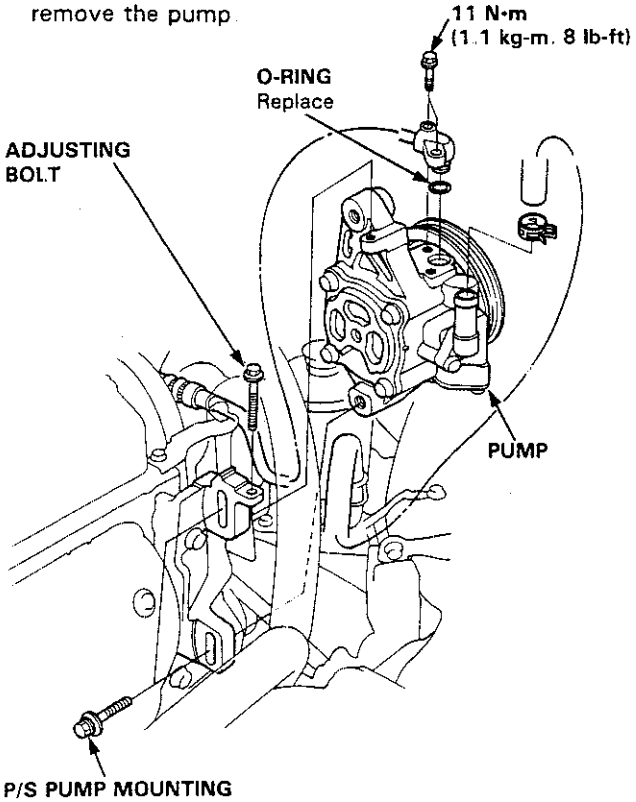
CAUTION:
- **Use only Honda Power Steering Fluid-V. The use of other fluid such as A.T.F., or other manufacturer's power steering fluid will cause damage to the system.**
- **Pump components are made of aluminum. Be careful not to damage them when servicing.**



Steering Pump

Replacement

1. Drain the fluid from the system (page 17-34)
2. Disconnect the inlet and outlet hoses from the pump and plug them.
3. Remove the belt by loosening the special bolts and adjusting bolt.
4. Remove the P/S pump mounting bolts, then remove the pump.



5. Loosely install a new pump on the bracket.
6. Connect the inlet and outlet hoses to the pump
7. Install and adjust the belt (page 17-32).
8. Fill the reservoir with new fluid to the UPPER LEVEL on the reservoir
9. Start the engine and let it run at fast idle while turning the steering wheel lock-to-lock several times to bleed air from the system.
10. Check the reservoir and add fluid if necessary

Pulley Replacement

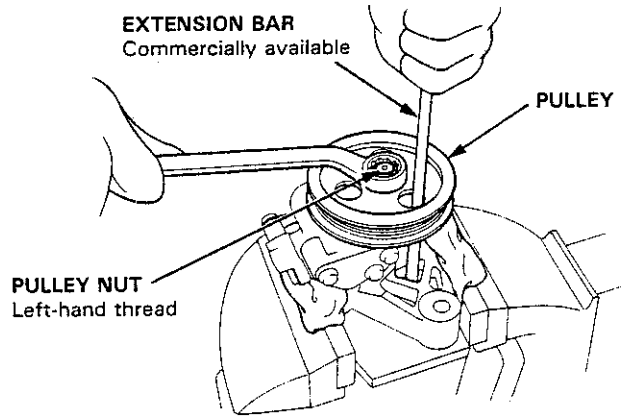
Hold the steering pump in a vise with soft jaws

CAUTION: When holding, be careful not to damage the pump housing with the jaws of the vise

Hold the pulley with a extension bar, and remove the pulley nut and pulley as shown below.

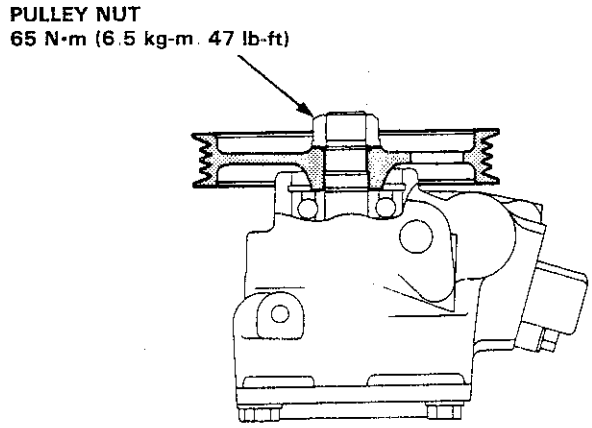
CAUTION: When holding the pulley, be careful not to damage the pipe fittings of the housing and pulley with a extension bar.

NOTE: Pulley nut has left-hand threads



Reinstall the pulley in the reverse order of removal.

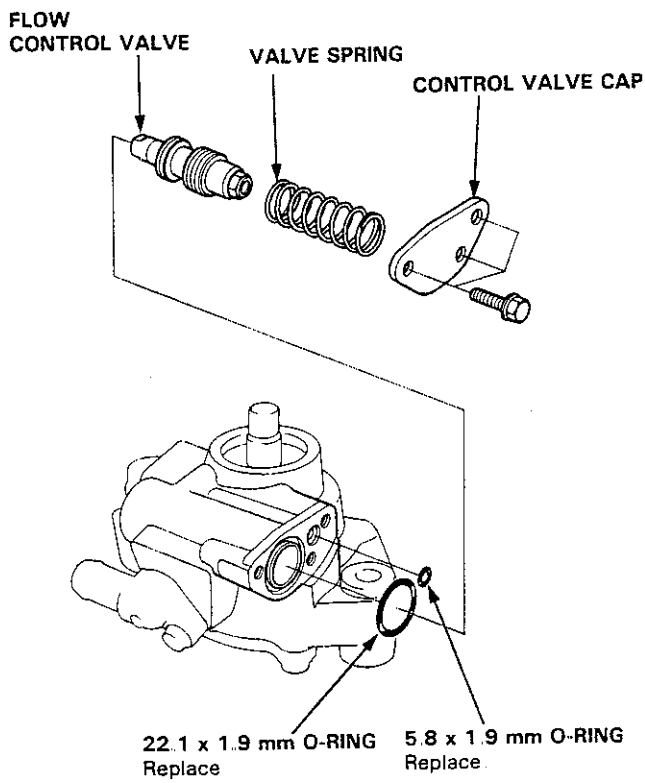
NOTE: Install the pulley as shown



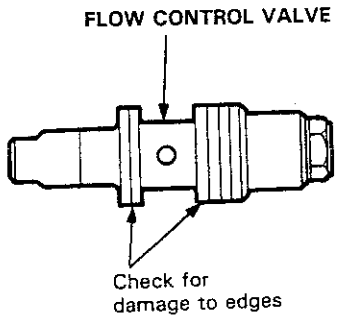
Flow Control Valve Inspection and Replacement

1. Remove the flow control valve cap by removing the three flange bolts

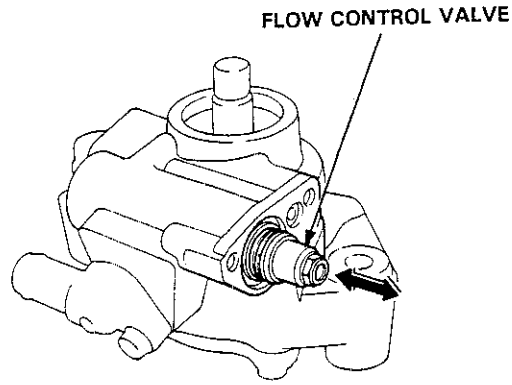
2. Remove the flow control valve spring, control valve and O-rings.



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

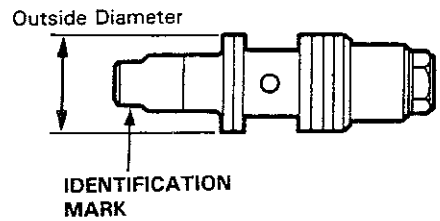


4. Slip the valve back in the pump and check that it moves in and out smoothly



If OK, go on step 5. if not replace the valve:

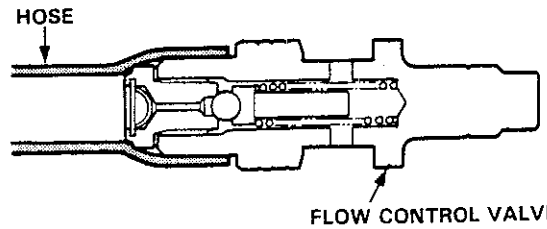
NOTE: The original valve was selected for a precise fit in the pump housing bore, so make sure the new one has the same identification mark



Mark	Part Name	Outside Diameter mm (in)
A	FLOW CONTROL VALVE A	17.991–17.996 (0.7083–0.7085)
B	FLOW CONTROL VALVE B	17.996–18.001 (0.7085–0.7087)

If OK, go on step 5, if not, replace the whole pump as an assembly

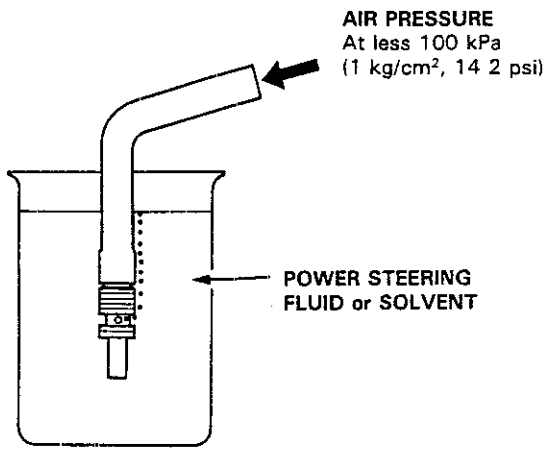
5. Attach a hose to the end of the valve as shown.



(cont'd)

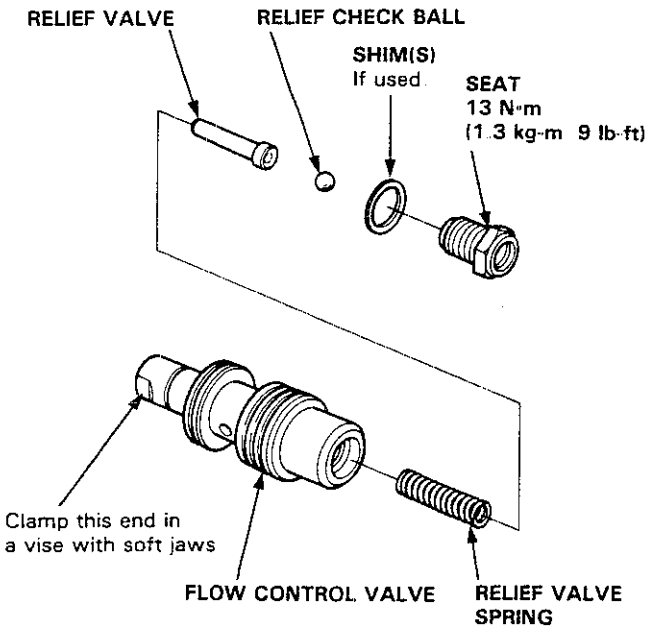
Flow Control Valve Inspection and Replacement (cont'd)

6. Submerge the valve in a container of power steering fluid or solvent, and blow in the hose. If air bubbles leak through the valve, replace or repair it as follows.



7. Clamp the bottom end of the valve in a vise with soft jaws.

8. Unscrew the seat in the top end of the valve and remove any shims, the relief check ball, relief valve and relief valve spring

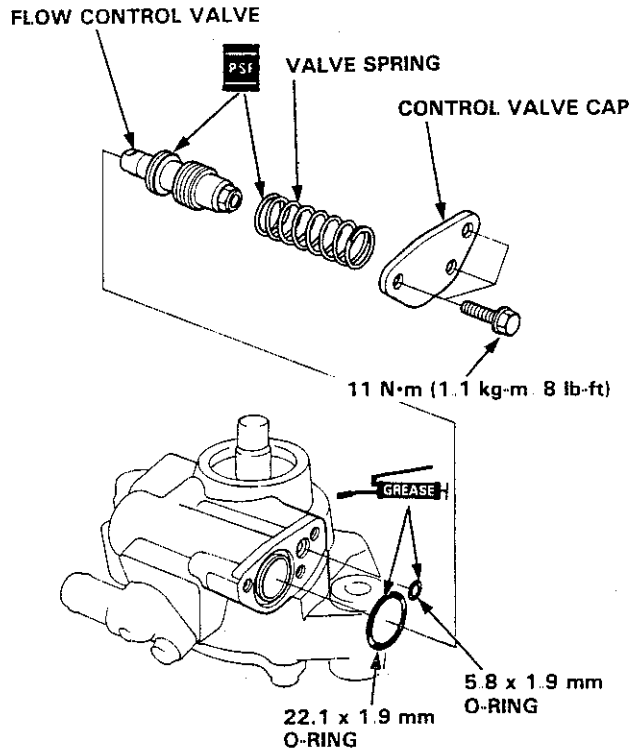


9. Clean all the parts in solvent, dry them off then reassemble and retest the valve.

   NOTE: If necessary, relief pressure is adjusted at the factory by adding shims under the check ball seat. If you found shims in your valve, be sure you reinstall as many as you took out.

10. Install the flow control valve in the reverse order of removal.

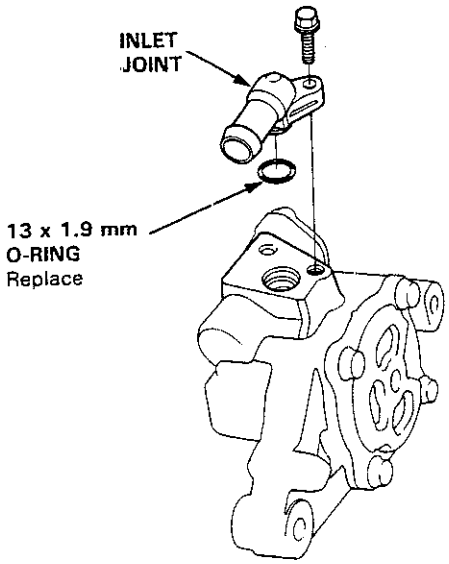
- Apply steering grease (Honda P/N 08733–B070E) to new O-rings.
- Coat the flow control valve with the recommended power steering fluid then install it and valve spring.



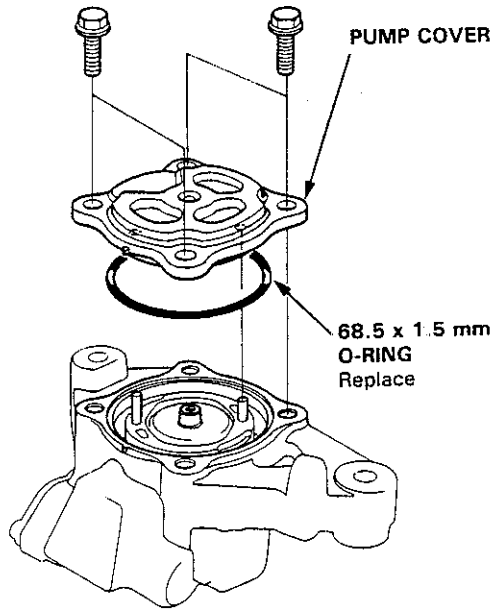
Disassembly

CAUTION: The pump components are made of aluminum. Be careful not to damage them when servicing.

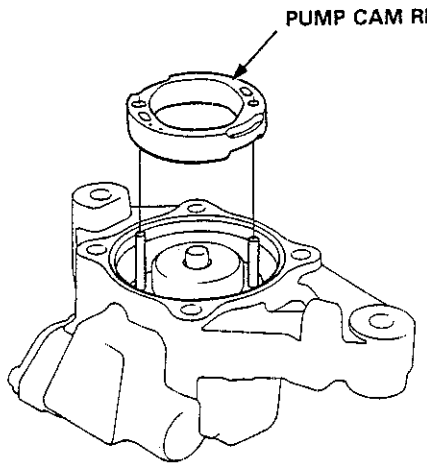
1. Remove the pump from the engine (page 17-44).
2. Remove the pulley (page 17-44).
3. Remove the flow control valve (page 17-45).
4. Remove the inlet joint and O-ring.



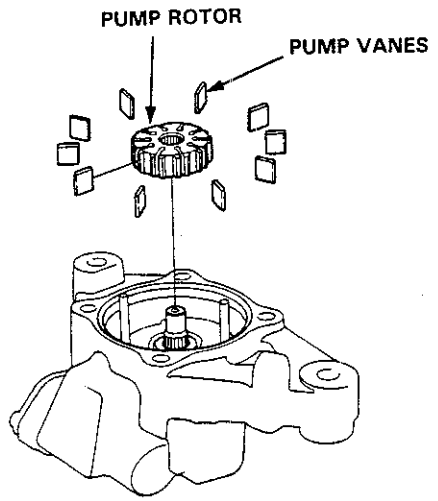
5. Remove the pump cover and O-ring



6. Remove the pump cam ring from the pump housing.



7. Remove the pump rotor and vanes.

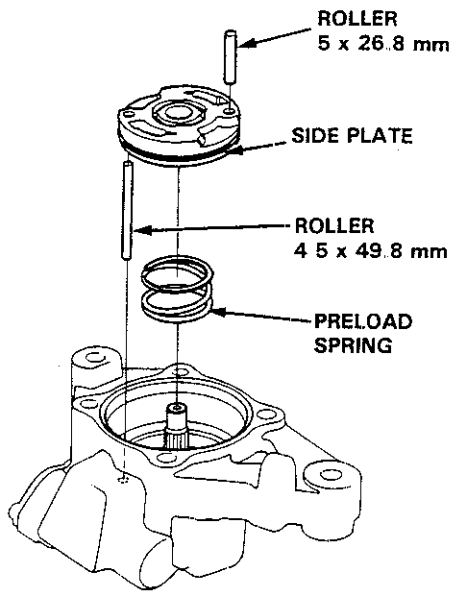


(cont'd)

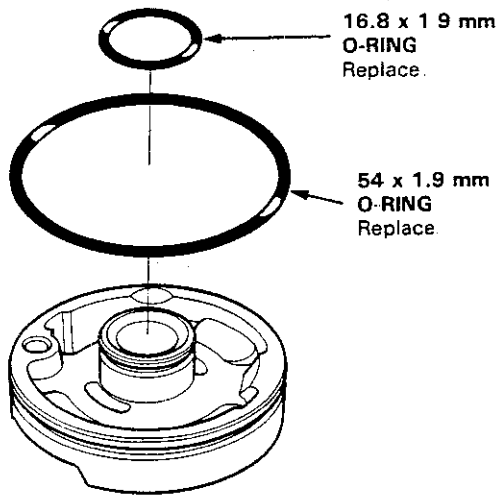
Disassembly (cont'd)

8 Remove the two rollers from the side plate.

9. Remove the side plate and preload spring

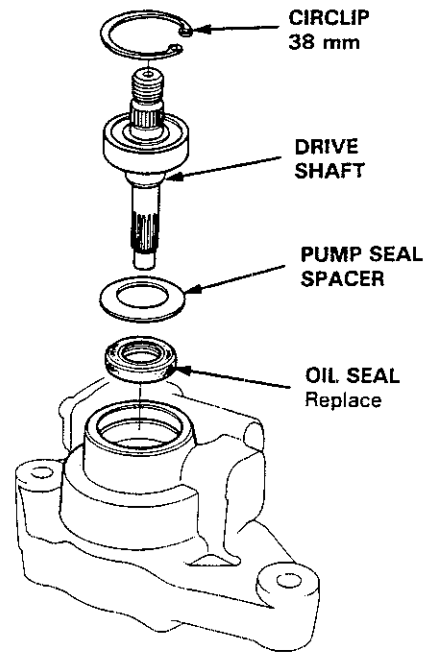


10 Remove the O-rings from the side plate.



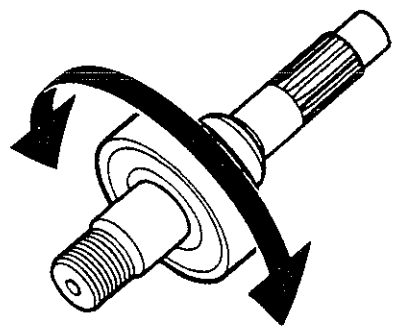
11 Remove the circlip, then remove the drive shaft assembly from the pump housing using a plastic hammer.

12. Remove the seal spacer and oil seal.

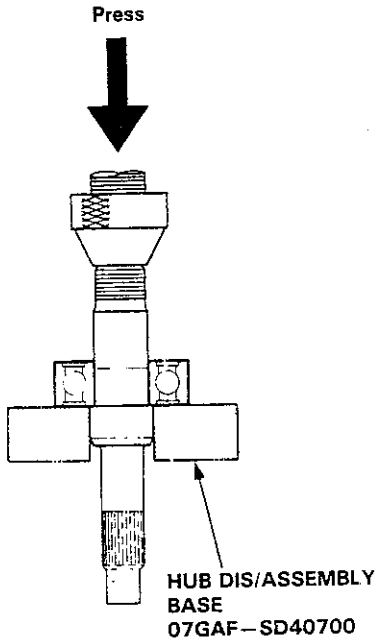


13. Check the pump ball bearing for play; if it is good and the grease in it is clean, go on step 14.

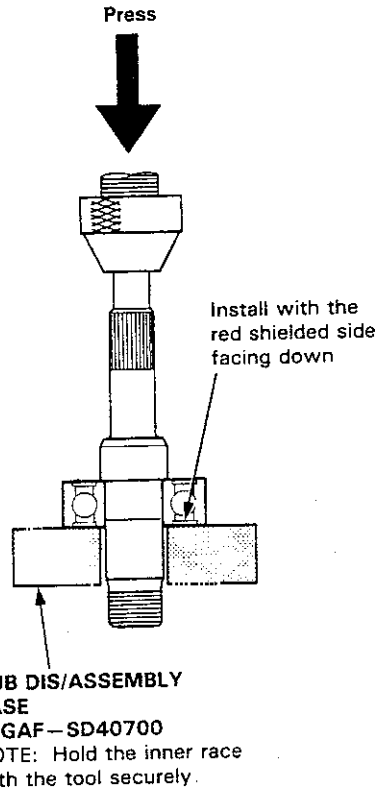
— If the bearing is noisy or has excessive play, replace the bearing.



– Remove the bearing using the special tool and press



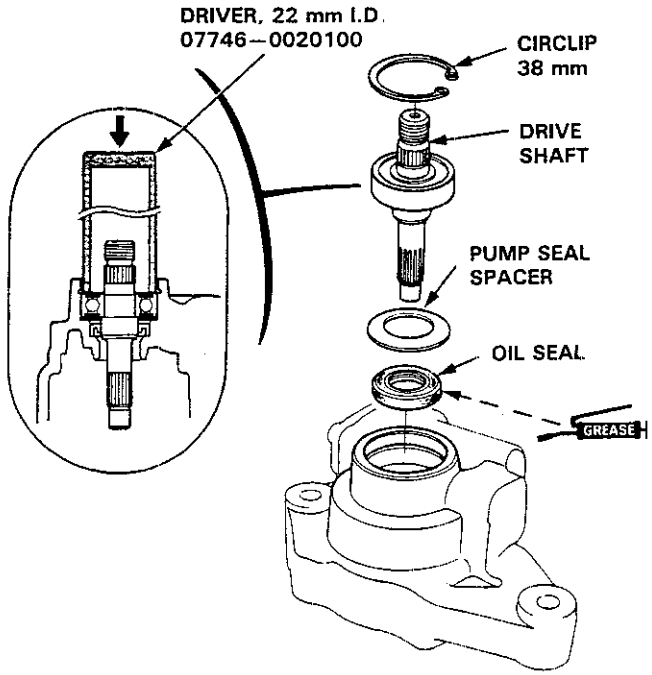
– Install the new bearing using the press and special tool



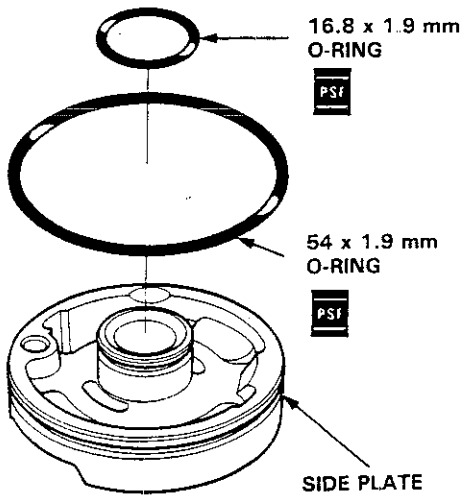
Steering Pump

Assembly

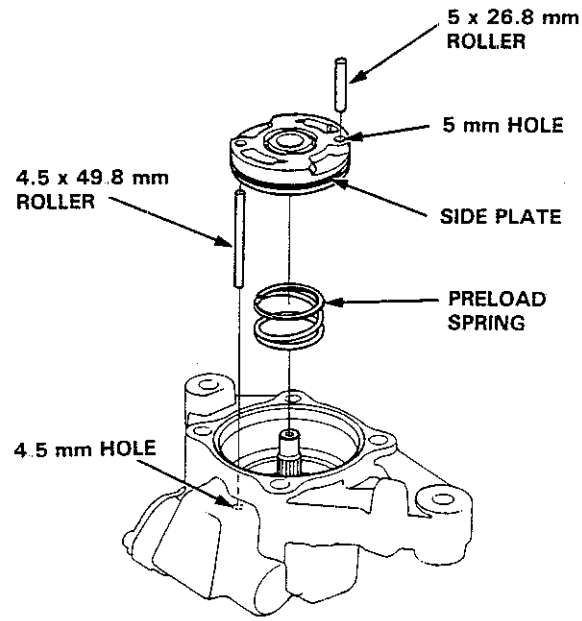
1. Coat the lip of the new oil seal with steering grease (Honda P/N 08733—B070E).
2. Install the new oil seal in the pump housing by hand, then install the pump seal spacer.
3. Install the pump drive shaft assembly with the special tool.
4. Install the 38 mm circlip with its tapered side facing out.



5. Coat the side plate grooves with the recommended power steering fluid, then position the 16.8 x 1.9 mm and 54 x 1.9 mm O-rings on the side plate.

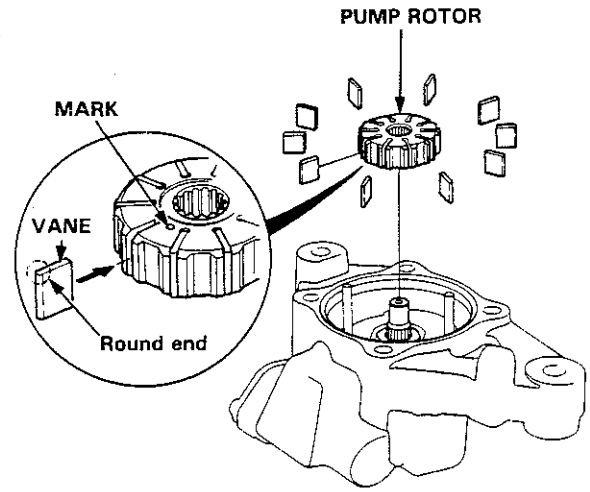


6. Install the preload spring in the pump housing
7. Set the 4.5 x 49.8 mm roller in the 4.5 mm hole in the pump housing.
8. Set the side plate over the roller and install it on the pump housing.
9. Set the 5 x 26.8 mm roller in the 5 mm hole in the side plate.

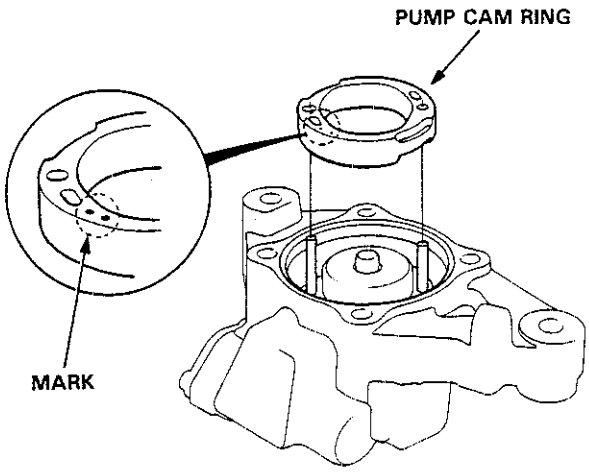


10. Assemble pump rotor to the drive shaft with the "o" mark on the rotor facing upward.
11. Set the 10 vanes in the grooves in the rotor.

NOTE: Be sure that the round end of the vanes is in contact with the sliding surface of the cam ring



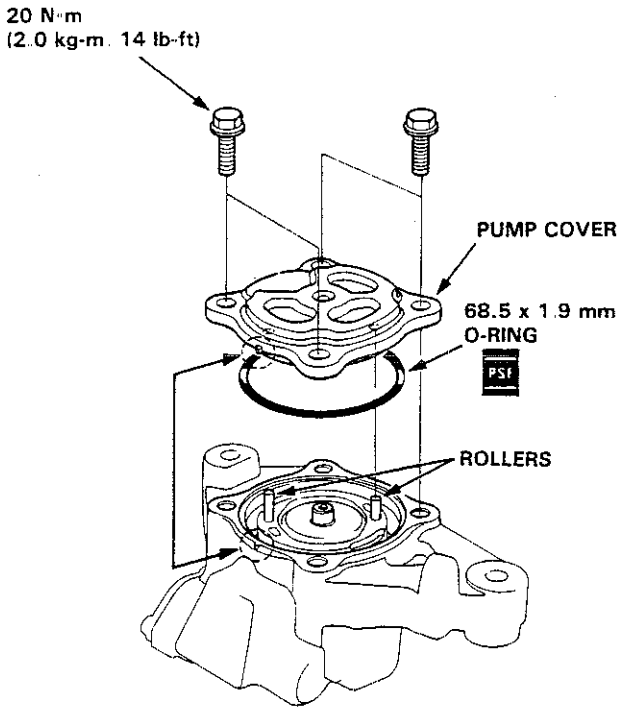
12. Set the pump cam ring over the two rollers with the "○" mark on the cam ring upward.



