

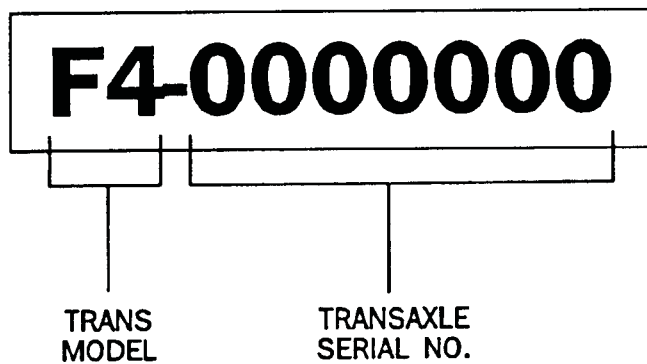
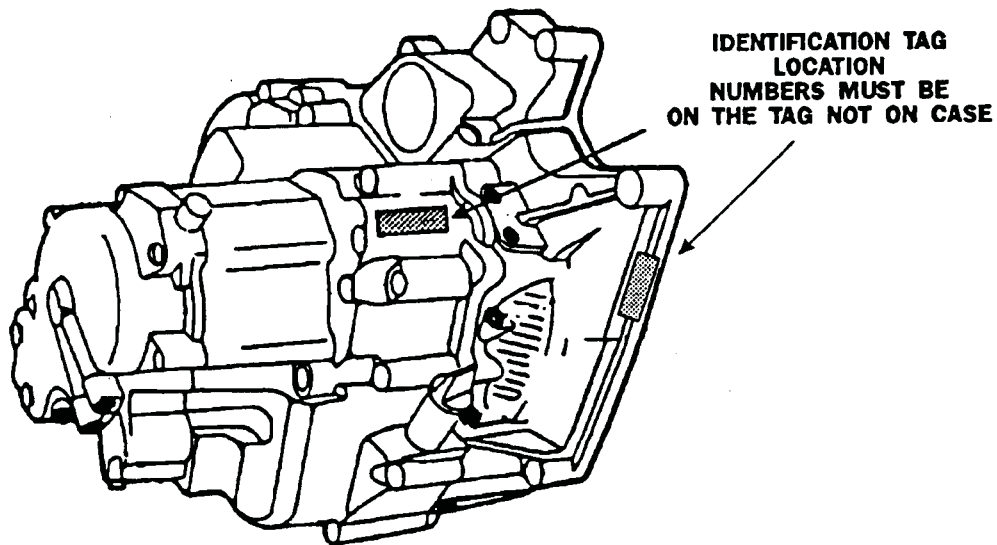
## HONDA F4

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## TRANSAXLE IDENTIFICATION

The I.D. tag located on the center casting on the converter housing gives the most superior information about the F4 transaxle. If no tag is available four items allow the F4 transaxle to be identified externally. 1- The 1st accumulator and end cover are cast as one piece, the vent is also on the end cover. 2- The dipstick is mounted to the center casting. 3 - The converter housing has casting numbers near the shift lever which can be seen when the converter is removed, the numbers will start with PF4. 4 - There are no solenoids or sensors outside or inside, therefore there are no wires going to the transaxle.



PROBABLE CAUSE	
45.	Servo valve check valve loose
46.	Gear clearance incorrect
47.	Clutch clearance incorrect
48.	Sprag clutch defective
49.	Sealing rings/guide worn
50.	Axle-inboard joint clip missing
51.	4th gears worn/damaged (2 gears)

PROBABLE CAUSES DUE TO IMPROPER REPAIR	
R1	Improper clutch clearance
R2	Improper gear clearance
R3	Parking pawl installed upside down
R4	Parking shift arm installed upside down
R5	Sprag clutch installed upside down
R6	Feed pipe missing in governor shaft
R7	Reverse hub installed upside down
R8	Oil pump binding
R9	Torque converter not fully seated in oil pump
R10	Main seal improperly installed
R11	Springs improperly installed
R12	Valves improperly installed
R13	Ball check valves not installed
R14	Shift fork bolt not installed

NOTES	
A	Flushing procedure (repeat 3 times): 1. Drain the trans. 2. Refill with 3 qts. of Dexron recommended type ATF. 3. Start the engine and shift trans to D4. 4. Let trans shift through gears at least 5 times. 5. Shift to reverse and neutral at least 5 times. 6. Drain and refill.
B	Set idle rpm in gear to specified idle speed. If still no good, adjust the motor mounts as outlined in engine section of service manual.
C	If the large clutch piston O-ring is broken, inspect the piston groove for rough machining.
D	If the clutch pack is seized, or is excessively worn, inspect the other clutches for wear, and check the orifice control valves and throttle valves for free movement.
E	If throttle valve B is stuck, inspect the clutches for wear.
F	If the modulator valve is stuck open (does not modulate line pressure), the trans will shift normally with less than 5/8 throttle but will shift up very late over 5/8 throttle. If the modulator valve is stuck closed, throttle valve A pressure will be zero and result in early upshifts and no forced downshift.
G	If the 1-2 valve is stuck closed, the transmission will not upshift. If stuck open, the transmission has no low gear.
H	If the 2nd orifice control valve is stuck, inspect the 2nd and 3rd clutch packs for wear.
I	If the 3rd orifice control valve is stuck, inspect the 3rd and 4th clutch packs for wear.
J	If the clutch pressure control valve is stuck closed, the transmission will not shift out of low gear.

NOTES	
K	Improper alignment of main valve body and torque converter case may cause oil pump seizure. The symptoms are mostly an rpm related ticking noise high pitched squeak. In severe instances, it may stall the engine. Follow instruction procedure on page 15-52.
L	If the oil screen is clogged with particles of steel or aluminum, inspect the oil pump and differential pinion shaft. If both are OK, and no cause for the contamination is found, replace the torque converter.
M	If the low clutch feedpipe guide in the end cover is scored by the mainshaft, inspect the ball bearing for excessive movement in the transmission housing. If OK, replace the end cover as it is dented. The O-ring under the guide is probably broken.
N	Replace the mainshaft if the bushings for the low and 4th feedpipe are loose or damaged. If the low feedpipe is damaged or out of round, replace it. If the 4th feedpipe is damaged or out of round, replace the end cover.
O	A worn or damaged sprag clutch is mostly a result of shifting the trans in D3 or D4 while the wheels rotate in reverse, such as rocking the car in snow.
P	Inspect the frame for collision damage.
Q	Inspect for damage or wear: 1. Governor shaft woodruff key 2. Reverse selector gear teeth chamfers 3. Engagement teeth chamfers of countershaft 4th & reverse gear 4. Shift fork, for scuff marks in center 5. Differential pinion shaft for wear under pinion gears 6. Bottom of 3rd clutch for swirl marks Replace items 1, 2, 3 and 4 if worn or damaged. If trans makes clicking, grinding or whirring noise, also replace mainshaft 4th gear and reverse idler gear and counter 4th gear in addition to 1, 2, 3, or 4. If differential pinion shaft is worn, overhaul differential assy and replace oil screen and thoroughly clean trans, flush torque converter and cooler and lines. If bottom of 3rd clutch is swirled and trans makes gear noise, replace countershaft and ring gear.
R	Be very careful not to damage the torque converter case when replacing the main ball bearing. You may also damage the oil pump when you torque down the main valve body; this will result in oil pump seizure if not detected. Use proper tools.
S	Install the main seal flush with the torque converter case. If you push it into the torque converter case until it bottoms out, it will block the oil return passage and result in damage.
T	Harsh downshifts when coasting to a stop with zero throttle may be caused by a bent-in throttle valve retainer/cam stopper. Throttle cable adjustment may clear this problem. See page 15-71.
U	Check if servo valve check valve stopper cap is installed. If it was not installed, the check valve may have been pushed out by hydraulic pressure causing a leak internally affecting all forward gears.
V	Throttle cable adjustment is essential for proper operation of the transmission. Not only does it affect the shift points if misadjusted but also the shift quality and lockup clutch operation. A too long adjusted cable will result in throttle pressure being too low for the amount of engine torque input into the transmission, and may cause clutch slippage. A too short adjusted cable will result in too high throttle pressures which may cause harsh shifts, erratic shifts and torque converter hunting.

