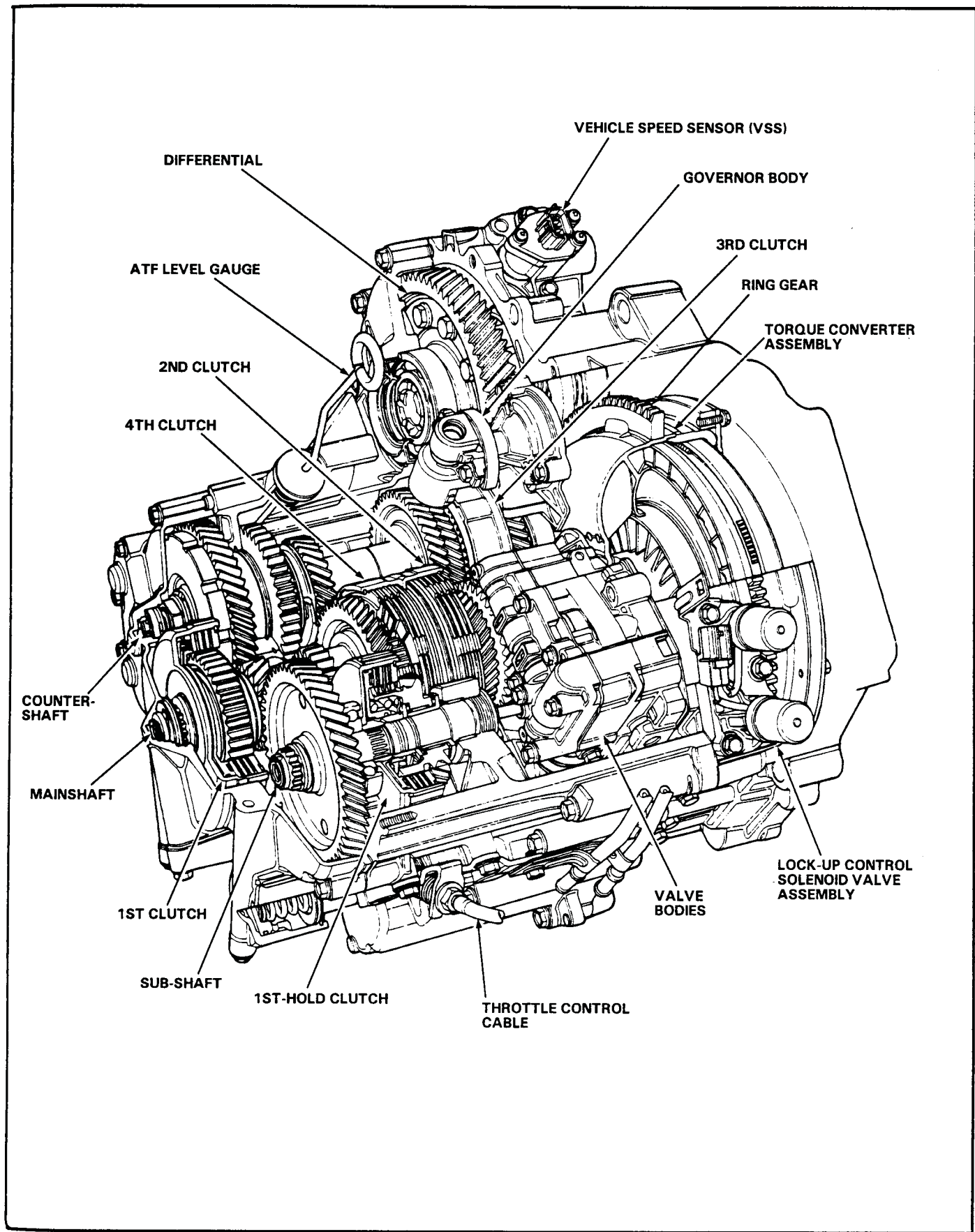


# INDEX

	PAGE
Description.....	3
Hydraulic Control.....	8
Troubleshooting.....	16
Road Test.....	22
Pressure Testing.....	27
Transmission Removal.....	34
Illustrated Index.....	38
Teardown.....	44
Valve Body.....	50
Governor.....	63
Mainshaft.....	65
Countershaft.....	68
Sub-shaft.....	74
Clutch Packs.....	76
Differential.....	108
Reassembly.....	81
Installation.....	98
Linkage.....	102

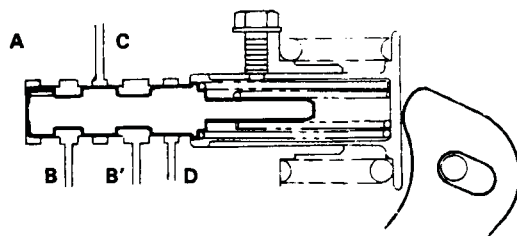


## Regulator Valve

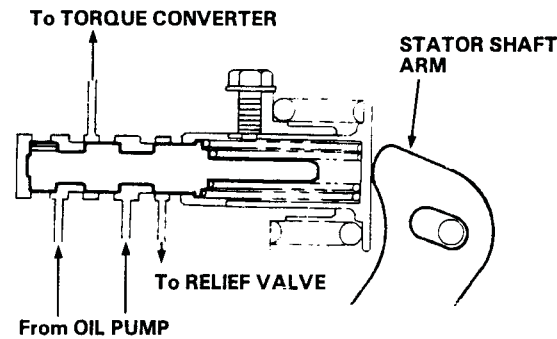
The regulator valve maintains a constant hydraulic pressure from the oil pump to the hydraulic control system, while also furnishing oil to the lubricating system and torque converter.

Oil flows through B and B'. The oil which enters through B flows through the valve orifice to A, pushing the regulator valve to the right. According to the level of hydraulic pressure through B, the position of the valve changes, and the amount of the oil through B' from D thus changes. This operation is continued, thus maintaining the line pressure.

(ENGINE NOT RUNNING)

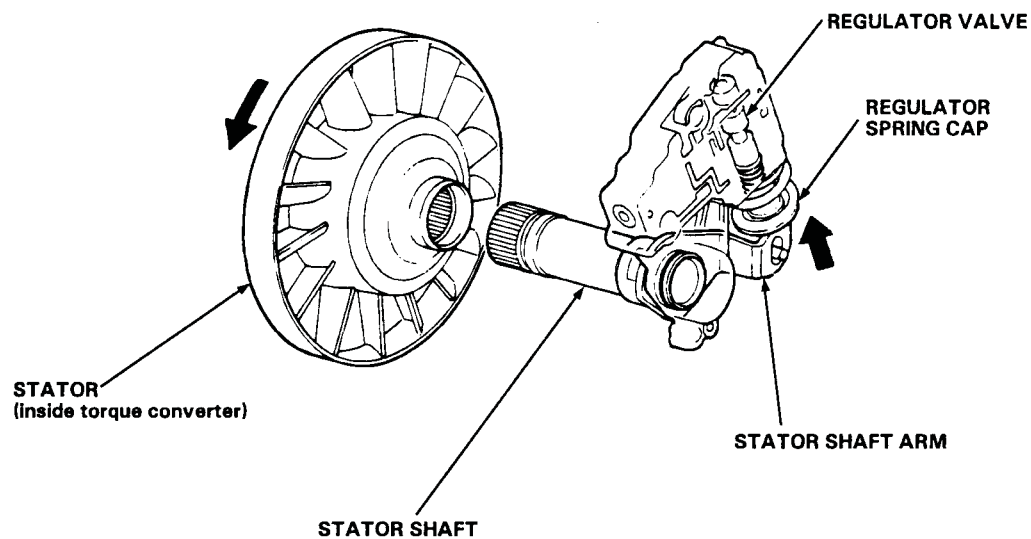


(ENGINE RUNNING)



## Stator Reaction Hydraulic Pressure Control

Hydraulic pressure increase, according to torque, is performed by the regulator valve using stator torque reaction. The stator shaft is splined to the stator and its arm end contacts the regulator spring cap. When the car is accelerating or climbing (Torque Converter Range), stator torque reaction acts on the stator shaft and the stator shaft arm pushes the regulator spring cap in this → direction in proportion to the reaction. The spring compresses and the regulator valve moves to increase the regulated control pressure or line pressure. Line pressure is maximum when the stator reaction is maximum.