13. Install the 68.5 x 1.9 mm O-ring on the pump cover.

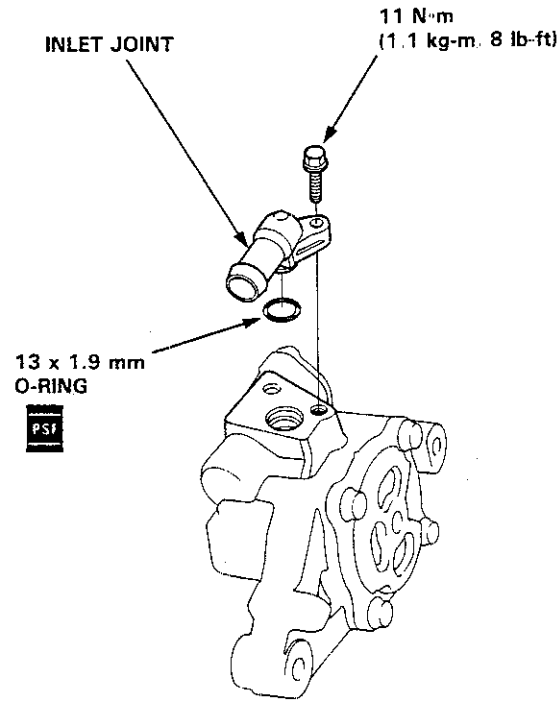
14. Align the roller set holes in the pump cover with the rollers.

15. Align the projection on the pump housing and the projection on the pump cover and tighten the four bolts.



16. Set the 13 x 1.9 mm O-ring on the inlet joint.

17. Install the inlet joint on the pump housing.



18. Install the flow control valve (page 17-46).

19. Install the pulley (page 17-44) and check that the pump turns smoothly by turning the pulley.

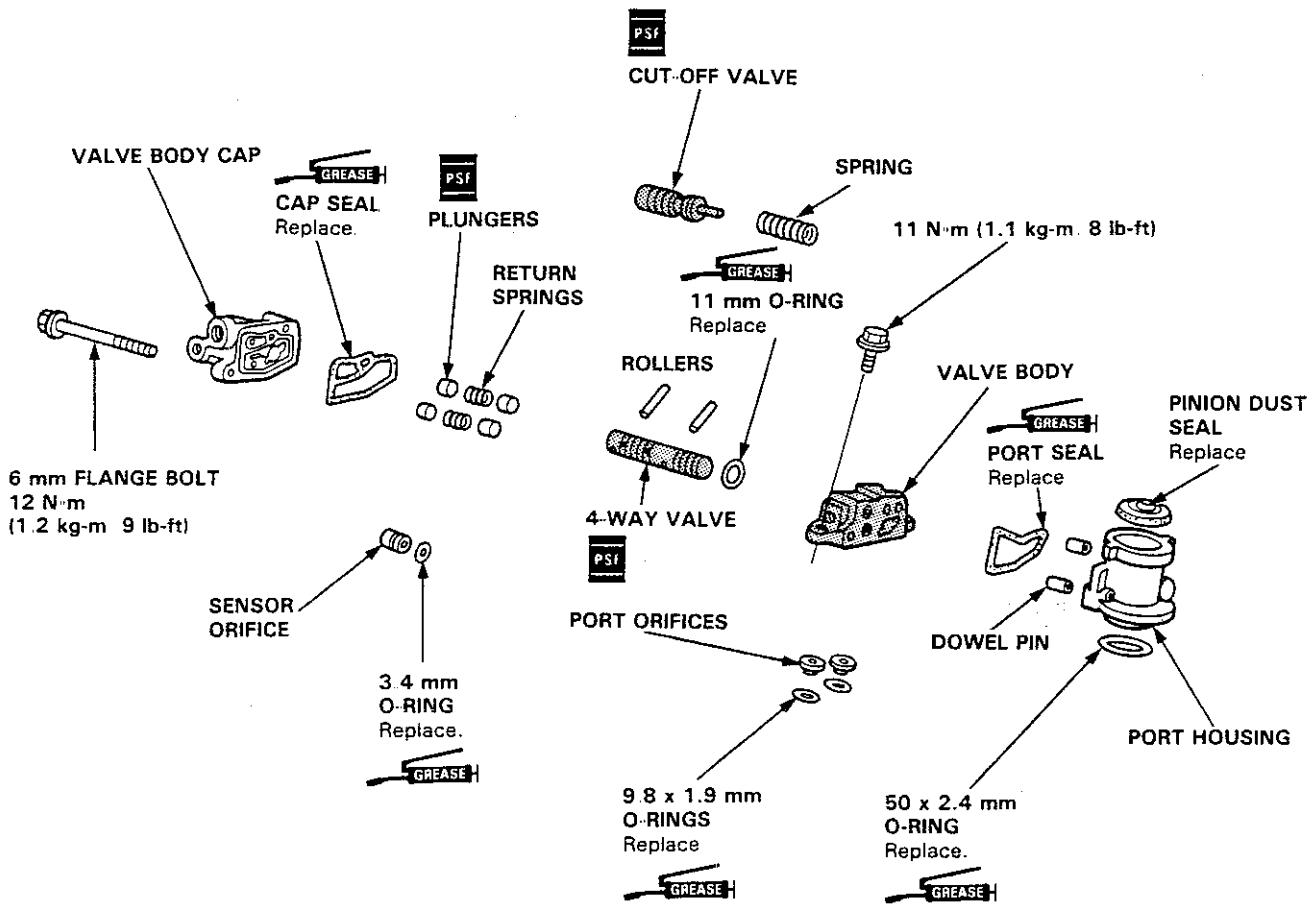
Steering Gearbox (LHD)

Valve Body Unit Overhaul

NOTE: If the Valve Body is damaged, it must be replaced as a set, with the Cut-off Valve and 4-Way Valve (shaded parts).

CAUTION:

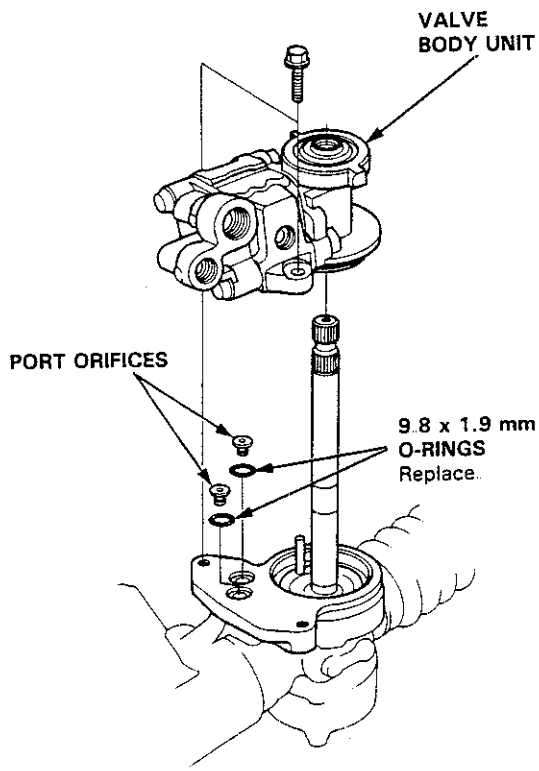
- Replace the O-rings and seals with new ones.
- Do not dip the O-rings and seals in solvent.
- Apply grease in the seal grooves to keep the cap and port seals in place.
- Apply grease to the 50 x 2.4 mm and 11 mm O-rings to keep them in place.
- GREASE STEERING GREASE ..... Part Number 08733—B070E
- Use only Honda Power Steering Fluid-V. The use of other fluid such as A.T.F., or other manufacturer's power steering fluid will cause damage to the system.



1. Remove the steering gearbox (17-57).

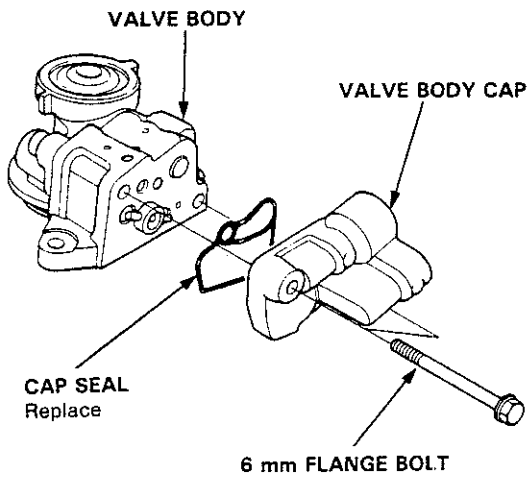
2. Remove the two 8 mm flange bolts and remove the valve body unit from the gearbox.

3. Remove the O-rings and port orifices from the gearbox.

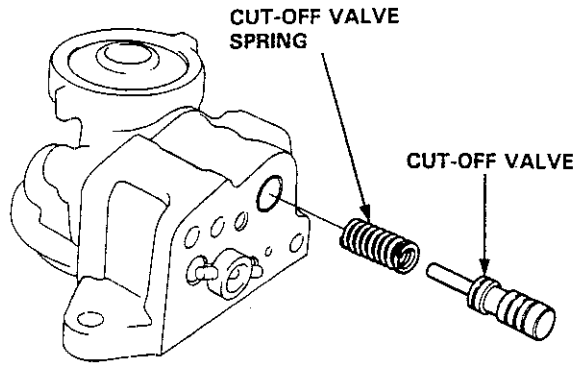


4. Remove the two 6 mm flange bolts, then remove the cap from the valve body.

5. Remove the cap seal from the cap

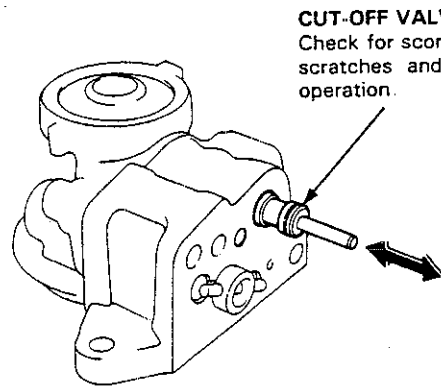


6. Remove the cut-off valve and spring from the valve body



7. Check the cut-off valve:

- Inspect its surface for scoring or scratches
- Slip it back into the valve body, and make sure it slides smoothly without drag and without side play.



NOTE: If any part of the valve body is damaged, replace the valve body unit (valve body, 4-way valve) as an assembly.

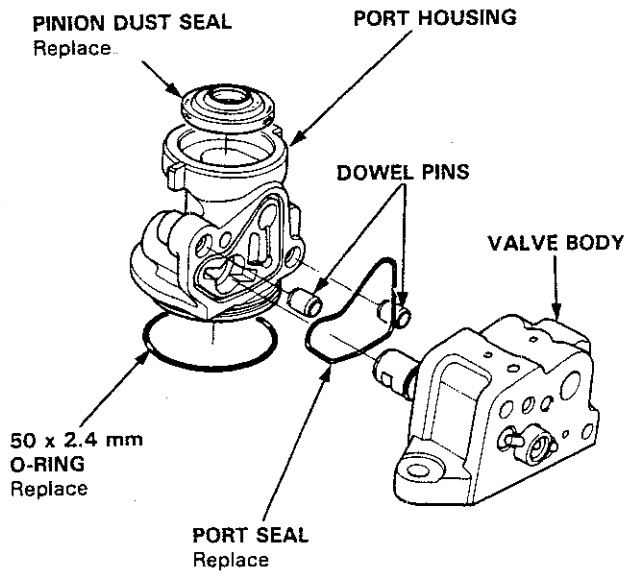
(cont'd)

Valve Body Unit Overhaul (cont'd)

8. Separate the valve body and port housing.

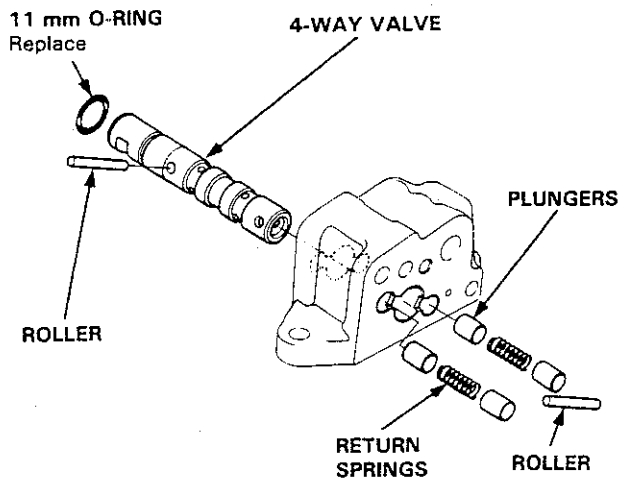
9. Remove the seal and dowel pins from the port housing.

10. Remove the pinion dust seal and O-ring from the port housing



11. Remove the rollers from the 4-way valve by pushing the valve out one side of the valve body, and then the other.

NOTE: When removing the rollers, hold the plungers with your fingers to keep them from popping out



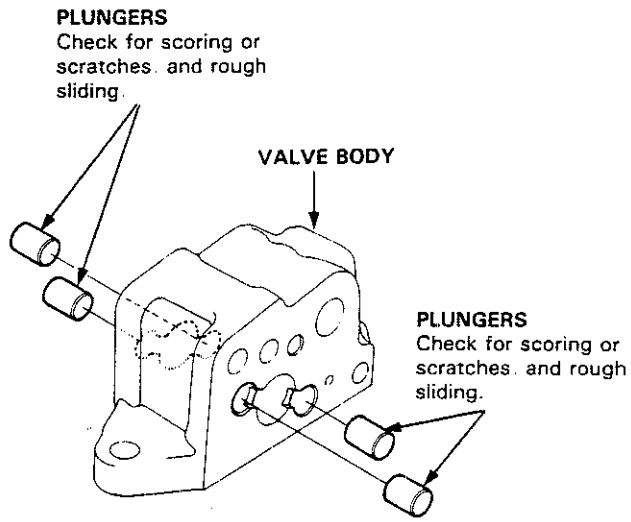
12. Remove the plungers, return springs and 4-way valve from the valve body

13. Remove the 11 mm O-ring from the 4-way valve.

14. Check the plungers.

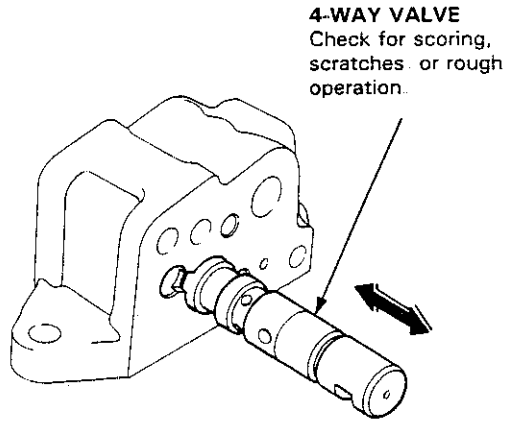
- Inspect their surface for scoring or scratches
- Slip each plunger into the valve body, and make sure it slides smoothly, without drag or side play.
  If any plunger is damaged, replace it

NOTE: If the valve body is damaged, replace all three parts (valve body, cut-off valve and 4-way valve) as a set.

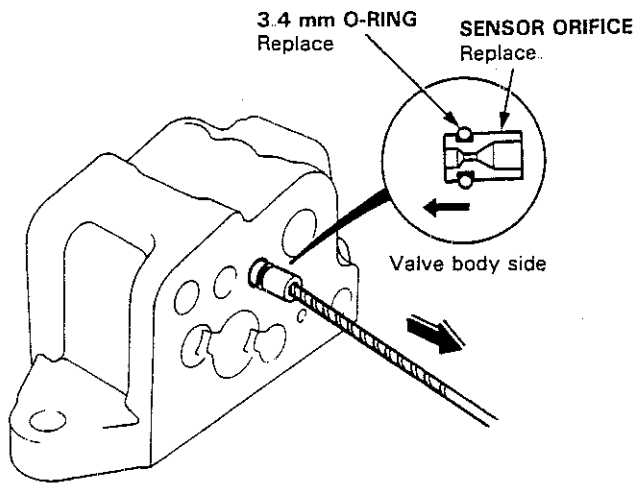


15. Check the 4-way valve
- Inspect its surface for scoring or scratches
- Slip it into the valve body, and make sure it slides smoothly, without drag or side play

NOTE: If any part of the valve body is damaged, replace the valve body unit (valve body, cut-off valve, 4-way valve) as an assembly.



16 If necessary; replace the sensor orifice and O-ring using a 1 5 mm (1/16") drill bit.



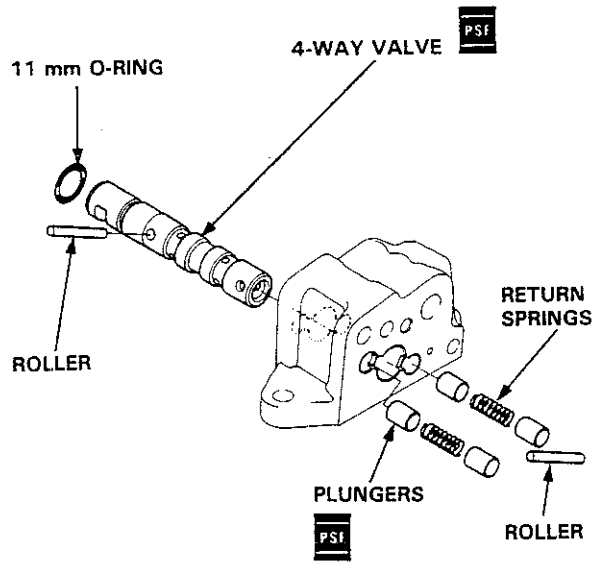
— Coat the new O-ring with recommended power steering fluid-V and install the sensor orifice into the valve body by tapping lightly with a rubber mallet.

Assembly:

NOTE:
- Thoroughly clean all the disassembled parts
- Coat the plungers, cut-off valve and 4-way valve surfaces with the recommended power steering fluid.

17 Coat the O-ring with grease, and install it on the 4-way valve.

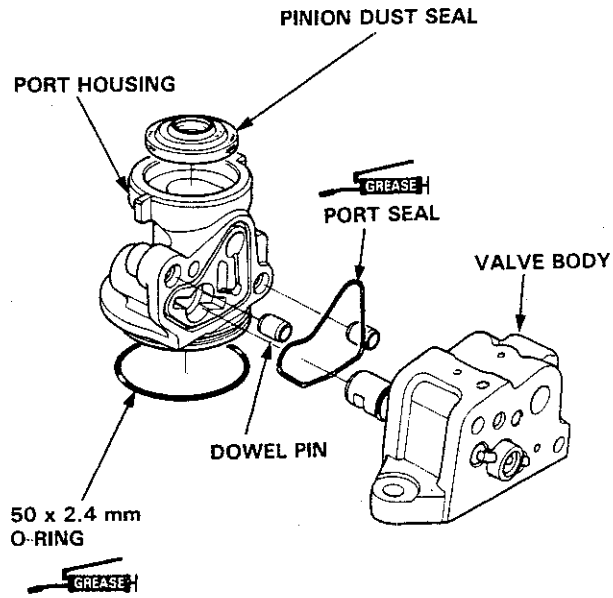
18 Install the 4-way valve, plungers, return springs and rollers into the valve body



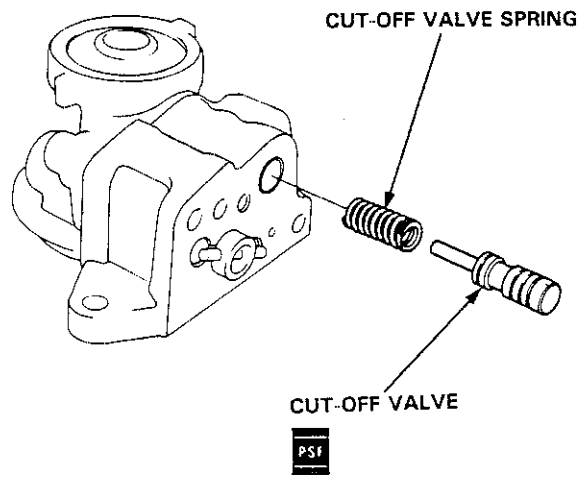
19 Install the new pinion dust seal in the port housing by hand.

20 Coat the O-ring and port seal with grease, and install them port housing.

21 Install the dowel pins and valve body on the port housing.



22 Install the cut-off valve spring and cut-off valve.

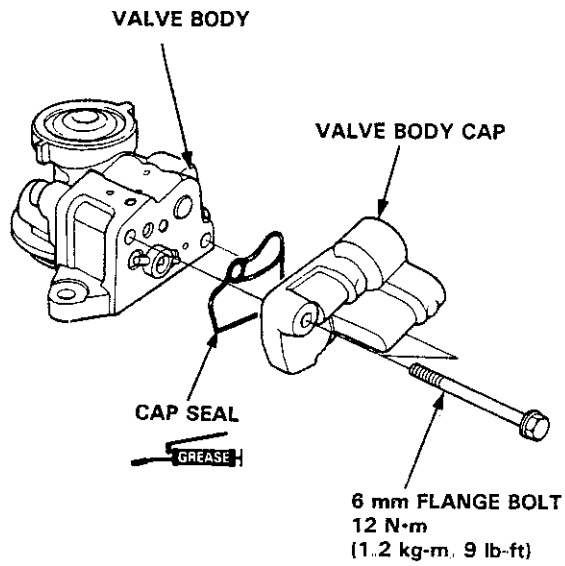


(cont'd)

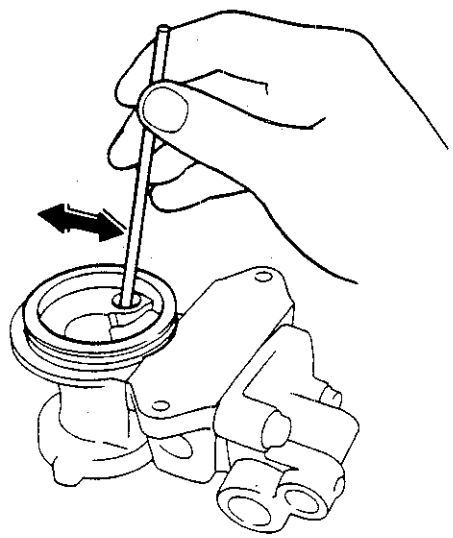
Valve Body Unit Overhaul (cont'd)

23 Coat the cap seal with grease and install the valve body cap.

24 Install and tighten the 6 mm flange bolts in the valve body unit.



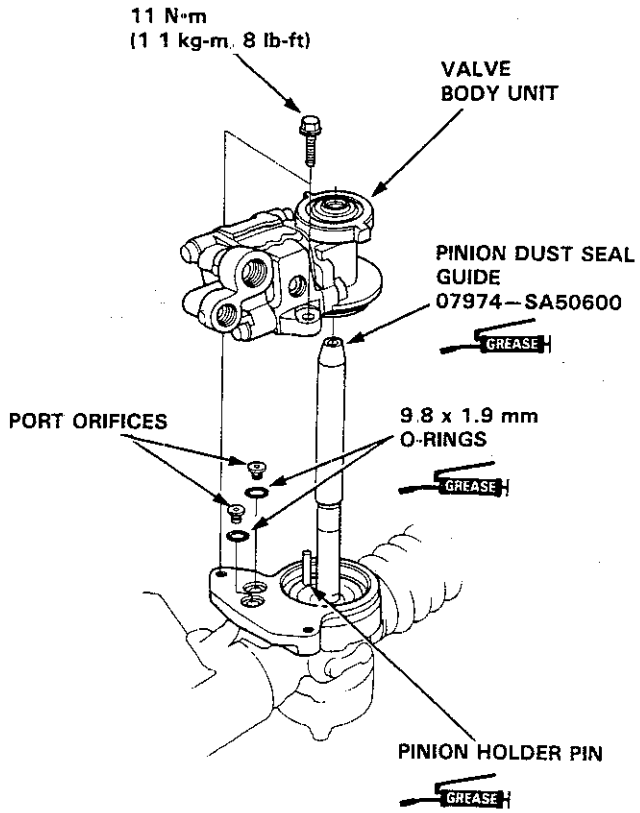
25 Make sure the 4-way valve moves smoothly, and returns to neutral position.



26 Coat the 9.8 x 1.9 mm O-rings and pinion holder pin with grease, and install them together with the orifices

27 Apply grease to the surface of the special tool and install it on the pinion shaft

28 Install the valve body unit on the gear housing with the two bolts



29 Remove the special tool.

CAUTION:

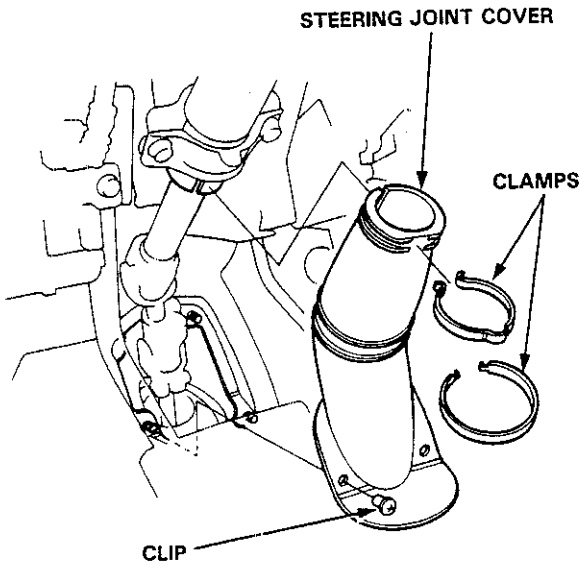
- **When installing, be careful not to hit the pinion holder pin.**
- **Make sure the O-rings are in place and not pinched.**

Gearbox Removal

NOTE: Before removing the steering gearbox, align the front wheels straight ahead

1 Drain the power steering fluid as described on page 17-34

2. Remove the steering joint cover.

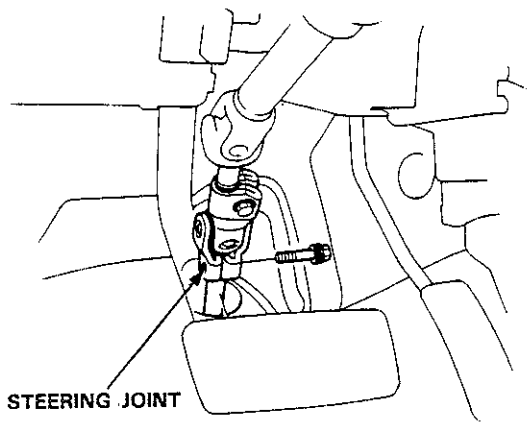


3. Remove the steering joint lower bolt, and move the joint toward the column.

4 Raise the front of car and support on safety stands in the proper locations.

NOTE: Do not open or close the power roof when the car is raised by using the safety stands.

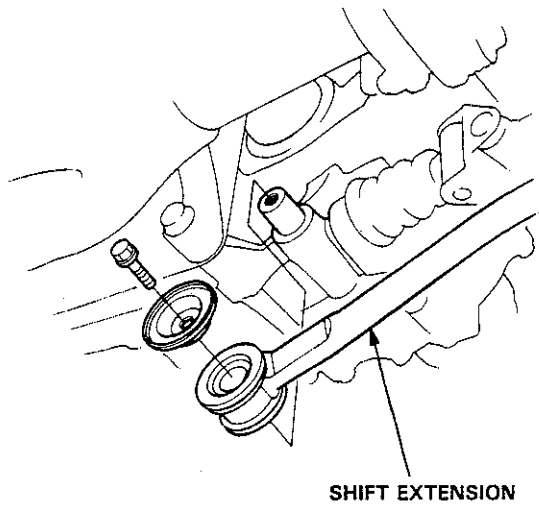
5 Remove the front wheels



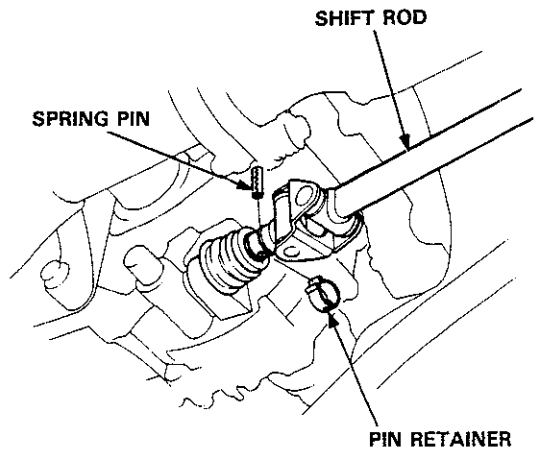
6. Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and the end of the gearbox. Blow dry with compressed air

(Manual transmission model only)

- Remove the shift extension from the transmission case.



- Slide the boot back at the connecting position of the gear shift rod.
- Drive out the spring pin with a punch, then disconnect the shift rod

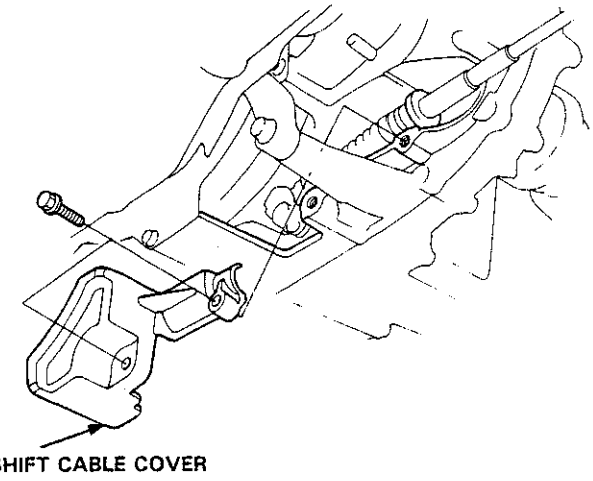


(cont'd)

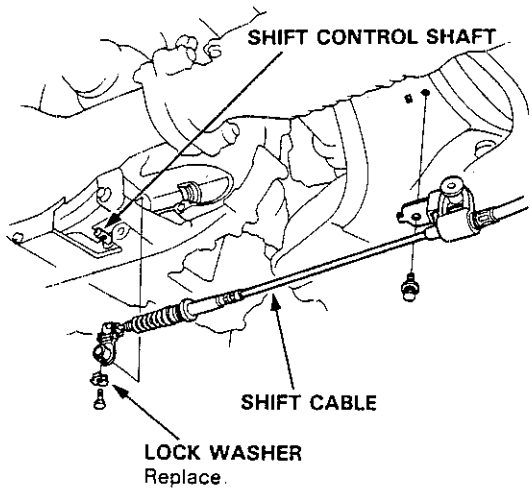
Gearbox Removal (cont'd)

(Automatic transmission only)

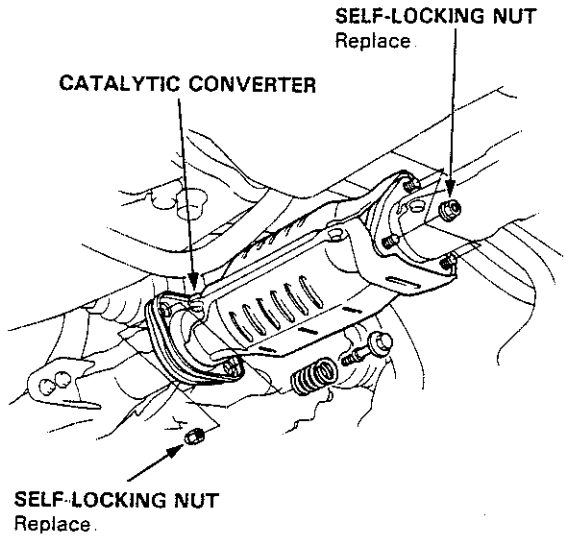
- Remove the shift cable cover



- Disconnect the shift cable from the shift control shaft.



