2003-04 AUTOMATIC TRANSMISSIONS

Overhaul - BVGA

TRANSMISSION END COVER

END COVER, 3RD GEAR, IDLER GEAR & 3RD CLUTCH REMOVAL

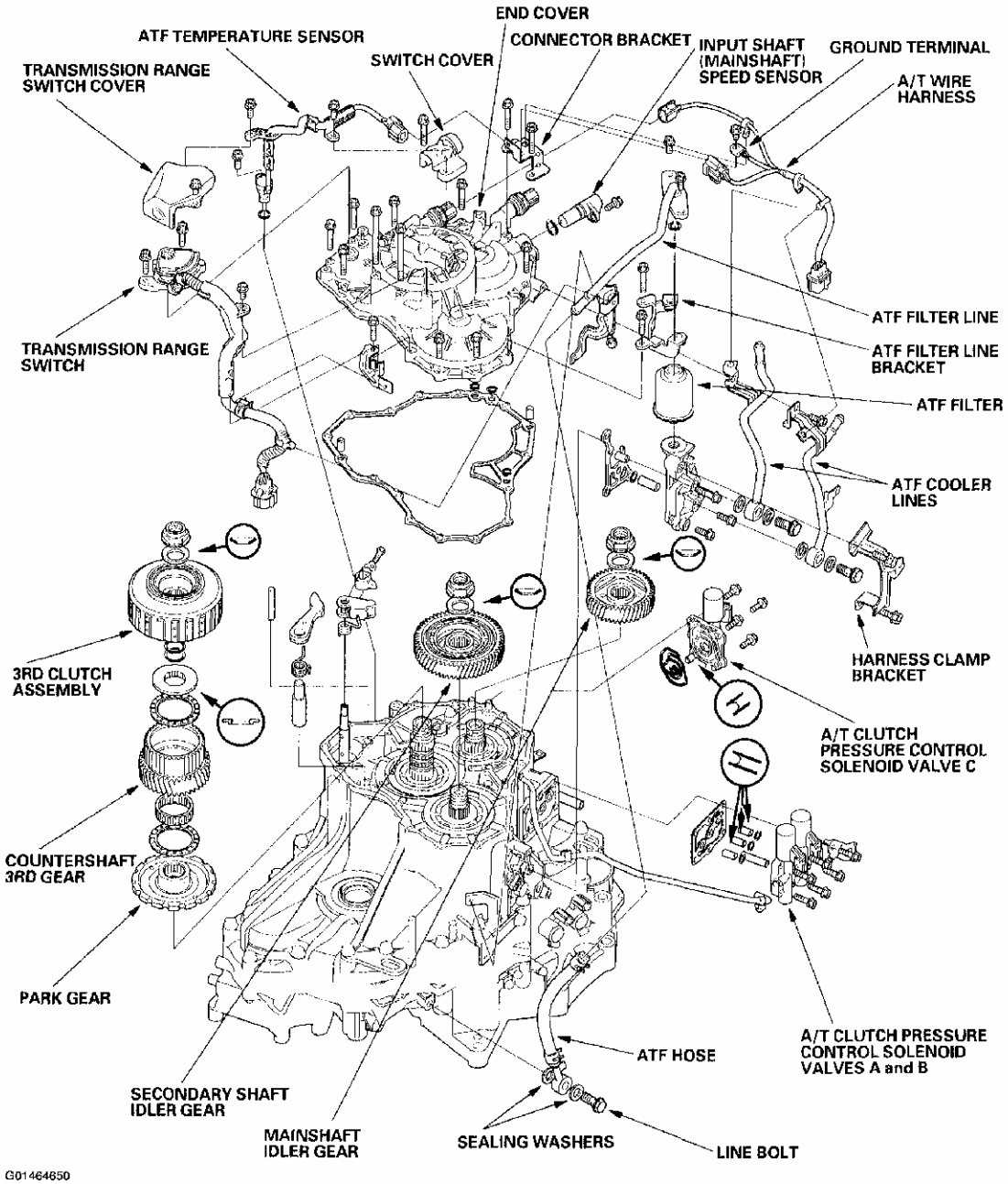

Fig. 1: Exploded View Of End Cover Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

- Mainshaft holder

  07GAB-PF50101 or 07GAB-PF50100

- Adjustable bearing puller, 25-40 mm

  07736-A01000B or 07736-A01000A

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the ATF temperature sensor connector from the connector bracket, then disconnect the connector.
2. Remove the ATF temperature sensor harness clamp bolts and the ATF temperature sensor, then remove the switch cover.
3. Remove the A/T wire harness ground terminal from the connector bracket, and disconnected the 3rd clutch transmission fluid pressure switch connector, then remove the connector bracket.
4. Remove the input shaft (mainshaft) speed sensor.
5. Remove the transmission range switch cover.
6. Remove the transmission range switch harness clamp bolts and harness clamp, then remove the transmission range switch.
7. Remove the harness clamp bracket, ATF cooler line bolts (two), and lines.
8. Remove the line bolt, the ATF hose, and the ATF filter line.
9. Remove the ATF filter line bracket and ATF filter. Remove the ATF passage body if necessary.
10. Remove the A/T clutch pressure control solenoid valve C.
11. Remove the remaining 11 bolts on the end cover, then remove the end cover.
12. Slip the special tool onto the mainshaft.

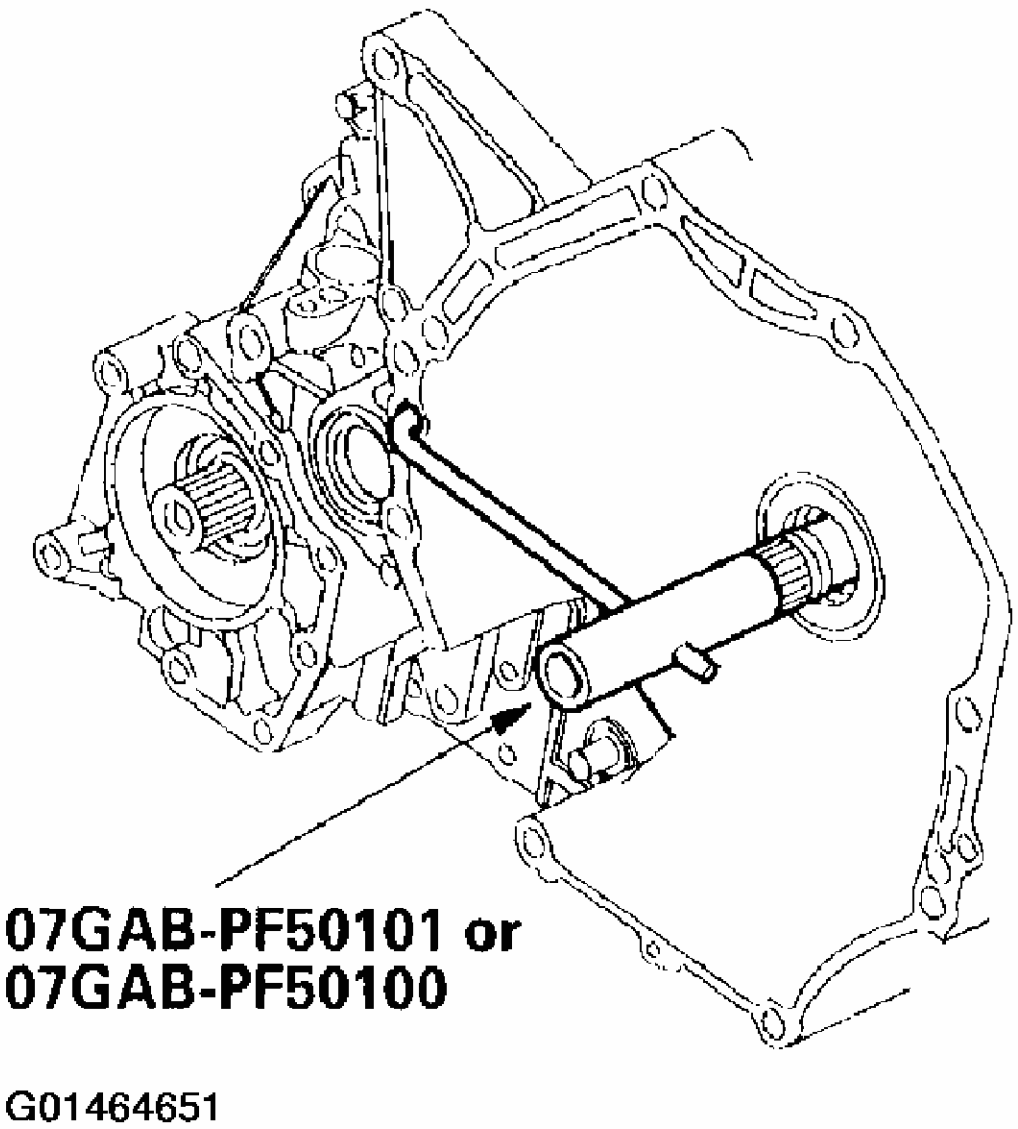

Fig. 2: Slipping The Special Tool Onto The Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Engage the park pawl with the park gear.

NOTE:

- **Countershaft and secondary shaft locknuts have left-hand threads.**
- **Clean the old locknut; they are used to install the press fit mainshaft 3rd gear, secondary shaft idler gear, park gear, and 3rd clutch assembly on the countershaft.**

- **Keep all of the chiseled particles out of the transmission.**

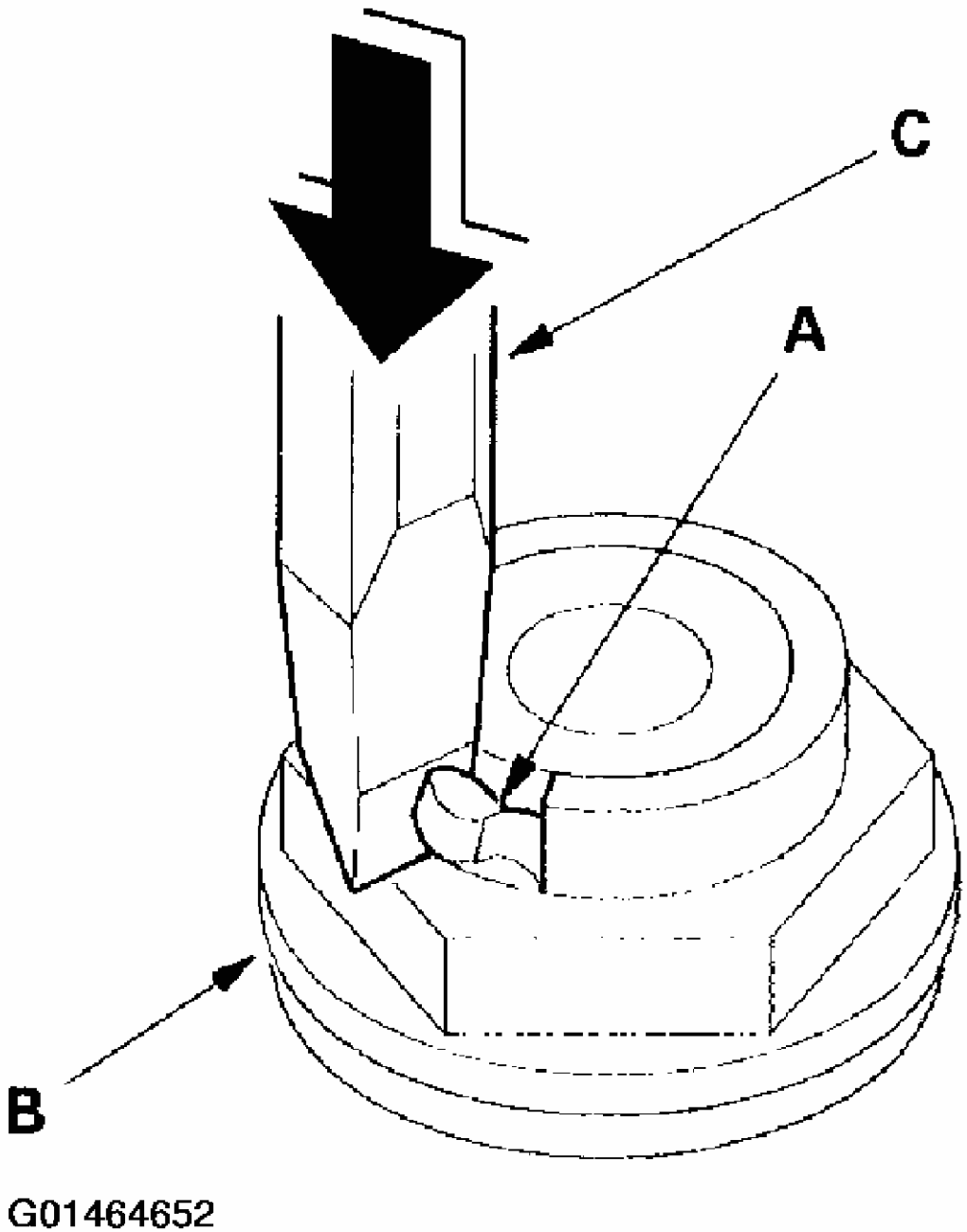

Fig. 3: Cutting The Lock Tabs Of Each Shaft Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Cut the lock tabs (A) of each shaft locknut (B) using a chisel (C). Then remove the locknuts and conical spring washers from each shaft.
15. Remove the special tool from the mainshaft.
16. Remove the 3rd clutch assembly using the special tool and a commercially available 3/8-16" slide hammer (A).