(cont'd)

# Technical Service Information

## Hydraulic System

18

### Symptom-to-Component Chart

SYMPTOM	Check these items on the PROBABLE CAUSE LIST	Check these items on the NOTES CHART
Engine runs, but car does not move in any gear.	1, 6, 7, 16	K, L, R, S
Car moves in R and 2, but not in D <sub>3</sub> , D <sub>4</sub> or 1.	8, 29, 44, 48	C, M, O
Car moves in D <sub>3</sub> , D <sub>4</sub> , 1, R, but not in 2.	9, 30, 49	C, L
Car moves in D <sub>3</sub> , D <sub>4</sub> , 2, 1, but not in R.	1, 11, 22, 34, 38, 39, 40	C, L, Q,
Car moves in N.	1, 8, 9, 10, 11, 46, 47	C, D
Excessive idle vibration.	5, 17	B, K, L
Slips in all gears.	6, 7, 16	C, L, U
No engine braking in 1 position.	12	C, D, L
Slips in 1st gear.	8, 29, 44, 48	C, N, O, U
Slips in 2nd gear.	9, 20, 23, 30, 49	C, L, U
Slips in 3rd gear.	10, 21, 23, 31, 44	C, L, U
Slips in 4th gear.	11, 23, 32	C, L, U
Slips in reverse gear.	11, 32, 34	C
Flares on 1-2 upshift.	3, 15	E, L, V
Flares on 2-3 upshift.	3, 15, 24, 44	E, L, V
Flares on 3-4 upshift.	3, 15, 25, 44	E, L, V
No upshift, transmission stays in 1st gear.	14, 19, 23	G, L
No downshift to low gear.	12, 19	G, L
Late upshift.	14	L, V
Erratic shifting.	2, 14, 26	V
Harsh shift (up and down shifting).	2, 4, 15, 23, 24, 27, 47	A, E, H, I, L, V
Harsh shift (1-2).	2, 9	C, D, V
Harsh shift (2-3).	2, 10, 23, 24	C, D, H, L, V
Harsh shift (3-4).	2, 11, 23, 25	C, D, I, L, V
Harsh kick-down shifts.	2, 23, 27, 28	L, V, Q
Harsh kick-down shift (2-1).	48	O
Harsh downshift at closed throttle.	15	E, T
Harsh shift when manually shifting to 1.	33	L
Axle(s) slips out of transmission on turns.	43, 50	L, P, Q
Axle(s) stuck in transmission.	43	L, Q
Ratcheting noise when shifting into R.	6, 7, 38, 39, 40	K, L, Q
Loud popping noise when taking off in R.	38, 39, 40	L, Q
Ratcheting noise when shifting from R to P or from R to N.	38, 39, 40, 45	L, Q
Noise from transmission in all selector lever positions.	6, 17	K, L, Q
Noise from transmission only when wheels are rolling.	39, 42	L, Q
Gear whine, rpm related (pitch changes with shifts).	8, 41	K, L, Q
Gear whine, speed related (pitch changes with speed).	38, 42	L, Q
Transmission will not shift into 4th gear in D <sub>4</sub> .	1, 21, 28, 32	L
Lock-up clutch does not lock-up smoothly.	17, 36, 37	L
Lock-up clutch does not operate properly.	2, 3, 15, 18, 35, 36, 37	E, L, V
Transmission has multitude of problems shifting. At disassembly, large particles of metal are found on magnet.	43	L, Q

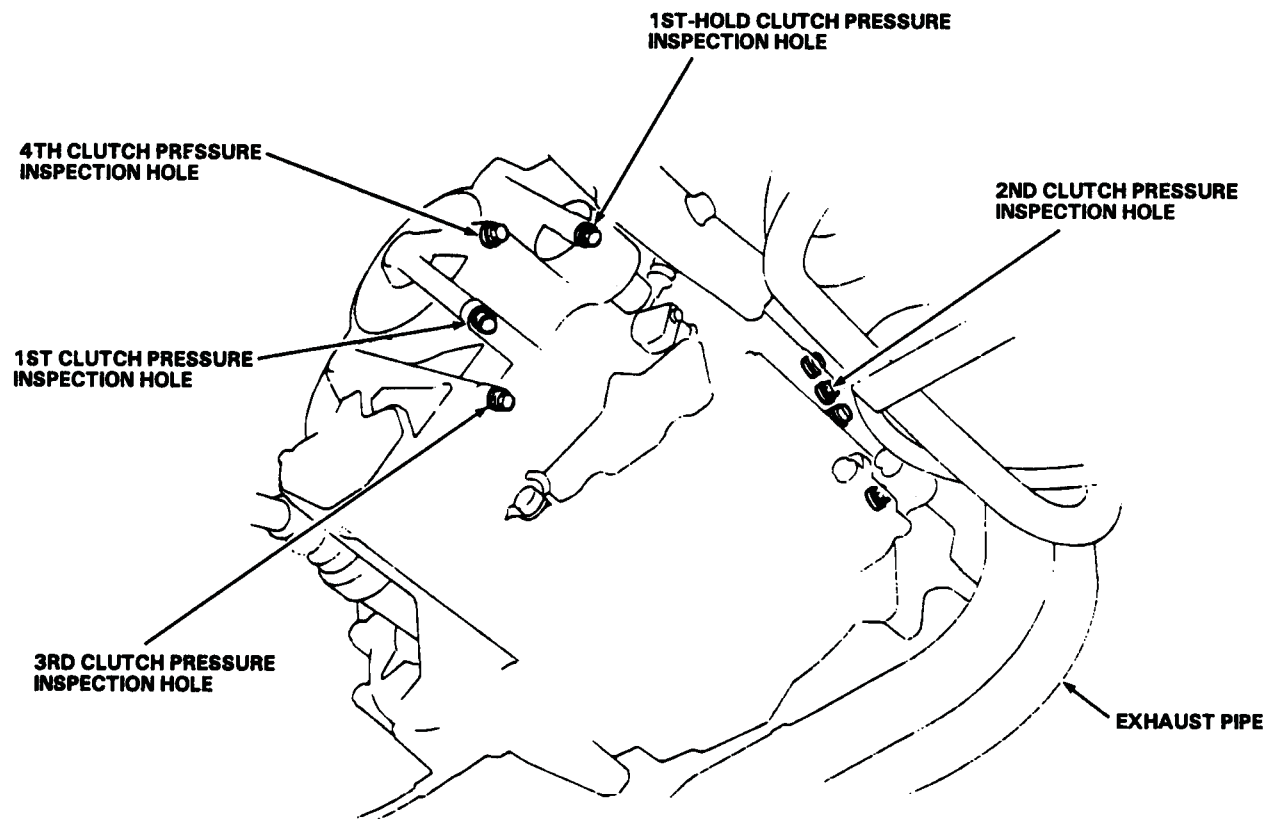
(cont'd)

