2001 AUTOMATIC TRANSMISSION

Overhaul - BMXA

HOUSING AND SHAFT ASSEMBLIES REMOVAL

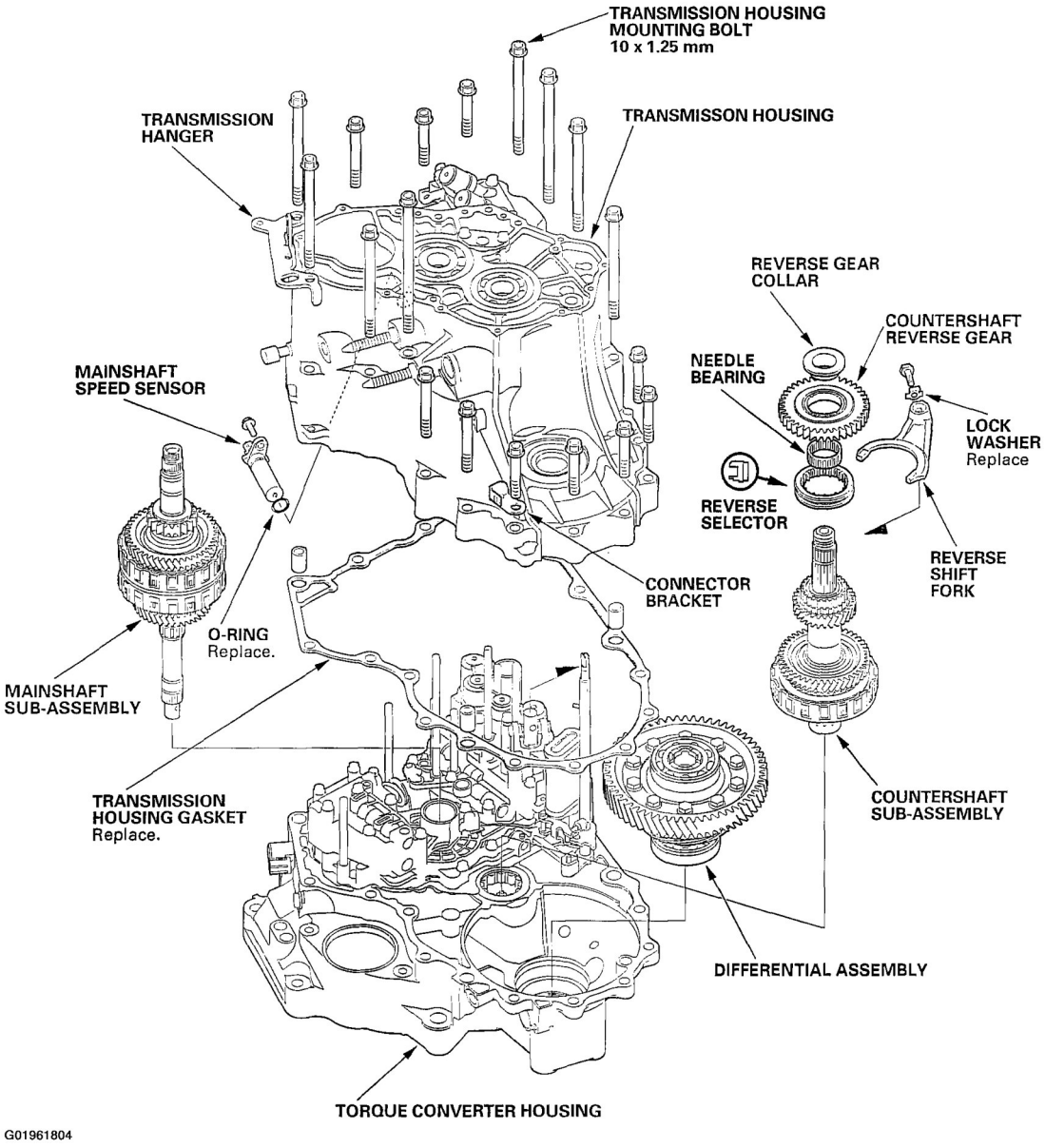


Fig. 1: Exploded View Housing & Shaft Assemblies

Special Tools Required

Housing puller 07HAC-PK40102

NOTE: Refer to Fig. 1 as needed during the following procedure.

1. Remove the mainshaft speed sensor.
2. Remove the transmission housing mounting bolts, transmission hanger, and connector bracket.
3. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.

NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

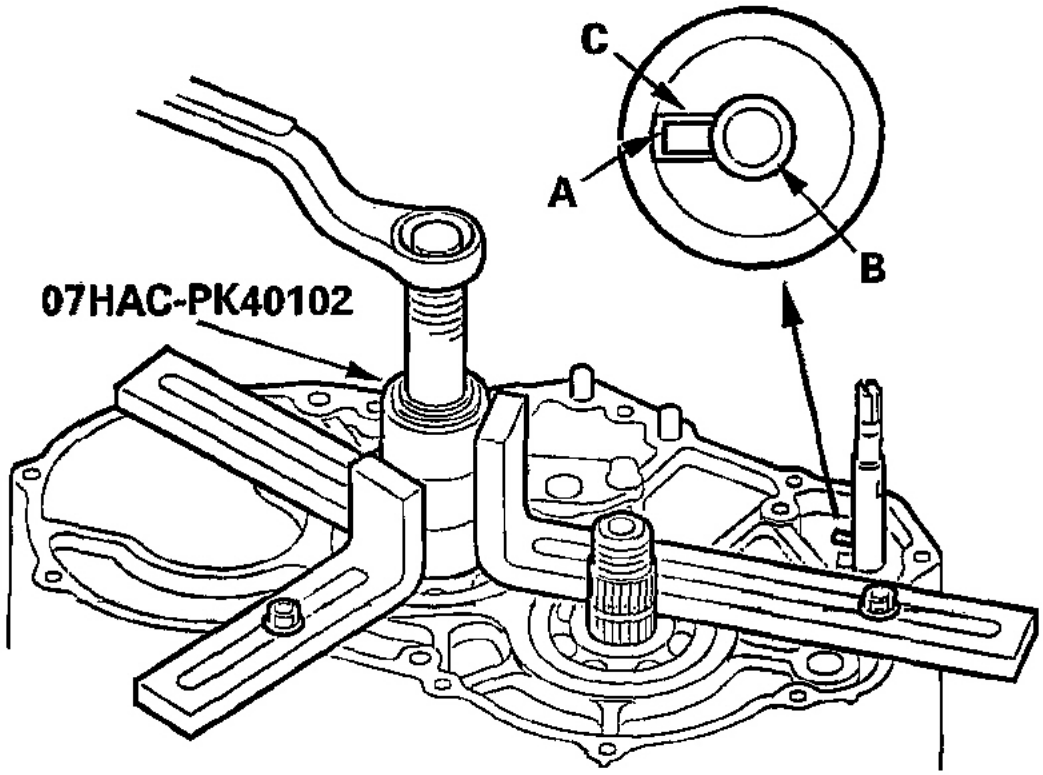
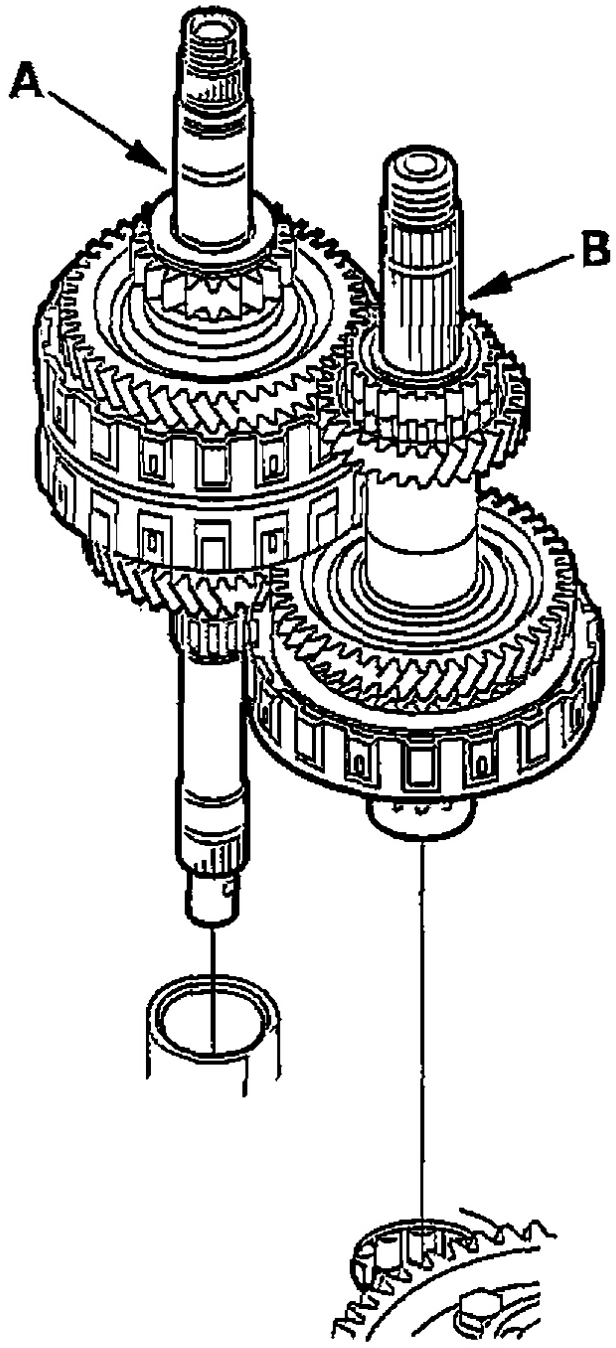


Fig. 2: Aligning Spring Pin On Control Shaft

4. Install the special tool over the mainshaft, then remove the transmission housing.

NOTE: If the top arm of your housing puller is too short, replace it with Housing Puller Arm, 205 mm 07SAC-P0Z0101.

5. Remove the countershaft reverse gear collar, countershaft reverse gear, and needle bearing.
6. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector together.
7. Remove the mainshaft sub-assembly (A) and countershaft sub-assembly (B) together.



G01961806

Fig. 3: Removing Mainshaft Sub-Assembly & Countershaft Sub-Assembly Together

8. Remove the differential assembly.

BEARING REMOVAL AND INSTALLATION

Special Tools Required

- Driver 07949-3710001
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm, 07746-0010600

NOTE: Coat all parts with ATF before assembly.

1. To remove the mainshaft bearing (A) and countershaft bearing (B) from the transmission housing, expand each snap ring with the snap ring pliers then push the bearing out.

NOTE: Do not remove the snap ring unless it's necessary to clean the grooves in the housing.

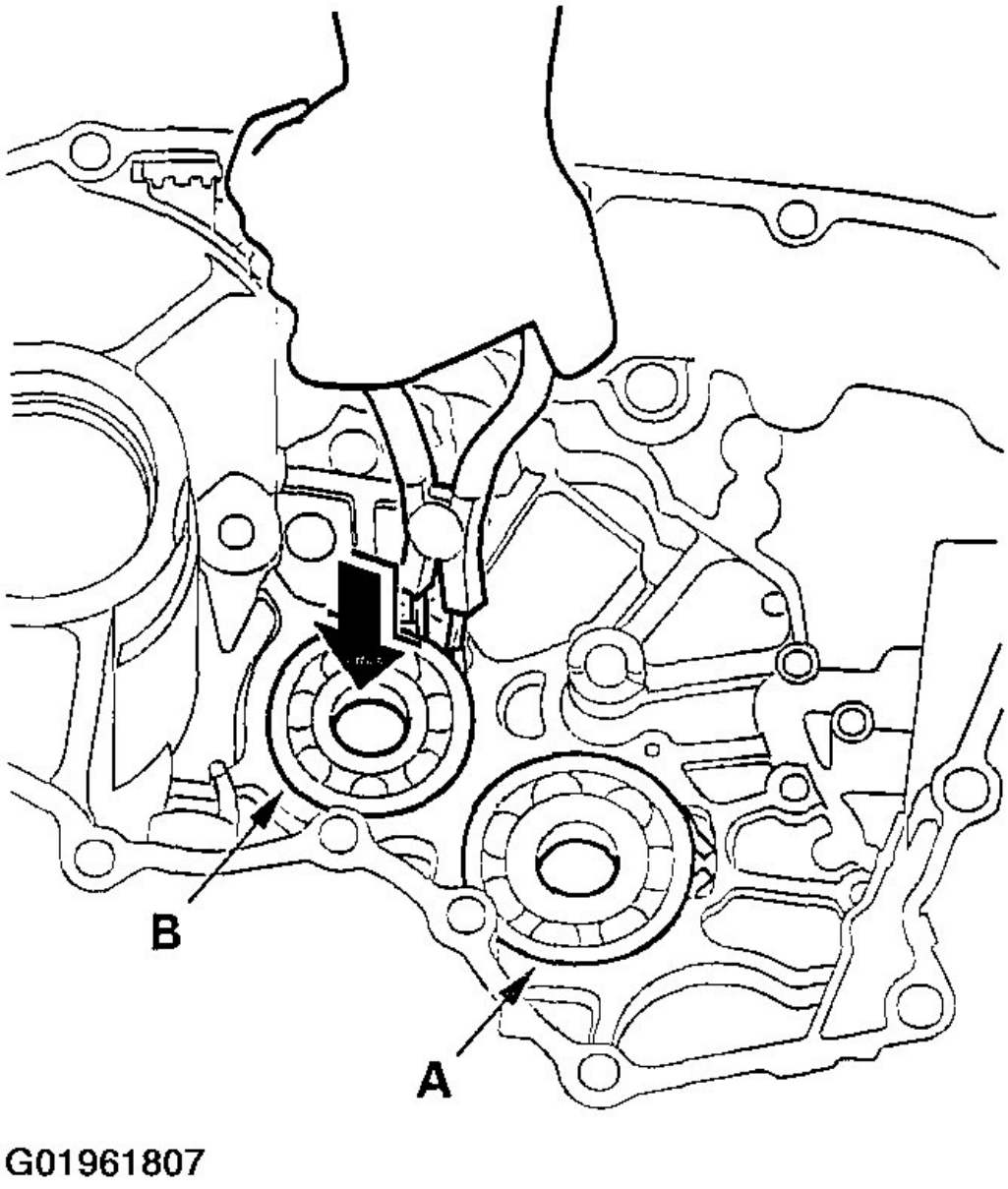
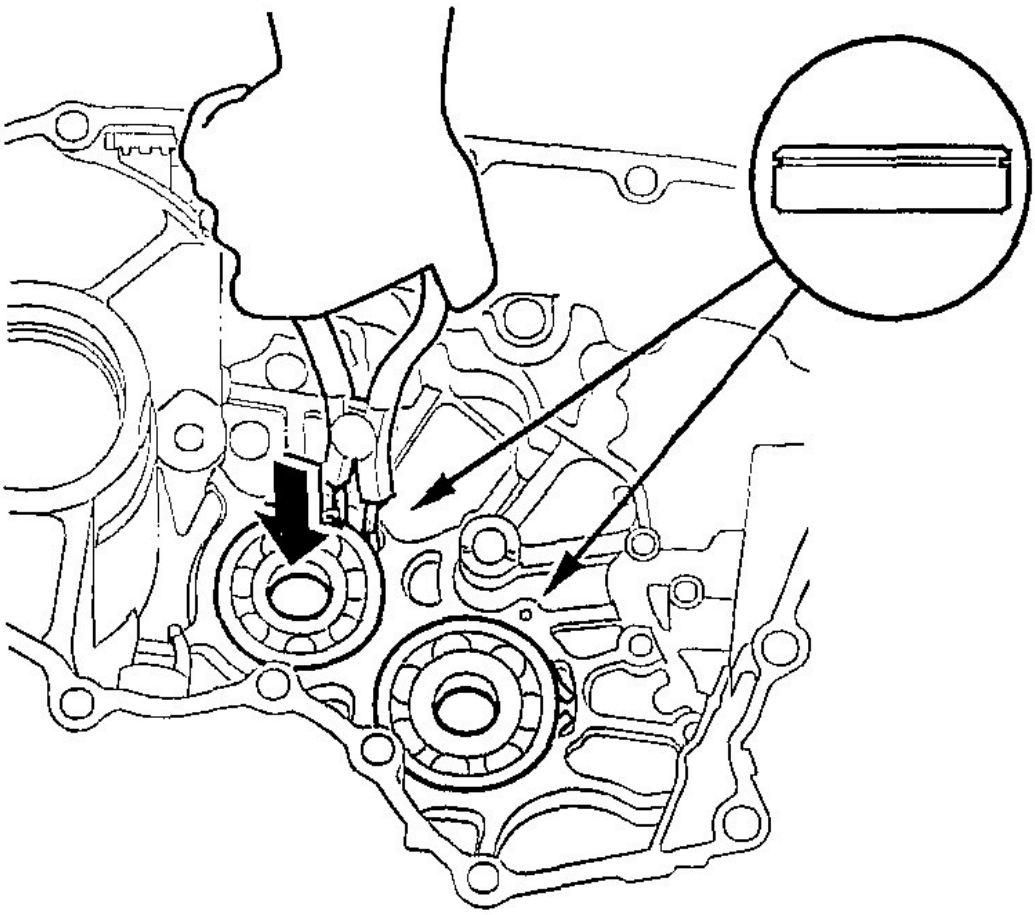


Fig. 4: Removing Mainshaft Bearing & Countershaft Bearing From Transmission Housing

2. Install the bearings in the direction shown in **Fig. 4** .
3. Expand each snap ring with the snap ring pliers, and install the bearing part-way into the housing.



G01961808

Fig. 5: Installing Bearing Part-Way Into Housing

4. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.
5. After installing the bearings verify that the snap rings (A) are seated in the bearing and housing grooves, and that the ring end gaps (B) are correct.

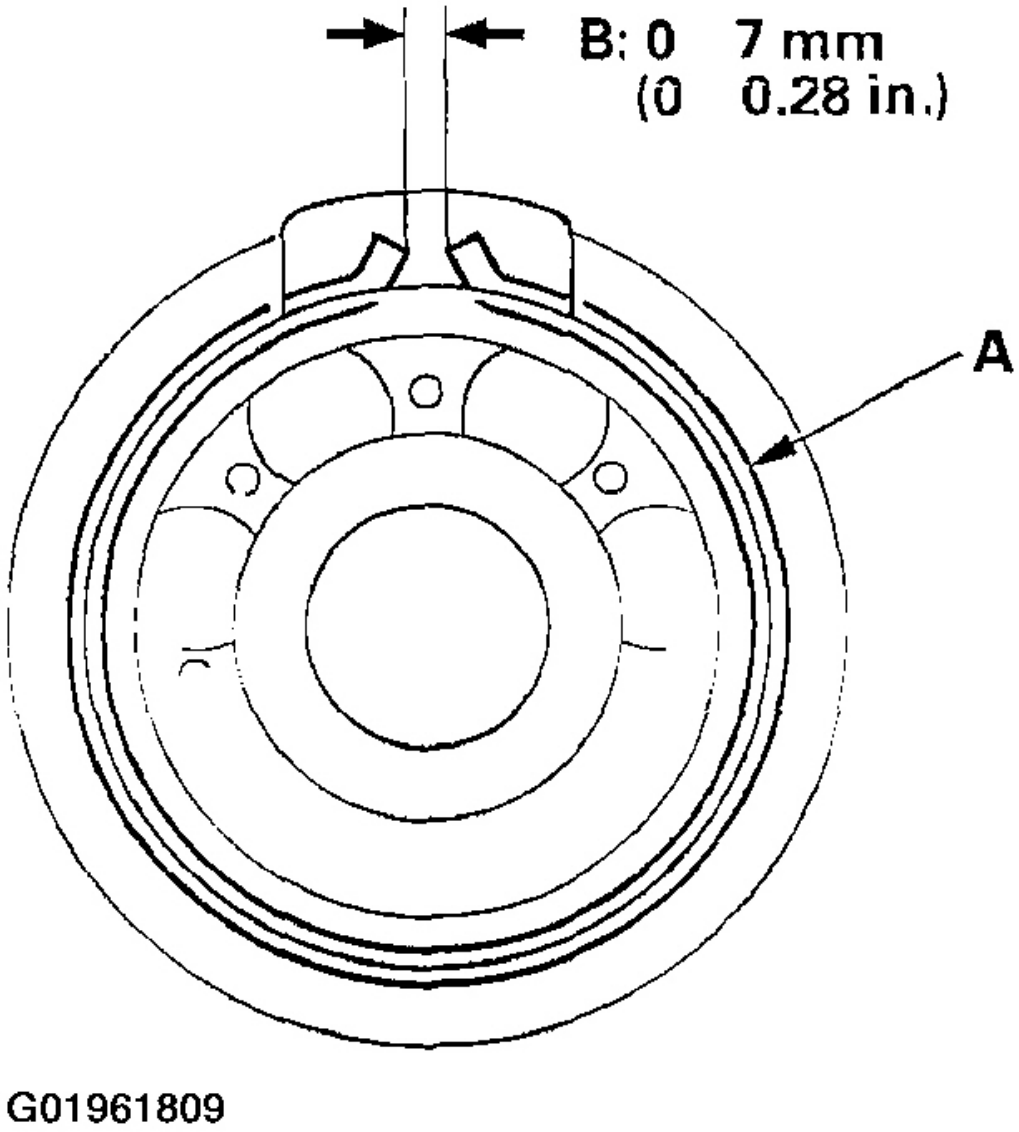


Fig. 6: Verifying Snap Rings Are Seated In Bearing & Housing Grooves

REVERSE IDLER GEAR REMOVAL AND INSTALLATION

REMOVAL

1. Remove the two bolts securing the reverse idler gear shaft holder, then remove the reverse idler gear shaft holder (A) and needle bearing (B).

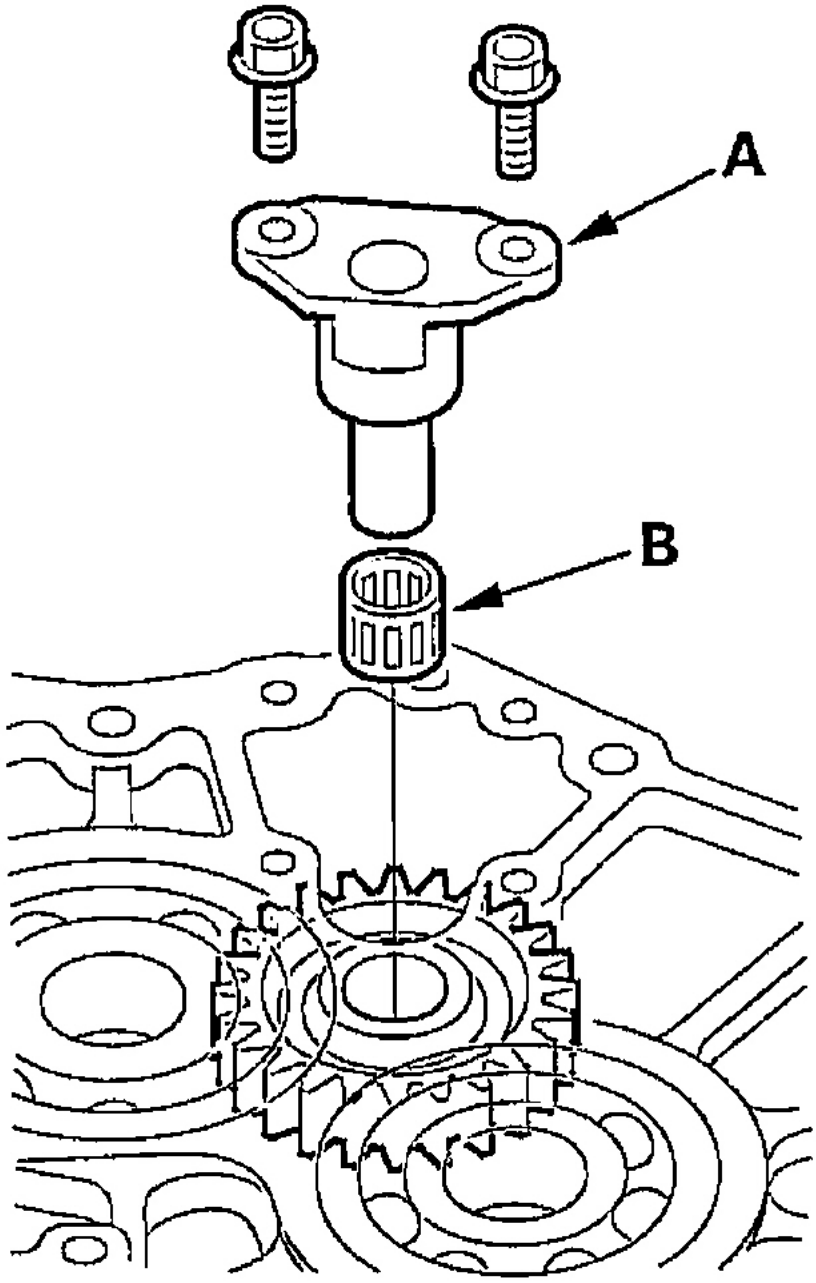
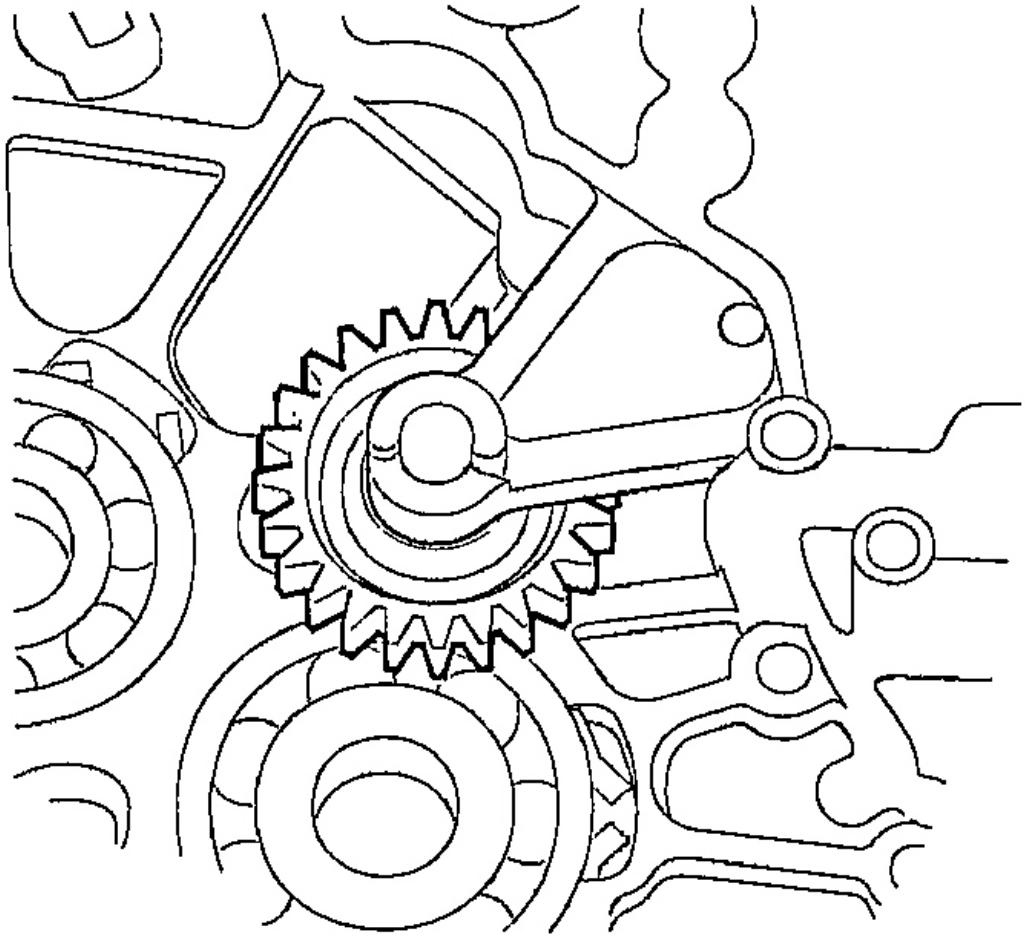


Fig. 7: Removing Reverse Idler Gear Shaft Holder & Needle Bearing

2. Remove the reverse idler gear.

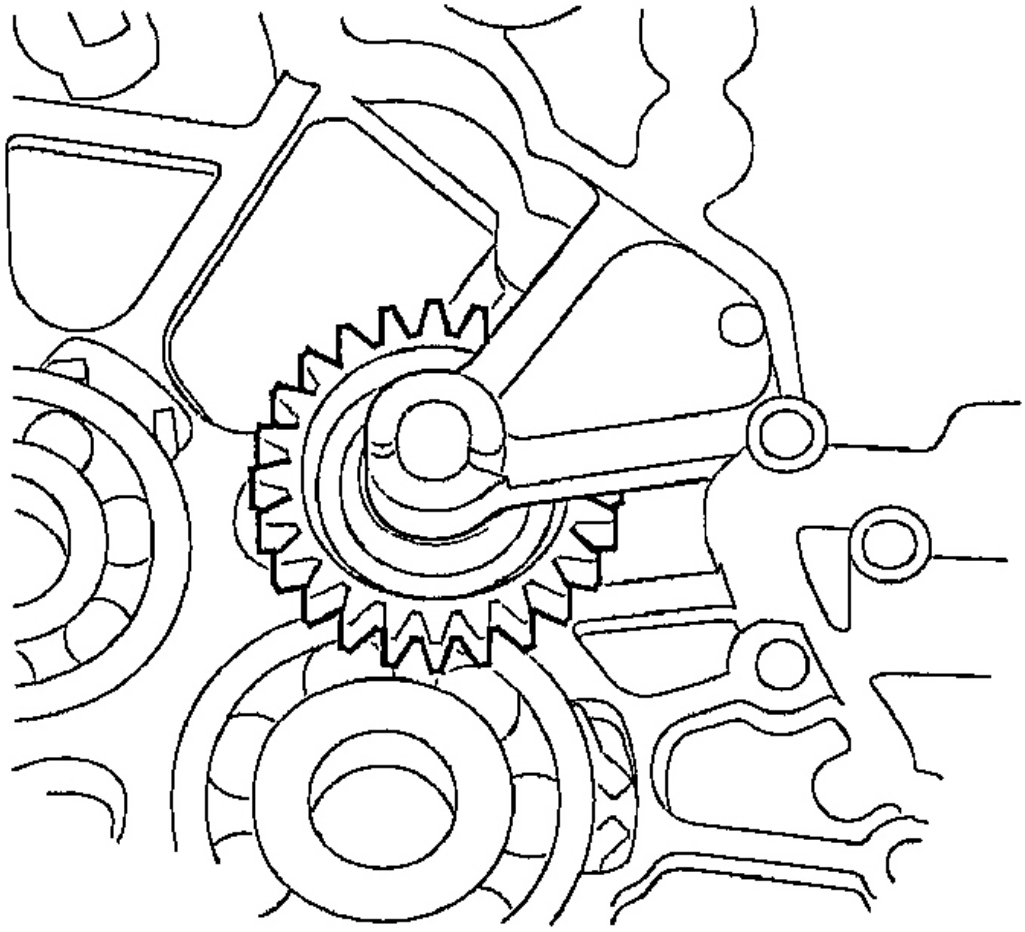


G01961811

Fig. 8: Removing Reverse Idler Gear

INSTALLATION

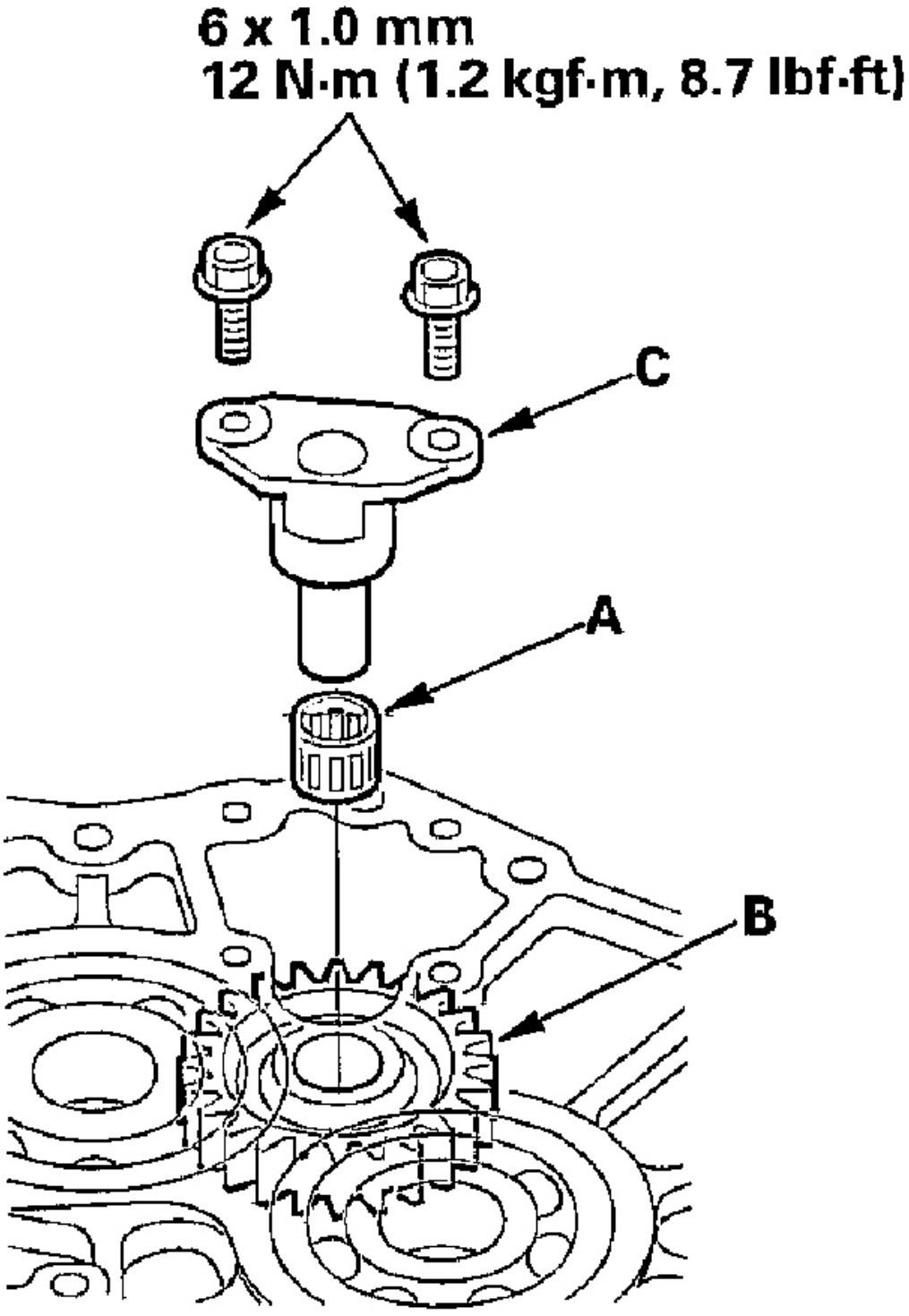
1. Install the reverse idler gear in the transmission housing.



G01961812

Fig. 9: Installing Reverse Idler Gear In Transmission Housing

2. Install the needle bearing (A) in the reverse idler gear (B).



G01961813

Fig. 10: Installing Needle Bearing In Reverse Idler Gear

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

VALVE BODY

VALVE BODIES AND ATF STRAINER REMOVAL

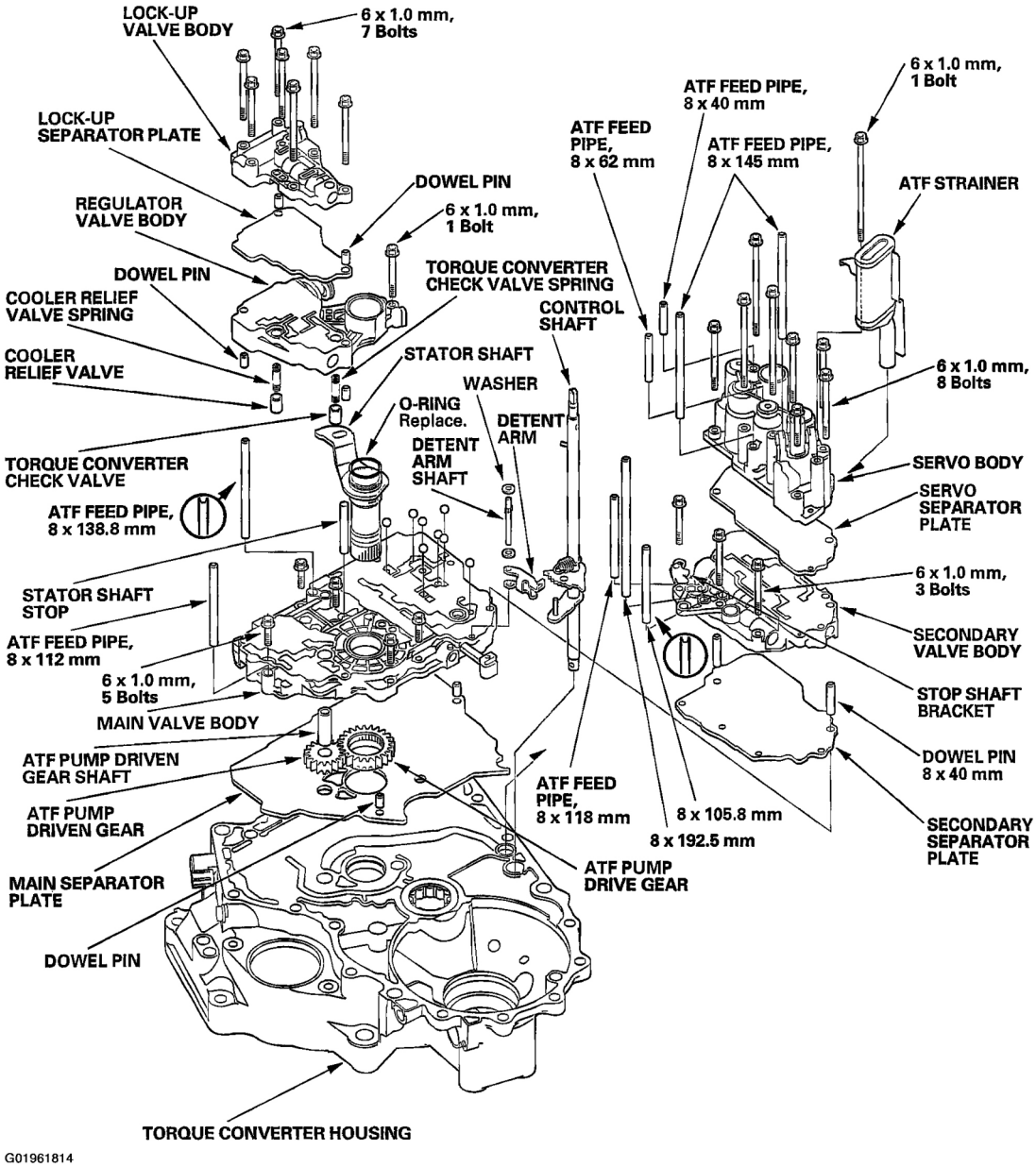


Fig. 11: Exploded View Of Valve Bodies & ATF Strainer

NOTE: Refer to Fig. 11 as needed during the following procedure:

1. Remove the ATF feed pipes from the main valve body, secondary valve body, and servo body.
2. Remove the ATF strainer (one bolt).
3. Remove the servo body (eight bolts), then remove the separator plate.
4. Remove the secondary valve body (three bolts), and stop shaft bracket, then remove the separator plate and dowel pins (two).
5. Remove the lock-up valve body (seven bolts), then remove the separator plate and dowel pins (two).
6. Remove the cooler relief valve spring and cooler relief valve, if necessary.
7. Remove the regulator valve body (one bolt) and dowel pins (two).
8. Remove the torque converter check valve and spring.
9. Remove the stator shaft and stator shaft stop.
10. Unhook the detent spring from the detent arm, then remove the detent arm shaft, washers, detent arm, and control shaft.
11. Remove the main valve body (five bolts).
12. Remove the ATF pump driven gear shaft, then remove the ATF pump gears.
13. Remove the main separator plate and dowel pins (two).
14. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.

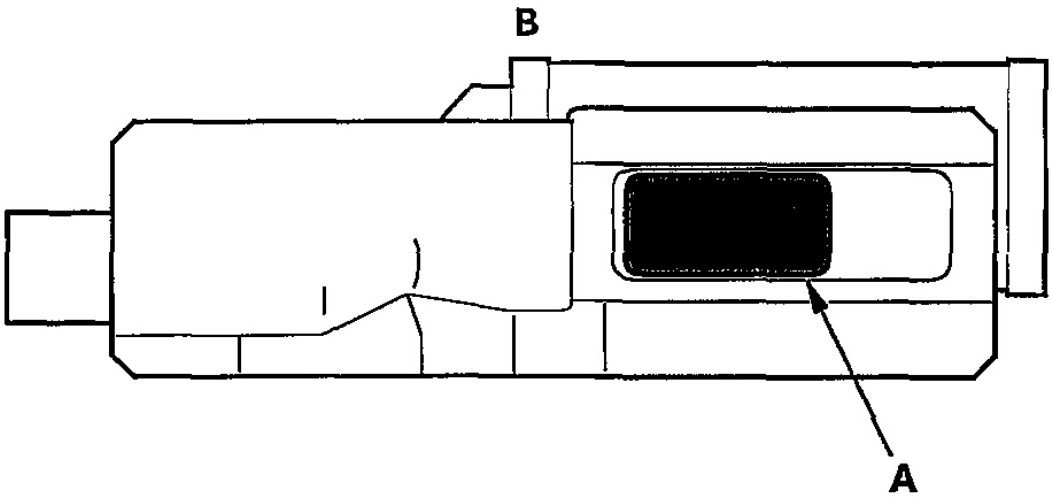


Fig. 12: Cleaning Inlet Opening Of ATF Strainer

15. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.

16. Clean the filter part on the 105.8 mm ATF feed pipe and the 138.8 mm pipe thoroughly with compressed air.
17. Check that the filters are not clogged, and that the opening is not damaged. Replace the feed pipe if the filter is clogged or damaged.

VALVE BODY REPAIR

NOTE: This repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

1. Soak a sheet of 600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
3. Inspect the valve for any scuff marks. Use the ATF-soaked 600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
4. Roll up half a sheet of ATF-soaked 600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

NOTE: The valve body is aluminum and doesn't require much polishing to remove any burrs.

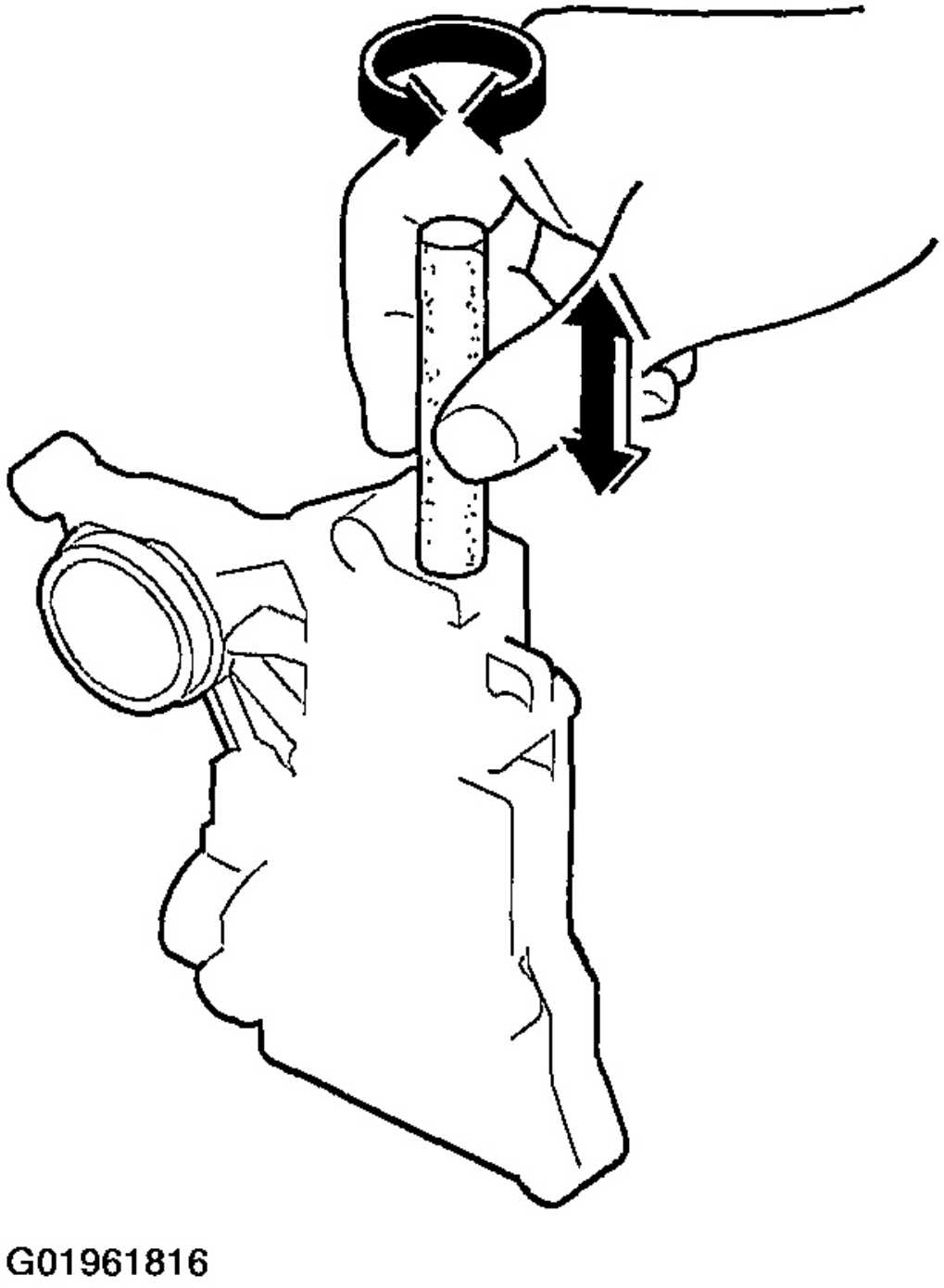
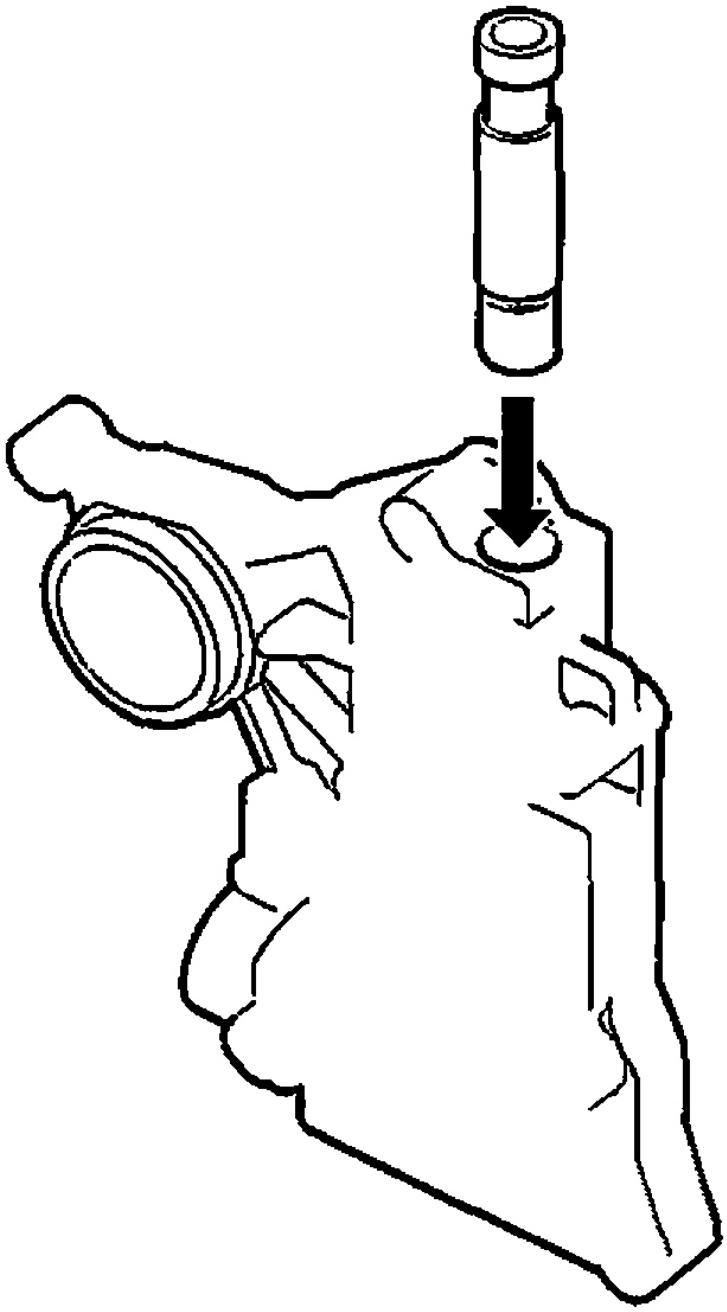


Fig. 13: Rolling ATF-Soaked 600 Paper & Inserting In Valve Bore Of Sticking Valve

5. Remove the 600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.
6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat step 4 , then retest. If the valve still sticks, replace the valve body.



G01961817

Fig. 14: Dropping Valve To Bottom Of Bore

7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

VALVE BODY VALVE INSTALLATION

1. Coat all parts with ATF before assembly.
2. Install the valves and springs in the sequence shown for the main valve body (see **Main Valve Body Disassembly, Inspection, and Reassembly**), regulator valve body (see **Regulator Valve Body Disassembly, Inspection, and Reassembly**), secondary valve body (see **Secondary Valve Body Disassembly, Inspection, and Reassembly**), and servo body (see **Servo Body Disassembly, Inspection, and Reassembly**) and lock-up valve body (see **Lock-up Valve Body Disassembly, Inspection, and Reassembly**). Refer to the following valve cap in **Fig. 15** , and install each valve cap so the end shown facing up will be facing the outside of the valve body.