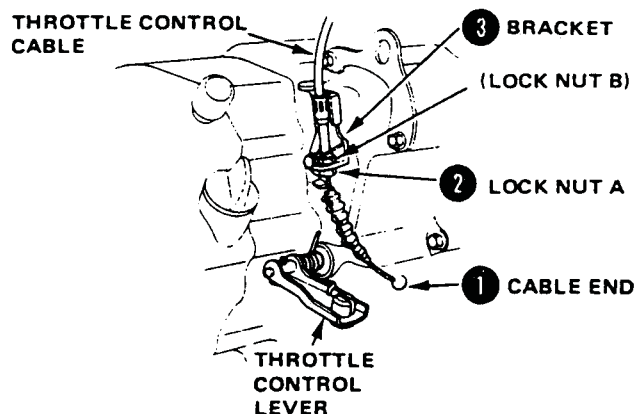
## ATSG HONDA BULLETINS

- 86-50 CLEANING VALVE BODY
- 87-27 NOISE, DRIVE TO REVERSE-REVERSE TO DRIVE
- 88-40 SPRAG INSTALLATION
- 89-40 HARSH ENGAGEMENT
- 90-70 HARSH SHIFTS
- 91-65 SLIPPING, SHUDDERS, HARD UP OR DOWN SHIFTS AND TRANS FAILURE
- 91-66 NO REVERSE AND SECOND GEAR STARTS
- 91-67 SLIPPING OR NO 1ST GEAR
- 91-68 HIGH LINE PRESSURE
- 92-07 LATE 1-2 SHIFT
- 92-08 NO-UPSHIFT
- 92-09 SQUAWKING NOISE GOING INTO 1ST

# Transmission

## Removal

1. Disconnect ground cable at battery and transmission.
2. Release steering lock, and shift gear selector to N.
3. Disconnect wiring:
  - Battery positive cable from starter.
  - Black/white wire from starter solenoid.
4. Disconnect cooler hoses, and wire them up next to the radiator so ATF won't drain out.
5. Remove starter mounting bolts and top transmission mounting bolt.
6. Loosen front wheel nuts.
7. Apply parking brake, block rear wheels, then raise front end on jack stands and remove front wheels.
8. Drain transmission. Reinstall drain plug with a new washer.
9. Remove throttle control cable:
  - Remove the cable end from the throttle lever.
  - Loosen the lock nut A only.
  - Remove the cable from bracket.



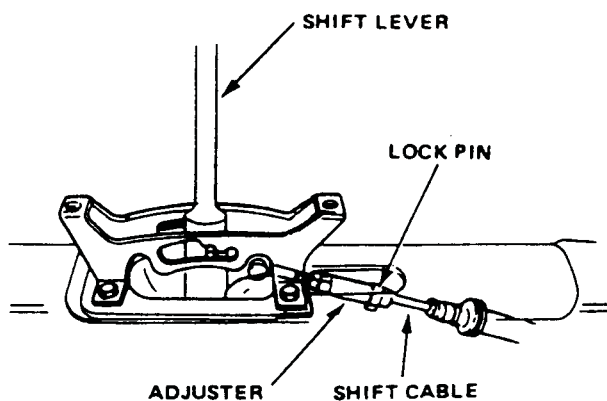
NOTE: For cable adjustment see page 74

10. Remove power steering speed sensor complete with speedometer cable and hoses.
11. Remove two upper transmission mounting bolts.
12. Place transmission jack securely beneath transmission, and hook hanger plate with hoist; make sure hoist chain is tight.
13. Remove subframe center beam and splash pan.
14. Remove the ball joint pinch bolt from the right-side lower control arm, then use a puller to disconnect the ball joint from the knuckle. Remove the damper fork bolt.

15. Turn right side steering knuckle to its most out-board position. With screwdriver, pry CV joint out approximately 1/2", then pull CV joint out of transmission housing.

**CAUTION:** Do not pull on the driveshaft or knuckle since this may cause the inboard CV joint to separate; pull on the inboard CV joint.

16. Remove transmission damper bracket located in front of torque converter cover plate.
17. Remove torque converter cover plate.
18. Remove center console and shift indicator.



19. Remove lock pin from adjuster and shift cable.  
NOTE: On reassembly, check cable adjustment
20. Remove both bolts and pull shift cable out of housing.
21. Unbolt torque converter assy from drive plate by removing eight bolts.
22. Remove the three rear engine mounting bolts from transmission housing.  
Remove the rear engine mount.
23. Remove the front transmission mount's two bolts.
24. Remove the lower transmission mounting bolt.
25. Pull transmission away from the engine to clear the two 14 mm dowel pins.
  - Pry left-side CV joint out approximately 1/2".
  - Pull transmission out and lower on transmission jack.
  - Remove torque converter from transmission.