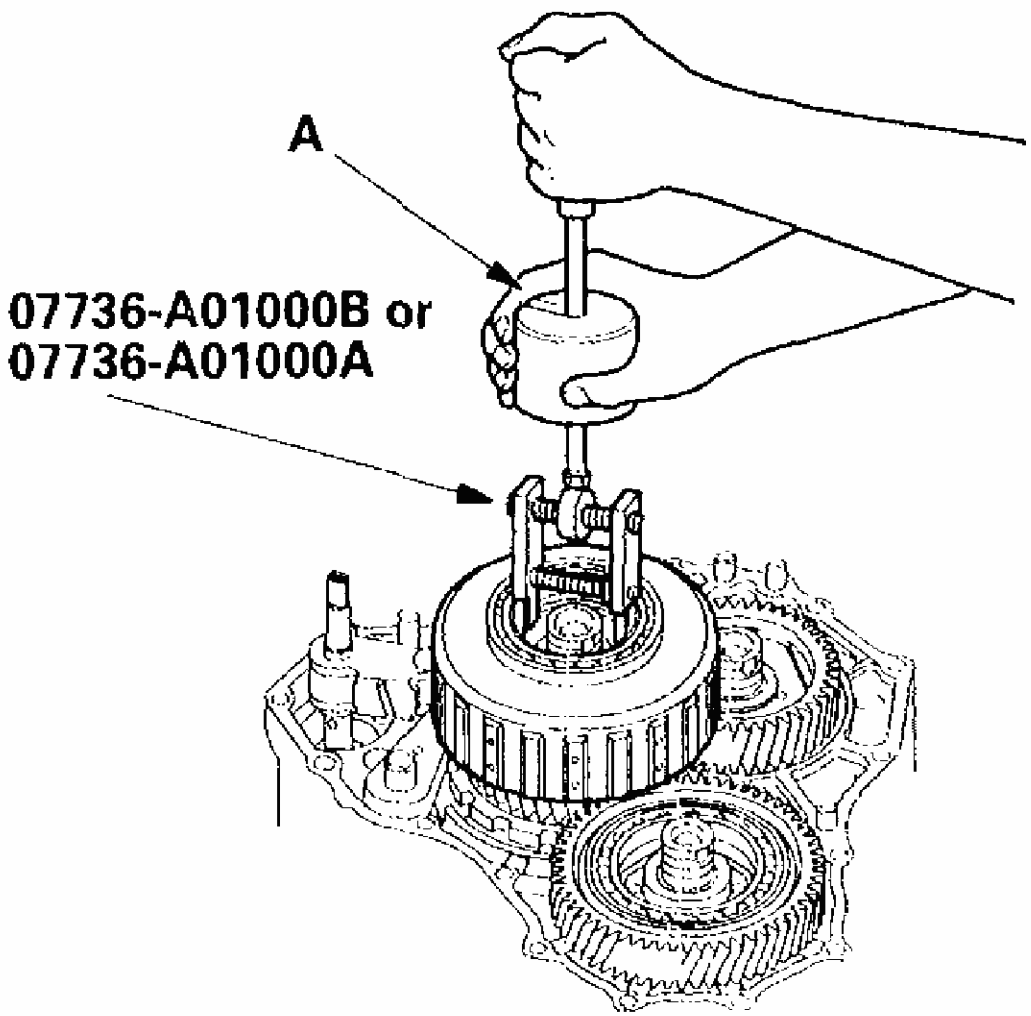

Fig. 4: Removing The 3rd Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Remove the splined washer, thrust needle bearing, countershaft 3rd gear, needle bearing, and thrust needle bearing from the countershaft.
18. Remove the mainshaft 3rd gear (A), secondary shaft idler gear (B), and park gear (C)

with a puller (D).

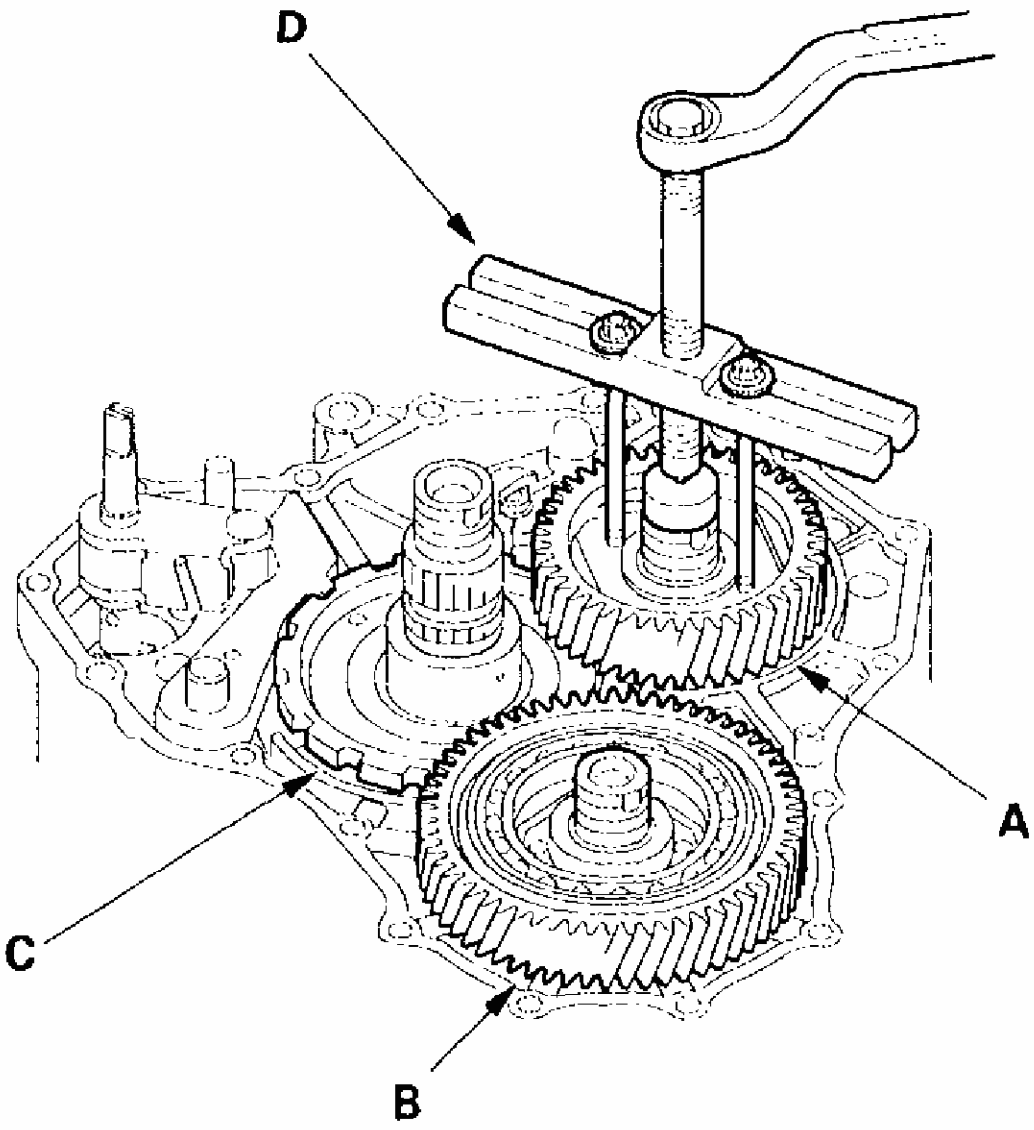

Fig. 5: Removing The Mainshaft 3rd Gear, Secondary Shaft Idler Gear & Park Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Remove the park pawl, park pawl spring, park pawl shaft, and stop shaft.
20. Remove the park lever from the control shaft.
21. Remove A/T clutch pressure control solenoid valves A and B.

PARK LEVER STOP INSPECTION & ADJUSTMENT

1. Set the park lever (A) in the P position.

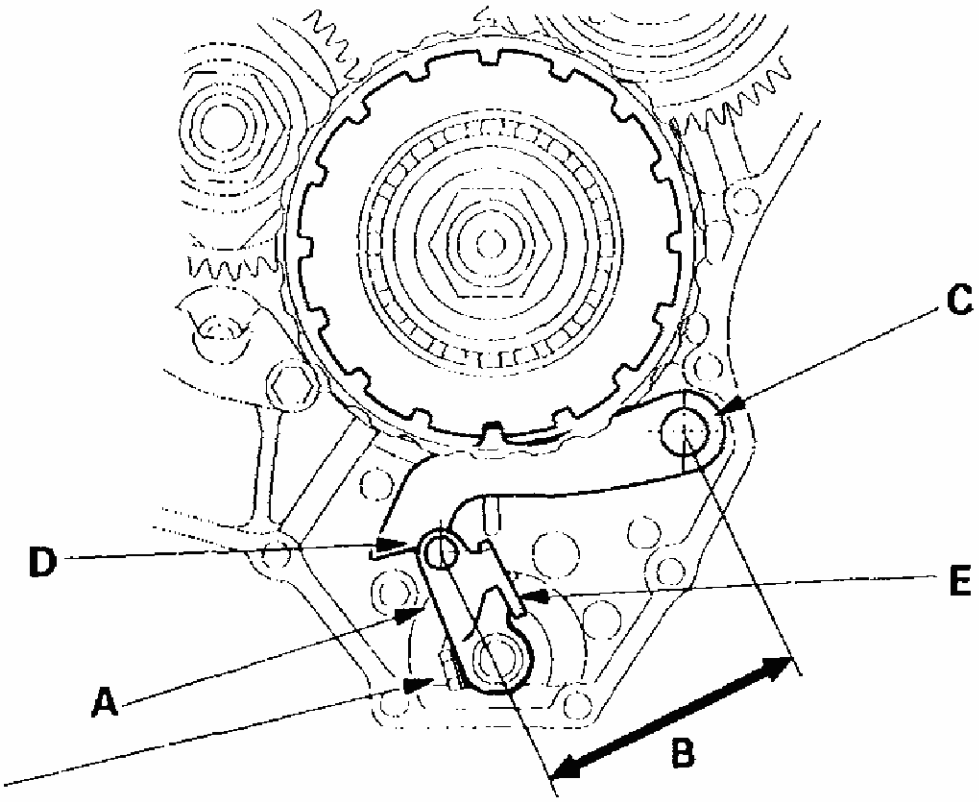

Fig. 6: Setting The Park Lever In The P Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the distance (B) between the park pawl shaft (C) and the park lever roller pin (D).

   Standard: 84.6-85.6 mm (3.33-3.37 in.

3. If the measurement is out of tolerance, select and install the appropriate park lever stop (E) from the table below.

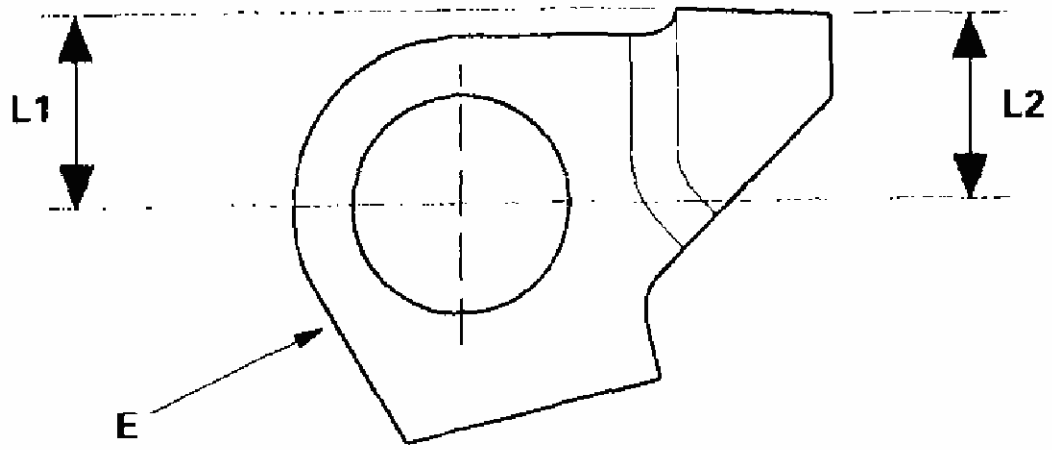

Fig. 7: Selecting & Installing The Park Lever Stop
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Mark	Part Number	L1	L2
1	24537-PA9-003	11.00 mm (0.433 in.)	11.00 mm (0.433 in.)
2	24538-PA9-003	10.80 mm (0.425 in.)	10.65 mm (0.419 in.)
3	24539-PA9-003	10.60 mm (0.417 in.)	10.30 mm (0.406 in.)

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Fig. 8: Park Lever Stop Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. After replacing the park lever stop, make sure the distance is within tolerance.

CONTROL SHAFT OIL SEAL REPLACEMENT

Special Tools Required

- Driver 07749-0010000

- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal (A) from the end cover (B).

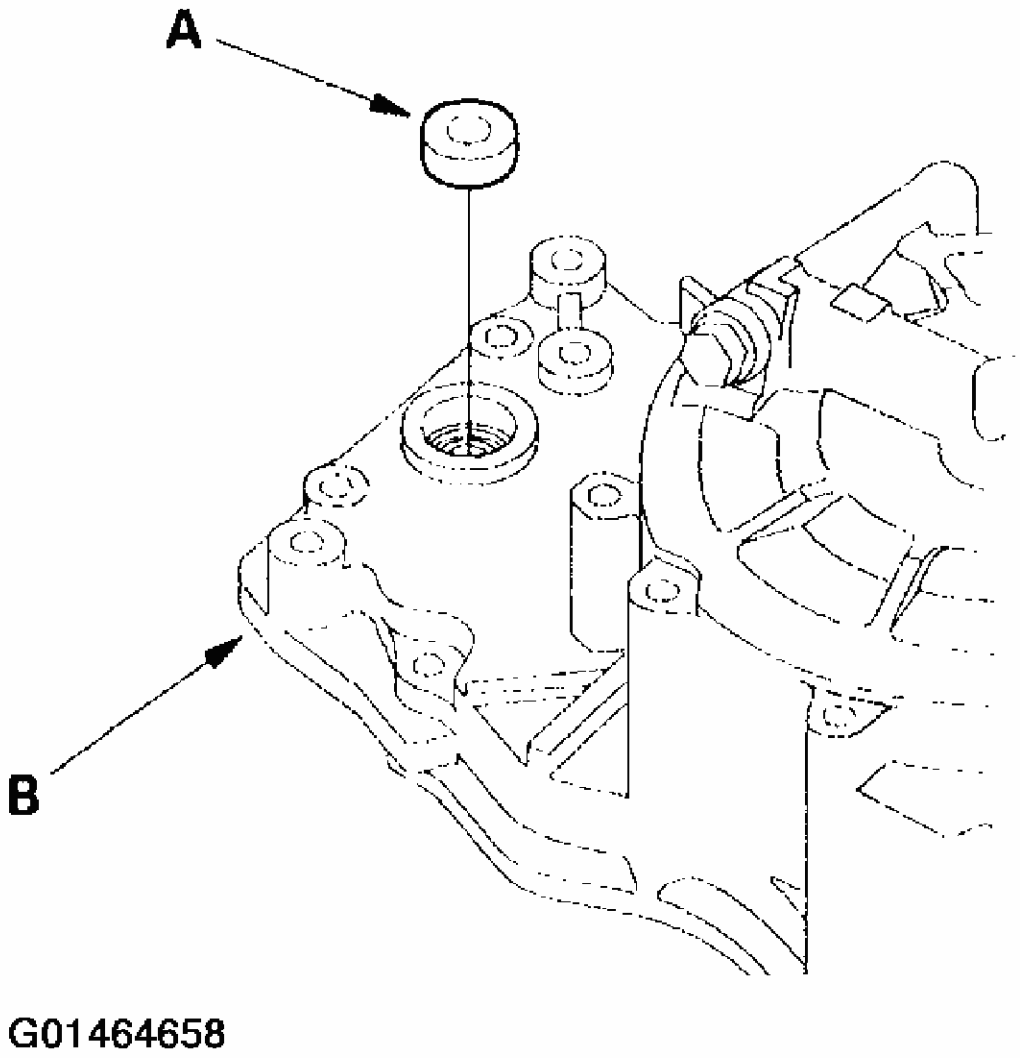

Fig. 9: Removing The Oil Seal From The End Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new oil seal flush to the end cover with the special tools.