• Clutch Pressure Measurement

**▲ WARNING**

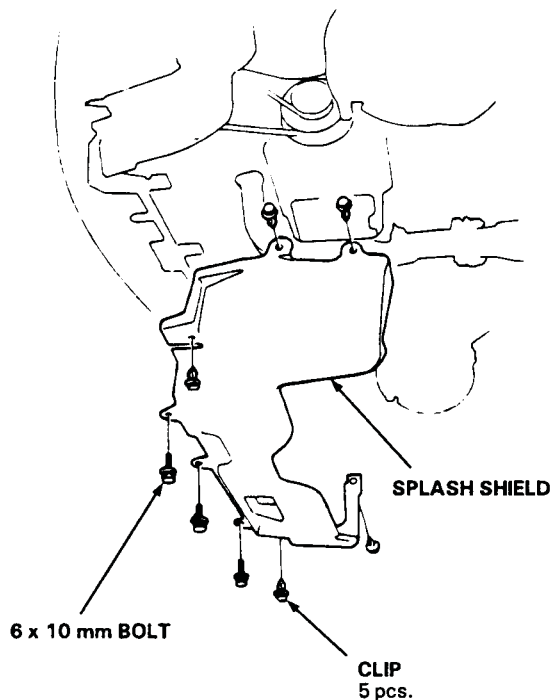
While testing, be careful of the rotating front wheels.

- 1. Set the parking brake and block both rear wheels securely.
- 2. Raise the front of the car and support with safety stands.
- 3. Allow the front wheels to rotate freely.
- 4. Run the engine at 2,000 rpm.
- 5. Measure each clutch pressure.

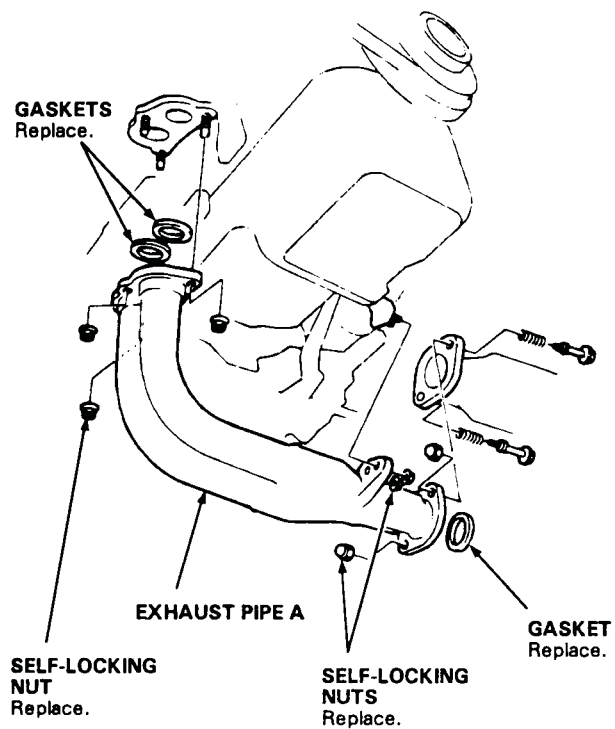


## Removal (cont'd)

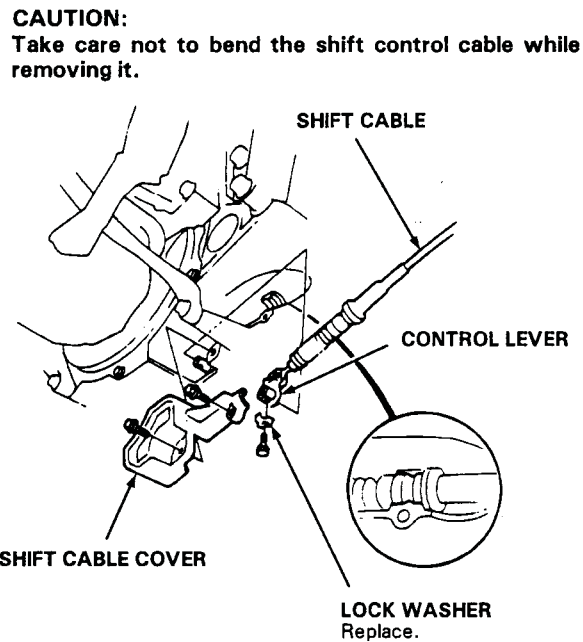
14. Remove the splash shield.



15. Remove the exhaust pipe A.



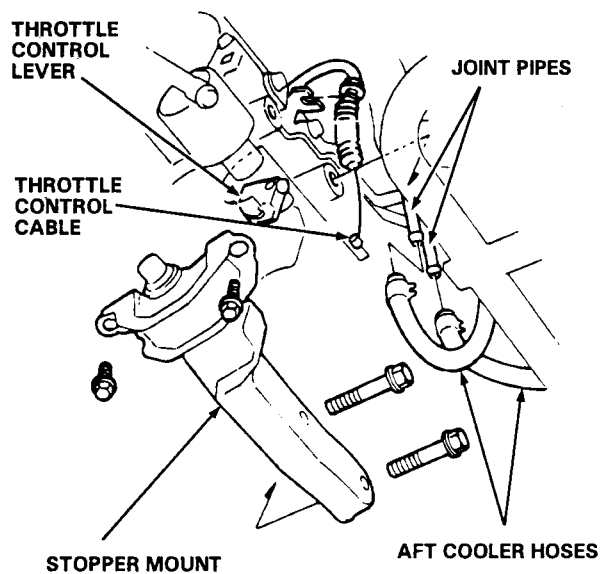
16. Remove the shift cable cover, then remove the shift cable by removing the control lever.



17. Remove the stopper mount, then remove the end of the throttle control cable from the throttle control lever.

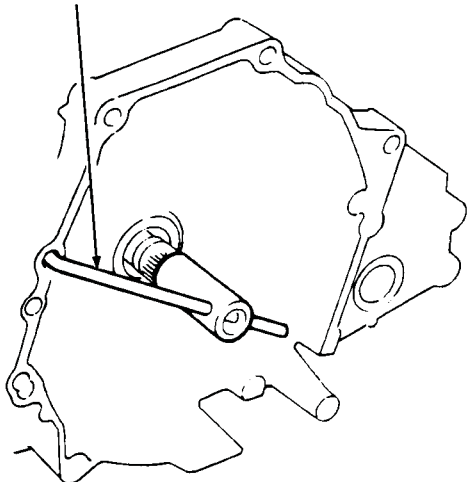
18. Remove the ATF cooler hoses at the joint pipes. Turn the ends of the cooler hoses up to prevent ATF from flowing out, then plug the joint pipes.

**NOTE:**  
Check for any signs of leakage at the hose joints.

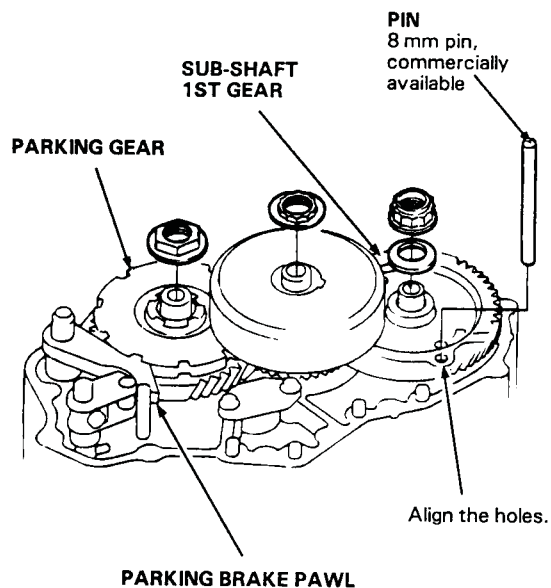


1. Remove the 13 bolts securing the right side cover, then remove the cover.
2. Slip the special tool onto the mainshaft.