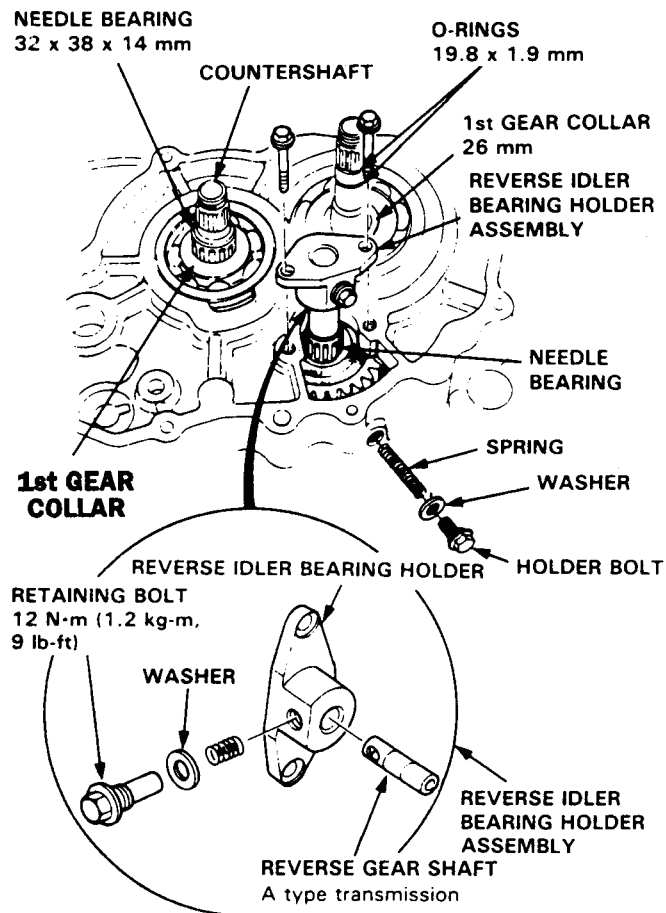
# Transmission Housing

## Removal (cont'd)

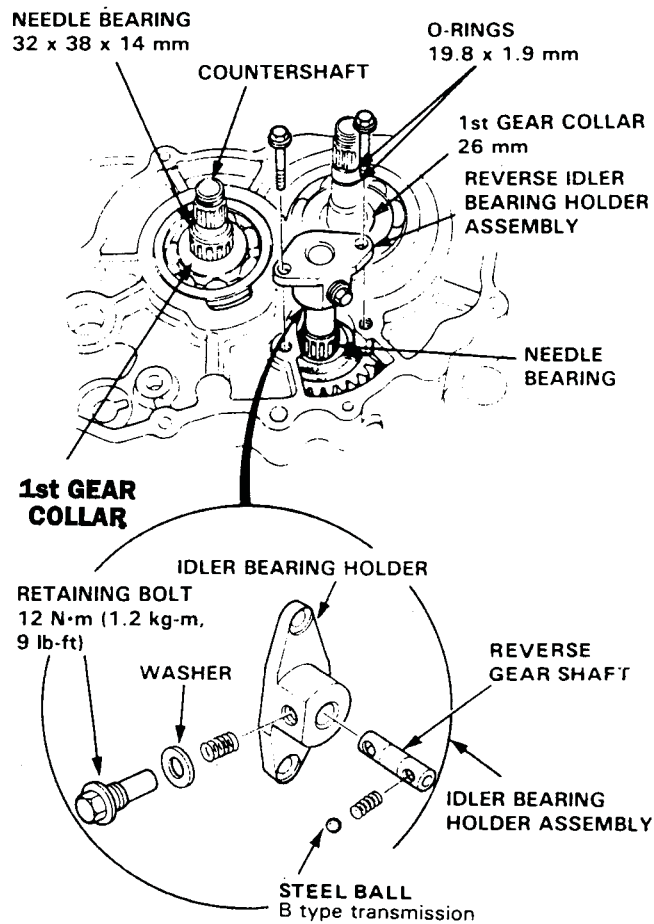
- From the countershaft, remove the needle bearing and 1st gear collar. From the mainshaft, remove the 1st gear collar.

- Remove the reverse idler bearing holder assembly.

(A type transmission)

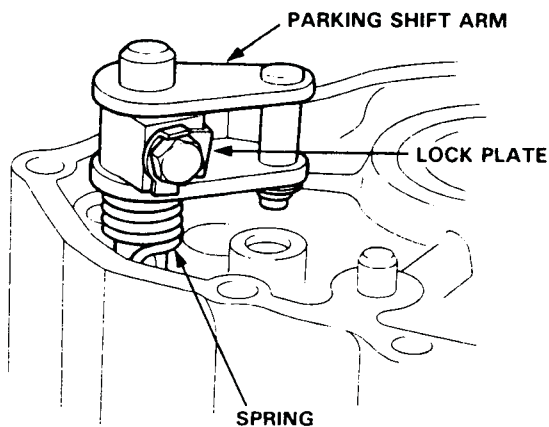


(B type transmission)



- Bend down the tab on the lock plate under the parking shift arm bolt.

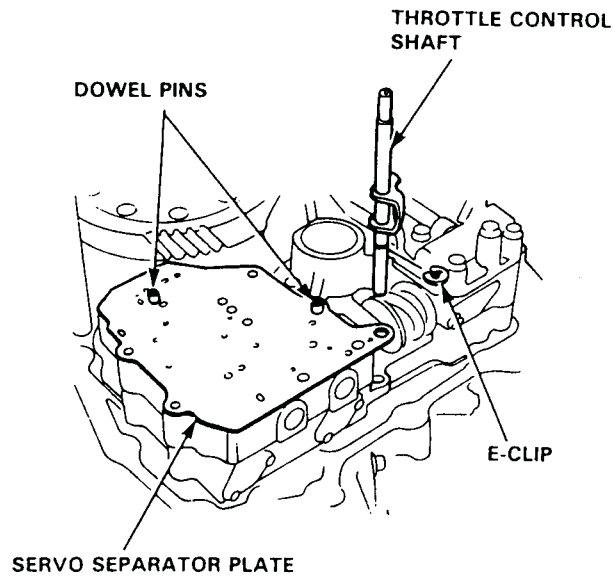
- Remove the bolt, then remove the parking shift arm.



# Main Valve Body

## Removal (cont'd)

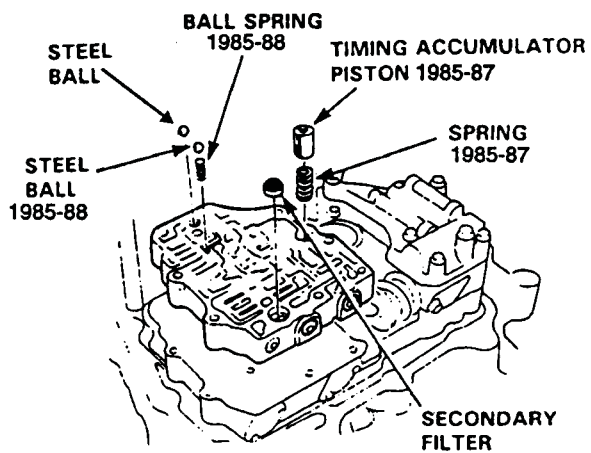
8. Remove the E-clip. Then remove the throttle control shaft from the separator plate.
9. Remove the separator plate and dowel pins.



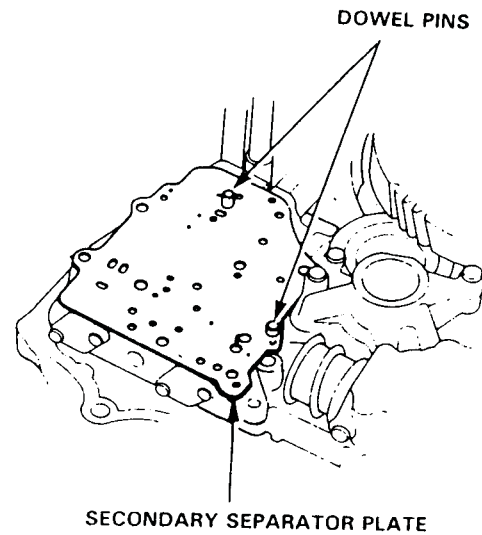
10. Remove the secondary valve body, being careful not to lose the 2 steel balls, ball spring, check valve and spring, secondary filter. 1988 & 89 see page 25

**CAUTION:** Do not use a magnet to remove the steel balls; it may magnetize the balls.

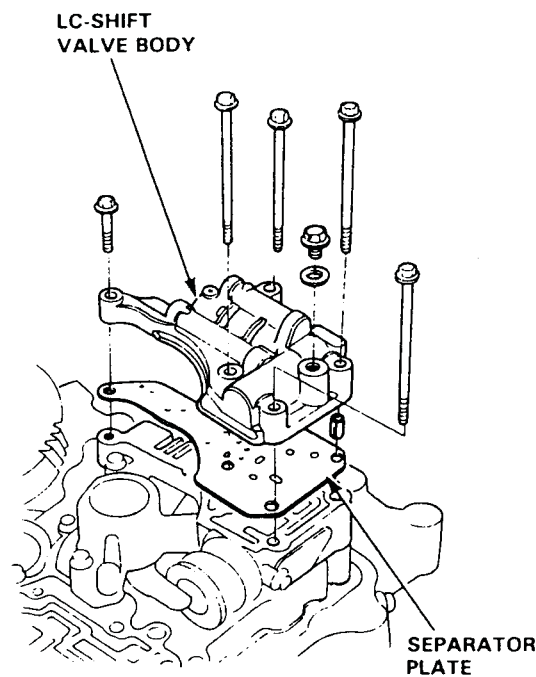
**SEE PAGE 25 FOR CHECK BALL LOCATIONS**