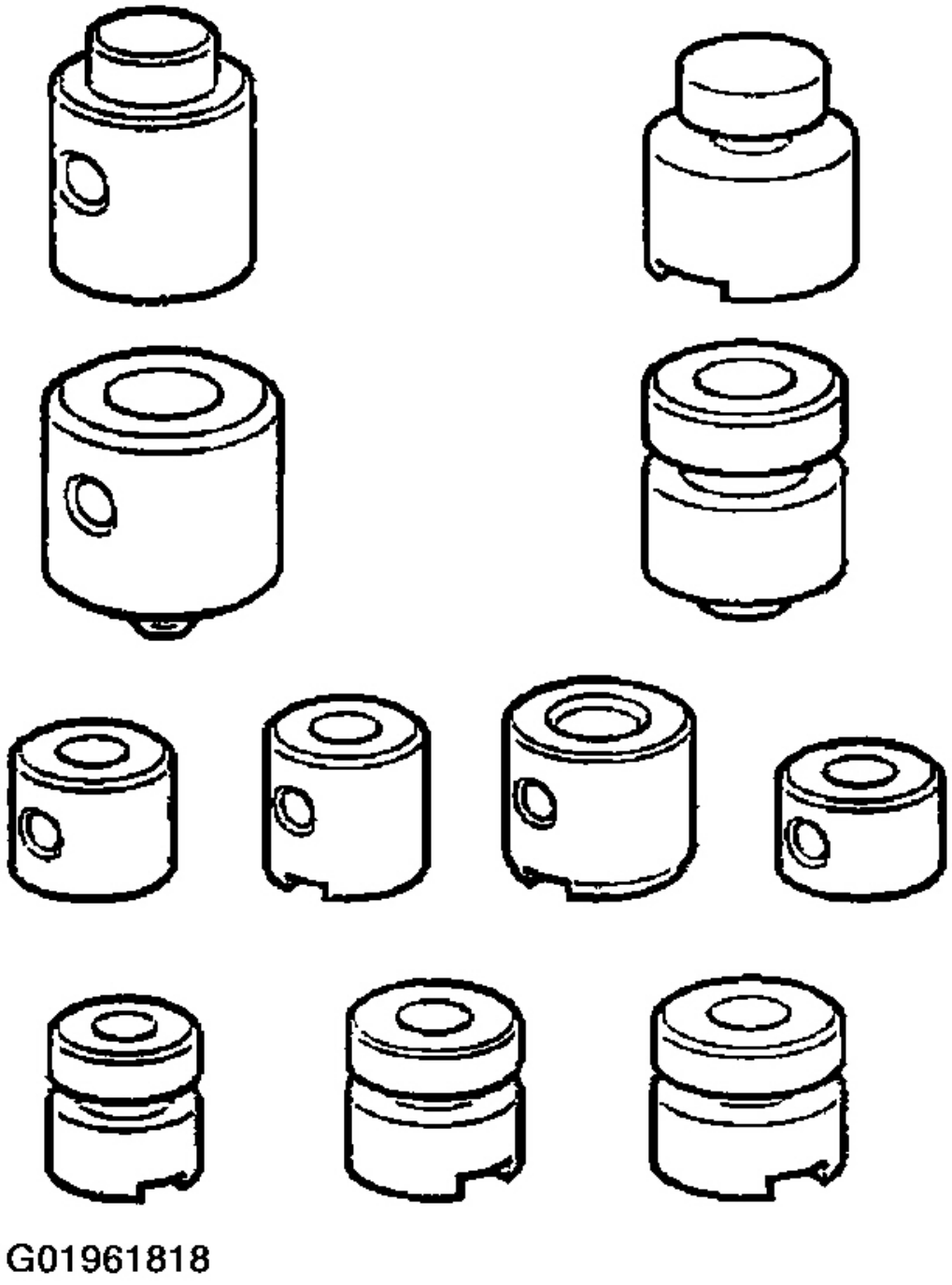


Fig. 15: Identifying Valve Cap

3. Install all the springs and seats. Insert the spring (A) in the valve, then install the valve in the valve body

(B). Push the spring in with a screwdriver, then install the spring seat (C).

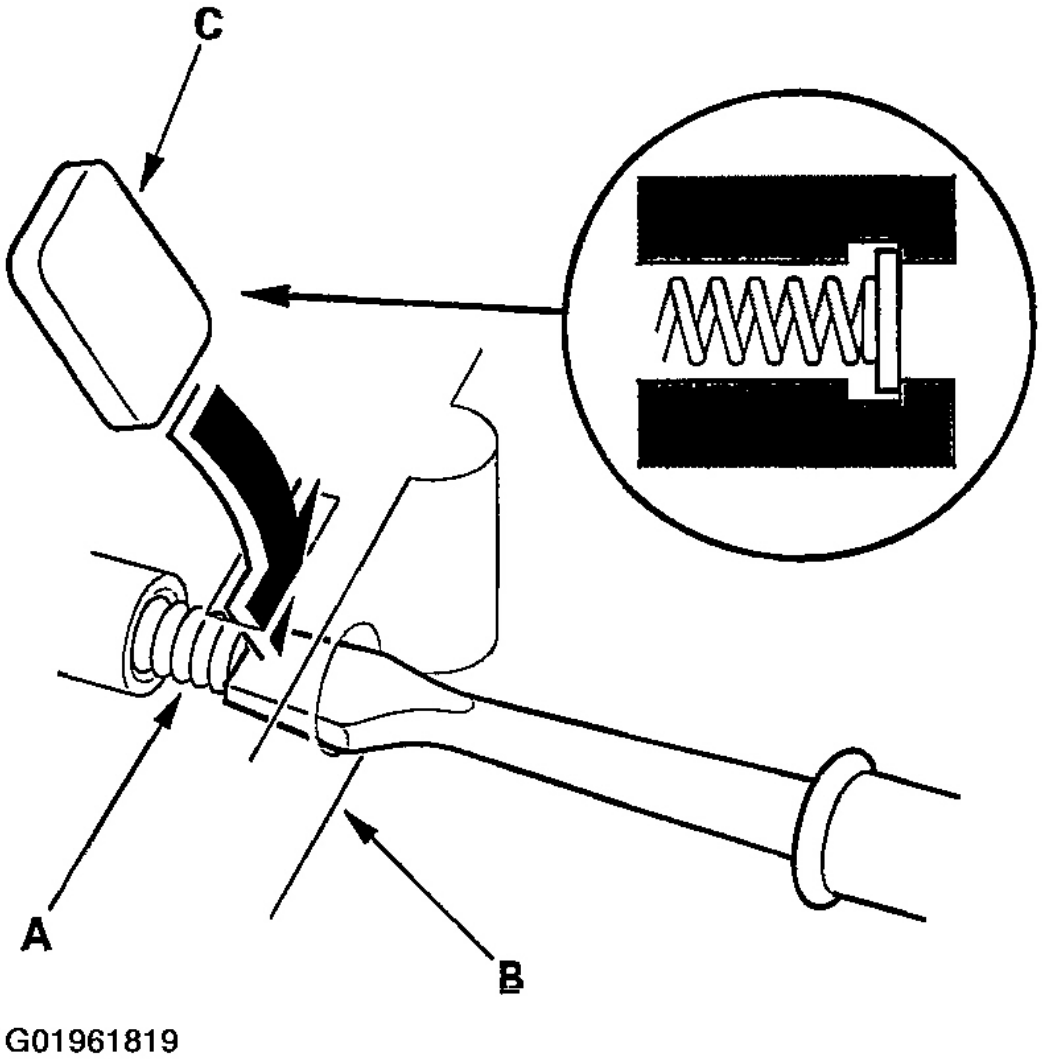


Fig. 16: Inserting Spring In Valve

MAIN VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the balls.
3. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see **Valve Body Repair**).
4. Replace the valve body as an assembly if any parts are worn or damaged.

5. Coat all parts with ATF during assembly.
6. Install the filter in the direction shown in **Fig. 17** .

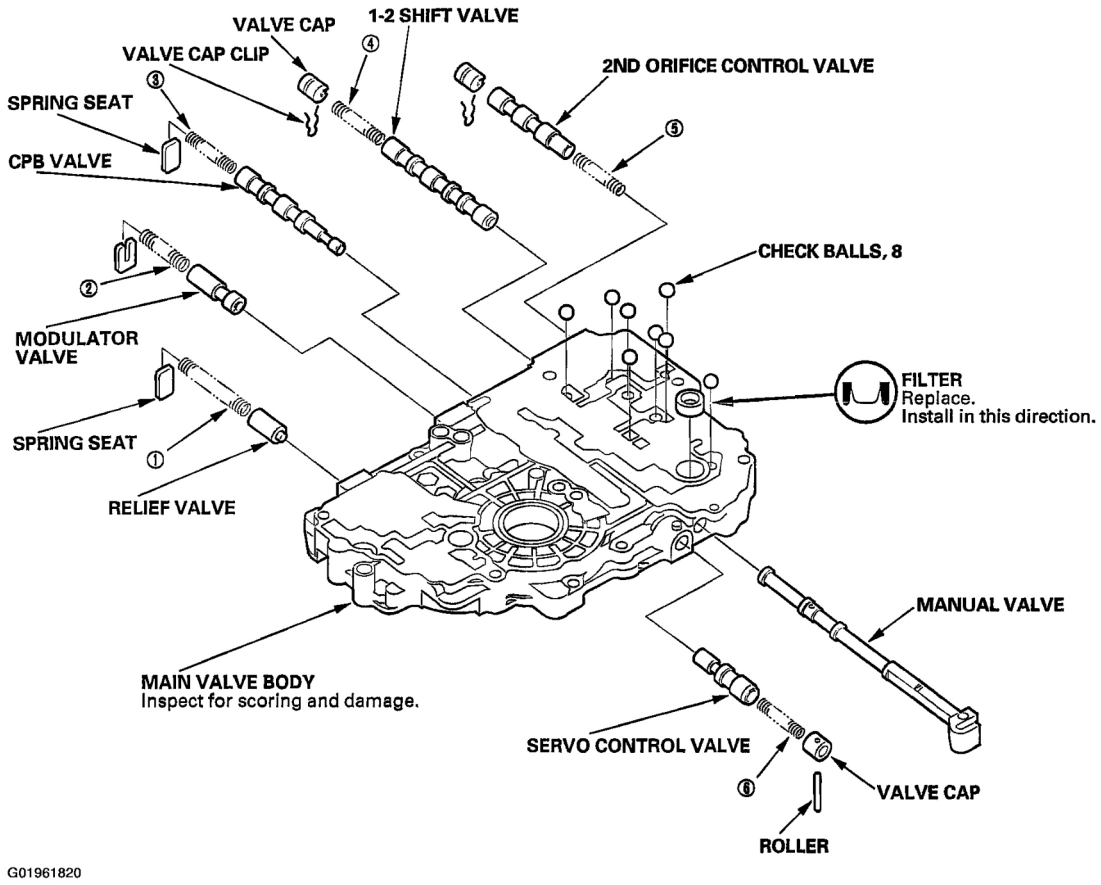
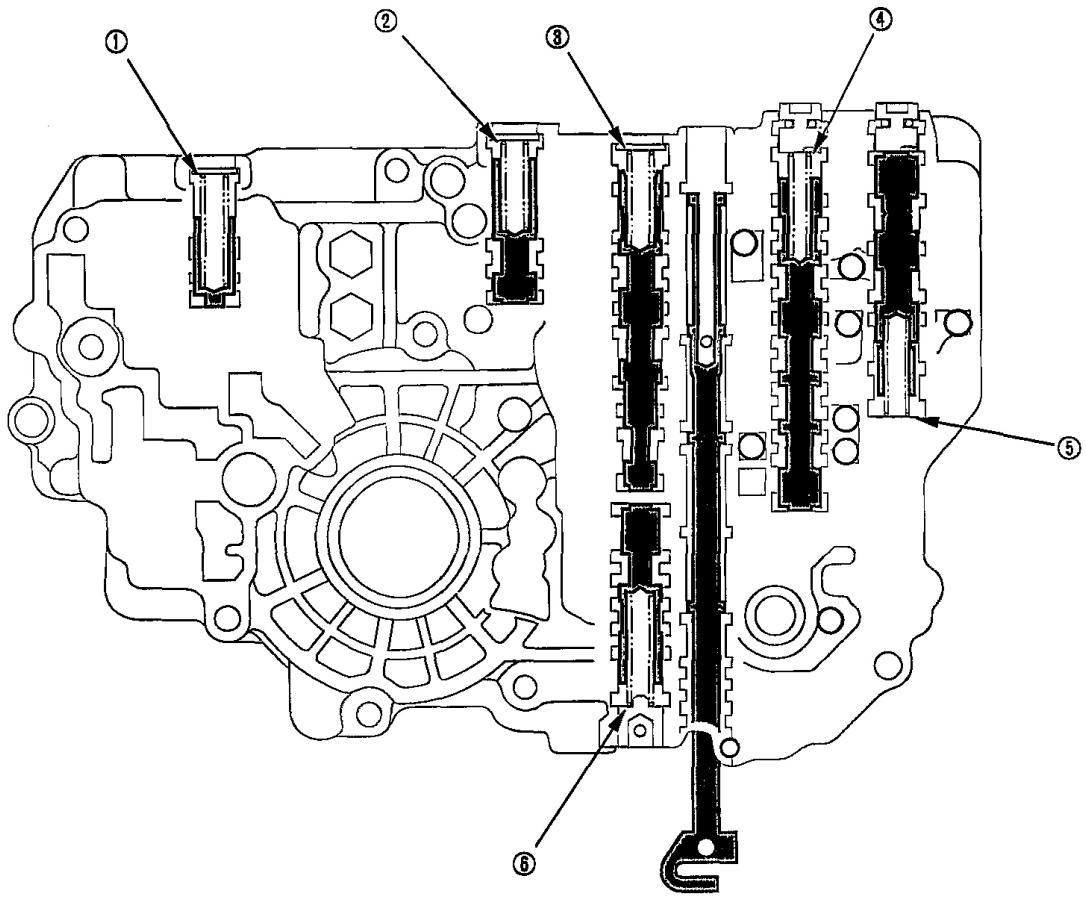


Fig. 17: Inspecting Main Valve Body



G01961821

Fig. 18: Sectional View If Valve Spring

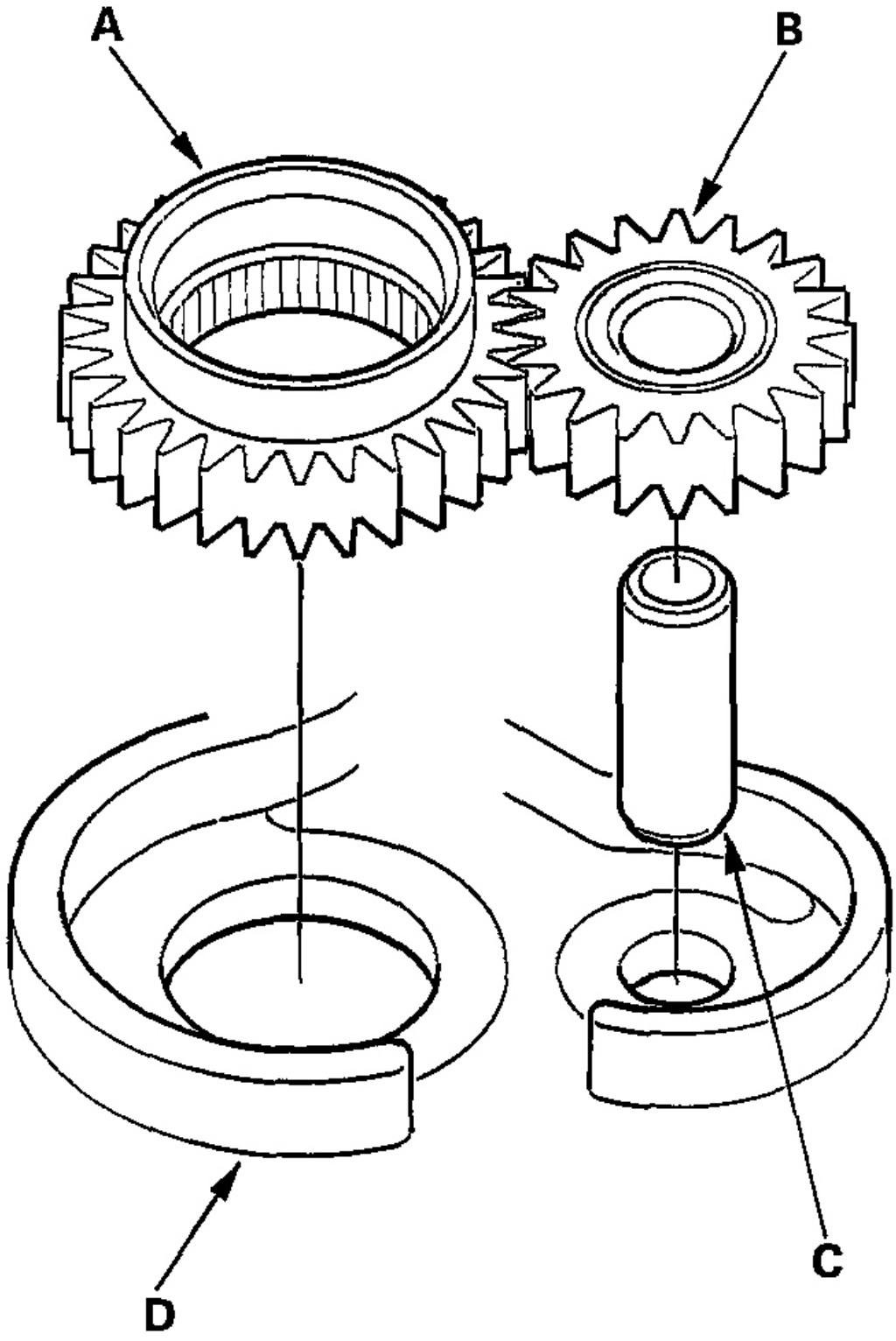
No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Relief valve spring	1.1 (0.043)	8.6 (0.339)	37.1 (1.461)	13.4
②	Modulator valve spring	1.4 (0.055)	9.4 (0.370)	33.8 (1.331)	10.9
③	CPB valve spring	1.0 (0.039)	8.1 (0.319)	40.9 (1.610)	16.2
④	1-2 shift valve spring	0.9 (0.035)	7.6 (0.299)	41.3 (1.626)	16.3
⑤	2nd orifice control valve spring	0.7 (0.028)	6.6 (0.260)	34.8 (1.370)	22.0
⑥	Servo control valve spring	1.0 (0.039)	8.1 (0.319)	52.1 (2.051)	20.8

G01961822

Fig. 19: Valve Spring Specifications Chart

ATF PUMP INSPECTION

1. Install the ATF pump drive gear (A), driven gear (B) and ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



G01961823

Fig. 20: Installing ATF Pump Gear

2. Measure the side clearance of the ATF pump drive gear (A) and driven gear (B).

ATF Pump Gears Side (Radial) Clearance:

Standard (New):

ATF Pump Drive Gear

0.105-0.1325 mm (0.004-0.005 in.)

ATF Pump Driven Gear

0.035-0.0625 mm (0.0014-0.0025 in.)

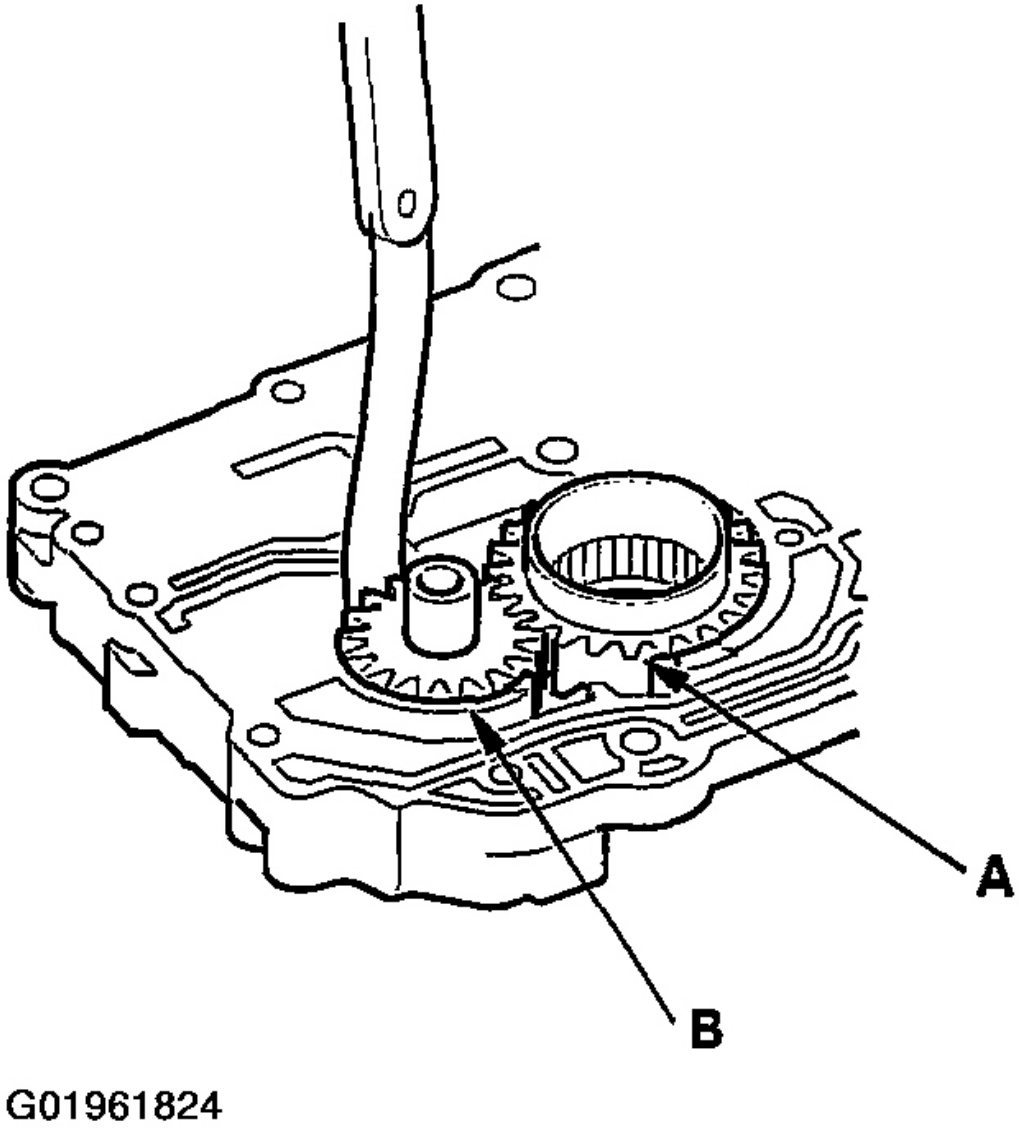


Fig. 21: Measuring Side Clearance Of ATF Pump Drive Gear

3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial)

Clearance:

Standard (New): 0.03-0.06 mm (0.000-1.002 in.)
Service Limit: 0.07 mm (0.003 in.)

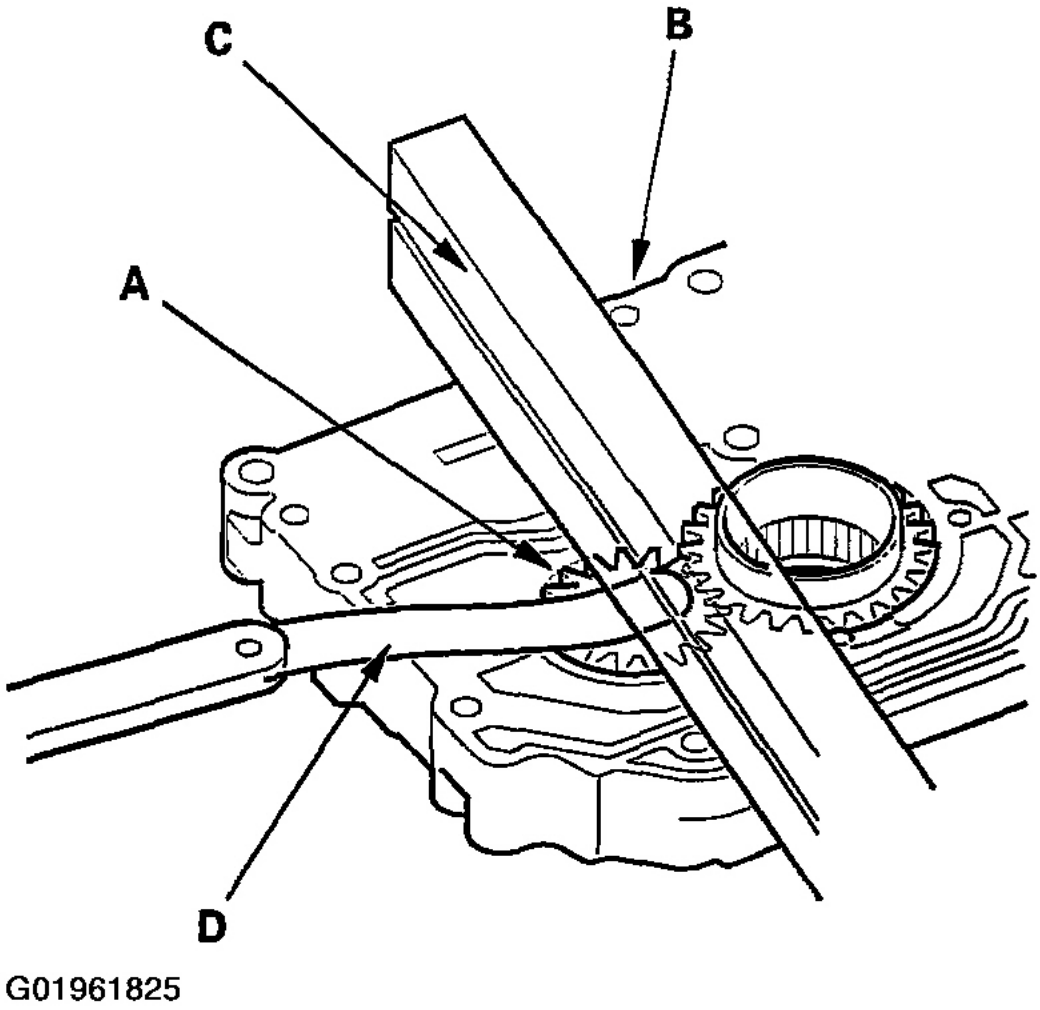


Fig. 22: Measuring Thrust Clearance Between ATF Pump Driven Gear

REGULATOR VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see **Valve Body Repair**).
3. Replace the valve body as an assembly if any parts are worn or damaged.
4. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring

loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.

5. Reassembly is the reverse of the disassembly.
6. Coat all parts with ATF during assembly.
7. Align the hole in the regulator spring cap with the hole in the valve body, then press the spring cap into the valve body, and tighten the stop bolt.

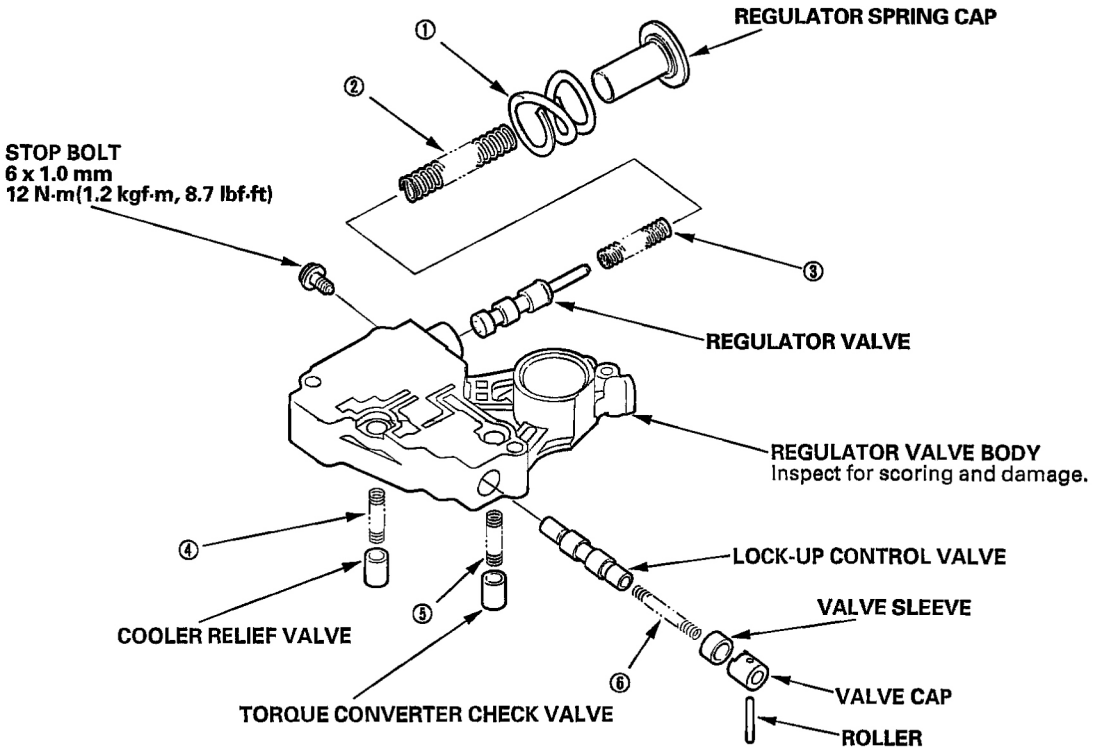


Fig. 23: Inspecting Regulator Valve Body

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.9
②	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	77.4 (3.047)	15.2
③	Regulator valve spring B	1.8 (0.071)	9.6 (0.378)	44.0 (1.732)	12.6
④	Cooler relief valve spring	1.0 (0.039)	8.4 (0.331)	33.8 (1.331)	8.2
⑤	Torque converter check valve spring	1.0 (0.039)	8.4 (0.331)	33.8 (1.331)	8.2
⑥	Lock-up control valve spring	0.8 (0.031)	6.0 (0.236)	38.4 (1.512)	30.3

G01961827

Fig. 24: Regulator Valve Body Spring Specifications Chart

SECONDARY VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.

2. Do not move the lock bolt for the CPC valve adjusting screw.
3. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see **Valve Body Repair**).
4. Replace the valve body as an assembly if any parts are worn or damaged.
5. Coat all parts with ATF during assembly.

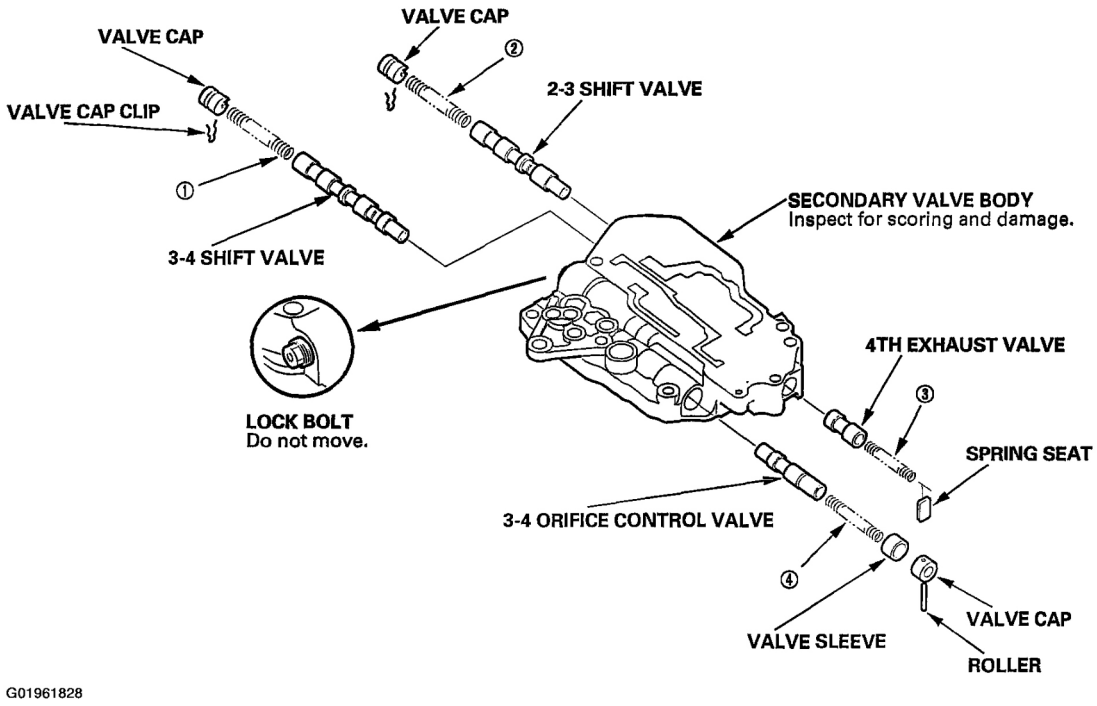


Fig. 25: Inspecting Secondary Valve Body

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	3-4 shift valve spring	0.9 (0.035)	7.6 (0.299)	57.0 (2.244)	26.8
②	2-3 shift valve spring	0.9 (0.035)	7.6 (0.299)	57.0 (2.244)	26.8
③	4th exhaust valve spring	0.9 (0.035)	6.1 (0.240)	36.4 (1.433)	19.5
④	3-4 orifice control valve spring	0.7 (0.028)	6.6 (0.260)	37.5 (1.476)	24.6

G01961829

Fig. 26: Secondary Valve Body Spring Specifications Chart

SERVO BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Replace the valve body as an assembly if any parts are worn or damaged.
3. Coat all parts with ATF during assembly.

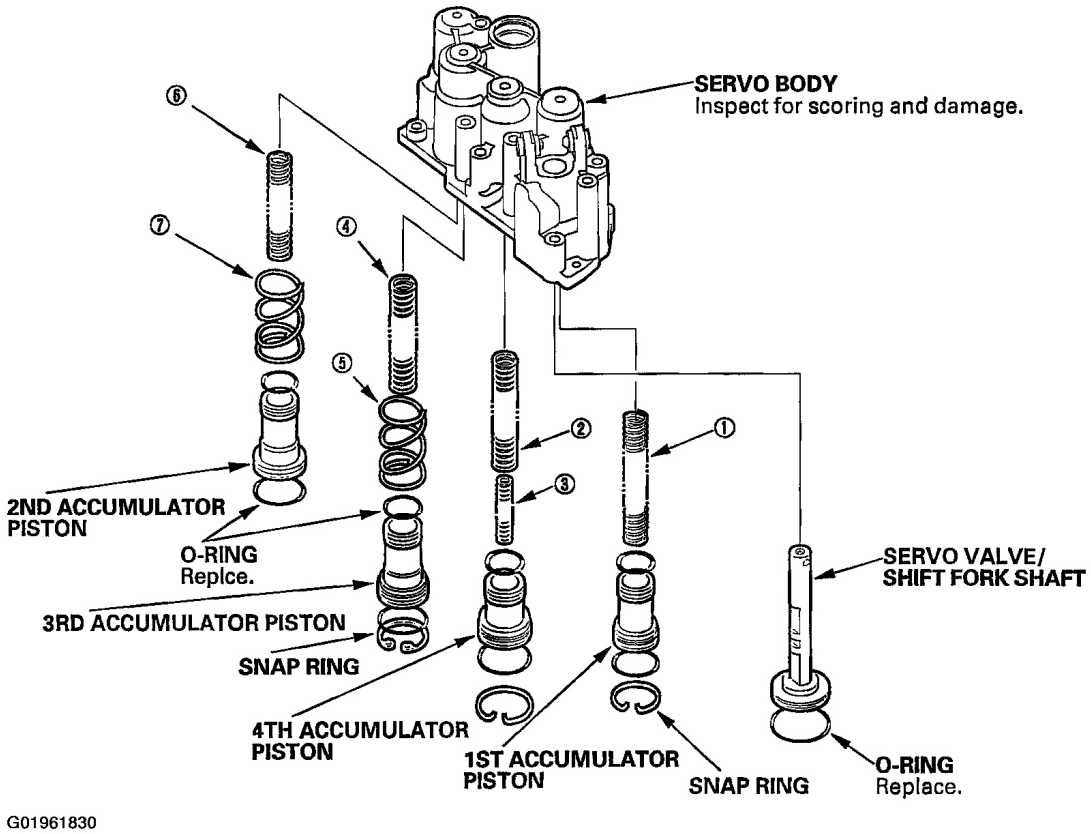


Fig. 27: Inspecting Servo Valve Body

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	1st accumulator spring	2.1 (0.083)	16.0 (0.630)	89.1 (3.508)	16.2
②	4th accumulator spring A	2.6 (0.102)	17.0 (0.669)	88.4 (3.480)	14.2
③	4th accumulator spring B	2.3 (0.091)	10.2 (0.402)	51.6 (2.031)	13.8
④	3rd accumulator spring A	2.8 (0.110)	17.5 (0.689)	94.3 (3.713)	15.9
⑤	3rd accumulator spring B	2.1 (0.083)	31.0 (1.220)	38.2 (1.504)	2.6
⑥	2nd accumulator spring C	2.2 (0.087)	14.5 (0.571)	68.0 (2.677)	13.9
⑦	2nd accumulator spring A	2.4 (0.094)	29.0 (1.142)	39.0 (1.535)	2.9

G01961831

Fig. 28: Servo Valve Body Spring Specifications Chart

LOCK-UP VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

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

4. Coat all parts with ATF during assembly.

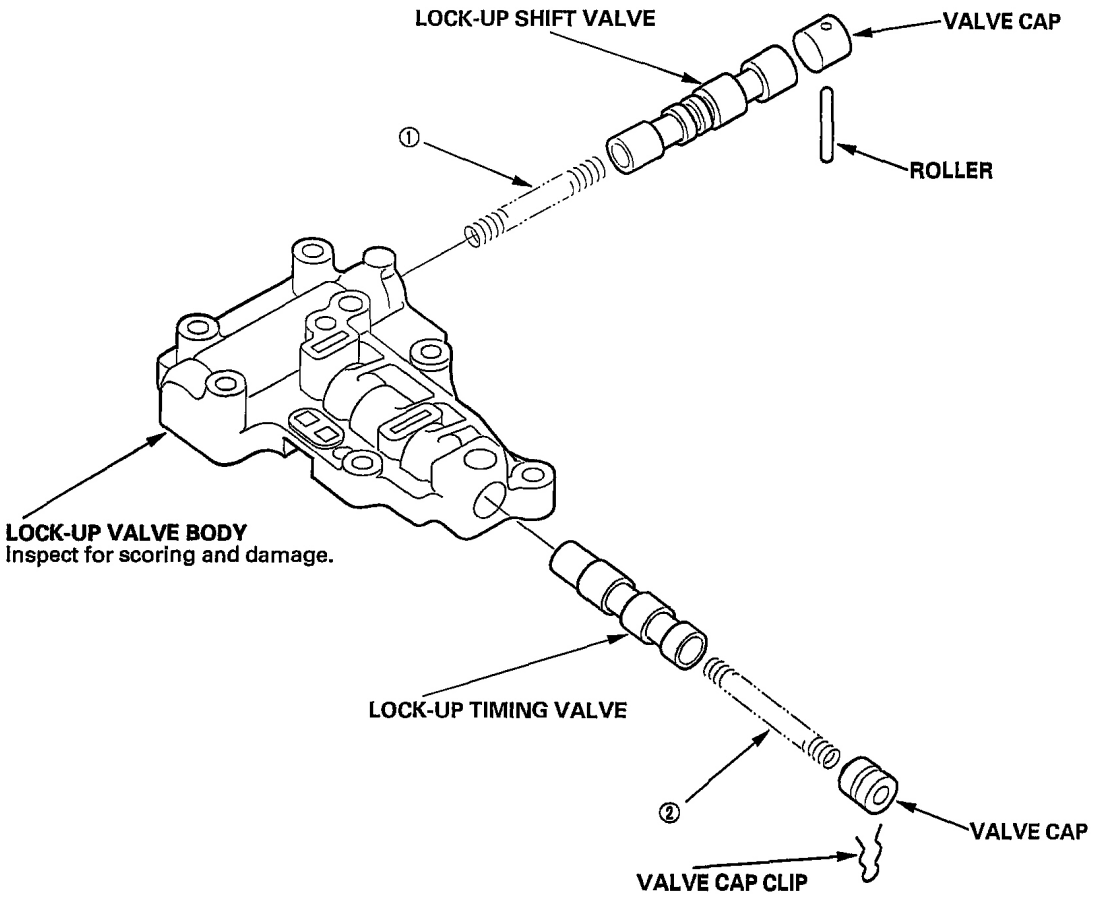


Fig. 29: Inspecting Lock-Up Valve Body

No.	Spring	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
①	Lock-up shift valve spring	0.9 (0.035)	7.6 (0.299)	73.7 (2.902)	32.0
②	Lock-up timing valve spring	0.9 (0.035)	8.1 (0.319)	80.7 (3.177)	54.2

G01961833

Fig. 30: Lock-Up Valve Body Spring Specifications Chart

TORQUE CONVERTER HOUSING

MAINSHAFT BEARING AND OIL SEAL REPLACEMENT

Special Tools Required

- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A

- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

1. Remove the mainshaft bearing and oil seal with the special tool and a commercially available 3/8"-16 slide hammer (A).

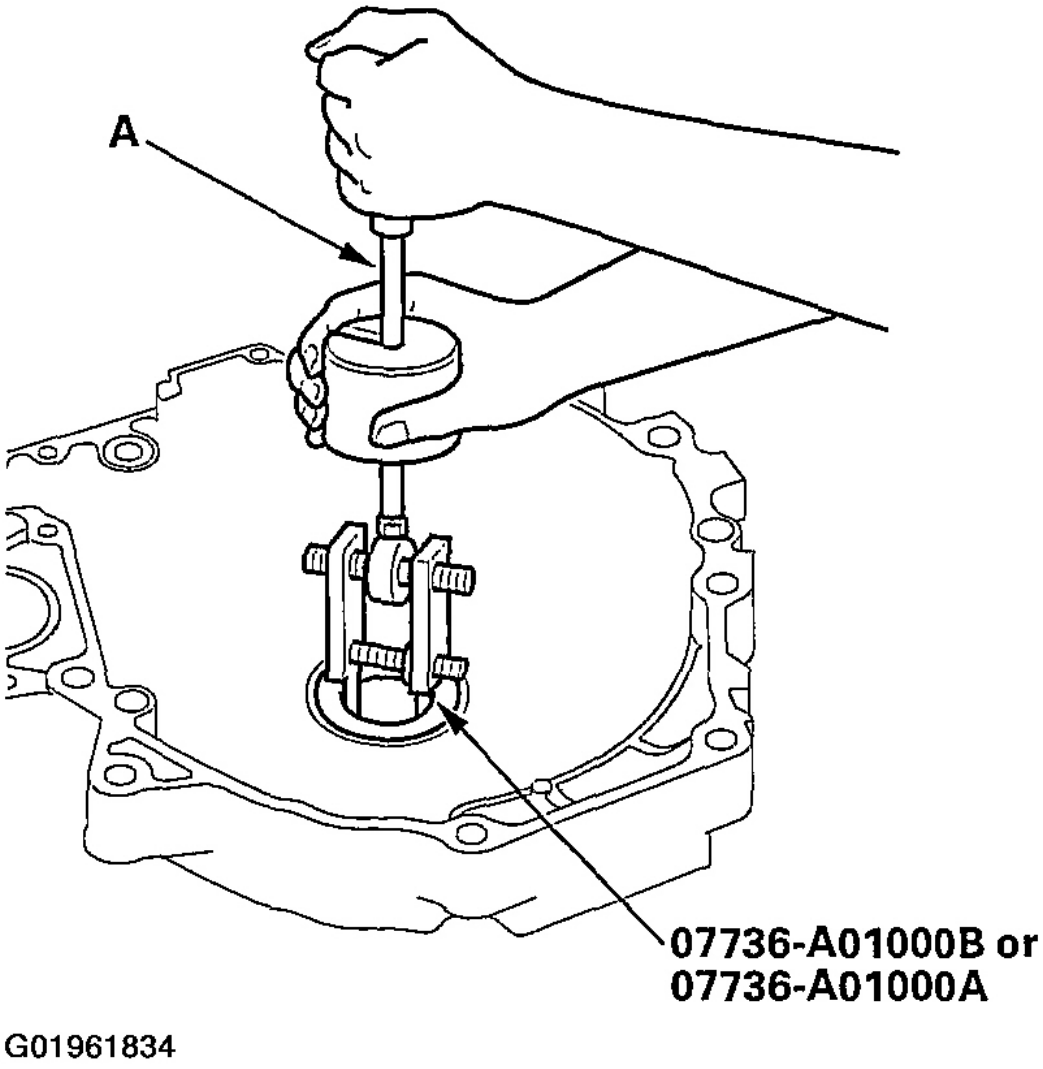


Fig. 31: Removing Mainshaft Bearing & Oil Seal

2. Install the new mainshaft bearing until it bottoms in the housing with the special tools.

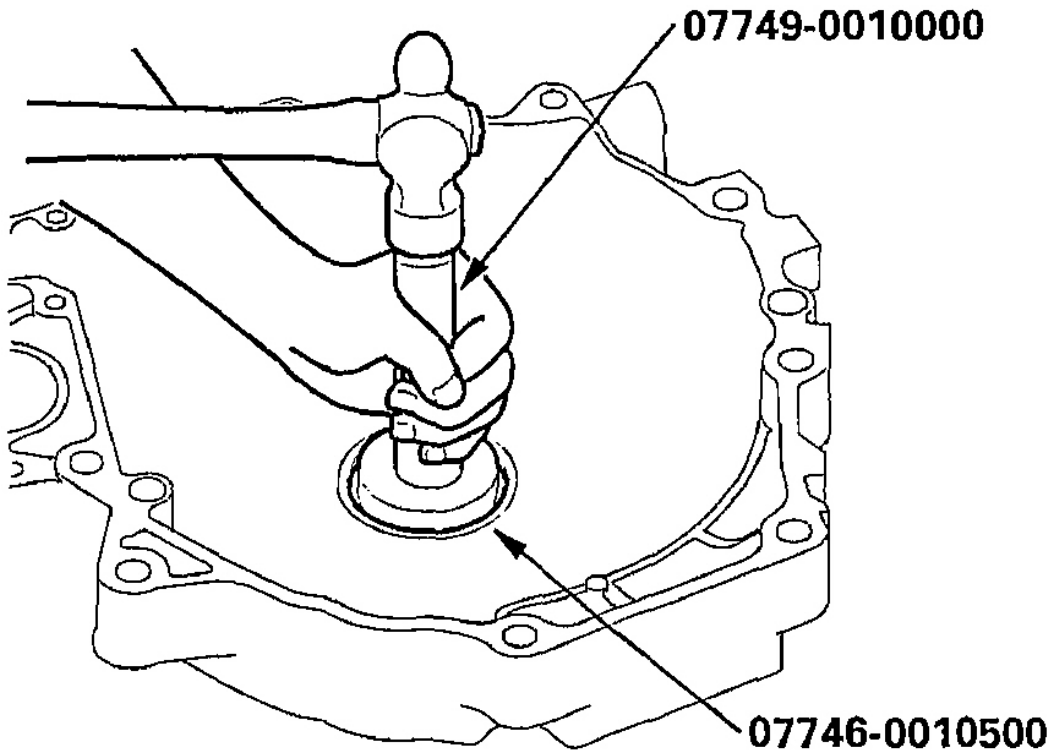


Fig. 32: Installing Mainshaft Bearing

3. Install the new oil seal flush with the housing using special tools.

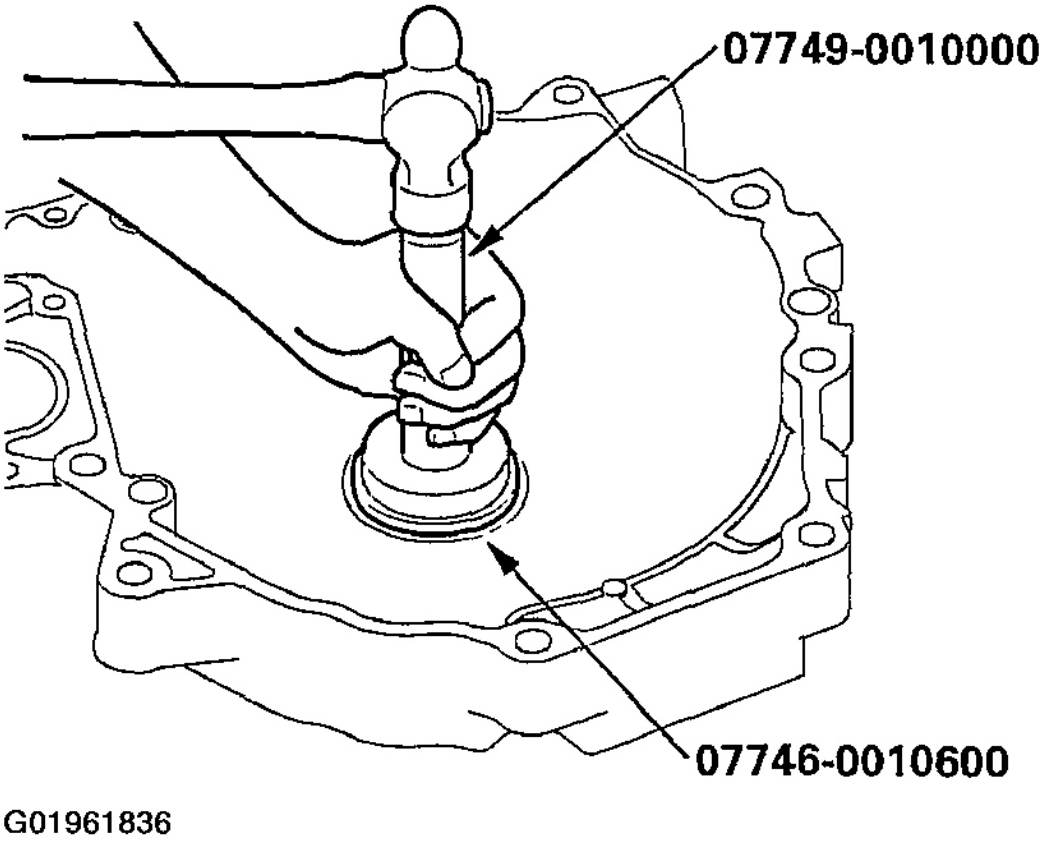


Fig. 33: Installing Oil Seal Flush

COUNTERSHAFT BEARING REPLACEMENT

Special Tools Required

- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the countershaft bearing with the special tool and a commercially available 3/8"-16 slide hammer (A).