**MAINSHAFT HOLDER  
07GAB-PF50101**



3. Engage the parking brake pawl with the parking gear.
4. Align the hole of the sub-shaft 1st gear with the hole of the transmission housing, then insert a pin to lock the sub-shaft while removing the sub-shaft locknut.



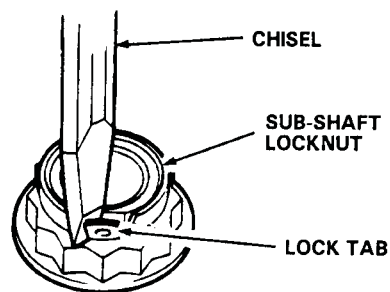
5. Pry the lock tabs of the mainshaft and countershaft locknuts.
6. Cut the lock tab of the sub-shaft locknut using a chisel as shown. Then remove the locknut from each shaft.

**NOTE:**

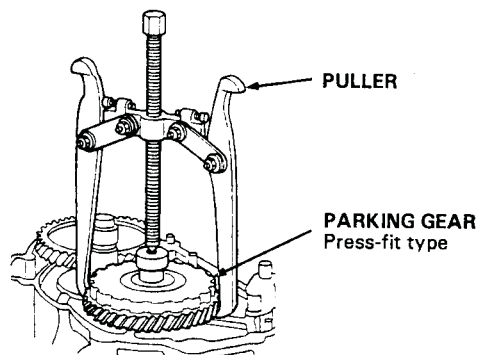
- Mainshaft locknut has left-hand threads.
- Clean the old countershaft locknut, it is used to install the "press fit" parking gear on the countershaft.
- Always wear safety glasses.

**CAUTION:**

Keep all of the chiseled particles out of the transmission.



7. Remove the special tool from the mainshaft after removing the locknut.
8. Remove the 1st clutch and mainshaft 1st gear assembly from the mainshaft.
9. Remove the sub-shaft 1st gear.
10. Remove the parking brake pawl.
11. Using a universal two jaw puller, remove the parking gear, one-way clutch and countershaft 1st gear assembly.



12. Remove the parking brake lever from the control shaft.
13. Remove the throttle control lever from the throttle control shaft.
14. Remove the ATF cooler pipes.
15. Remove the ATF lever gauge.

# Technical Service Information

## Valve Caps

50

### Description

- Caps with one projected tip and one flat end are installed with the flat end toward the inside of the valve body.
- Caps with a projected tip on each end are installed with the smaller tip toward the inside of the valve body. The small tip is a spring guide.

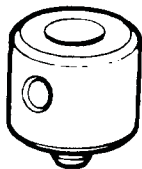
Toward outside of valve body.



Toward inside of valve body.

- Caps with one projected tip and hollow end are installed with the tip toward the inside of the valve body. The tip is a spring guide.

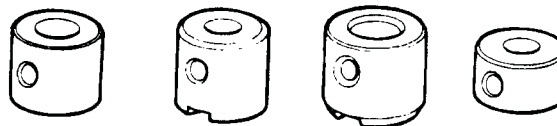
Toward outside of valve body.



Toward inside of valve body.

- Caps with hollow ends are installed with the hollow end away from the inside of the valve body.
- Caps with notched ends are installed with the notch toward the inside of the valve body.
- Caps with flat ends and a hole through the center are installed with the smaller hole toward the inside of the valve body.

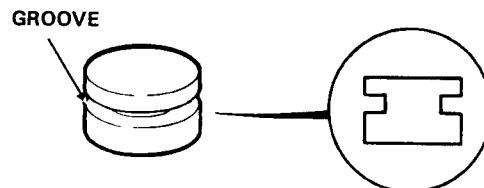
Toward outside of valve body.



Toward inside of valve body.

- Caps with flat ends and a groove around the cap are installed with the groove side toward the outside of the valve body.

Toward outside of valve body.



Sectional view.

Toward inside of valve body.



# Technical Service Information

## Regulator Valve Body

57

### Disassembly/Inspection/Reassembly

**NOTE:**

- Clean all parts thoroughly in solvent or carburetor cleaner and dry with compressed air.
- Blow out all passages.
- Replace valve body as an assembly if any parts are worn or damaged.
- Check all valves for free movement. If any fail to slide freely, see Valve Body Repair

1. Hold the regulator spring cap in place while removing the lock bolt. Once the bolt is removed, release the spring cap slowly.

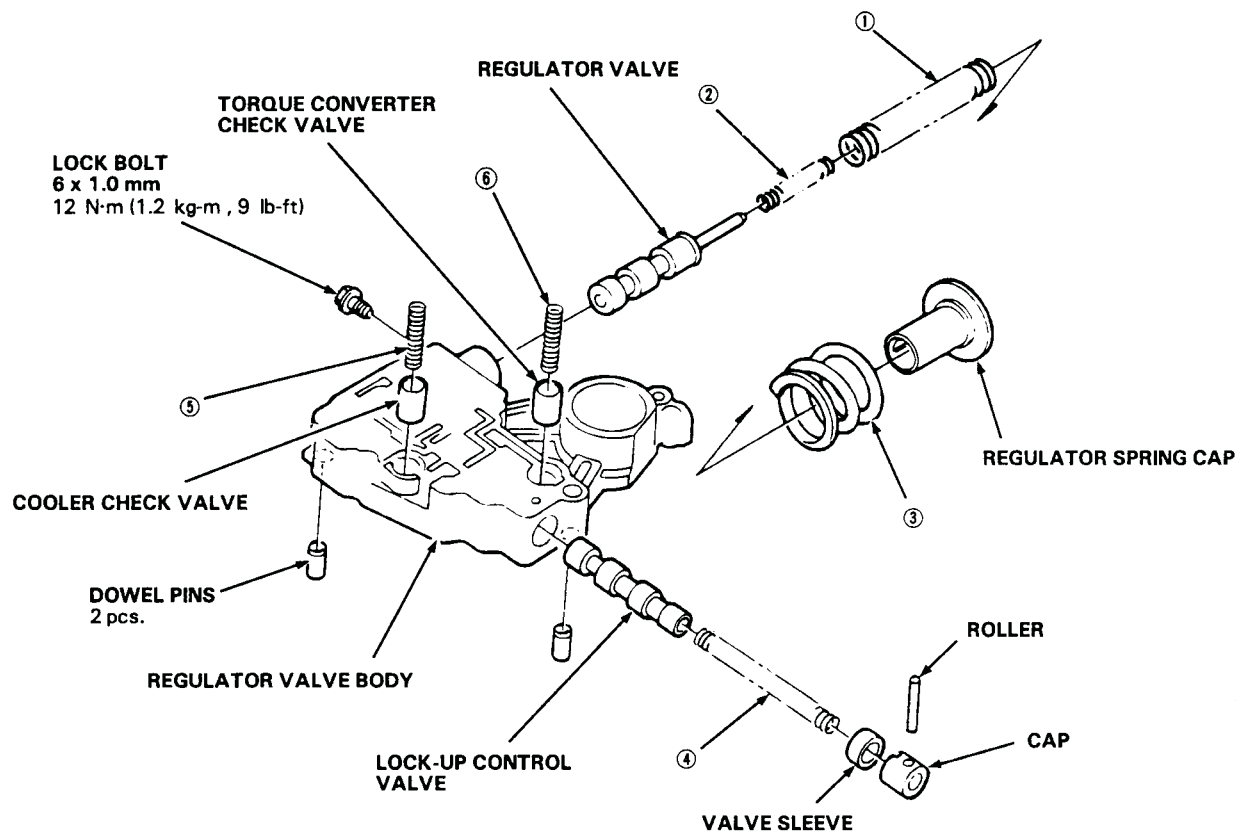
**CAUTION:**

The regulator spring cap can pop out when the lock bolt is removed.