7 Separate the catalytic converter by removing the self-locking nuts



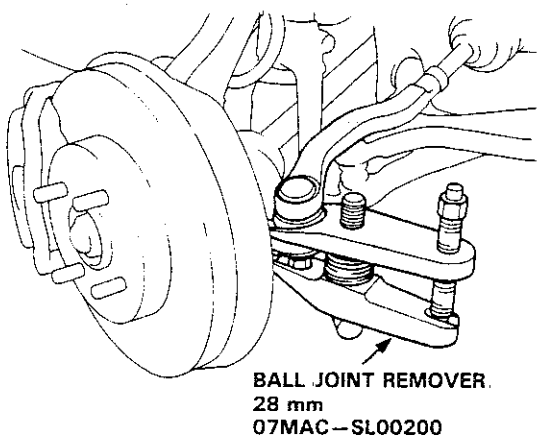
8. Remove the cotter pin from the tie-rod ball joint nut and remove the nut

9. Install the 10 mm hex nut on the ball joint. Be sure that the 10 mm hex nut is flush with the ball joint pin end, or the threaded section of the ball joint pin might be damaged by the ball joint remover.

NOTE: Remove the ball joint using the Ball Joint Remover, 28 mm (07MAC—SL00200). Refer to page 18-12 for how to use the ball joint remover.

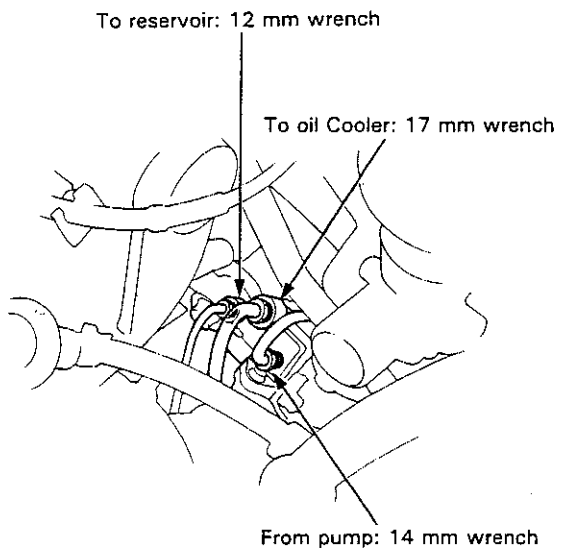
10 Separate the tie-rod ball joint and knuckle using the special tool.

CAUTION: Avoid damaging the ball joint boot.



11. Disconnect the three lines from the valve body unit

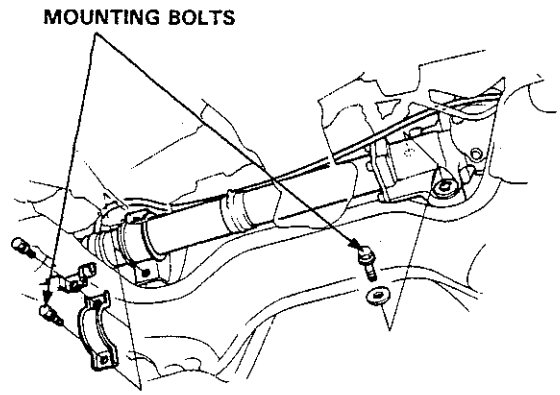
CAUTION: After disconnecting the hoses and pipes, plug or seal the hoses and pipes with the piece of tape or equivalent to prevent foreign materials from entering the valve body unit.



12. Remove the left tie-rod end, then slide the rack all the way to the right

NOTE: Remove the performance rod, if it is equipped

13. Remove the steering gearbox assembly mounting bolts and pinion shaft gromet.

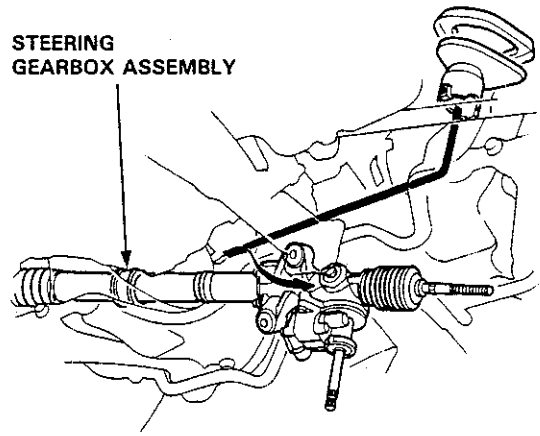


14. Pull the steering gearbox assembly all the way down to clear the pinion shaft from the blukhead.

15. Move the steering gearbox assembly to the right so the left rack end clears the rear beam

16. Hold the steering gearbox assembly and slide the rack all the way to the left, place the left rack end below the rear beam.

17 Move the steering gearbox assembly to the left and tilt the left side down to remove it from the car



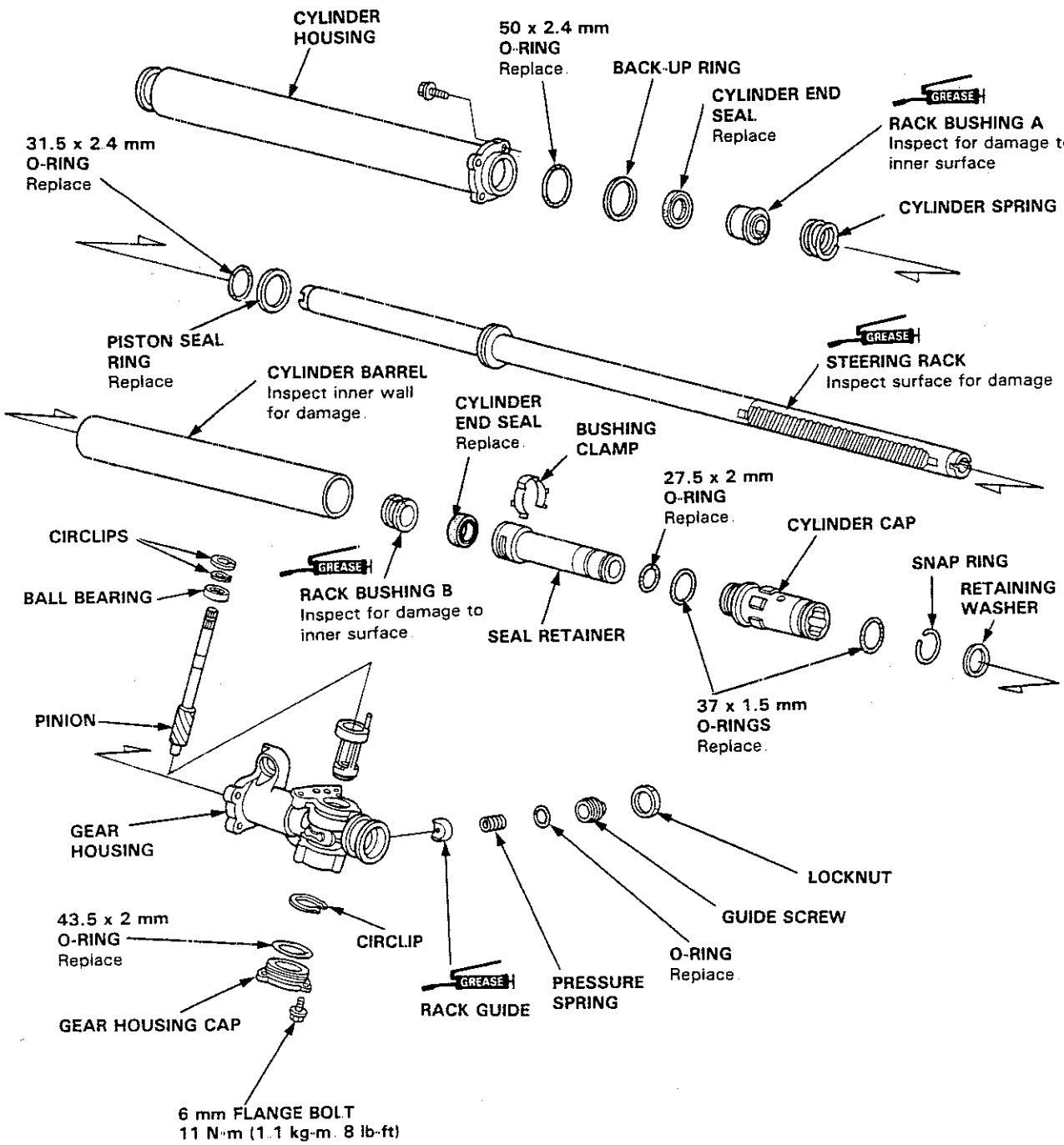
Steering Gearbox (LHD)

Illustrated Index

CAUTION:

- Before disassembling the gearbox, wash it off with solvent and a brush.
- Thoroughly clean all disassembled parts.
- Always replace O-rings and seals.
- Replace parts with damaged sliding surfaces.
- Do not dip seals and O-rings in solvent; coat O-rings with grease, make sure they stay in position during reassembly and use appropriate special tools to install them where necessary.

- GREASE STEERING GREASE ..... Part Number 08733–B070E
- Use only Honda Power Steering Fluid-V. The use of other fluid such as A.T.F., or other manufacturer's power steering fluid will cause damage to the system



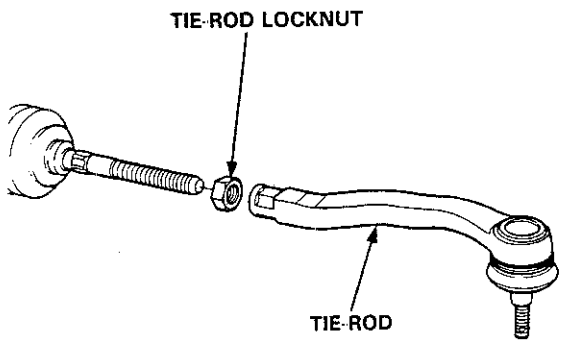
Overhaul

Disassembly

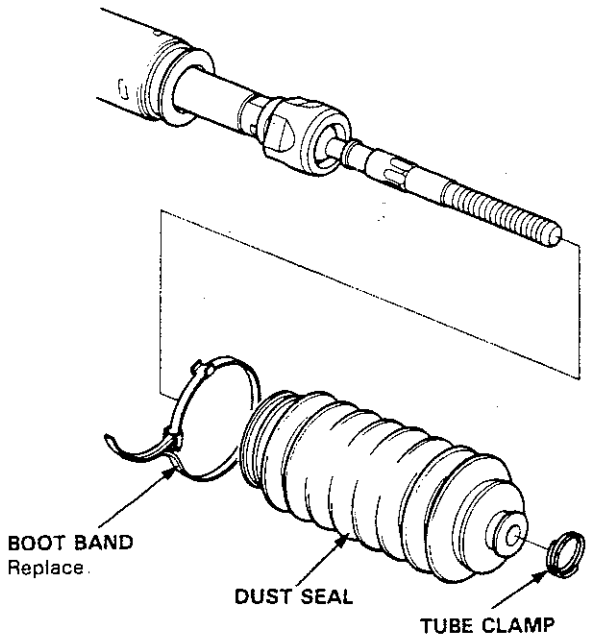
1 Remove the valve body unit as described on page 17-52.

2 Carefully clamp the gearbox in a vise with soft jaws

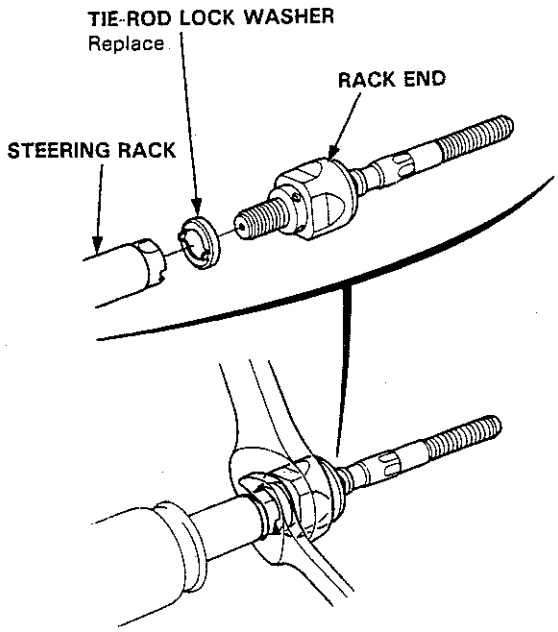
3 Remove the tie-rod assembly.



4 Remove the boot bands and tube clamps Pull the dust seals away from the ends of the gearbox



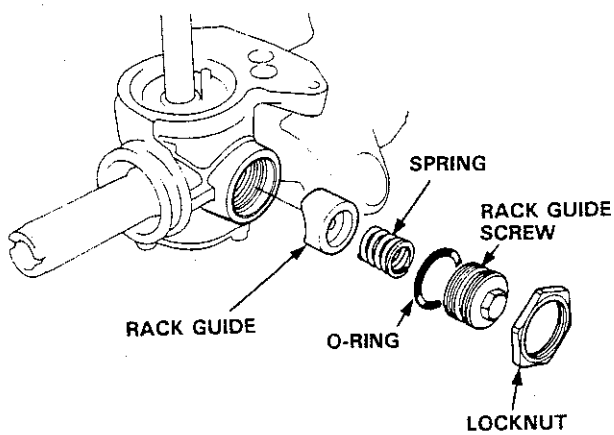
5. Hold the steering rack with a 19 mm wrench and unscrew the rack end with a wrench.



6. Push the right end of the rack back into the cylinder housing so the smooth surface that rides against the seal won't be damaged.

7 Loosen the rack screw locknut and remove the rack guide screw.

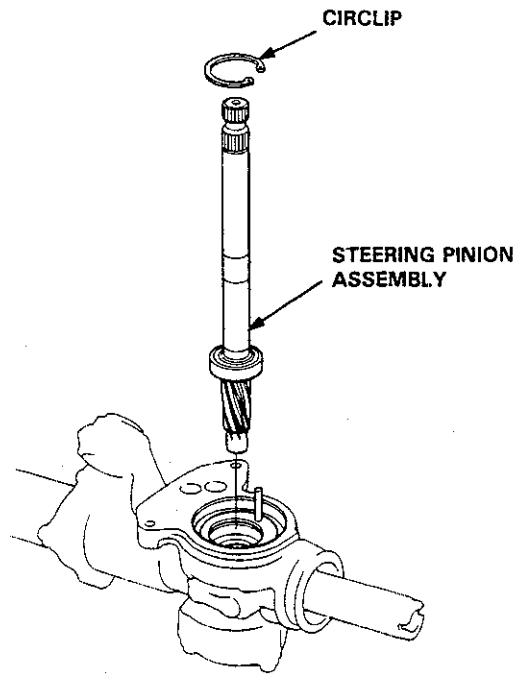
8. Remove the spring and rack guide from the gear housing



(cont'd)

Overhaul (cont'd)

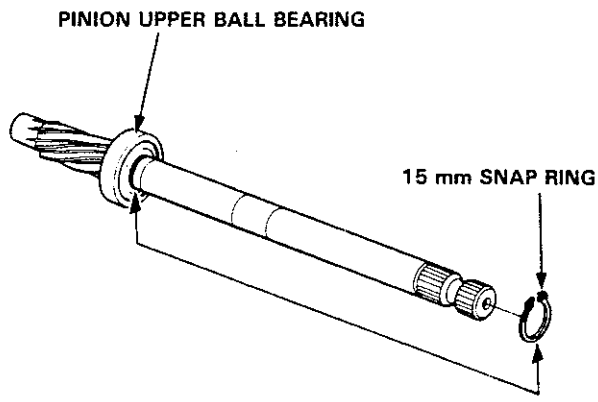
9. Remove the steering pinion assembly by removing the circlip.



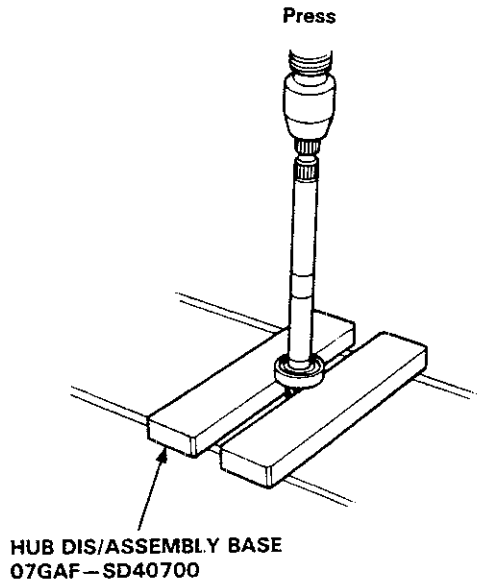
– Check the pinion upper ball bearing for play; if it is good and the grease in it is clean, go on step 10.

If the bearing is noisy or has excessive play, replace the bearing

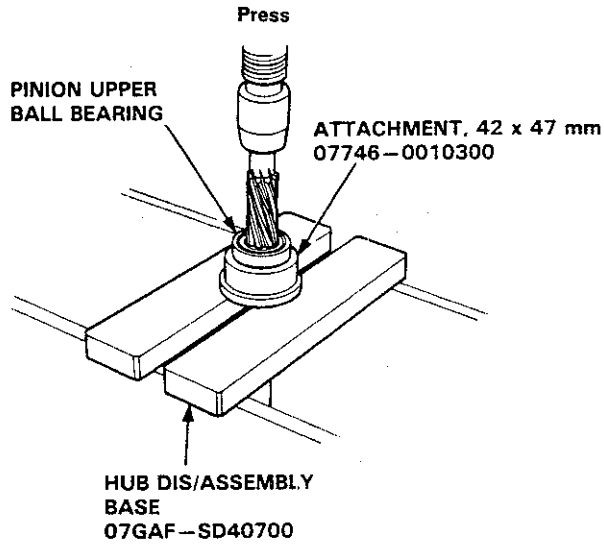
- Remove the 15 mm snap ring.



- Remove the ball bearing using the special tool.

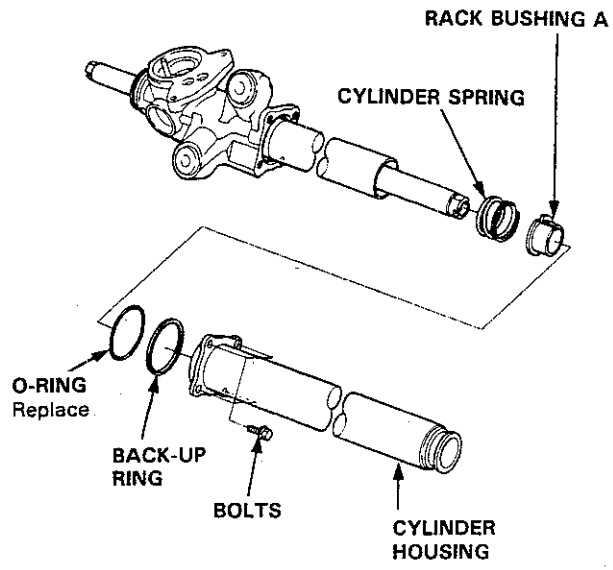


- Using a press, install the upper ball bearing on the pinion



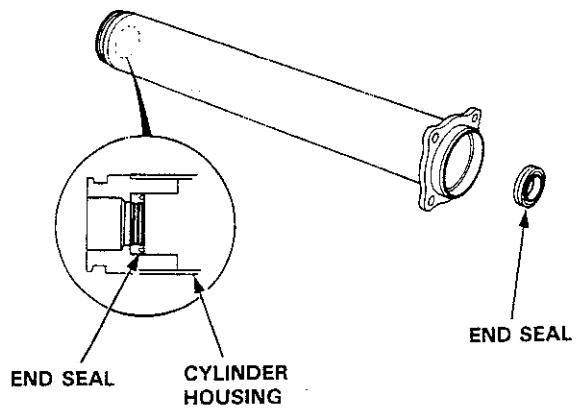
10. Remove the four bolts from the end of the cylinder housing, then slide the housing off the rack.

11. Remove the O-ring, back-up ring, steering rack bushing A and cylinder spring.

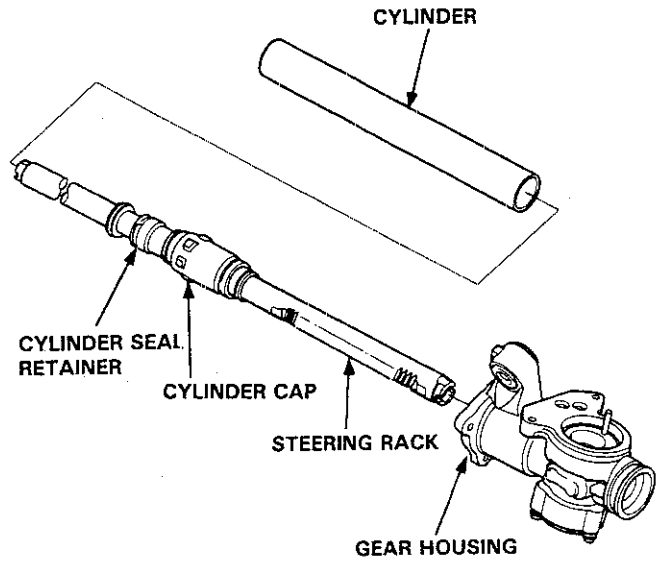


12. Remove the cylinder end seal from the cylinder housing

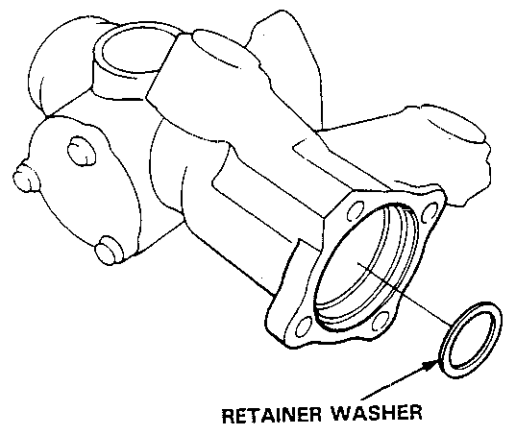
NOTE: Use you fingers or a wooden stick to avoid damaging the housing.



13. Remove the cylinder, cylinder seal retainer, cylinder cap and steering rack from the gear housing.



14. Remove the retainer washer from the gear housing.



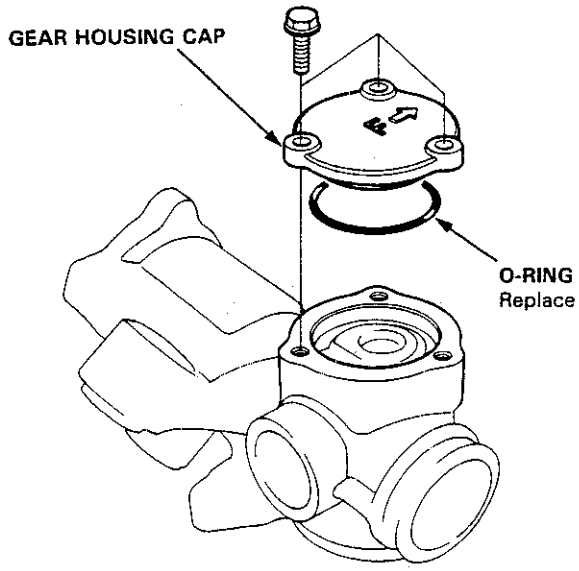
(cont'd)

Overhaul (cont'd)

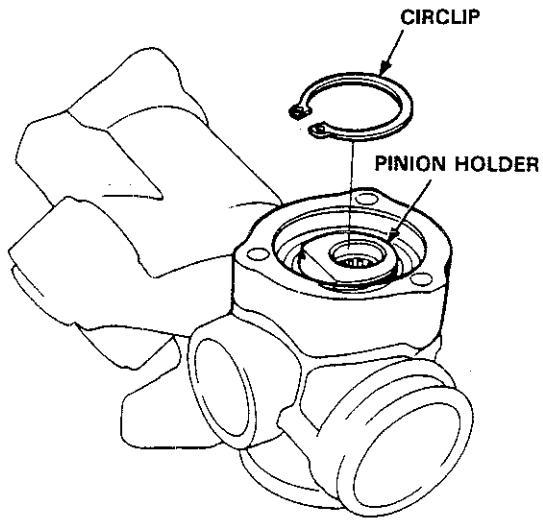
– Check the pinion holder for free movement, excessive play and rough movement; if it is good go on step 15.

If it is damaged, or if dirt has gone past the seal into the grease, replace the bearing.

- Remove the gear housing cap from the gear housing.

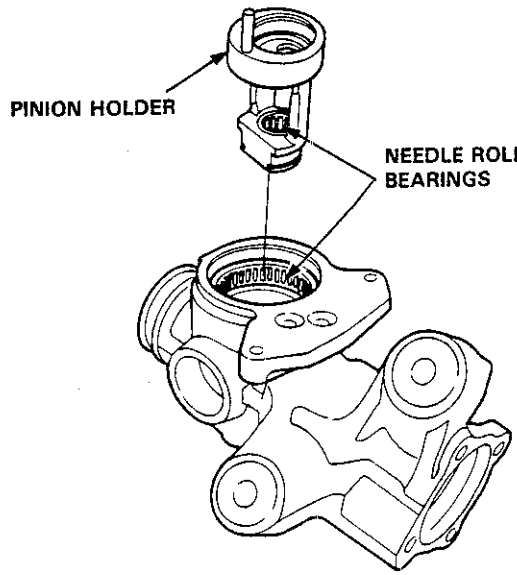


- Remove the circlip from the pinion holder



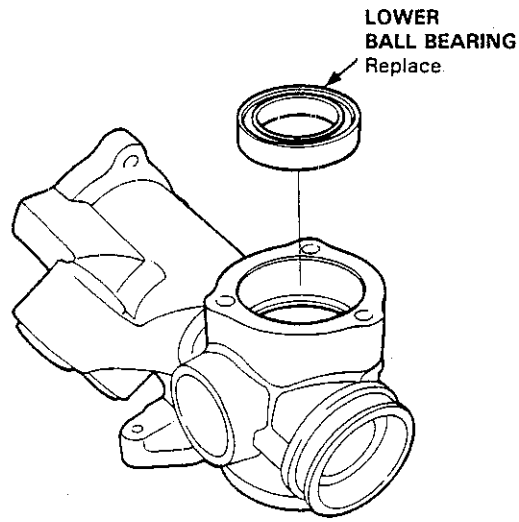
- Remove the pinion holder from the gear housing.

- Check the needle roller bearings in the pinion holder and gear housing for damage; if OK, pack the needle roller bearing with grease. If the bearings are damaged, replace them as a set.

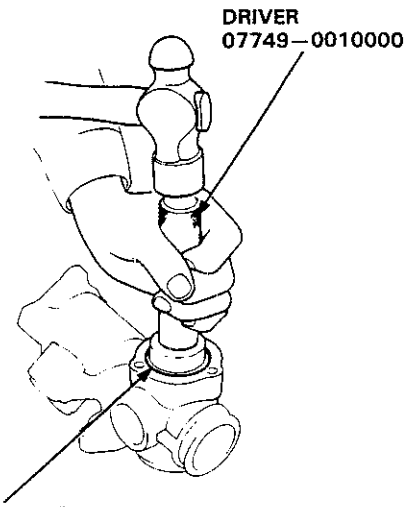


- Check the lower ball bearing for damage;
If it is damage, replace the lower ball bearing.

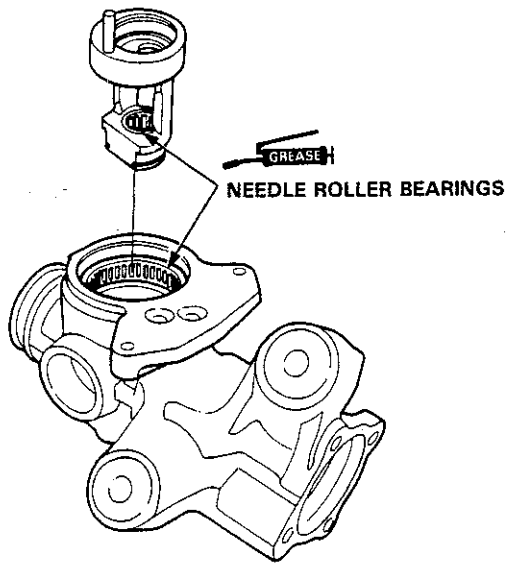
- Remove the pinion lower ball bearing from the gear housing.



- Drive the new lower ball bearing into the gear housing using the special tools



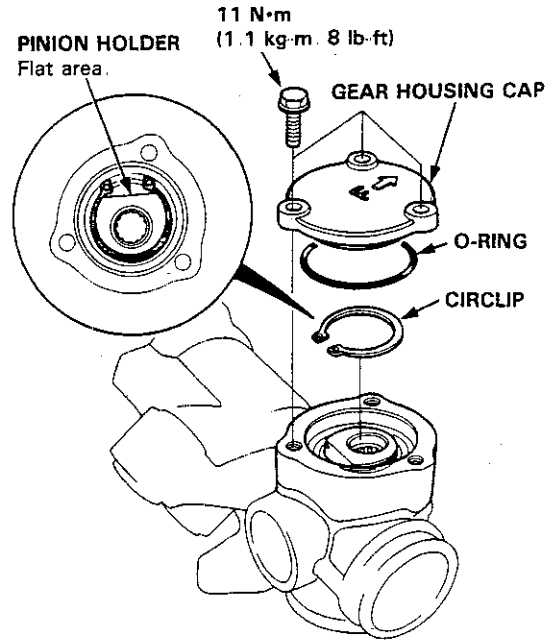
- Install the pinion holder in the gear housing.