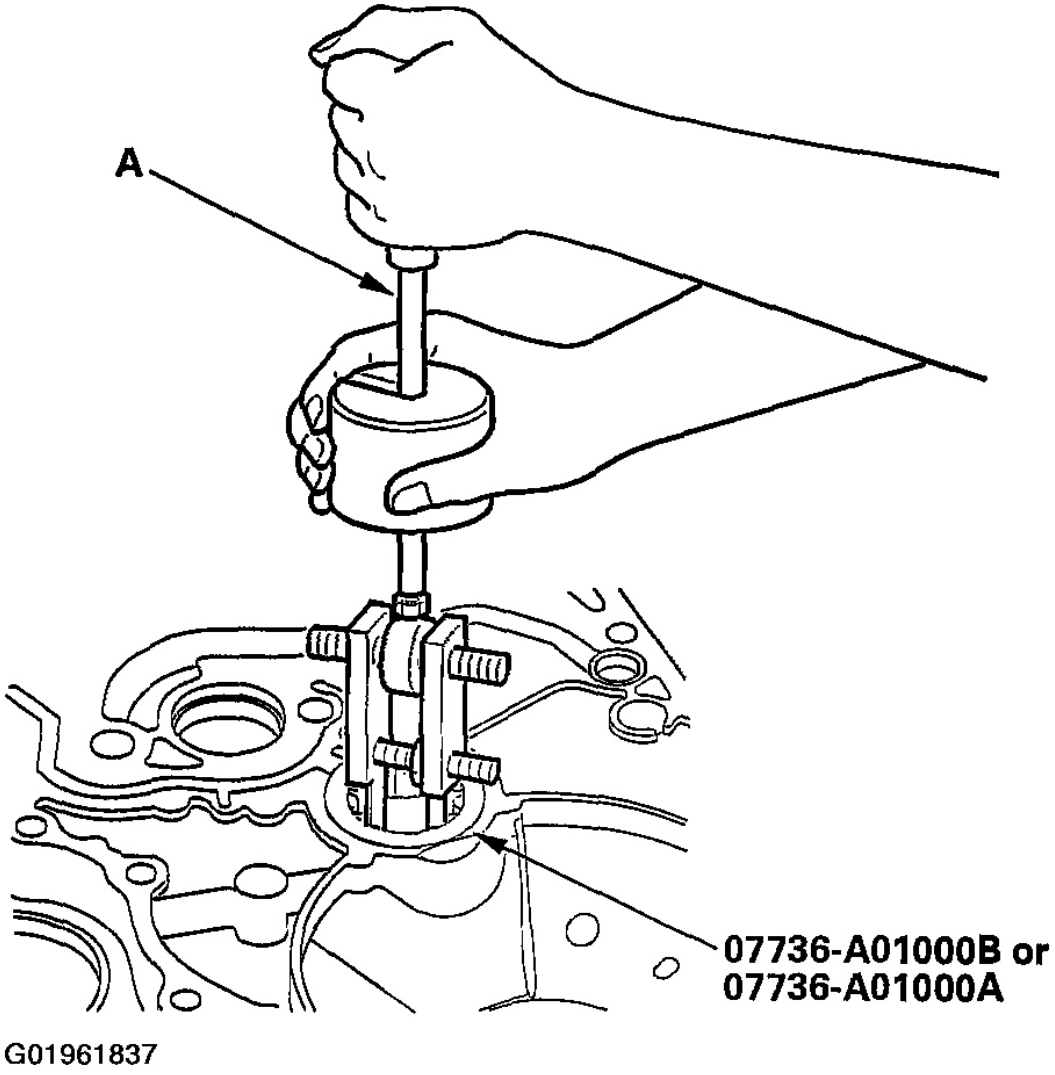


Fig. 34: Removing Countershaft Bearing

2. Install the ATF guide plate (A).

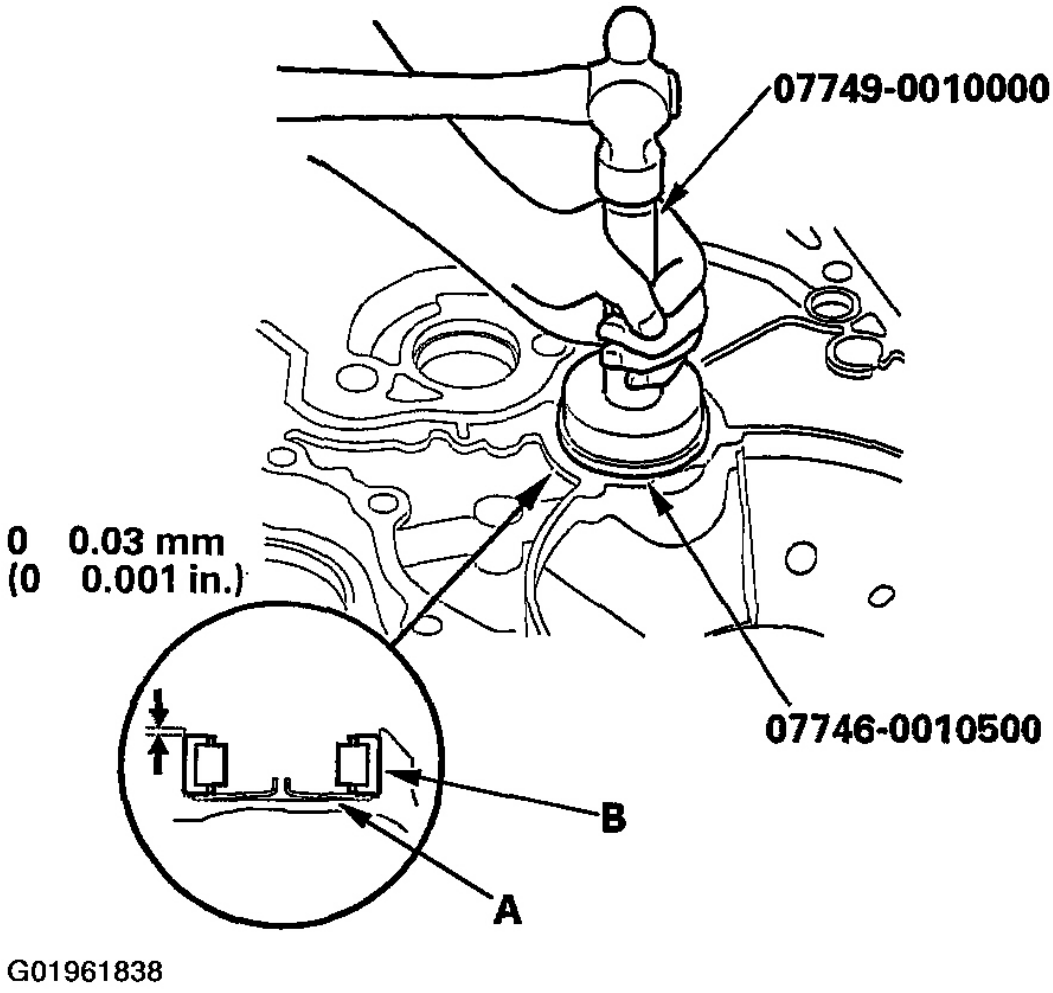


Fig. 35: Installing ATF Guide Plate

3. Install the new countershaft bearing (B) in the housing with the special tools.

SHAFTS AND CLUTCHES

MAINSHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Lubricate all parts with ATF during assembly.

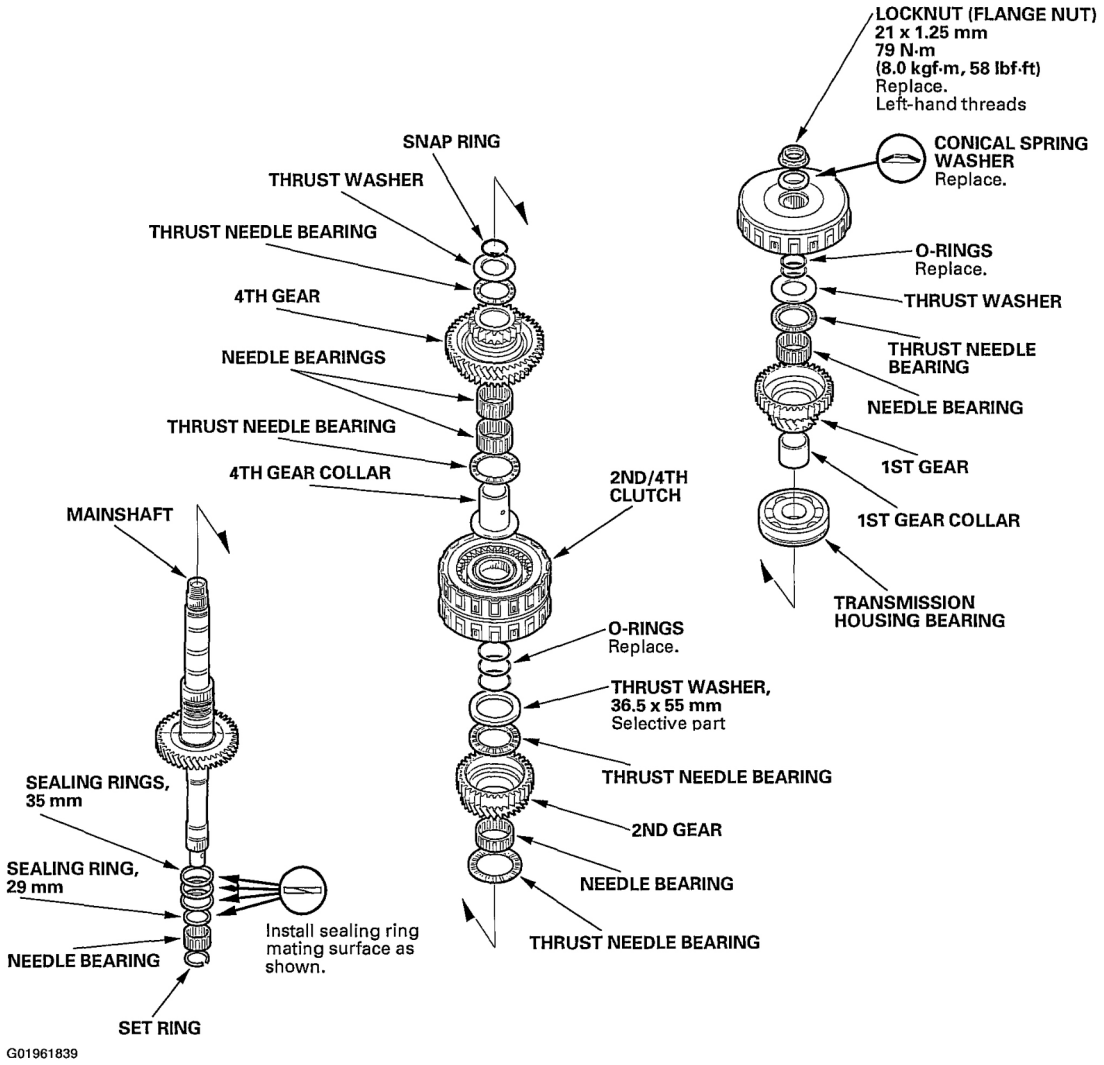


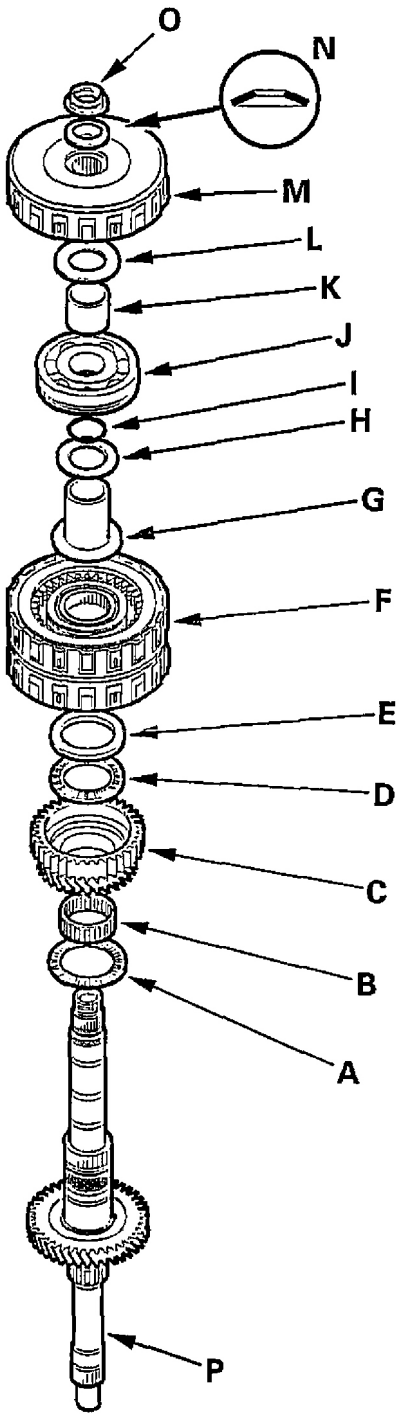
Fig. 36: Lubricating All Part With ATF During Assembly

2. Check the clearance of the 2nd gear.
3. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Check shaft bearing surfaces for scoring and excessive wear.
6. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
7. Install the conical spring washer in the direction shown in **Fig. 36** .
8. Inspect the condition of the sealing rings. If the sealing rings are worn, distorted, or damaged, replace them (see **Mainshaft Sealing Rings Replacement**).

MAINSHAFT 2ND GEAR CLEARANCE INSPECTION

1. Remove the mainshaft transmission housing bearing (see **Bearing Removal and Installation**).

2. Assemble the thrust needle bearing (A), needle bearing (B), 2nd gear (C), thrust needle bearing (D), 36.5 x 55 mm thrust washer (E), 2nd/4th clutch (F), 4th gear collar (G), thrust washer (H), snap ring (I), transmission housing mainshaft bearing (J), 1st gear collar (K), thrust washer (L), 1st clutch (M), conical spring washer (N), and locknut (O) on the mainshaft (P).



G01961840

Fig. 37: Assembling Thrust Needle Bearing

3. Tighten the locknut (A) to 29 N.m (3.0 kgf.m, 22 lbf.ft). The locknut has left-hand threads.

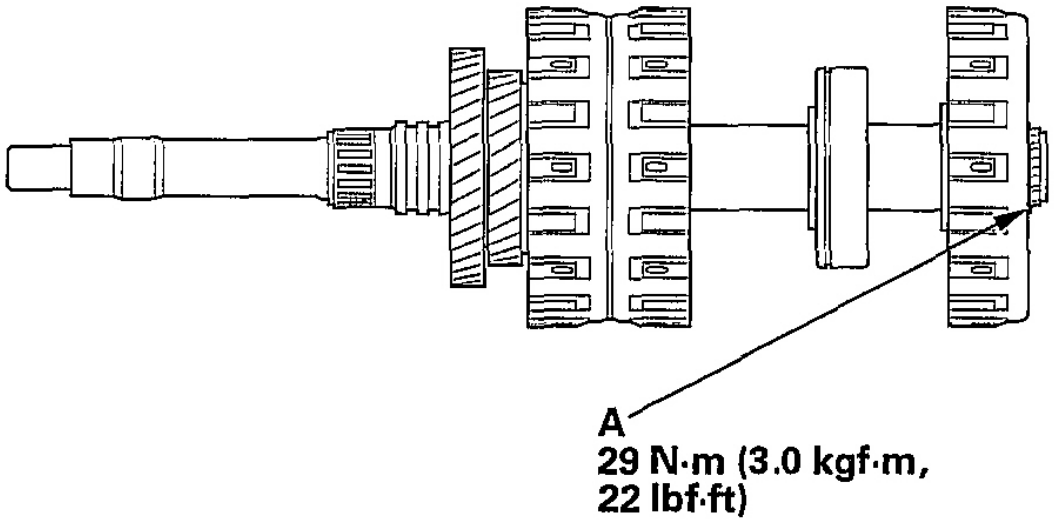


Fig. 38: Tightening Locknut

4. Hold the 2nd gear (A) against the 2nd clutch (B), then measure the clearance between the 2nd gear and 3rd gear (C) with a feeler gauge (D), in at least 3 places. Use the average as the actual clearance.

   STANDARD: 0.05-0.13 mm (0.002-0.005 in.)

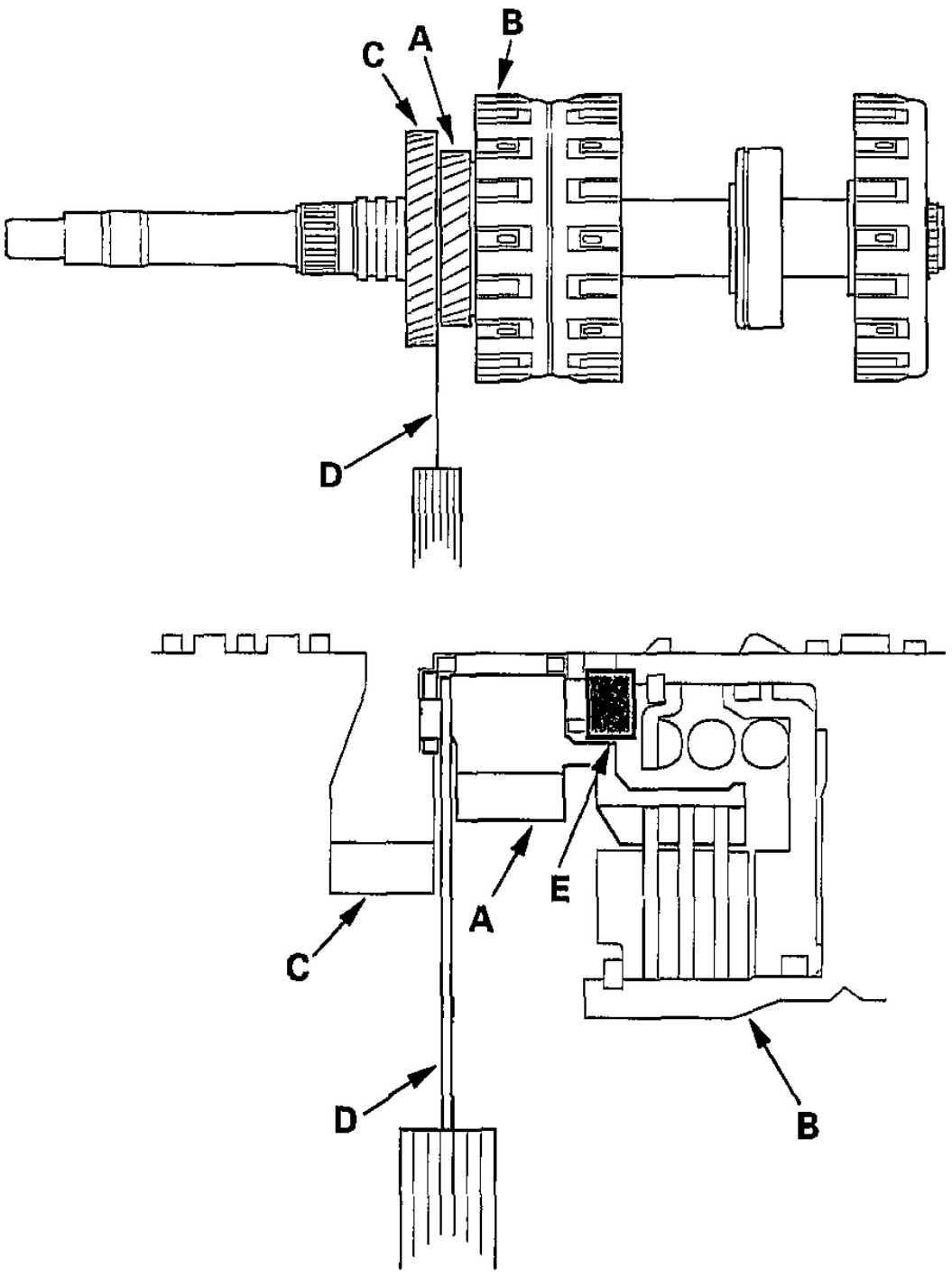


Fig. 39: Measuring Clearance Between 2nd & 3rd Gear With Feeler Gauge

5. If the clearance is out of standard, remove the 36.5 x 55 mm thrust washer and measure its thickness.
6. Select and install a new thrust washer, then recheck.

No.	Part Number	Thickness
1	90441-P4P-000	4.00 mm (0.157 in.)
2	90442-P4P-000	4.05 mm (0.159 in.)
3	90443-P4P-000	4.10 mm (0.161 in.)
4	90444-P4P-000	4.15 mm (0.163 in.)
5	90445-P4P-000	4.20 mm (0.165 in.)
6	90446-P4P-000	4.25 mm (0.167 in.)
7	90447-P4P-000	4.30 mm (0.169 in.)
8	90448-P4P-000	4.35 mm (0.171 in.)
9	90449-P4P-000	4.40 mm (0.173 in.)
10	90450-P4P-000	4.45 mm (0.175 in.)

G01961843

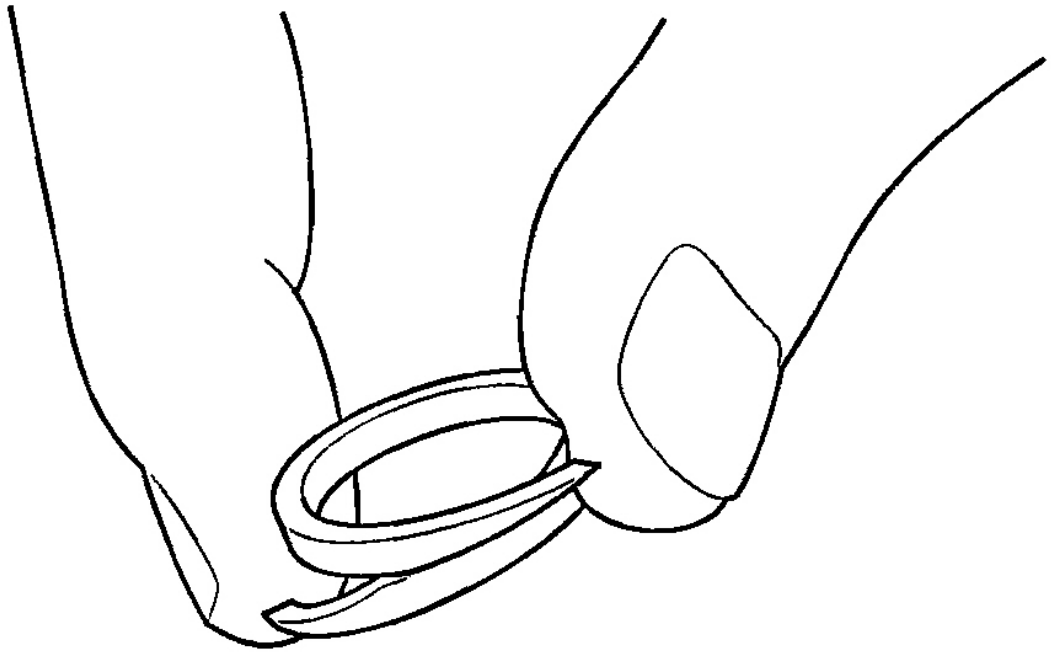
Fig. 40: Thrust Washer Thickness Chart (36.5 x 55 mm)

7. After replacing the thrust washer, make sure the clearance is within standard.
8. Disassemble the shaft and gears.
9. Reinstall the bearing in the transmission housing (see **Bearing Removal and Installation**).

MAINSHAFT SEALING RINGS REPLACEMENT

The sealing rings on the mainshaft are synthetic resin with chamfered ends. Check the condition of the sealing rings, and replace them only if they are worn, distorted, or damaged.

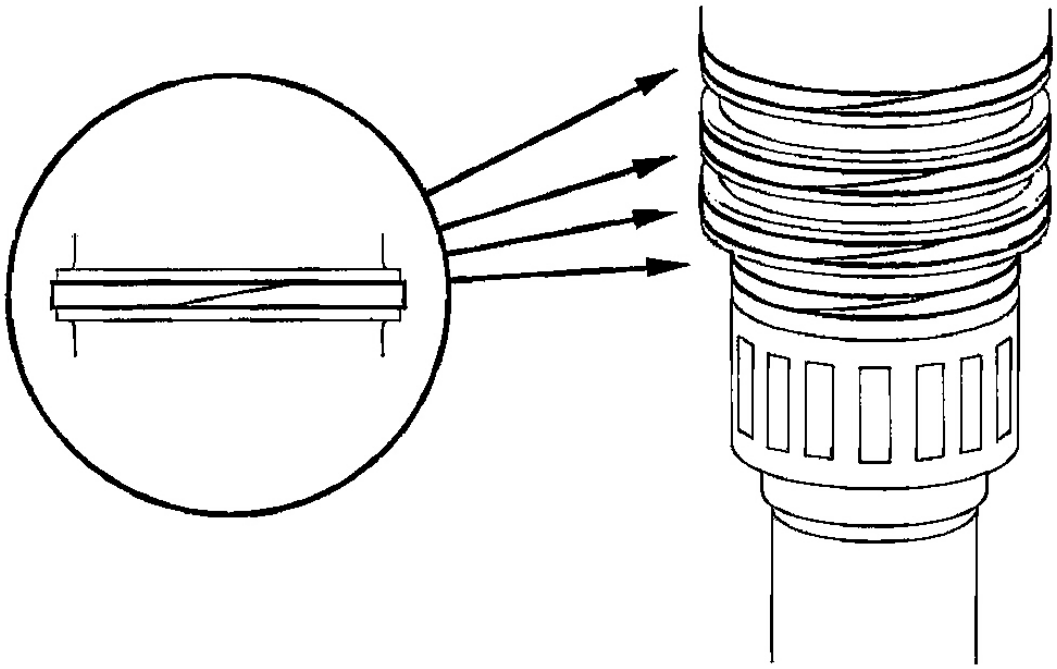
1. For a better fit, squeeze the sealing rings together slightly before installing them.



G01961844

Fig. 41: Squeezing Sealing Rings Together Before Installing

2. Apply ATF to the new sealing rings, then install them on the mainshaft.



G01961845

Fig. 42: Applying ATF To Sealing Rings

3. After installing the sealing rings, verify the following:
   - The rings are fully seated in the groove.
   - The ring are not twisted.
   - The chamfered ends of the ring are properly joined.

COUNTERSHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Remove the locknut, and take off components down to the reverse selector hub.

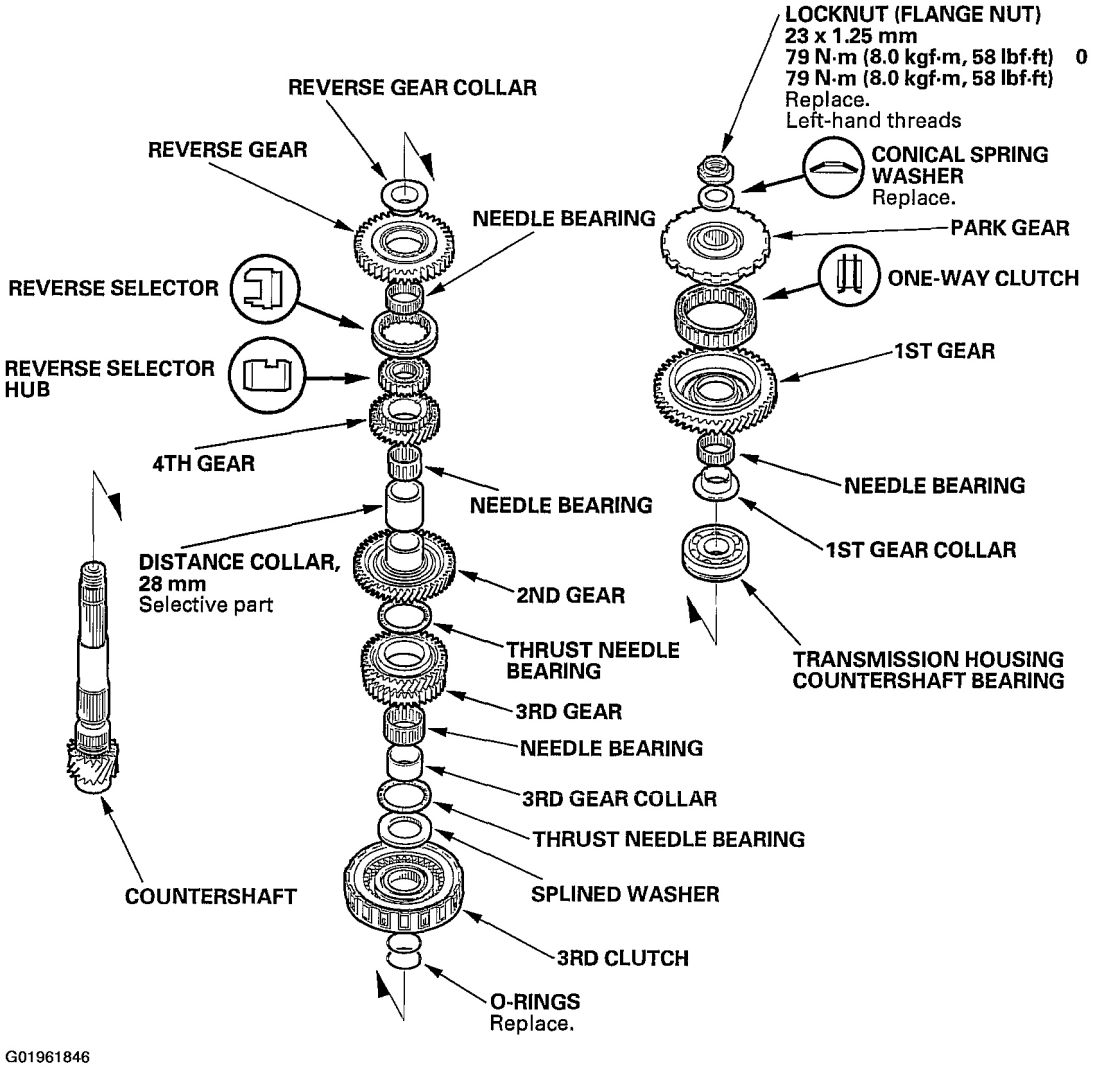


Fig. 43: Removing Locknut & Removing Components To Reverse Selector Hub

2. Remove the reverse selector hub and 4th gear (see **Countershaft Reverse Selector Hub Removal**).
3. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Check shaft bearing surfaces for scoring and excessive wear.
6. Lubricate all parts with ATF during assembly.
7. Check the clearance of the 4th gear.
8. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
9. Install the reverse selector hub, reverse selector, one-way clutch, and conical spring washer in the direction shown in **Fig. 43** .

COUNTERSHAFT REVERSE SELECTOR HUB REMOVAL

Remove the reverse selector hub (A) and the 4th gear (B) with a universal 2-jaw (or 3-jaw) puller (C). Place a shaft protector (D) between the puller and countershaft (E) to prevent countershaft damage.

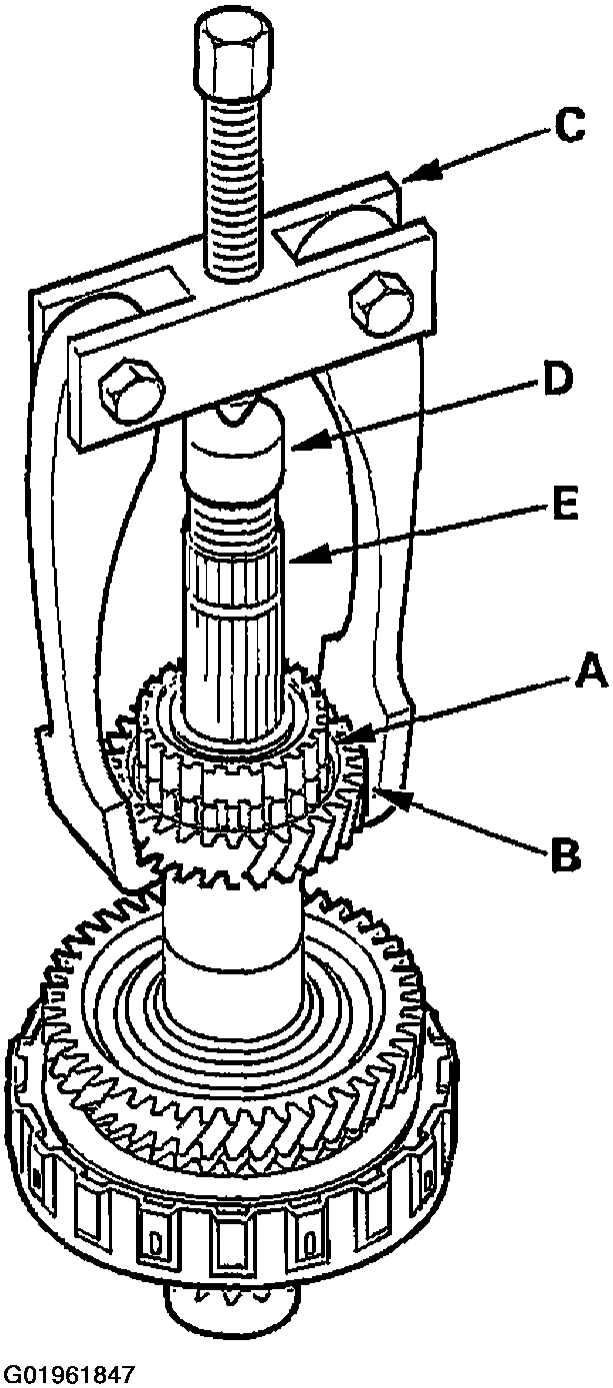


Fig. 44: Removing Countershaft Reverse Selector Hub

COUNTERSHAFT REVERSE SELECTOR HUB INSTALLATION

Special Tools Required

Driver 40 mm I.D. 07746-0030100

1. Wrap the countershaft splines with tape to prevent O-ring damage.
2. Install the new O-rings (A), then remove the tape on the shaft splines.

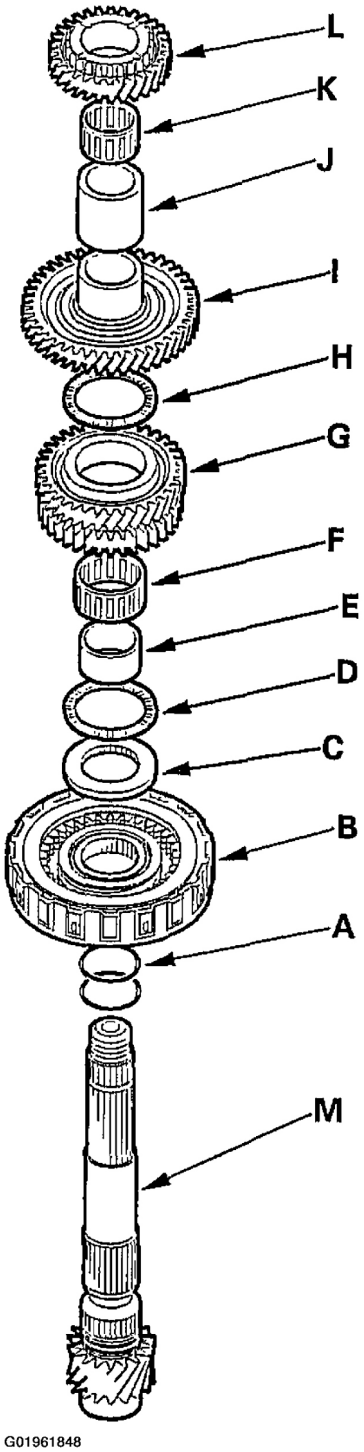


Fig. 45: Installing O-Rings & Tape On Shaft Splines

3. Install the 3rd clutch (B), splined washer (C), thrust needle bearing (D), 3rd gear collar (E), needle bearing (F), 3rd gear (G), thrust needle bearing (H), 2nd gear (I), 28 mm distance collar (J), needle bearing (K), and 4th gear (L) on the countershaft (M).

4. Slide the reverse selector hub (A) over the countershaft (B), then press it into place with the special tool and a press.

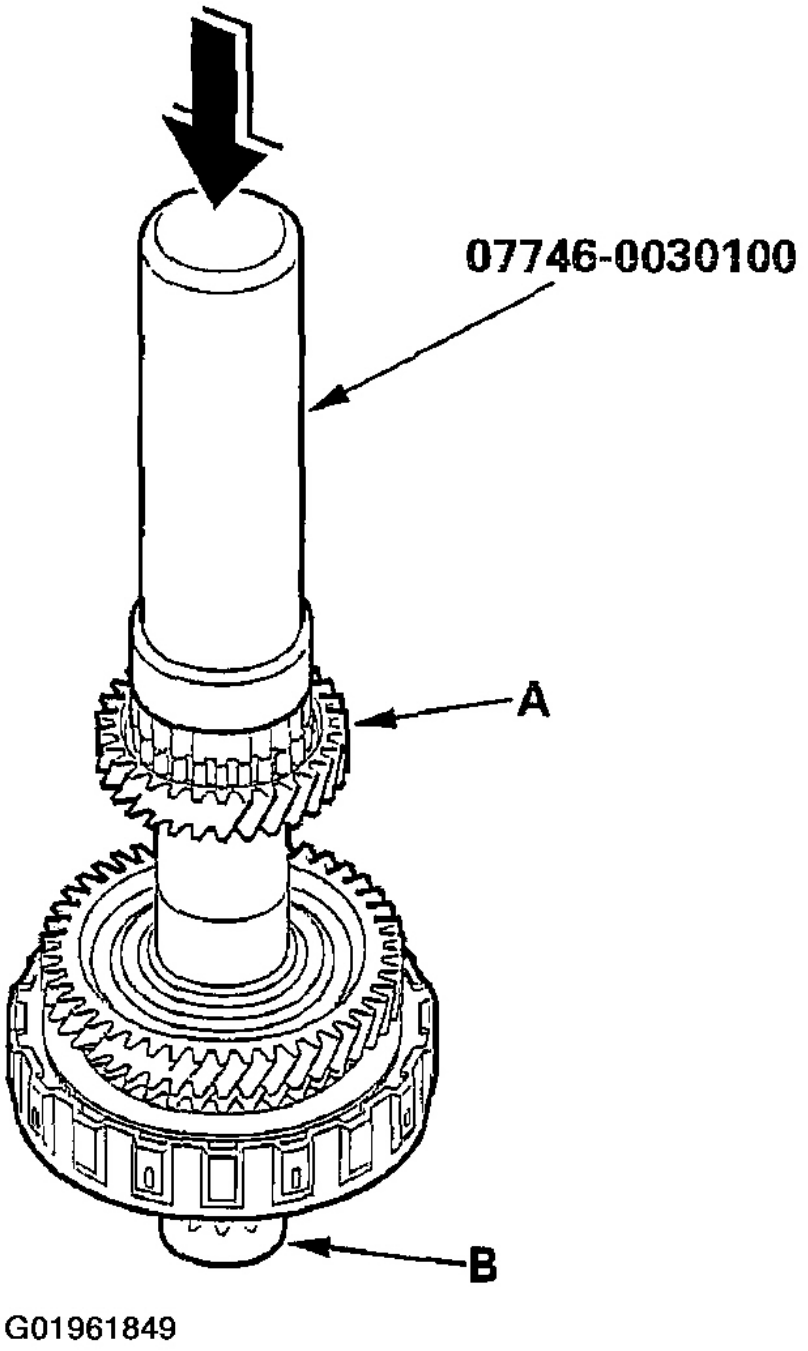


Fig. 46: Sliding Reverse Selector Hub Over Countershaft

COUNTERSHAFT 4TH GEAR CLEARANCE INSPECTION

Special Tools Required

Driver 40 mm I.D. 07746-0030100

1. Remove the countershaft transmission housing bearing (see **Bearing Removal and Installation**).
2. Remove the O-rings from the countershaft.
3. Install the 3rd clutch (A), splined washer (B), thrust needle bearing (C), 3rd gear collar (D), needle bearing (E), 3rd gear (F), thrust needle bearing (G), 2nd gear (H), 28 mm distance collar (I), needle bearing (J), and 4th gear (K) on the countershaft (L).

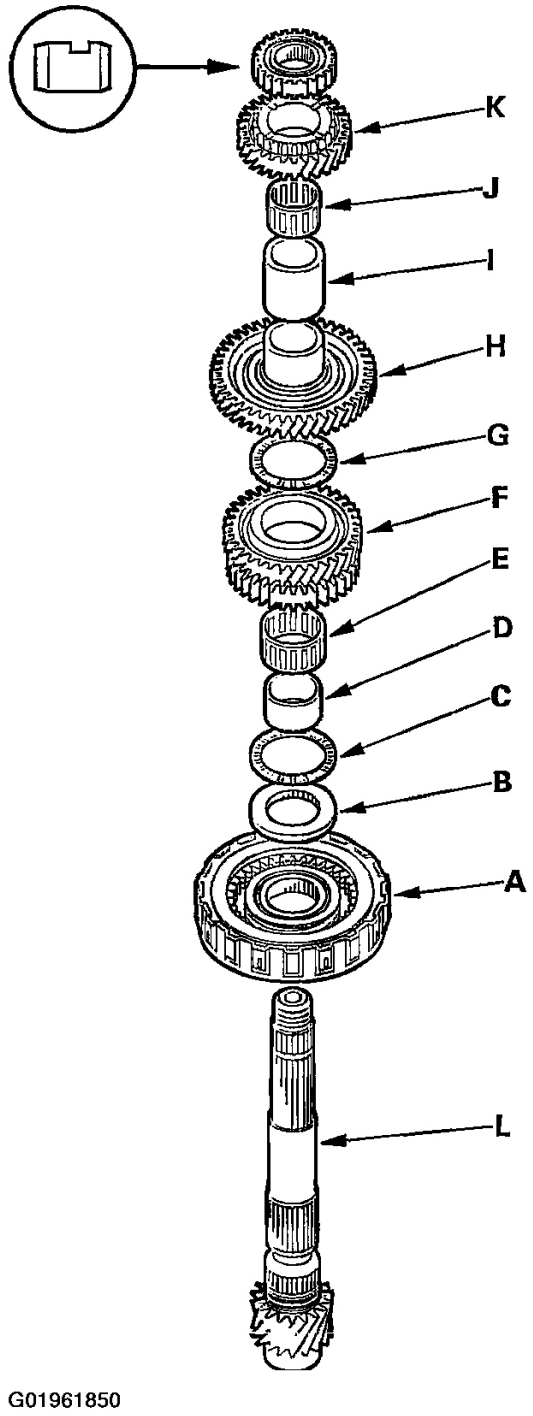


Fig. 47: Installing 3rd Clutch

4. Slide the reverse selector hub (A) over the countershaft (B), then press it into place with the special tool and a press.

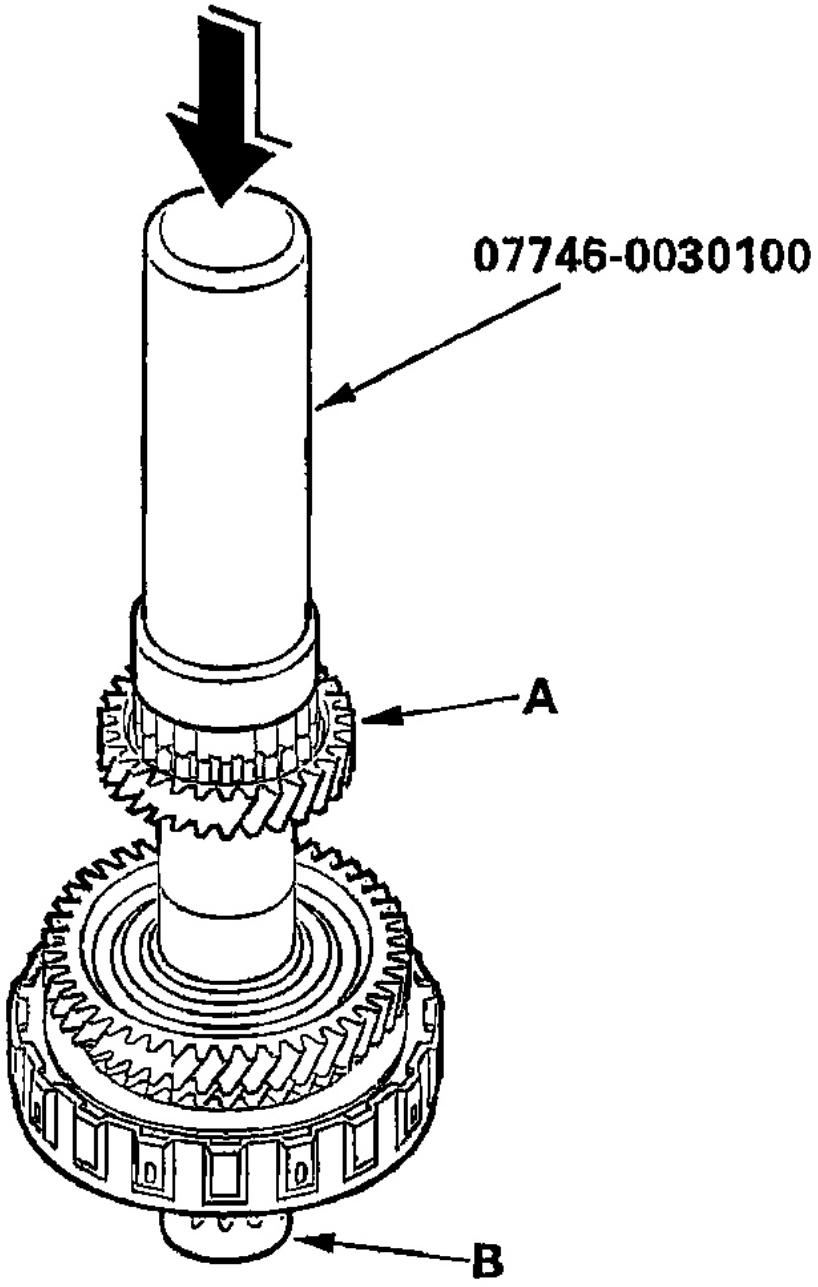


Fig. 48: Sliding Reverse Selector Hub Over Countershaft

5. Install the reverse gear collar (A), transmission housing bearing (B), 1st gear collar (C), needle bearing (D), 1st gear/one-way clutch/park gear (E), and conical spring washer (F) on the countershaft sub-assembly (H).

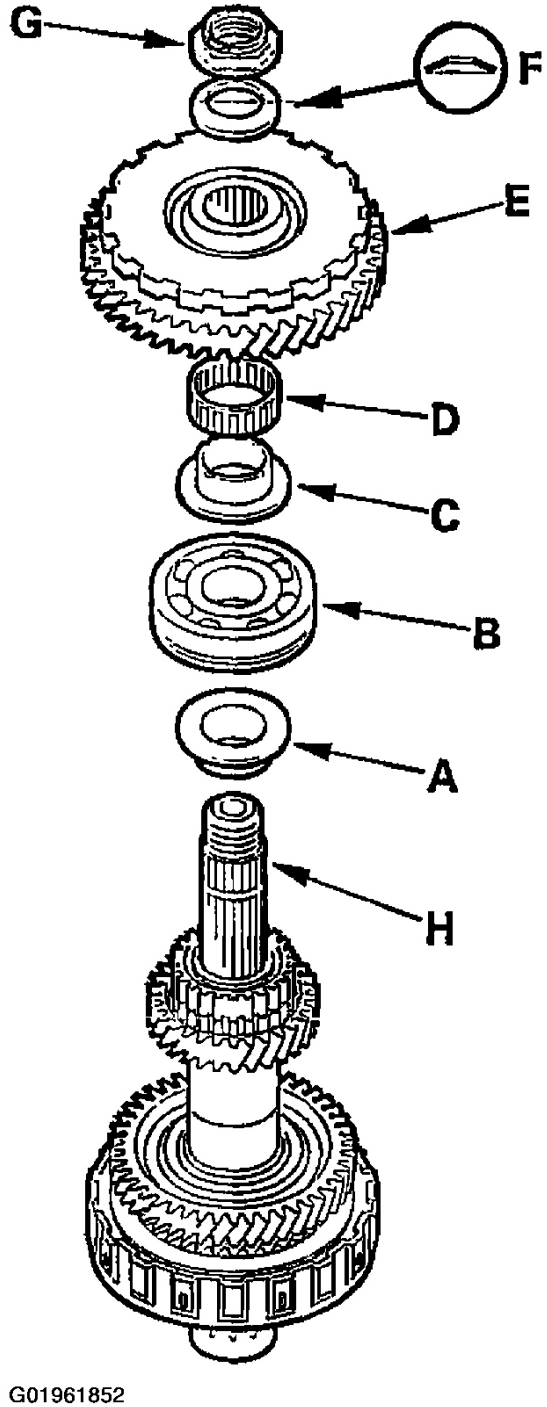
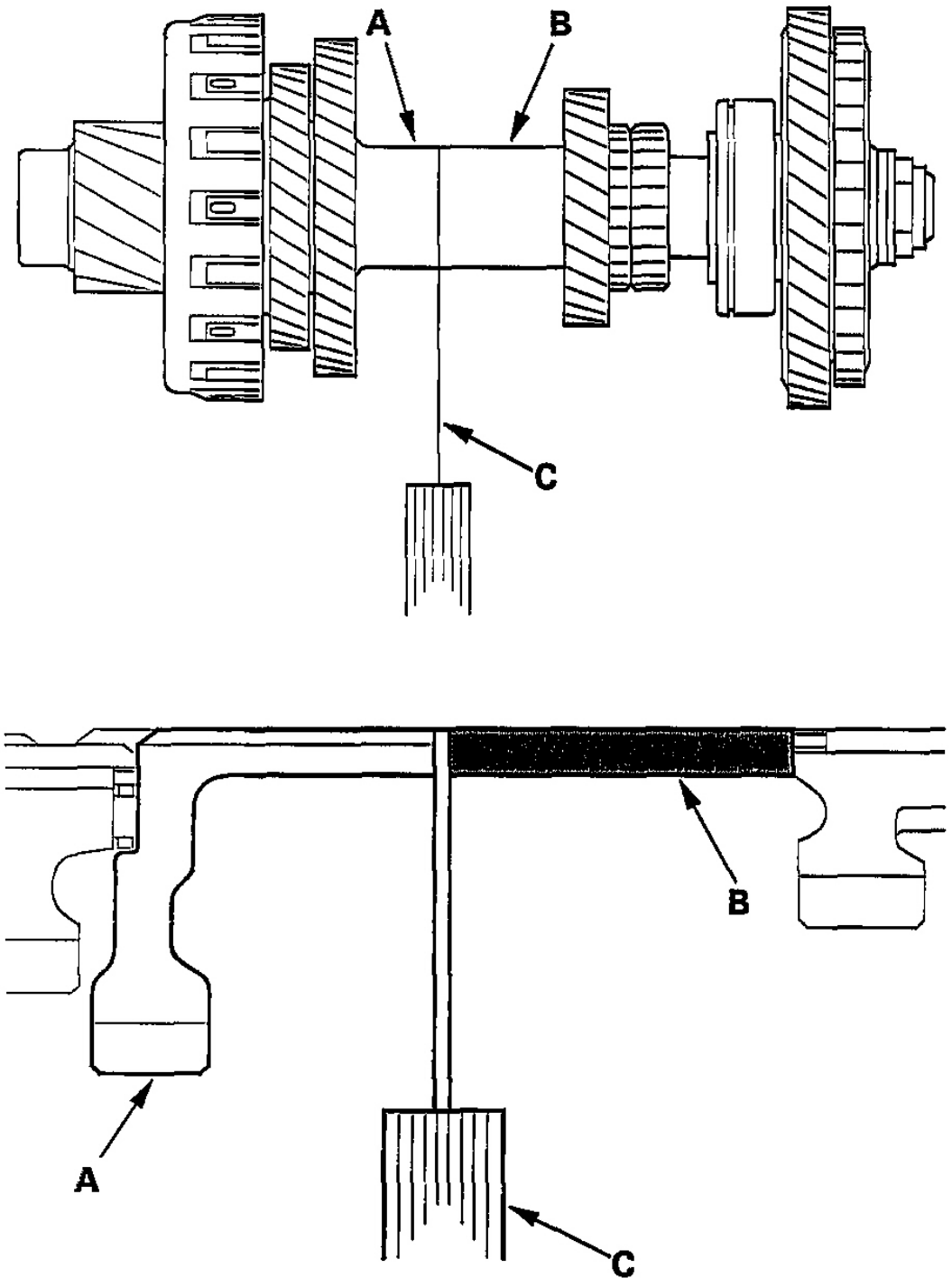


Fig. 49: Installing Reverse Gear Collar

6. Tighten the locknut (G) to 29 N.m (3.0 kgf.m, 22 lbf.ft). The locknut has left-hand threads.
7. Measure the clearance between the 2nd gear (A) and 28 mm distance collar (B) with a feeler gauge (C) in at least 3 places. Use the average as the actual clearance.