2. Reassembly is in the reverse order of the disassembly procedure.

**NOTE:**

- Coat all parts with ATF.
- Align the hole in the regulator spring cap with the hole in the valve body, press the spring cap into the body and tighten the lock bolt.



**SPRING SPECIFICATIONS**

Unit of length : mm (in)

No.	Spring	Standard (New)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Regulator valve spring A	1.80 (0.071)	14.70 (0.579)	88.60 (3.488)	16.5
②	Regulator valve spring B	1.80 (0.071)	9.60 (0.378)	44.00 (1.732)	7.5
③	Stator reaction spring	5.50 (0.217)	*26.40 (1.039)	30.30 (1.193)	2.1
④	Lock-up control valve spring	0.80 (0.031)	6.60 (0.260)	50.60 (1.992)	24.6
⑤	Cooler check valve spring	1.10 (0.043)	8.40 (0.331)	33.80 (1.331)	12.5
⑥	Torque converter check valve spring	1.10 (0.043)	8.40 (0.331)	33.80 (1.331)	12.5

\* : Inside Diameter

# Technical Service Information

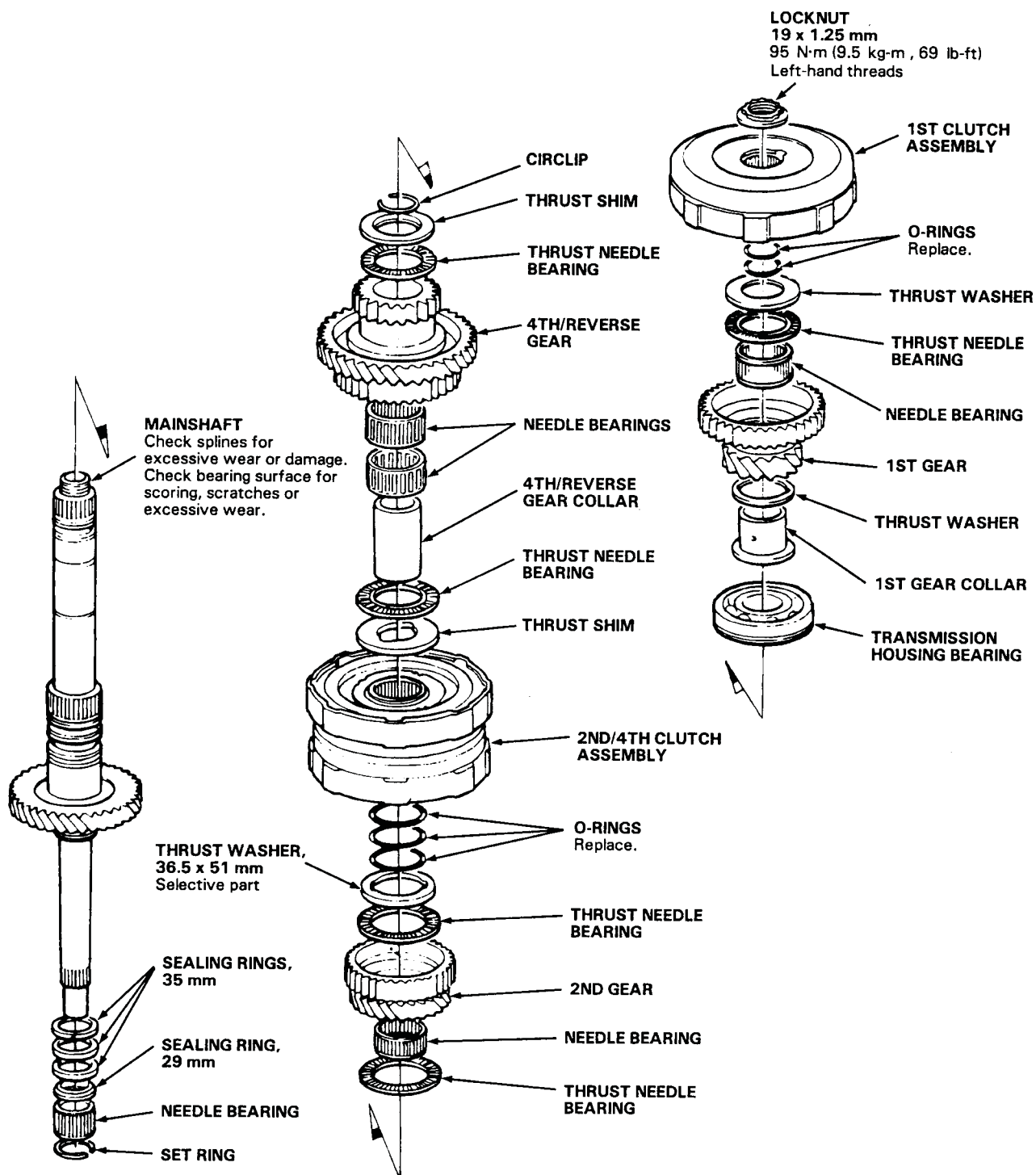
## Mainshaft

65

### Disassembly/Inspection/Reassembly

**NOTE:**

- Lubricate all parts with ATF during reassembly.
- Install the thrust needle bearings with unrolled edge of bearing retainer facing washer.
- Inspect the thrust needle bearings and the needle bearings for galling and rough movement.
- Before installing the O-rings, wrap the shaft splines with tape to prevent damaging the O-rings.
- Locknut has left-hand threads.



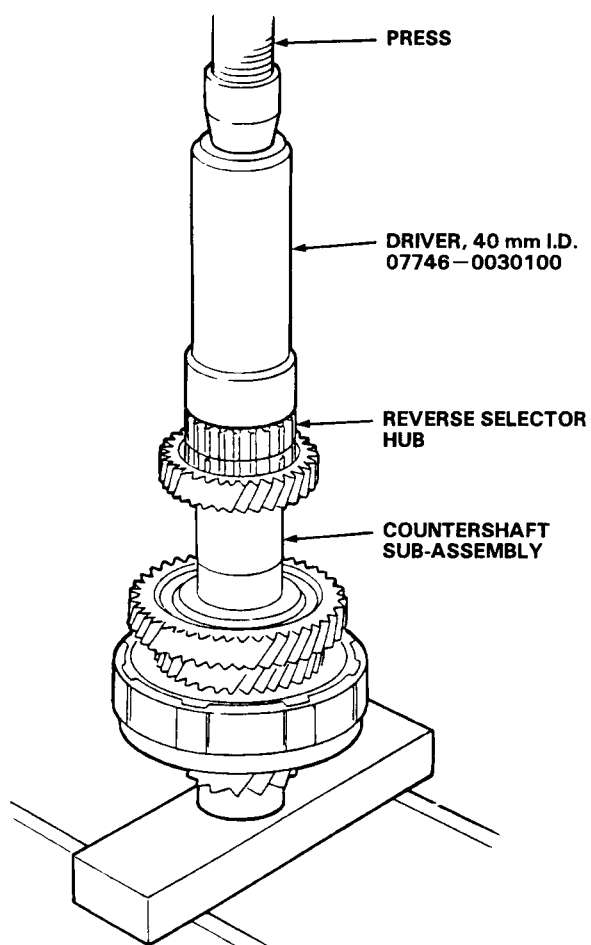
# Technical Service Information

## Countershaft

70

### Disassembly/Reassembly (cont'd)

3. Install the reverse selector hub on the countershaft sub-assembly, and then press the reverse selector hub using the special tool and a press as shown.