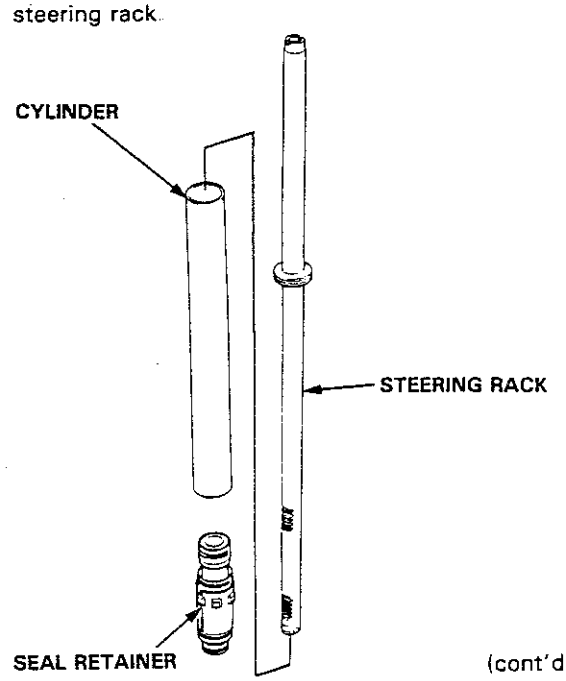
- Reinstall the circlip with its tapered side facing out.

NOTE: Circlip ends must be aligned with the flat area

- Grease the new O-ring and install it in the groove in the gear housing cap. Install the gear housing cap and tighten the bolts securely



15 Remove the cylinder and seal retainer from the steering rack.

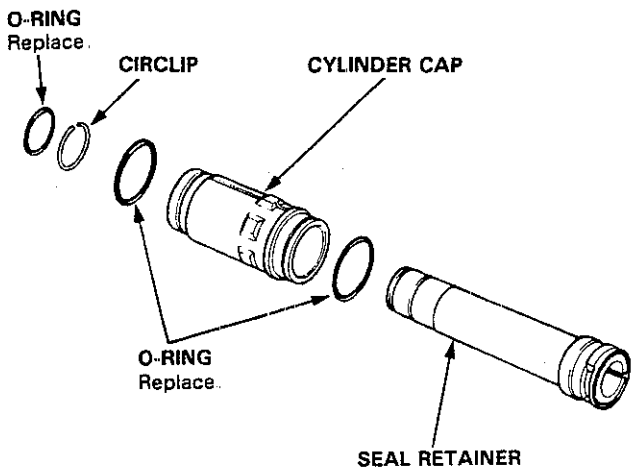


(cont'd)

Overhaul (cont'd)

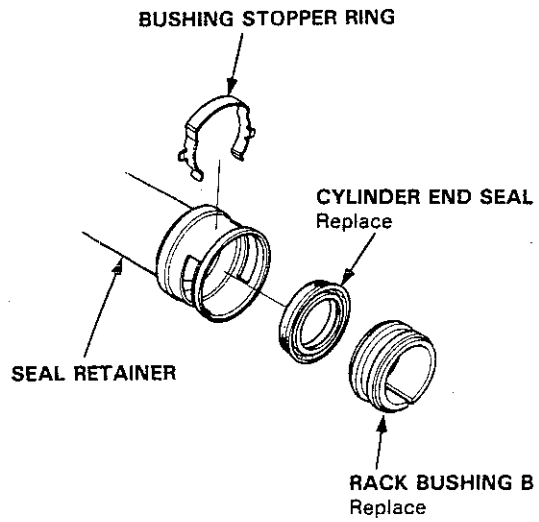
16. Remove the O-ring and circlip from the seal retainer, then remove the cylinder cap from the seal retainer.

17. Remove the O-rings from the cylinder cap.

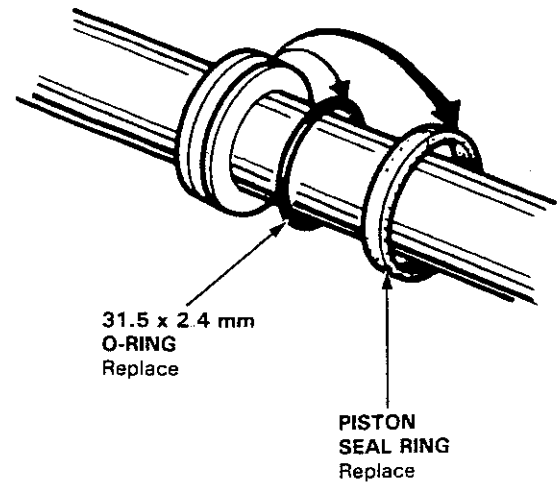


18. Remove the bushing stopper ring from the seal retainer.

19. Remove the cylinder end seal.



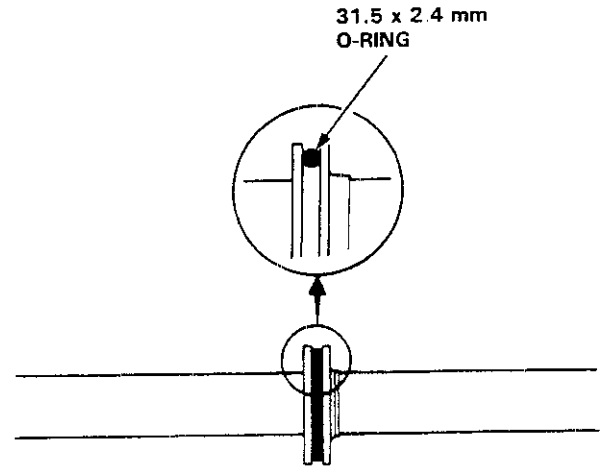
20. Carefully pry the piston seal ring and O-ring off the rack.



Assembly

NOTE: Before reassembling any parts inspect them as discribed on page 17-60 and make sure they are clean. Replace worn or damaged parts.

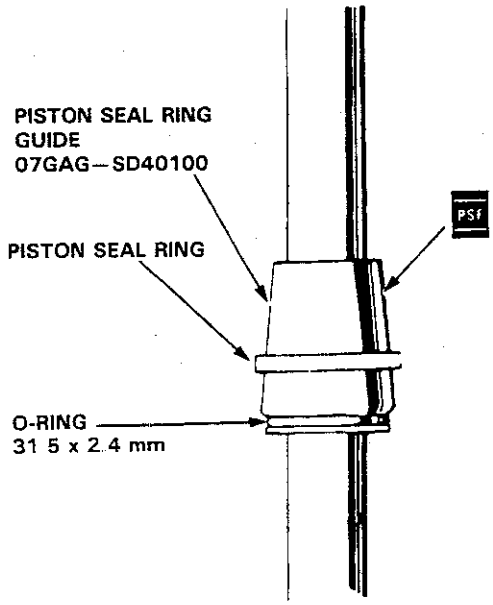
21. Install a new O-ring on the rack.



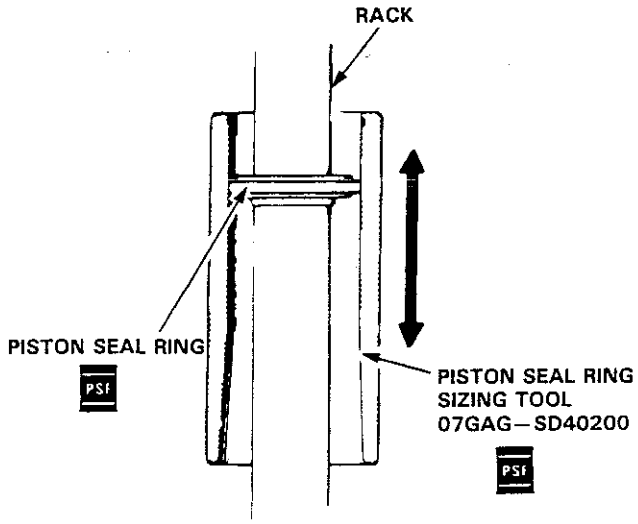
22. Coat the piston seal ring guide with power steering fluid, and slide it onto the rack, big end first.

23. Position the new piston seal ring on the special tool, slide it down to big end of the tool, and then pull it off into the piston groove on top of the O-ring.

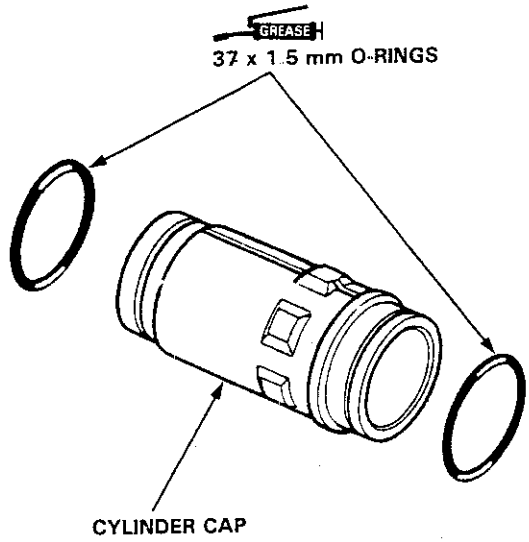
CAUTION: Do not expand the piston seal ring excessively.



24. Coat the piston seal ring and inside of the special tool with the recommended power steering fluid. Carefully slide the tool onto the rack and over the piston ring, then rotate the tool as you move it up and down to seat the piston seal ring.

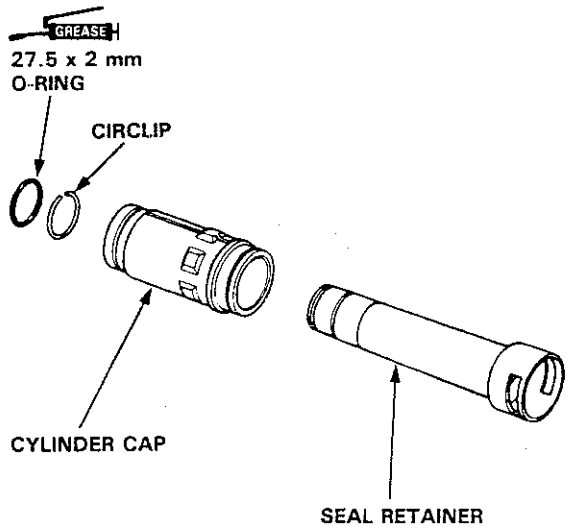


25. Coat new O-rings with grease and install them on the cylinder cap.



26. Slide the cylinder cap onto the seal retainer.

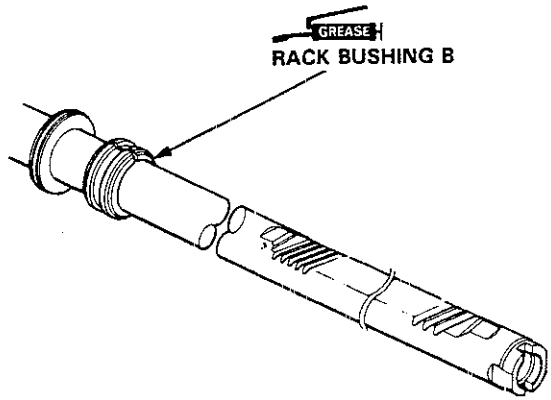
27. Install the circlip and O-ring on the seal retainer.



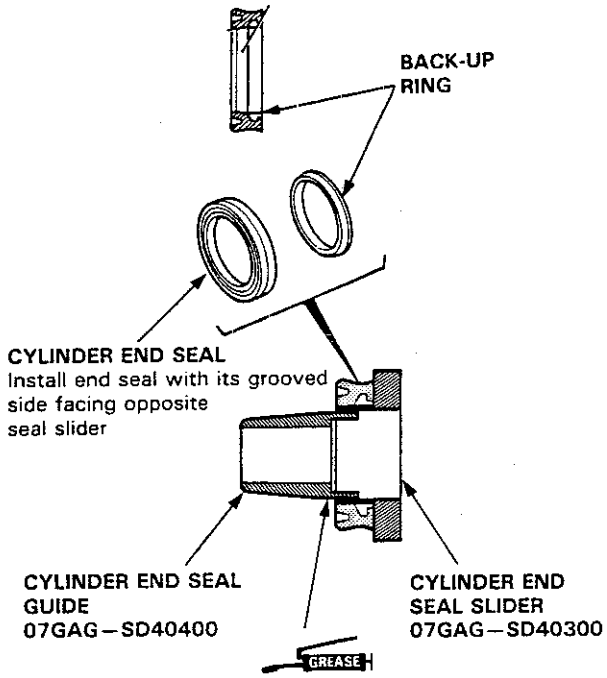
(cont'd)

Overhaul (cont'd)

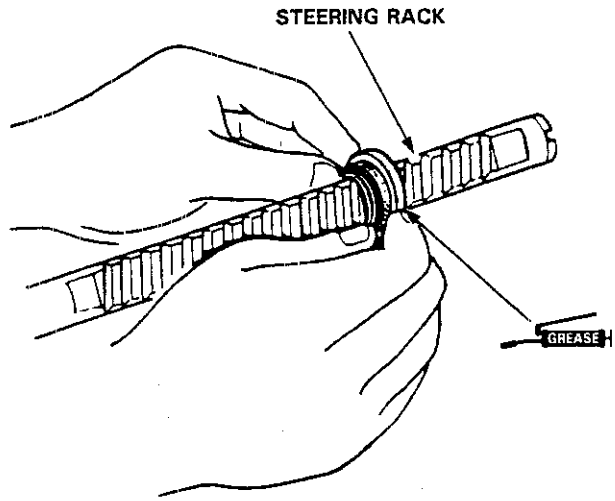
28 Grease the sliding surface of the steering rack bushing B, and install the bushing on the steering rack with the groove of the bushing facing the steering rack piston.



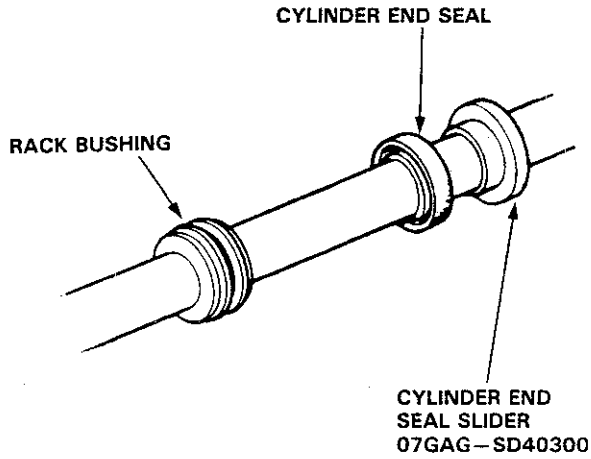
29. Assembly the special tools (Cylinder End Seal Slider and Cylinder End Seal Guide) and apply a thin coat of grease to the tool surface. Then install a new cylinder end seal over the special tool (Cylinder End Seal Guide)



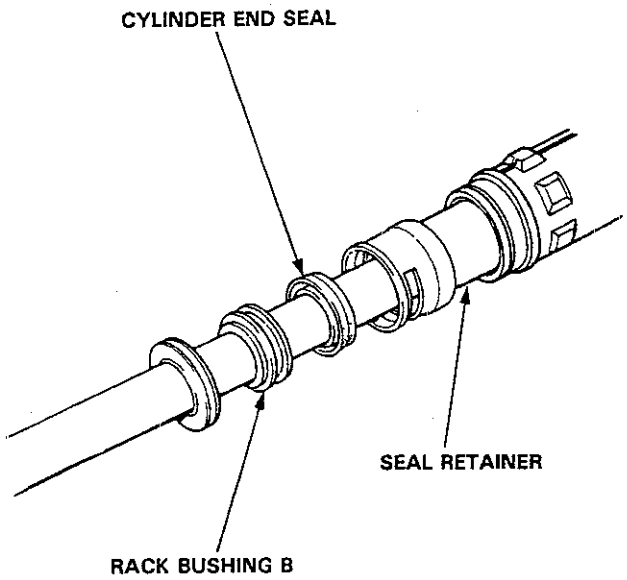
30. Separate the special tools, and apply a thin coat of grease to the inside of the special tool (Cylinder End Seal Slider) Then install the special tool on to the steering rack as shown.



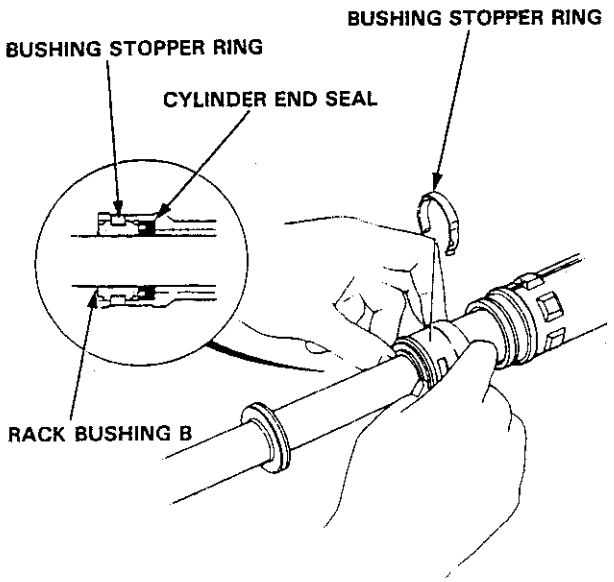
31. Separate the cylinder end seal from the special tool, then remove the tool from the rack



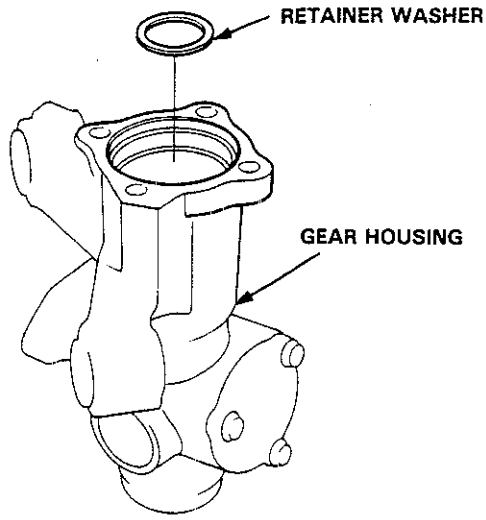
32. Fit the seal retainer on the steering rack



33. Push the rack bushing B toward the seal retainer by hand until the cylinder end seal is seated in the retainer. Fit the seal stopper ring in the groove of the seal retainer securely. Then grease the steering rack.

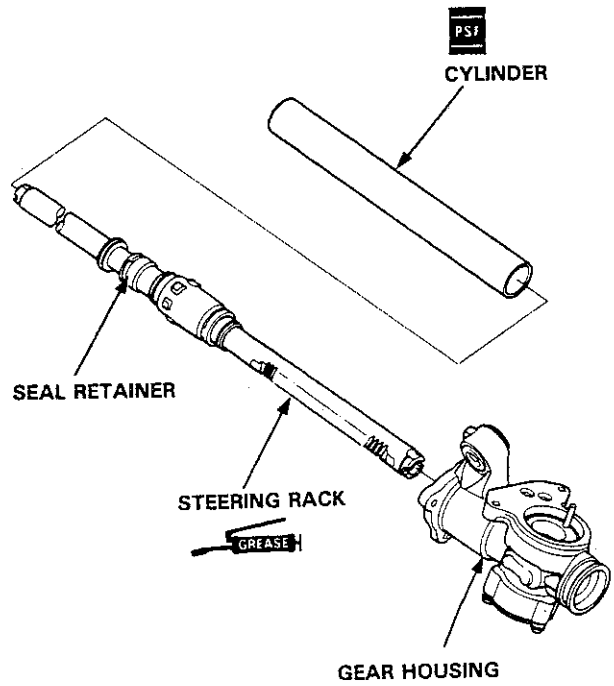


34. Install the retainer washer on the gear housing



35. Place the gear housing on the work bench and insert the seal retainer and steering rack into the gear housing.

36. Coat the inside surface of the cylinder with the recommended power steering fluid, slide it over the rack and into the gear housing; press it into the housing untill it seats

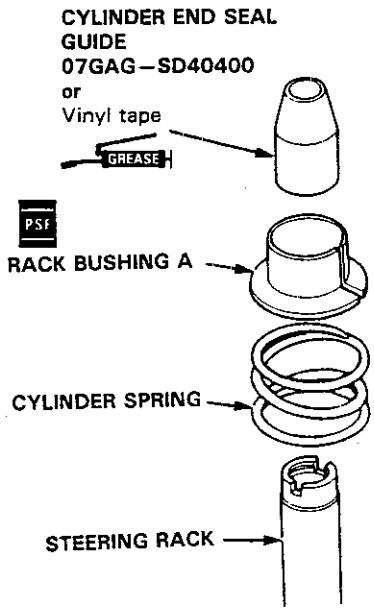


(cont'd)

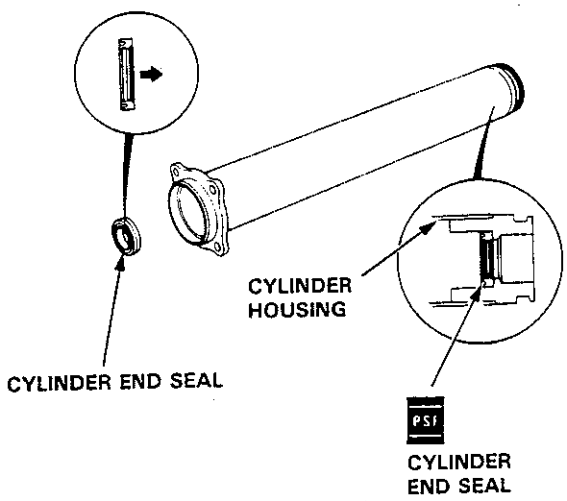
Overhaul (cont'd)

37 Install the cylinder spring over the rack, then coat the rack bushing A with the recommended power steering fluid and install it on the spring

38. Install the special tool, or apply vinyl tape onto the steering rack and coat the special tool or vinyl tape with grease



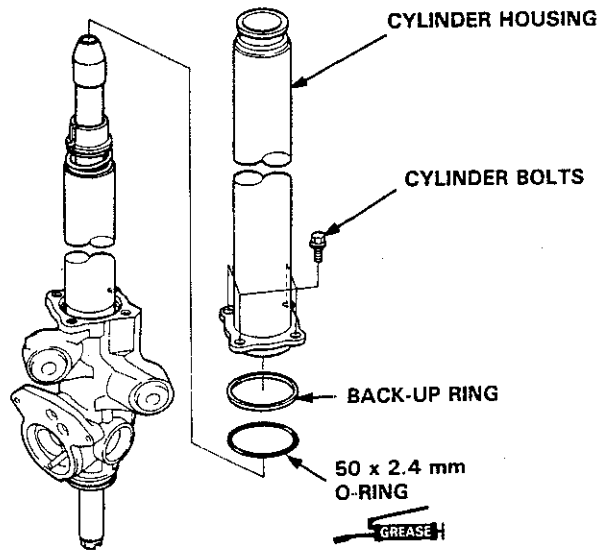
39. Coat the inside surface of the cylinder with the recommended power steering fluid and install the cylinder end seal with its grooved side facing out.



40. Install the O-ring and back-up ring on the gear housing.

41 Carefully position the cylinder housing on the gear housing and loosely install with four bolts

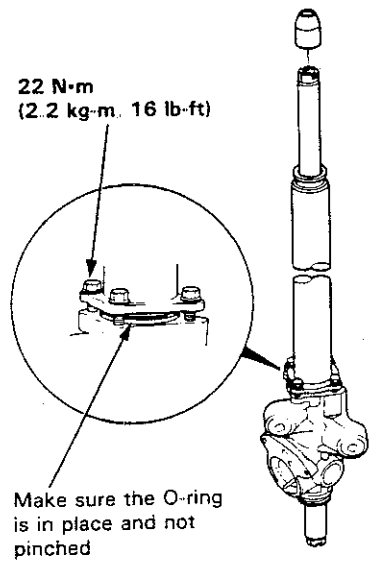
CAUTION: Be careful not to damage the end seal in the cylinder housing.



42. Remove the vinyl tape or special tool from the steering rack.

43. Tighten the cylinder housing to the gear housing.

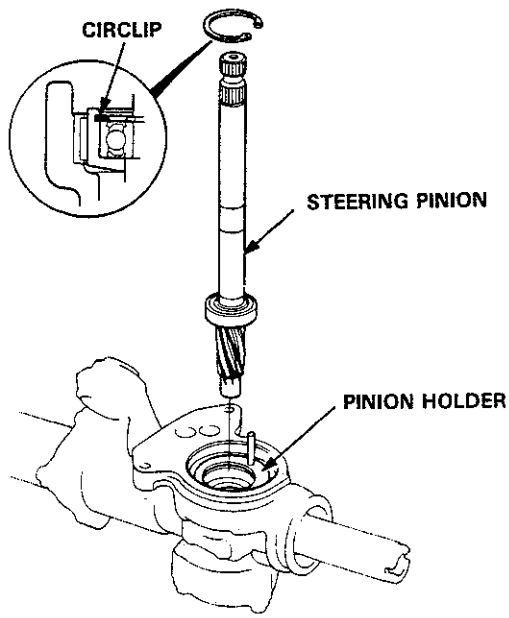
NOTE: Before tightening the bolts, make sure the mating surfaces of the cylinder and gear housing fit properly by pushing them together; hold them together while tightening the bolts.



44. Install the steering pinion in the pinion holder.

45 Install the circlip securely in the pinion holder groove.

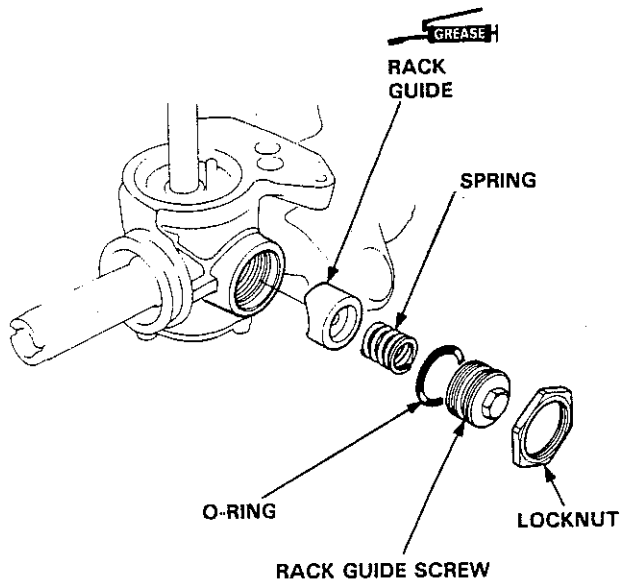
NOTE: Install the circlip with its tapered side facing out



46. Install the O-ring on the rack guide screw.

47. Coat the rack guide with grease

48. Install the rack guide, spring and rack guide screw on the gear housing.

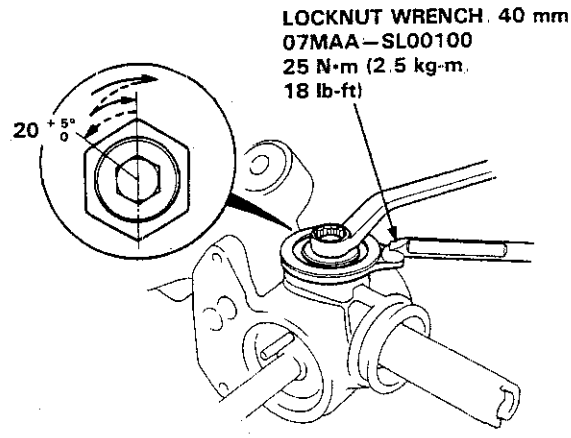


49. Tighten the rack guide screw until it compresses the spring and seats against the rack guide, then loosen it.

50. Retighten it to 4 N·m (0.4 kg-m, 2.9 lb-ft), back it off about 20 $^{+5^\circ}_{0}$.

51. Install the locknut on the rack guide screw and tighten the locknut to a torque wrench reading (indicated) of Reading Torque below while holding the rack guide screw with a wrench

Reading Torque: 17 N·m (1.7 kg-m, 12 lb-ft)



NOTE: The above Reading Torque specification is the torque wrench reading (indicated) when the locknut is tightened using a torque wrench 345 mm (13.6 in) long. If you tighten the locknut using a torque wrench of the different length, obtain the indicated torque value (torque wrench reading) using the formulas (see page 17-33).

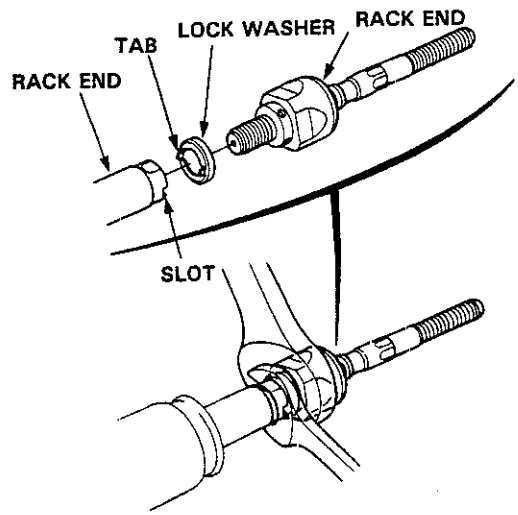
52. Install the valve body unit (page 17-56).