11. Remove the separator plate and dowel pins.



12. Remove the LC-Shift valve body and separator plate (5 bolts).

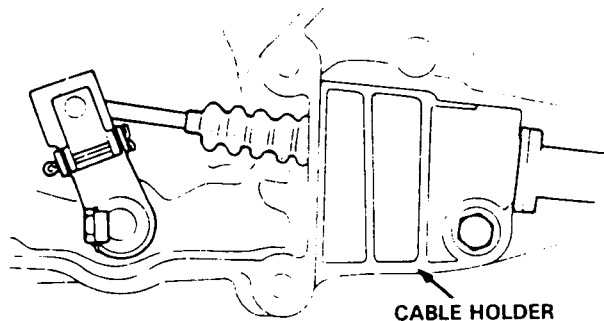




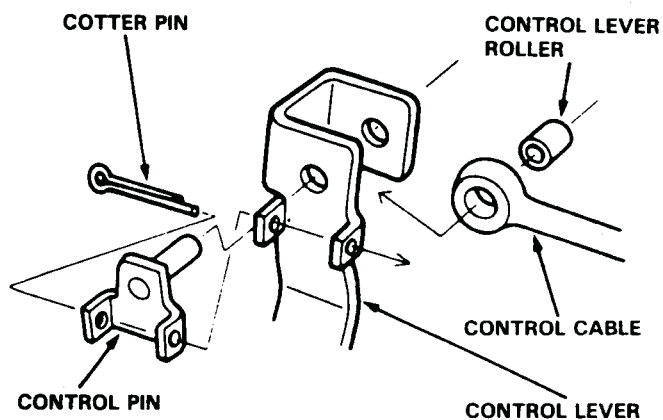
# Control Shaft

## Removal

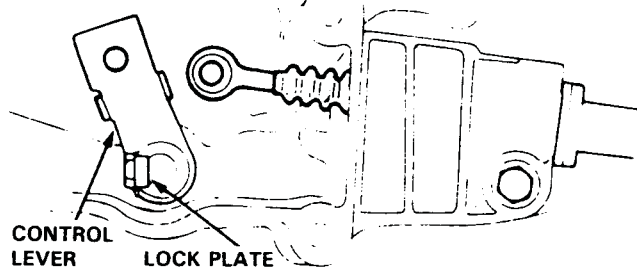
1. Remove the cable holder.



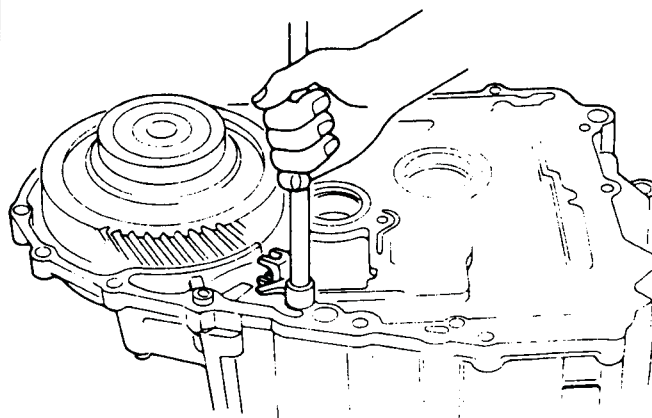
2. Remove the cotter pin, control pin, and control lever roller from the control lever.



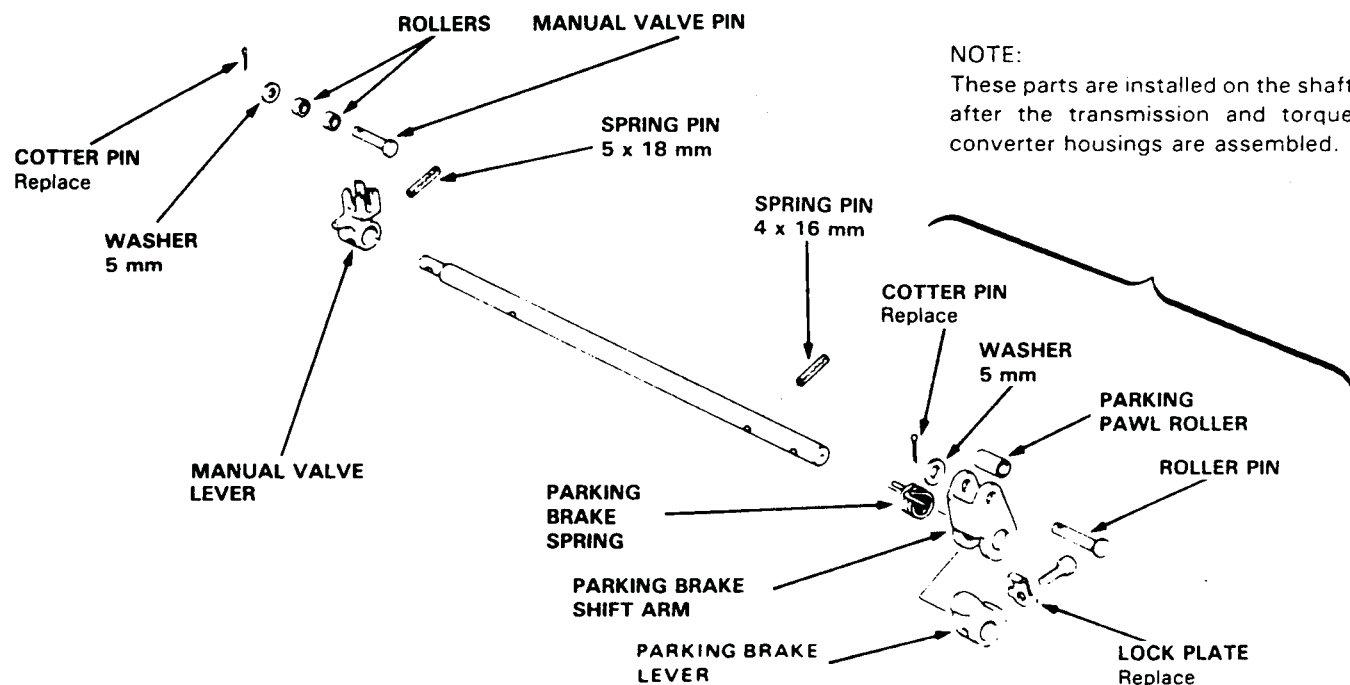
3. Bend down the tab on the lock plate under the bolt in the control lever. Then remove the bolt and lever.



4. Turn the torque converter housing over and remove the control shaft.



## Disassembly/Reassembly

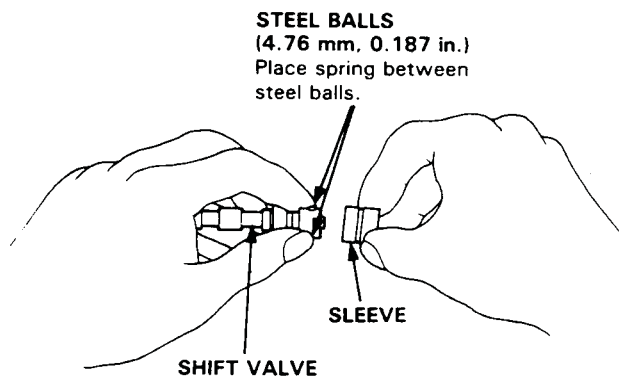


# Main Valve Body

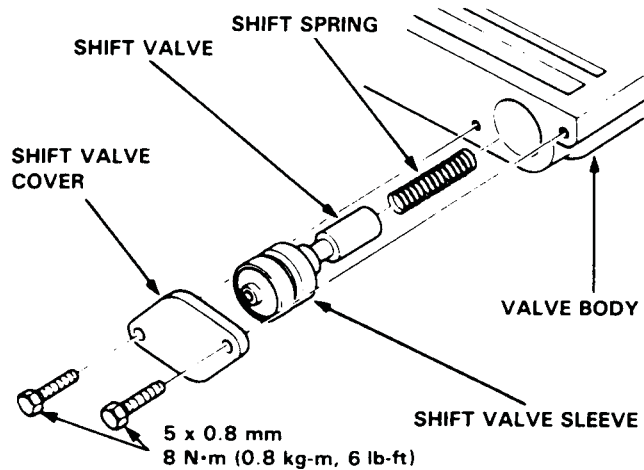
## Reassembly

NOTE: Coat all parts with ATF before assembling.