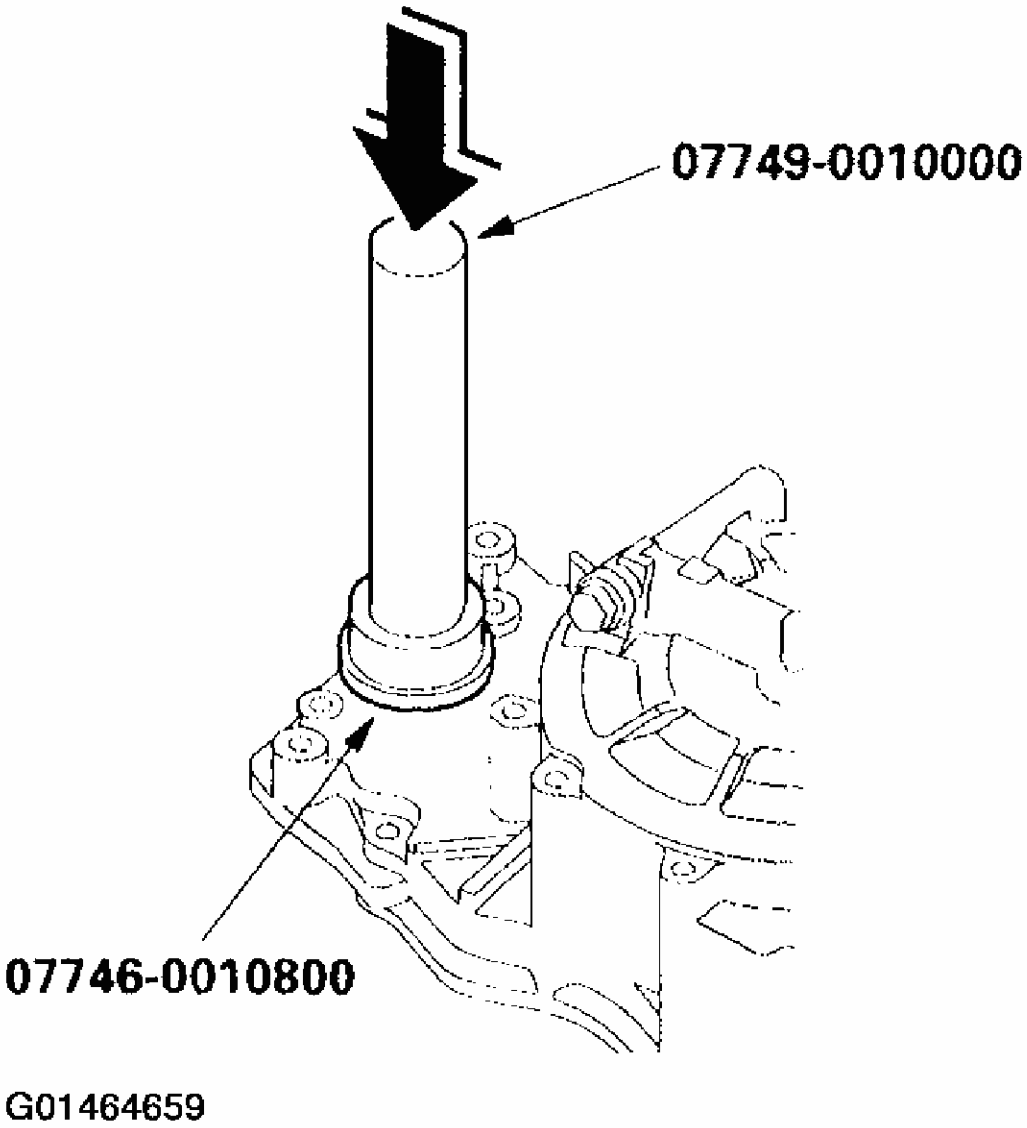

Fig. 10: Installing The Oil Seal Flush To The End Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CONTROL SHAFT BEARING REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the end cover, then remove the bearing.

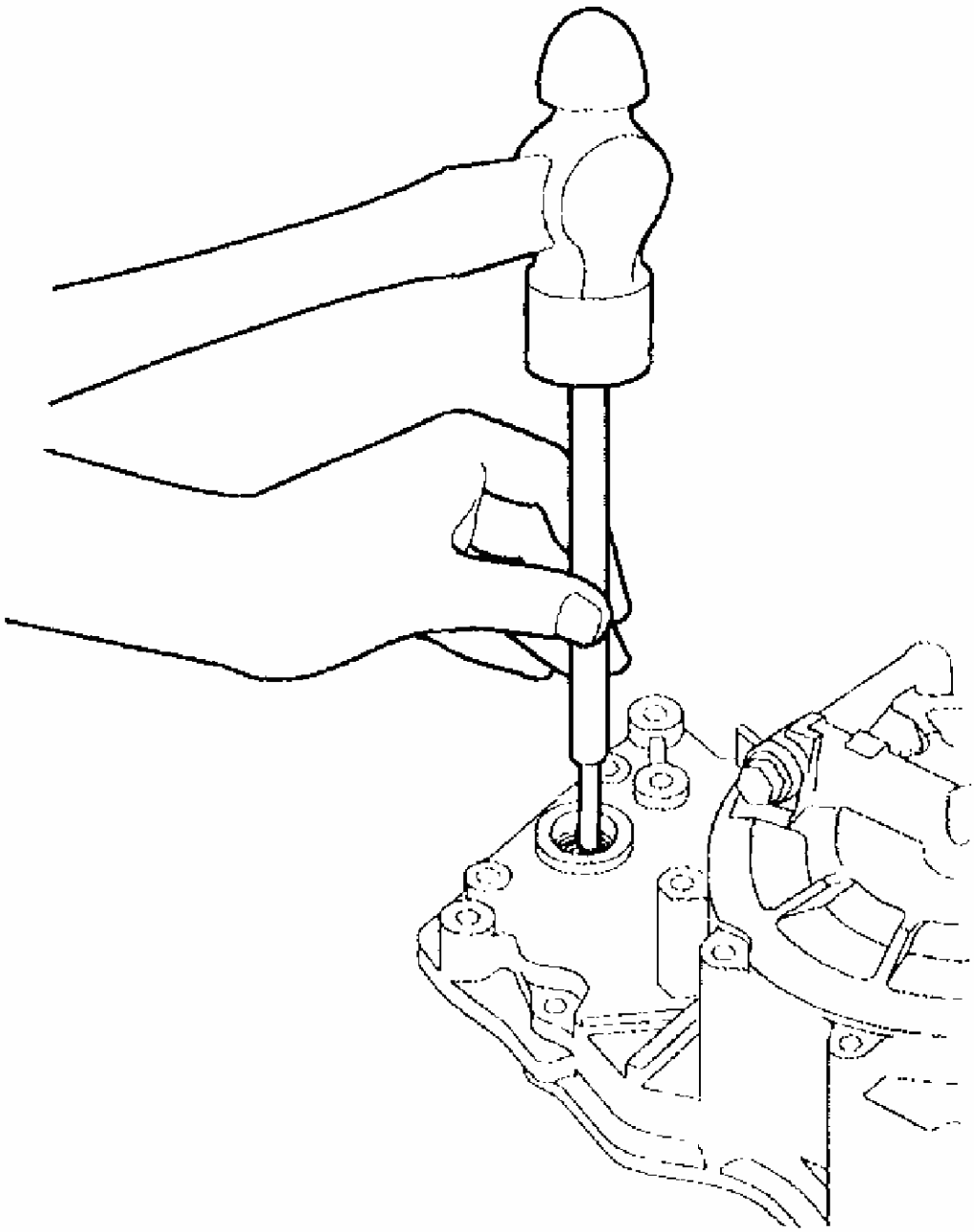

Fig. 11: Removing The Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new bearing flush to the end cover with the special tools.

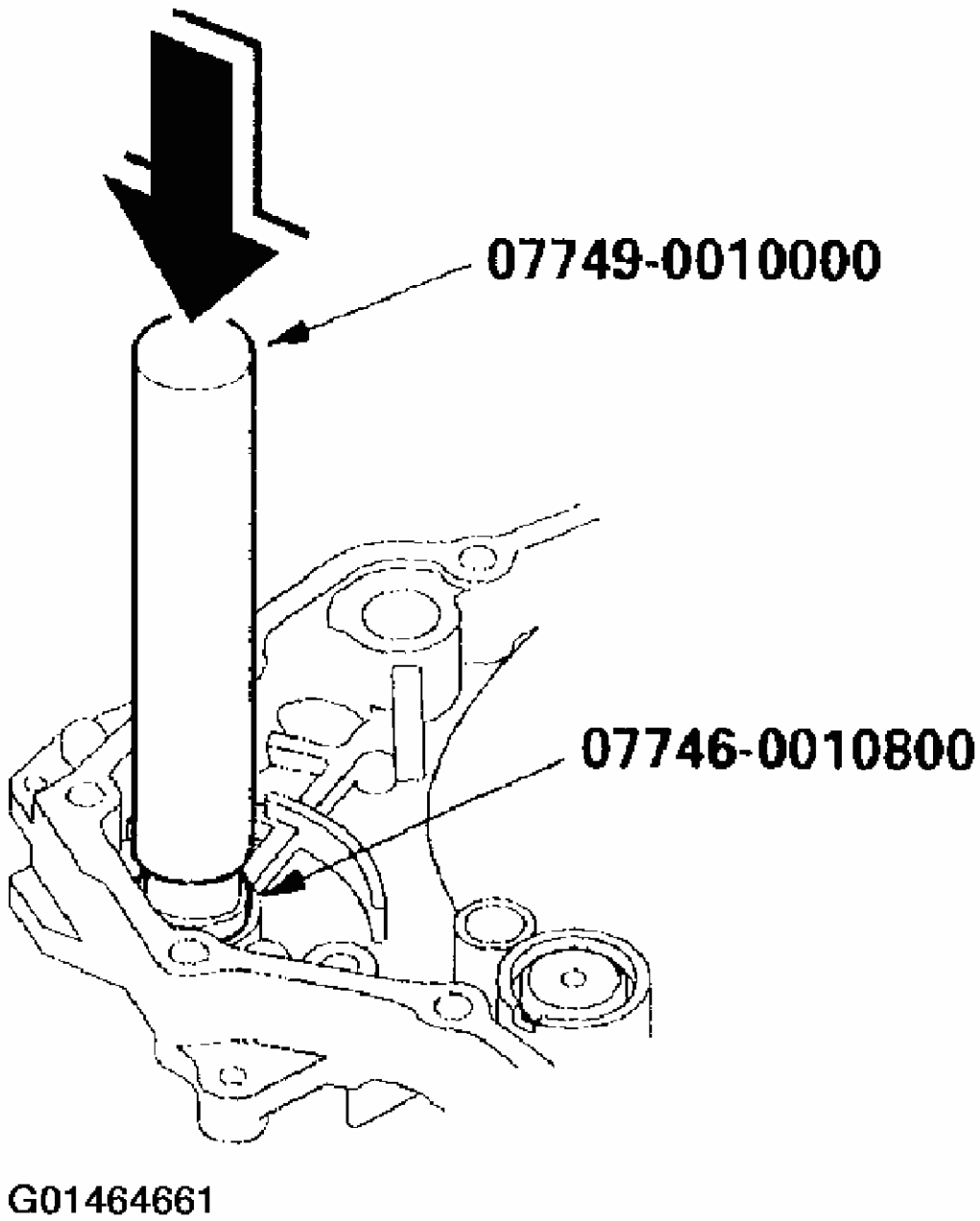

Fig. 12: Installing The Bearing Flush To The End Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new oil seal.

ATF FEED PIPE REPLACEMENT

1. Remove the snap rings (A), ATF feed pipes (B), and feed pipe flanges (C) from the end

cover (D).

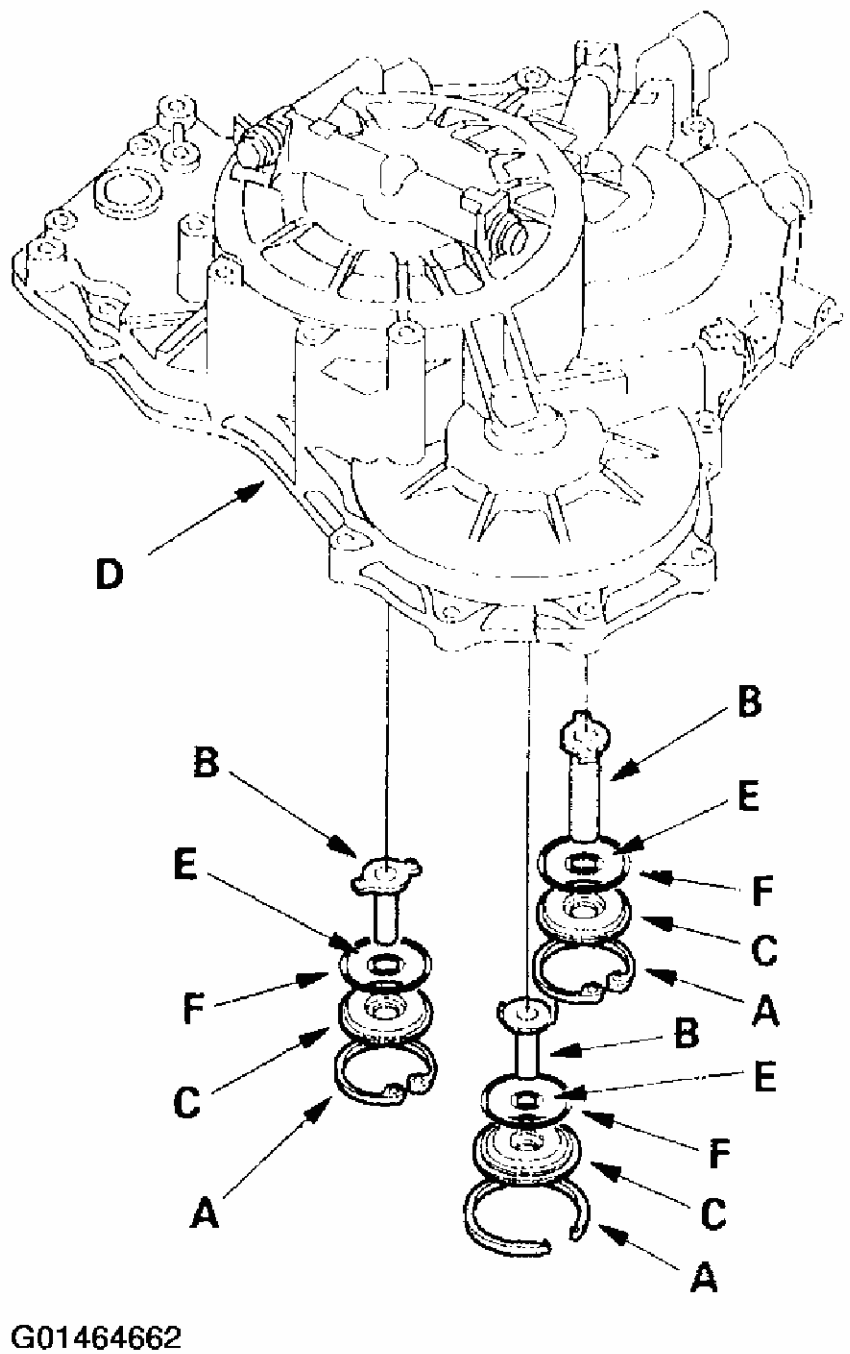

Fig. 13: Removing The Snap Rings, ATF Feed Pipes & Feed Pipe Flanges From The End Cover
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new O-ring (E) over the ATF feed pipe.