(cont'd)

Overhaul (cont'd)

53. Install the new lock washer in the groove in the steering rack.

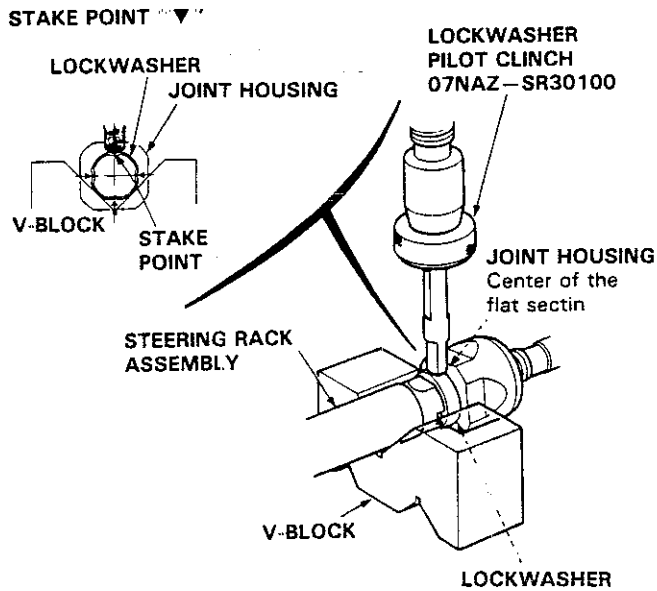
54 Hold the steering rack with a wrench and tighten the rack end to 55 N·m (5.5 kg-m, 40 lb-ft)



55 After tightening the rack end stake the four section of lockwasher with the special tool and hydraulic press.

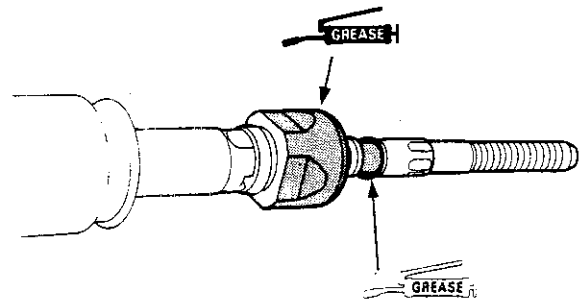
NOTE: Set the V-block on the press table Set the lockwasher section of the rack end on the V-block securely.

- Be sure that the pressing direction. special tool, and each lockwasher stake position are in line.
- Stake the lockwasher in the center of the flat section of the joint housing. (The bottom end of the stake must be in that position) See below



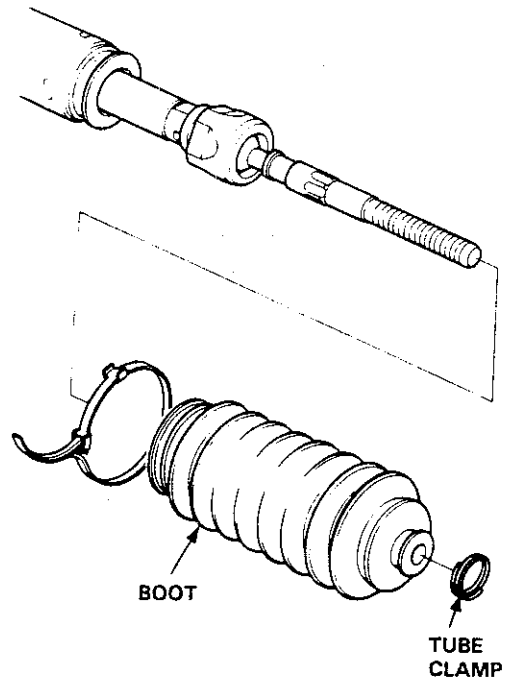
56. Apply grease to the circumference of the rack end housing

NOTE: Coat the rack end groove and inside of the boot with silicone grease.



SILICONE GREASE
Coat the sliding surface of the rack end

57 Install the boots on the rack end with the tube clamps.



NOTE: Install the boot band with the rack in the straight ahead position (i.e. right and left tie-rods are equal in length).

58. Install the boot band so that the locking tabs of the band (stake points) are in the range shown below. (Tabs should face up and slightly forward.)

59. Install new boot bands on the boot and bend both sets of locking tabs.

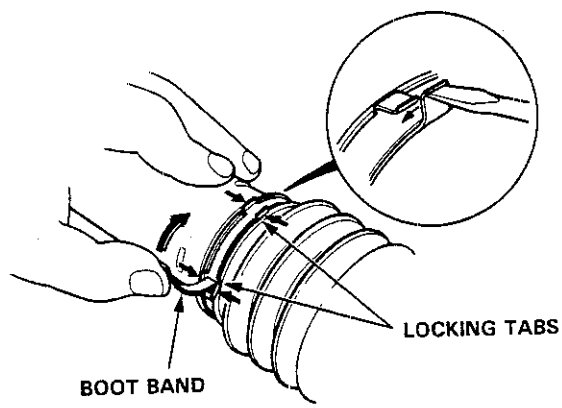
60. Lightly tap on the doubled-over portions to reduce their height

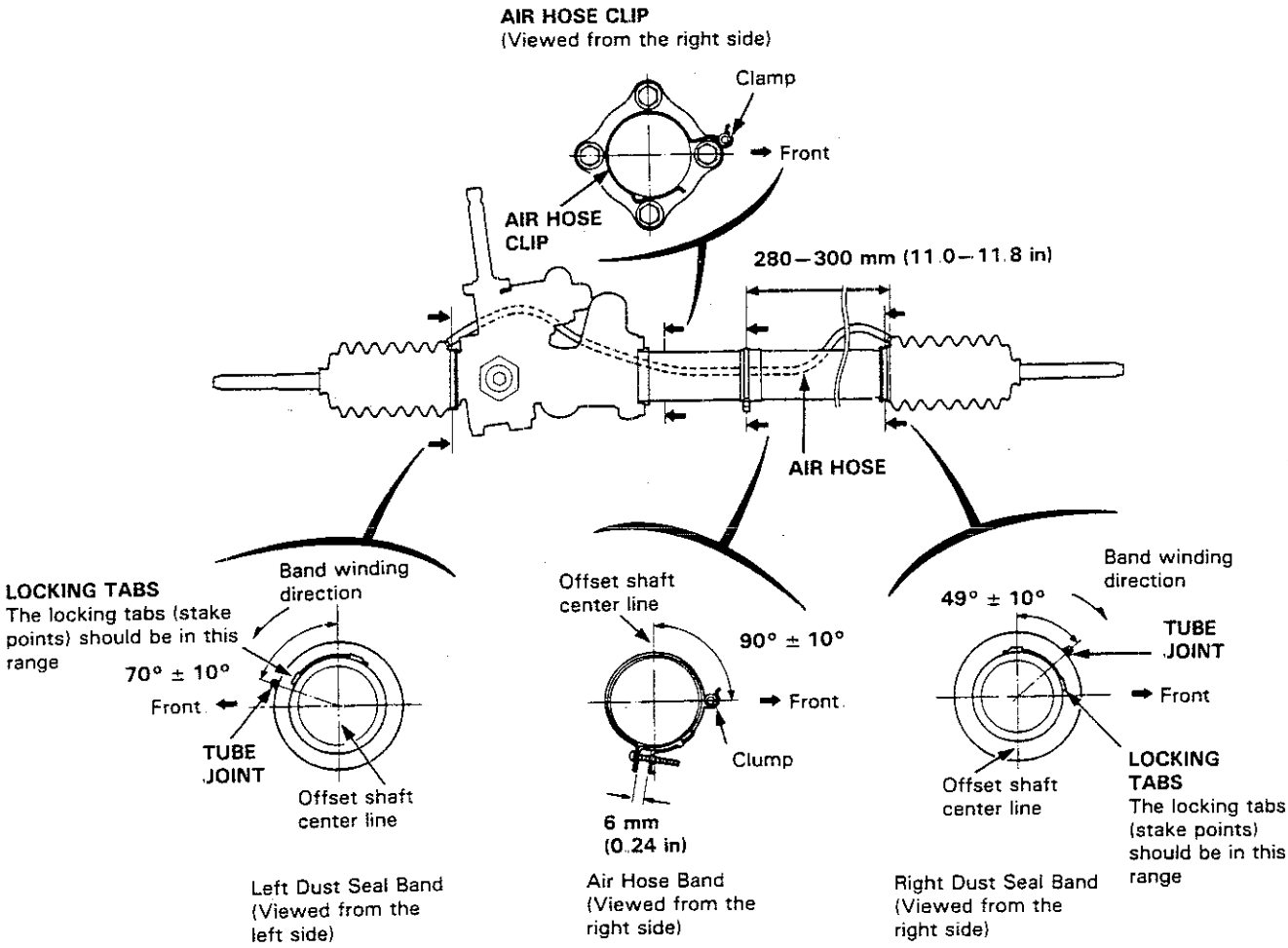
CAUTION: Stake the band locking tabs firmly.

61. Install the band cushion and air hose band; position the band as shown and tighten it. Then install the air hose.

62. After assembling, slide the rack right and left to be certain that the boots are not deformed or twisted.

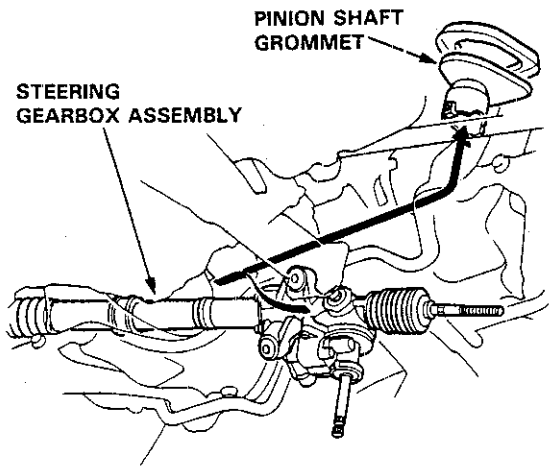
63. Install the right and left tie-rods on the right and left rack ends.





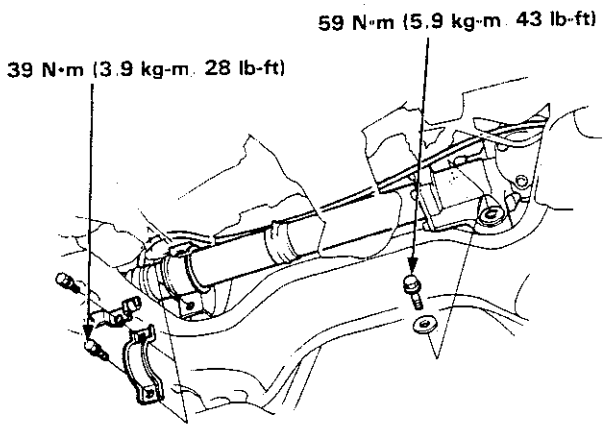
Gearbox Installation

1. Slide the rack all the way to the right
2. Pass the right side of the steering gearbox assembly above and through the right side of the rear beam.
3. Hold the steering gearbox assembly and slide the rack all the way to the right
4. Raise the left side of the steering gearbox assembly above and through the left side of the rear beam.
5. Install the pinion shaft grommet and insert the pinion shaft up through the bulkhead.

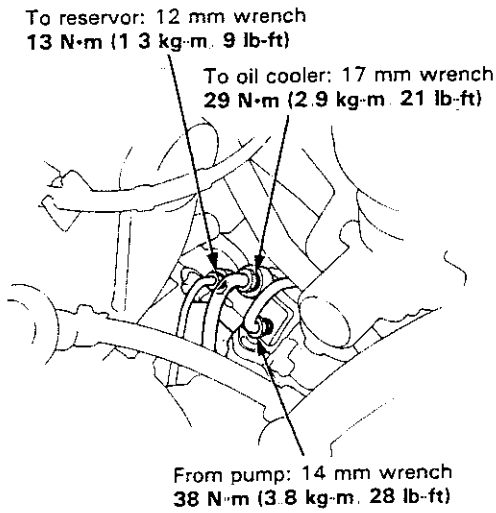


NOTE: Install the performance rod, if it is equipped.

6. Install and tighten the gearbox mounting bolts.

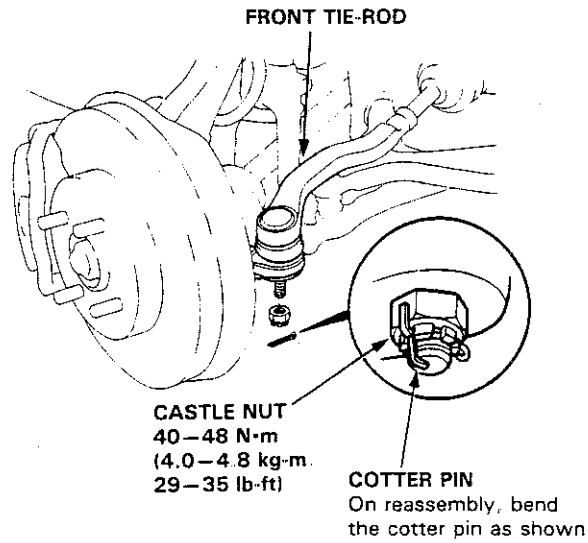


7. Connect the fluid lines to the control unit

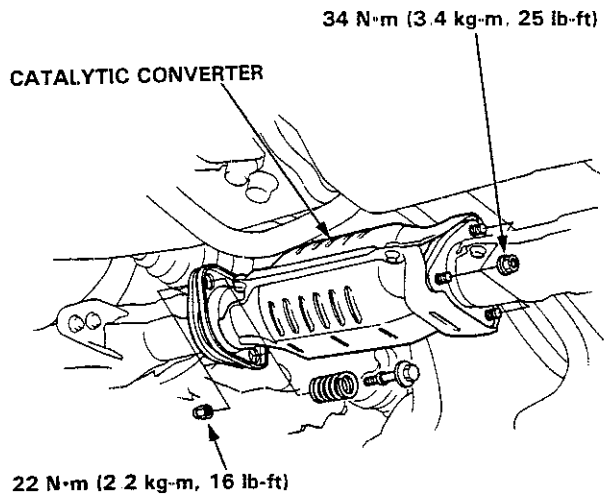


8. Reconnect the tie-rods to the steering knuckles, tighten the ball joint nut to the specified torque and install new cotter pins.

CAUTION: Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the pin hole. Do not align the nut by loosening.

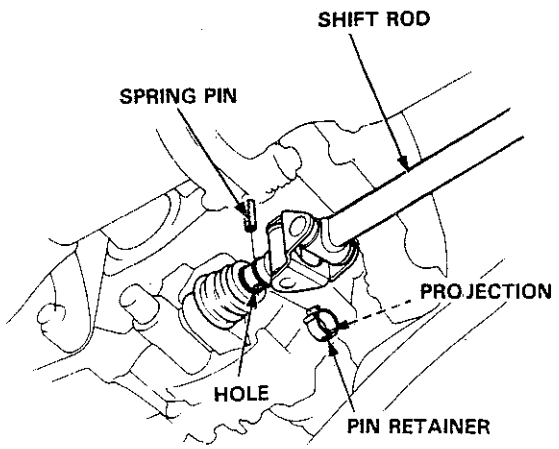


9. Install the catalytic converter with the new gaskets and self-locking nuts

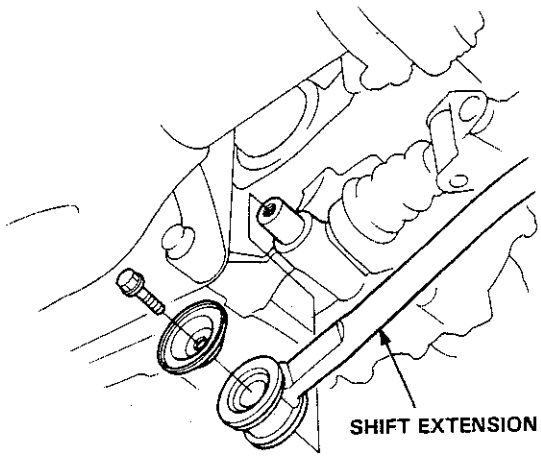


(Manual transmission model only)

- Connect the shift rod to the transmission and drive the spring pin with a punch, then install the pin retainer. Be sure that the projection on the pin retainer is in the hole.

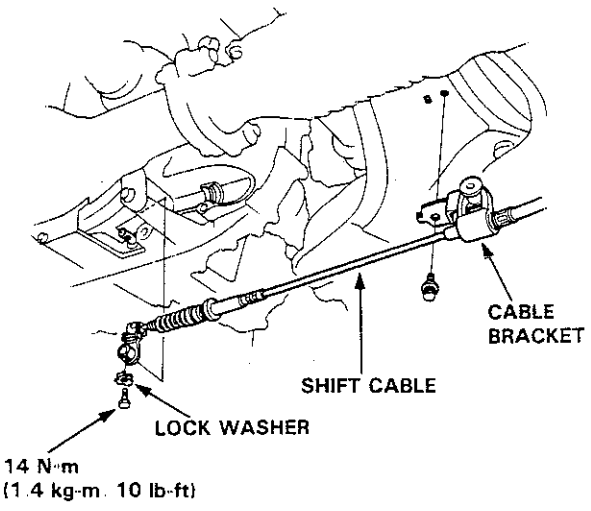


- Install the shift extension on the transmission case



(Automatic transmission model only)

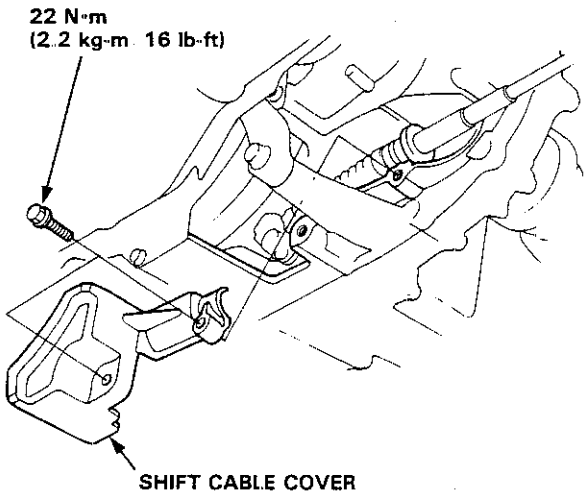
- Connect the shift cable end to the control shaft, and install the cable bracket.



(cont'd)

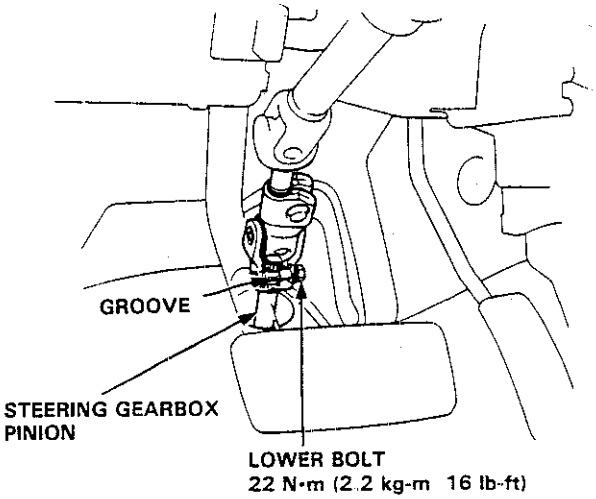
Gearbox Installation (cont'd)

- Install the shift cable cover.

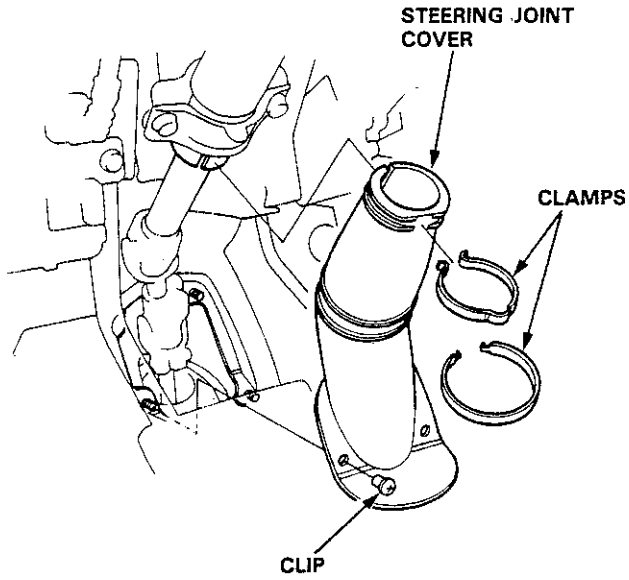


10. Reconnect the steering shaft to the gearbox.

CAUTION: Before tightening the steering joint bolts pull the steering joint to make sure that the steering joint is fully seated.



11. Install the steering joint cover with the clamps and clip.



12. Fill the system:
    - Fill the reservoir with new Honda Power Steering Fluid-V.

13. After installation, perform the following checks
    - Start the engine and let it run at fast idle, then turn the steering wheel from lock-to-lock several times to bleed air from the system.
    - Check the fluid again, and add more if nesessary
    - Check the gearbox for leaks.
    - Check the front toe.
    - Check the steering wheel spoke angle. Adjust by turning the right and left tie-rods, if necessary.

    NOTE: Turn the right and left tie-rods equally

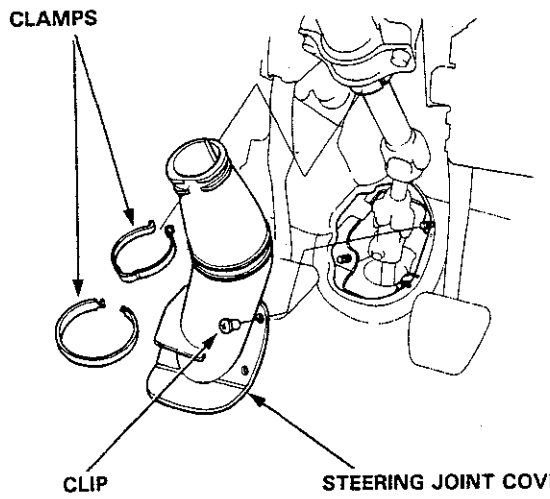
Steering Gearbox (RHD)

Gearbox Removal

NOTE: Before removing the steering gearbox, align the front wheels straight ahead

1 Drain the power steering fluid as described on page 17-34

2. Remove the steering joint cover

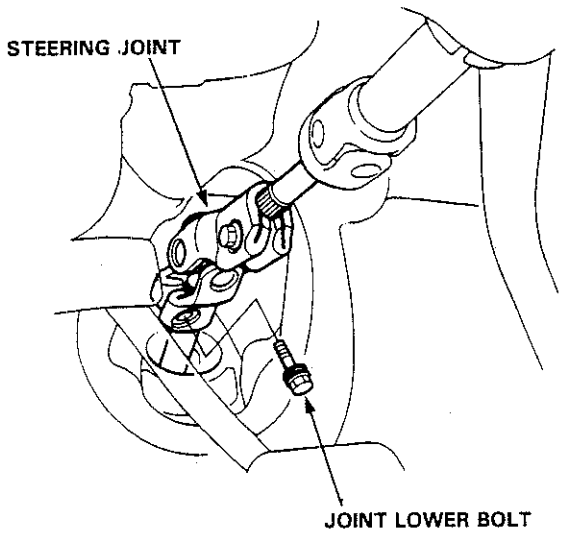


3 Remove the steering joint lower bolt, and move the joint toward the column.

4 Raise the front of car and support on safety stands in the proper locations.

NOTE: Do not open or close the power roof when the car is raised by using the safety stands.

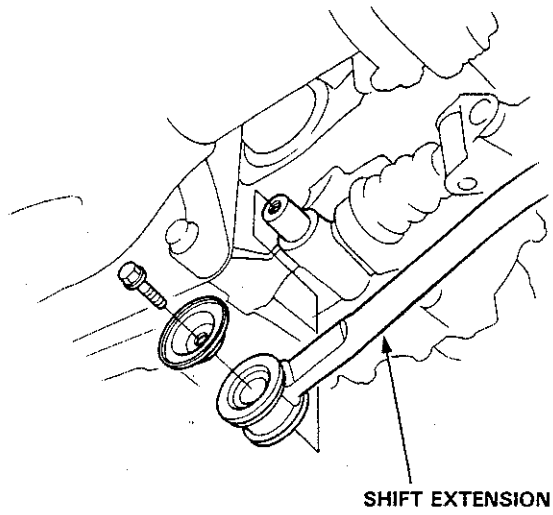
5. Remove the front wheels.



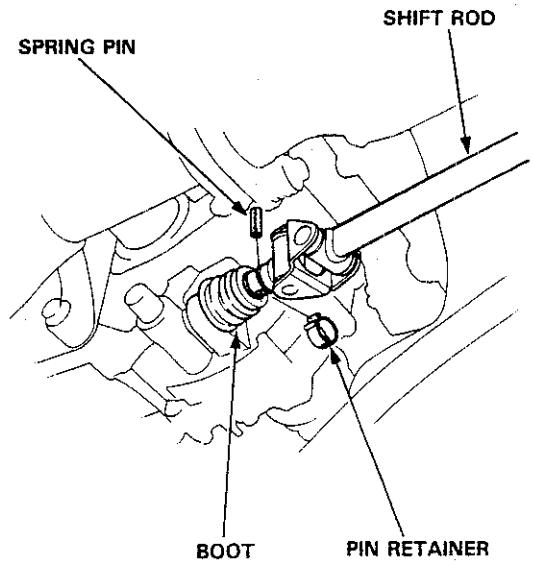
6 Using solvent and a brush, wash any oil and dirt off the control unit, its lines, and the end of the gearbox. Blow dry with compressed air

(Manual transmission model only)

- Remove the shift extension from the transmission case.



- Slide the boot back at the connecting position of the gear shift rod.
- Drive out the spring pin with a punch, then disconnect the shift rod.

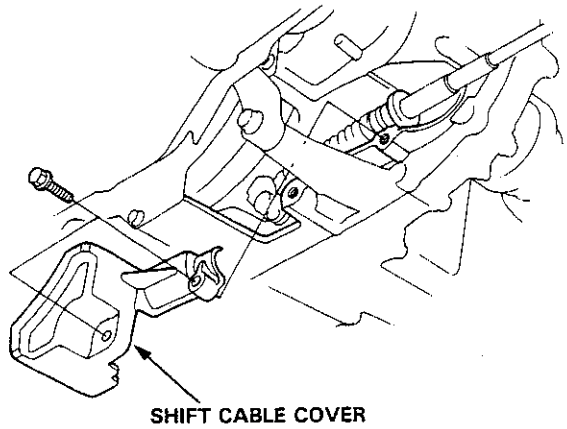


(cont'd)

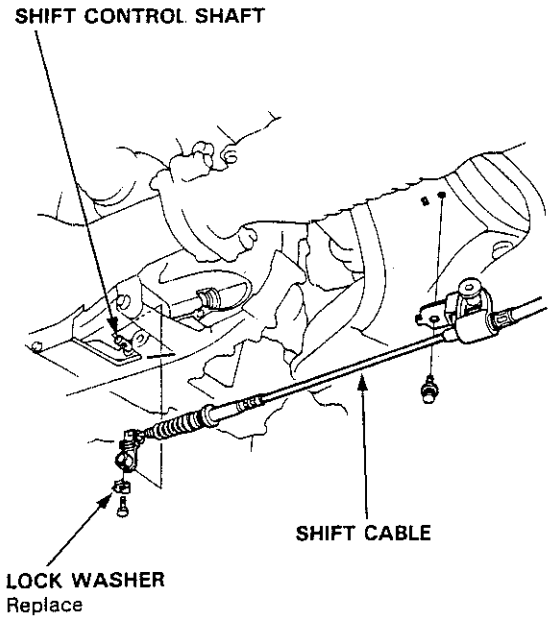
Gearbox Removal (cont'd)

(Automatic transmission only)

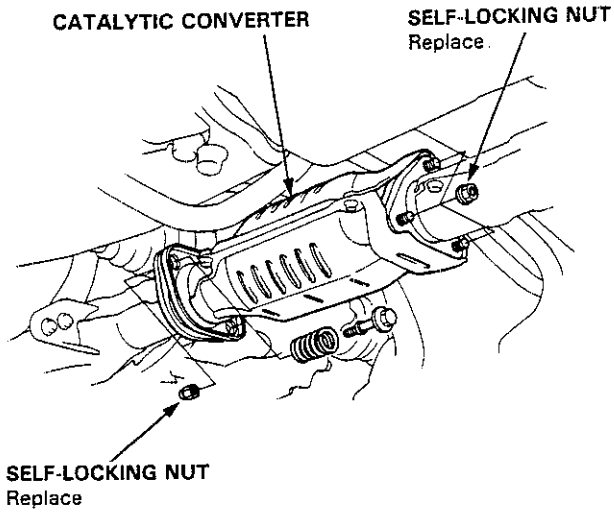
- Remove the shift cable cover.



- Disconnect the shift cable from the shift control shaft.



7. Separate the catalytic converter by removing the self-locking nuts.



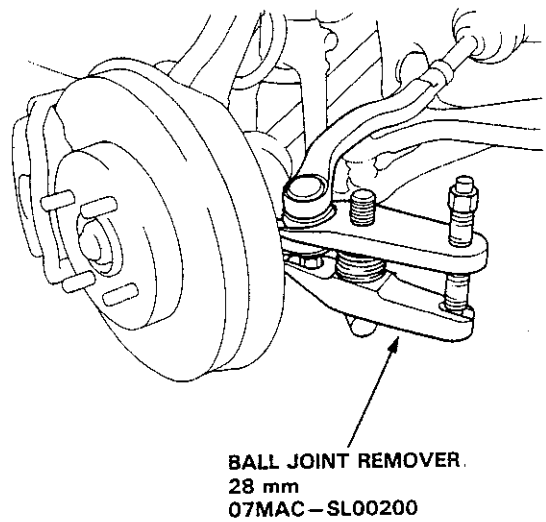
8. Remove the cotter pin from the tie-rod ball joint nut and remove the nut

9. Install the 10 mm hex nut on the ball joint. Be sure that the 10 mm hex nut is flush with the ball joint pin end, or the threaded section of the ball joint pin might be damaged by the ball joint remover.

   NOTE: Remove the ball joint using the Ball Joint Remover, 28 mm (07MAC—SL00200). Refer to page 18-12 for how to use the ball joint remover.

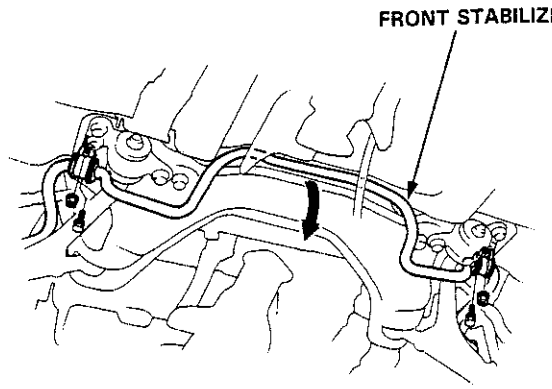
10. Separate the tie-rod ball joint and knuckle using the special tool.