### Inspection

- Clearance Measurement

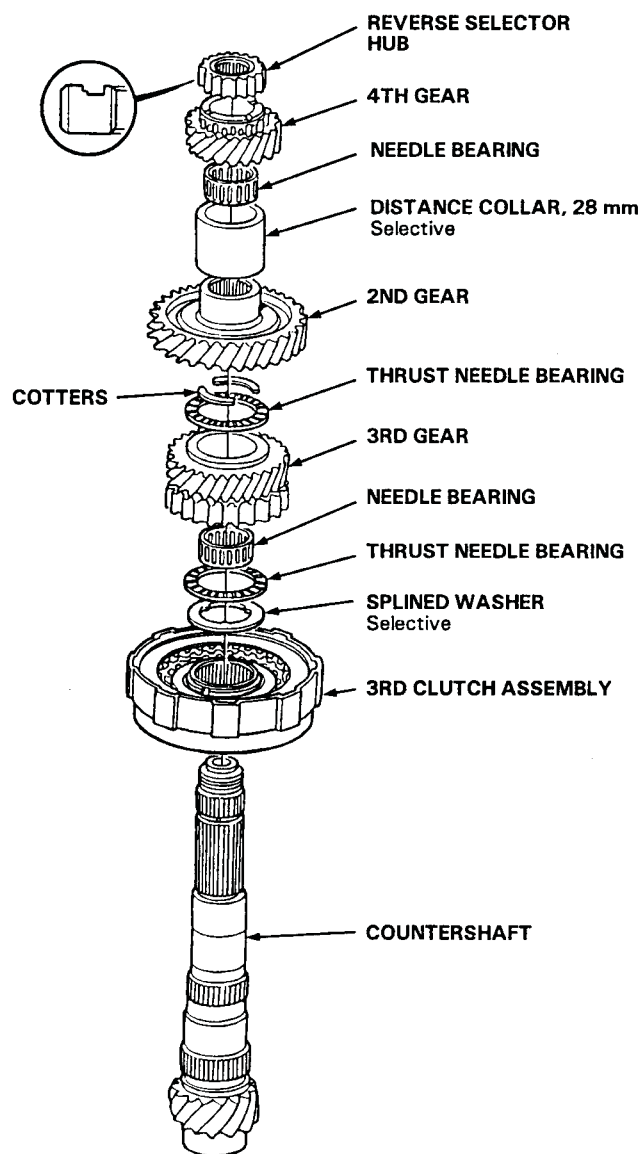
#### NOTE:

Lubricate all parts with ATF during assembly.

1. Remove the countershaft bearing from the transmission housing
2. Install the parts below on the countershaft using the special tool and a press as described on this page.

#### NOTE:

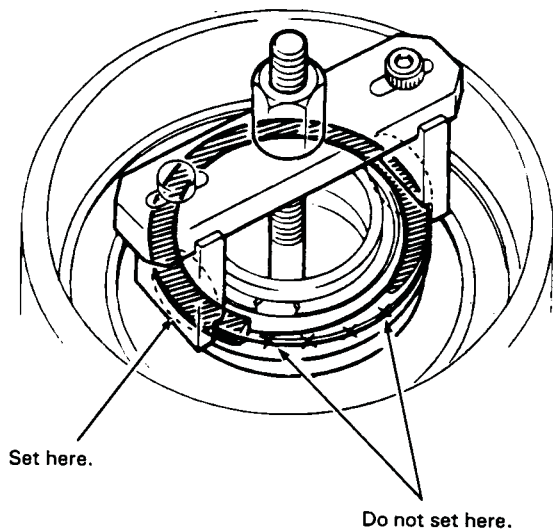
Do not assemble the O-rings while inspecting.



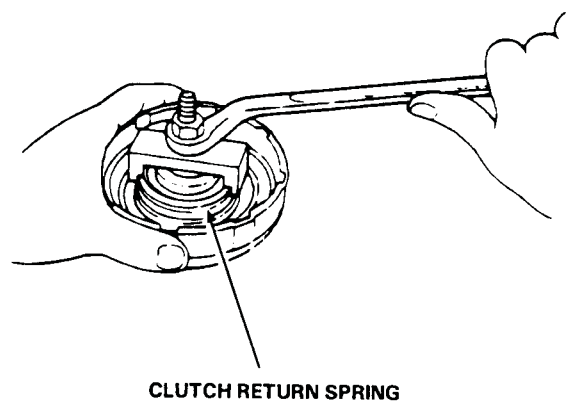
## Disassembly (cont'd)

**CAUTION:**

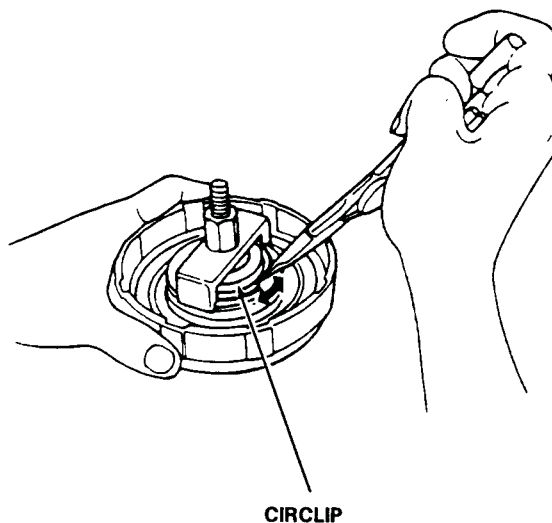
If either end of the compressor attachment is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



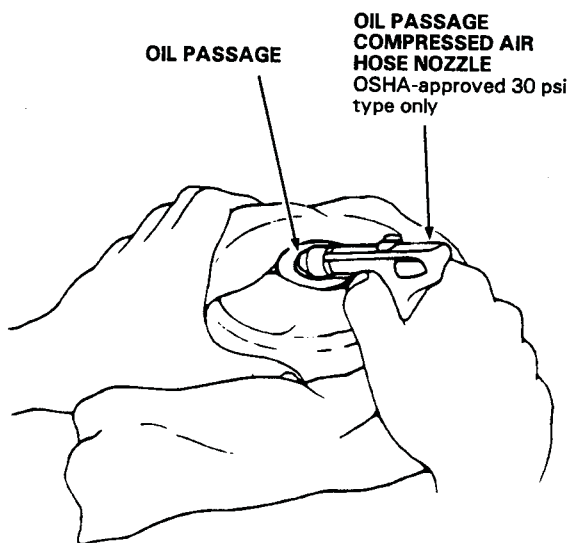
4. Compress the clutch return spring.