3. Install ATF feed pipe in the end cover by aligning the feed pipe tabs with the indentations in the end cover.
4. Install the new O-ring (F) in the end cover, then install the feed pipe flange over the ATF feed pipe and O-rings.
5. Secure the ATF feed pipe and feed pipe flange with the snap ring.

TRANSMISSION HOUSING

HOUSING & SHAFT ASSEMBLY REMOVAL

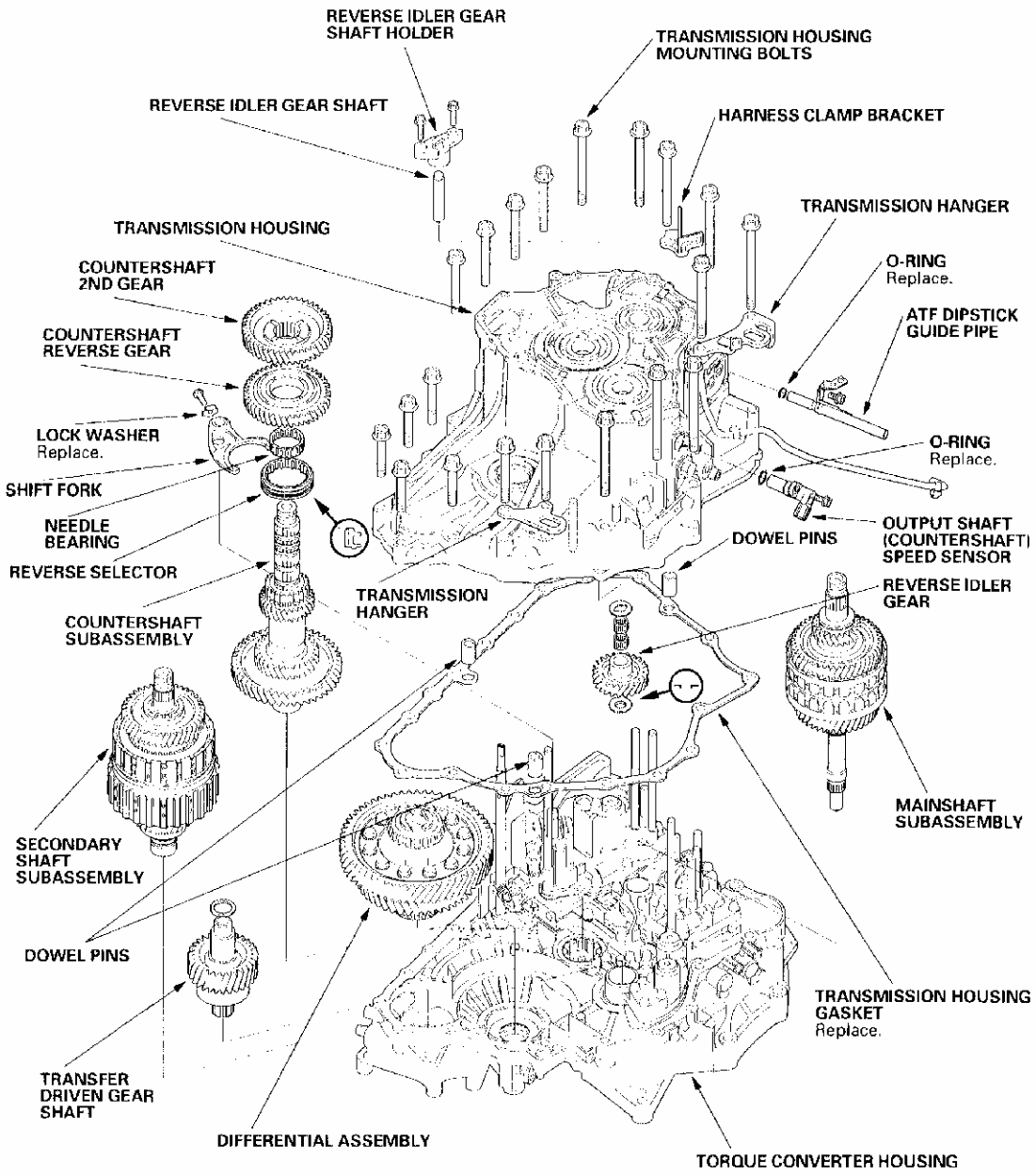

Fig. 14: Exploded View Of Transmission Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

Special Tools Required

Housing puller 07HAC-PK40102

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the ATF dipstick guide pipe.
2. Remove the two bolts securing the reverse idler gear shaft holder, then remove the reverse idler gear shaft holder (A), shaft (B), and washer (C).

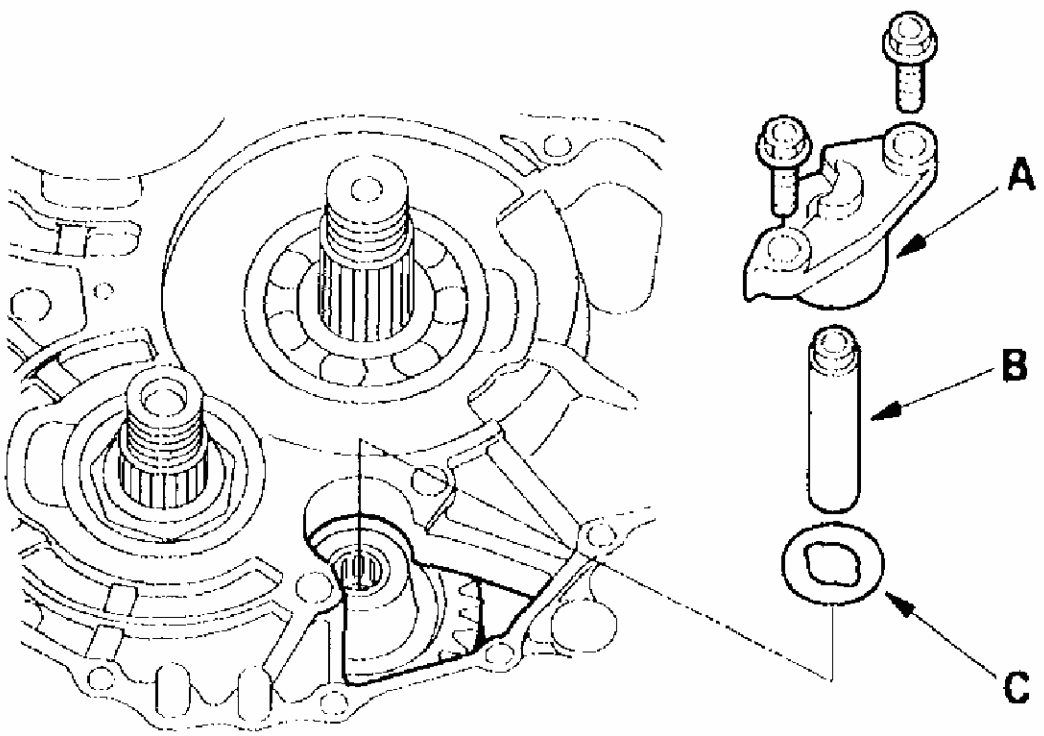

Fig. 15: Removing The Reverse Idler Gear Shaft Holder, Shaft & Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the transmission housing mounting bolts, transmission hangers, and harness clamp bracket.

NOTE: The transmission housing will not separate from the torque

converter housing if the reverse idler gear is not moved.

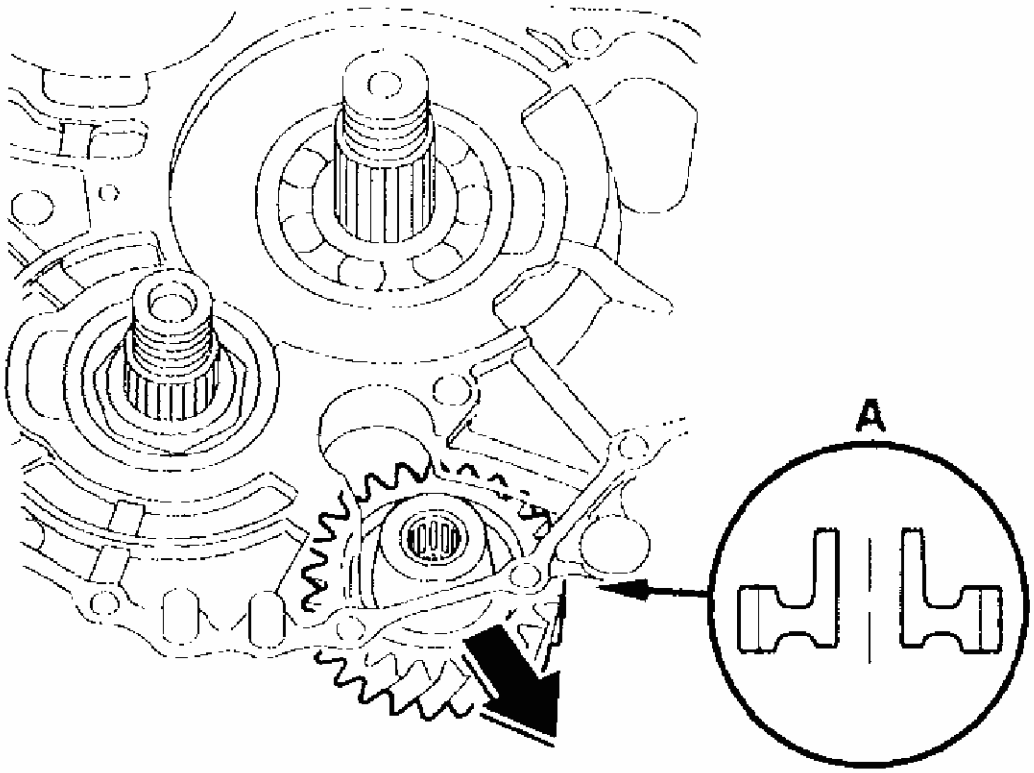

Fig. 16: Moving The Reverse Idler Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Move the reverse idler gear (A) to disengage it from the mainshaft and countershaft reverse gears.
5. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.

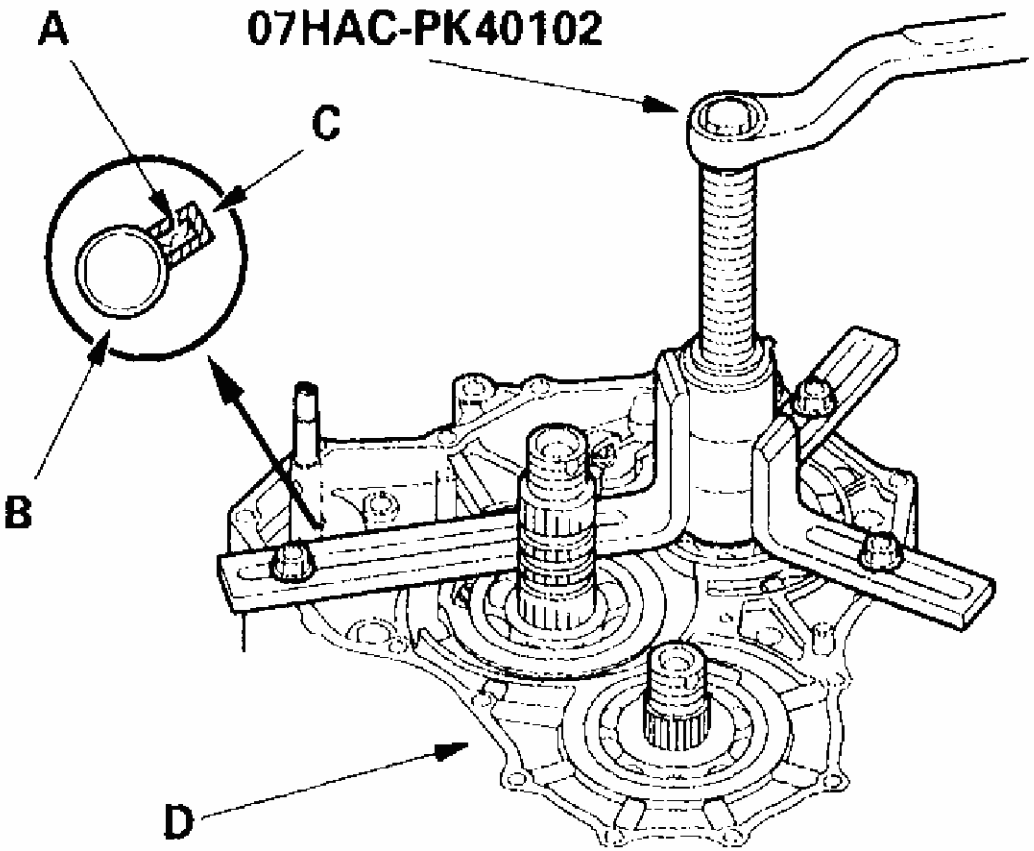

Fig. 17: Aligning The Spring Pin On The Control Shaft With The Transmission Housing Groove
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

6. Install the special tool over the mainshaft, then remove the transmission housing (D).
7. Remove the reverse idler gear, needle bearings, and thrust washer from the transmission housing.
8. Remove the countershaft 2nd gear, then remove the countershaft reverse gear and the needle bearing.
9. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector.

If the reverse selector hub is not press-fitted, remove the reverse selector hub,

countershaft 5th gear, and needle bearing from the countershaft.