    CAUTION: Avoid damaging the ball joint boot.



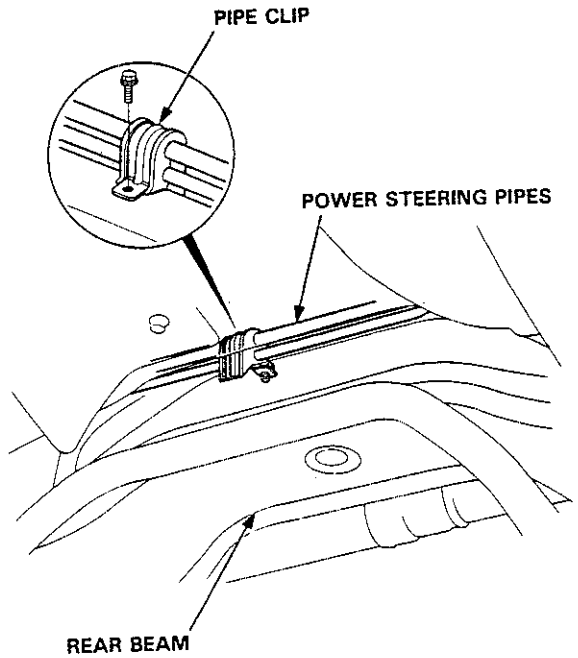
11. Remove the fastener from the front stabilizer mounting section and lower the front stabilizer

NOTE: Do not disconnect the front stabilizer from the joint.



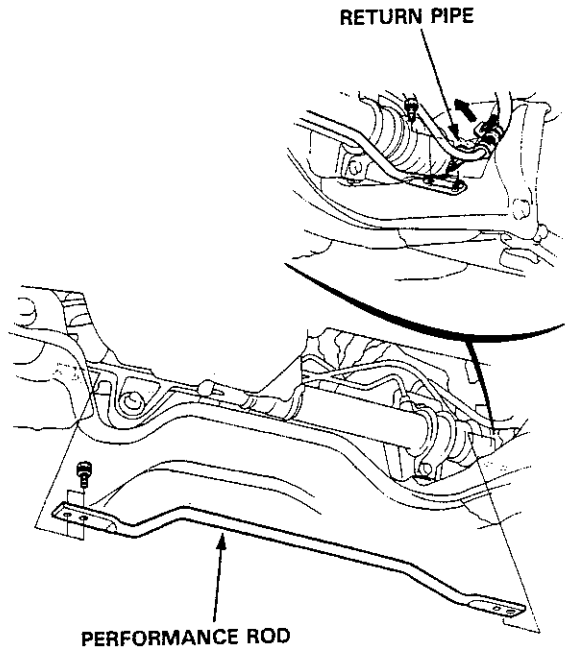
12 Remove the two power steering pipes on the top of the rear beam by removing the pipe clip

NOTE: Remove the bolt of the pipe clip from the engine room with the universal wrench



13. Remove the return pipe clamp from the left side of the rear beam and move the return pipe above the gearbox

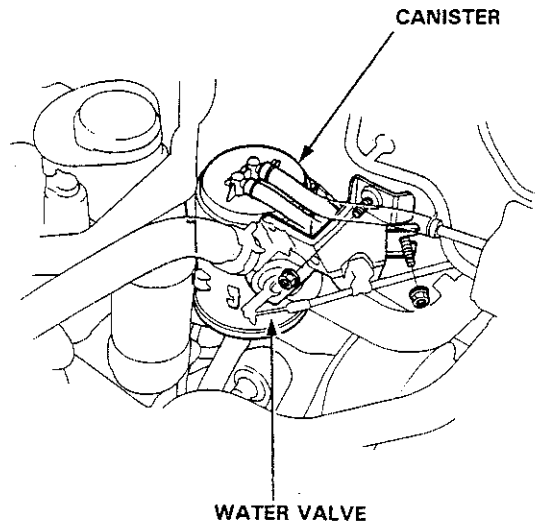
14. Remove the performance rod, if it is equipped



15 Move the canister up and remove it

16. Disconnect the cable from the water valve and remove the valve from the blukhead.

NOTE: Do not disconnect the hoses from the canister and the water valve. Move them aside



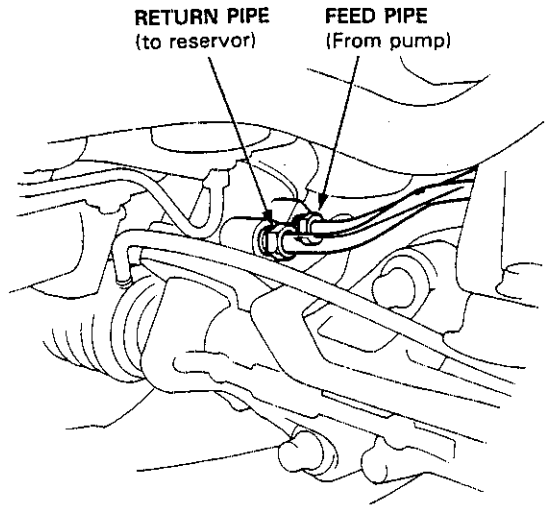
(cont'd)

Gearbox Removal (cont'd)

17. Disconnect the two pipes from the valve unit

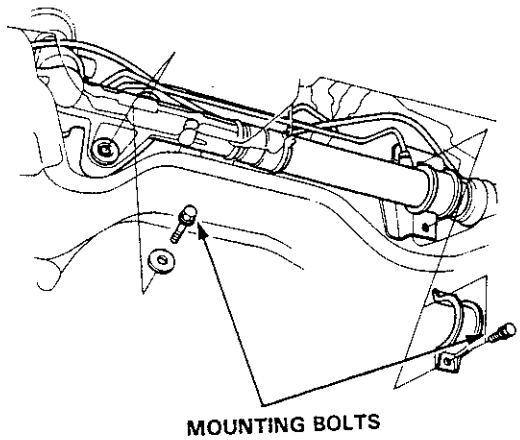
CAUTION: After disconnecting the hoses and pipes, plug or seal the hoses and pipes with the piece of tape or equivalent to prevent foreign materials from entering the valve unit

NOTE: Move the disconnected two pipes behind the gearbox so that they do not interfere with the gearbox on its removal.



18. Remove the left tie-rod end, then slide the rack all the way to the right

19. Remove the steering gearbox assembly mounting bolts and pinion shaft grommet



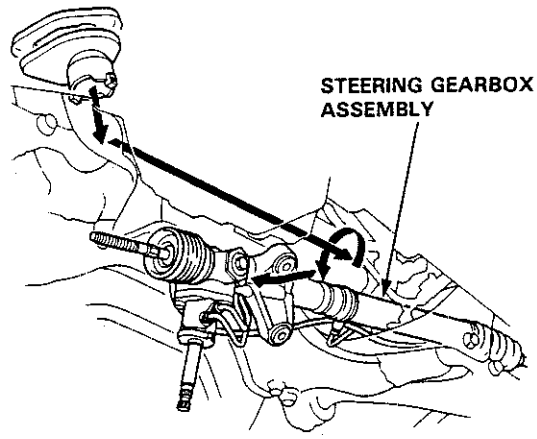
NOTE: Check the mount bushings dust seals, and other rubber parts for deterioration and damage. Replace if necessary.

20. Pull the steering gearbox assembly all the way down to clear the pinion shaft from the blukhead.

21. Move the steering gearbox assembly to the left so the right rack end clears the rear beam.

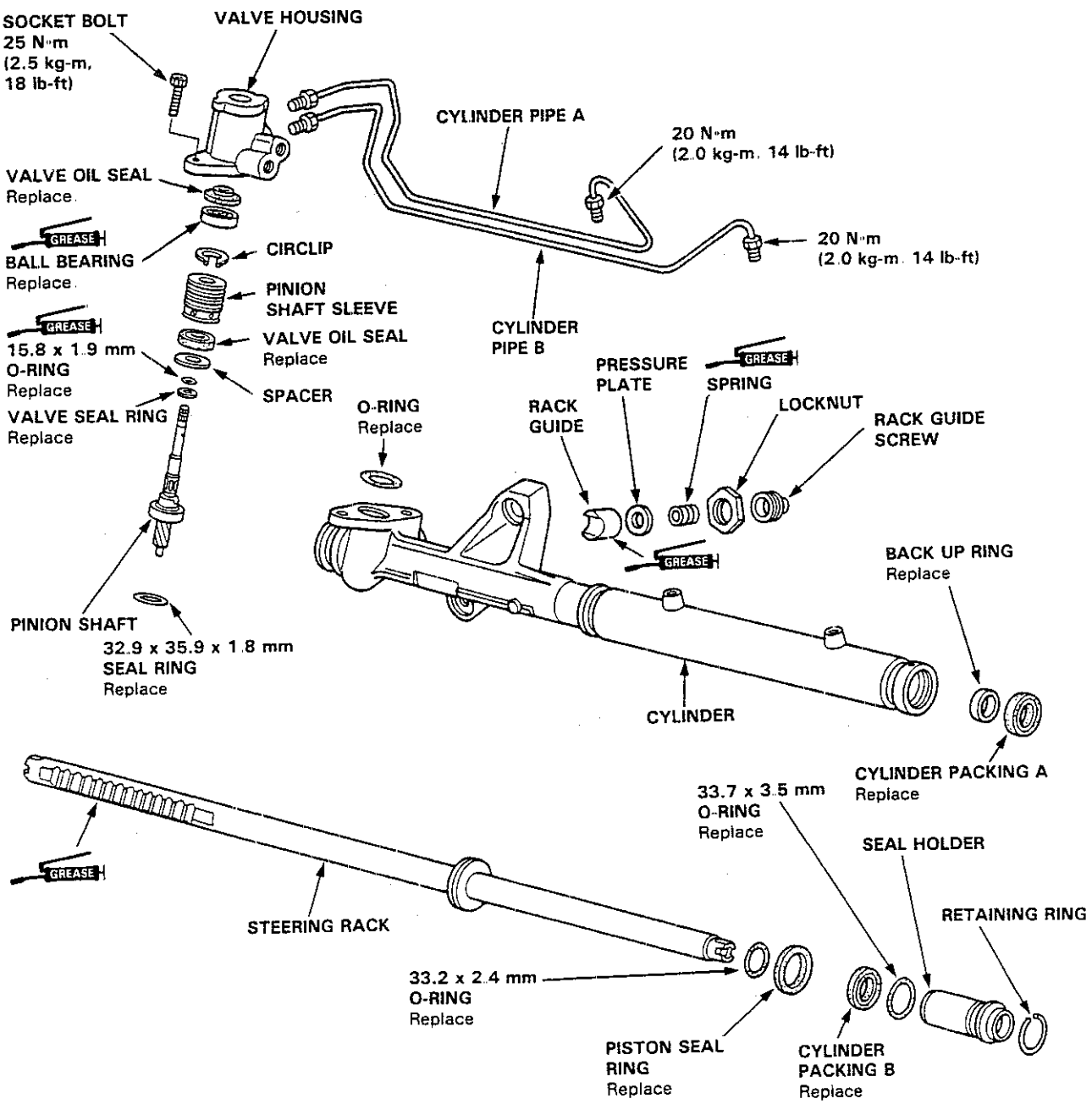
22. Hold the steering gearbox assembly and slide the rack all the way to the right, place the right rack end below the rear beam.

23. Move the steering gearbox assembly to the right and tilt the right side down to remove it from the car



CAUTION:
- Before disassembling the gearbox, wash it off with solvent and a brush.
- Thoroughly clean all disassembled parts.
- Always replace O-rings and seals.
- Replace parts with damaged sliding surfaces.
- Do not dip seals and O-rings in solvent; coat O-rings with grease, make sure they stay in position during reassembly, and use appropriate special tools to install them where necessary.

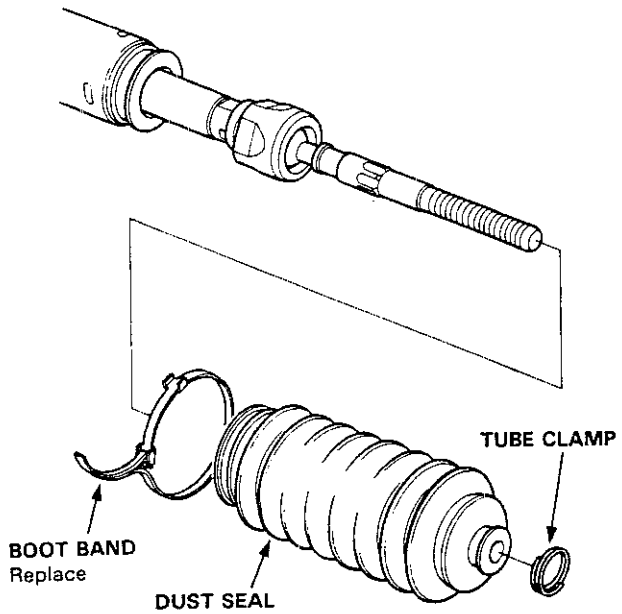
- GREASE STEERING GREASE ..... Part Number 08733—B070E
- Use only Honda Power Steering Fluid-V. The use of other fluid such as A.T.F., or other manufacturer's power steering fluid will cause damage to the system.



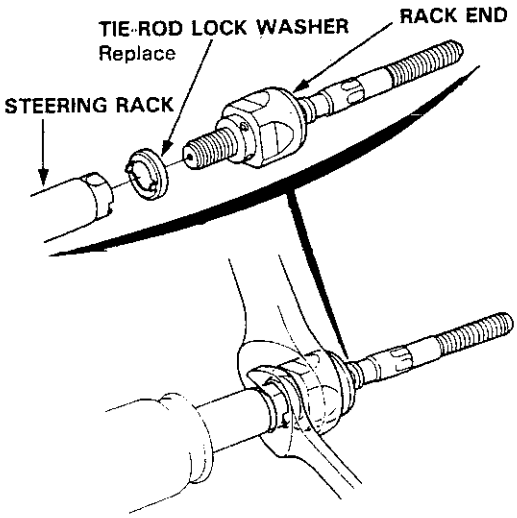
Overhaul

Disassembly

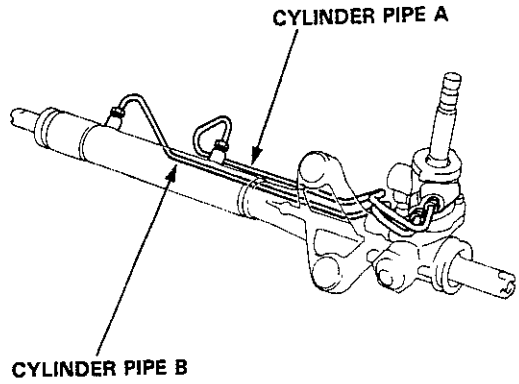
1. Remove the steering gearbox (page 17-77).
2. Carefully clamp the gearbox in a vise with soft jaws.
3. Remove the tie-rod assembly.
4. Remove the boot bands and tube clamps. Pull the dust seals away from the ends of the gearbox.



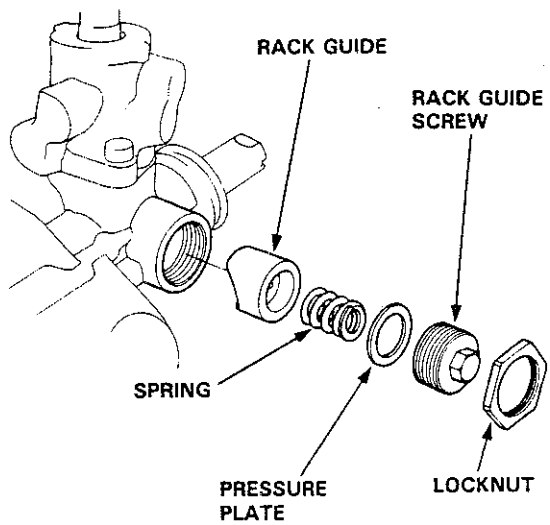
5. Hold the steering rack with a 19 mm wrench and unscrew the rack end with a wrench.



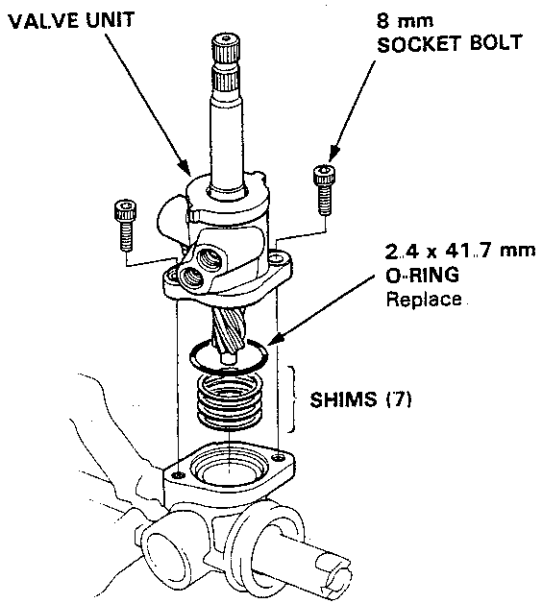
6. Remove the cylinder pipe A and B from the gearbox



7. Push the right end of the rack back into the cylinder housing so the smooth surface that rides against the seal won't be damaged.
8. Loosen the rack screw locknut and remove the rack guide screw.
9. Remove the spring, pressure plate and rack guide from the gear housing.

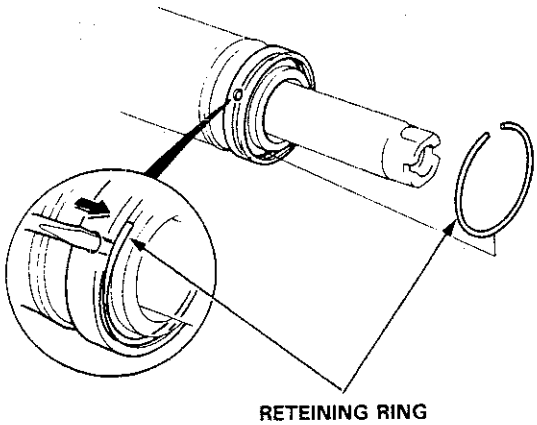


10. Remove the two socket bolts using a TORX T40 bit, then remove the valve unit from the gearbox.

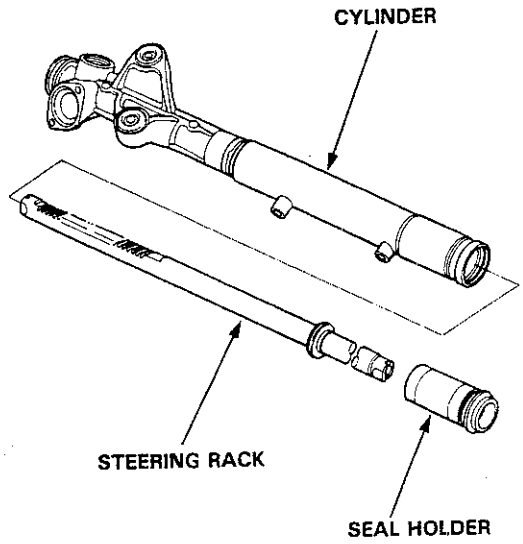


NOTE: Adjust the gear tooth contact using the shims whenever the valve unit or the gearbox cylinder is replaced.

11. Remove the retaining ring from the cylinder using a narrow screw driver

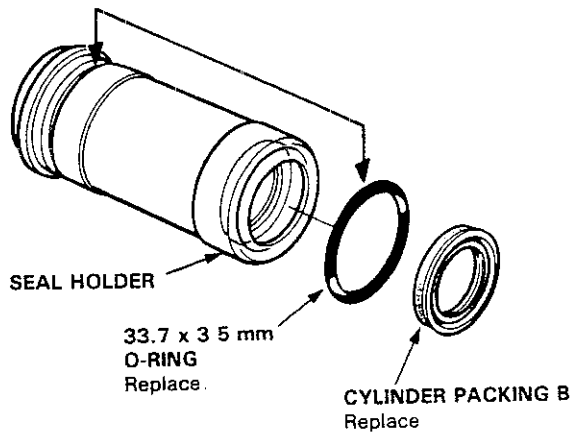


12. Remove the seal holder and steering rack from the cylinder housing.



13. Remove the O-ring and cylinder packing B from the seal holder.

CAUTION: Remove the O-ring and cylinder packing B with the fingers or a wood piece. Do not use a driver or other metal tools to remove them; it could damage the inside of the seal holder



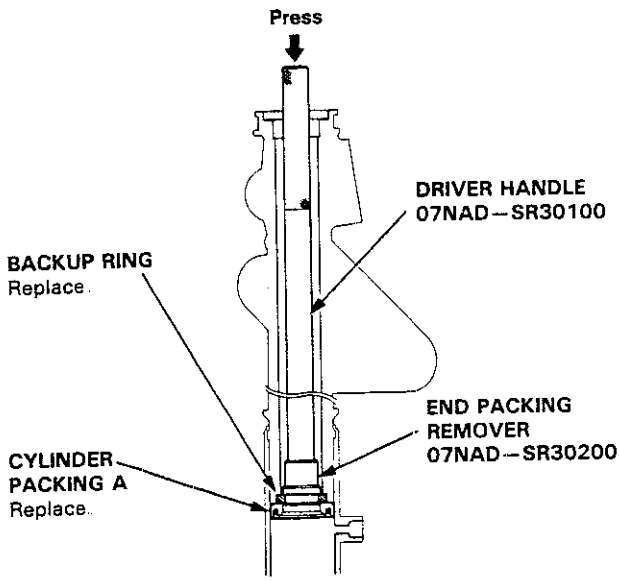
(cont'd)

Overhaul (cont'd)

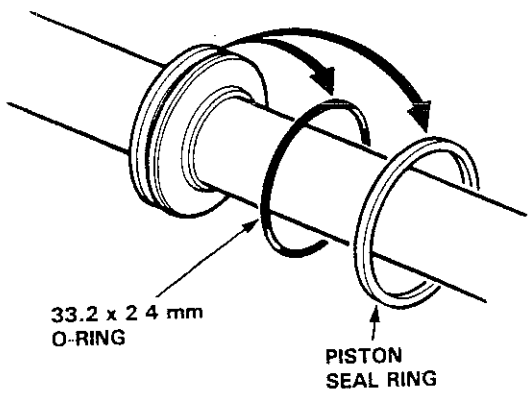
14. Replace the cylinder packing A and backup ring using the special tool.

15. Insert the special tool into the cylinder from the valve port side and drive out the cylinder packing A and backup ring using a press

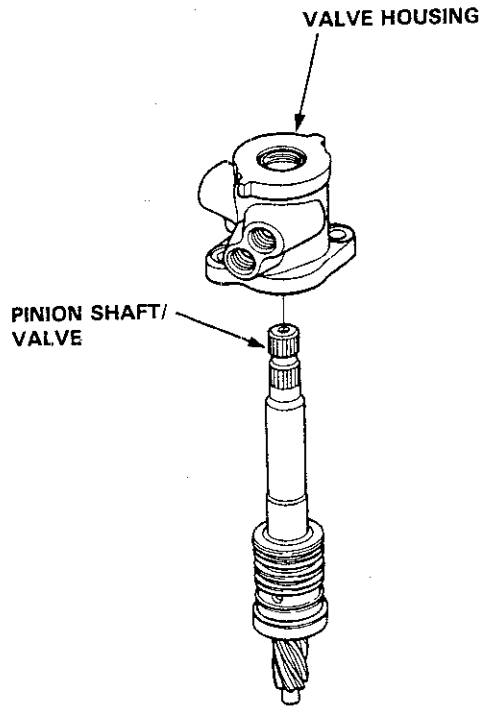
CAUTION: Do not try to remove the cylinder packing A and backup ring by tapping on the special tool. It could break the packing and a broken chip could be left in the cylinder.



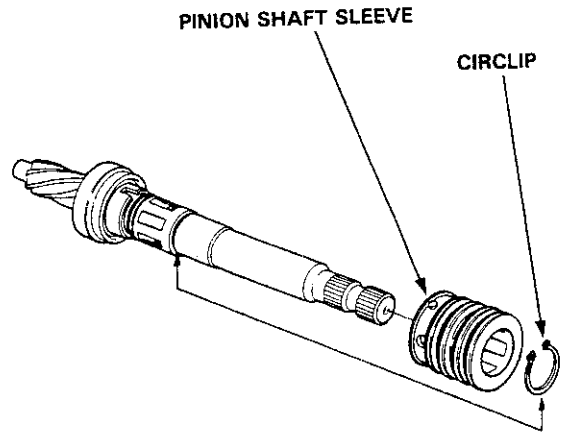
16 Carefully pry the piston seal ring and O-ring off the rack



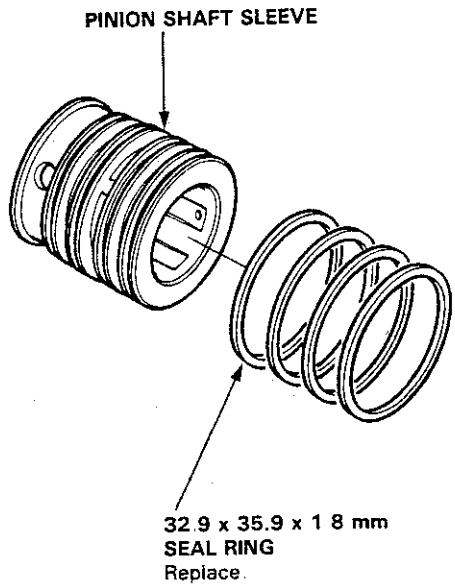
17 Separate the valve housing from the pinion shaft/valve by tapping on the shaft end with a plastic hammer



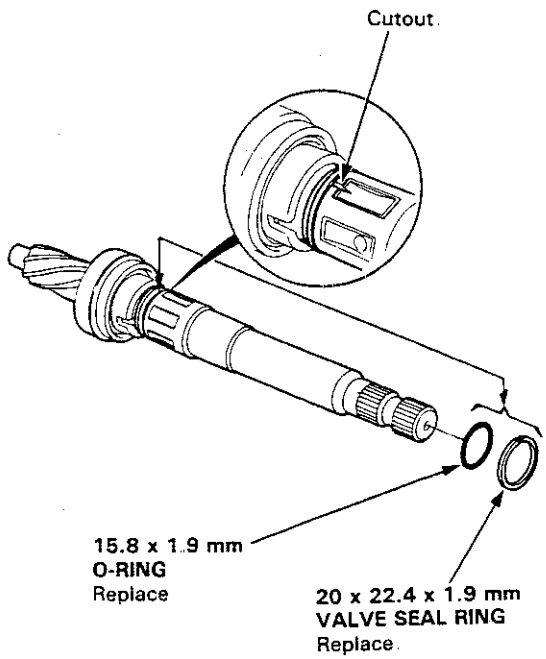
18. Remove the circlip and pinion shaft sleeve from the pinion shaft.



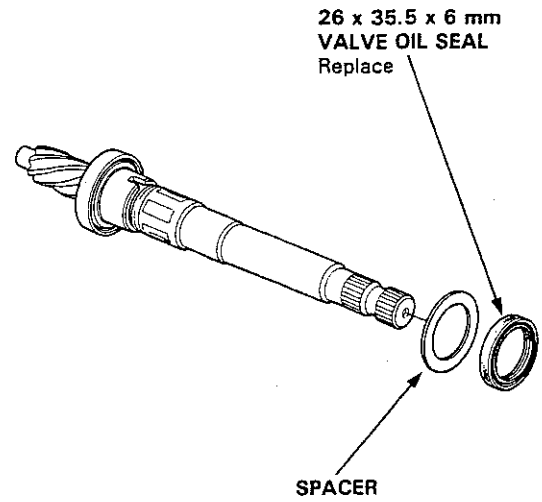
19. Remove the four seal rings from the pinion shaft sleeve with a wood piece



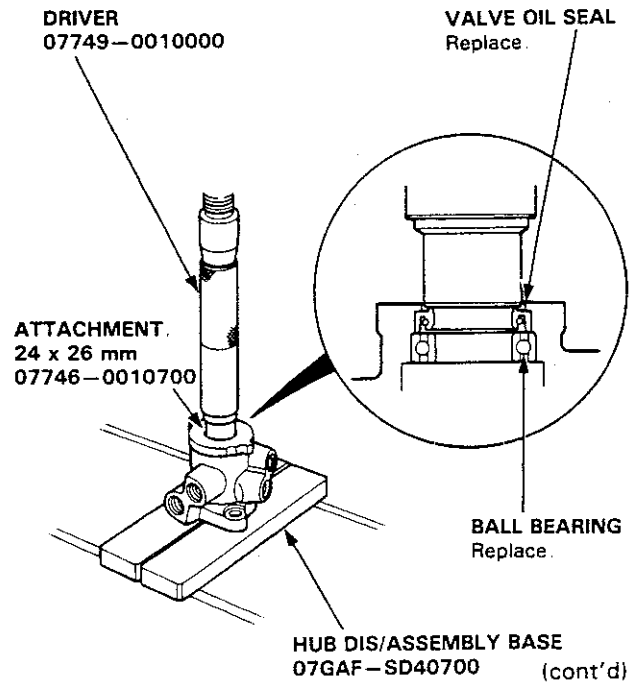
20. Using a cutter or an equivalent tool, cut the valve seal ring and O-ring at the groove in the shaft. Remove the valve seal ring and O-ring



21 Remove the valve oil seal and spacer from the pinion shaft.



22. Press the valve oil seal and ball bearing out of the valve housing using a hydraulic press and special tools shown below.