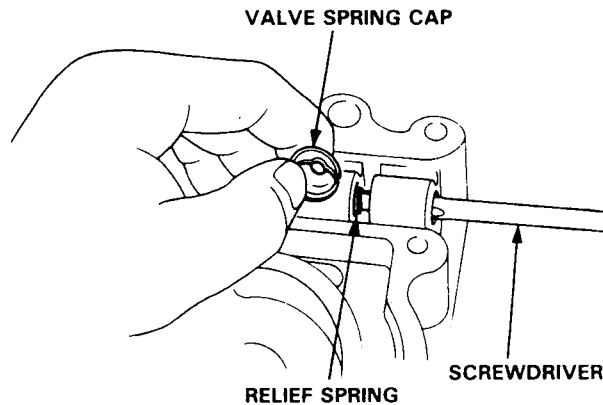
1. Slide the spring into the hole in the big end of the shift valve.  
While holding the steel balls with the tips of your fingers, put the sleeve over valve.



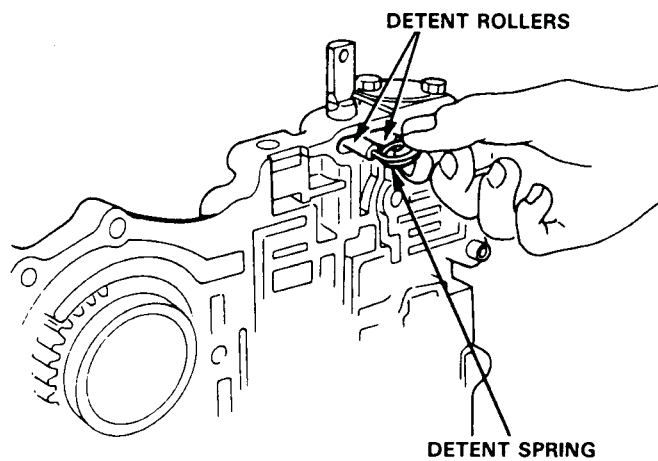
2. Place the shift spring in the valve, then slip it into the valve body and install the valve cover.



3. Set the relief spring in the relief valve and install it in the main valve body.
4. Install the spring with a screwdriver, then install the check valve cap with the cutout aligned with the screwdriver.



5. Install the manual valve, detent rollers and spring.



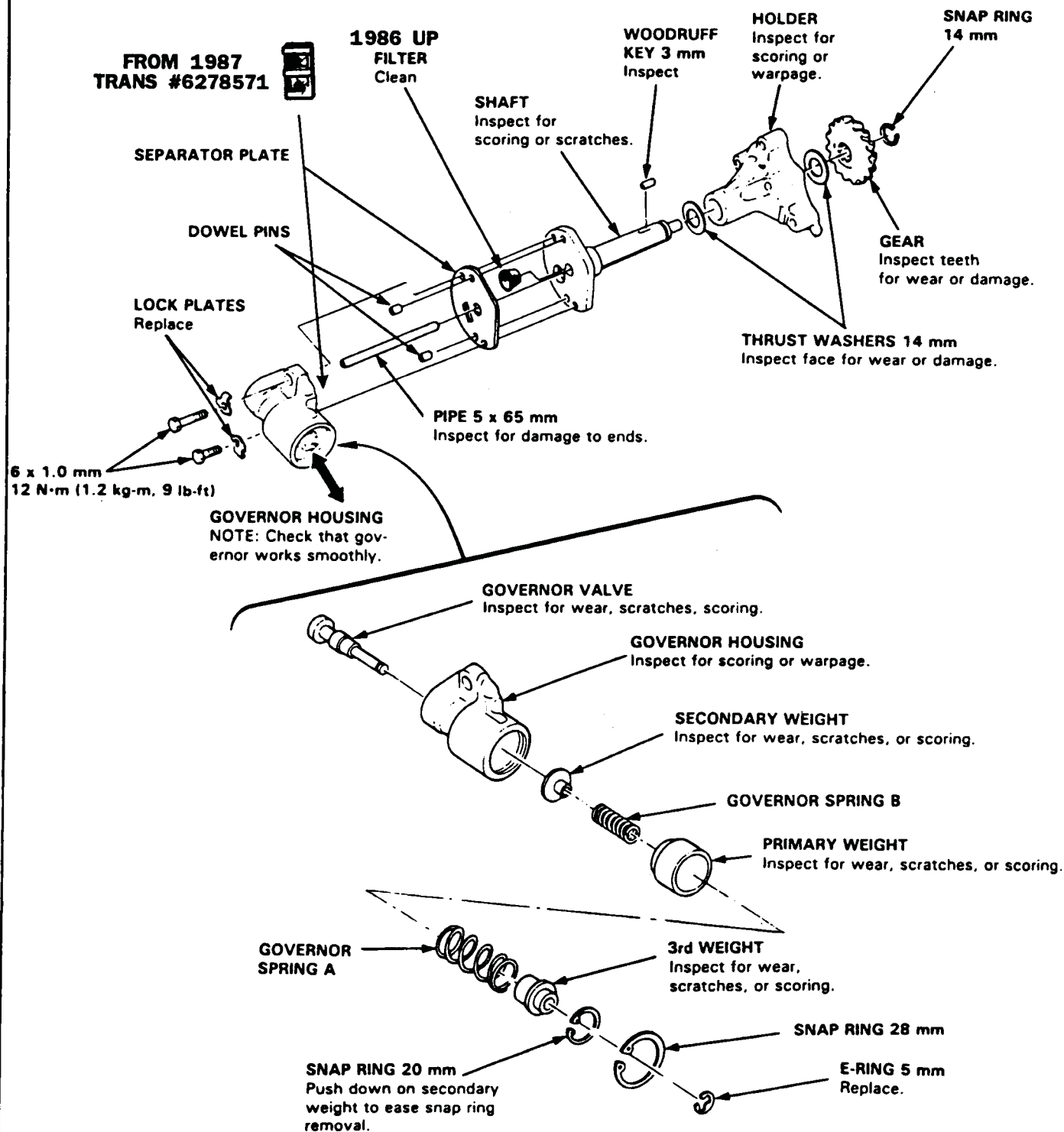


# Governor Valve

## Disassembly/Inspection/Reassembly

### NOTE:

- Clean all parts thoroughly solvent or carburetor cleaner, and dry with compressed air. Blow out all passages.
- Check that the governor works smoothly; replace it if it does not.
- Coat all parts with ATF before reassembly.