5. Remove the circlip. Then remove the special tools, spring retainer and return spring.



6. Wrap a shop towel around the clutch drum and apply air pressure to the oil passage to remove the piston. Place a finger tip on the other end while applying air pressure.



# Technical Service Information

## Reverse Idler Gear

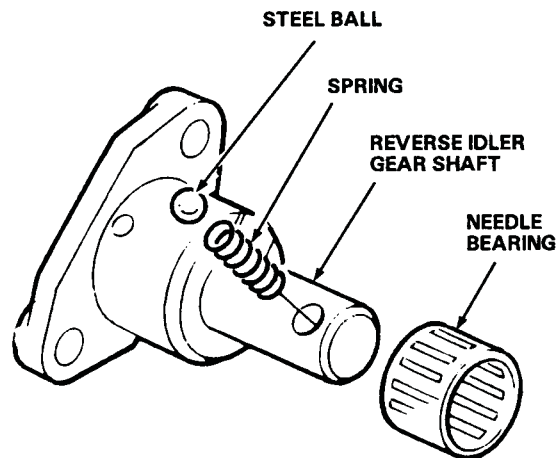
89

### Installation

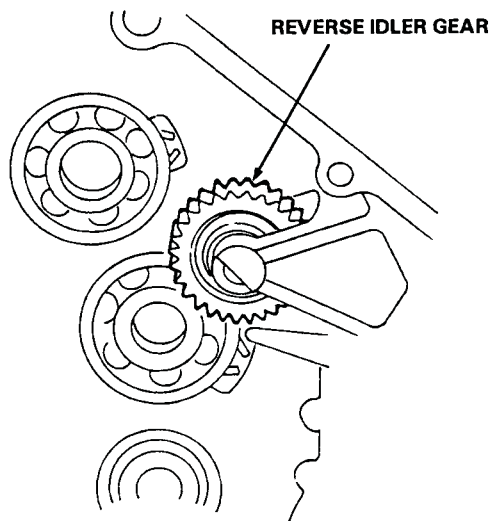
1. Set the spring in the reverse idler gear shaft. Push the spring in with the steel ball, then install the needle bearing.

**NOTE:**

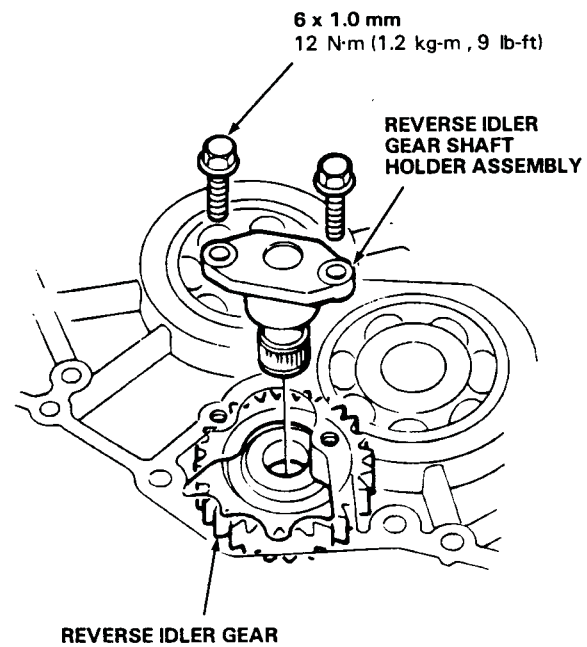
The steel ball is under spring pressure. Take care not to let it pop out.



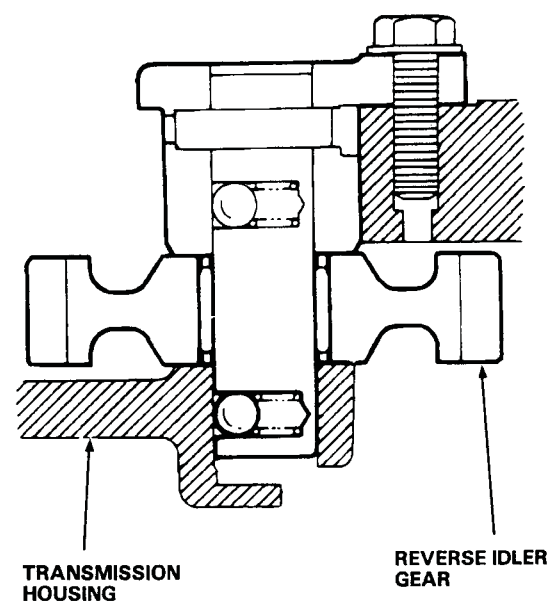
2. Install the reverse idler gear.



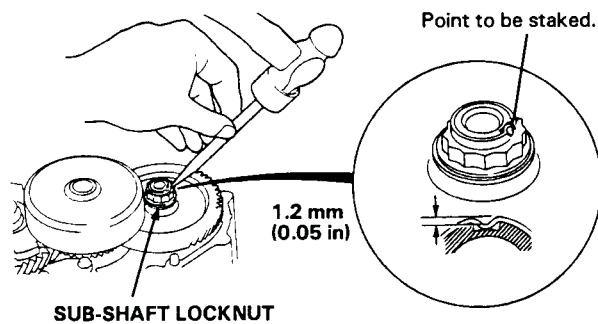
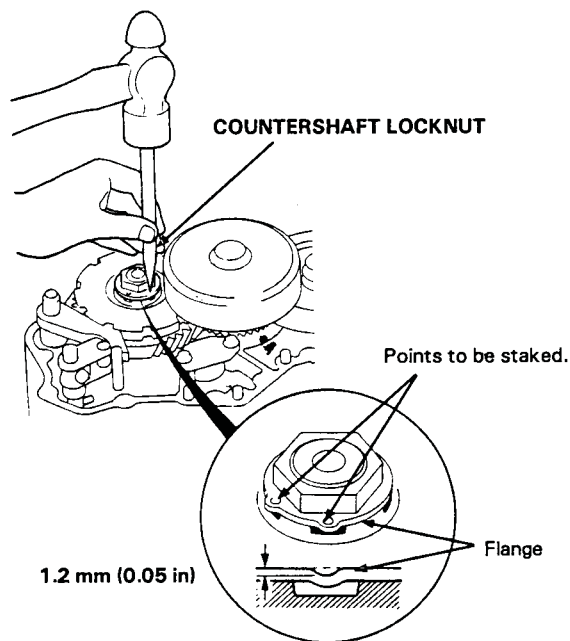
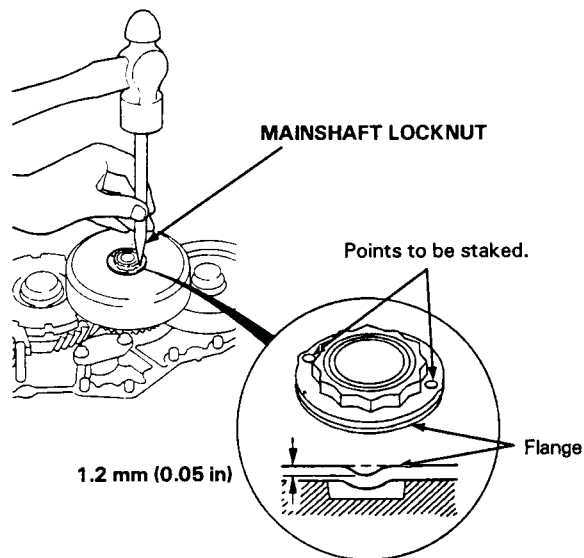
3. Install the reverse idler gear shaft holder into the transmission housing, then tighten the bolts.