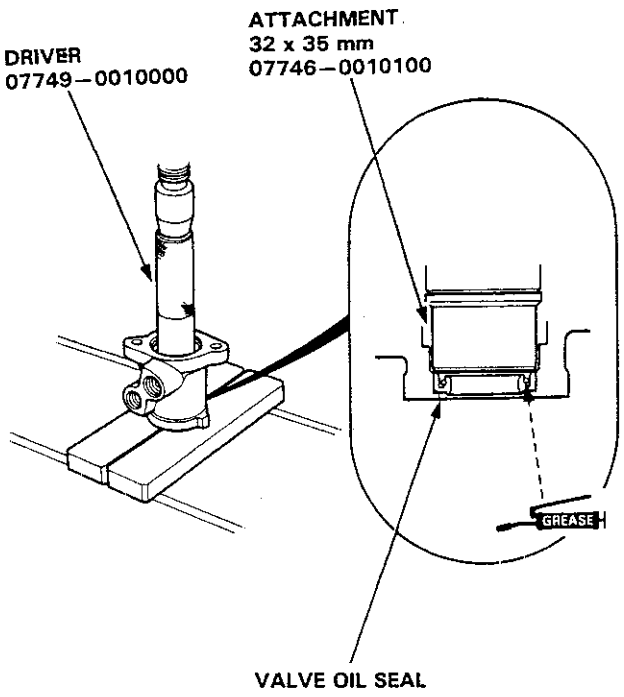


(cont'd)

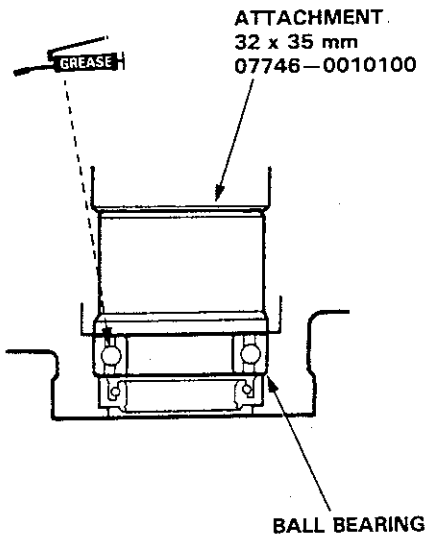
Overhaul (cont'd)

Assembly

23. Grease the sealing lip of the valve oil seal, and install the seal in the valve housing using a hydraulic press and special tools shown below



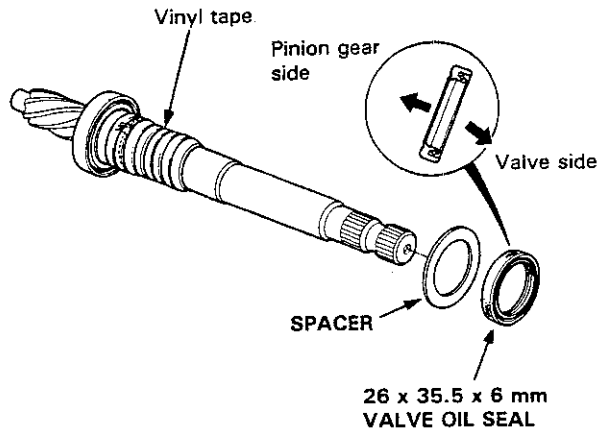
24. Pack a new ball bearing with grease, then press the bearing into the valve housing using a hydraulic press and special tools



25. Wrap the stepped portion of the pinion shaft with vinyl tape and the recommended power steering fluid the surface of the tapy.

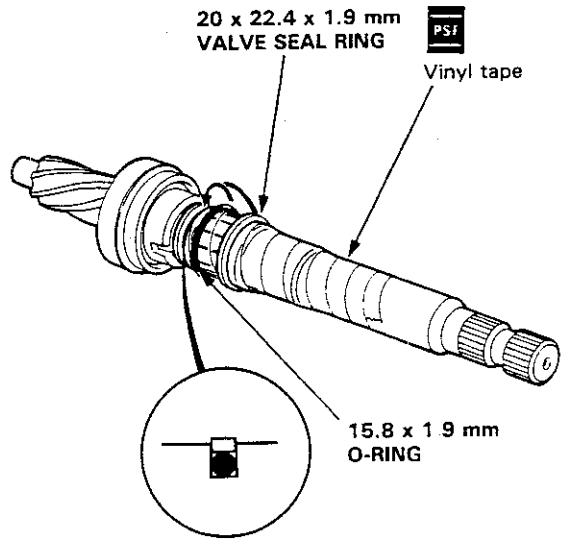
26. Slide the spacer and valve oil seal over the pinion shaft, being careful not to damage the sealing lip.

CAUTION: Install the valve oil seal with its groove toward the valve sleeve.



27. Fit the new O-ring in the groove of the pinion shaft. Then slide the new valve seal ring over the shaft and groove on the pinion shaft

28. Remove the vinyl tape.



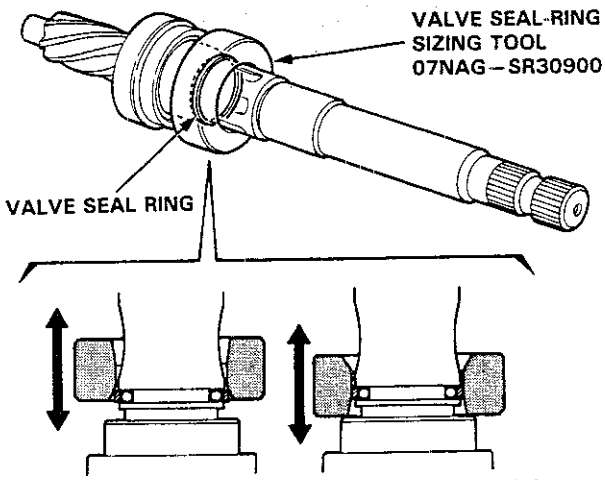
29. Apply power steering fluid to the surface of the valve seal ring which was installed on the pinion shaft.

30. Apply recommended power steering fluid to the inside of the special tool, too. Set the larger diameter end of the special tool over the valve seal ring.

31. Move the special tool up and down several times to make the valve seal ring fit in the pinion shaft.

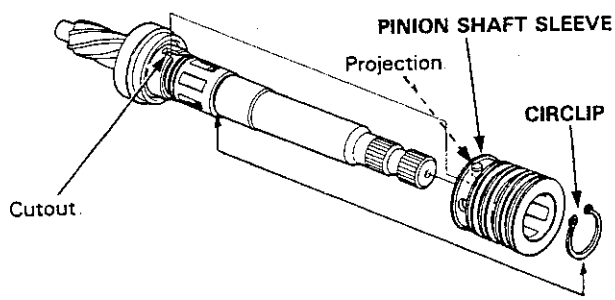
32. Remove the special tool.

33. Set the smaller diameter end of the special tool over the valve seal ring. Move the special tool up and down several times and make the valve seal ring snugly fit in the pinion shaft.



34. Install the pinion shaft sleeve over the pinion shaft and secure it using a circlip.

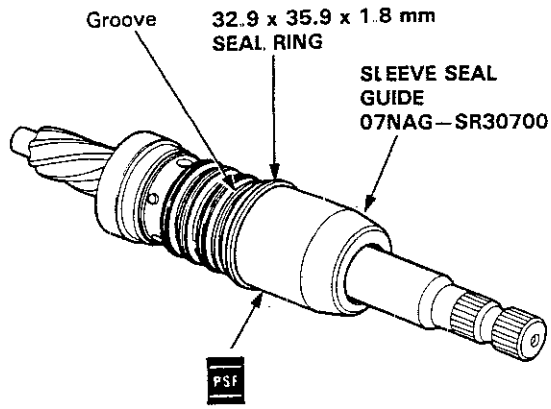
NOTE: Assemble the pinion shaft sleeve and pinion shaft aligning the projection on the inside of the sleeve with the cutout in the shaft.



CAUTION: Do not expand the seal ring excessively.

35. Apply recommended power steering fluid to the surface of the special tool. Set the new seal rings (four rings) over the special tool from the smaller diameter end of the tool and expand the seal rings.

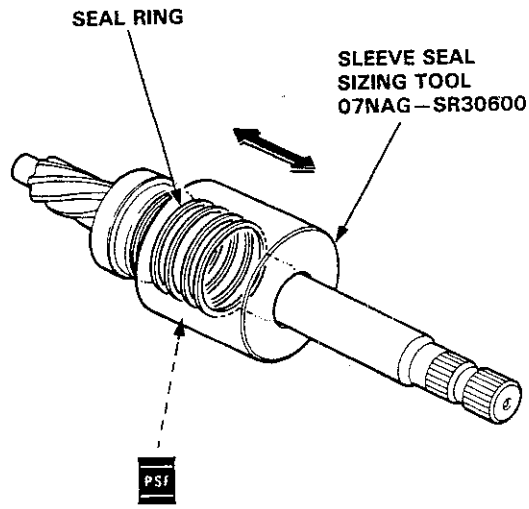
36. Set the special tool in the grooves in the sleeve and set each ring in each groove securely.



NOTE: After installation, compress the seal rings with the fingers temporarily.

37. Apply recommended power steering fluid to the seal rings on the sleeve and to the whole internal surface of the special tool.

38. Move the special tool up and down several times to make the seal rings snugly fit in the sleeve.



(cont'd)

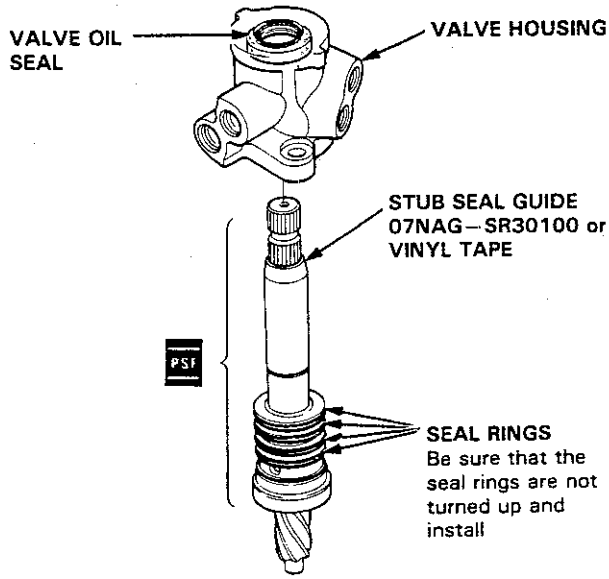
Overhaul (cont'd)

CAUTION:
- **Install the pinion shaft with care not to damage the valve oil seal lip.**
- **The seal rings expand outward. Set each ring in the grooves in the sleeve by pushing them with fingers securely and install them in the valve housing.**

39. Install the special tool or vinyl type on the pinion shaft and coat the special tool or vinyl tape with the recommended power steering fluid

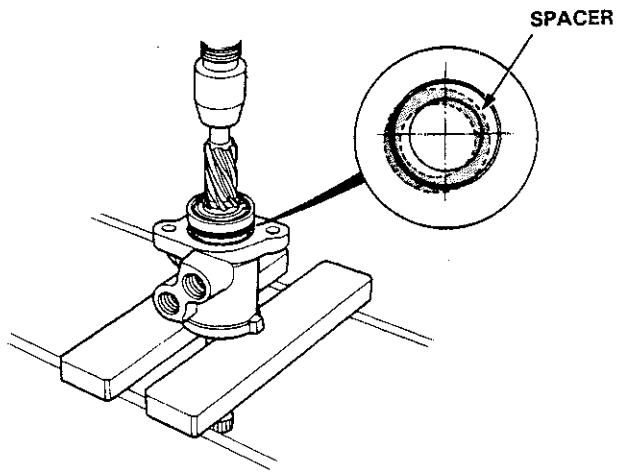
40. Insert the pinion shaft on the valve housing.

41. Remove the special tool or vinyl tape from the pinion shaft.



42. Press the pinion shaft using a hydraulic press shown below.

CAUTION: Before inserting the pinion shaft, be sure that the spacer is not off to the side as shown.

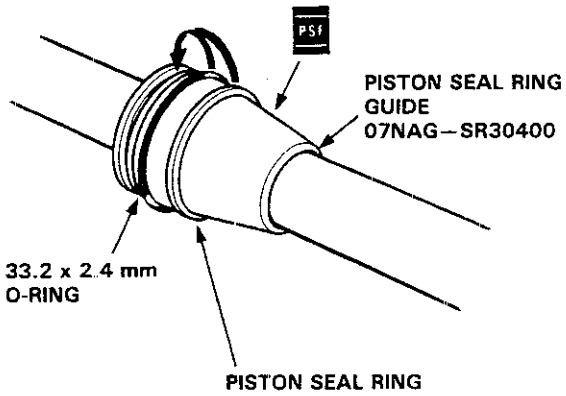


NOTE: Before reassembling any parts inspect them as described on page 17-81 and make sure they are clean. Replace worn or damaged parts.

43. Install a new O-ring on the rack.

44. Coat the piston seal ring guide with the recommended power steering fluid, and slide it onto the rack, big end first.

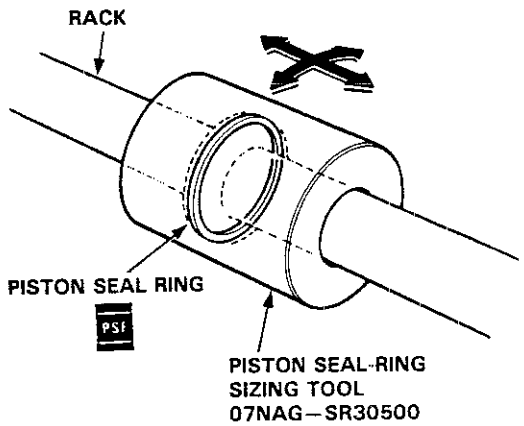
45. Position the new piston seal ring on the special tool, slide it down to big end of the tool, and then pull it off into the piston groove on top of the O-ring



CAUTION: Do not expand the piston seal ring excessively

46. Coat the piston seal ring and inside of the special tool with the recommended power steering fluid

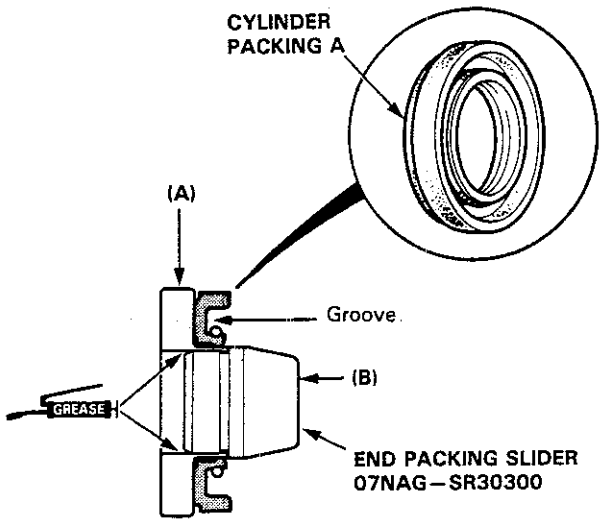
47. Carefully slide the tool onto the rack and over the piston ring, then rotate the tool as you move it up and down to seat the piston seal ring.



48. Assemble the special tools (A) and (B) and apply a thin coat of grease to the tool surface.

49. Install a new cylinder packing A over the special tool (B).

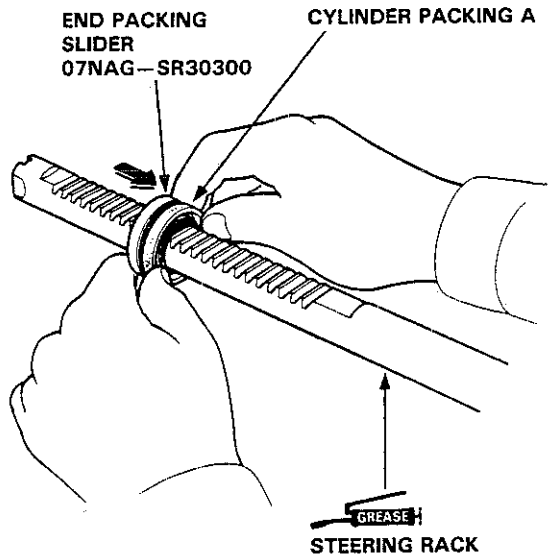
NOTE: Note the installation direction of the cylinder packing A. Install it as shown.



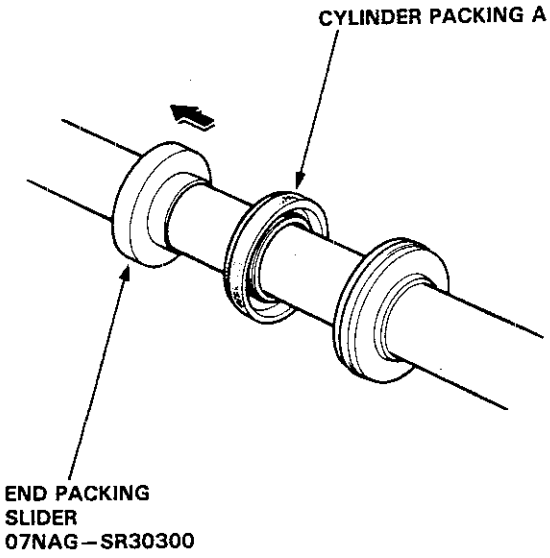
50. Remove the special tool (B) from the special tool (A).

51. Apply a thin coat of grease to the inside of the special tool (A).

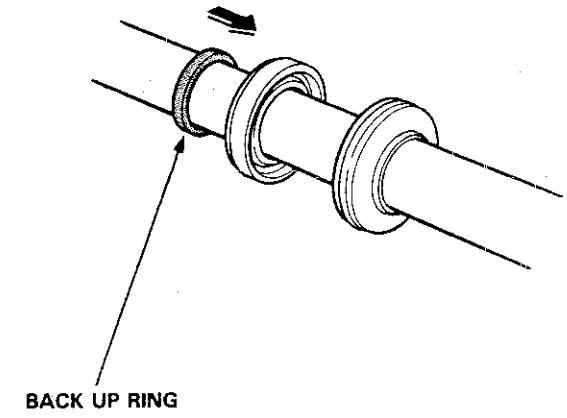
52. Grease the steering rack, and install the special tool.



53. Separate the cylinder end seal from the special tool, then remove the tool from the rack.



54. Install the back up ring on the steering rack.



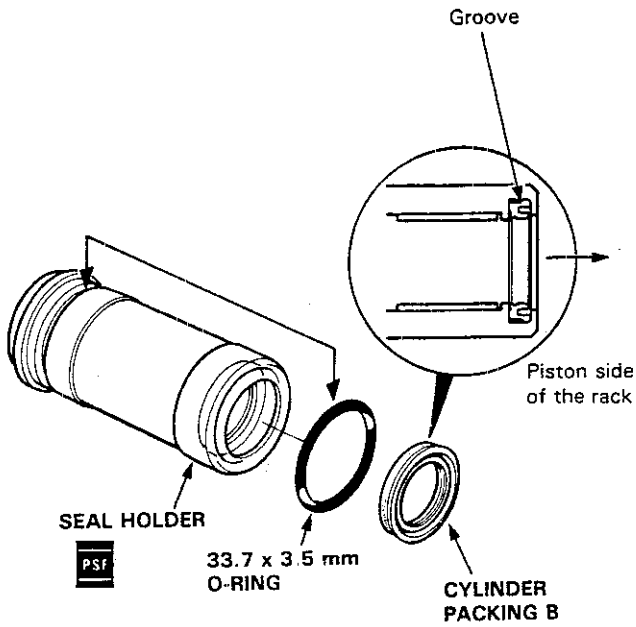
(cont'd)

Overhaul (cont'd)

55 Coat the inside surface of the seal holder with the recommended power steering fluid, and install the cylinder packing B.

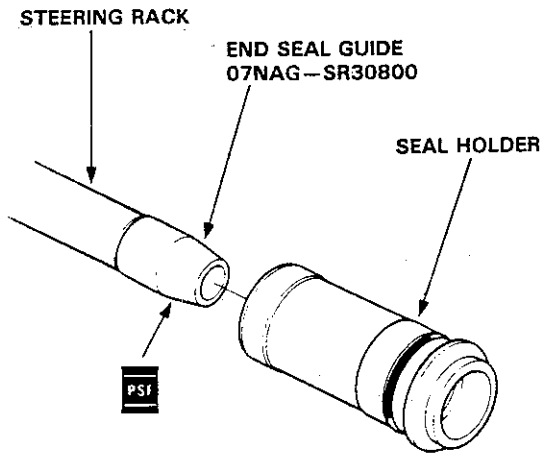
56 Install the O-ring on the groove of the seal holder.

CAUTION: Install the cylinder packing B with its groove toward the piston side of the rack.



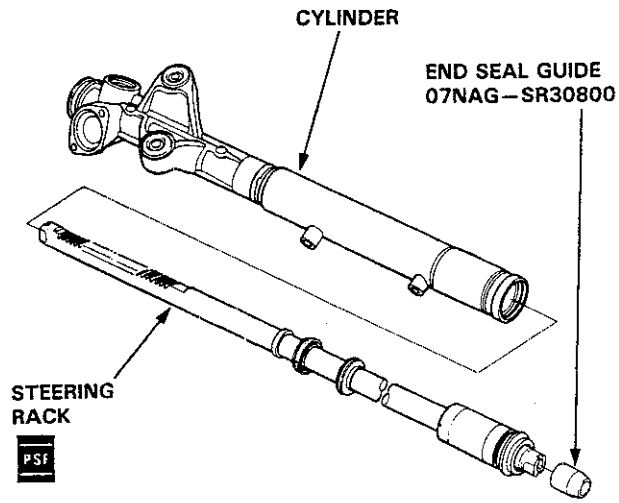
57 Coat the special tool with the recommended power steering fluid, and install it on the steering rack.

58 Install the seal holder on the steering rack.



59 Remove the special tool.

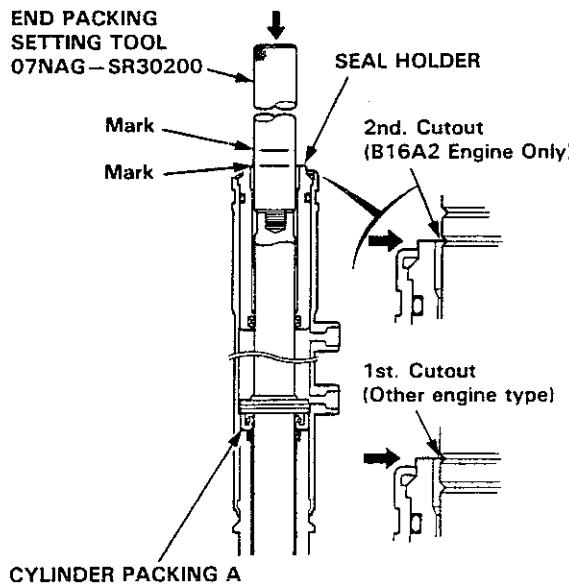
60 Coat the steering rack with the recommended power steering fluid, and insert it in the cylinder.



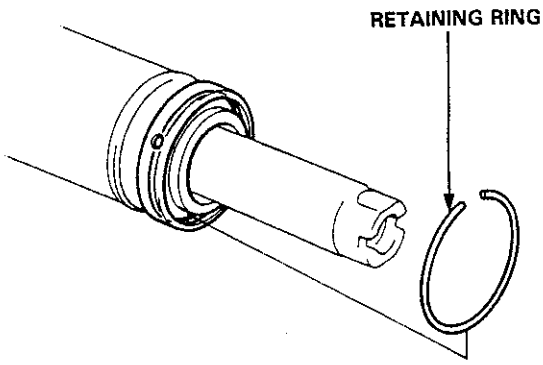
61 Set the cylinder on a press table with the steering rack attached. Install the special tool screwing it into the rack end.

62 Insert the cylinder packing A into the cylinder by pressing on the rack end with the press.

NOTE: Insert the cylinder packing A into the cylinder until the mark on the special tool aligns with the seal holder end. Insert the packing with 150 N (15 kg, 33 lbs) of force.

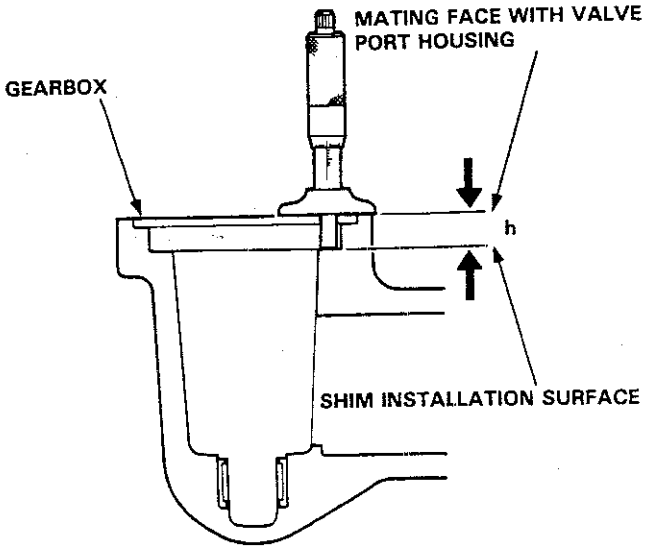


63. Install the retaining ring on the cylinder.

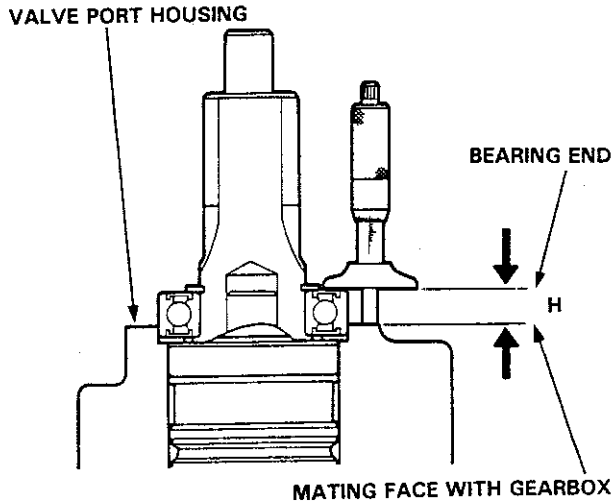


64 Adjust number of the shims (7 shims, thickness: 0.05 mm/0.002 in) before installing the valve unit on the gearbox.

1) Measure the depth "h" from the mating surface of the gearbox/valve port housing to the shim installation surface.

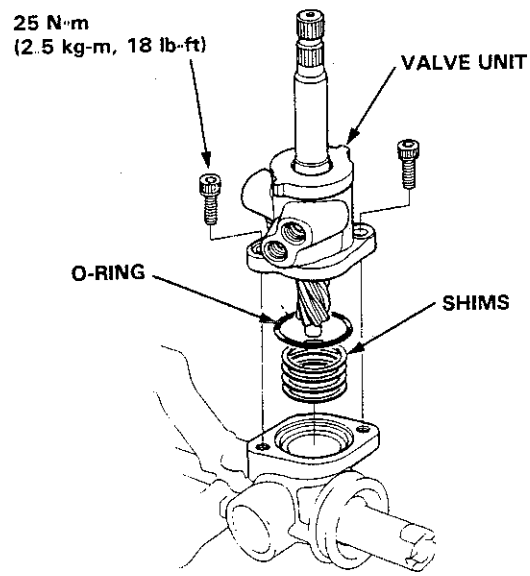


2) Measure the height "H" from the mating surface of the valve unit/gearbox to the bearing end.



3) Adjust number of the shims so that the difference between the measurements "h" and "H" is 0.05 mm (0.002 in) or below.

65. Install the shims and O-ring on the gear housing. Install the valve unit on the gear housing.



NOTE: Be sure to apply the liquid gasket to the mating face evenly (0.5—1.5 g/0.018—0.053 oz) not to let it to drop inside the housing

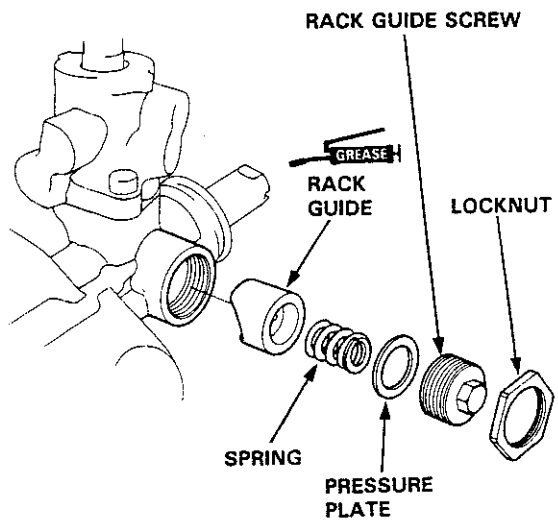
(cont'd)

Overhaul (cont'd)

66. Install the rack guide screw.

67. Coat the rack guide with grease

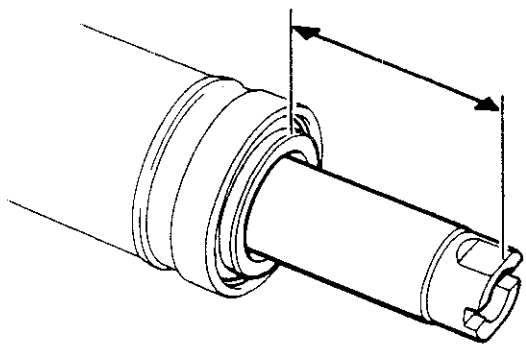
68. Install the spring, pressure plate and rack guide screw on the gear housing



NOTE: Adjust the rack guide at the center of the rack stroke.

69. Values for the cylinder side are listed below

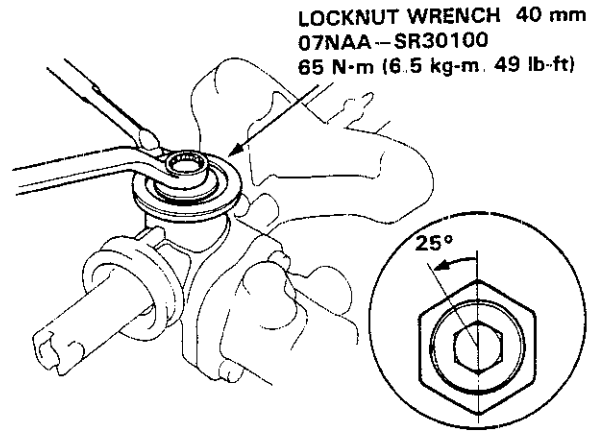
B16A2 Engine : 59.1 mm (2.33 in)
Other engines: 64.3 mm (2.53 in)



70. Tighten the rack guide screw until it compresses the spring and seats against the rack guide, then loosen it.

71 Retighten it to 5 N·m (0.5 kg-m, 3.6 lb-ft), back it off about 25°

72. Install the locknut on the rack guide screw and tighten the locknut to a torque wrench reading (indicated) of Reading Torque below while holding the rack guide screw with a wrench.