STANDARD: 0.10—0.18 mm (0.004—0.007 in.)



G01961853

Fig. 50: Measuring Clearance Between 2nd Gear & 28 mm Distance Collar With Feeler Gauge

8. If the clearance is out of standard, disassemble the countershaft. Remove the 28 mm distance collar, and measure its length.
9. Select and install a new distance collar, assemble the countershaft, then recheck.

No.	Part Number	Thickness
1	90503-PC9-000	39.00 mm (1.535 in.)
2	90504-PC9-000	39.10 mm (1.539 in.)
3	90505-PC9-000	39.20 mm (1.543 in.)
4	90507-PC9-000	39.30 mm (1.547 in.)
5	90508-PC9-000	39.05 mm (1.537 in.)
6	90509-PC9-000	39.15 mm (1.541 in.)
7	90510-PC9-000	39.25 mm (1.545 in.)
8	90511-PC9-000	38.90 mm (1.531 in.)
9	90512-PC9-000	38.95 mm (1.533 in.)

G01961854

Fig. 51: Distance Collar Thickness Chart (28 mm)

10. After replacing the distance collar, make sure the clearance is within standard.
11. Disassemble the shaft and gears.
12. Reinstall the bearing in the transmission housing (see **Bearing Removal and Installation**).

1ST GEAR ONE-WAY CLUTCH DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Separate countershaft 1st gear (A) from the park gear (B) by turning the park gear in the direction shown in **Fig. 52** .

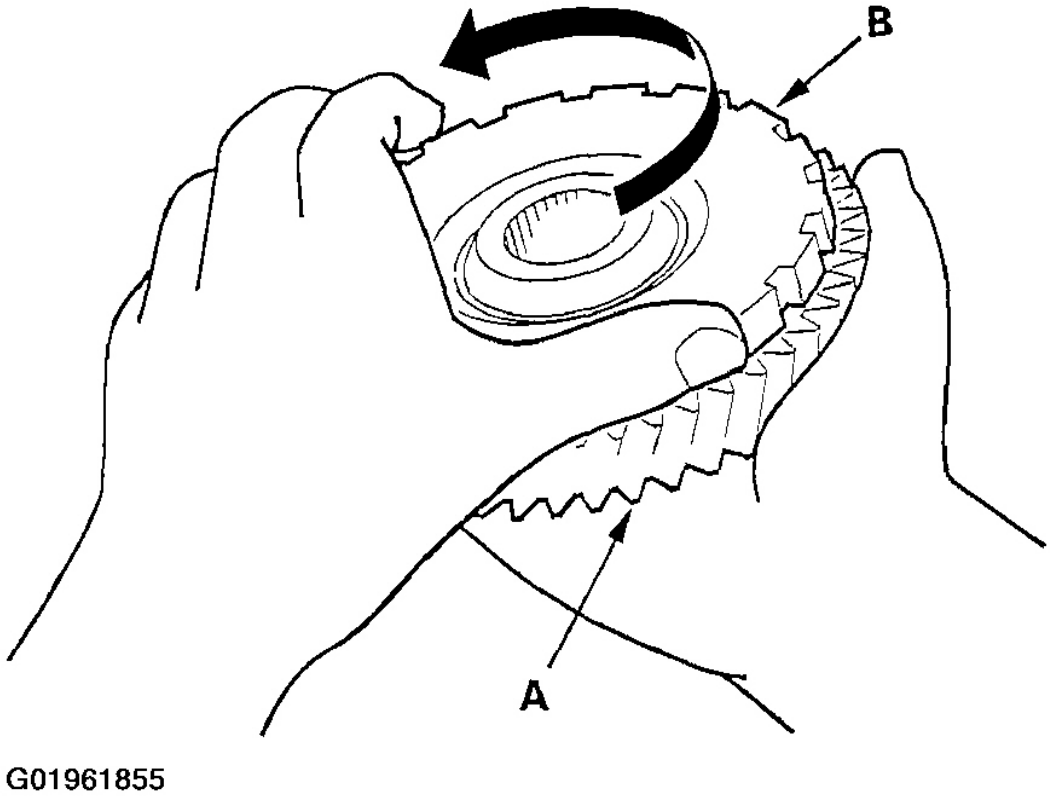


Fig. 52: Separating Countershaft 1st Gear From Park Gear

2. Pry the one-way clutch (A) up with tip of a screwdriver (B), and remove the one-way clutch from the countershaft 1st gear (C).

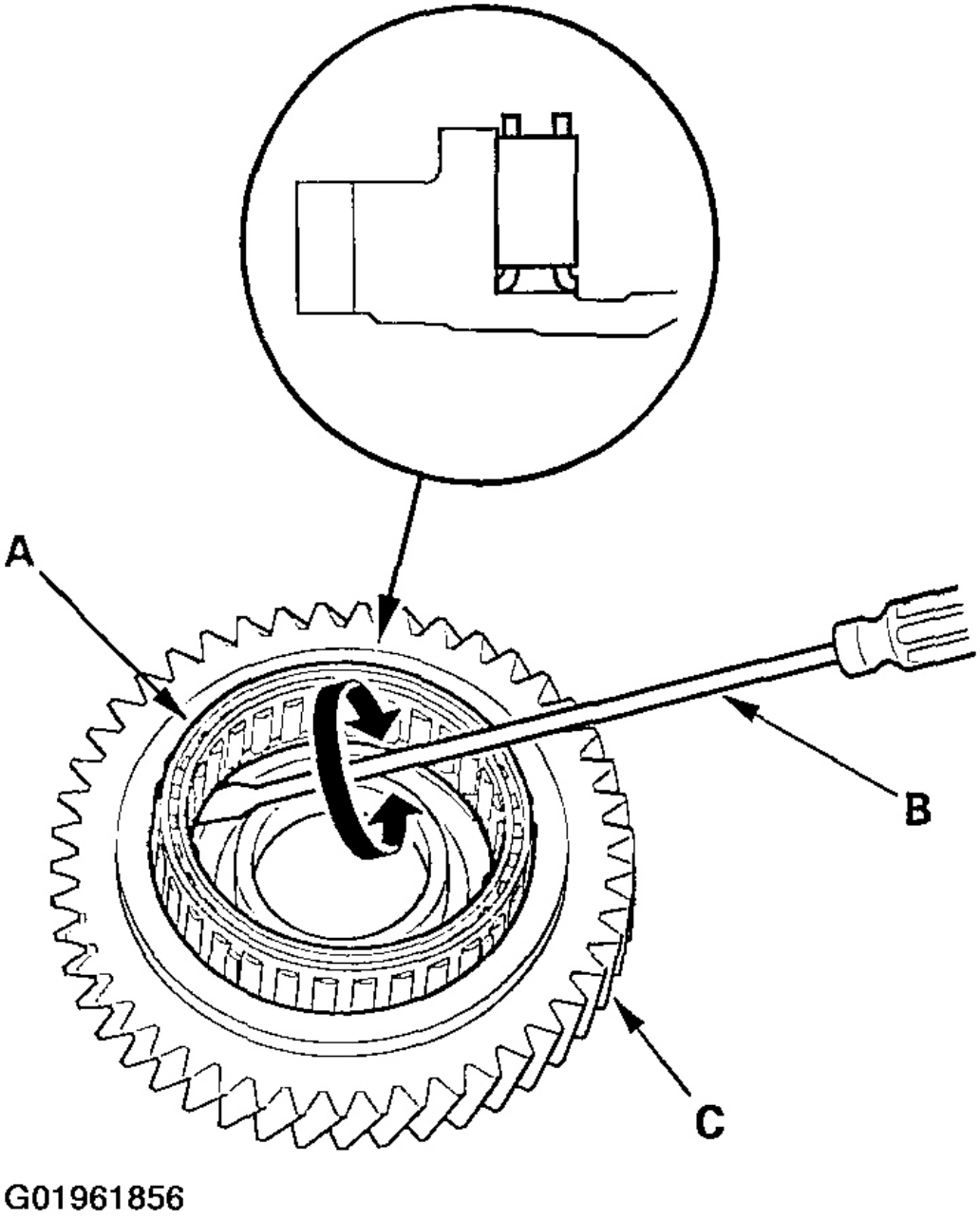


Fig. 53: Prying One-Way Clutch Up with Tip Of Screwdriver

3. Inspect the park gear (A) and 1st gear (B) for wear and scoring. Inspect the one-way clutch (C) for damage and faulty movement.

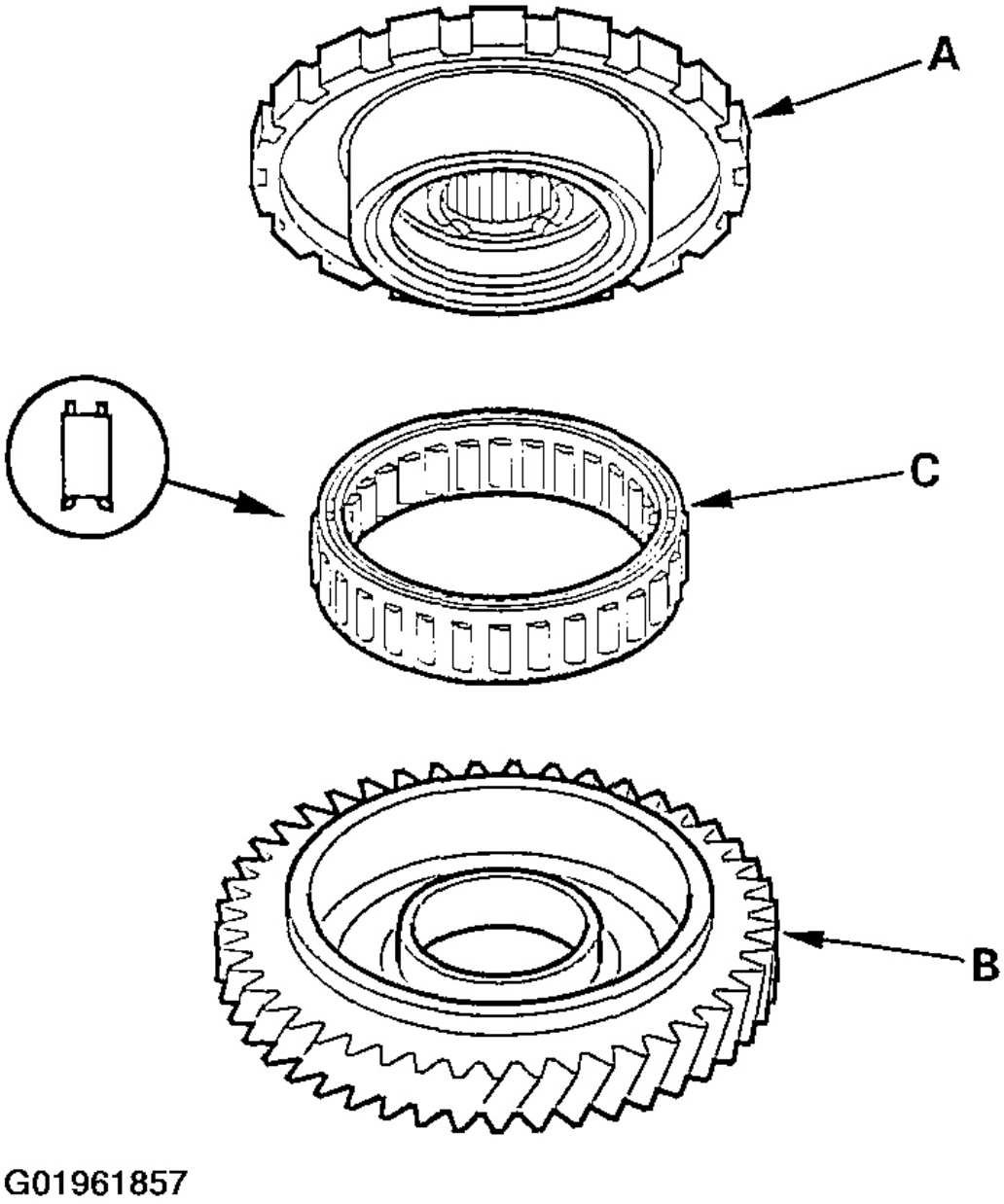


Fig. 54: Inspecting One-Way Clutch For Damage & Faulty Movement

4. Assemble the 1st gear, one-way clutch, and park gear.
5. Hold the 1st gear (A), and turn the park gear (B) in the direction shown in **Fig. 55** to be sure it turns freely. Also make sure the park gear does not turn in the opposite direction.

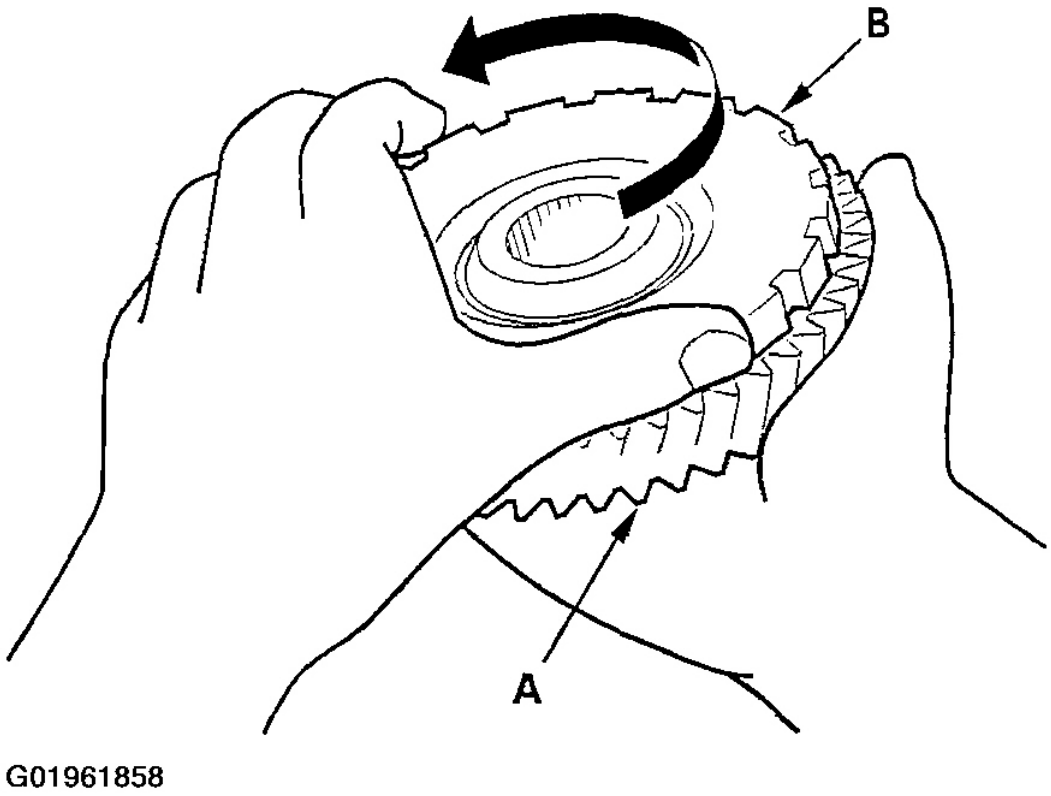


Fig. 55: Holding 1st Gear & Turning Park Gear

CLUTCH DISASSEMBLY

Special Tools Required

- Clutch spring compressor attachment 07LAE-PX40100
- Clutch spring compressor attachment 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

1. Remove the snap ring (A), then remove the clutch end plate, the clutch discs, and the plates with a screwdriver (B).

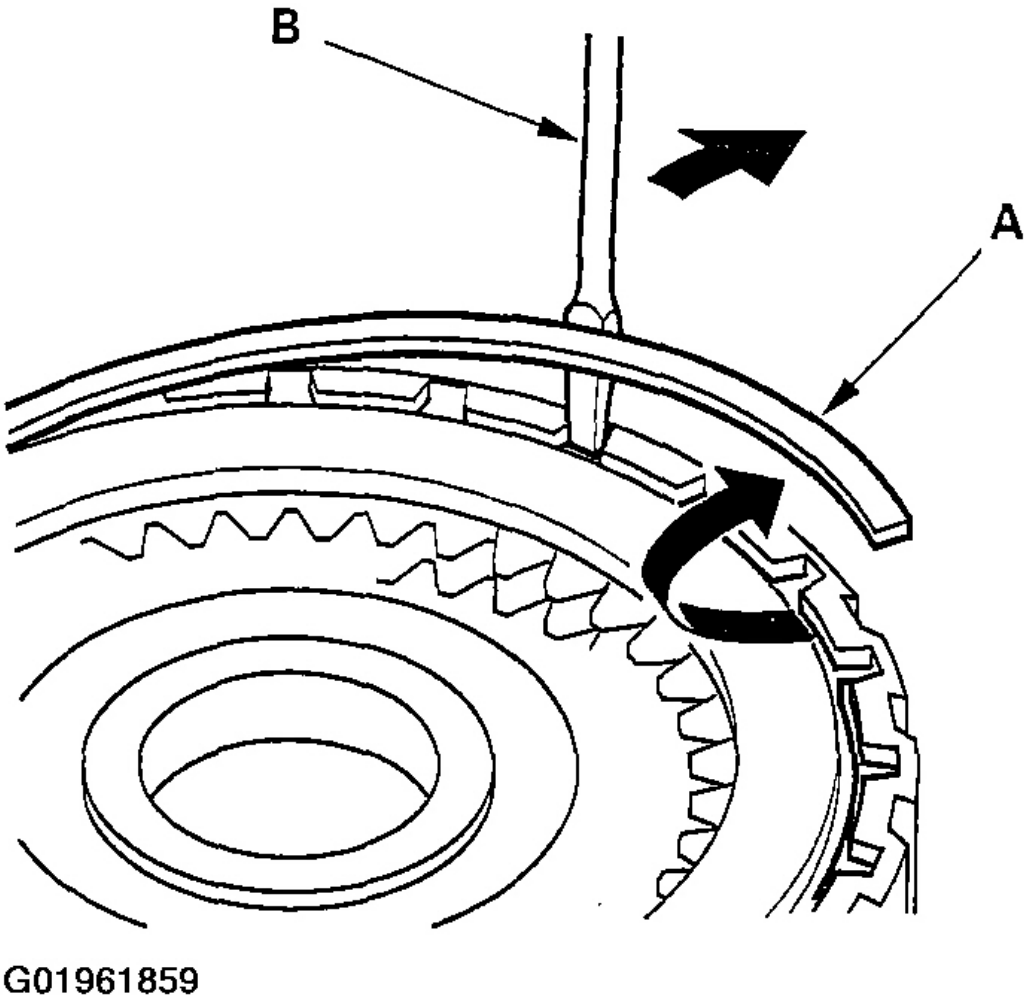
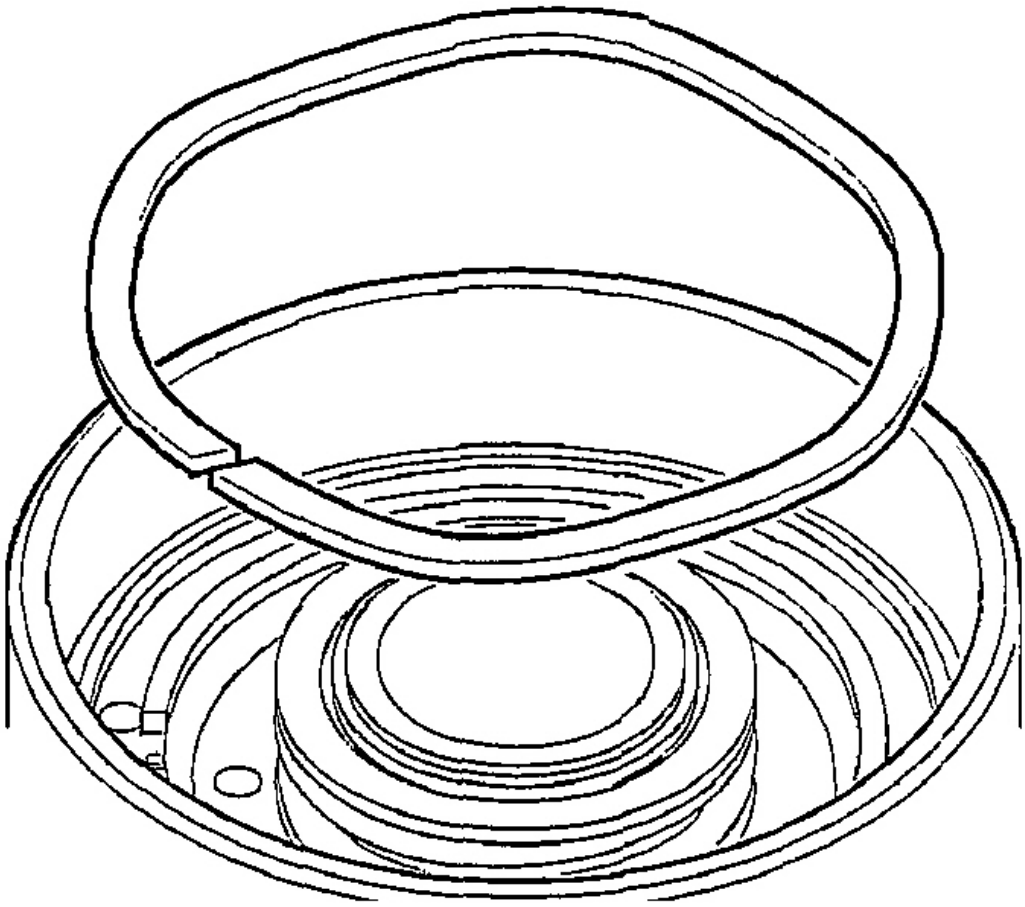


Fig. 56: Removing Snap Ring

2. Remove the wave spring from the 1st, 3rd, and 4th clutches.



G01961860

Fig. 57: Removing Wave Spring

3. Install the special tool on the clutch assembly.

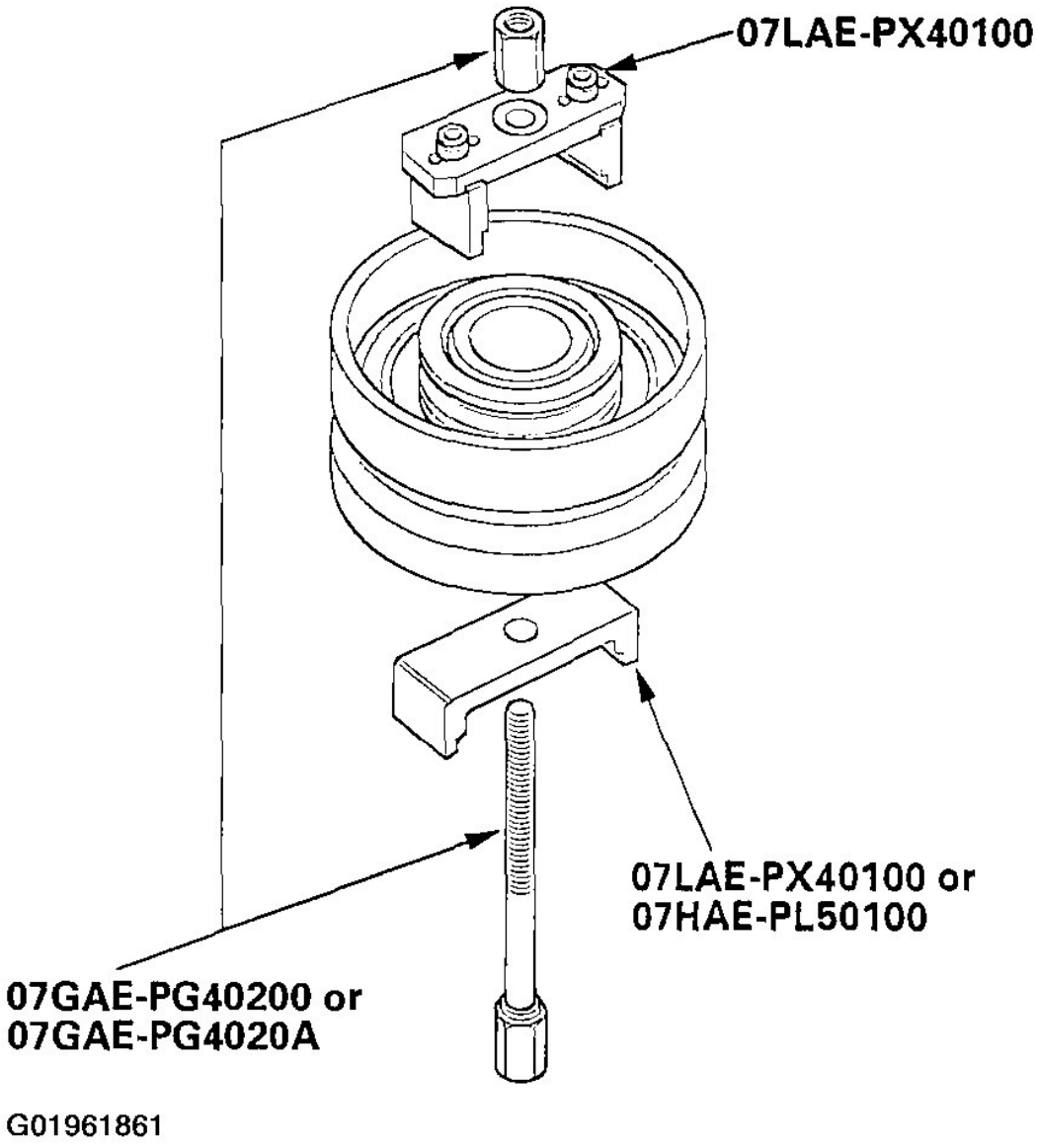


Fig. 58: Installing Special Tool On Clutch Assembly

4. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the clutches.

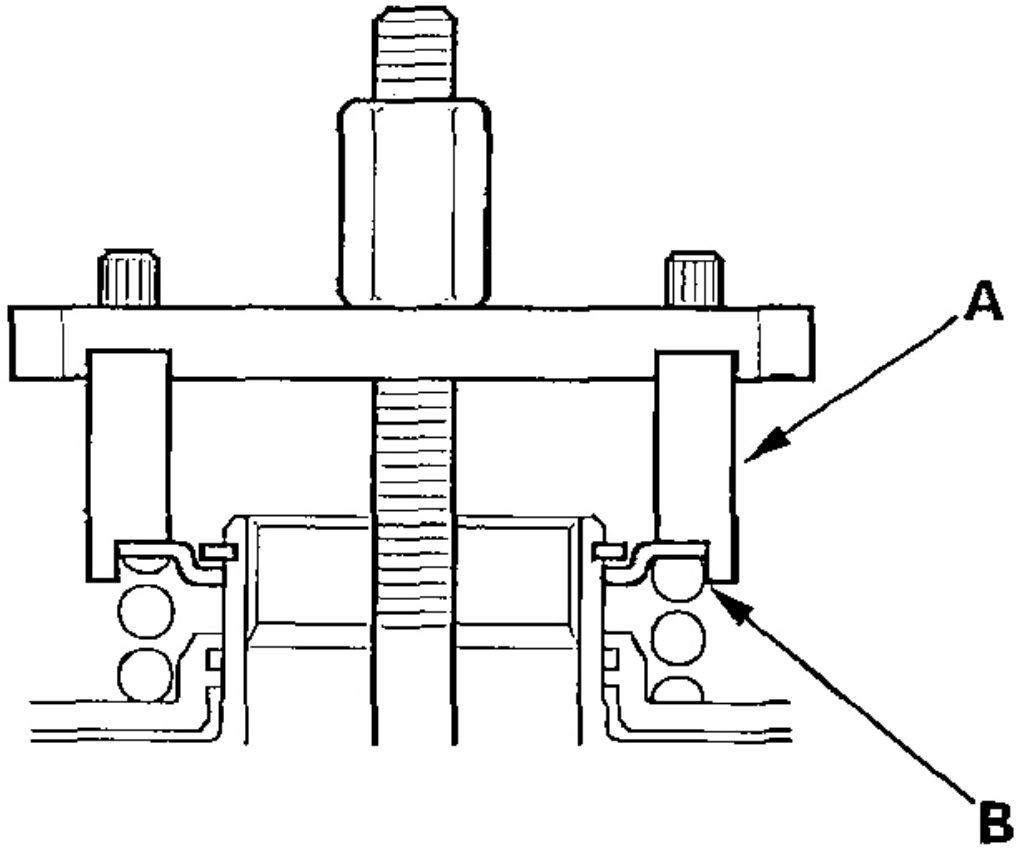
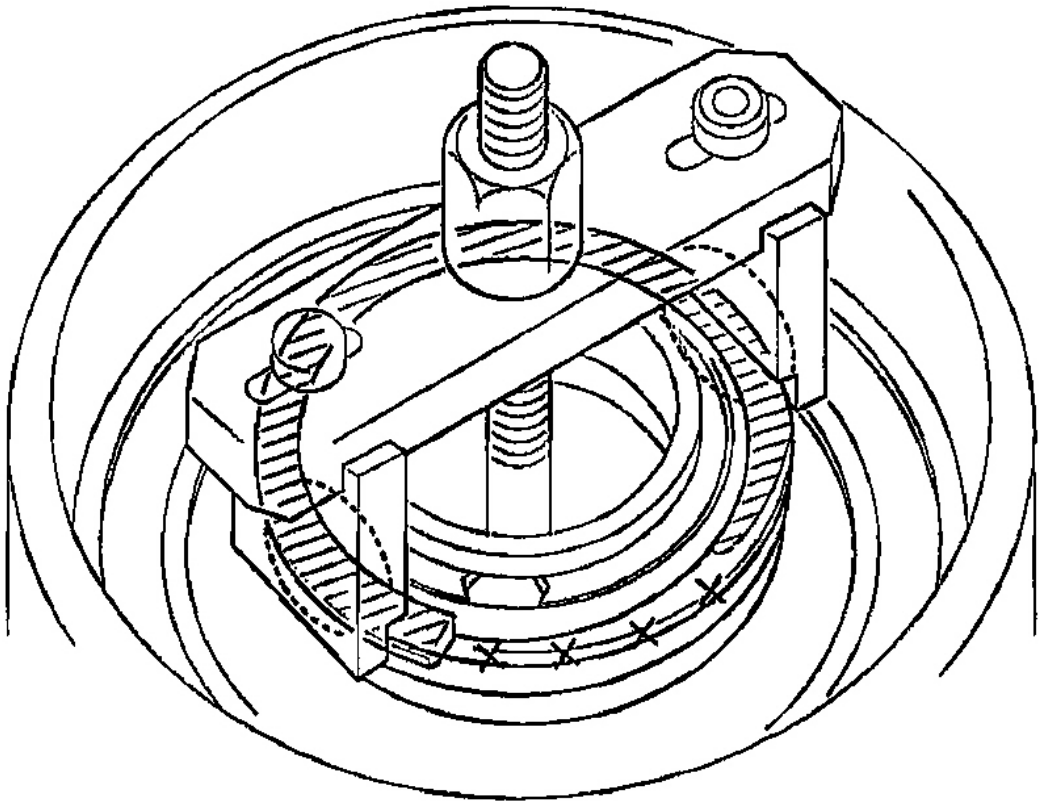


Fig. 59: Making Sure Special Tool Is Adjusted With Spring Retainer

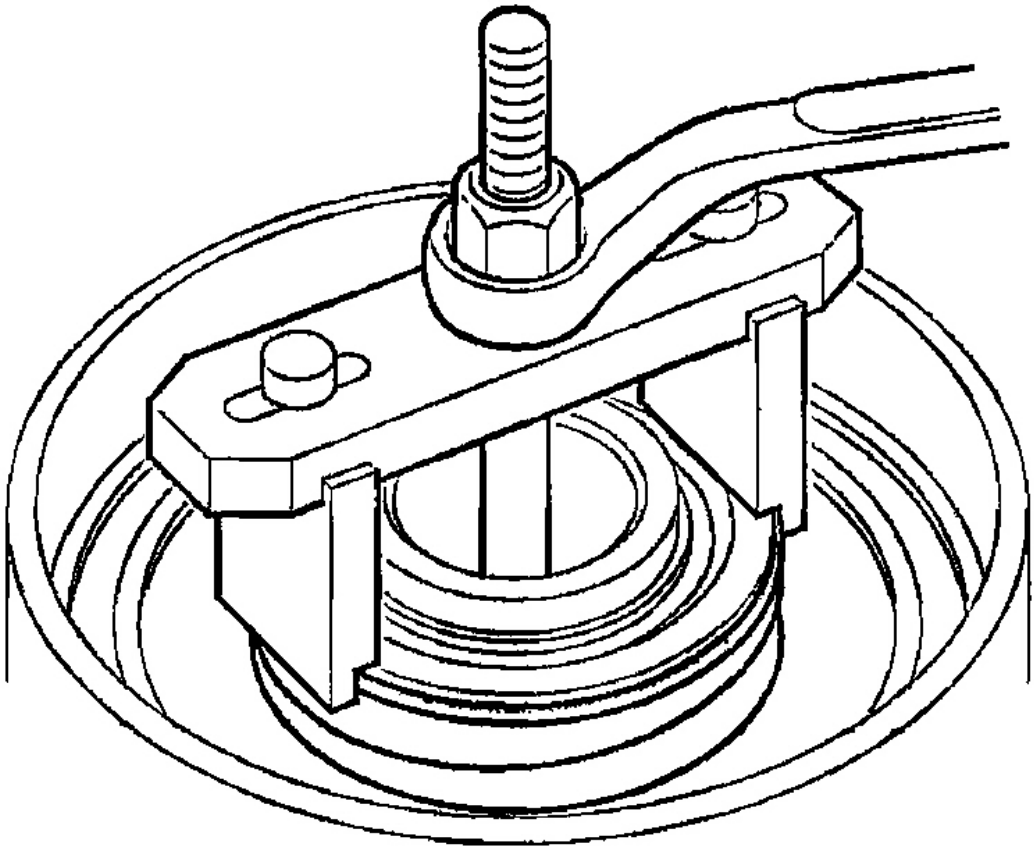
5. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



G01961863

Fig. 60: Setting Special Tool Over Spring Retainer

6. Compress the spring until the snap ring can be removed.



G01961864

Fig. 61: Compressing Spring

7. Remove the snap ring (A). Then remove the special tools (B), spring retainer (C), and return spring.

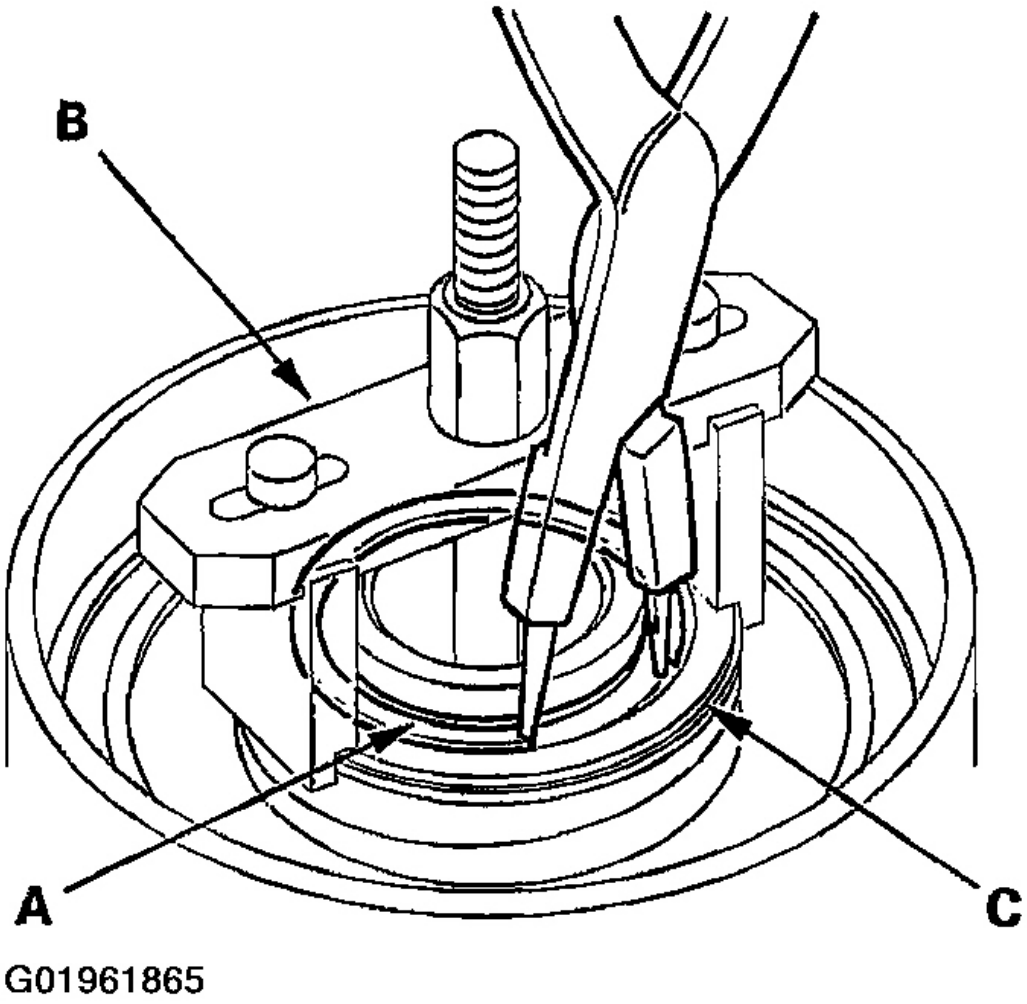


Fig. 62: Removing Snap Ring

8. Wrap a shop rag around the clutch drum (A), and apply air pressure to the fluid passage to remove the piston (B). Place a finger tip on the other end while applying air pressure.

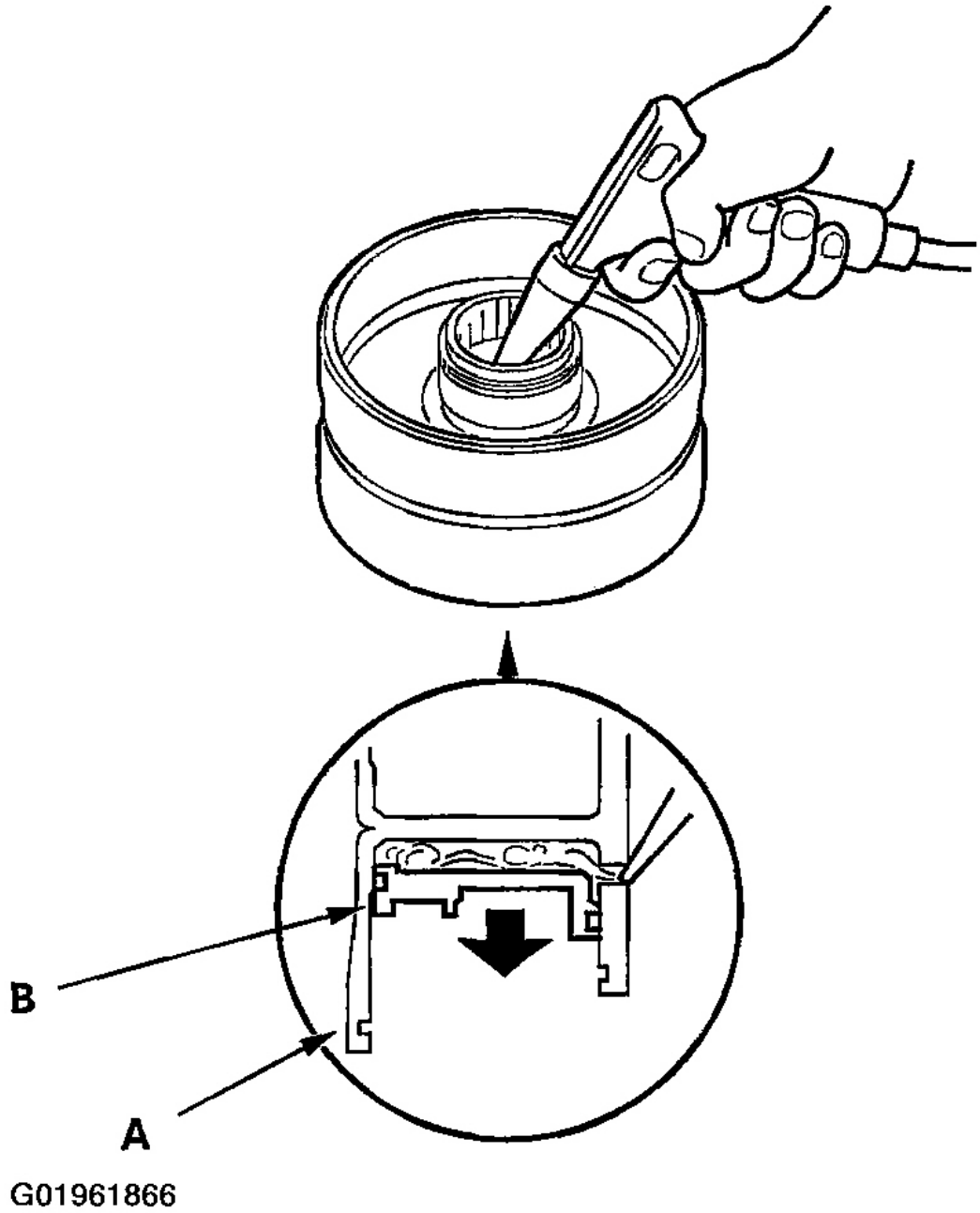


Fig. 63: Wrapping Shop Rag Around Clutch Drum

CLUTCH INSPECTION

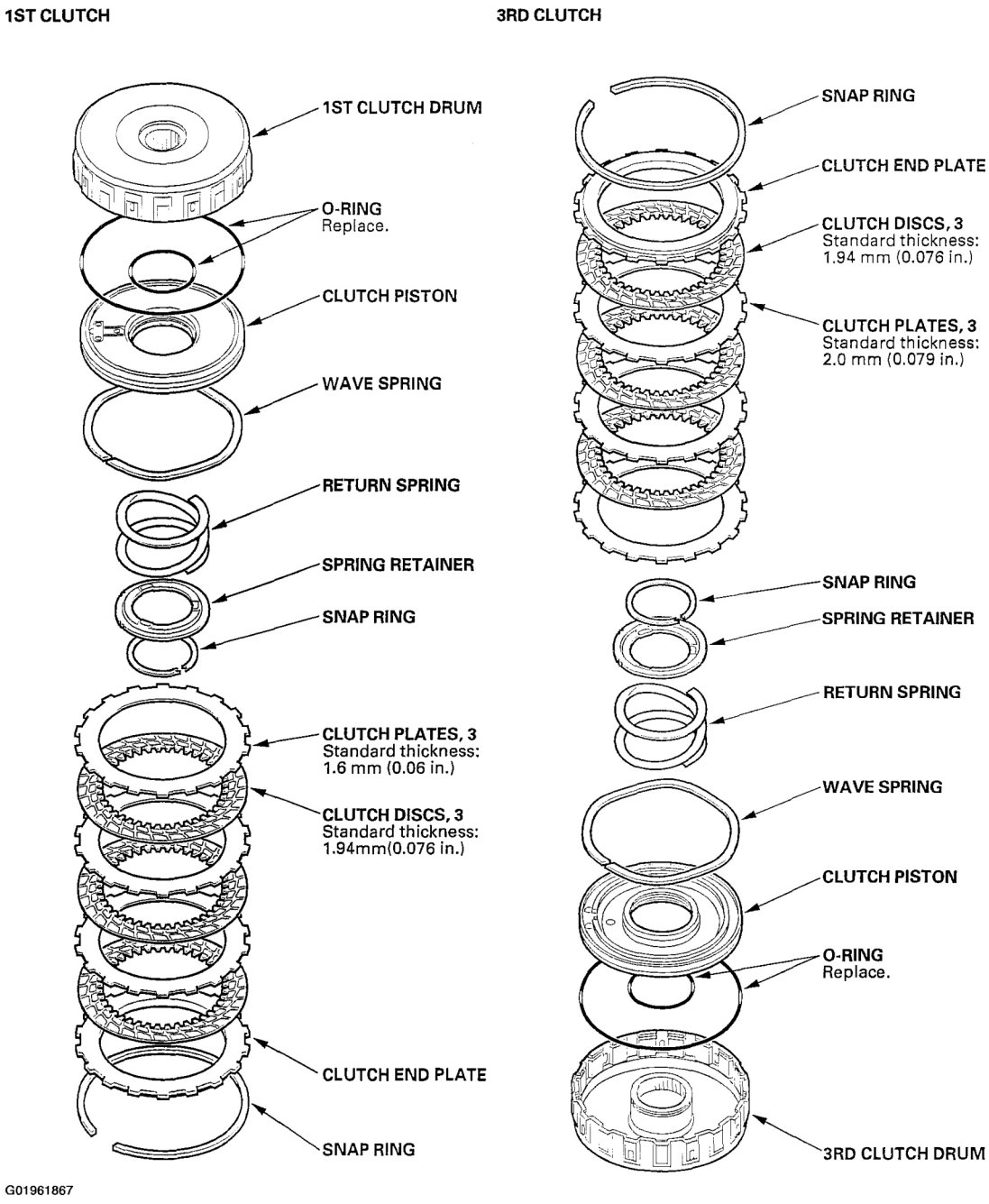


Fig. 64: Inspecting 1st & 3rd Clutch

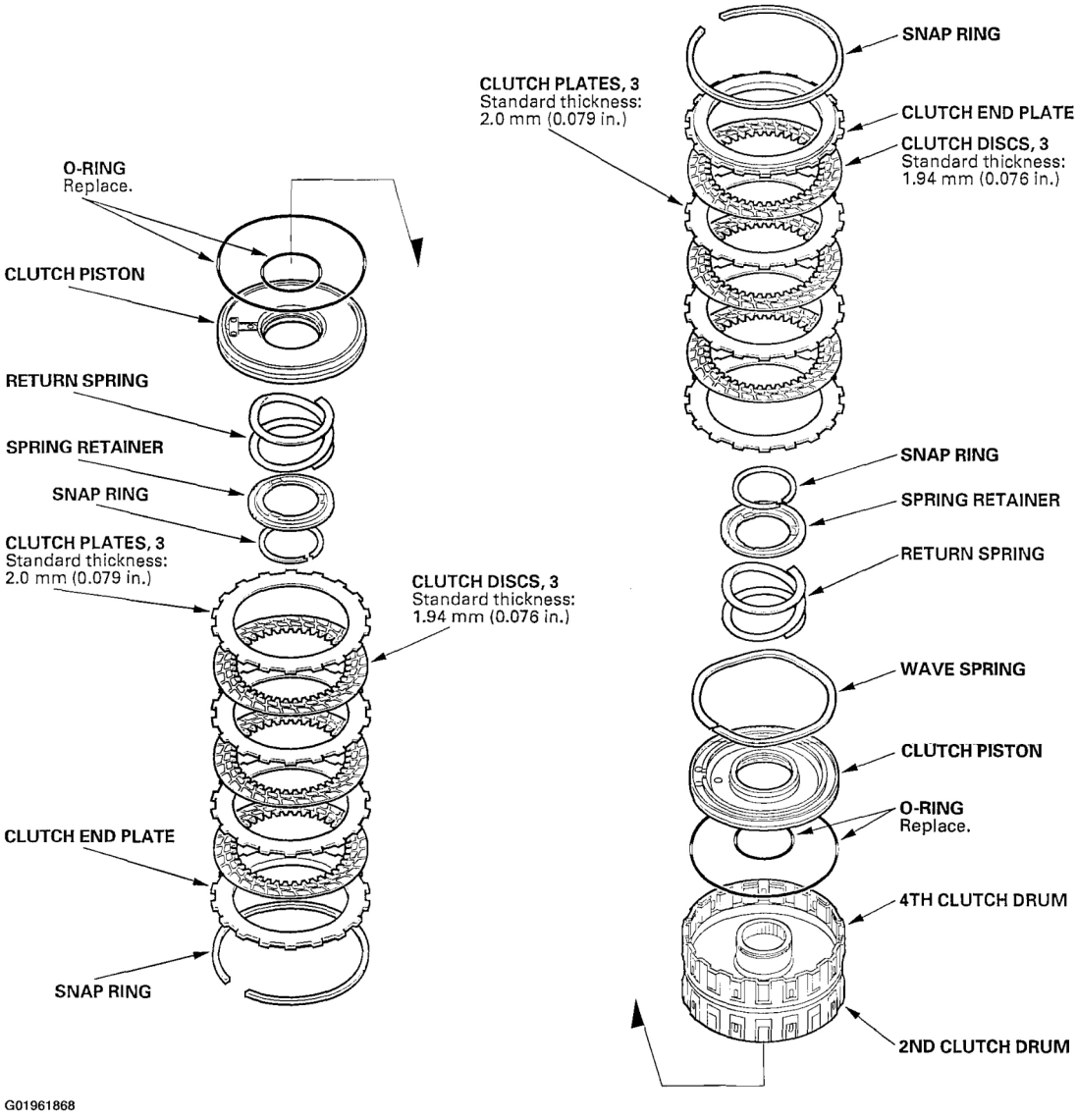


Fig. 65: Inspecting 2nd/4th Clutch

CLUTCH REASSEMBLY

Special Tools Required

- Clutch spring compressor attachment 07LAE-PX40100
- Clutch spring compressor attachment 07HAE-PL50101
- Clutch spring compressor bolt assembly 07GAE-PG40200 or 07GAE-PG4020A

NOTE:

- **Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air.**

- **Blow out all passages.**
- **Apply ATF to all parts before assembly.**

1. Inspect the check valve (A); if it's loose, replace the piston (B).

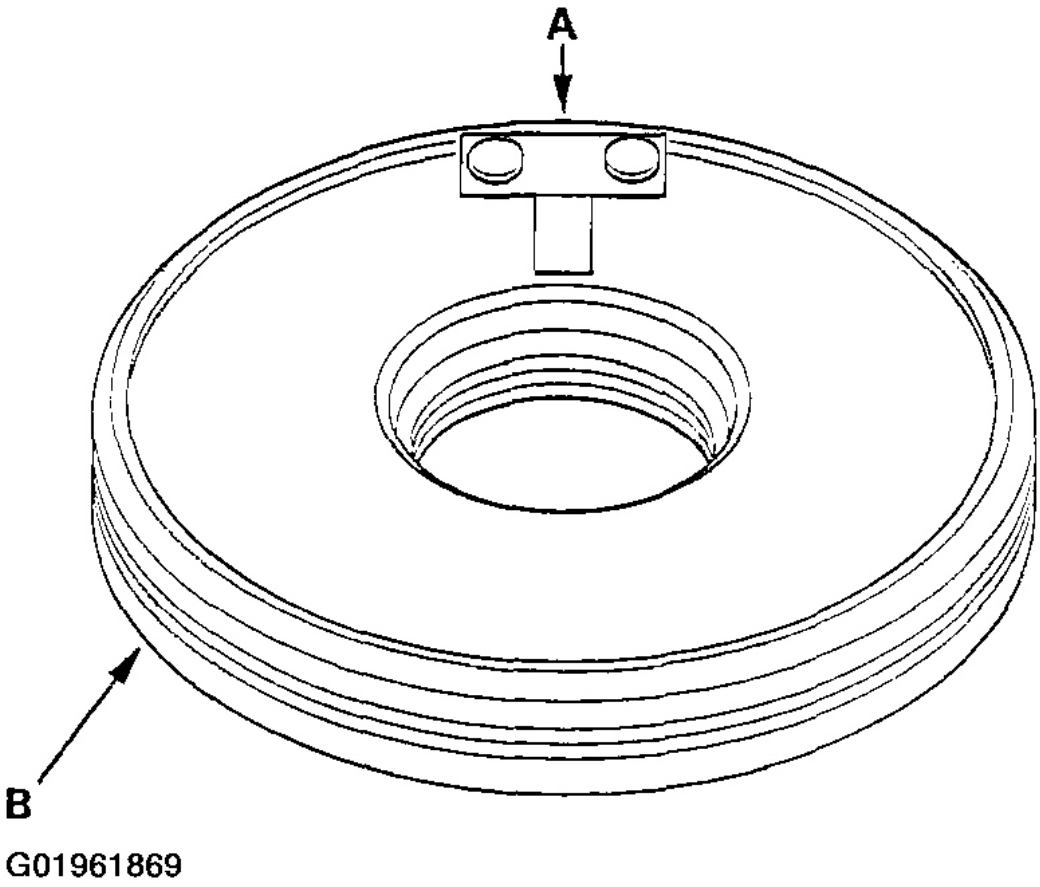


Fig. 66: Inspecting Check Valve

2. Install new O-rings (A) on the piston (B).

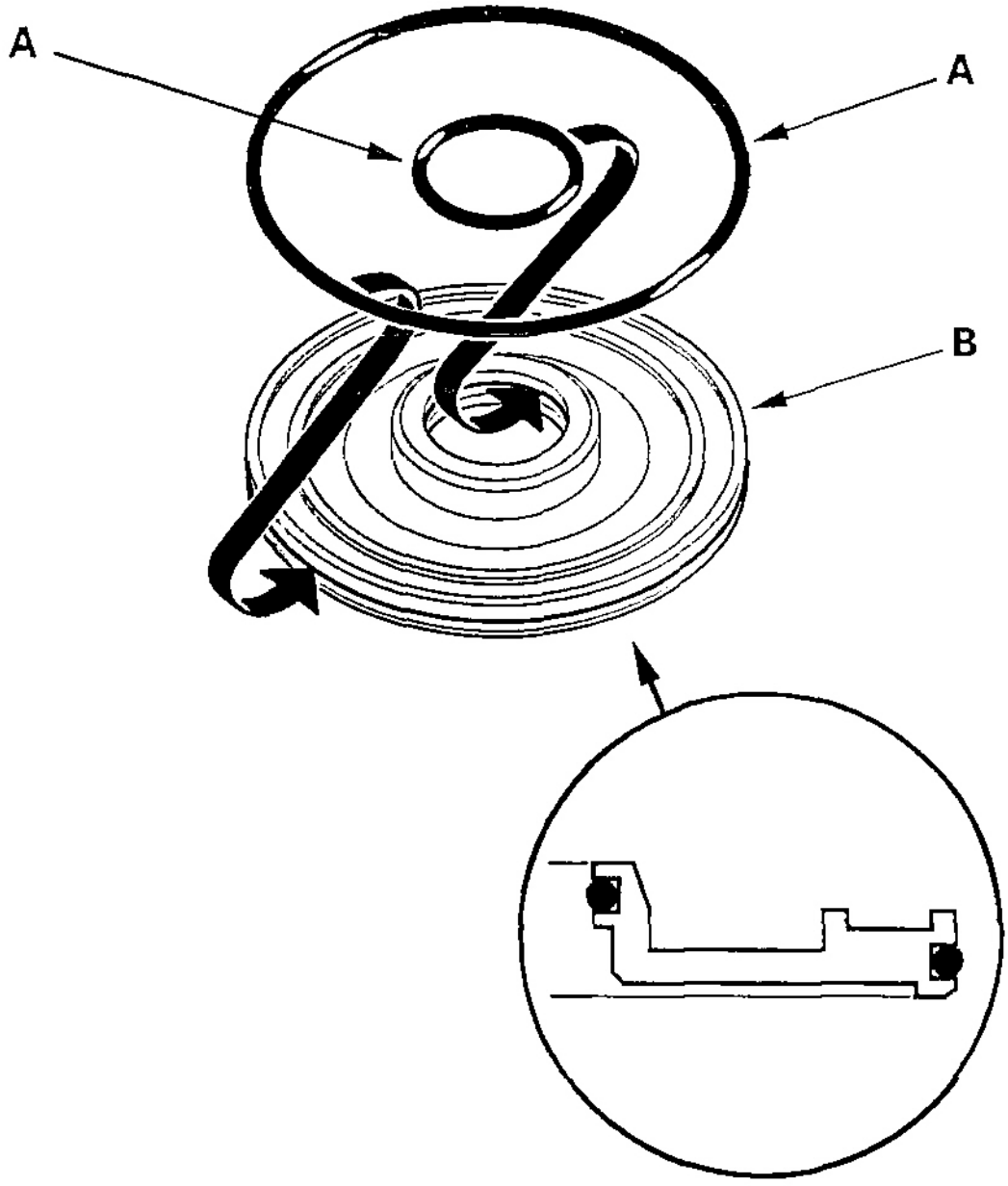


Fig. 67: Installing O-Rings On Piston

3. Install the piston (A) in the clutch drum (B). Apply pressure and rotate to ensure proper seating. Lubricate the piston O-ring with ATF before installing.