10. Remove the secondary shaft subassembly. If the reverse selector hub is press-fitted, remove the secondary shaft subassembly, countershaft subassembly and mainshaft subassembly together.
11. Remove the countershaft subassembly.
12. Remove the mainshaft subassembly.
13. Remove the differential assembly.
14. Remove the transfer driven gear shaft.
15. Remove the output shaft (countershaft) speed sensor.

BEARING REMOVAL & INSTALLATION

Special Tools Required

- Driver 07749-0010000
- Seal driver attachment 07GAD-PG40100 or 07GAD-PG40101
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

NOTE: Coat all parts with ATF before assembly.

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

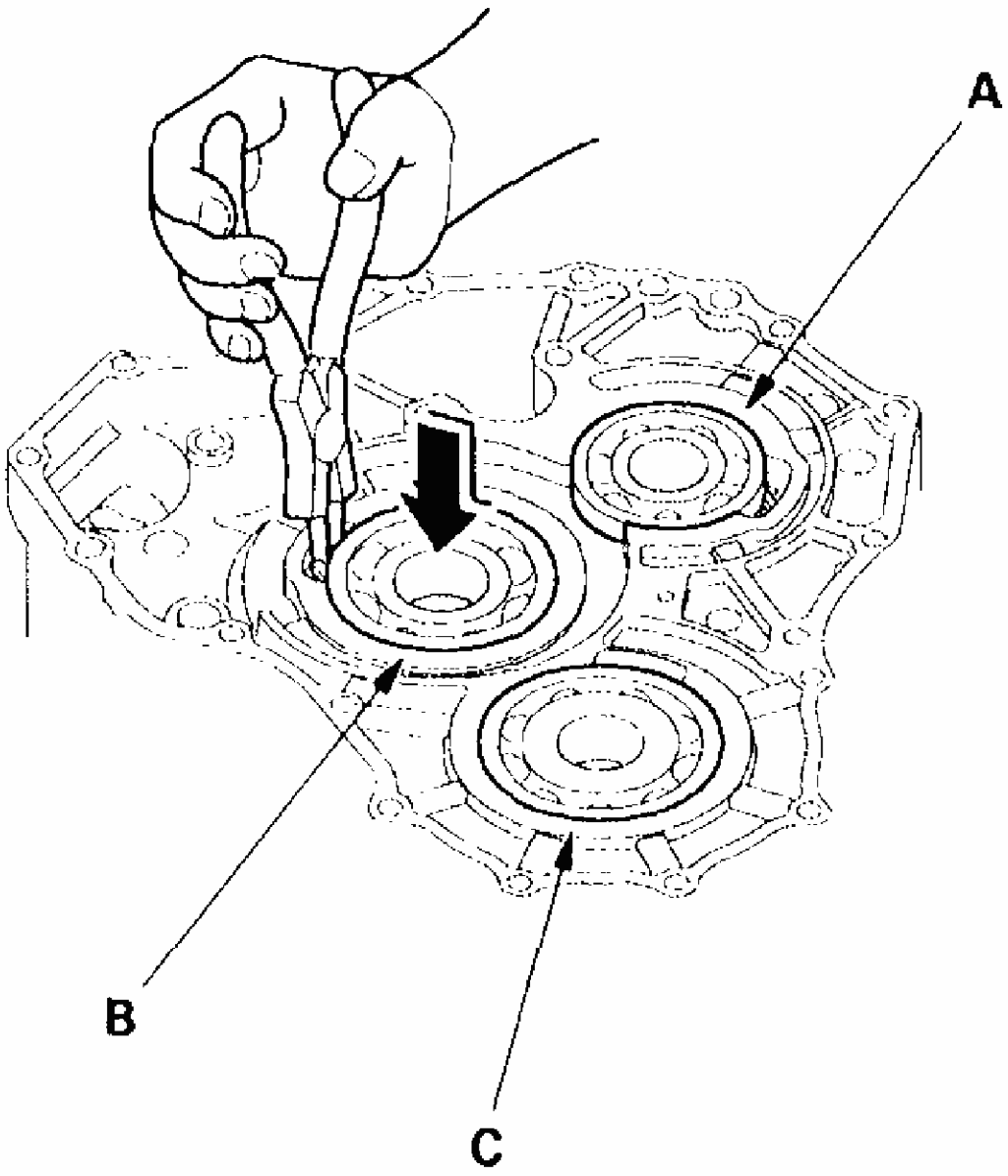

Fig. 18: Removing The Mainshaft Bearing, Countershaft Bearing & Secondary Shaft Bearing From The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. To remove the mainshaft bearing (A), countershaft bearing (B), and secondary shaft bearing (C) from the transmission housing, expand each snap ring with the snap ring pliers, then push the bearing out.
2. Install the bearings in the direction shown.

3. Expand each snap ring with the snap ring pliers, and insert the bearing part-way into the housing.
4. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.

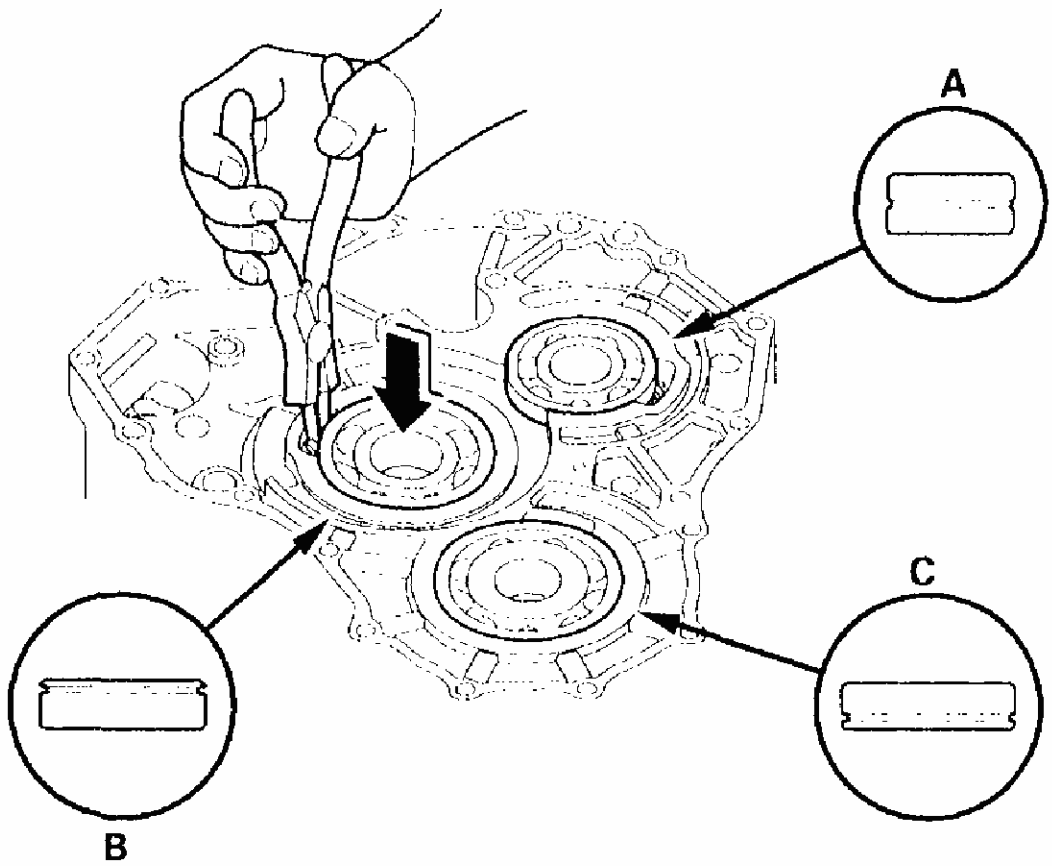

Fig. 19: Releasing The Pliers & Pushing The Bearing Down Into The Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. After installing the bearings, verify the following:
   - The snap rings (A) are seated in the bearing and housing grooves.
   - The ring end gaps (B) are correct.

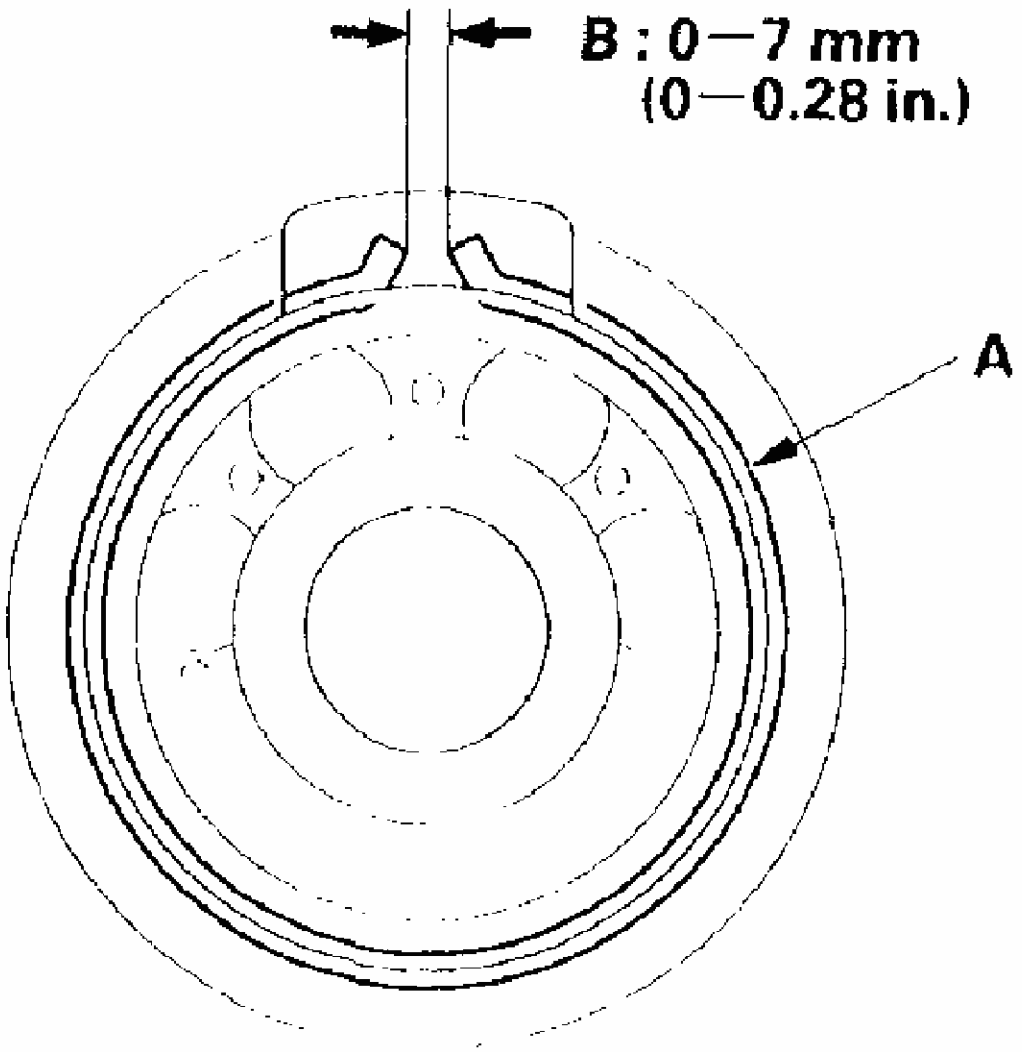

Fig. 20: Verifying The Snap Rings Are Seated In The Bearing & Housing Grooves, & The Ring End Gaps Are Correct
Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE BODY

VALVE BODY & ATF STRAINER REMOVAL

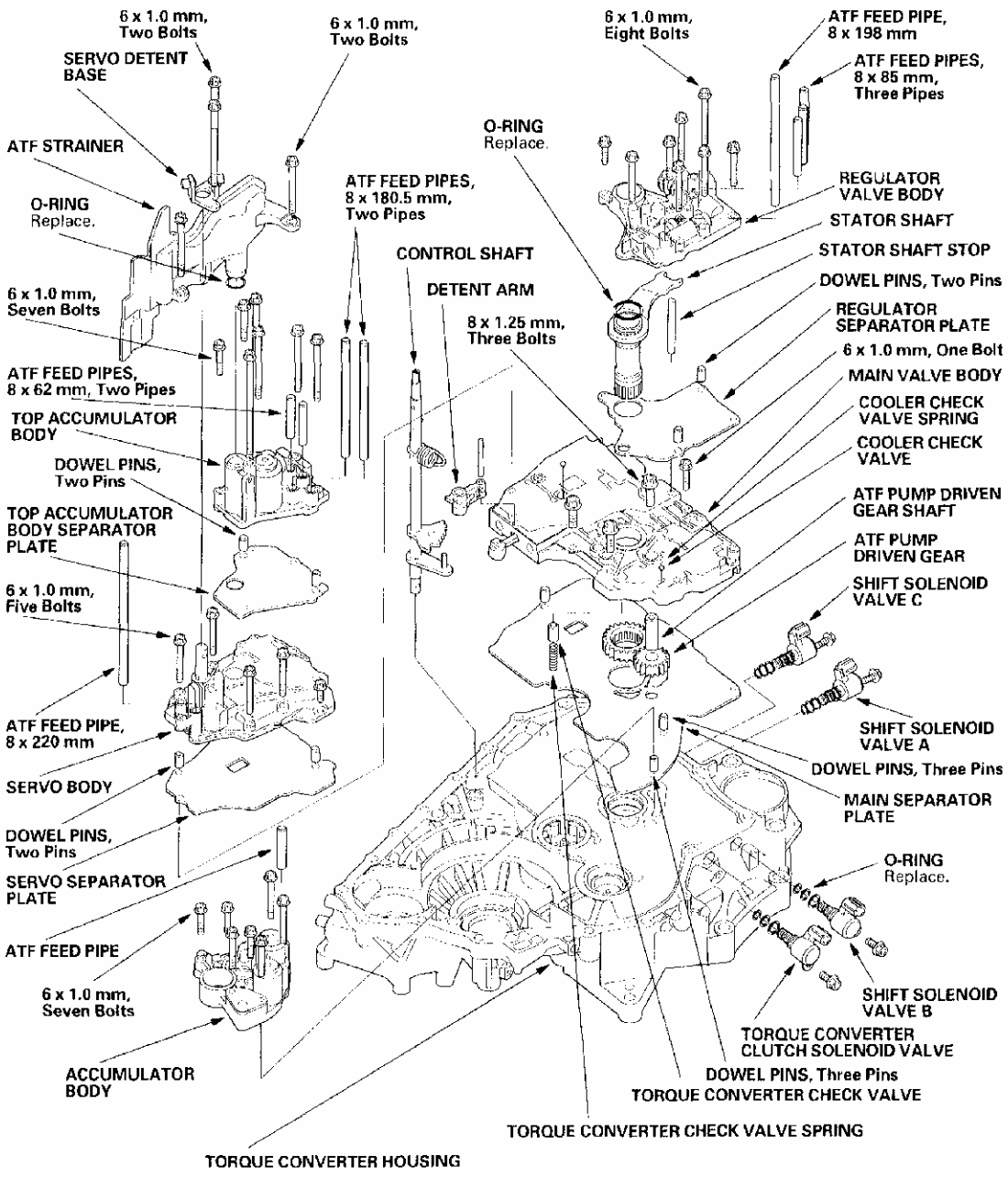

Fig. 21: Exploded View Of Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Refer to the Exploded View as needed during the following procedure.