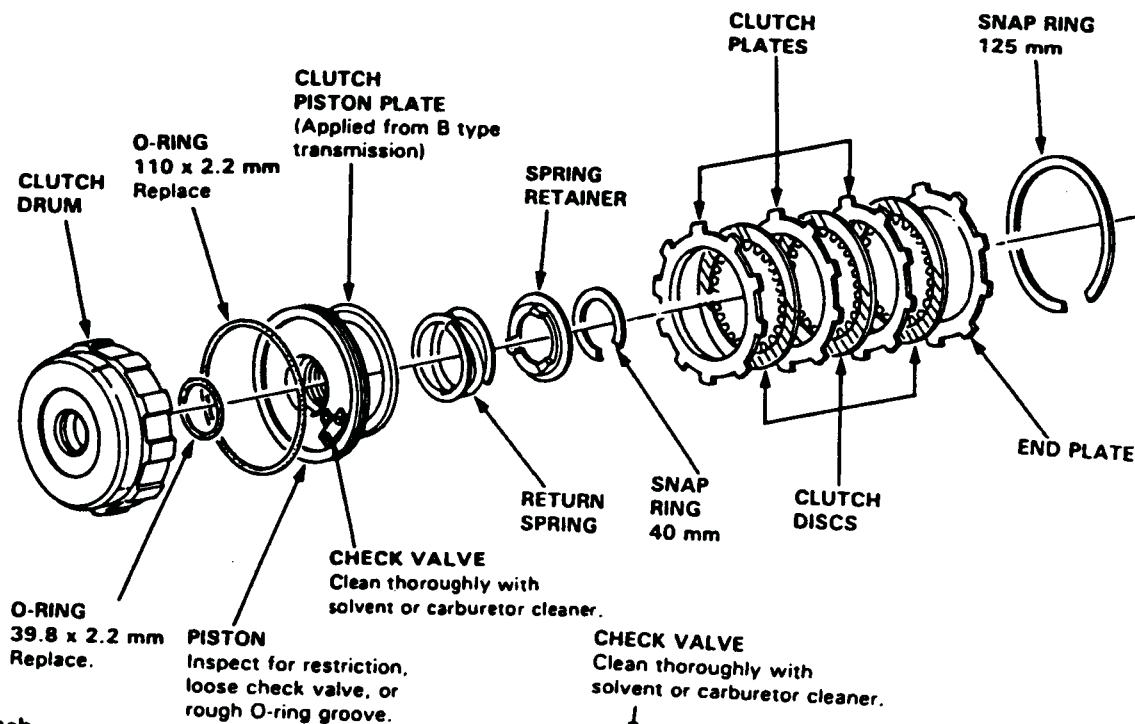


# Clutch

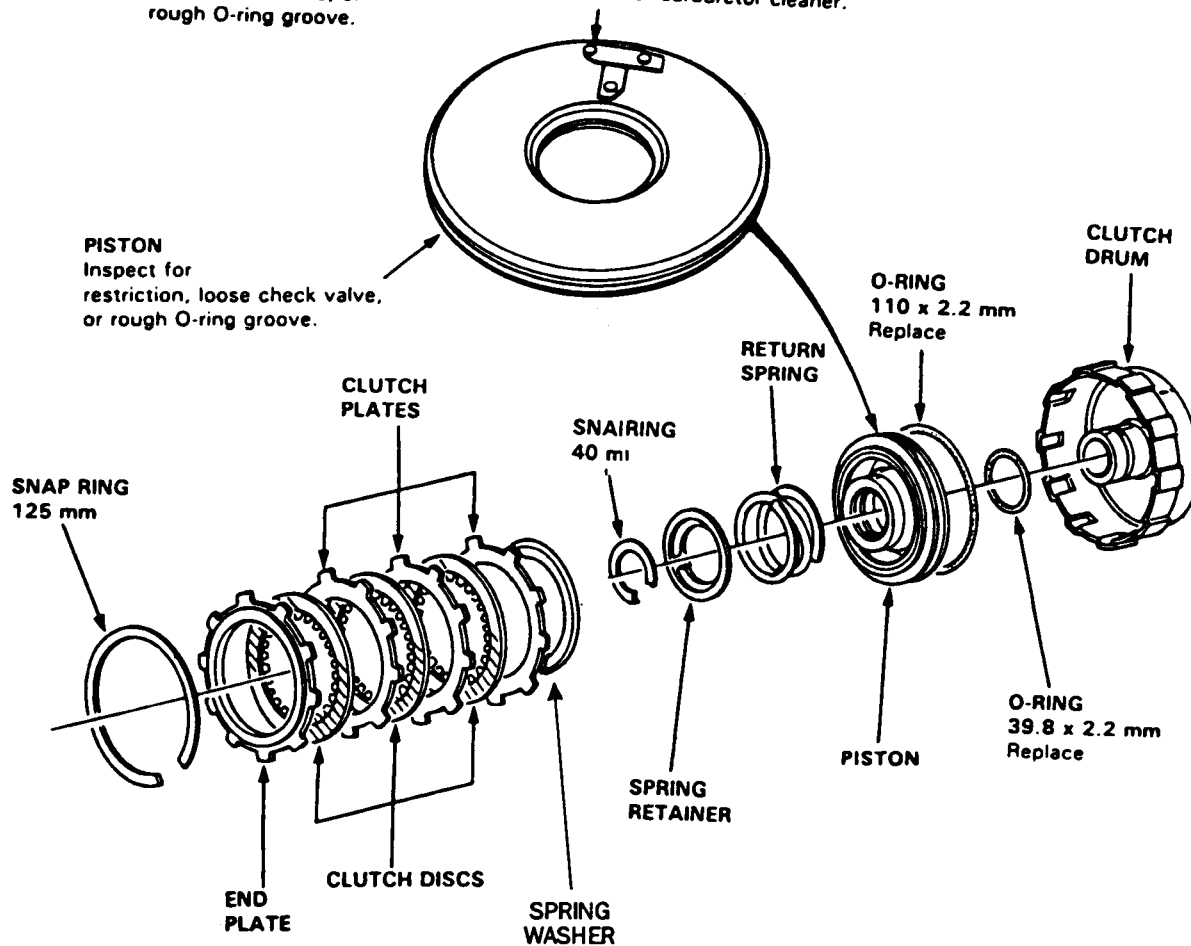
## Disassembly/Inspection (cont'd)

### 1st Clutch

NOTE: Piston plate (applied from B type transmission) is installed in the 1st clutch.



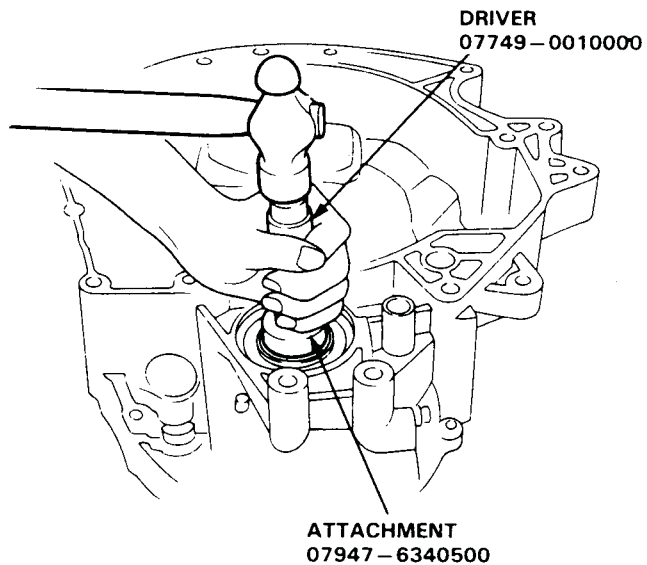
### 3rd Clutch



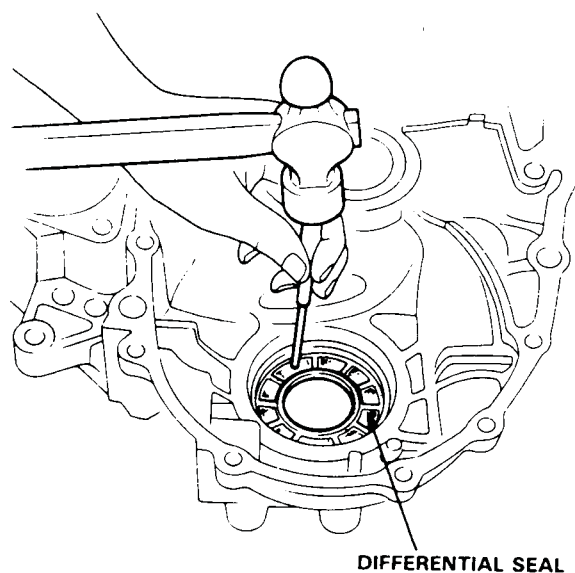
# Differential and Seal

## Replacement

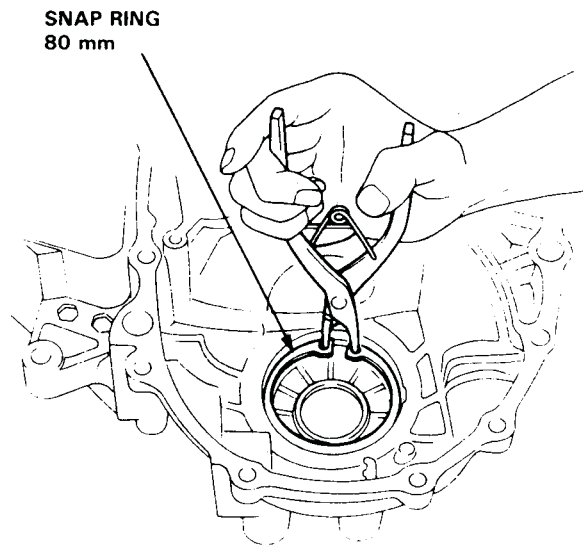
1. If seals are to be replaced, or if differential needs repair, remove the differential.