NOTE: Do not pinch the O-ring by installing the piston with too much force.

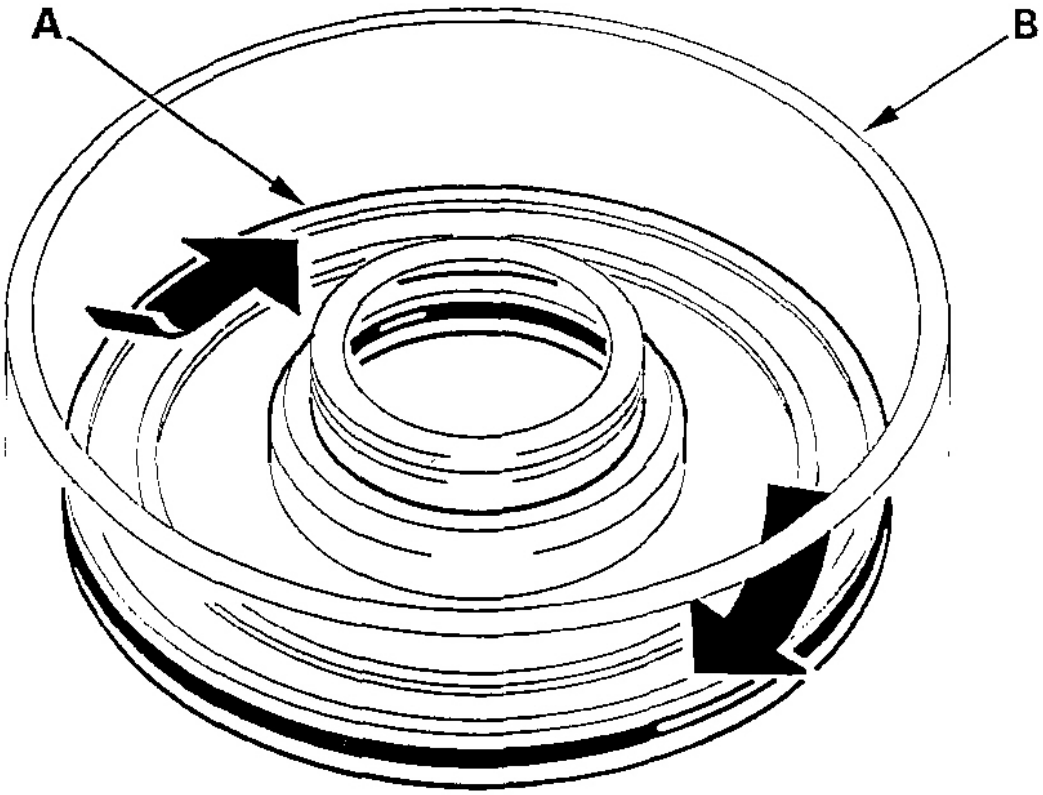
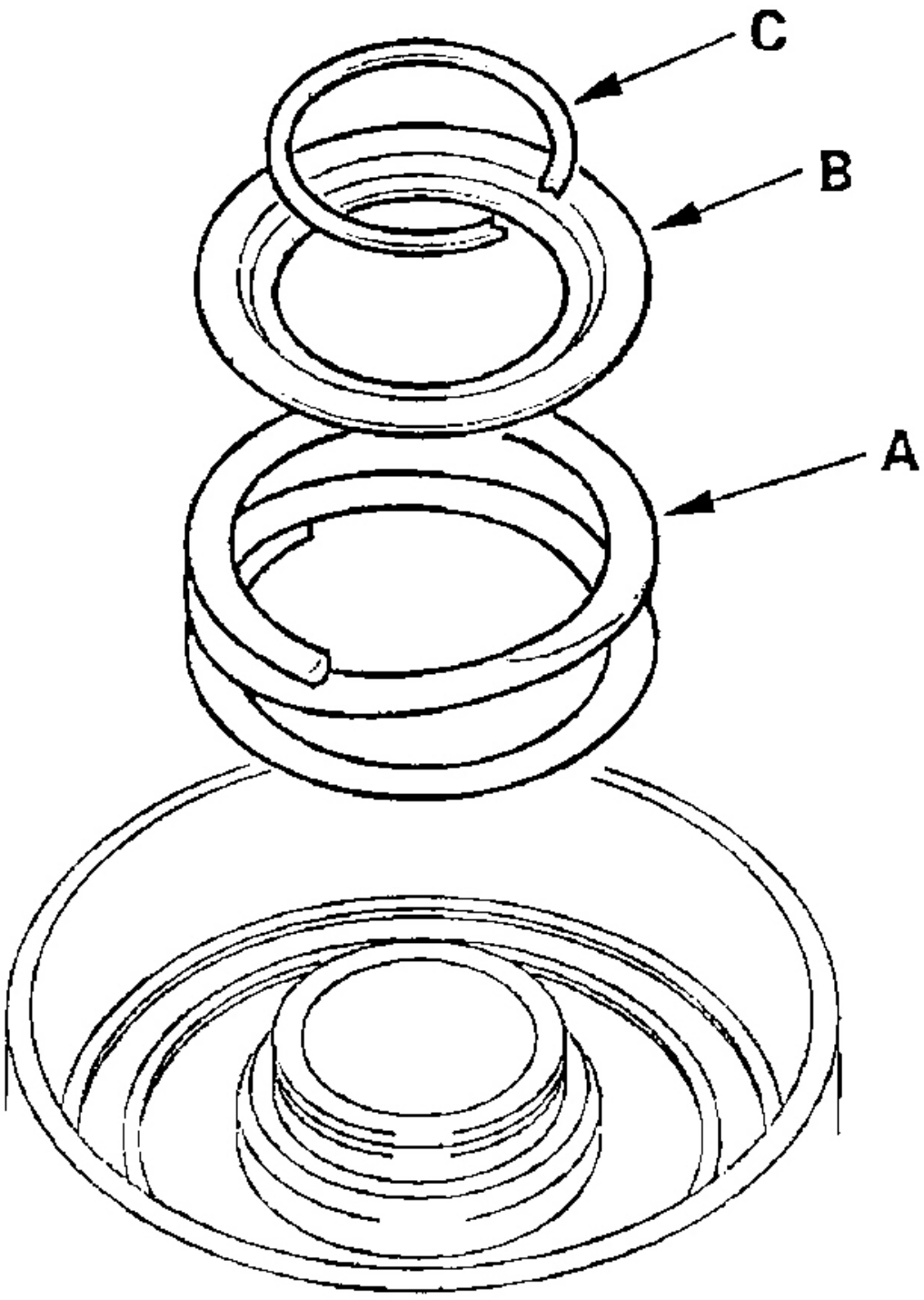


Fig. 68: Installing Piston In Clutch Drum

4. Install the return spring (A) and spring retainer (B), and position the snap ring (C) on the retainer.



G01961872

Fig. 69: Installing Return Spring & Spring Retainer

5. Install the special tools on the clutch assembly.

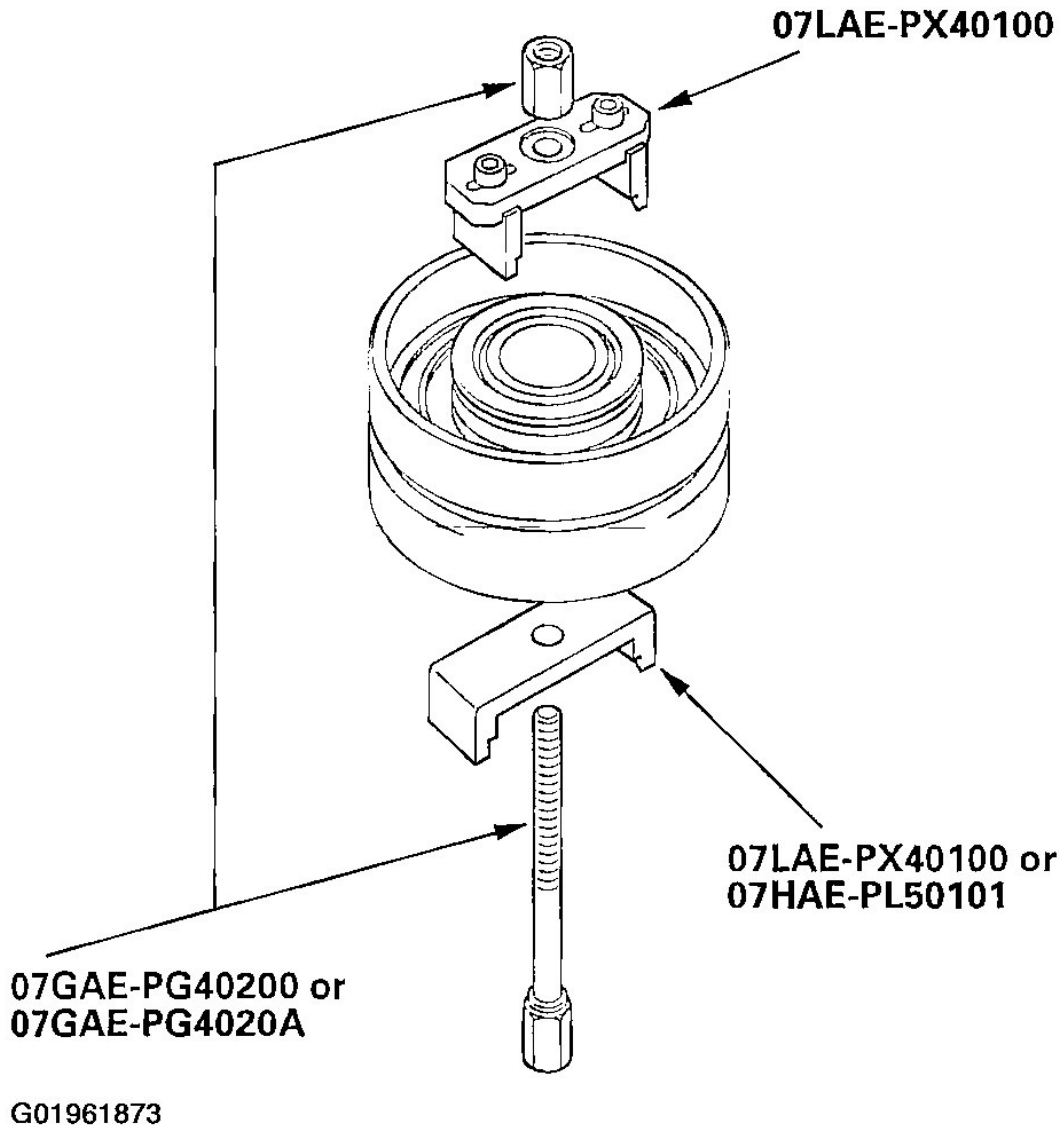


Fig. 70: Installing Special Tool On Clutch Assembly

6. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the clutches.

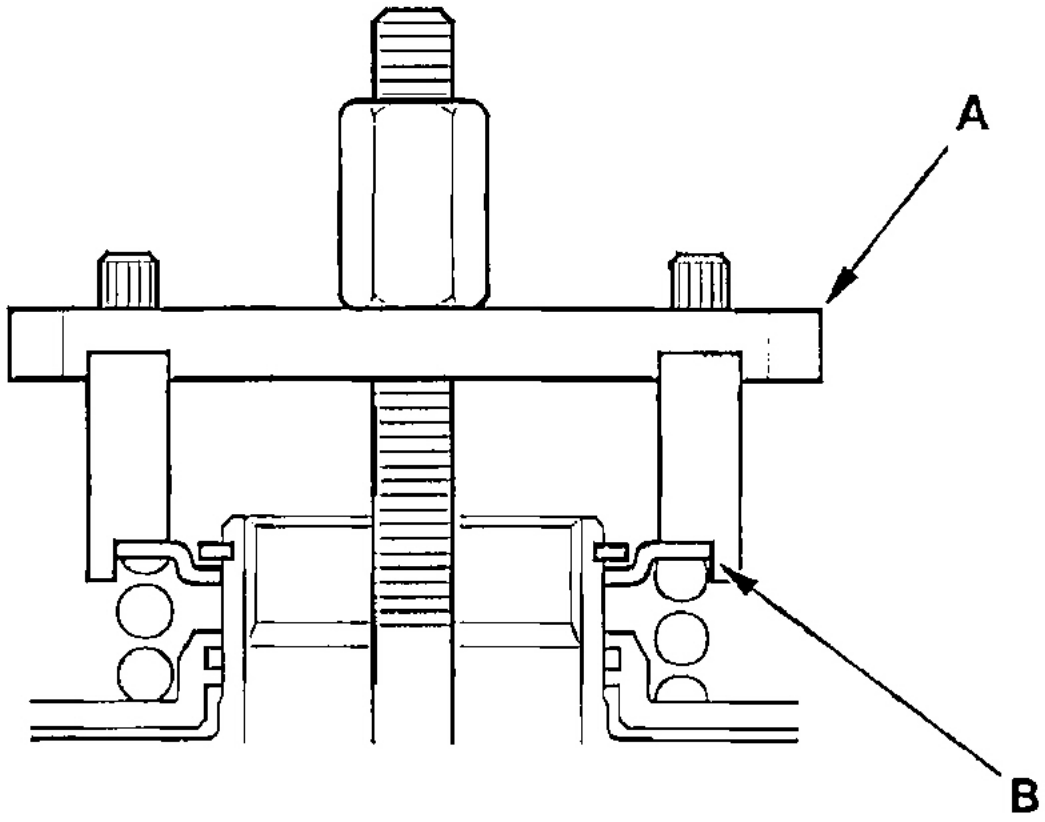
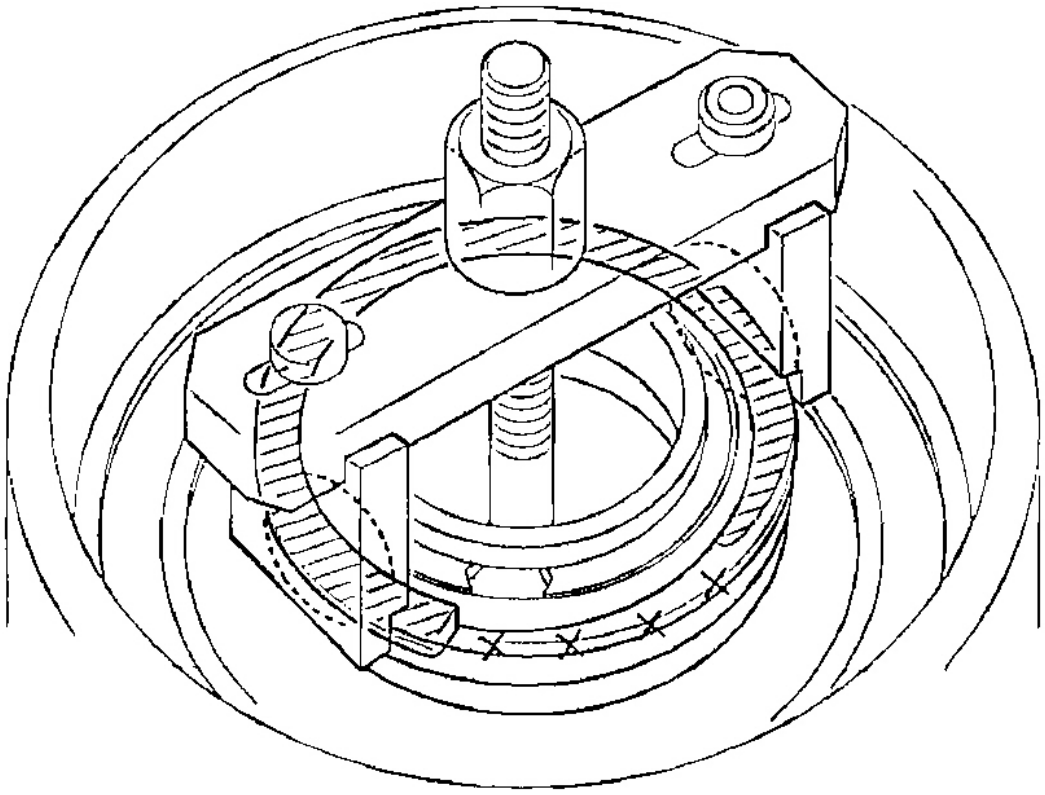


Fig. 71: Adjusting Special Tool To Have Full Contact With Spring Retainer

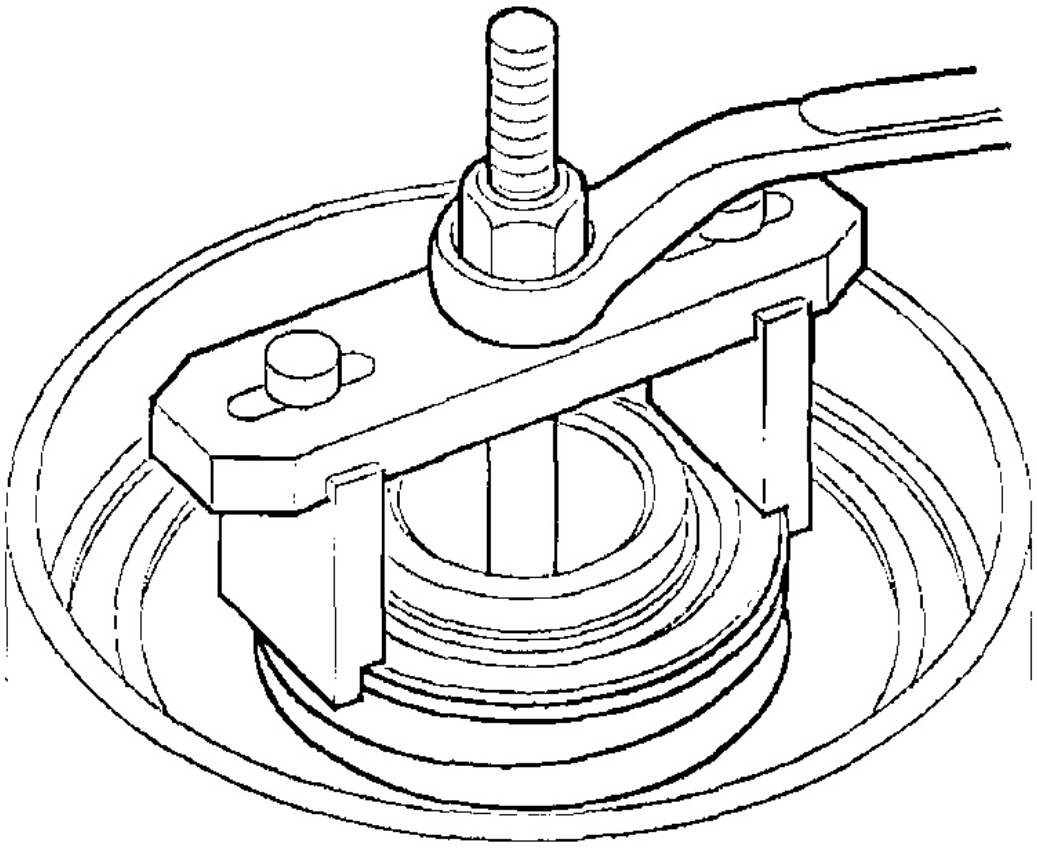
7. If either end of the special tool is set over an area of the spring retainer which is unsupported by the return spring, the retainer may be damaged.



G01961875

Fig. 72: Setting Special Tool Over Spring Retainer

8. Compress the return spring.



G01961876

Fig. 73: Compressing Return Spring

9. Install the snap ring (A).

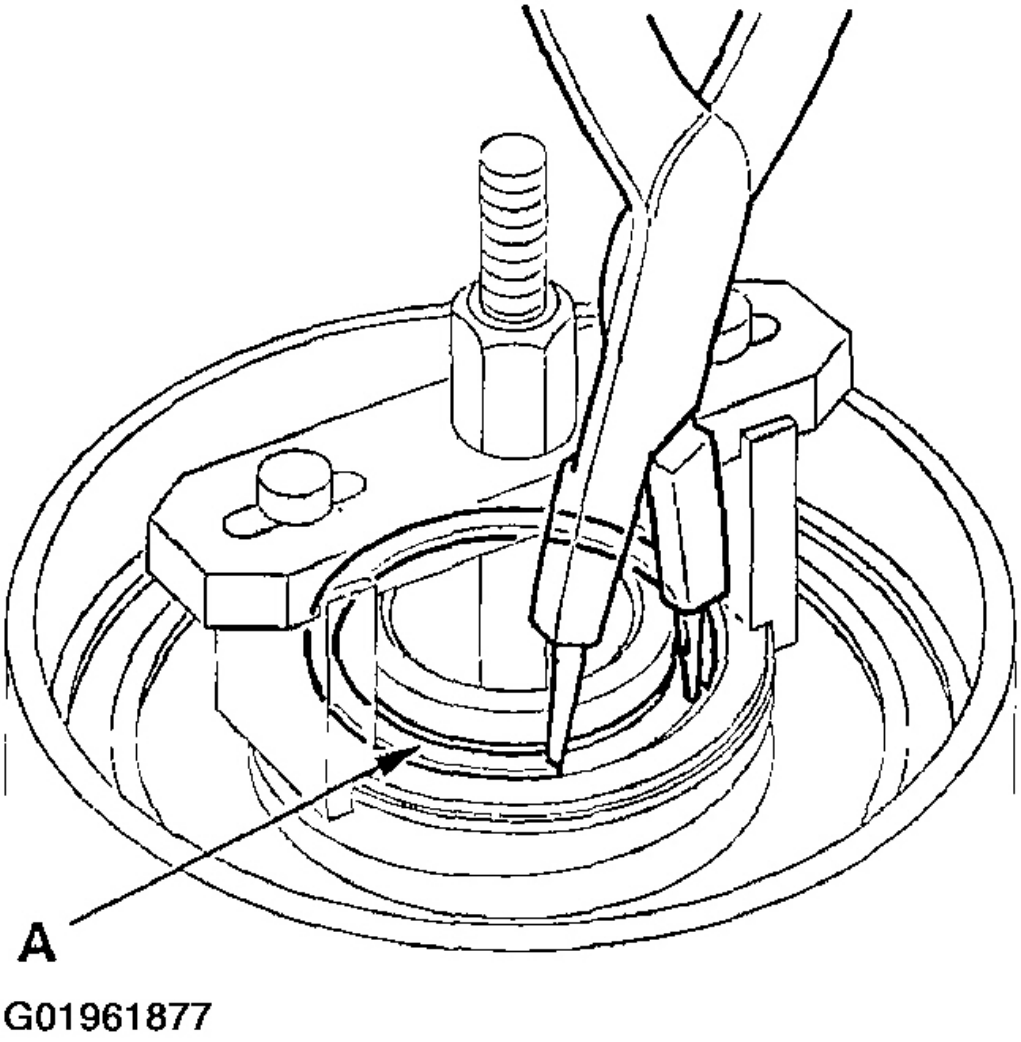
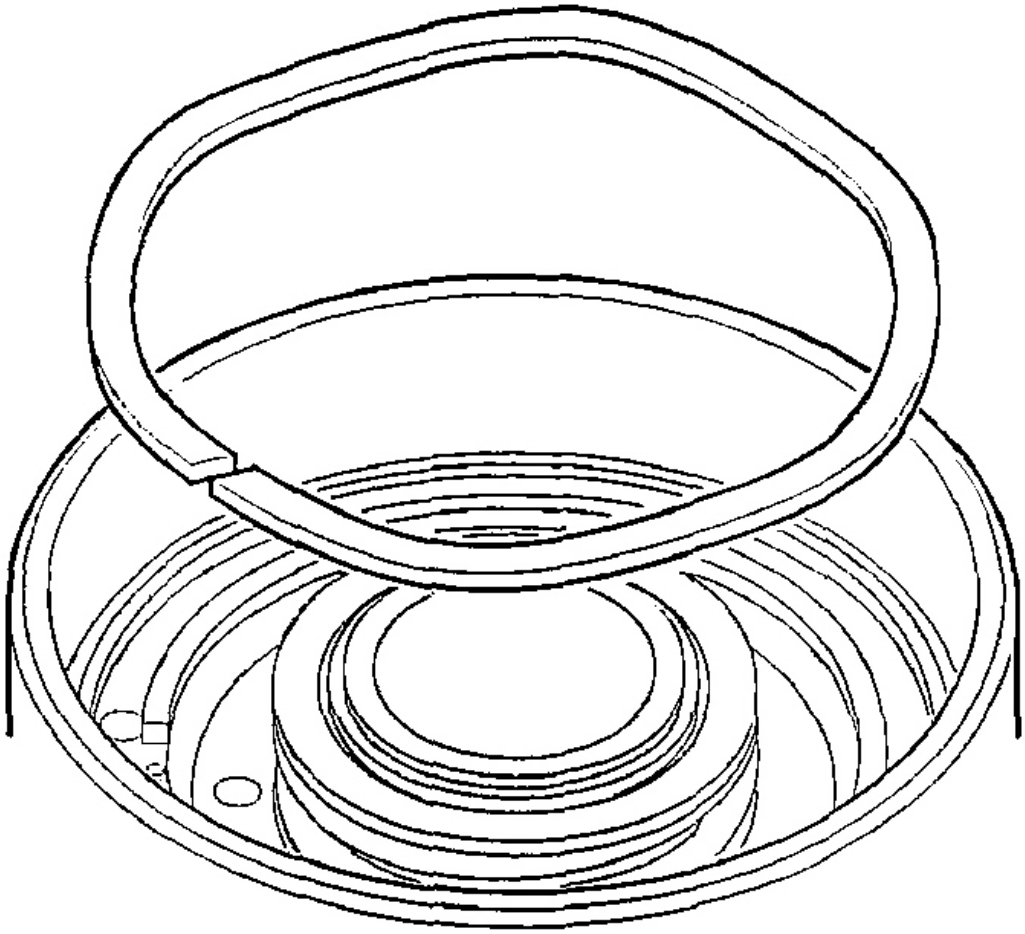


Fig. 74: Installing Snap Ring

10. Remove the special tools.
11. Install the wave spring in the 1st, 3rd, and 4th clutches.



G01961878

Fig. 75: Installing Wave Spring

12. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes. Before installing the plates and discs, make sure the inside of the clutch drum is free of dirt and other foreign matter.
13. Starting with a clutch plate, alternately install the clutch plates and discs. Install the clutch end plate (A) with the flat side toward the disc (B).

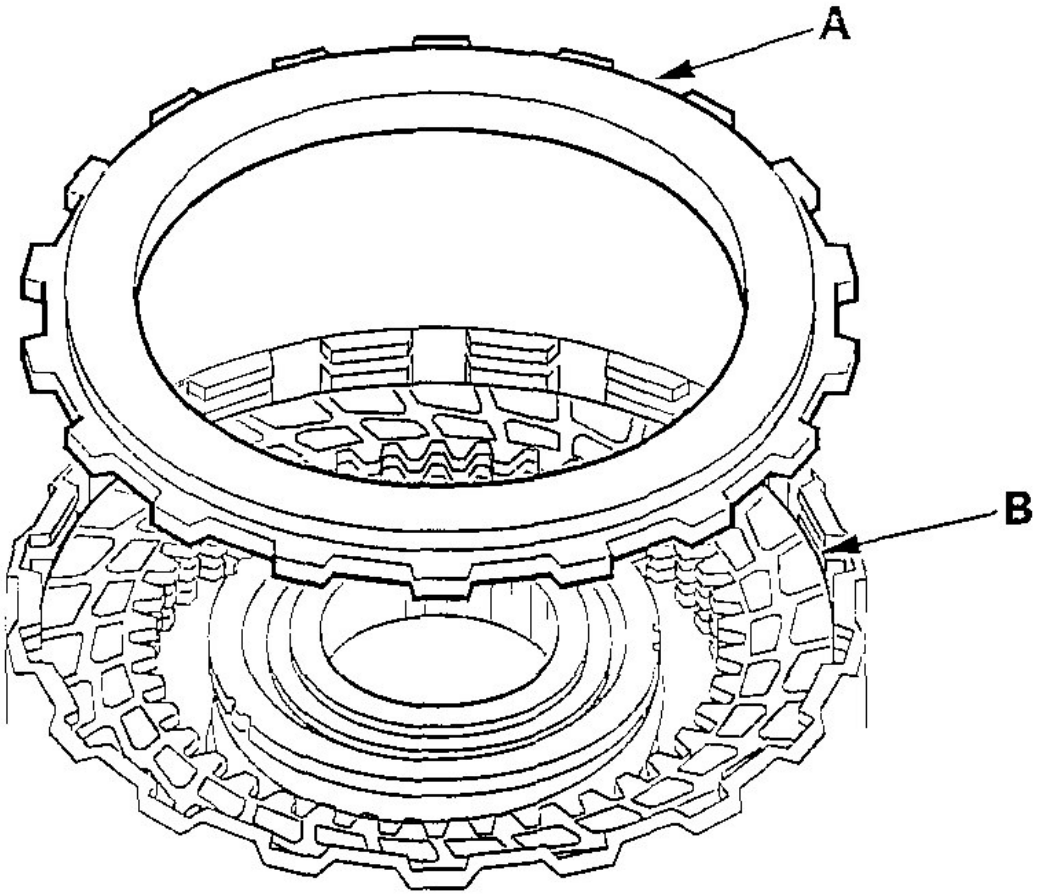


Fig. 76: Installing Clutch End Plate With Flat Side Toward Disc

14. Install the snap ring (A) with a screwdriver (B).

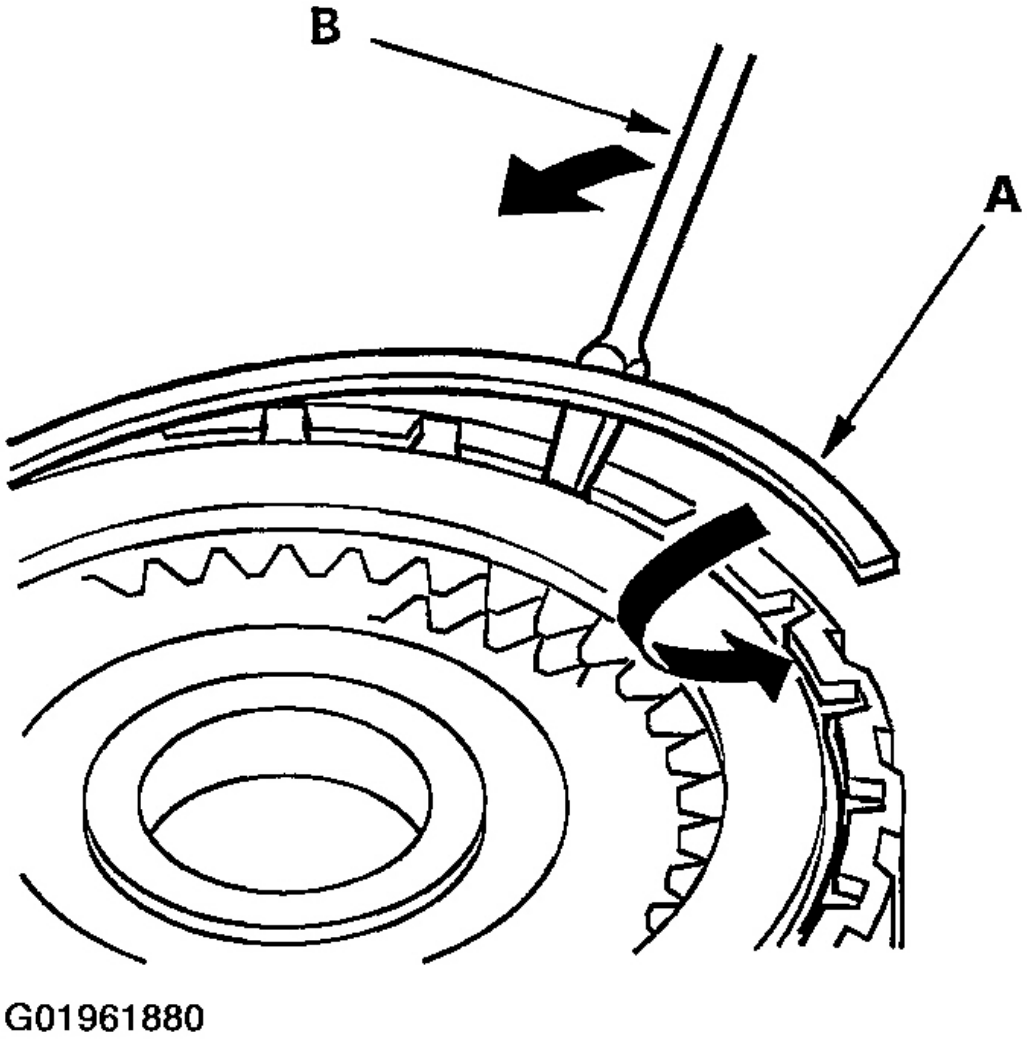


Fig. 77: Installing Snap Ring With Screwdriver

15. Measure the clearance between the clutch end plate (A) and top disc (B) with a dial indicator (C). Zero the dial indicator with the clutch end plate lowered, and lift it up to the snap ring (D). The distance that the clutch end plate moves is the clearance between the clutch end plate and top disc.

NOTE: Take measurements in at least 3 places, and use the average as the actual clearance.

Clutch End Plate-to-Top Disc Clearance:

Service Limit

1st Clutch: 0.65-0.85 mm (0.026-0.033 in.)
2nd Clutch: 0.65-0.85 mm (0.026-0.033 in.)
3rd Clutch: 0.4-0.6 mm (0.016-0.024 in.)
4th Clutch: 0.4-0.6 mm (0.016-0.024 in.)

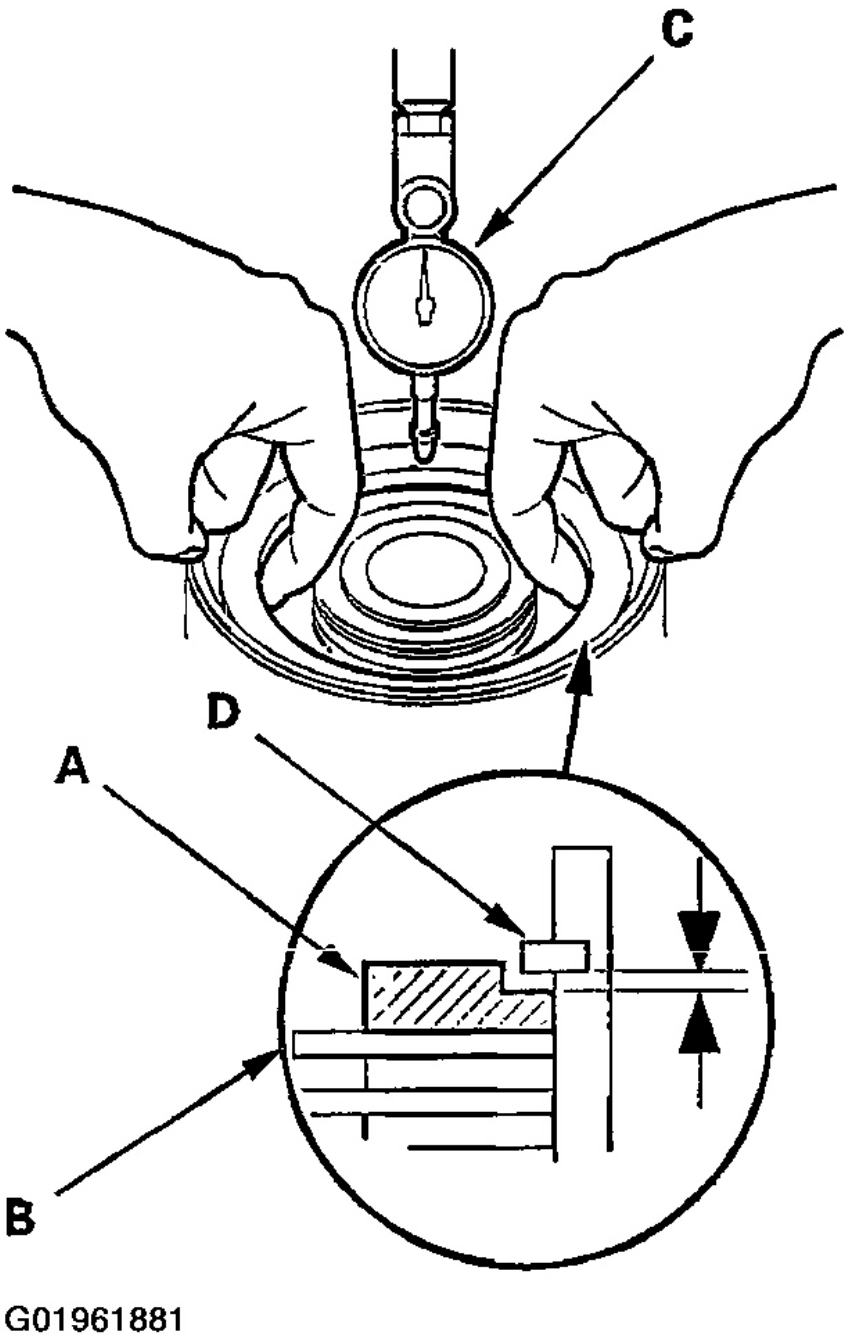
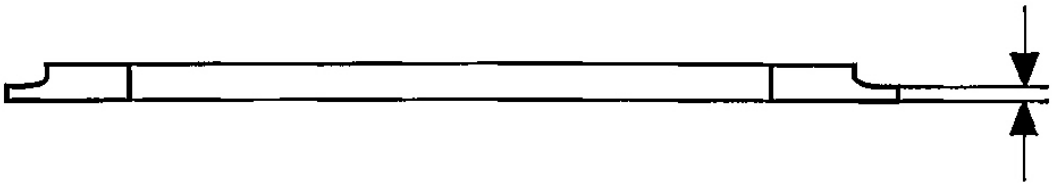


Fig. 78: Measuring Clutch End Plate-To-Top Disc Clearance

16. If the clearance is not within the service limits, select a new clutch end plate from the following **Fig. 80** .

NOTE: **If the thickest clutch end plate is installed, but the clearance is still over the standard, replace the clutch discs and clutch plates.**



G01961882

Fig. 79: Clutch End Plates Thickness Chart (1 Of 2)

Mark	Part Number	Thickness
1	22551-P4R-003	2.1 mm (0.083 in.)
2	22552-P4R-003	2.2 mm (0.087 in.)
3	22553-P4R-003	2.3 mm (0.091 in.)
4	22554-P4R-003	2.4 mm (0.094 in.)
5	22555-P4R-003	2.5 mm (0.098 in.)
6	22556-P4R-003	2.6 mm (0.102 in.)
7	22557-P4R-003	2.7 mm (0.106 in.)
8	22558-P4R-003	2.8 mm (0.110 in.)
9	22559-P4R-003	2.9 mm (0.114 in.)

G01961883

Fig. 80: Clutch End Plates Thickness Chart (2 Of 2)

VALVE BODIES AND ATF STRAINER INSTALLATION

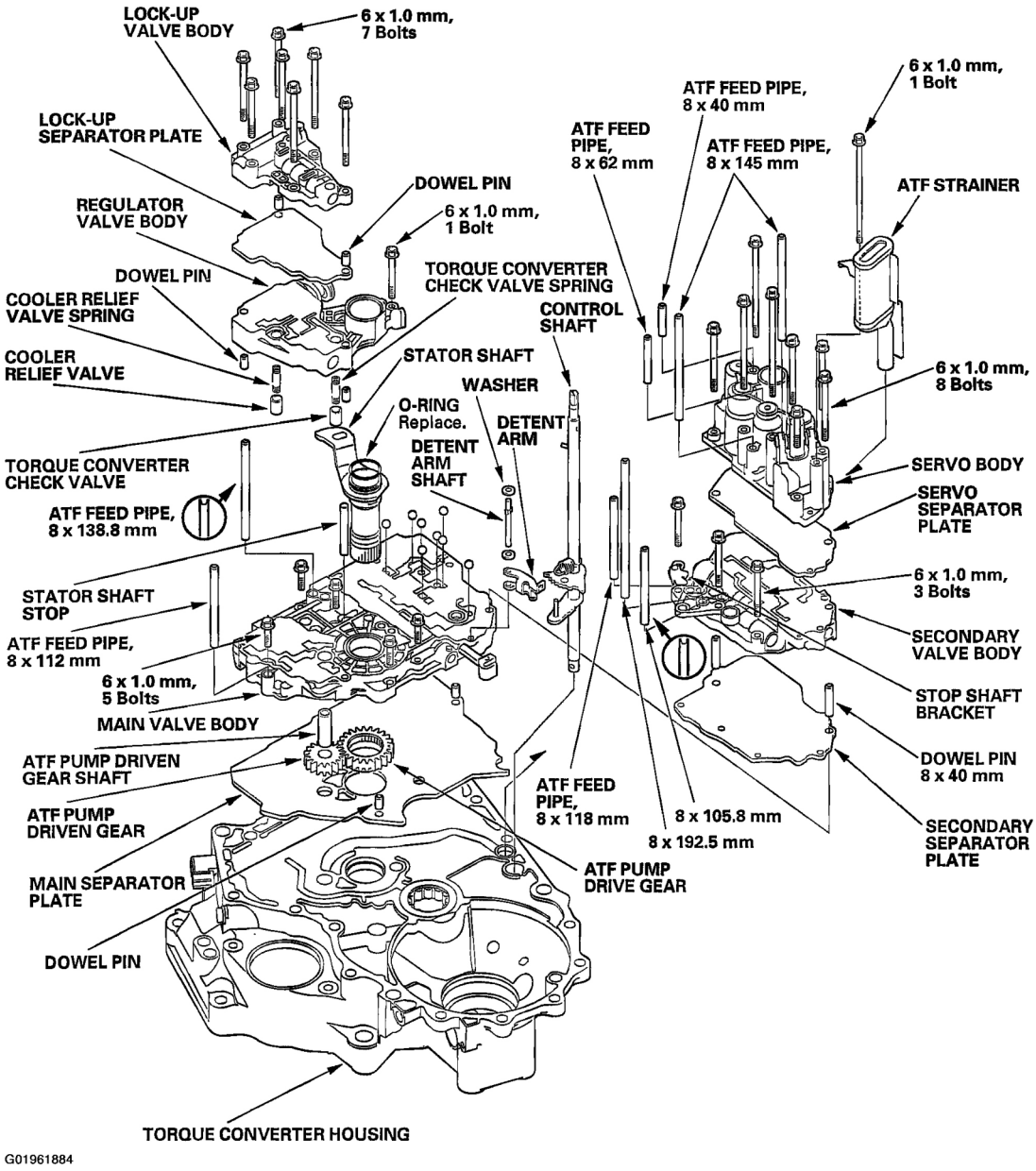


Fig. 81: Exploded View Of Valve Bodies & ATF Strainer

NOTE: Refer to Fig. 81 as needed during the following procedure.

1. Install the suction pipe collar in the torque converter housing, if necessary.
2. Install the main separator plate (A) and two dowel pins on the torque converter housing. Then install the ATF pump drive gear (B), driven gear (C), and ATF pump driven gear shaft (D). Install the ATF pump driven gear with its grooved and chamfered side facing down.