1. Remove the ATF feed pipes from the regulator valve body, servo body, top accumulator body, and accumulator body.
2. Remove the servo detent base (two bolts).
3. Remove the ATF strainer (two bolts).

4. Remove the top accumulator body (seven bolts), then remove the accumulator body separator plate and dowel pins (two).
5. Remove the servo body (five bolts), then remove servo separator plate and dowel pins (two).
6. Remove the regulator valve body (eight bolts).
7. Remove the stator shaft and stator shaft stop.
8. Remove the regulator separator plate and dowel pins (two).
9. Remove the accumulator body (seven bolts).
10. Unhook the detent spring from the detent arm, then remove the detent arm shaft, detent arm, and control shaft.
11. Remove the cooler check valve spring and cooler check valve (ball).
12. Remove the main valve body (four bolts).
13. Remove the torque converter check valve and spring.
14. Remove the ATF pump driven gear shaft, then remove the ATF pump gears.
15. Remove the main separator plate and dowel pins (three).
16. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition, and the inlet opening is not clogged.

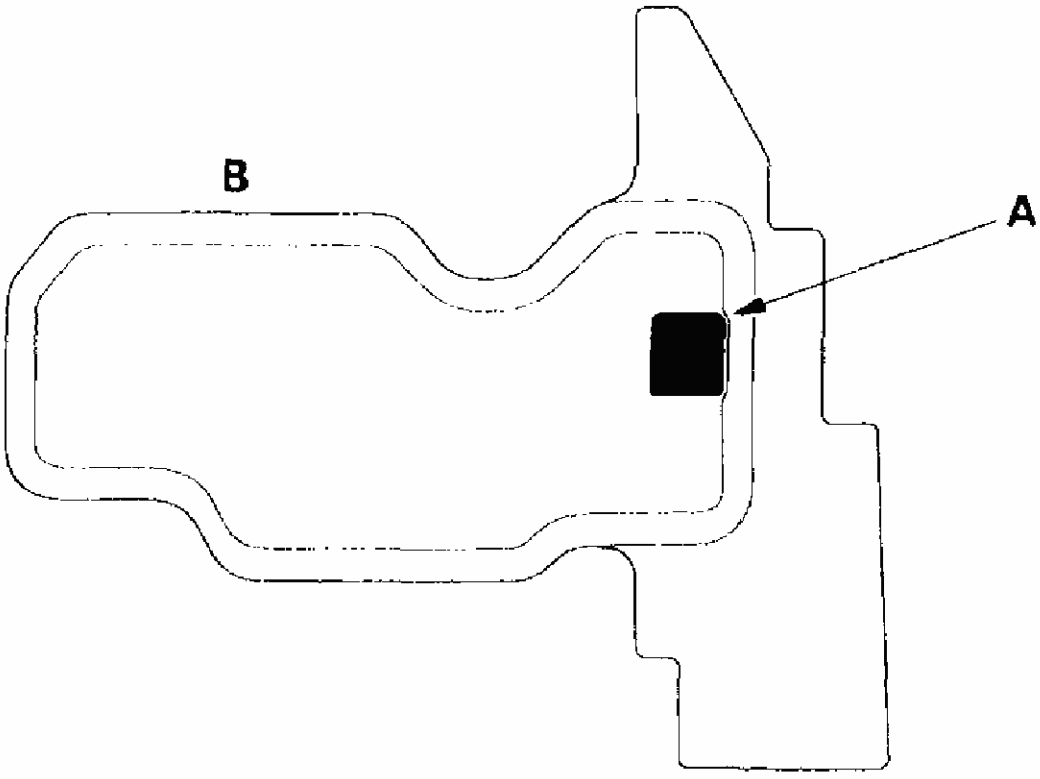

Fig. 22: Cleaning The Inlet Opening Of The ATF Strainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it 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.

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

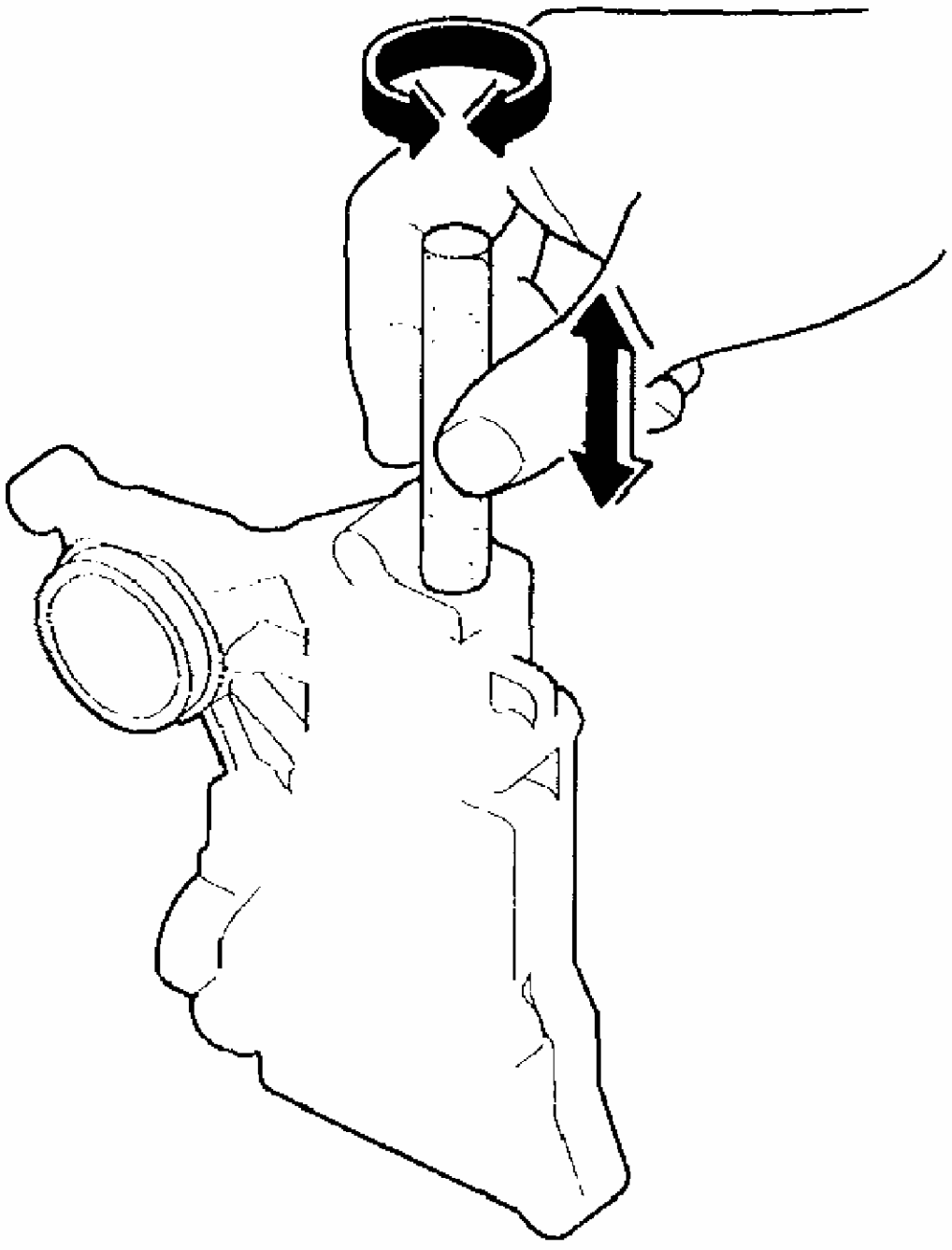

Fig. 23: Polishing The Bore

Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.
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 and 5, then retest. If the valve still sticks, replace the valve body.

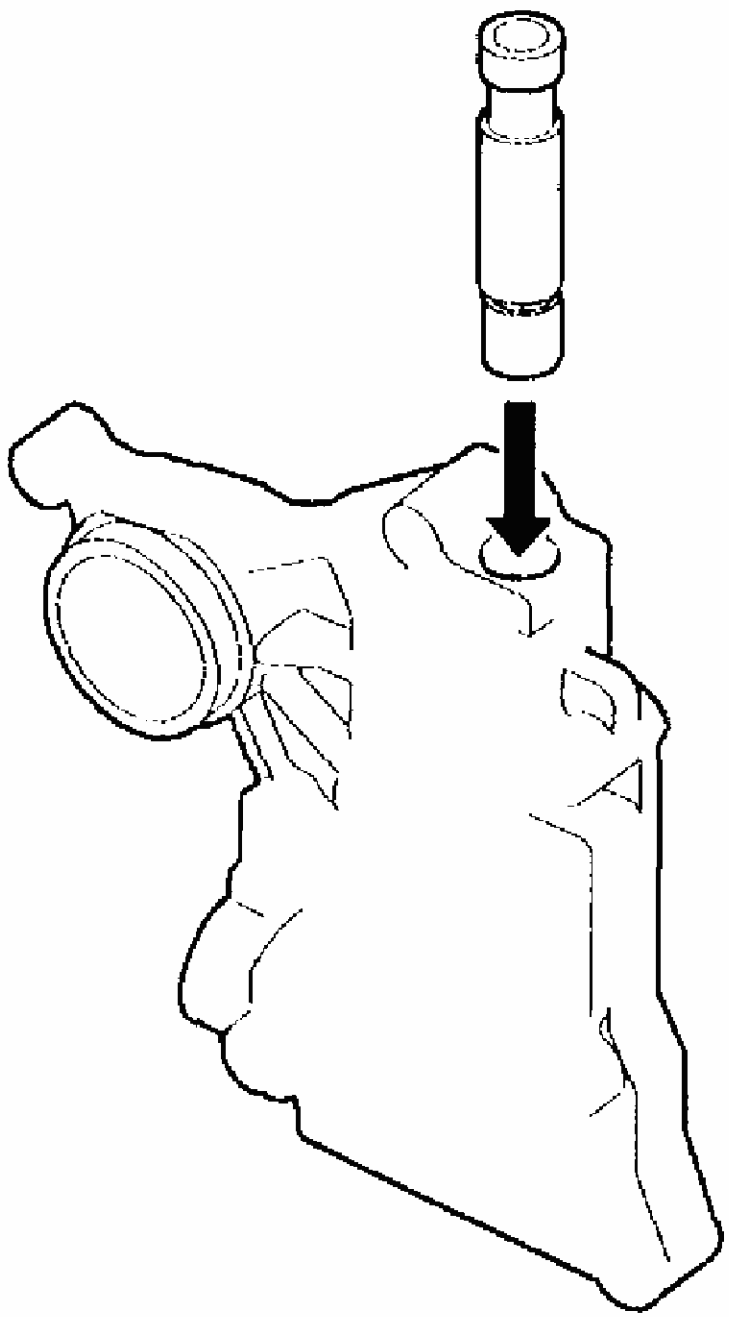

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Fig. 24: Dropping The Valve Into The Bore
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 & Reassembly**), regulator valve body (see **Regulator Valve Body Disassembly, Inspection & Reassembly**), servo body (see **Servo Body Disassembly, Inspection & Reassembly**), and top accumulator body (see **Top Accumulator Body Disassembly, Inspection & Reassembly**). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body.

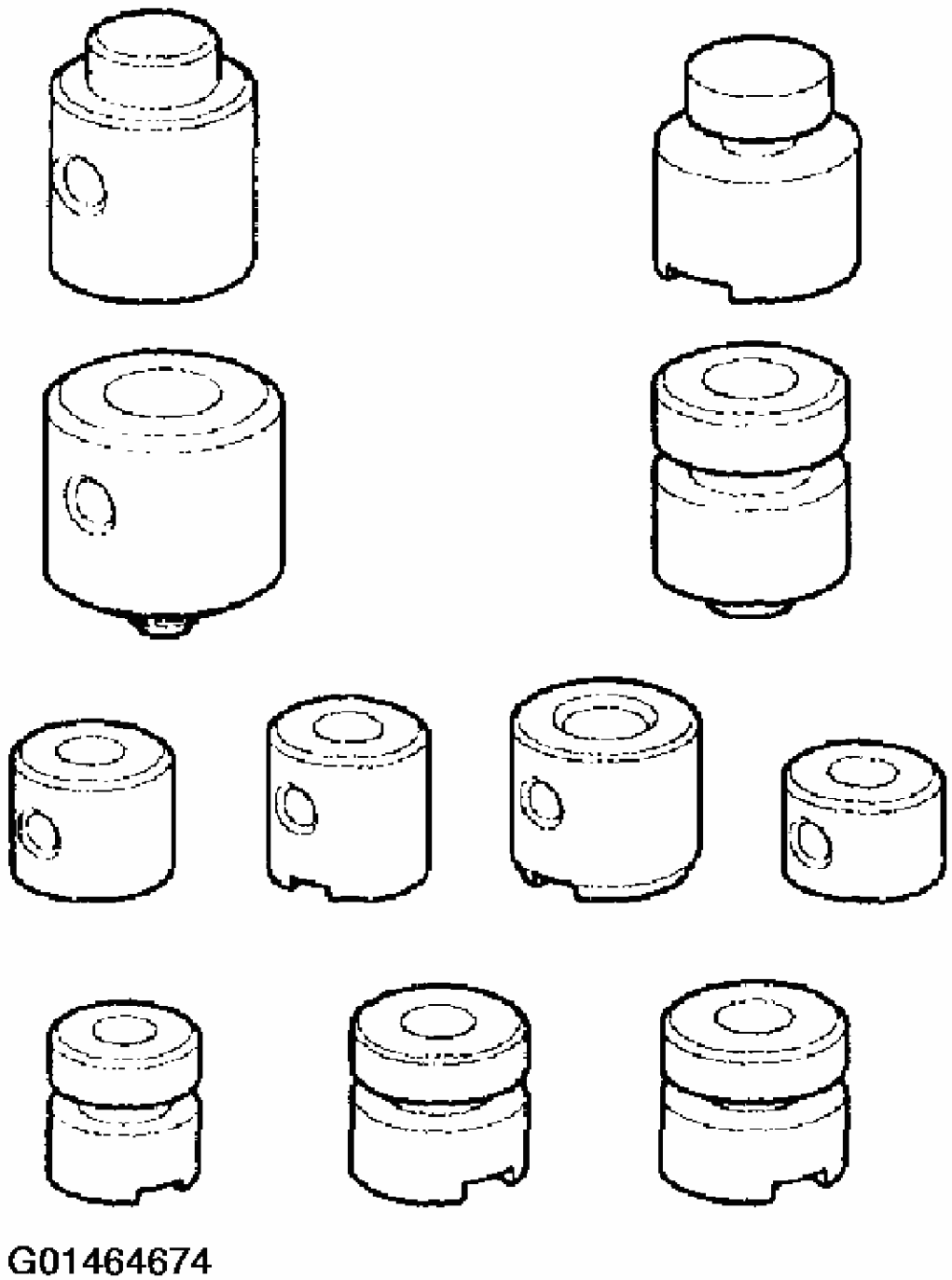

Fig. 25: Identifying Valve Caps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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).