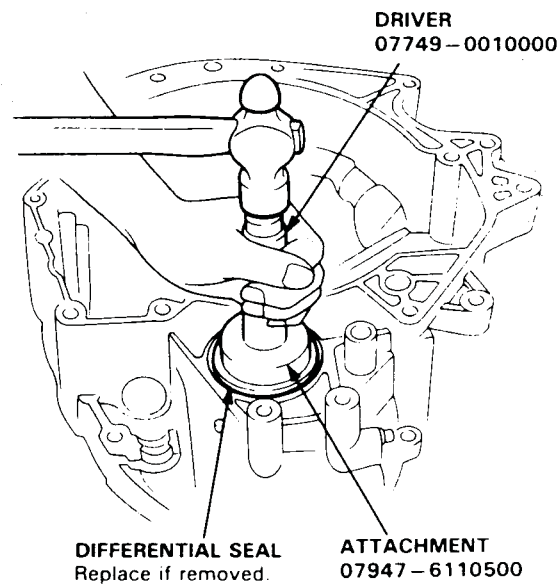
2. On the torque converter housing, remove the 80 mm snap ring, then drive out the seal as shown.
3. Remove the differential seal from the transmission housing in the same way.



4. On the torque converter housing, install the differential 80 mm snap ring if removed.



5. Install the differential seals into the torque converter housing and transmission housing.

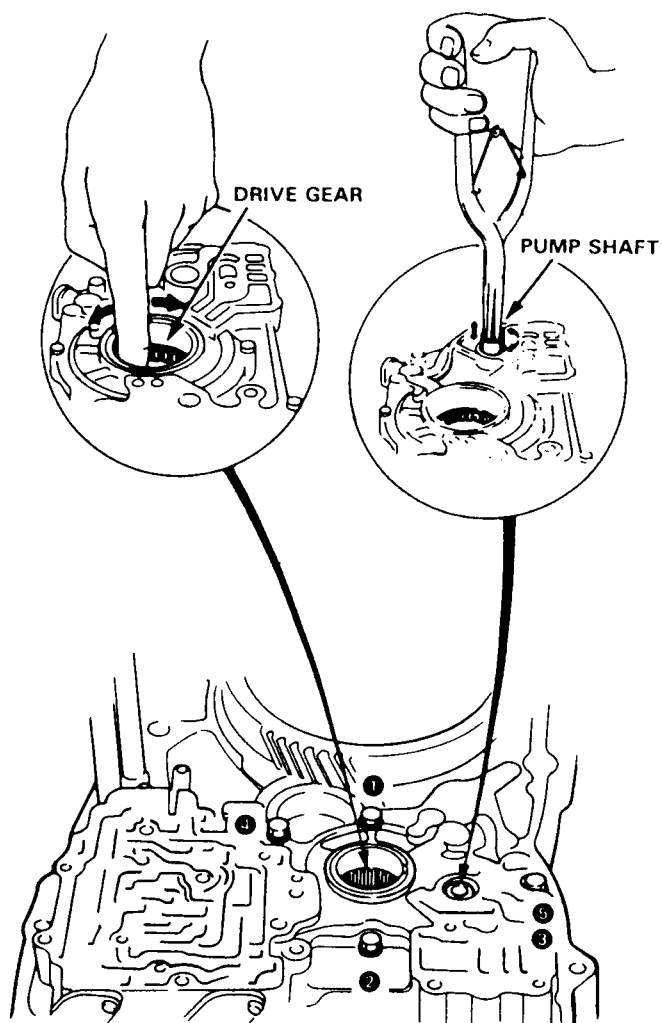


# Transmission

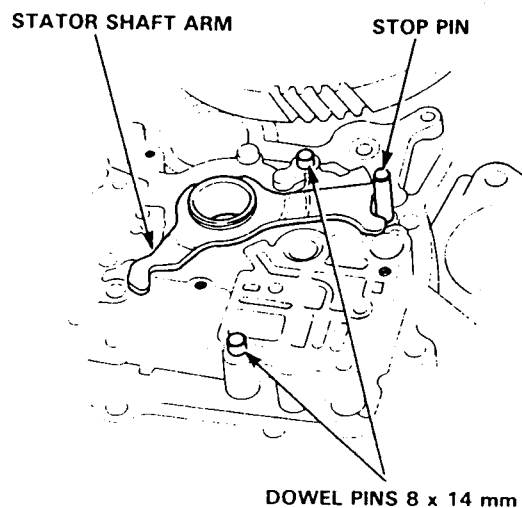
## Reassembly (cont'd)

7. Tighten the 4 valve body bolts in the sequence shown. Make sure the pump drive gear rotates smoothly in the normal operating direction and the pump shaft moves smoothly in both the axial and normal operating directions.
8. Torque the valve body bolts to **80 inch pounds** (ft-lb), and again check that the pump gear and pump shaft move freely.

**CAUTION:** If the pump gear and pump shaft do not move freely, loosen the valve body bolts, realign the shaft, and then retighten to the specified torque. Failure to align the pump shaft correctly will result in seized pump gear or pump shaft.

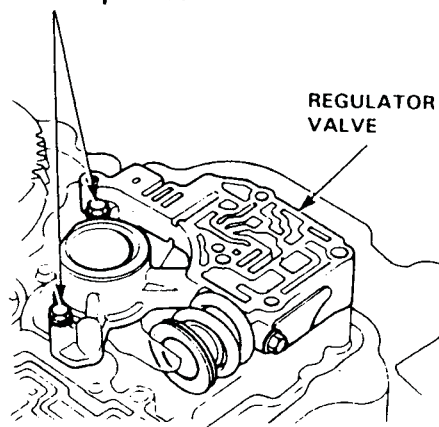


9. Install the stator shaft arm, stop pin and dowel pins.



10. Install the regulator valve and torque its 2 bolts to **70 inch pounds**

**6 mm BOLTS**  
**70 inch pounds**

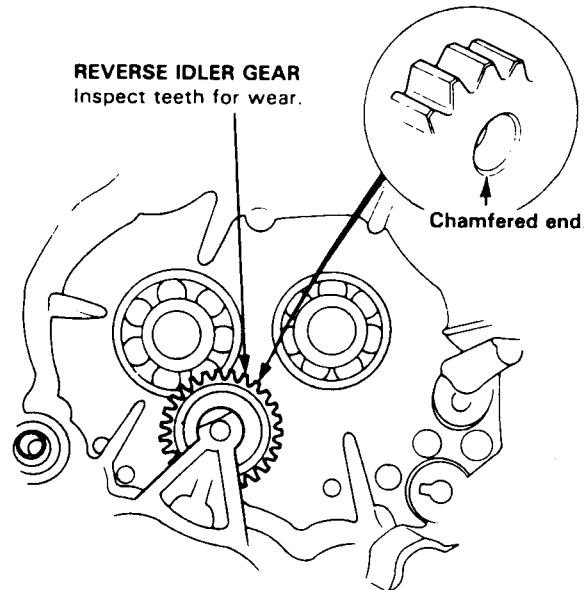


# Transmission

## Reassembly (cont'd)

34. Install the reverse idler gear.

NOTE: Install the reverse idler gear so that the larger chamfer on the shaft bore faces the torque converter housing.