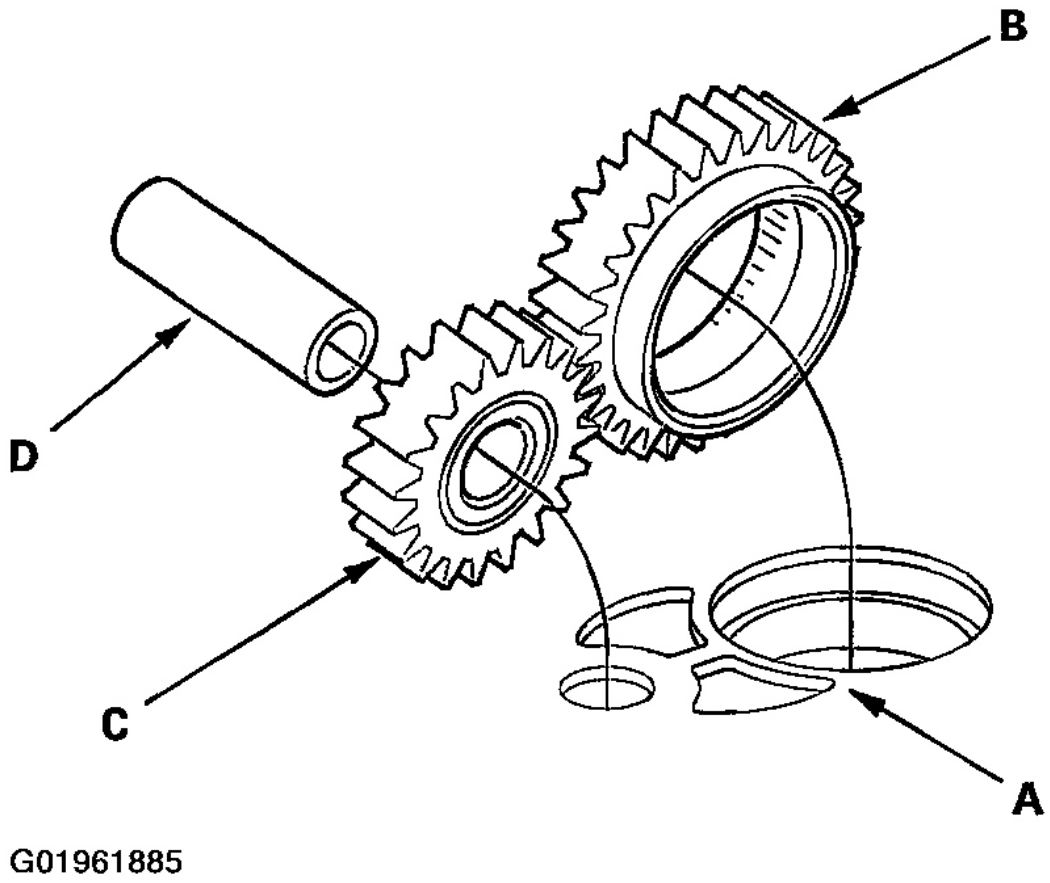


Fig. 82: Installing Main Separator Plate

3. Install the main valve body, and loosely tighten the five bolts. Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (B) moves smoothly in the axial and normal operating direction.

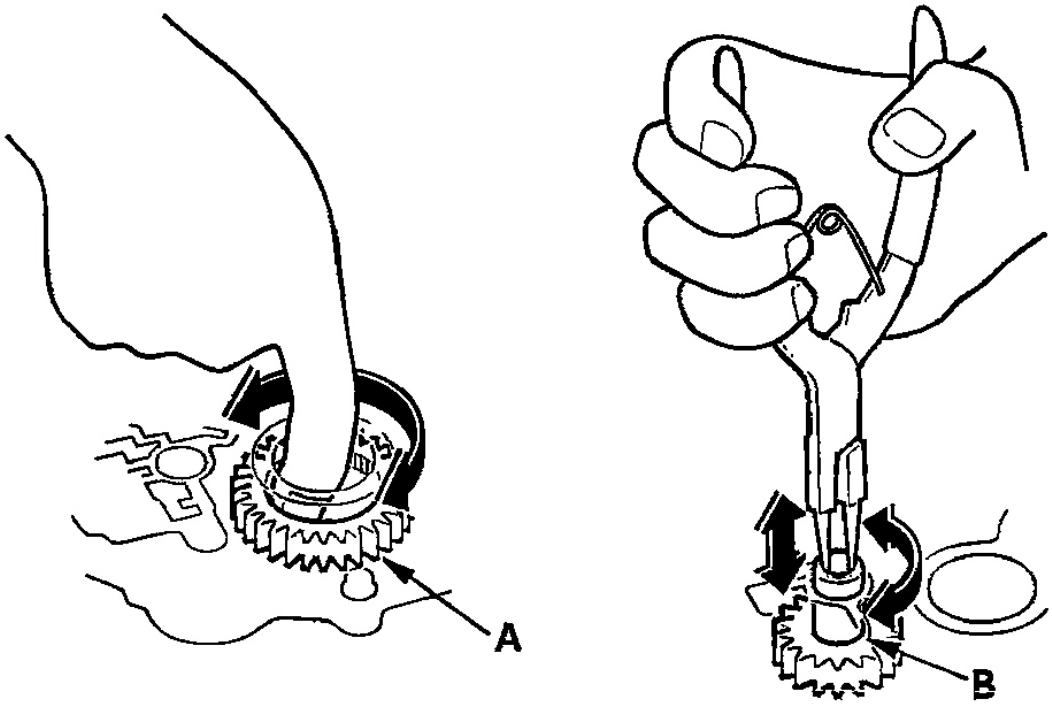


Fig. 83: Rotating ATF Pump Drive Gear Smoothly

4. Install the two dowel pins and the secondary separator plate on the main valve body then install the secondary valve body. Do not install the bolts on the secondary valve body (three bolts).
5. Install the control shaft (A) in the housing along with the manual valve (B).

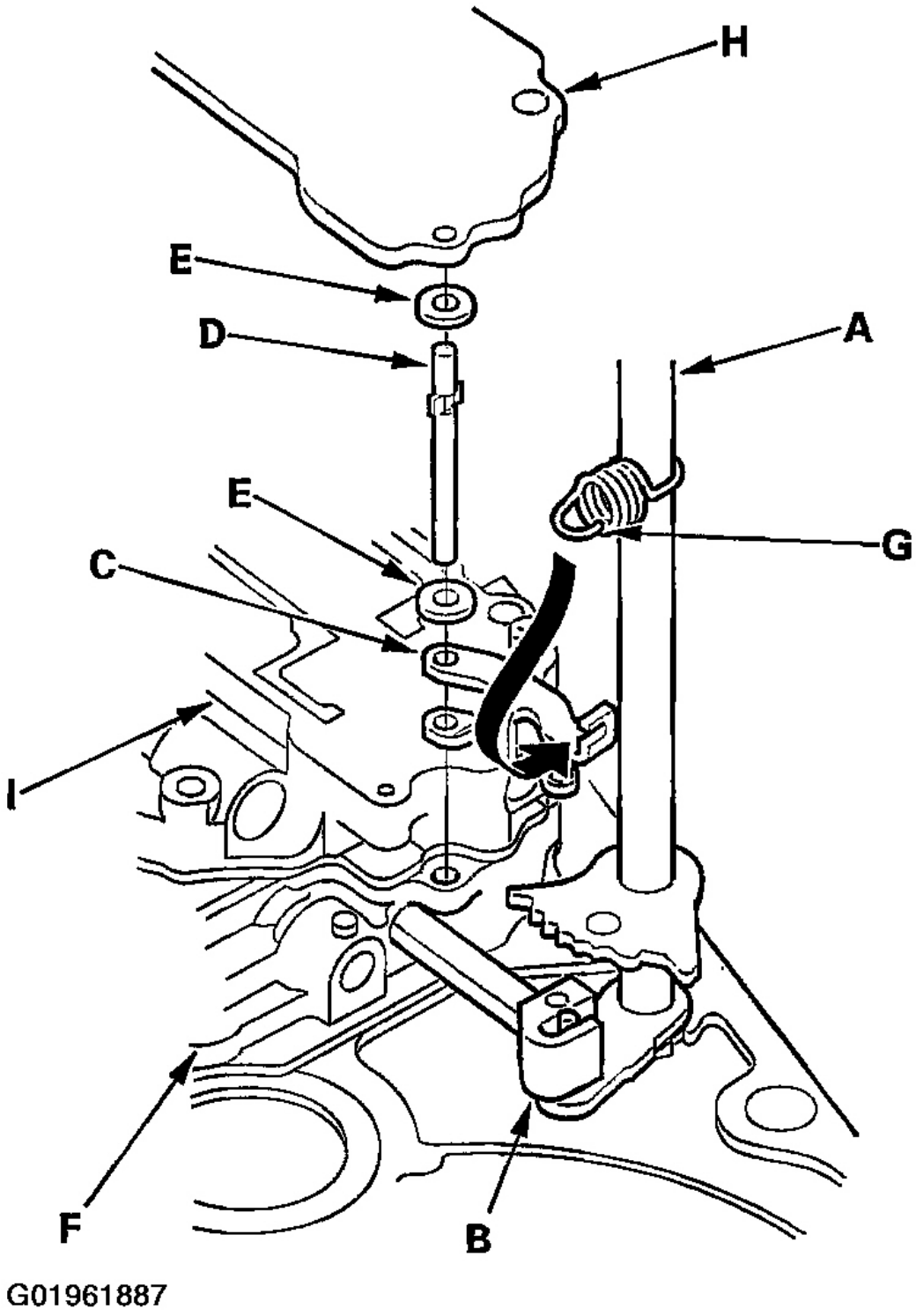


Fig. 84: Installing Control Shaft In Housing

6. Install the detent arm (C) and arm shaft (D) with the washers (E) in the main valve body (F), then hook the detent arm spring (G) to the detent arm.
7. Install the servo body separator plate (H) on the secondary valve body (I), then install the servo body (eight bolts).
8. Install the ATF strainer (one bolt).
9. Tighten the five bolts on the main valve body to 12 N.m (1.2 kgf.m, 8.7 lbf.ft).
10. Make sure the ATF pump drive gear and ATF pump driven gear shaft move smoothly. If they don't move smoothly, disassemble the valve bodies, and loosen the main valve body bolts. Realign the ATF pump driven gear shaft, reassemble the valve bodies, and retighten the bolts to the specified torque, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.
11. Install the stator shaft and stator shaft stop.
12. Install the three bolts and stop shaft bracket on the secondary valve body.
13. Install the torque converter check valve and valve spring and cooler relief valve and valve spring in the regulator valve body, then install the regulator valve body with two dowel pins on the main valve body (one bolt).
14. Install the lock-up separator plate and two dowel pins on the regulator valve body.
15. Install the lock-up valve body (seven bolts).
16. Install the four ATF feed pipes in the servo body.
17. Install the three ATF feed pipes in the secondary valve body; install the 105.8 mm feed pipe with its filter side away from the secondary valve body.
18. Install the two ATF feed pipes in the main valve body; install the 138.8 mm feed pipe with its filter side away from the main valve body.

SHAFT ASSEMBLIES AND HOUSING INSTALLATION

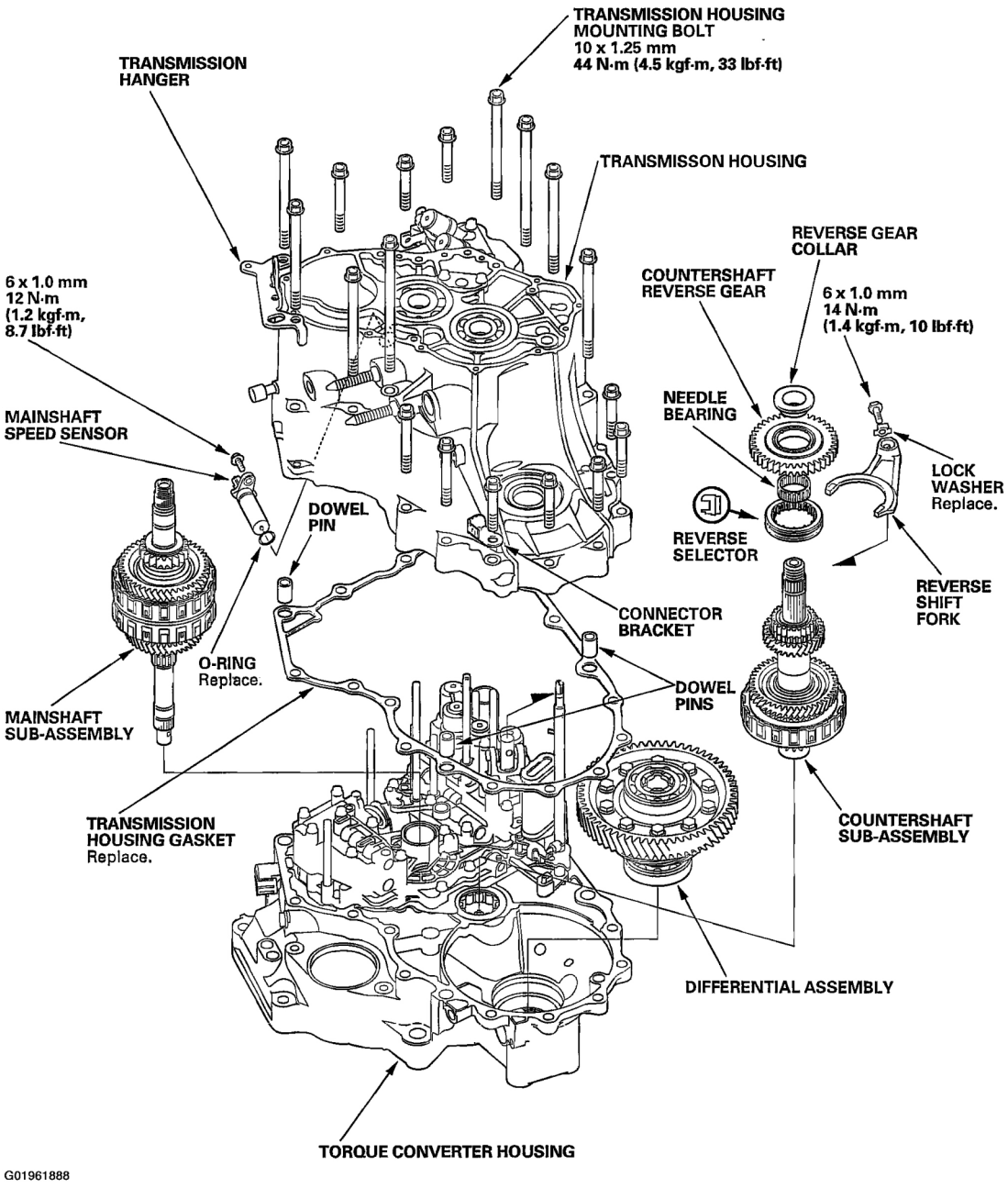


Fig. 85: Exploded View Of Shaft Assemblies & Housing

NOTE: Refer to Fig. 85 as needed during the following procedure.

1. Install the reverse idler gear in the transmission housing (see **Reverse Idler Gear Removal and Installation**).
2. Assemble the mainshaft sub-assembly (see **Shafts and Clutches** and countershaft sub-assembly (see **Countershaft Disassembly, Inspection, and Reassembly**).
3. Install the differential assembly in the torque converter housing.

4. Install the mainshaft sub-assembly (A) and countershaft sub-assembly (B) together in the torque converter housing.

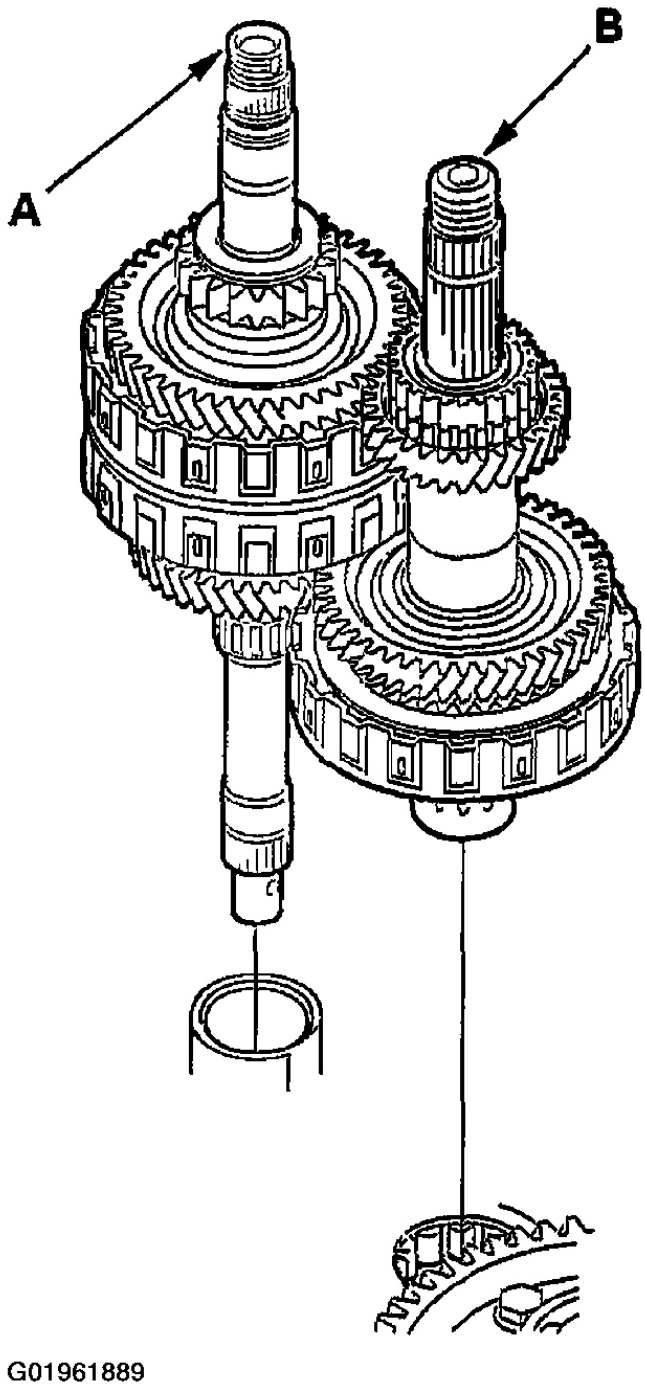


Fig. 86: Installing Mainshaft Sub-Assembly & Countershaft Sub-Assembly Together

5. Turn the shift fork shaft (A) so the large chamfered hole is facing the fork bolt hole. Then install the shift fork (B) and reverse selector together on the shift fork shaft and countershaft. Secure the shift fork to the shift fork shaft with the lock bolt (C) and a new lock washer (D), then bend the lock washer against the bolt head.

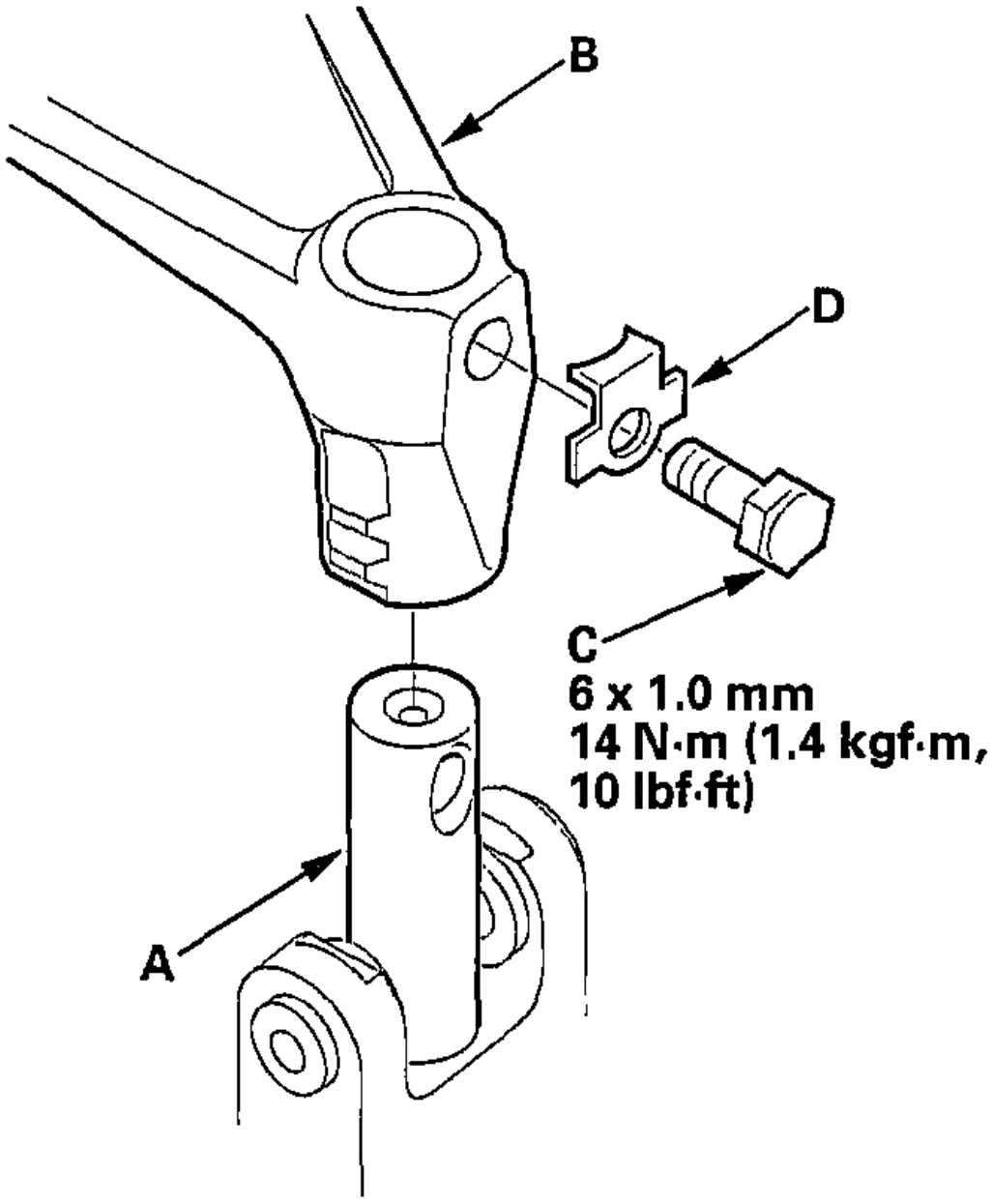


Fig. 87: Turning Shift Fork Shaft

6. Install the countershaft reverse gear, needle bearing, and countershaft reverse gear collar on the countershaft.
7. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.

NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

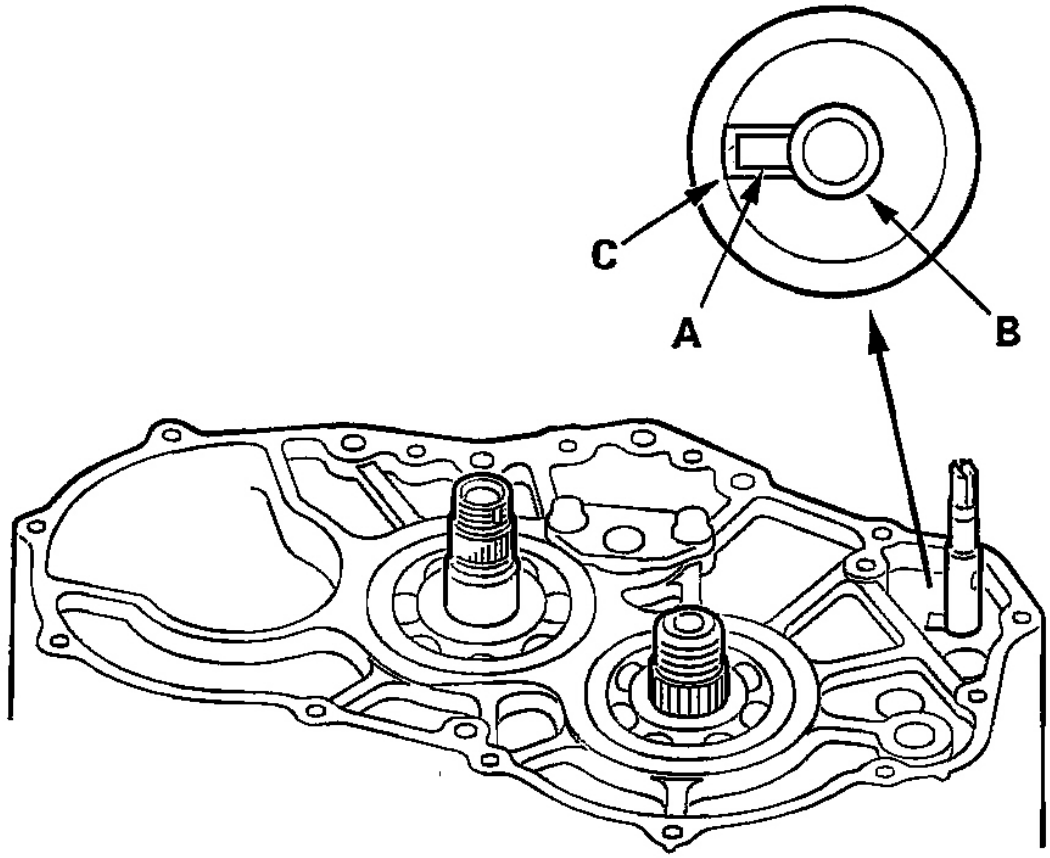


Fig. 88: Aligning Spring Pin On Control Shaft With Transmission Housing Groove

8. Install the three dowel pins and a new gasket on the torque converter housing.
9. Place the transmission housing on the torque converter housing. Do not install the mainshaft speed sensor before installing the transmission housing on the torque converter housing.

10. Install the housing bolts along with the transmission hanger (A) and connector bracket (B), tighten the bolts in two or more steps in the sequence shown in **Fig. 89** to 44 N.m (4.5 kgf.m, 33 lbf.ft).

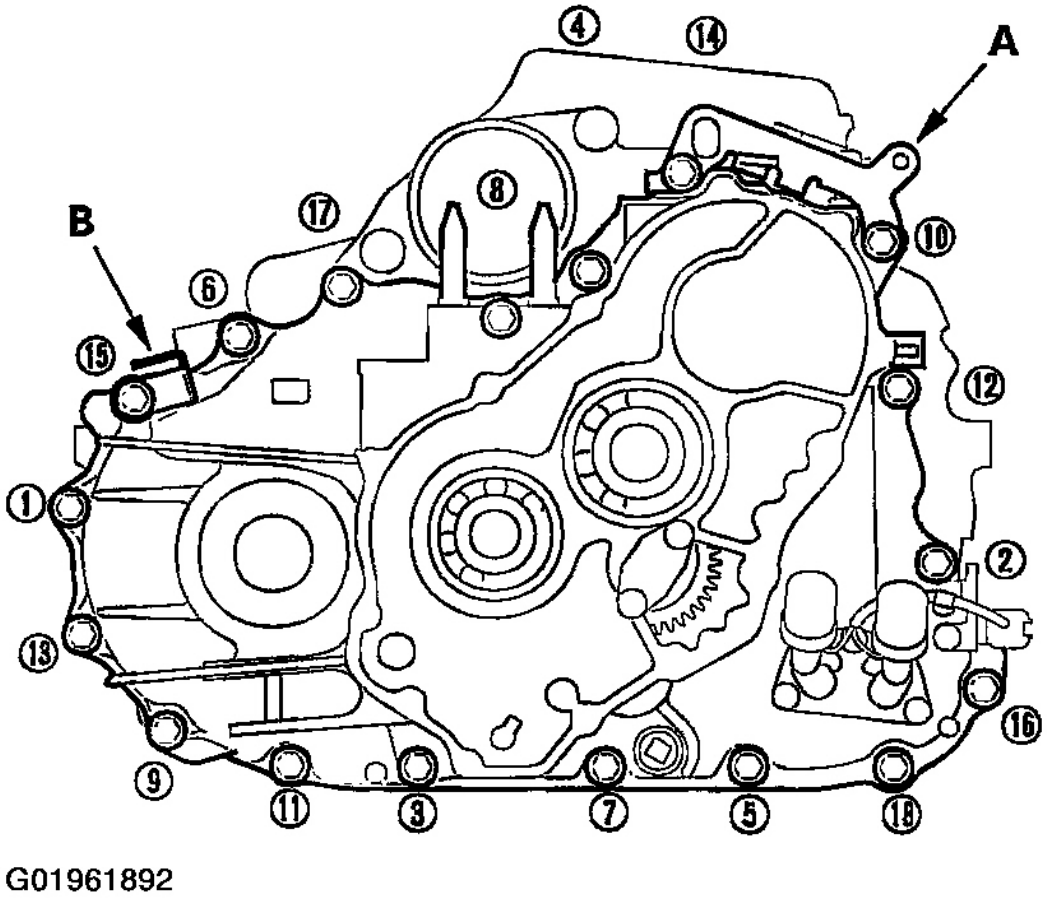


Fig. 89: Installing Housing Bolts Along Transmission Hanger & Connector Bracket

11. Install the mainshaft speed sensor with the new O-ring.

End Cover, 1st Gears, and 1st Clutch Installation

Special Tools Required

Mainshaft Holder 07GAB-PF50101 or 07GAB-PF50100

1. Install the park lever (A) and park lever stop (B) on the control shaft (C), then install the lock bolt (D) with a new lock washer (E). Do not bend the lock tab of the lock washer until step 19 .

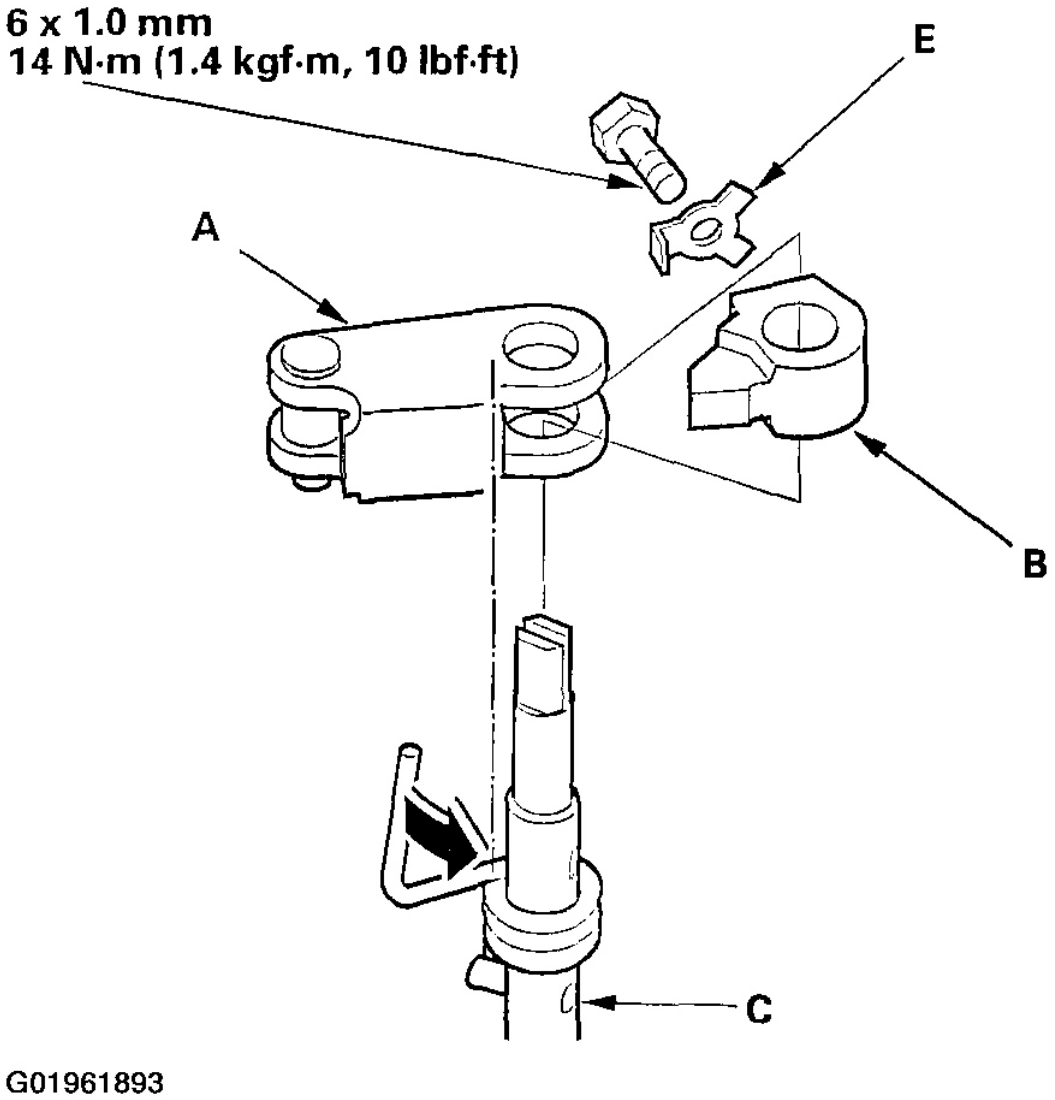


Fig. 90: Installing Park Lever & Park Lever Stop On Control Shaft

2. Lubricate the following parts with ATF:
   - Splines of the countershaft and park gear.
   - Threads of the countershaft and old locknut.
   - Old conical spring washer, and areas where the park gear contacts the conical spring washer.
3. Install the countershaft 1st gear collar (A), needle bearing (B), and countershaft 1st gear (C) on the countershaft (D).

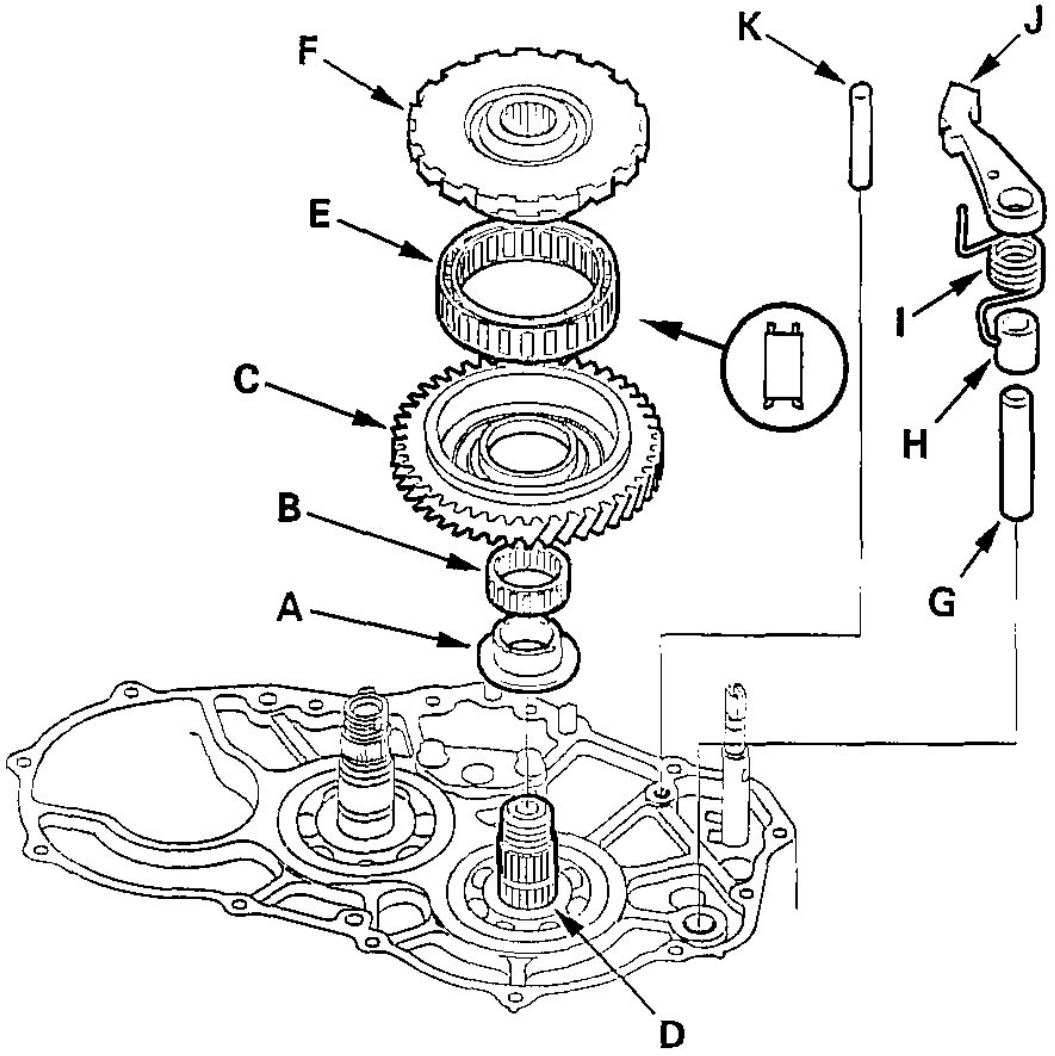


Fig. 91: Installing Countershaft 1st Gear Collar

4. Install the one-way clutch (E) in the direction shown in **Fig. 91** the countershaft 1st gear.
5. Align the park gear splines with those on the countershaft, then push the park gear (F) onto the countershaft by hand.
6. Install the park pawl shaft (G), pawl shaft collar (H), park pawl spring (I), park pawl (J), and stop shaft (K) on the transmission housing, then engage the park pawl with the park gear.
7. Install the old conical spring washer (A) and old locknut (B) on the countershaft (C). Tighten the old locknut to 103 N.m (10.5 kgf.m, 75.9 lbf.ft), then remove the old locknut and conical spring washer.

NOTE:

- **Use a torque wrench to tighten the locknut. Do not use an impact**

wrench.

- **Countershaft locknut has left-hand threads.**

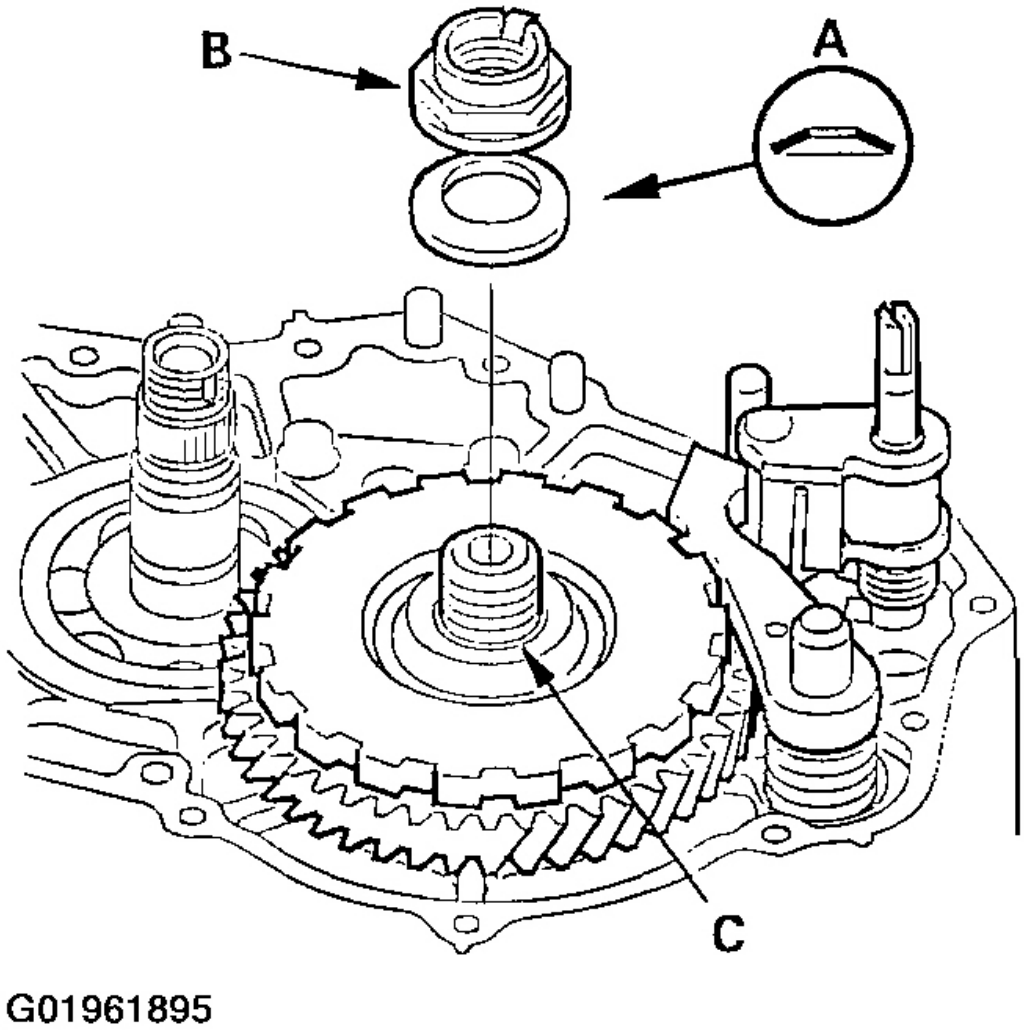


Fig. 92: Installing Conical Spring Washer & Locknut On Countershaft

8. Install the special tool onto the mainshaft.

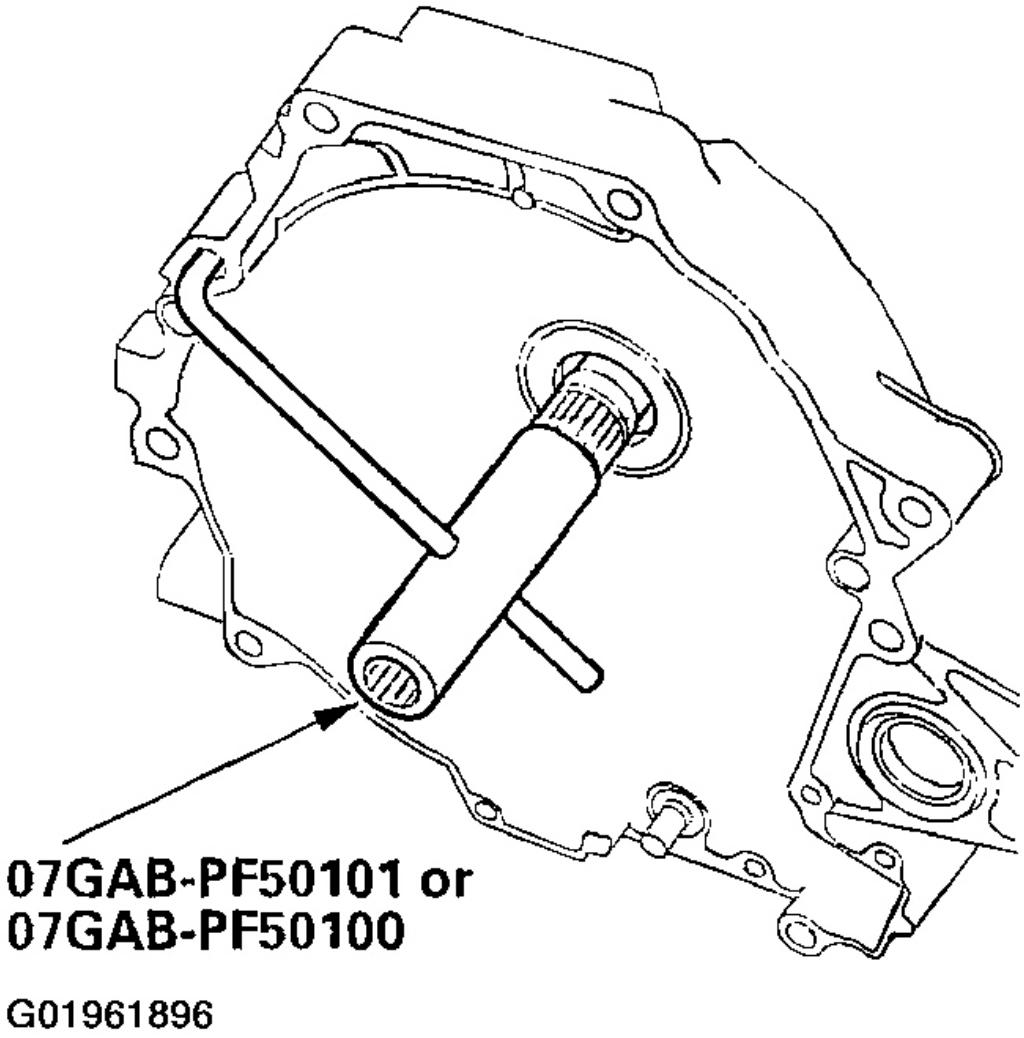


Fig. 93: Installing Special Tool On Mainshaft

9. Install the mainshaft 1st gear collar (A), mainshaft 1st gear (B), needle bearing (C), thrust needle bearing (D), and thrust washer (E) on the mainshaft (F).

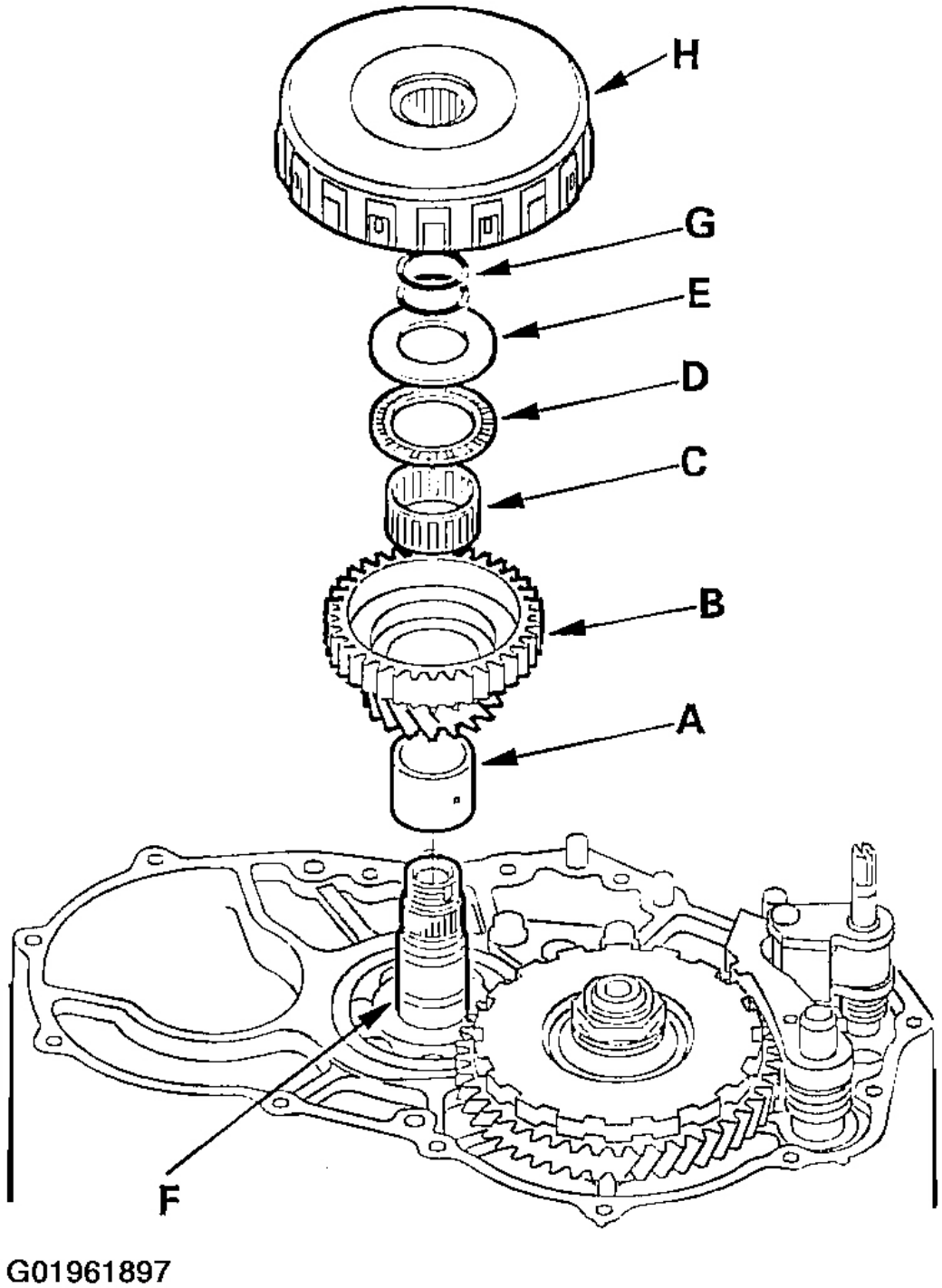


Fig. 94: Installing Mainshaft 1st Gear Collar

10. Wrap the mainshaft splines with tape to prevent O-ring damage. Install new O-rings (G) in the mainshaft grooves, then remove the tabe.
11. Install the 1st clutch assembly (H) on the mainshaft.
12. Lubricate the threads of both shafts, the new locknuts, and the new conical spring washers with ATF.
13. Install the new conical spring washers (A) in the direction shown in **Fig. 95** , and install the new mainshaft locknut (B) and the new countershaft locknut. (C).