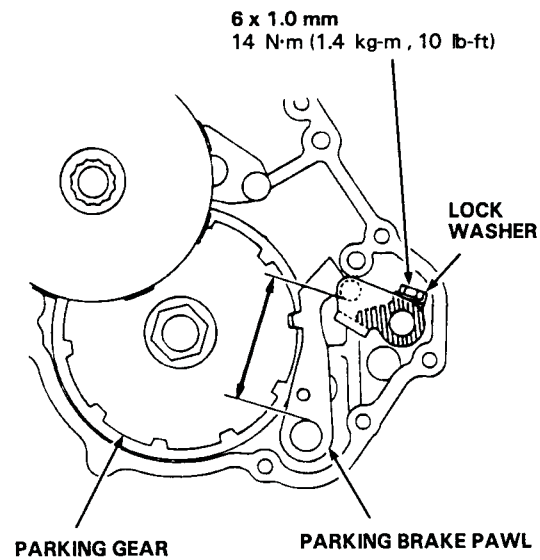
Sectional View



37. Stake each locknut using a 3.5 mm punch.

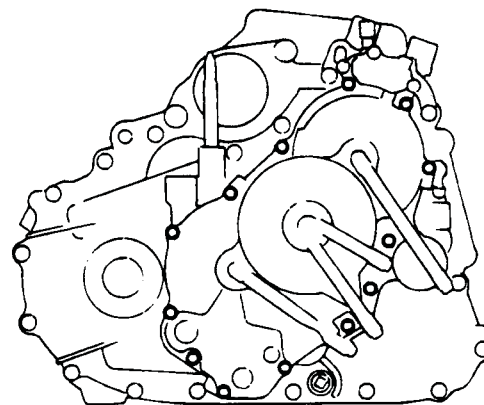


38. Set the parking brake lever in the **P** position, then verify that the parking brake pawl engages to the parking gear.
39. If the pawl does not engage fully, check the parking brake pawl stopper clearance as described.
40. Tighten the lock bolt and bend the lock tab.



41. Install the right side cover.

**TORQUE:** 12 N·m (1.2 kg-m, 9 lb-ft)



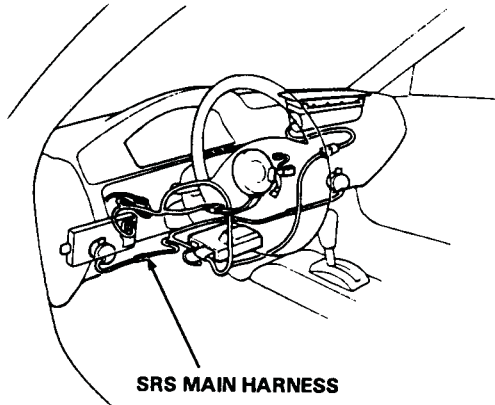
42. Install the ATF cooler pipes and ATF level gauge.

## Shift Cable

### Removal/Installation

**CAUTION:**

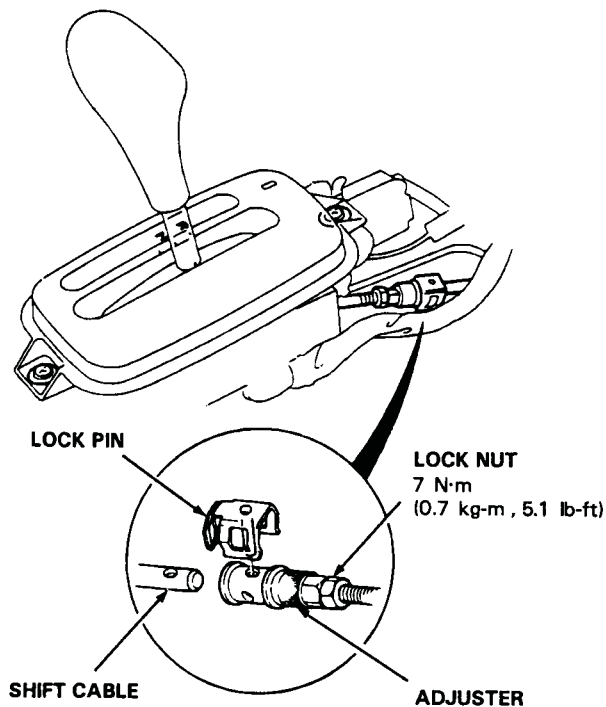
- All SRS electrical wiring harnesses are covered with yellow outer insulation.
- Before disconnecting the SRS wire harness, install the short connector (s) on the airbag (s).
- Replace the entire affected SRS harness assembly if it has an open circuit or damaged wiring.



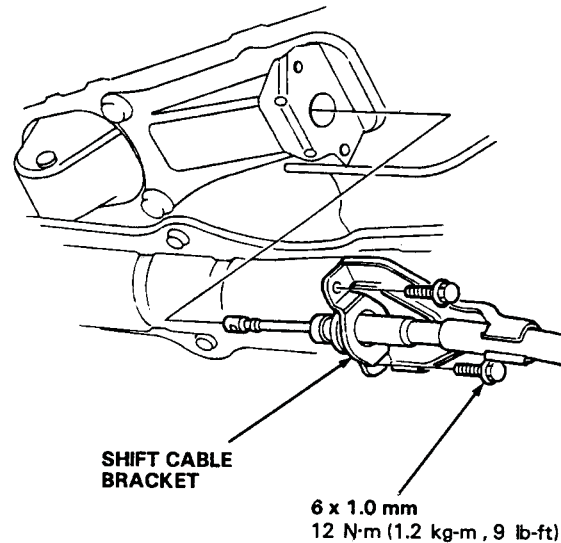
**▲ WARNING**

Make sure lifts are placed properly

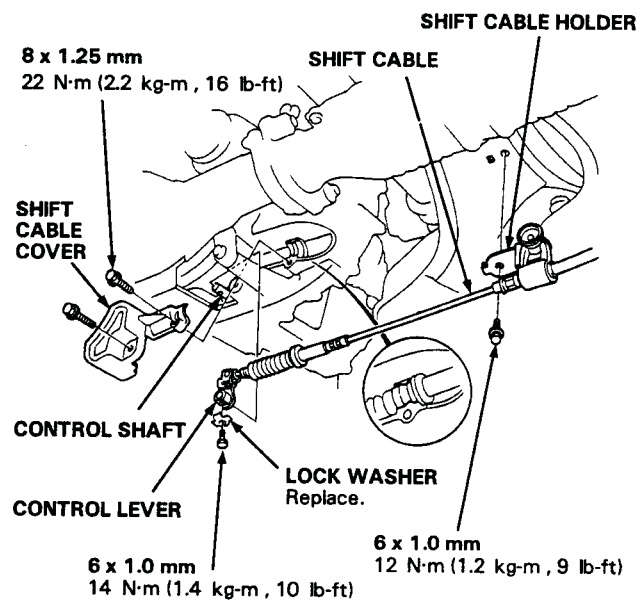
1. Remove the center console
2. Shift to **N** position, then remove the lock pin from the cable adjuster.



3. Remove the shift cable bracket.



4. Remove the shift cable holder.
5. Remove the shift cable cover.
6. Remove the control lever from the control shaft, then remove the shift cable. Take care not to bend the cable when removing/installing it.



7. Install the shift cable in the reverse order of removal.
8. Check the cable adjustment on reassembly.