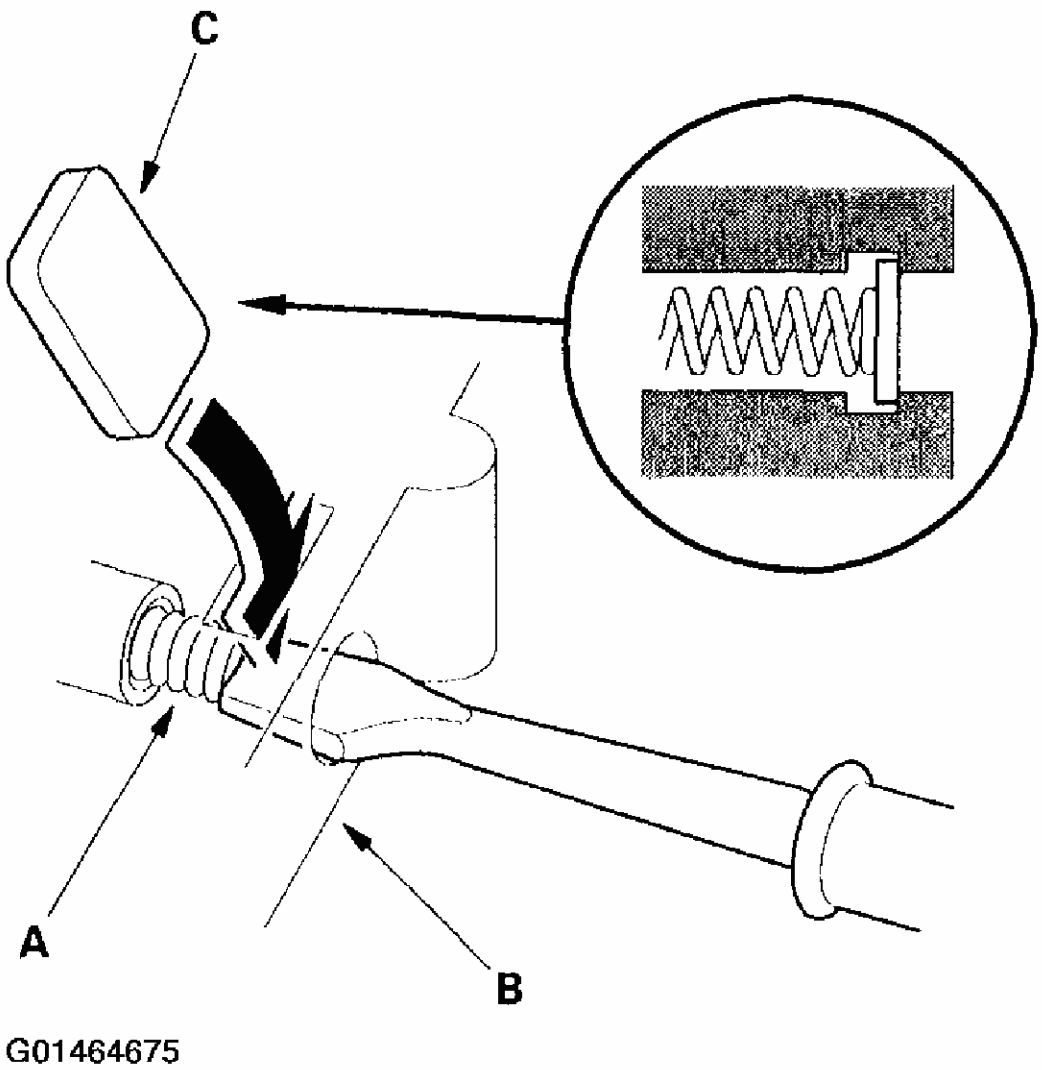

Fig. 26: Inserting The Spring In The Valve, & Installing The Valve In The Valve Body & Installing The Spring Seat
Courtesy of AMERICAN HONDA MOTOR CO., INC.

MAIN VALVE BODY DISASSEMBLY, INSPECTION & 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 ball, it may magnetize the ball.
3. Inspect the valve body for scoring and damage. Replace the valve body as an assembly if any parts are worn or damaged.
4. Check all valves for free movement. If any fail to slide freely, refer to Valve Body Repair (see **Valve Body Repair**).

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

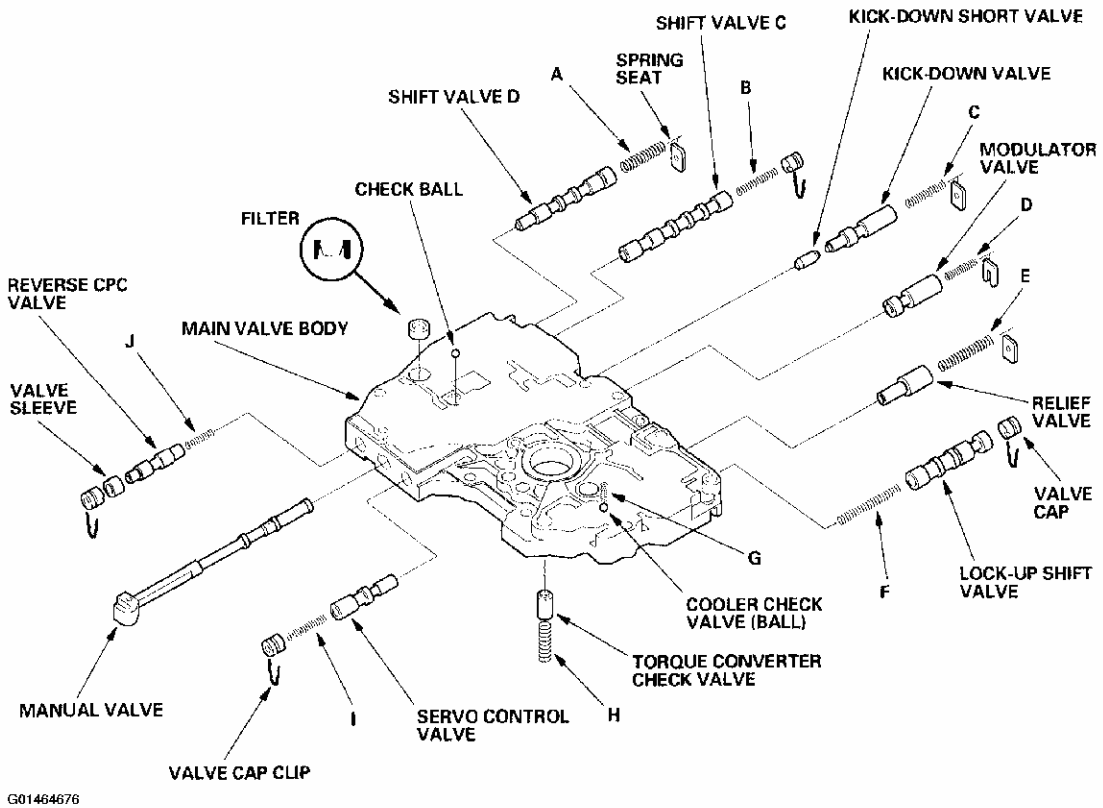

Fig. 27: Exploded View Of Main Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

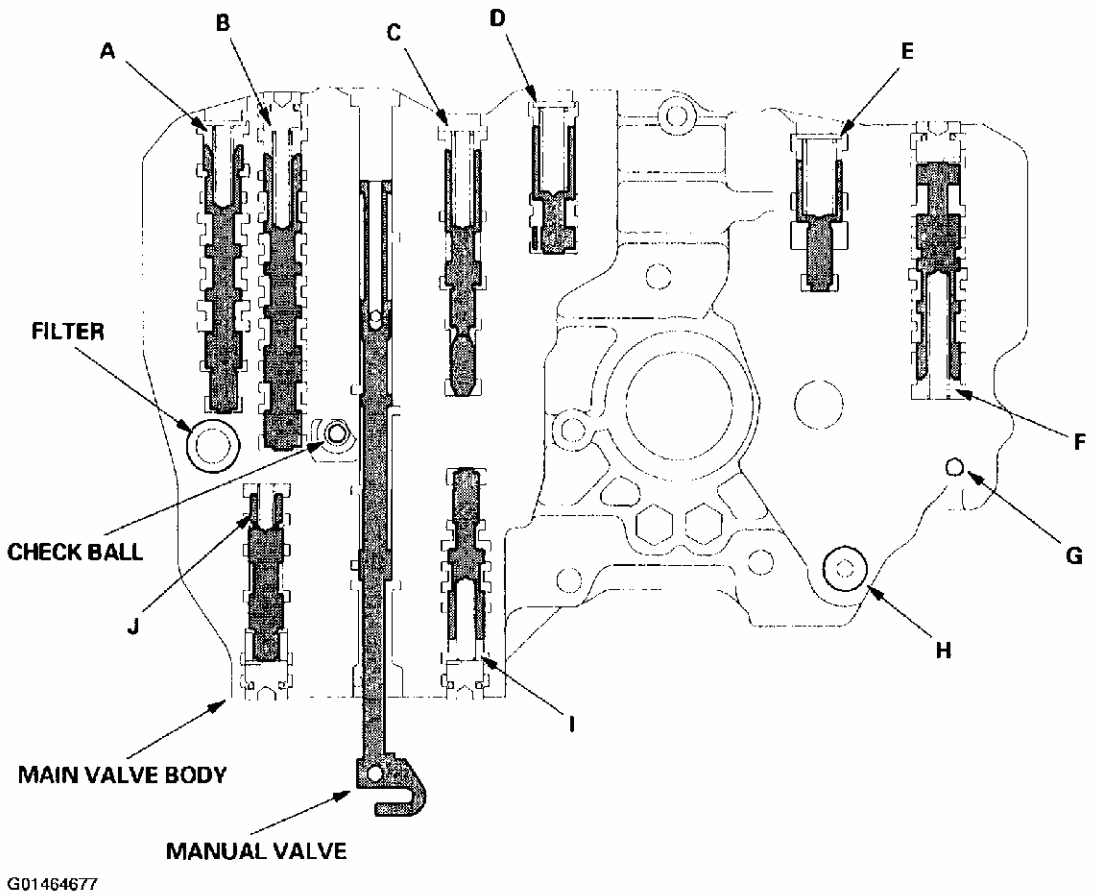

Fig. 28: Sectional View Of Main Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	Shift valve D spring	0.7 (0.028)	6.6 (0.260)	33.7 (1.327)	11.6
B	Shift valve C spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
C	Kick-down valve spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
D	Modulator valve spring	1.6 (0.063)	10.4 (0.409)	33.5 (1.319)	9.8
E	Relief valve spring	1.2 (0.047)	11.1 (0.437)	39.0 (1.535)	9.9
F	Lock-up shift valve spring	0.9 (0.035)	7.6 (0.299)	63.0 (2.480)	22.4
G	Cooler check valve spring	0.6 (0.024)	5.8 (0.228)	14.5 (0.571)	6.8
H	Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	35.1 (1.382)	14.3
I	Servo control valve spring	0.9 (0.035)	6.4 (0.252)	32.5 (1.280)	17.5
J	Reverse CPC valve spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9

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Fig. 29: Main Valve Body Spring Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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.

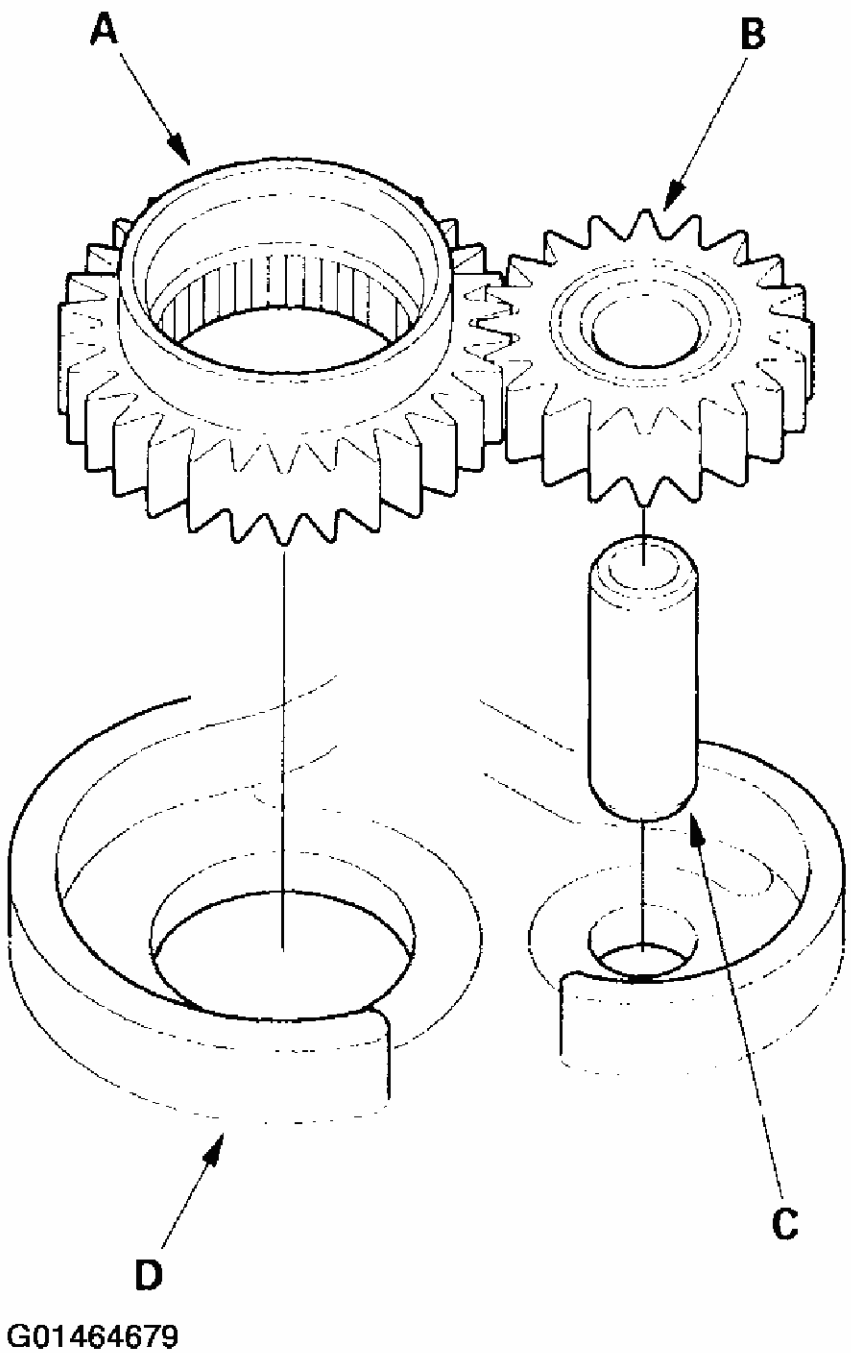

Fig. 30: Installing The ATF Pump Drive Gear, Driven Gear & ATF Pump Driven Gear Shaft In The Main Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 0.210-0.265 mm (0.0083-0.00104 in.)