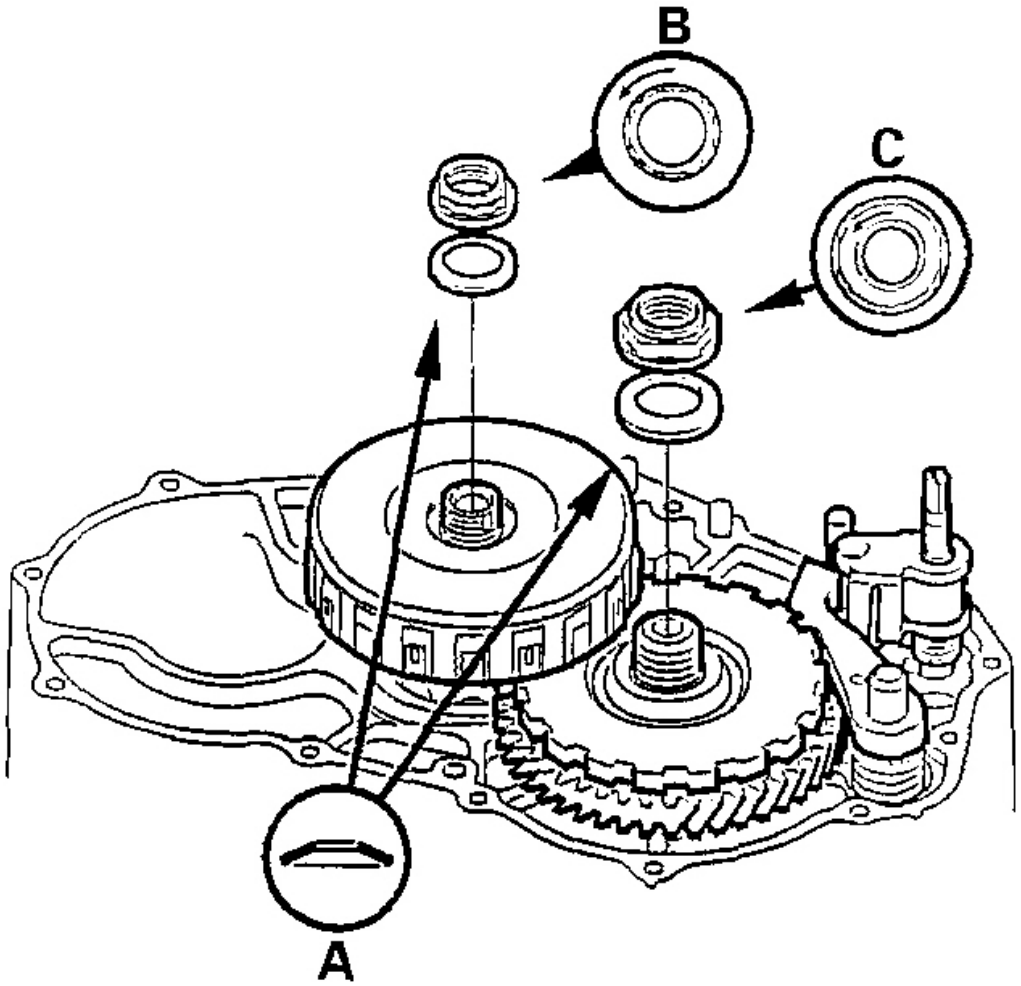


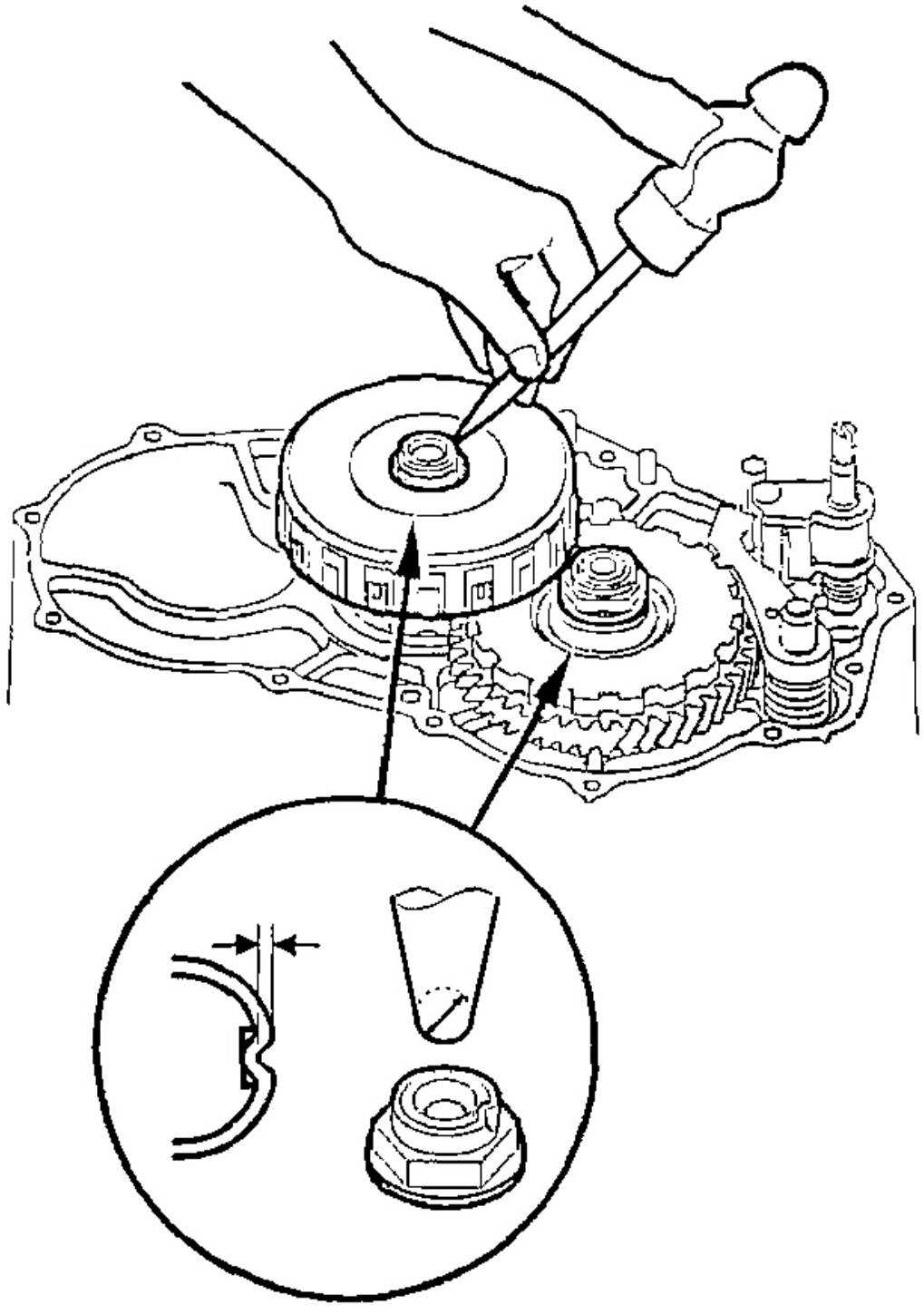
Fig. 95: Installing Conical Spring Washers

14. Tighten the countershaft locknut to 103 N.m (10.5 kgf.m, 75.9 lbf.ft), and tighten the mainshaft locknut to 78 N.m (8.0 kgf.m, 58 lbf.ft).

NOTE:

- **Use a torque wrench to tighten the locknuts. Do not use an impact wrench.**
- **Countershaft and mainshaft locknuts have left-hand threads.**

15. Remove the special tool from the mainshaft.
16. Stake both locknuts into the shafts with a 3.5 mm punch.



G01961899

Fig. 96: Staking Both Locknuts Into Shaft With Punch

17. Set the park lever in P position, then verify that the park pawl (A) engages the park gear (B).

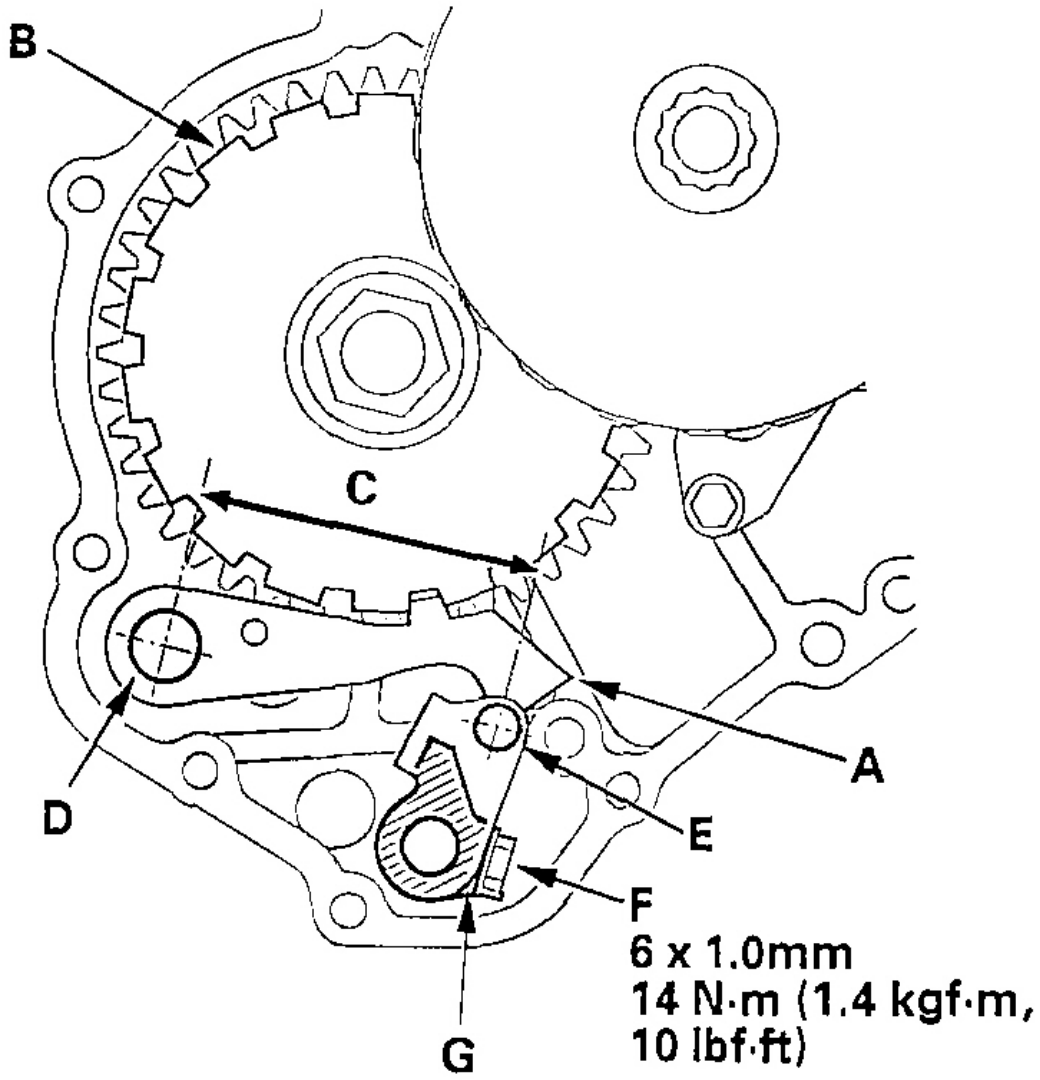


Fig. 97: Verifying Park Pawl Engages Park Gear

18. If the park pawl does not engage fully, check the distance (C) between the pawl shaft (D) and the park level roller pin (E) (see page 14-139).
19. Tighten the lock bolt (F), and bend the lock tab of the lock washer (G) against the bolt head.

20. Install the end cover (A) with the two dowel pins, new O-rings, new gasket, and connector bracket (B). Tighten the 12 bolts to 12 N.m (1.2 kgf.m, 8.7 lbf.ft).

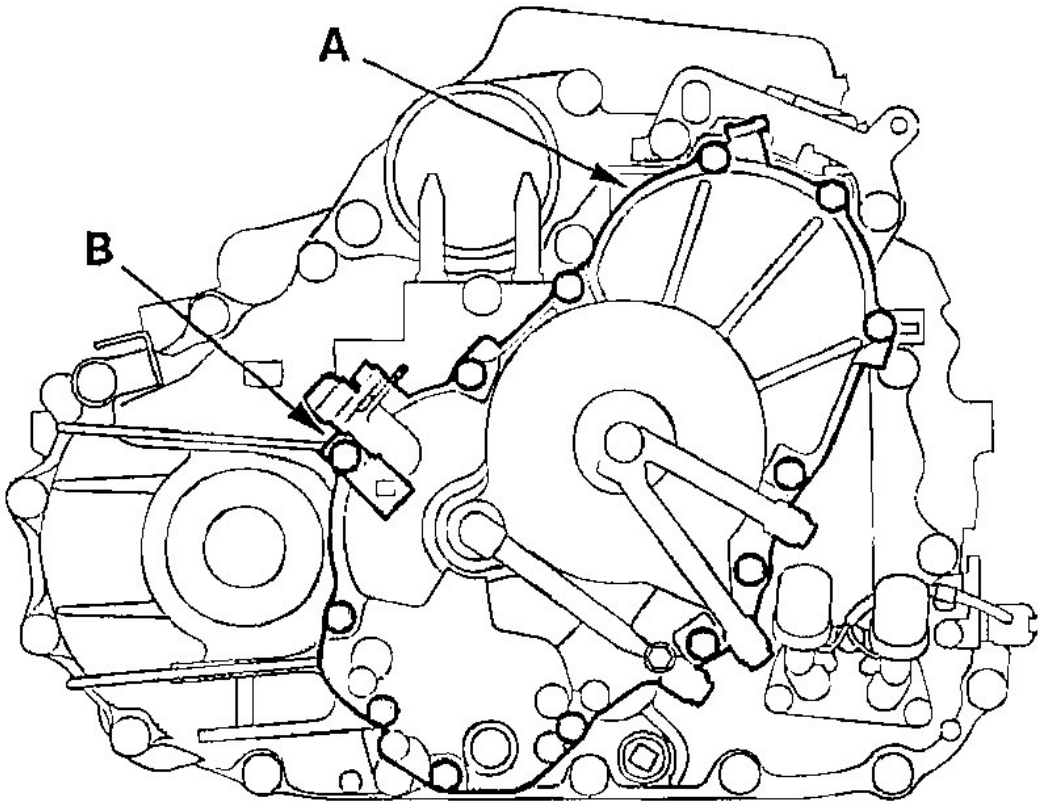


Fig. 98: Installing End Cover With Dowel Pins

21. Set the control shaft (A) to N position by turning it.

NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

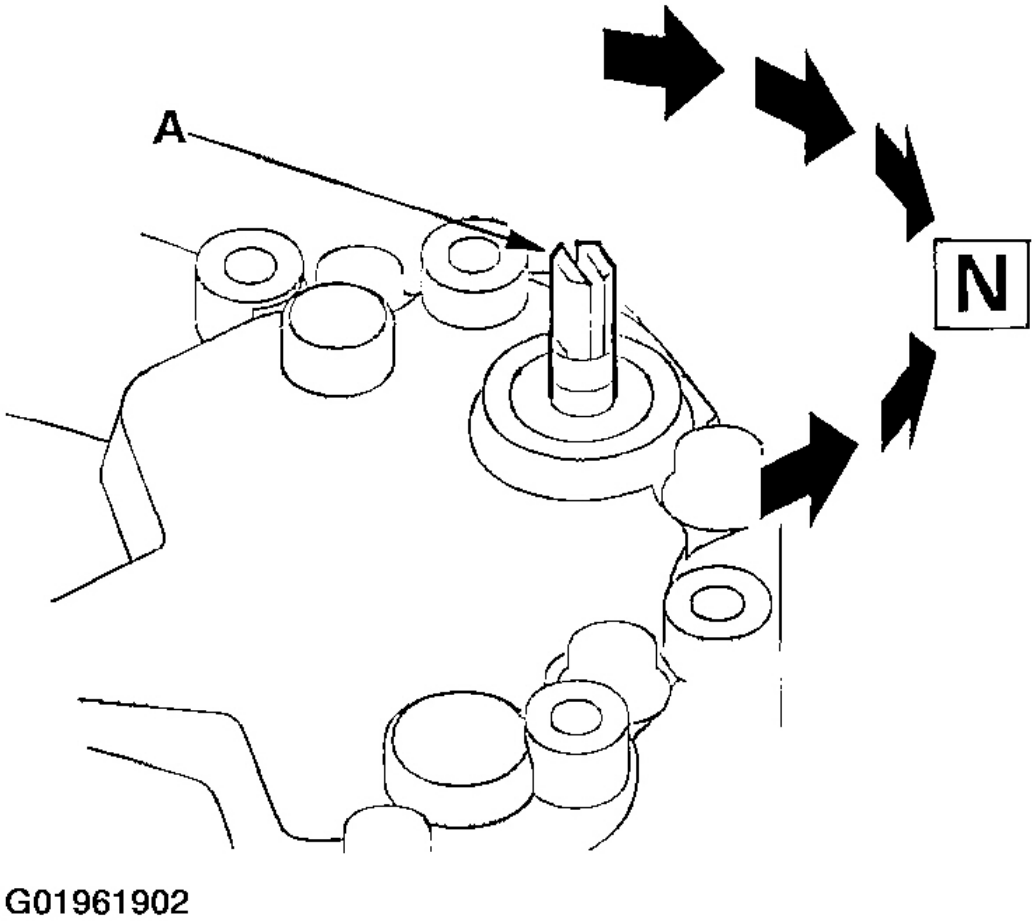


Fig. 99: Setting Control Shaft To N Position

22. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch, then put a 2.0 mm (0.08 in.) feeler gauge blade (C) in the cutouts to hold it in the N position.

NOTE: Be sure to use a 2.0 mm (0.08 in. blade or equivalent to hold the switch in the N position.

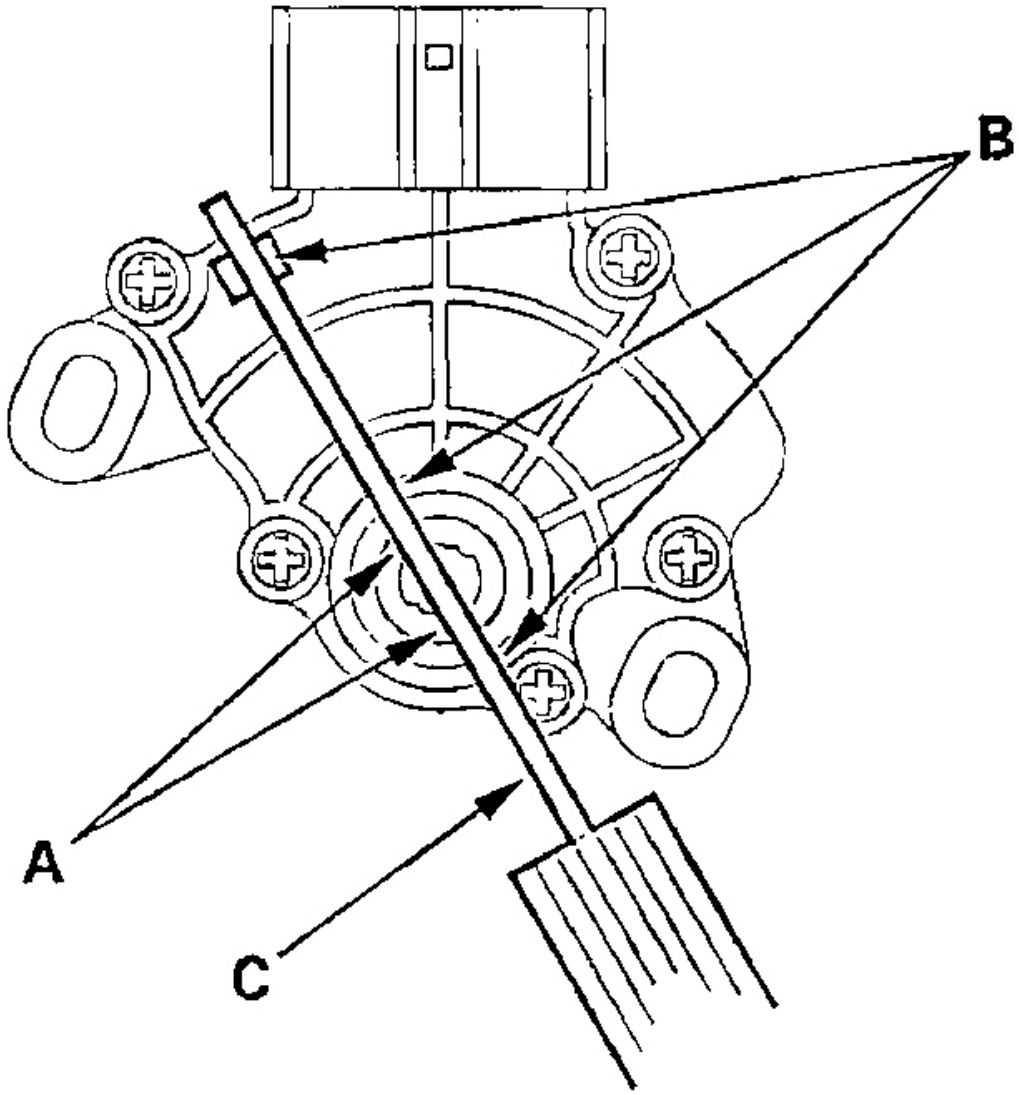


Fig. 100: Aligning Cutouts On Rotary-Frame With Neutral Positioning Cutouts

23. Install the transmission range switch (A) gently on the control shaft (B) with holding the N position with the 2.0 mm (0.08 in.) blade (C).

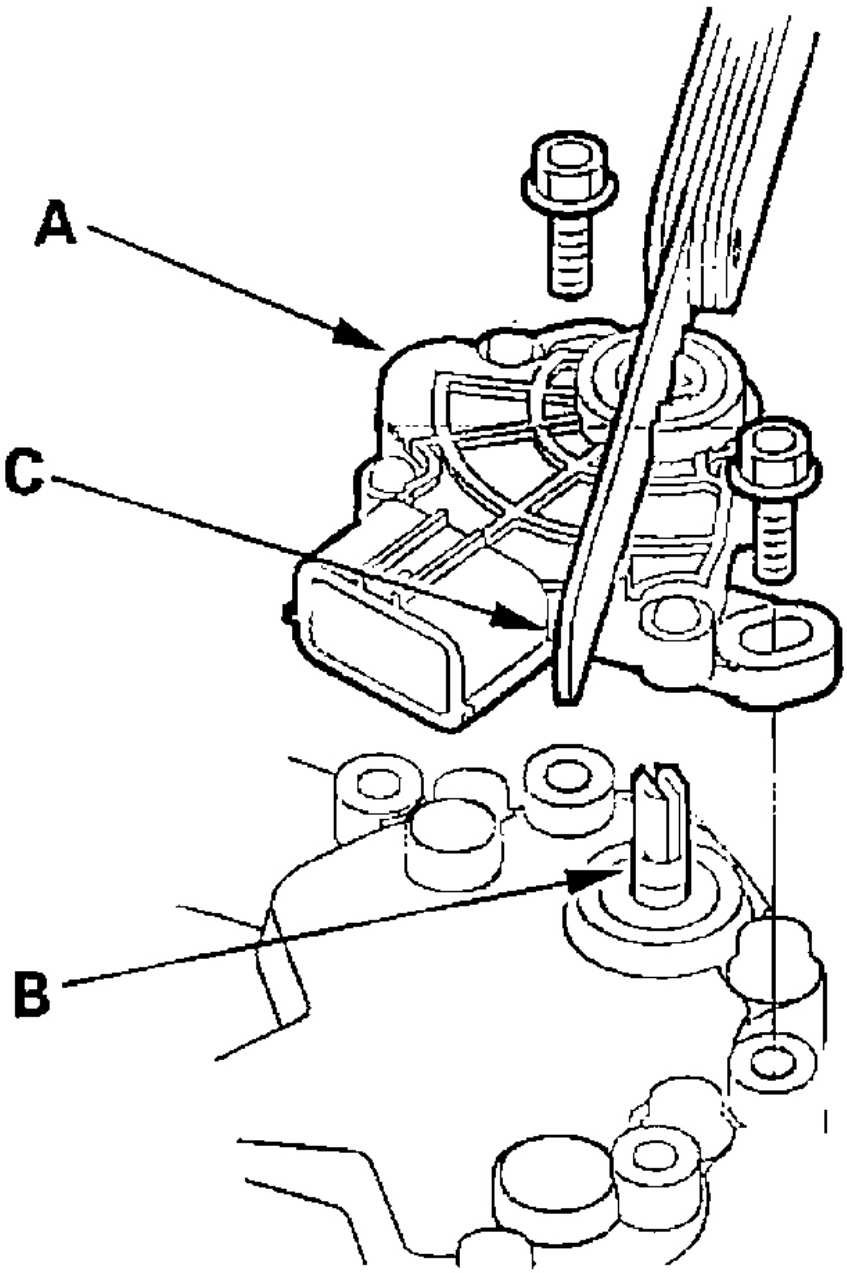


Fig. 101: Installing Transmission Range Switch

24. Tighten the bolts on the transmission range switch while you continue to hold the N position. Do not move the transmission range switch when tightening the bolts. Remove the feeler gauge.

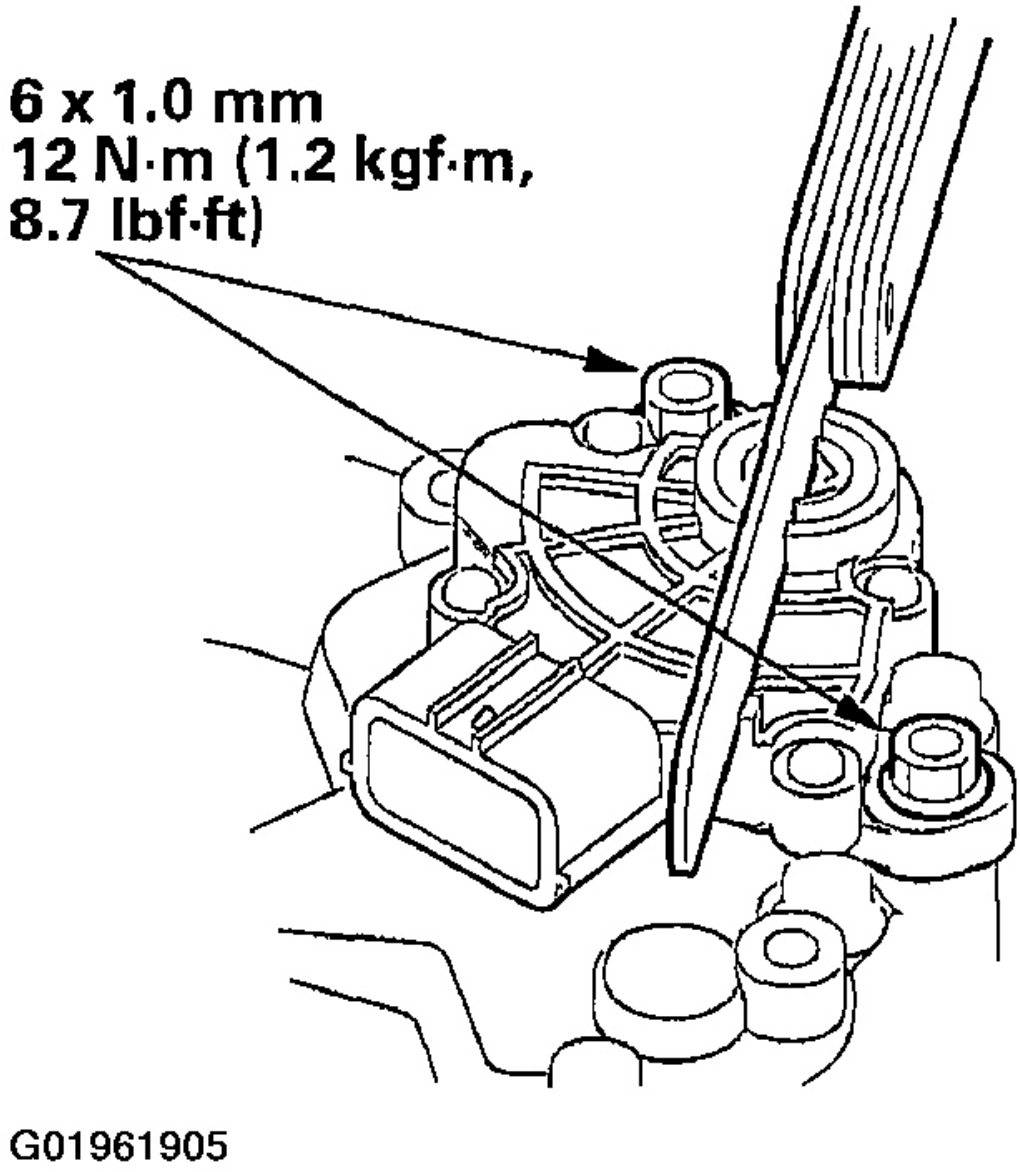


Fig. 102: Tightening Transmission Range Switch Bolts Holding N Position

25. Connect the switch harness connector securely, then secure the switch harness (A) with the clamps (B).

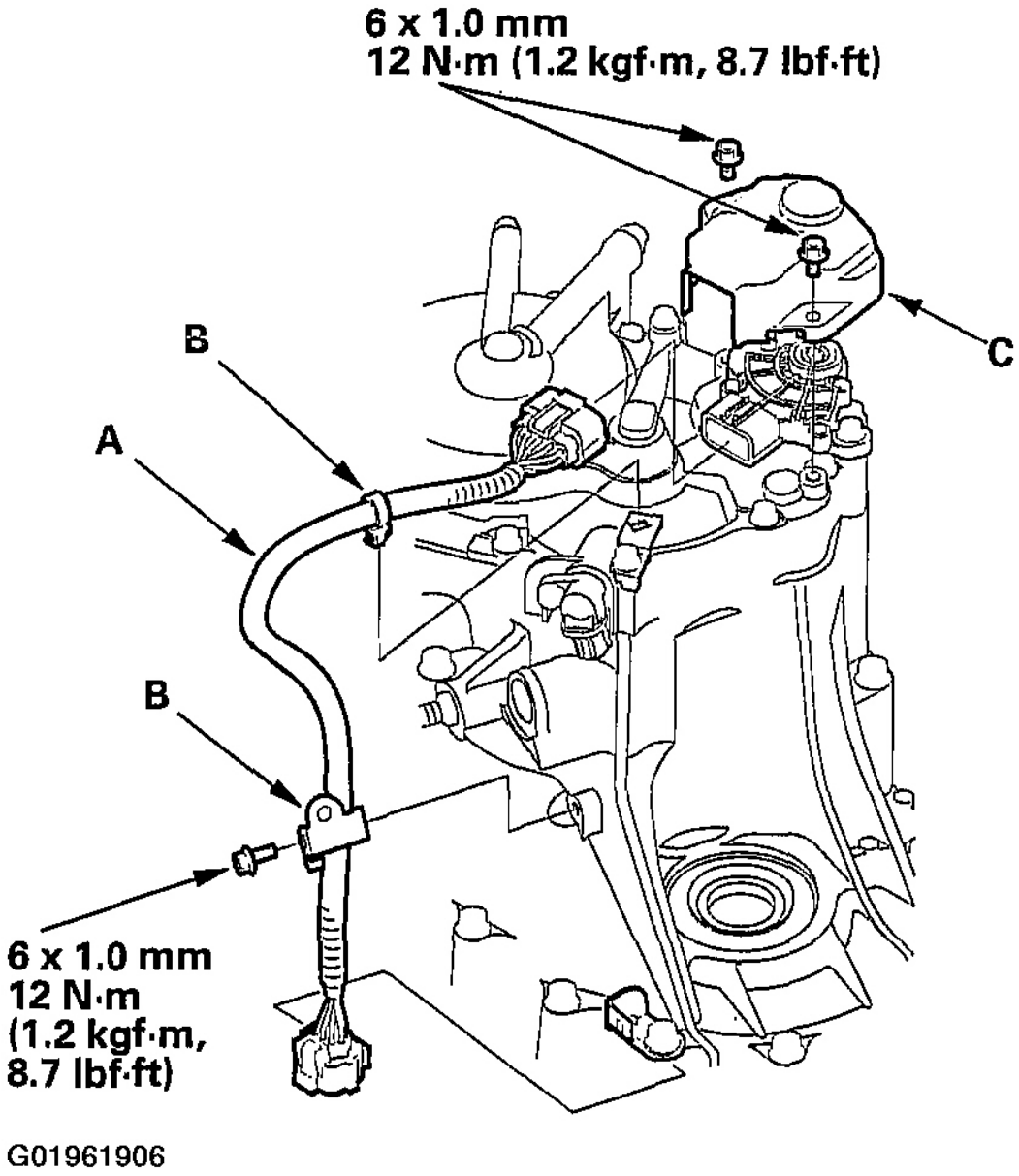


Fig. 103: Securing Switch Harness With Clamps

26. Install the transmission range switch cover (C).
27. Install the filter/gasket (A) in A/T clutch pressure control solenoid valve body groove, then install the A/T clutch pressure control solenoid valves A and B (B), if it was removed. Do not pinch the filter/gasket.

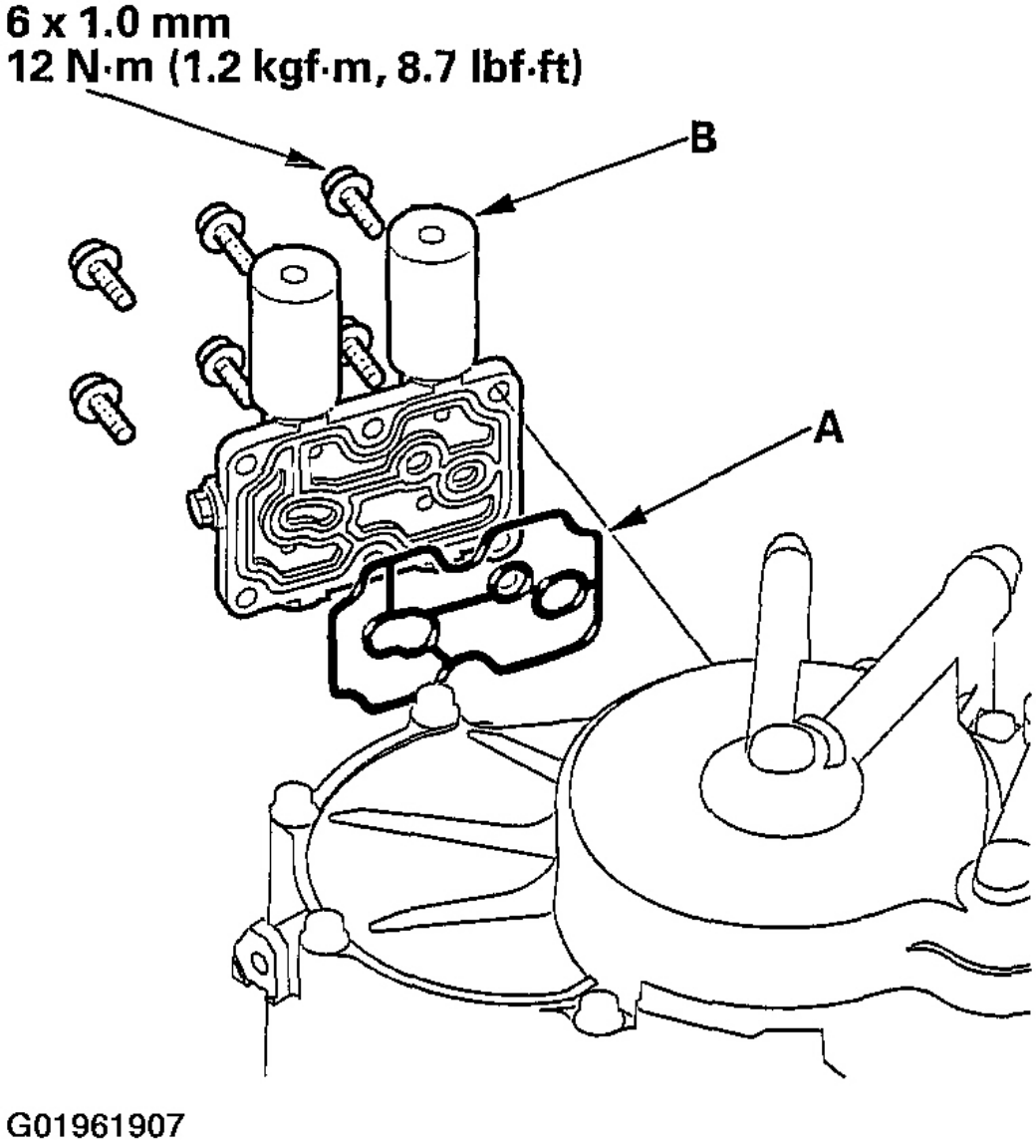


Fig. 104: Installing Filter/Gasket In A/T Clutch Pressure Control Solenoid Valve Body Groove

28. Install the ATF cooler lines and new sealing washers. Tighten the line fittings to 28 N.m (2.9 kgf.m, 21 lbf.ft).
29. Install the ATF dipstick.

A/T DIFFERENTIAL

COMPONENT LOCATION INDEX

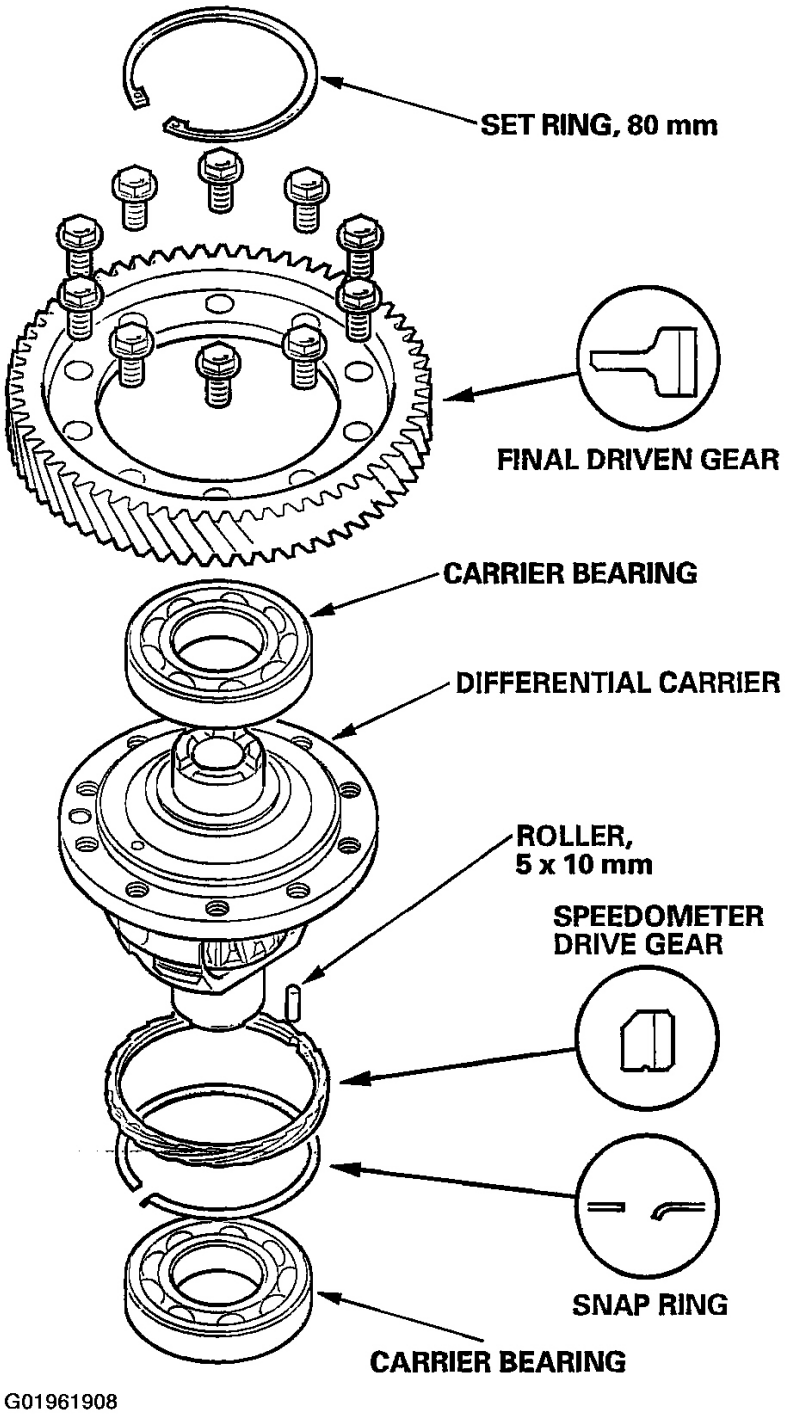


Fig. 105: Locating A/T Differential Components

BACKLASH INSPECTION

1. Place the differential assembly on V-blocks (A), and install both axles.

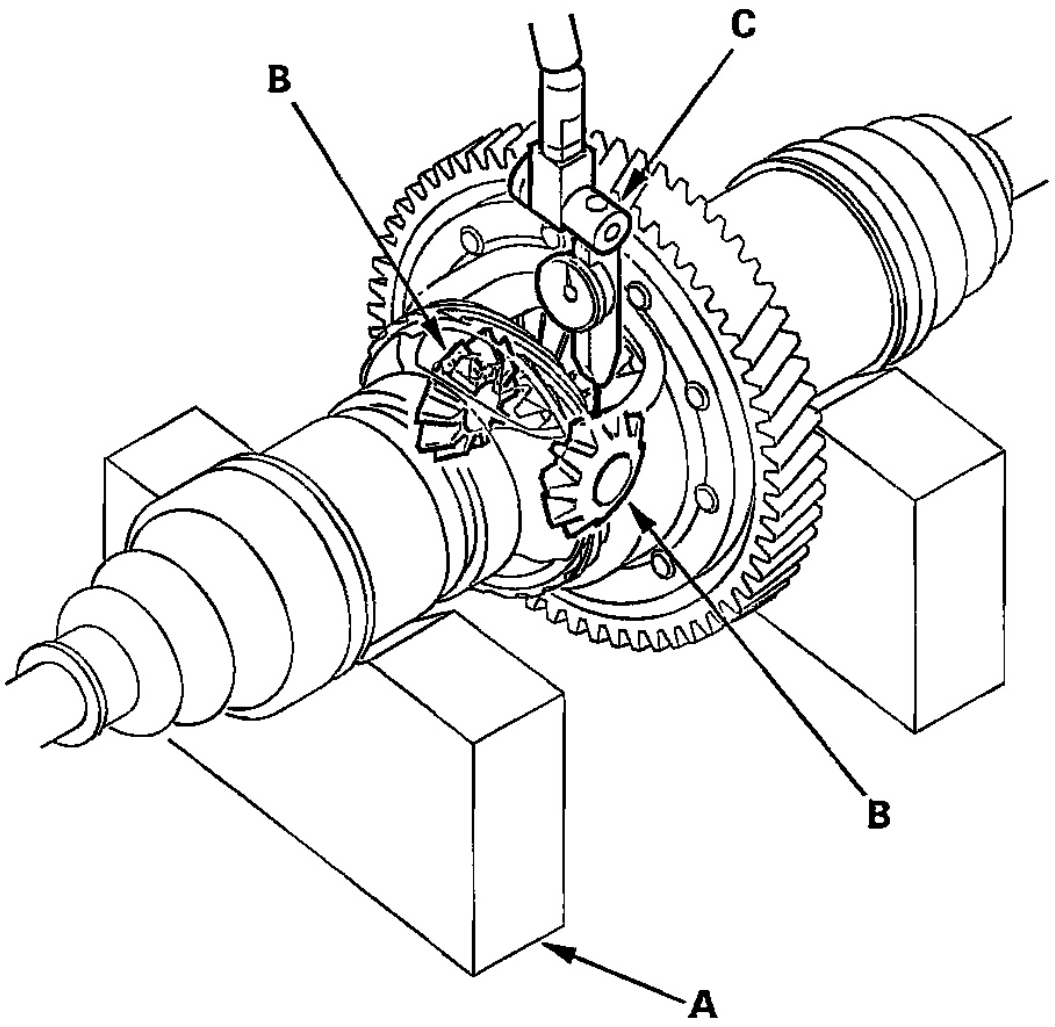


Fig. 106: Placing Differential Assembly On V-Blocks

2. Check the backlash of the pinion gears (B) with a dial indicator (C).
   STANDARD: 0.05-0.15 mm (0.002-0.006 in.)
3. If the backlash is out of standard, replace the differential carrier.

DIFFERENTIAL CARRIER REPLACEMENT

1. Remove the snap ring (A) from the differential assembly (B).

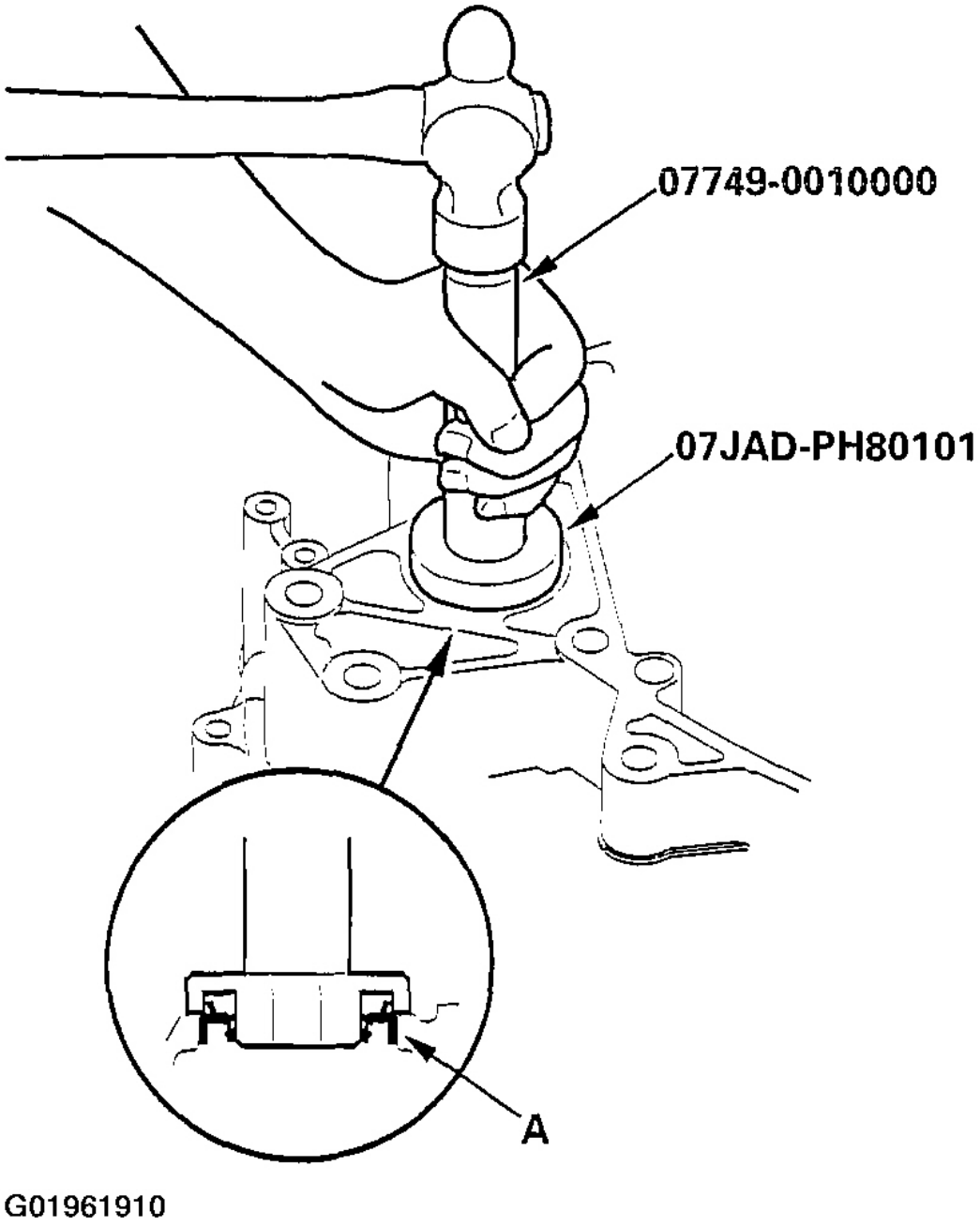


Fig. 107: Removing Snap Ring From Differential Assembly

2. Remove the 5 x 10 mm roller (A) and the speed meter drive gear (B).

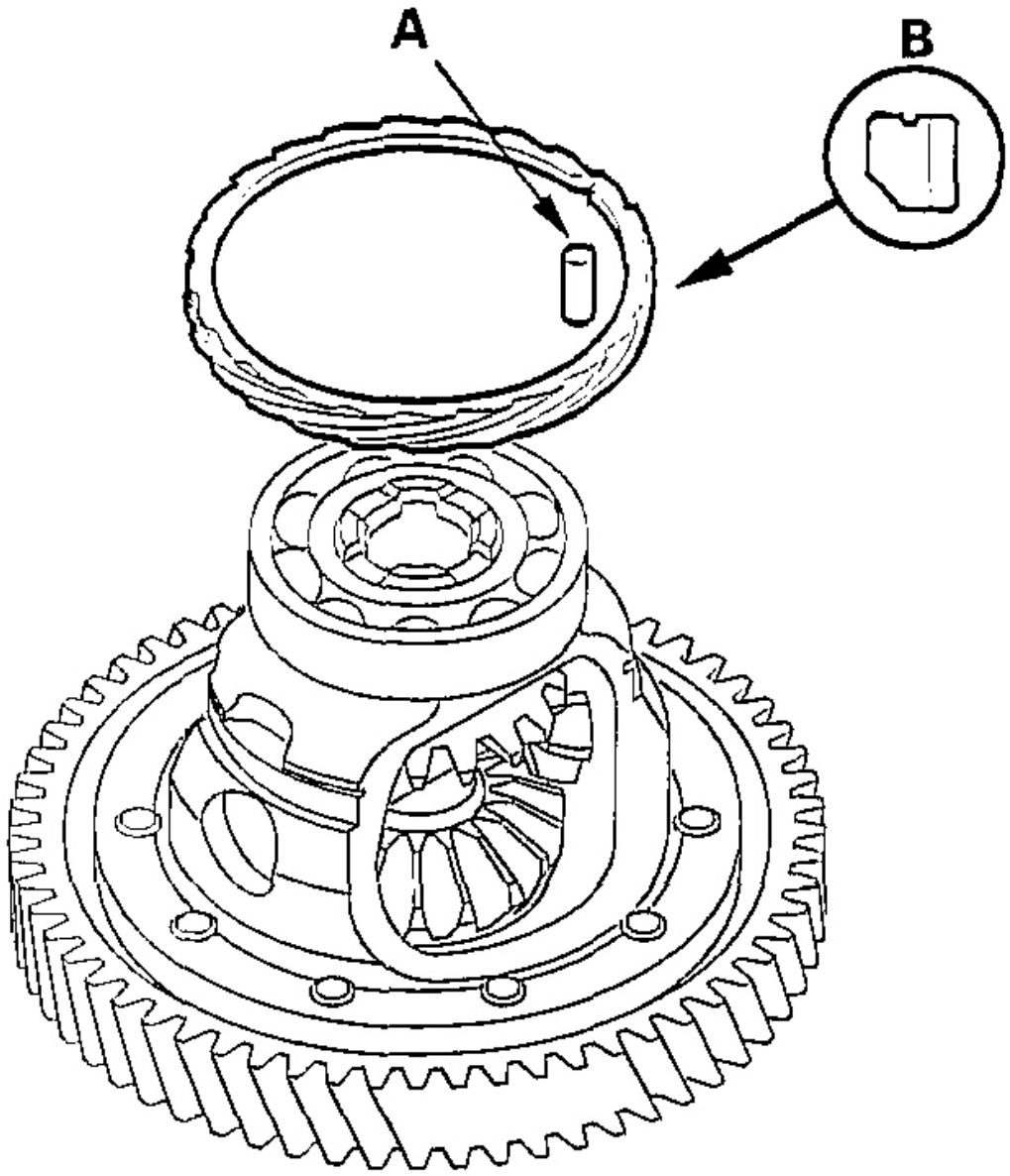


Fig. 108: Removing Roller & Speed Meter Drive Gear

3. Remove final driven gear bolts, then separate the final driven gear and the differential carrier. The final driven gear bolts have left-hand threads.
4. Install the final driven gear (A) on the new differential carrier (B) with the chamfered side on the inner bore facing the differential carrier.