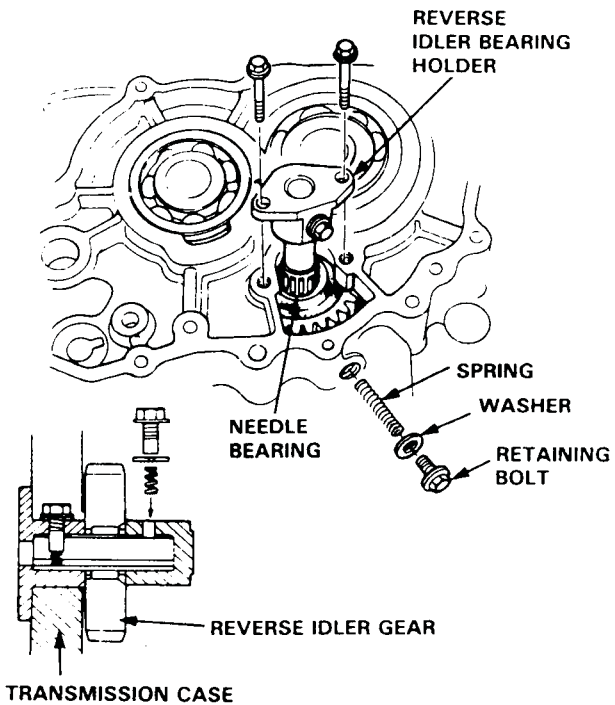


35. Install the needle bearing into the idler gear.
36. Install the idler bearing holder into the transmission housing.

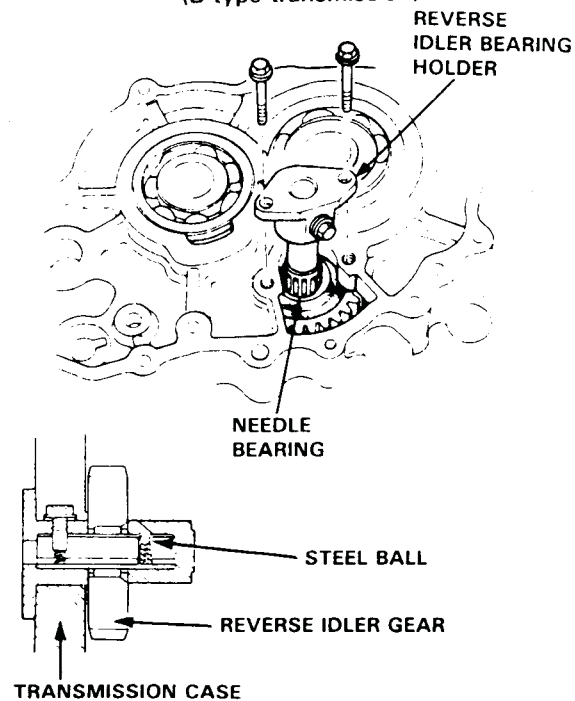
37. Tighten the reverse idler bearing holder bolts.

38. Install the spring and then tighten the retaining bolt with sealed washer.

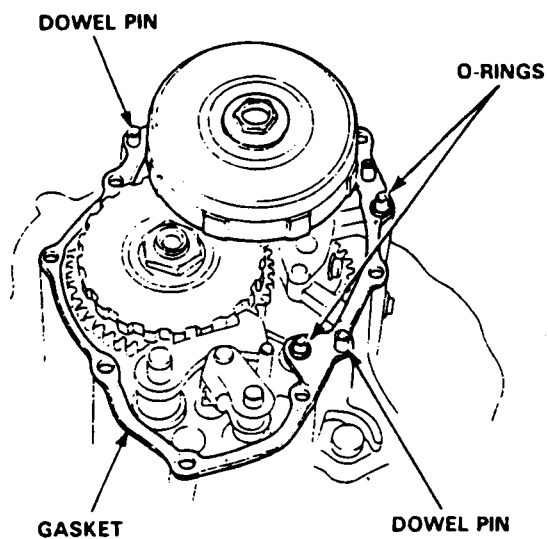
(A type transmission)



(B type transmission)



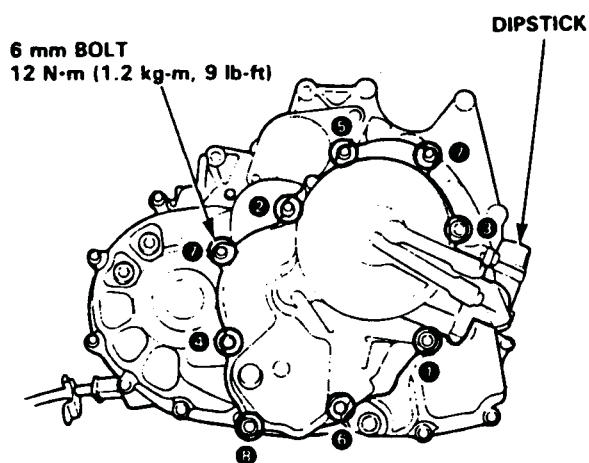
57. Install the gasket, dowel pins, and O-rings on the transmission housing.



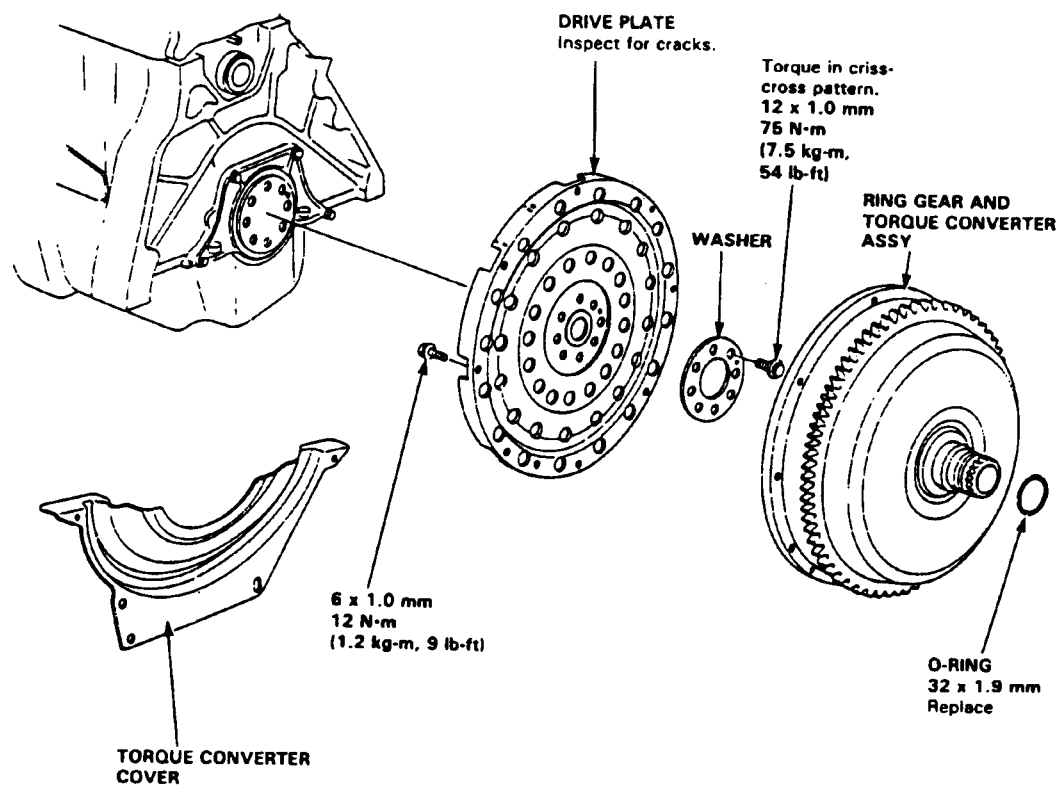
58. Install the end cover and torque all bolts (9) to 12 N·m (1.2 kg·m, 9 lb·ft).

59. Install the dipstick.

60. Install the transmission cooler banjo fitting, but do not tighten until the transmission is installed in the car and the hose is positioned properly.



## TORQUE CONVERTER DISASSEMBLY



# Gearshift Selector