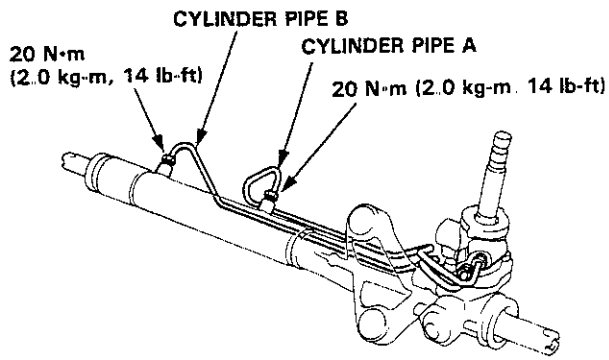


Reading Torque: 47 N·m (4.7 kg-m, 34 lb-ft)

NOTE: The above Reading Torque specification is the torque wrench reading (indicated) when the locknut is tightened using a torque wrench 345 mm (13.6 in) long. If you tighten the locknut using a torque wrench of the different length, obtain the indicated torque value (torque wrench reading) using the formulas. (See page 17-33).

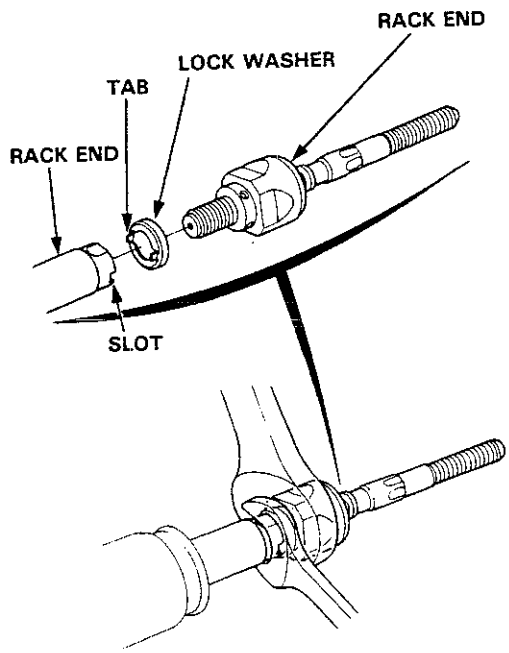
NOTE: After adjustment, be sure that the pinion torque is 0.7—1.2 N·m (7—12 kg-cm, 6.07—10.41 lb-in) when the pinion angle is within 90° right and left, and it is 1.3 N·m (13 kg-cm, 11.28 lb-in) or below when the pinion angle is outside the above specification.

73. Install the cylinder pipes A and B.



74. Install the new lock washer in the groove in the steering rack.

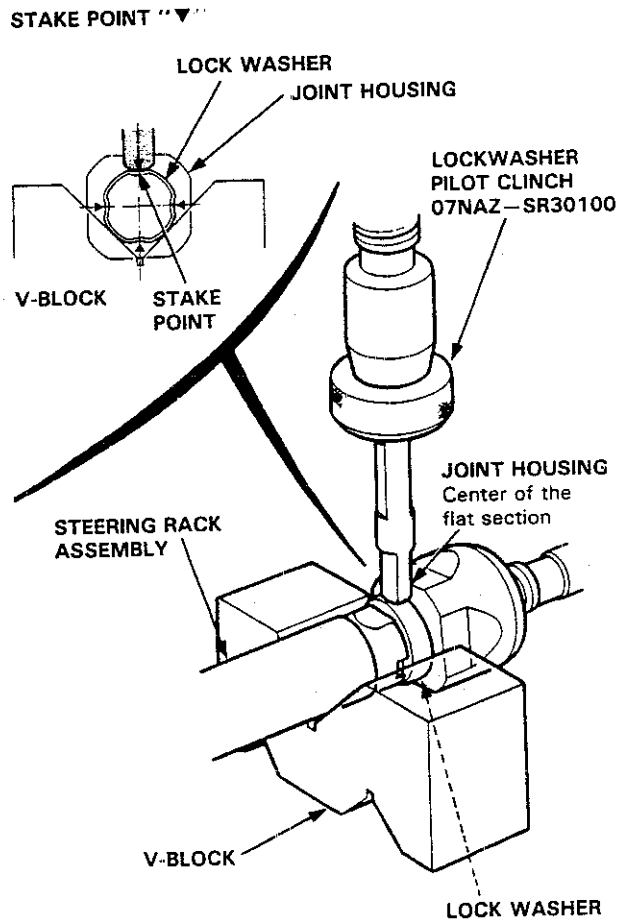
75. Hold the steering rack with a wrench and tighten the rack end to 55 N·m (5.5 kg-m, 40 lb-ft).



76. After tightening the rack end, stake the four section of lock washer with the special tool and hydraulic press.

NOTE: Set the V-block on the press table. Set the lock washer section of the rack end on the V-block securely.

- Be sure that the pressing direction, special tool, and each lock washer stake position are in line.
- Stake the lock washer in the center of the flat section of the joint housing. (The bottom end of the stake must be in that position.) See below.

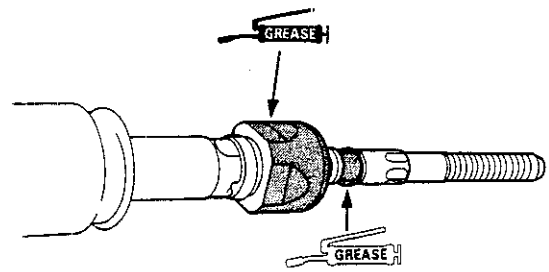


(cont'd)

Overhaul (cont'd)

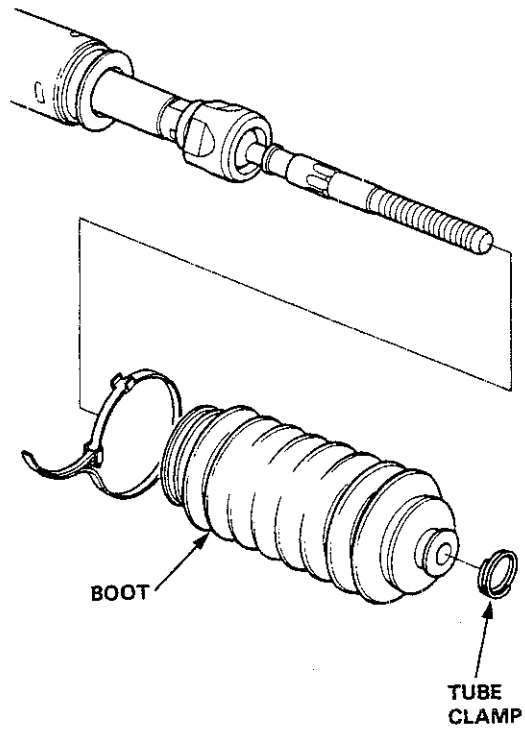
77. Apply grease to the circumference of the rack end housing.

NOTE: Coat the rack end groove and inside of the boot with silicone grease.



SILICONE GREASE
Coat the sliding surface of the rack end

78. Install the boots on the rack end with the tube clamps.



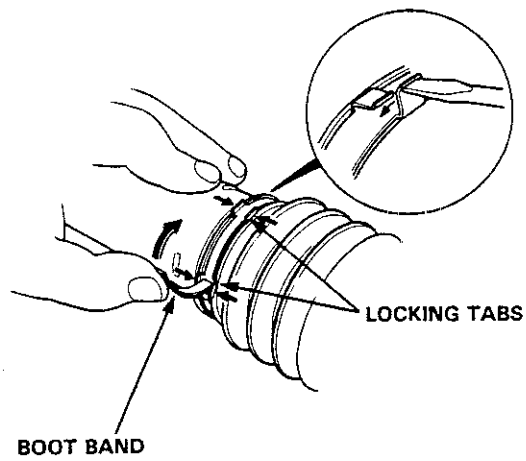
NOTE: Install the boot band with the rack in the straight ahead position (i.e. right and left tie-rods are equal in length).

79. Install the boot band so that the locking tabs of the band (stake points) are in the range shown below (Tabs should face up and slightly forward.)

80. Install new boot bands on the boot and bend both sets of locking tabs.

81 Lightly tap on the doubled-over portions to reduce their height

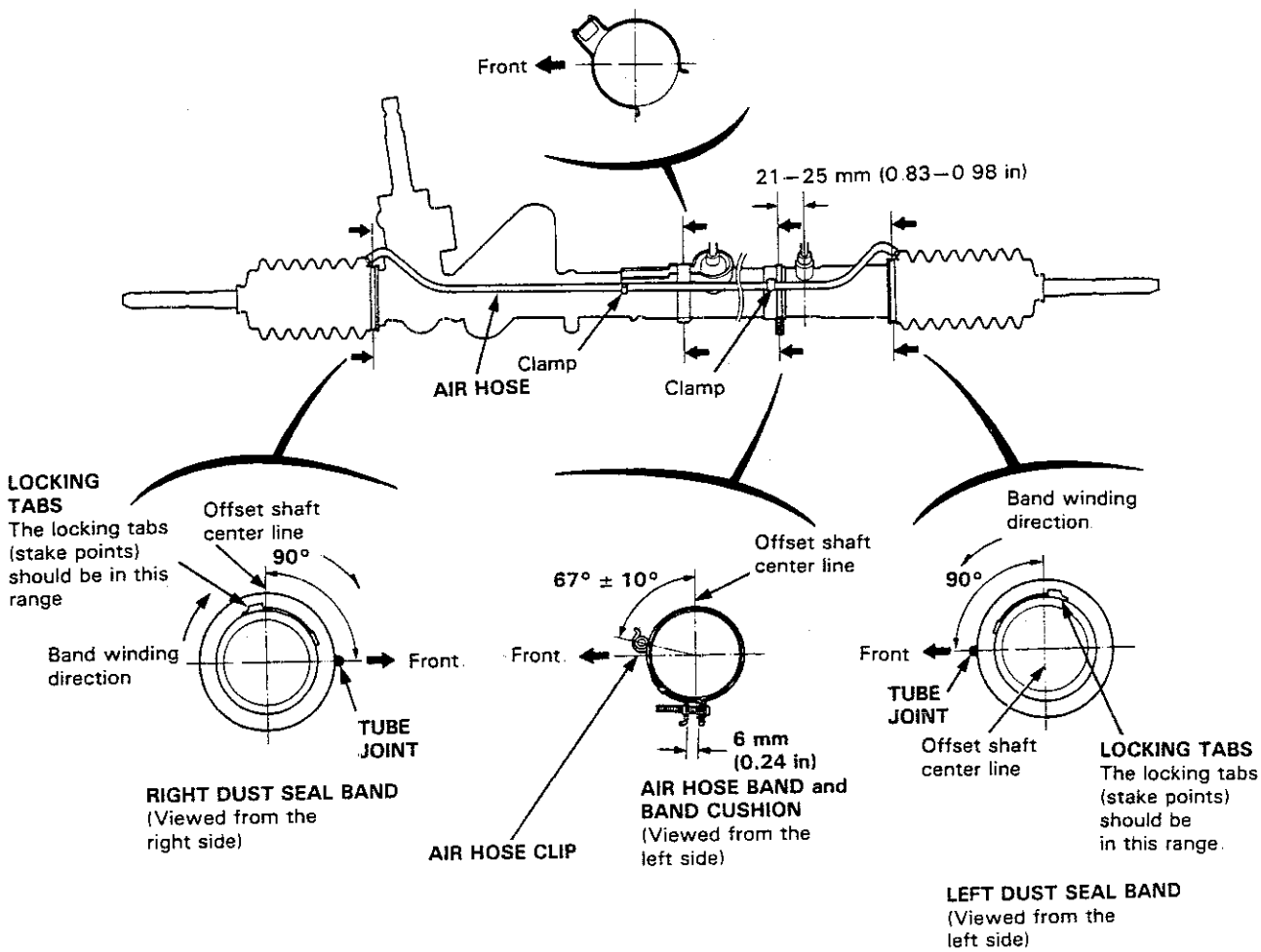
CAUTION: Stake the band locking tabs firmly.



82. Install the band cushion and air hose band; position the band as shown and tighten it. Then install the air hose.

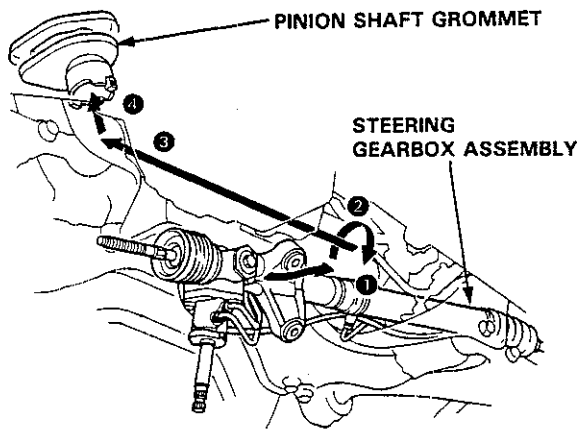
83. After assembling, slide the rack right and left to be certain that the boots are not deformed or twisted

84. Install the right and left tie-rods on the right and left rack ends

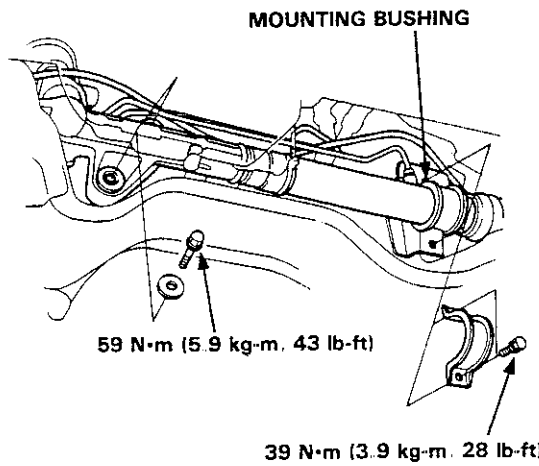


Gearbox Installation

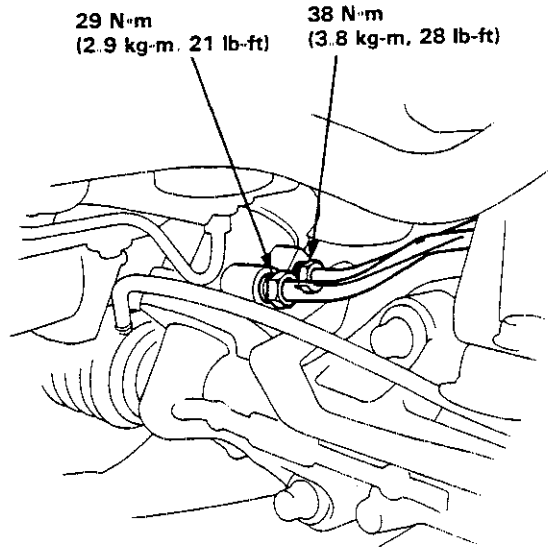
1. Slide the rack all the way to the left.
2. Pass the left side of the steering gearbox assembly above and through the left side of the rear beam.
3. Hold steering gearbox assembly and slide the rack all the way to the left.
4. Raise the right side of the steering gearbox assembly above and through the right side of the rear beam.
5. Install the pinion shaft grommet and insert the pinion shaft up through the bulkhead



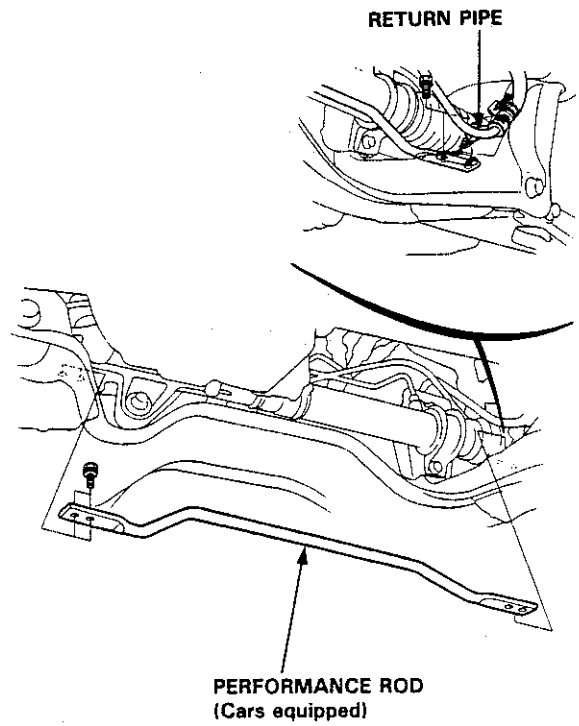
6. Install and tighten the gearbox mounting bolts.



7. Connect the fluid lines to the valve unit

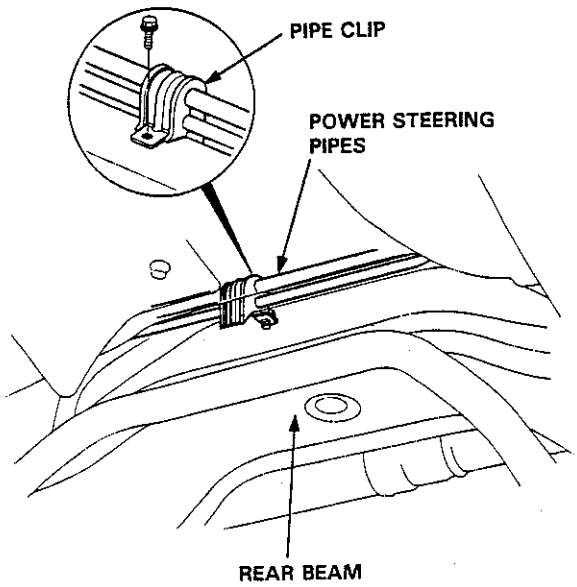


8. Install the performance rod on the rear beam, if it is equipped.

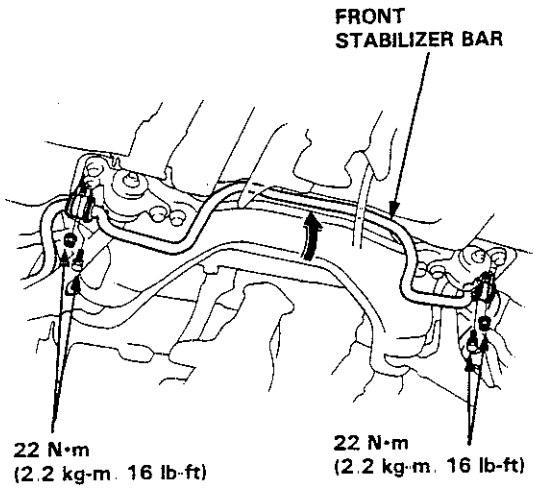


9. Secure the two pipes with the pipe clip in the top of the rear beam.

NOTE: After installation of the pipes, check them for bend, interference with the adjacent parts, and other abnormalities.

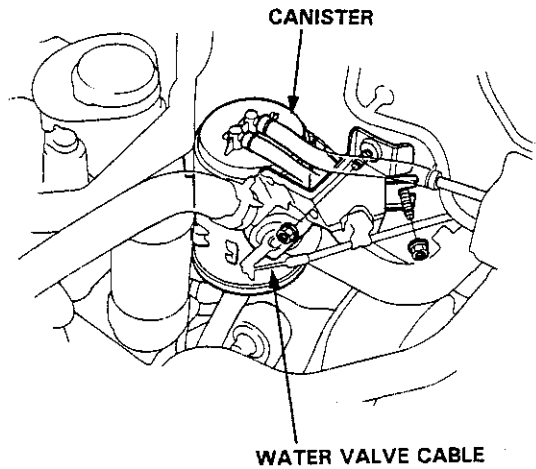


10. Install the front stabilizer in its original position.

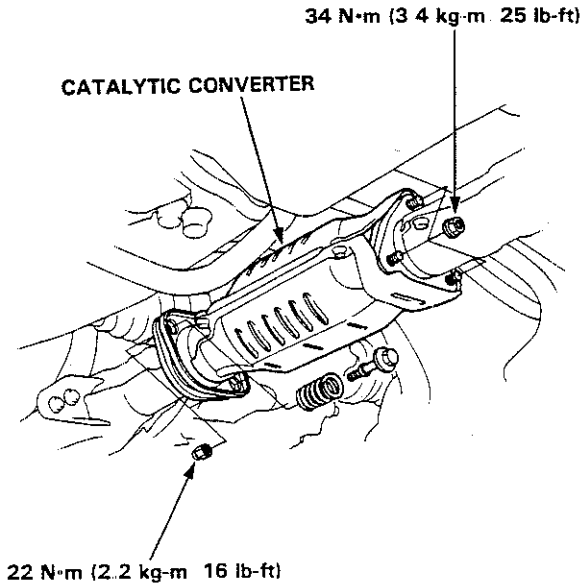


11. Install the water valve and connect the cable.

12. Install the canister.



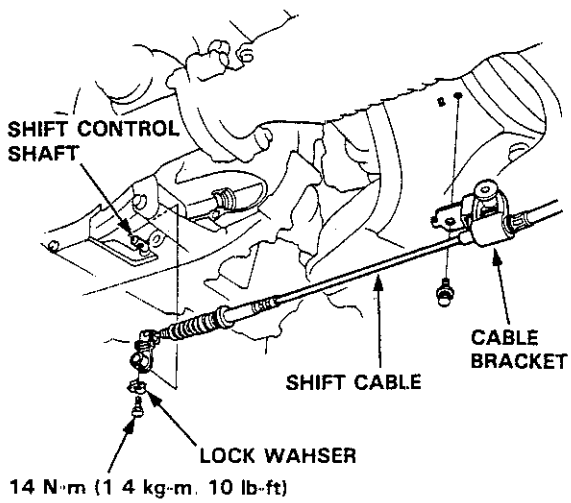
13 Install the catalytic converter with the new gaskets and self-locking nuts



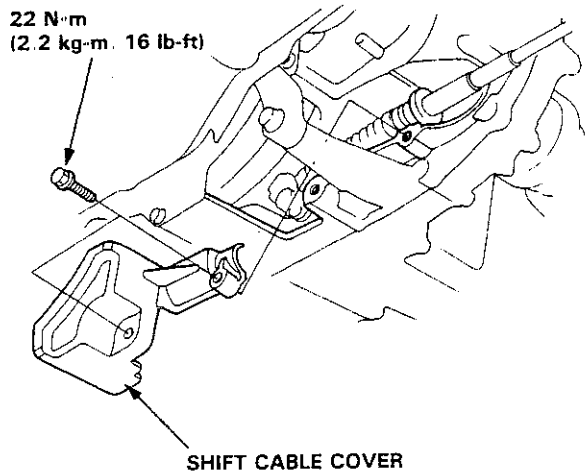
Gearbox Installation (cont'd)

(Automatic transmission model only)

- Connect the shift cable end to the shift control shaft, and install the cable bracket

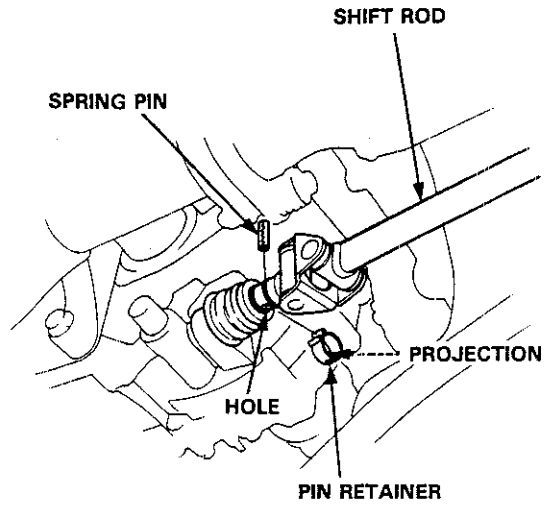


- Install the shift cable cover.

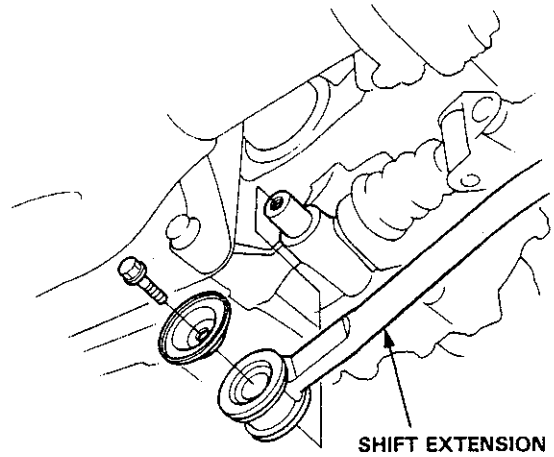


(Manual transmission model only)

- Connect the shift rod to the transmission and drive the spring pin with a punch, then install the pin retainer. Be sure that the projection on the pin retainer is in the hole.

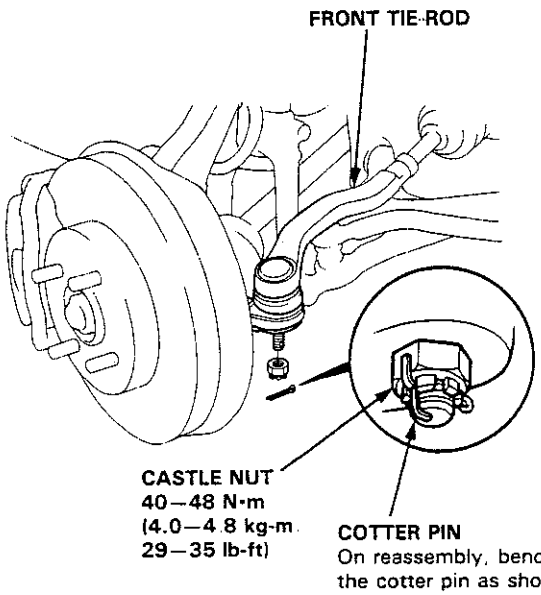


- Install the shift extension on the transmission case



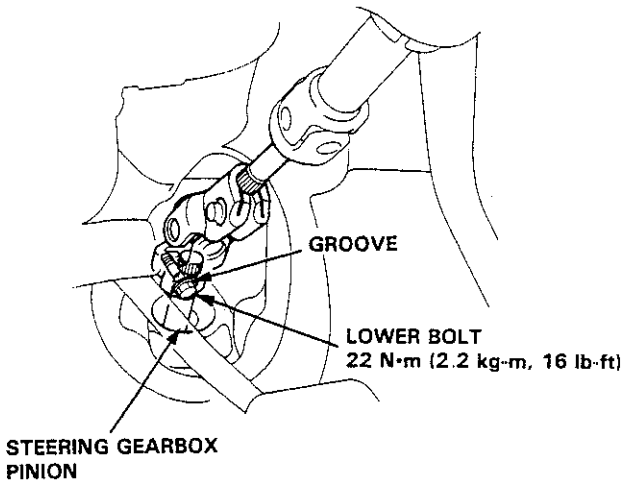
14. Reconnect the tie-rods to the steering knuckles, tighten the ball joint nut to the specified torque, and install new cotter pins.

CAUTION: Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the pin hole. Do not align the slot by loosening.

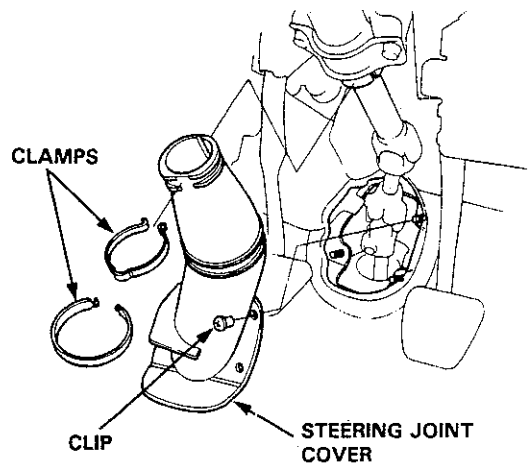


15. Reconnect the steering shaft to the gearbox.

CAUTION: Before tightening the steering joint bolts pull the steering joint to make sure that the steering joint is fully seated.



16. Install the steering joint cover with the clamps and clip.



17. Fill the system:
- Fill the reservoir with new Honda Power Steering Fluid-V

18. After installation, perform the following checks
- Start the engine and let it run at fast idle, then turn the steering wheel from lock-to-lock several times to bleed air from the system.
- Check the fluid again and add more if nesessary.
- Check the gearbox for leaks.
- Check the front toe.
- Check the steering wheel spoke angle. Adjust by turning the right and left tie-rods if necessary.

NOTE: Turn the right and left tie-rods equally.

Ball Joint Boot

Replacement

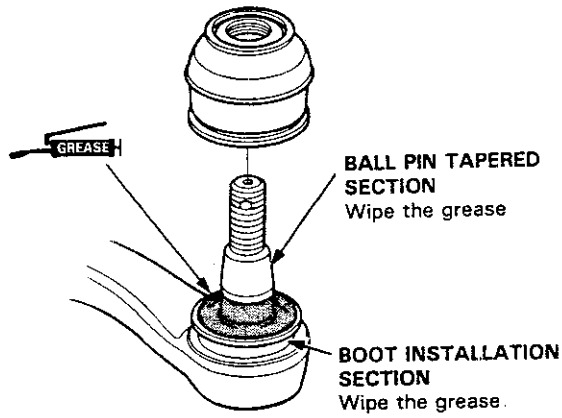
1. Remove the circlip and the boot.

   CAUTION: Do not contaminate the boot installation section with grease.

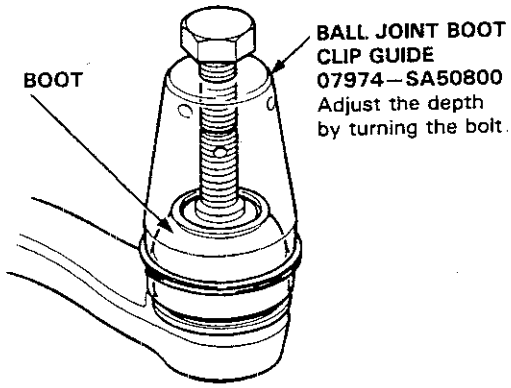
2. Pack the interior of the boot and lip with grease.

3. Wipe the grease off the sliding surface of the ball pin, then pack the lower area with fresh grease

   CAUTION:
   - **Keep grease off the boot installation section and the tapered section of the ball pin.**
   - **Do not allow dust, dirt or other foreign materials to enter the boot.**



4. Install the boot in the groove of the boot installation section securely then bleed air.



CAUTION: After installing the boot, check the ball pin tapered section for grease contamination and wipe it if necessary.