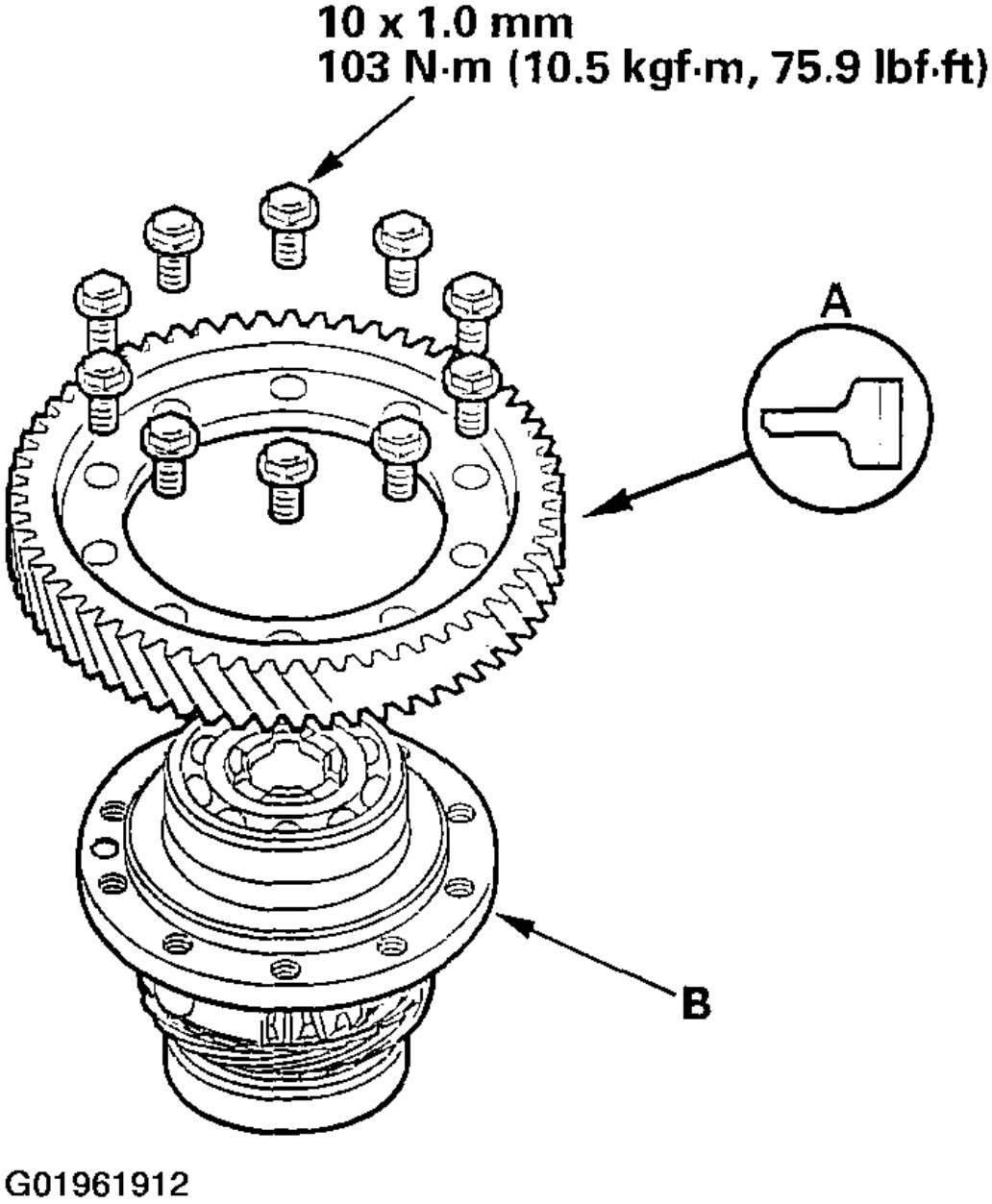


Fig. 109: Installing Final Driven Gear On Differential Carrier

5. Tighten the bolts to 103 N.m (10.5 kgf.m, 75.9 lbf.ft) in a crisscross pattern.
6. Install the speedometer drive gear (A) with its chamfered side facing the carrier. Align the cutout on the bore of the speedometer drive gear with the 5 x 10 mm roller hole, then install the 5 x 10 mm roller.

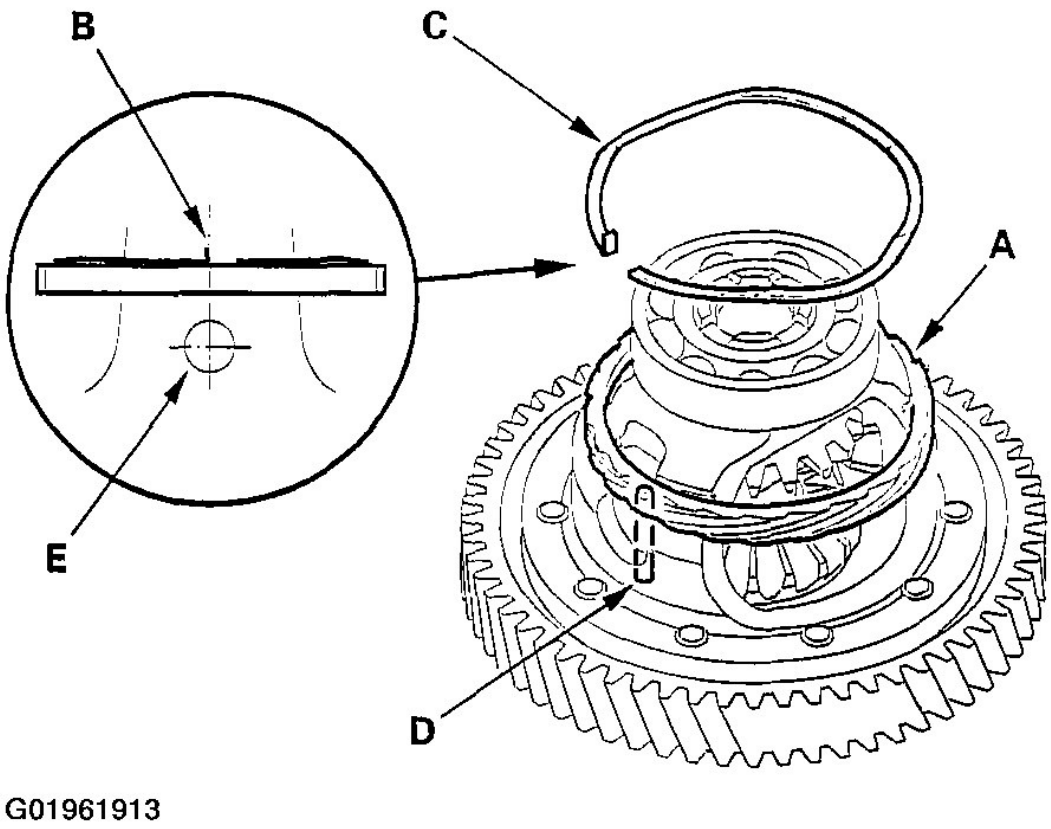


Fig. 110: Installing Speedometer Drive Gear

7. Align the hooked end (B) of the snap ring (C) with the spring pin (D) in the pinion shaft (E), then install the snap ring in the differential carrier groove.

FINAL DRIVEN GEAR REPLACEMENT

1. Remove the final driven gear from the differential carrier. The final driven gear bolts have left-hand threads.

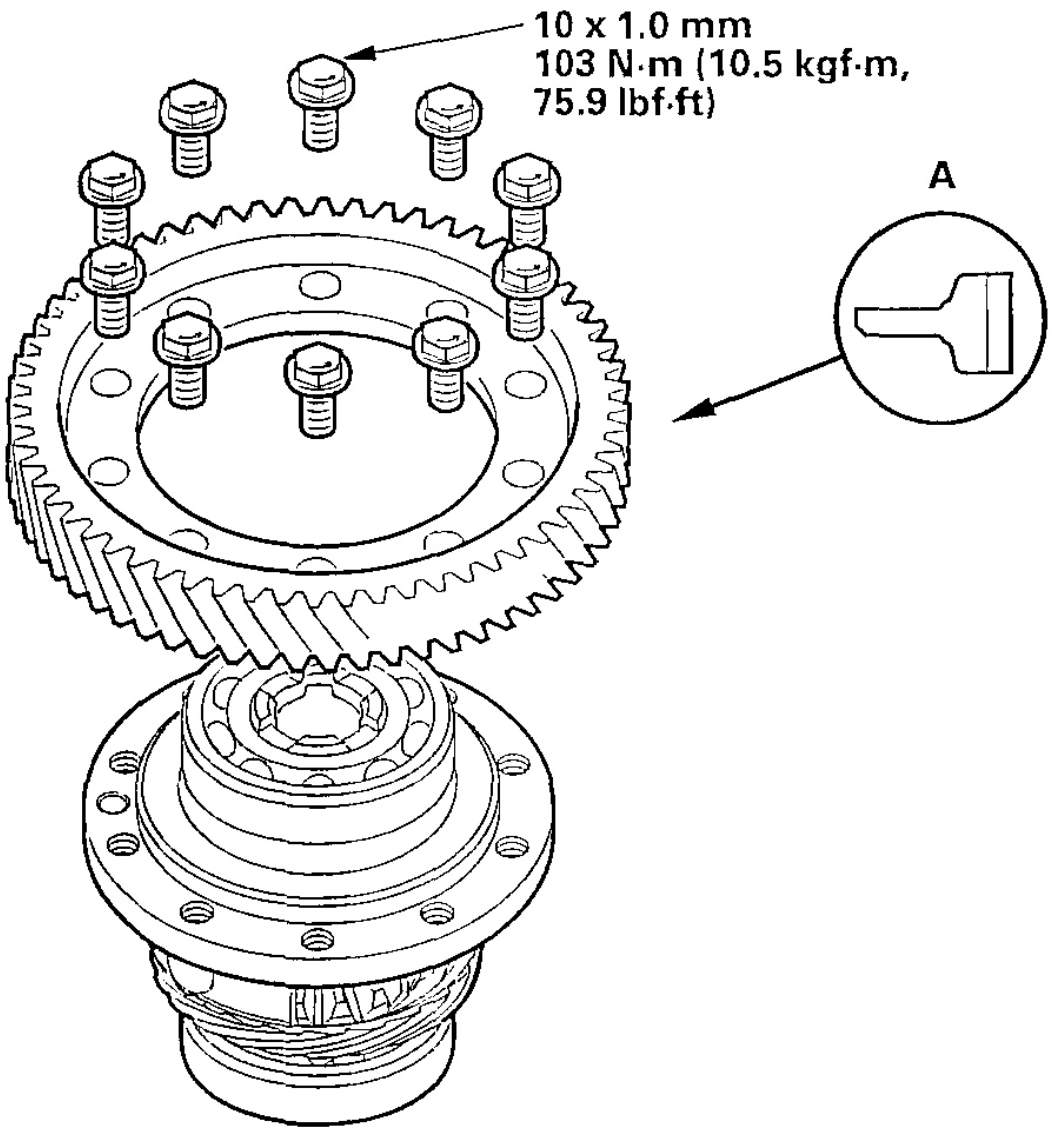


Fig. 111: Removing Final Driven Gear From Differential Carrier

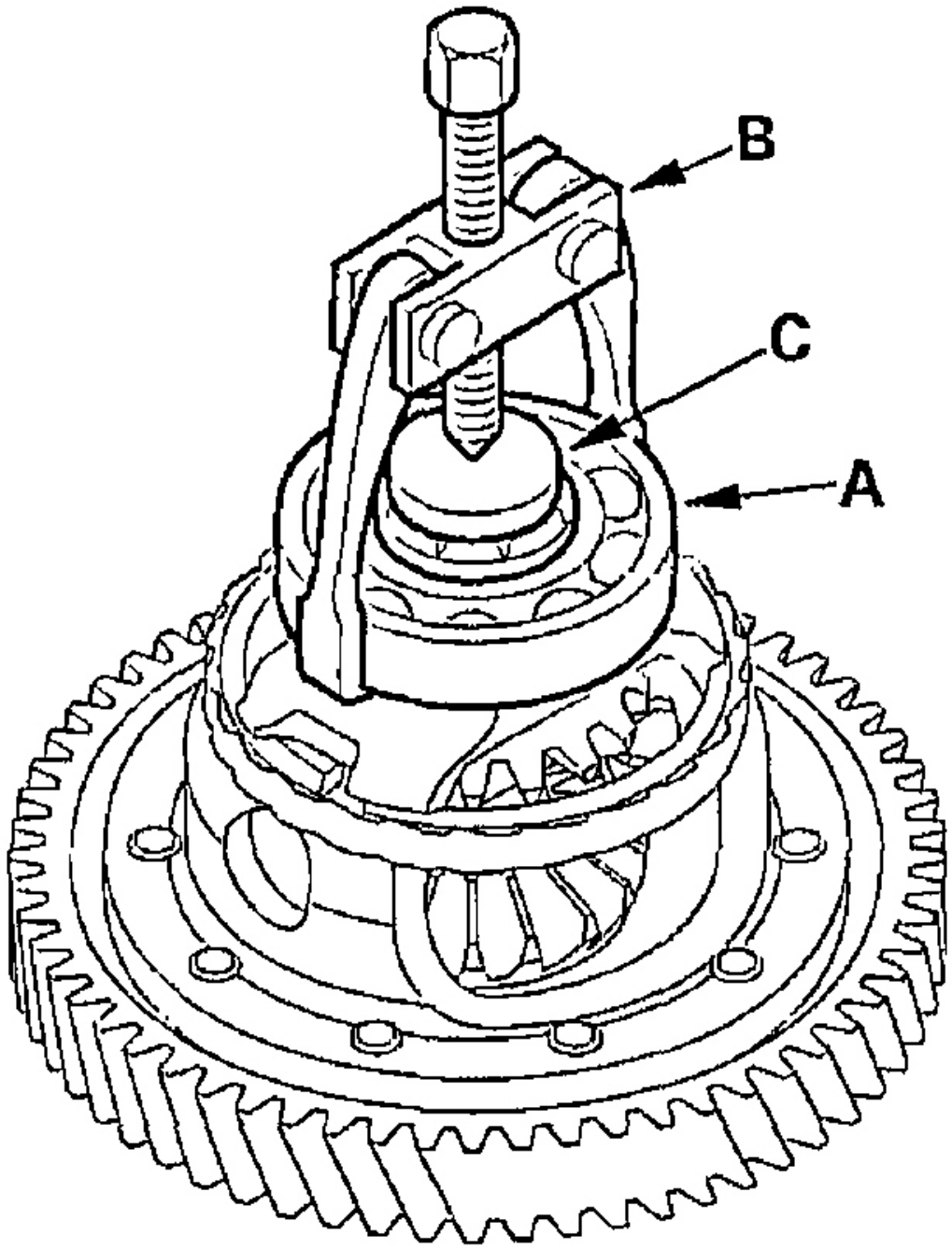
2. Install the final driven gear with the chamfered side on the inner bore (A) facing the differential carrier.
3. Tighten the bolts to 103 N.m (10.5 kgf.m, 75.9 lbf.ft) in a crisscross pattern.

CARRIER BEARING REPLACEMENT

Special Tools Required

Driver 40 mm I.D. 07746-0030100

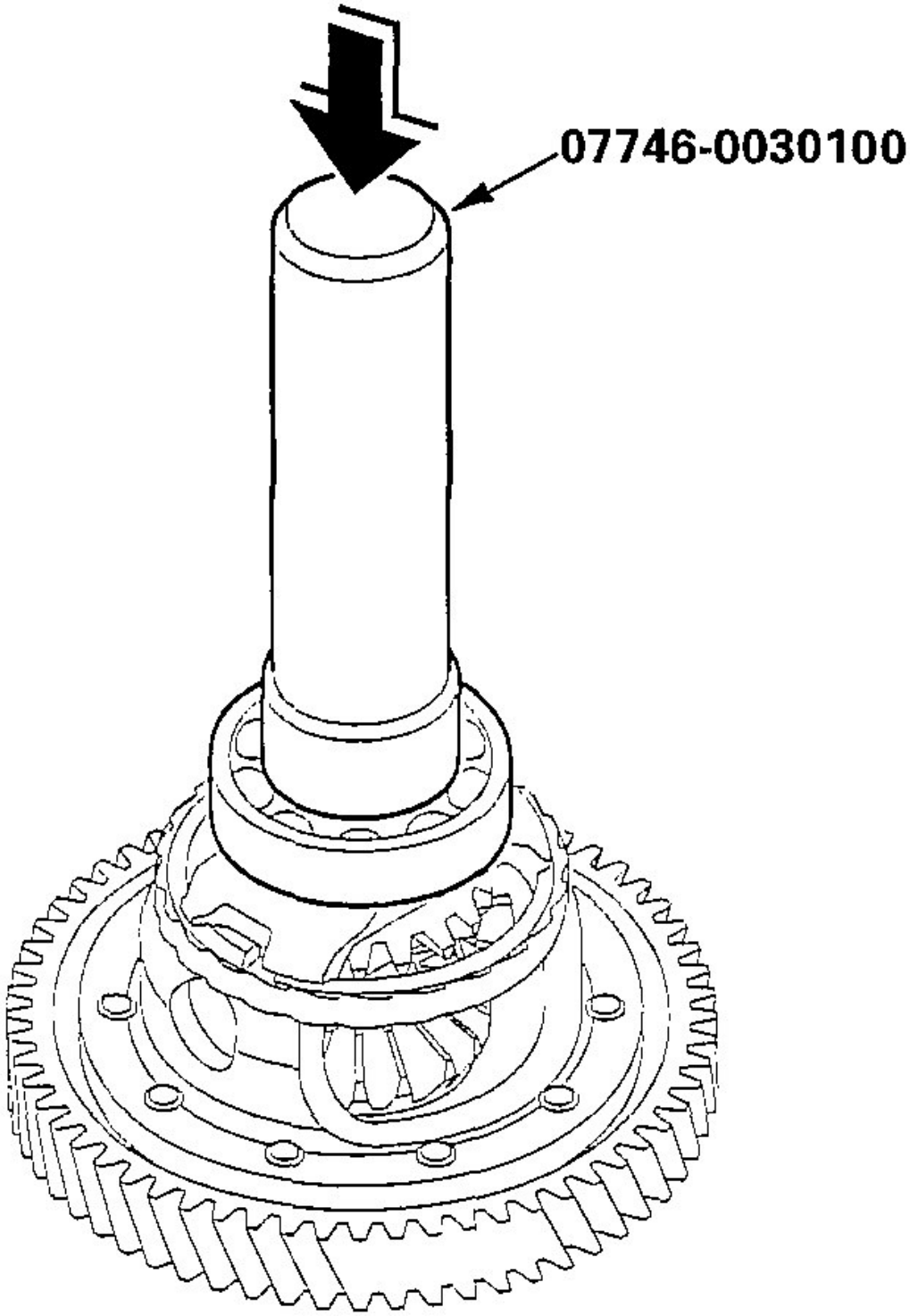
1. Remove the bearings (A) with a commercially available bearing puller (B) and stepped adapter (C).



G01961915

Fig. 112: Removing Bearings With Commercially Available Bearing Puller & Stepped Adapter

2. Install the new bearings with the special tool and a press. Press the bearing on until it bottoms.



G01961916

Fig. 113: Installing Bearings With Special Tool & Press

OIL SEAL REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Driver Attachment 07NAD-PX40100
- Driver attachment 07JAD-PH80101

1. Remove the oil seal (A) from the transmission housing (B).

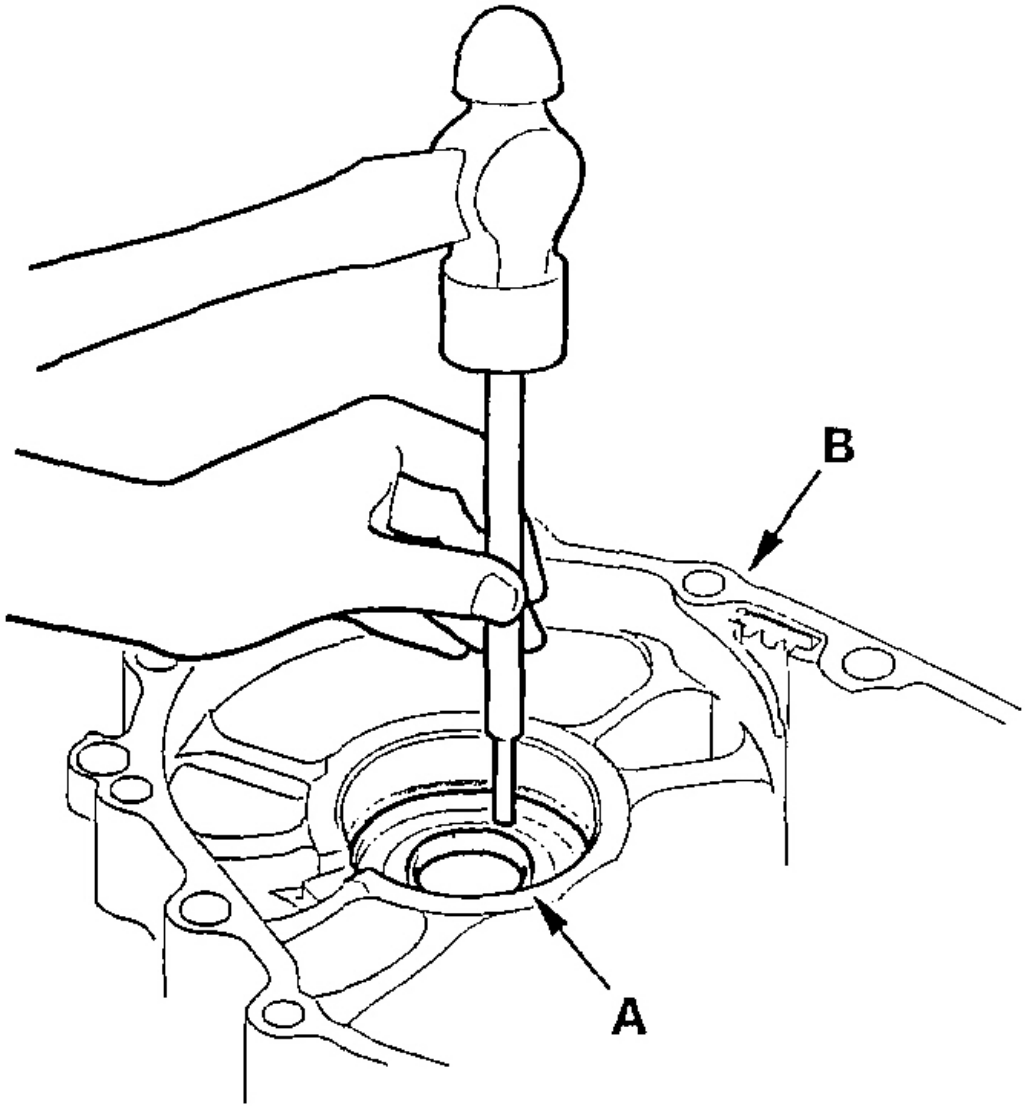


Fig. 114: Removing Oil Seal From Transmission Housing

2. Remove the oil seal (A) from the torque converter housing (B).

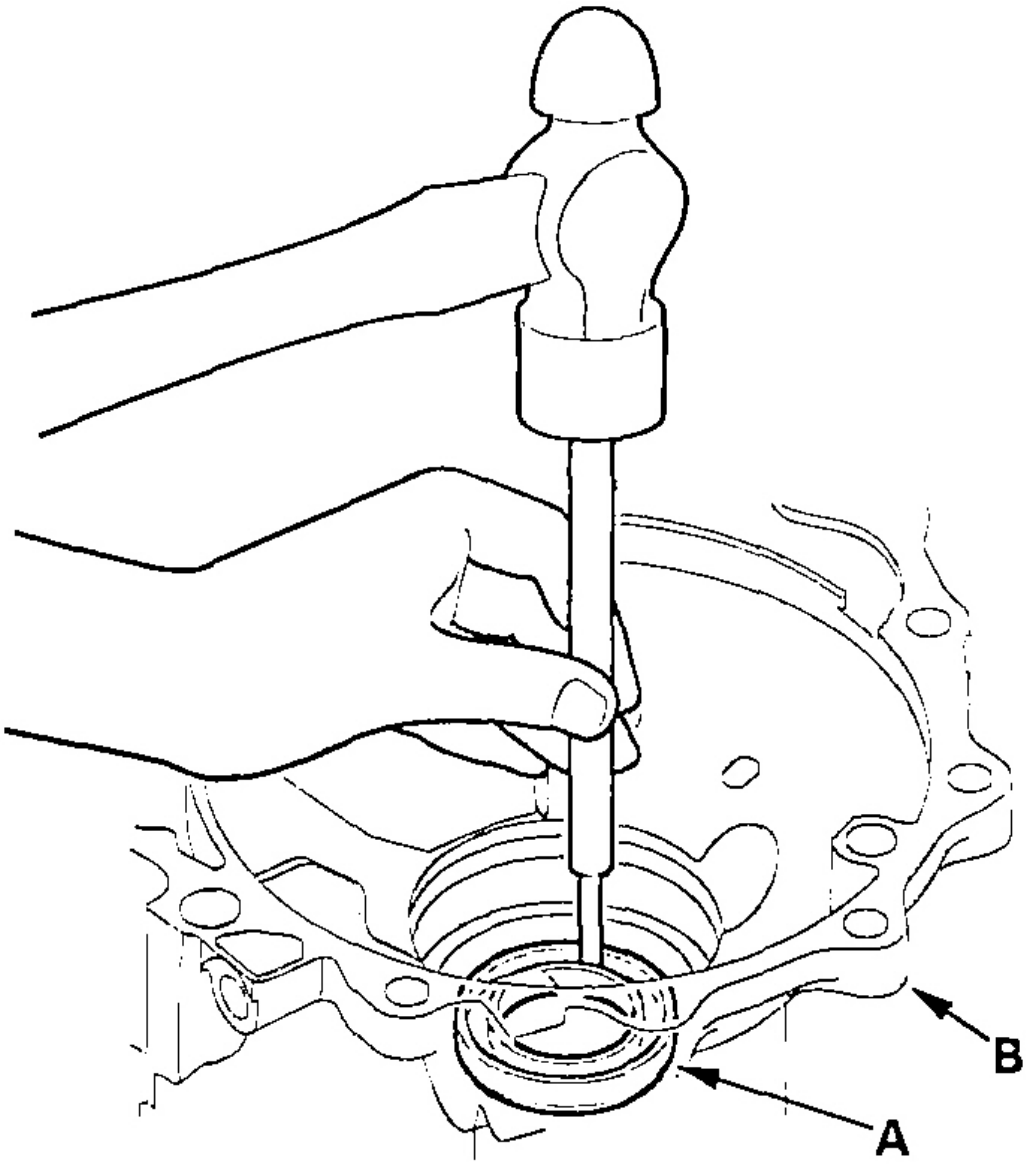


Fig. 115: Removing Oil Seal From Torque Converter Housing

3. Install the oil seal (A) in the transmission housing with the special tools.

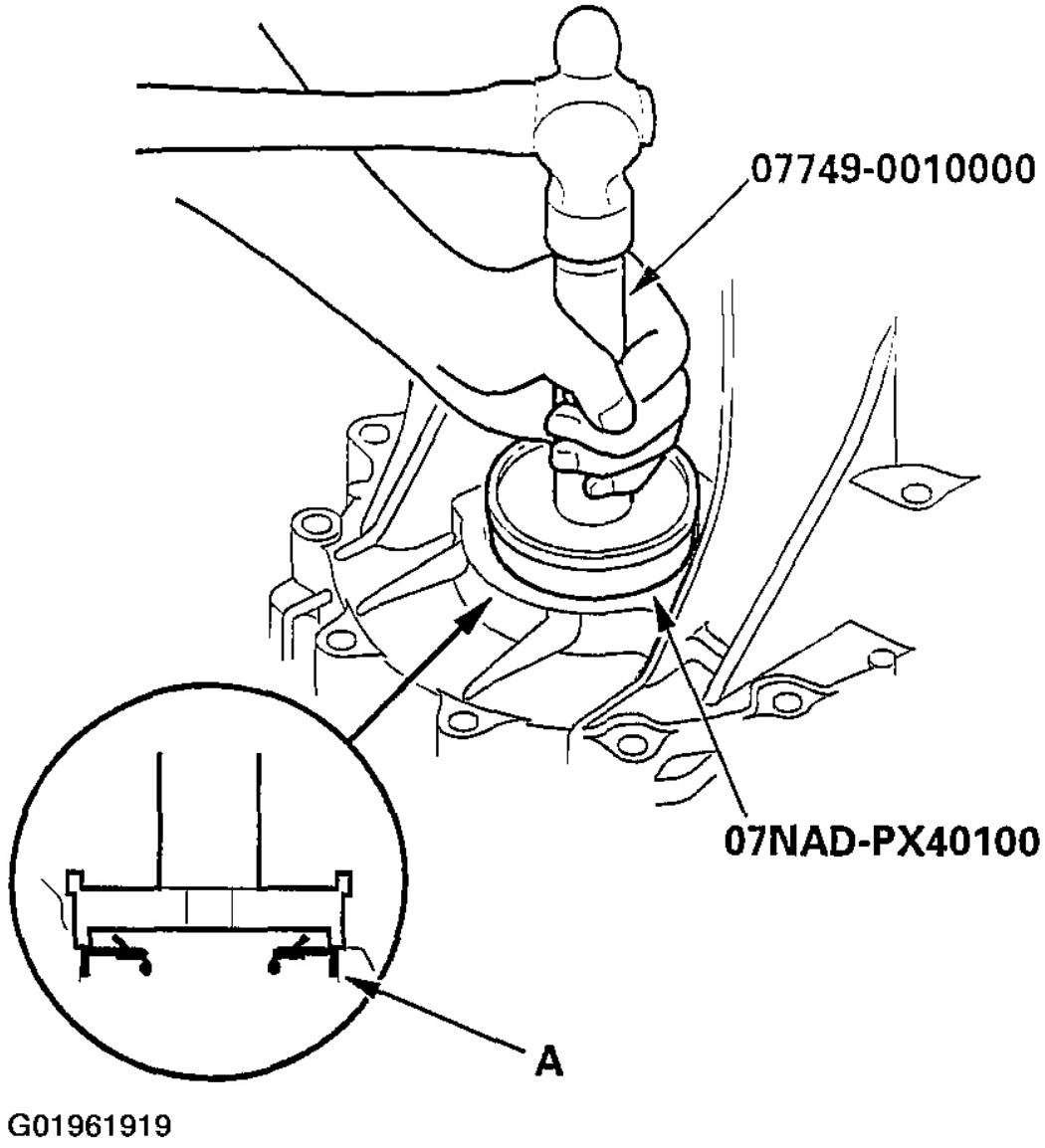


Fig. 116: Installing Oil Seal In Transmission Housing

4. Install the oil seal (A) in the torque converter housing with the special tools.

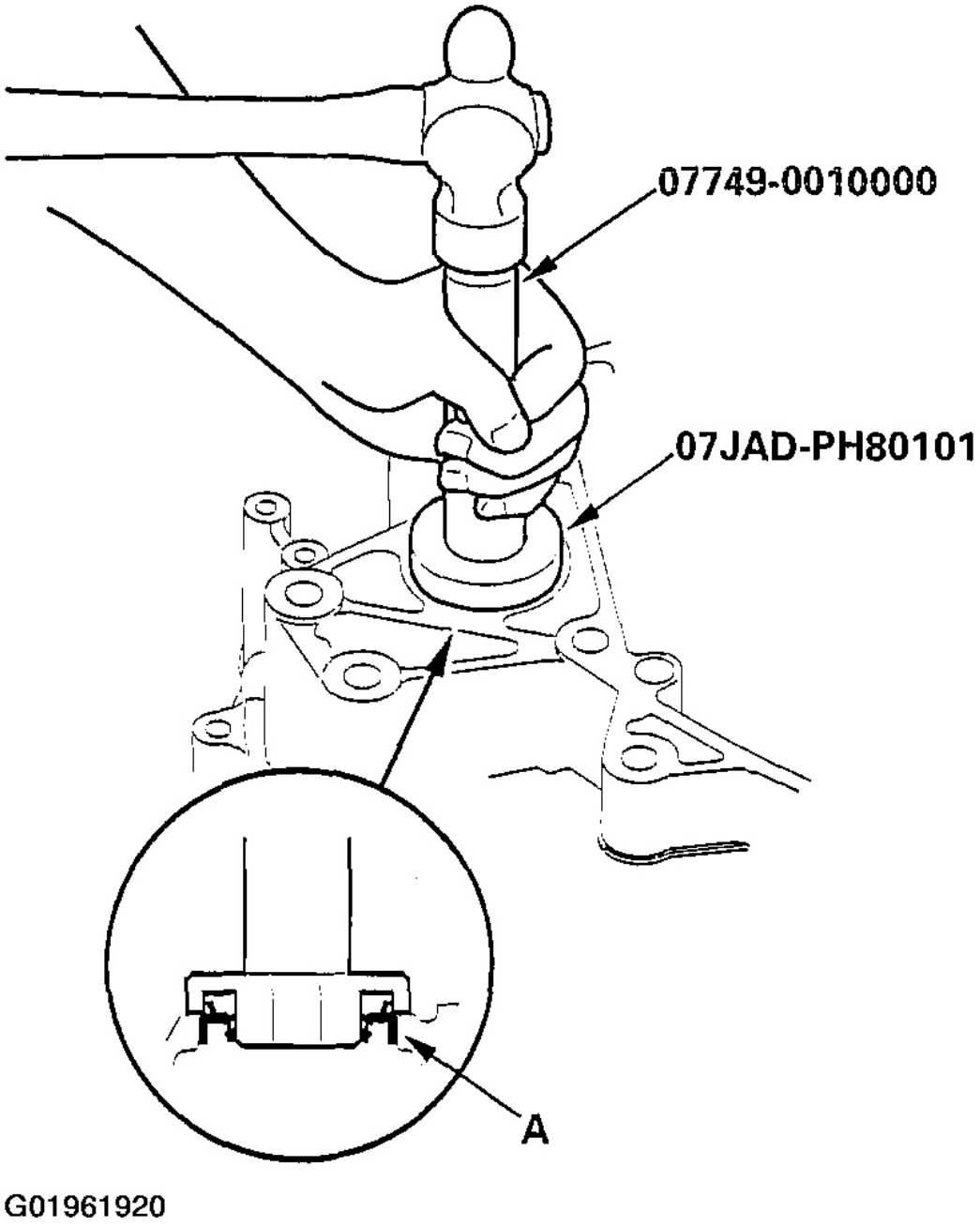


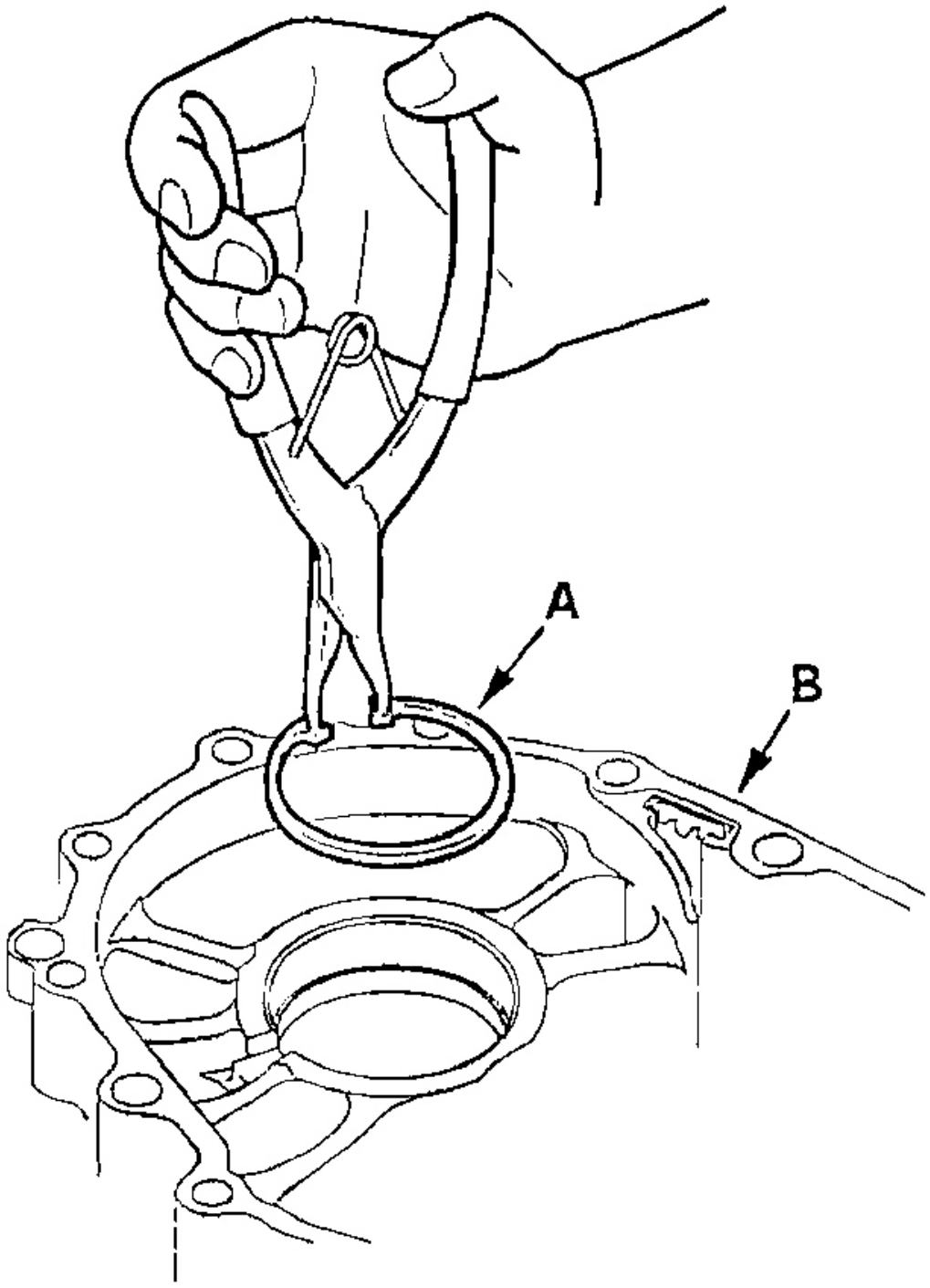
Fig. 117: Installing Oil Seal In Torque Converter Housing

CARRIER BEARING SIDE CLEARANCE INSPECTION

Special Tools Required

Driver 40 mm I.D. 07746-0030100

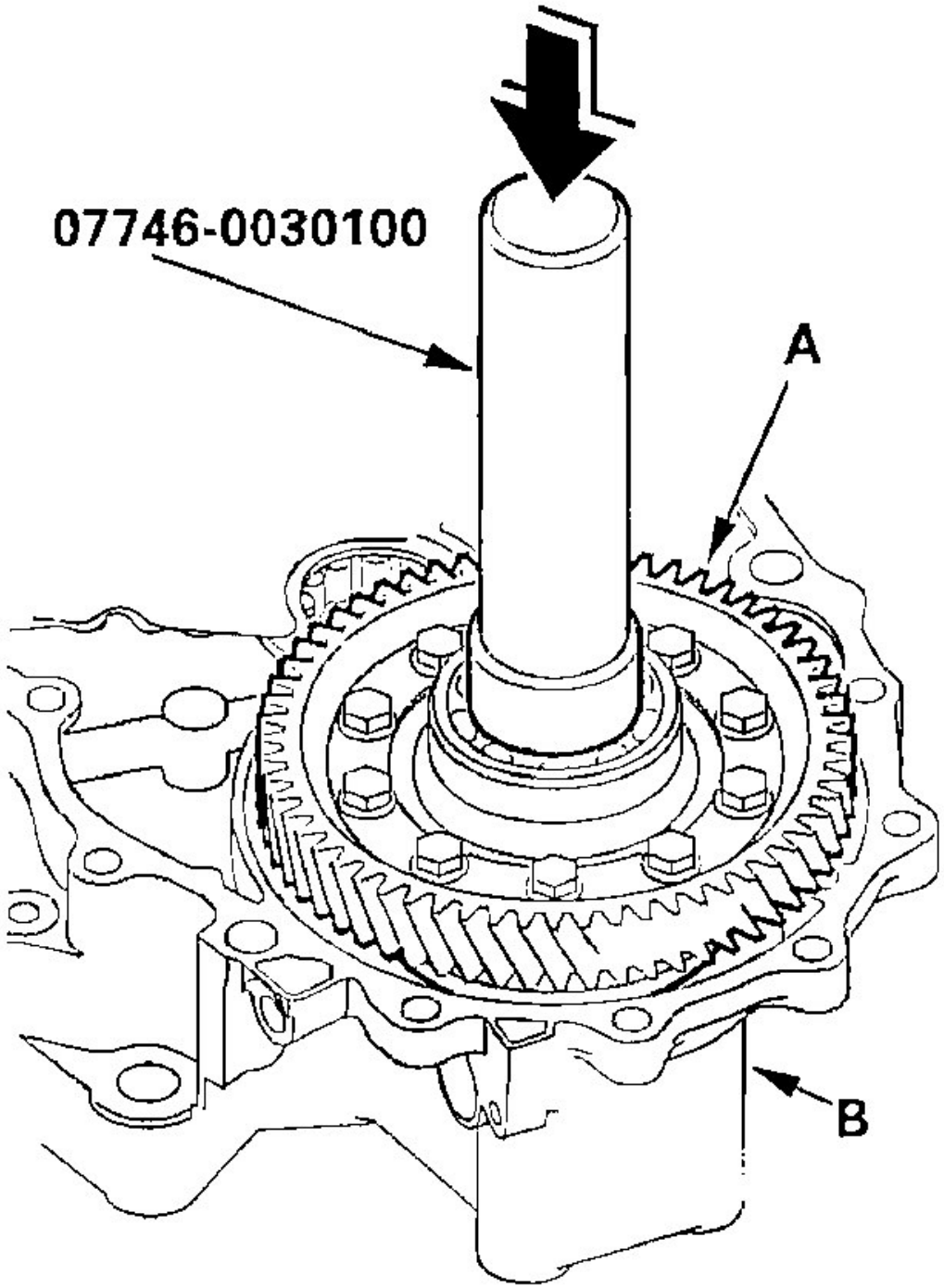
1. Install the 80 mm set ring (A) in the transmission housing (B).



G01961921

Fig. 118: Installing Set Ring In Transmission Housing

2. Install the differential assembly (A) in the torque converter housing (B) using the special tool.



G01961922

Fig. 119: Installing Differential Assembly In Torque Converter Housing

3. Align the spring pin (A) on the control shaft with the transmission housing groove (B) by turning the control shaft (C).

NOTE: Be careful not to squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty signal or position due to the play between the control shaft and the switch.

4. Install the three dowel pins (D) and the gasket (E) on the torque converter housing (F).

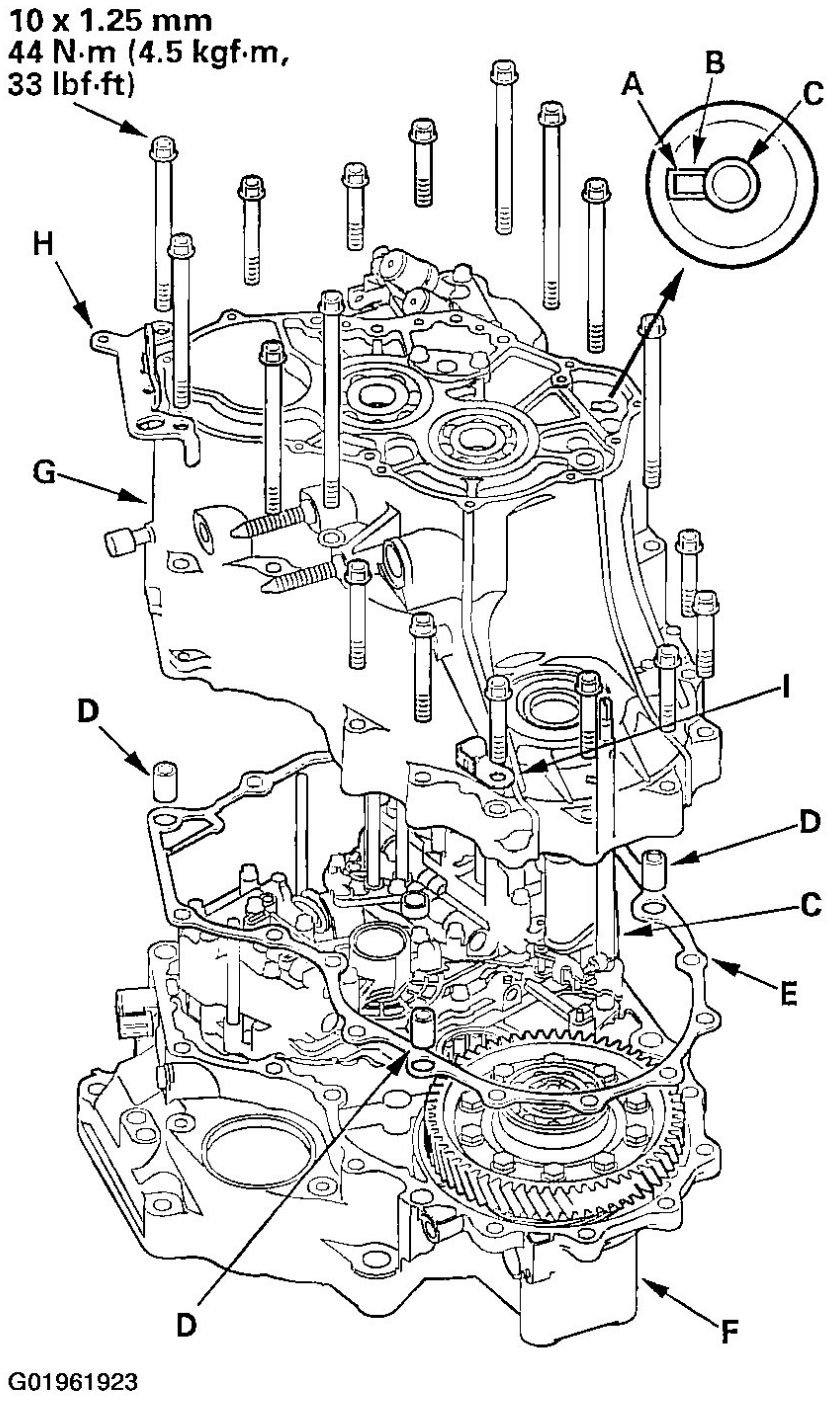


Fig. 120: Installing Dowel Pins & Gasket

5. Place the transmission housing (G) on the torque converter housing.
6. Install the housing bolts along with the transmission hanger (H) and connector bracket (I). Tighten the bolts in two or more steps to 44 N.m (4.5 kgf.m, 33 lbf.ft) in a crisscross pattern.

7. Measure the clearance between the 80 mm set ring and carrier bearing outer race with a feeler gauge.
   STANDARD: 0-0.15 mm (0-0.006 in.)

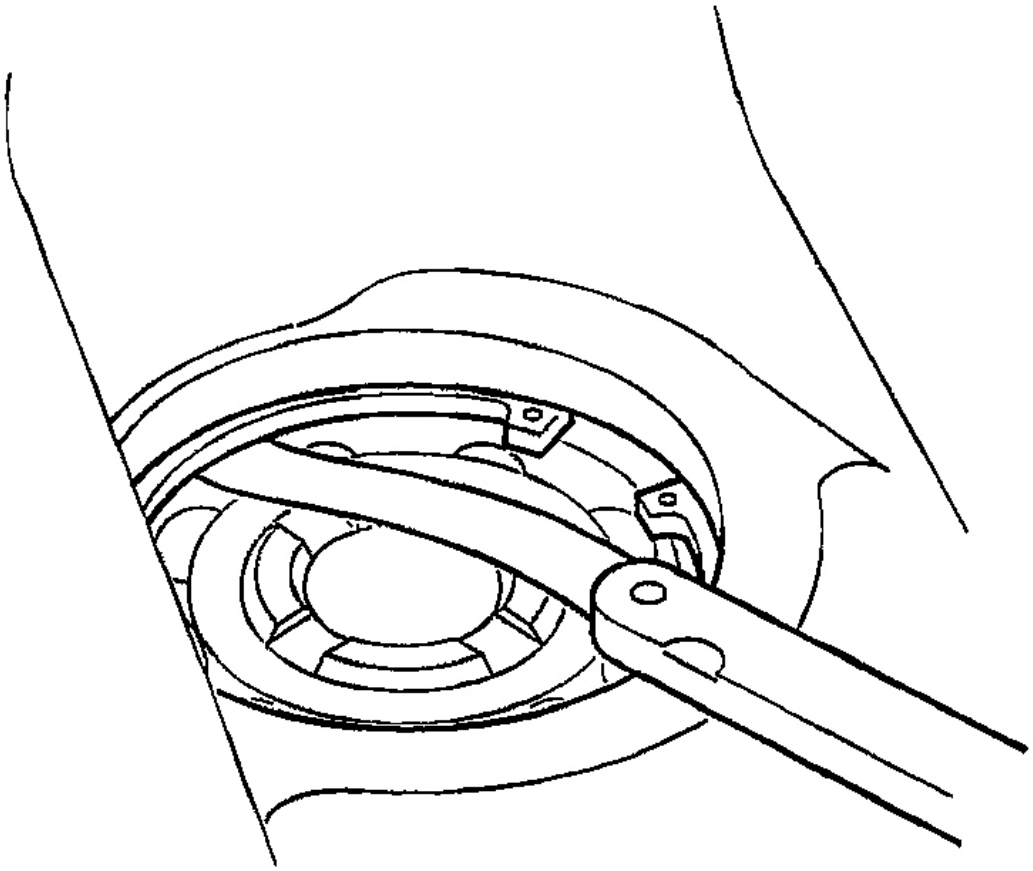


Fig. 121: Measuring Clearance Between Set Ring & Carrier Bearing Outer Race With Feeler Gauge

8. If the clearance is out of standard, remove the 80 mm set ring, and measure its thickness.
9. Select and install a new set ring, then recheck the clearance and make sure it is within the standard.

No.	Part Number	Thickness
1	90414-689-000	2.50 mm (0.098 in.)
2	90415-689-000	2.60 mm (0.102 in.)
3	90416-689-000	2.70 mm (0.106 in.)
4	90417-689-000	2.80 mm (0.110 in.)
5	90418-689-000	2.90 mm (0.114 in.)
6	90419-PH8-000	3.00 mm (0.118 in.)

G01961925

Fig. 122: Set Ring Thickness Chart (80 mm)