ATF Pump Driven Gear 0.070-0.125 mm (0.0028-0.0050 in.)

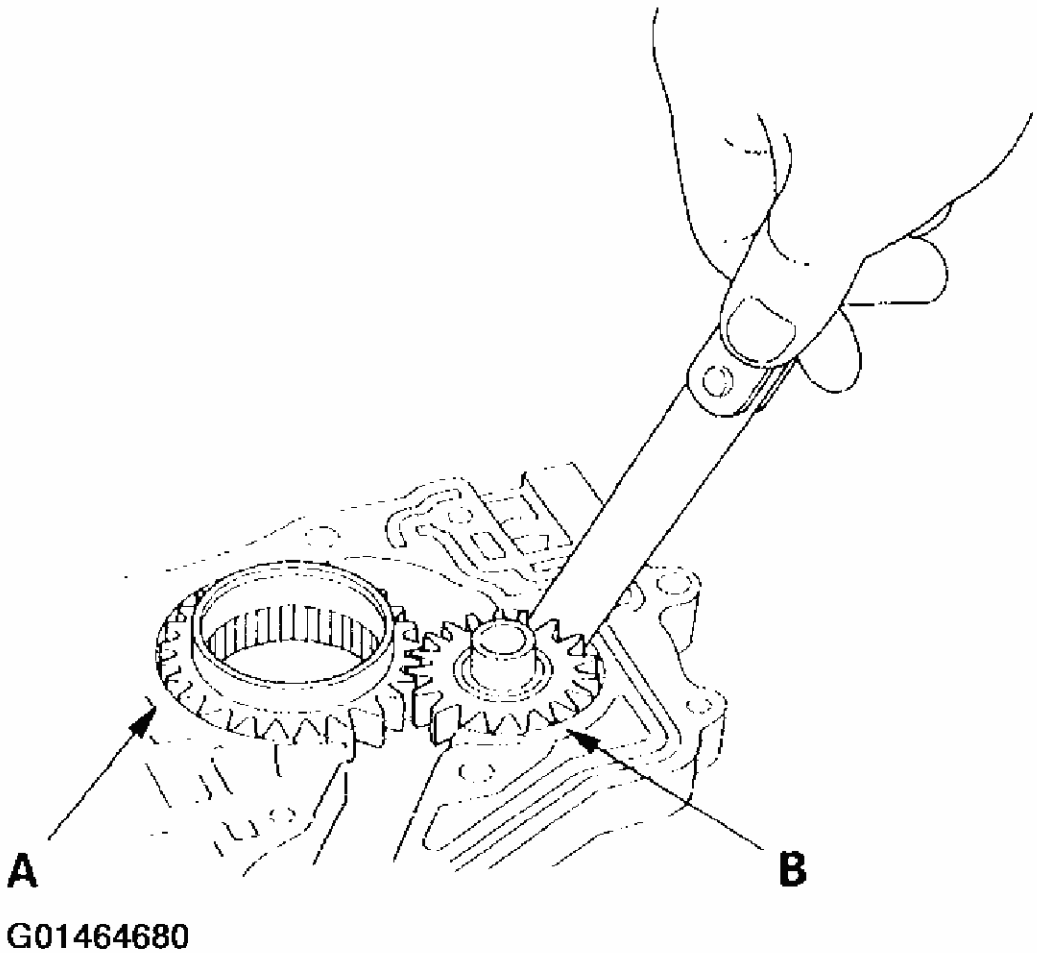

Fig. 31: Measuring The Side Clearance Of The ATF Pump Drive Gear & Driven Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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 (0.001-0.002 in.)

Service Limit: 0.07 mm (0.003 in.)

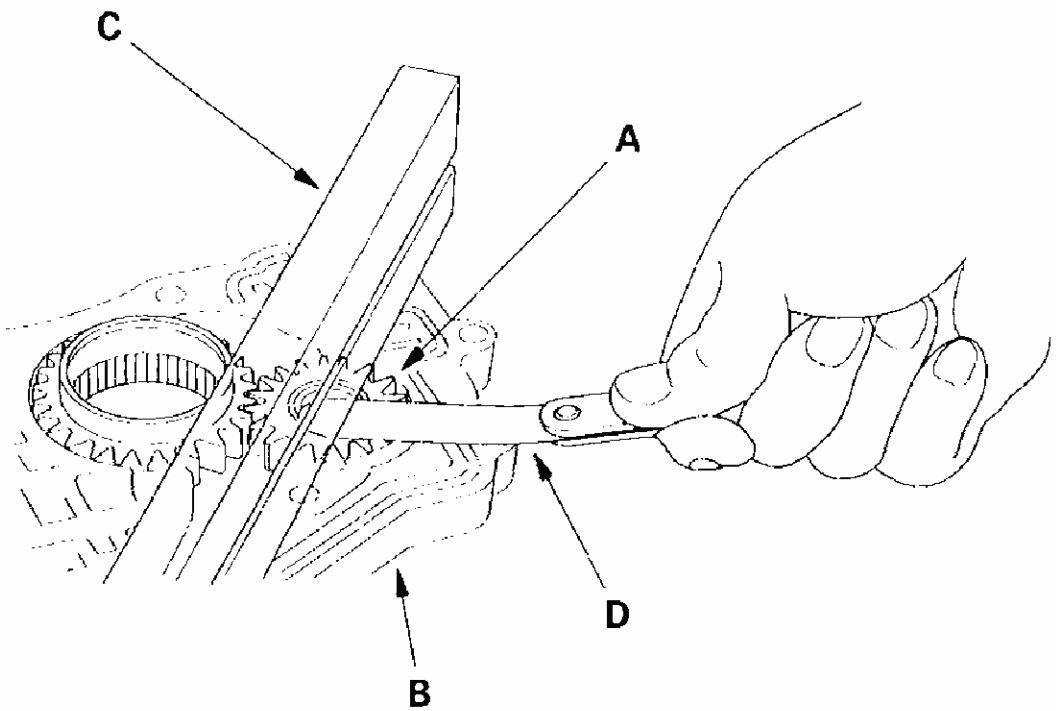

Fig. 32: Measuring The Thrust Clearance Between The ATF Pump Driven Gear & The Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REGULATOR VALVE BODY DISASSEMBLY, INSPECTION & REASSEMBLY

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Inspect the valve body for scoring and damage.
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. 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.

6. Reassembly is the reverse of the disassembly. Install the filter in the direction shown.
7. Coat all parts with ATF during assembly.
8. 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.
9. Install the new filter in the direction shown.

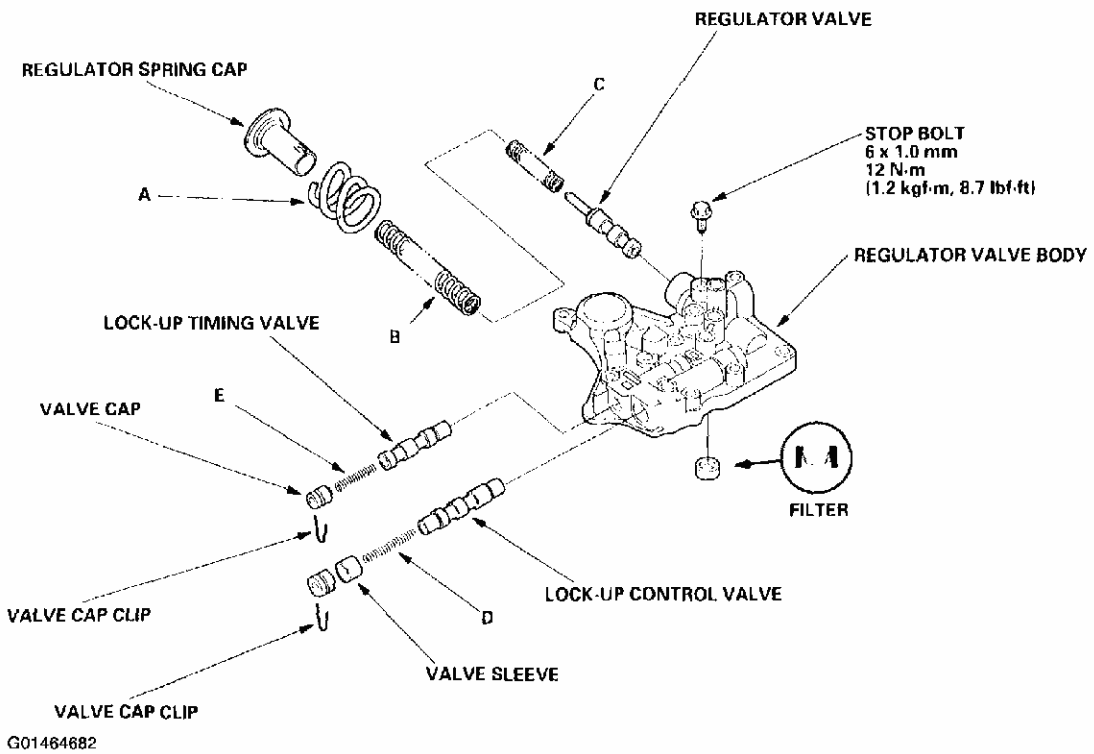

Fig. 33: Exploded View Of The Regulator Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

	Springs	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	Stator reaction spring	5.5 (0.217)	37.4 (1.472)	30.3 (1.193)	2.1
B	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C	Regulator valve spring B	1.4 (0.055)	8.8 (0.346)	44.0 (1.732)	12.0
D	Lock-up control valve spring	0.7 (0.028)	6.6 (0.260)	42.9 (1.689)	14.2
E	Lock-up timing valve spring	0.65 (0.026)	6.6 (0.260)	34.8 (1.370)	15.6

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Fig. 34: Regulator Valve Body Spring Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SERVO BODY DISASSEMBLY, INSPECTION & REASSEMBLY

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

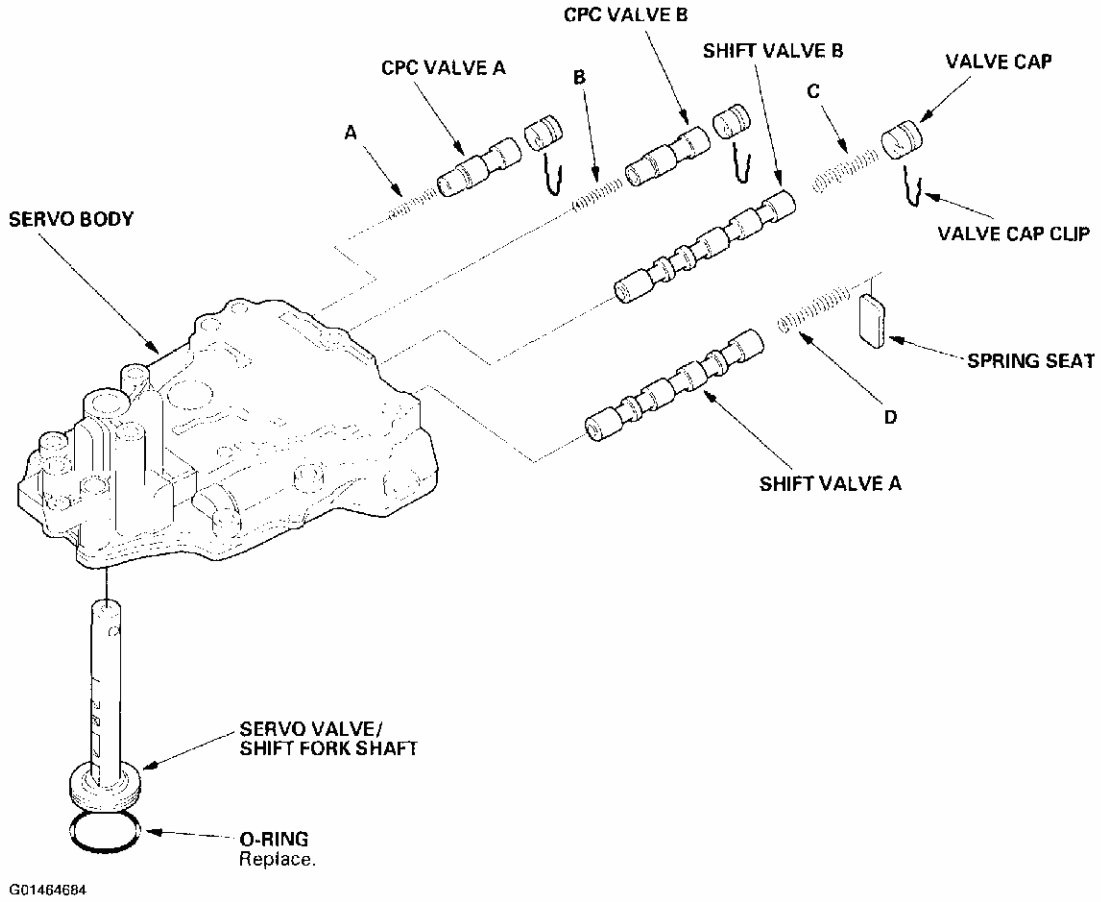

Fig. 35: Exploded View Of The Servo Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

	Springs	Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	CPC valve A spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	CPC valve B spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
C	Shift valve B spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
D	Shift valve A spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7

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Fig. 36: Servo Body Spring Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TOP ACCUMULATOR BODY DISASSEMBLY, INSPECTION & REASSEMBLY

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

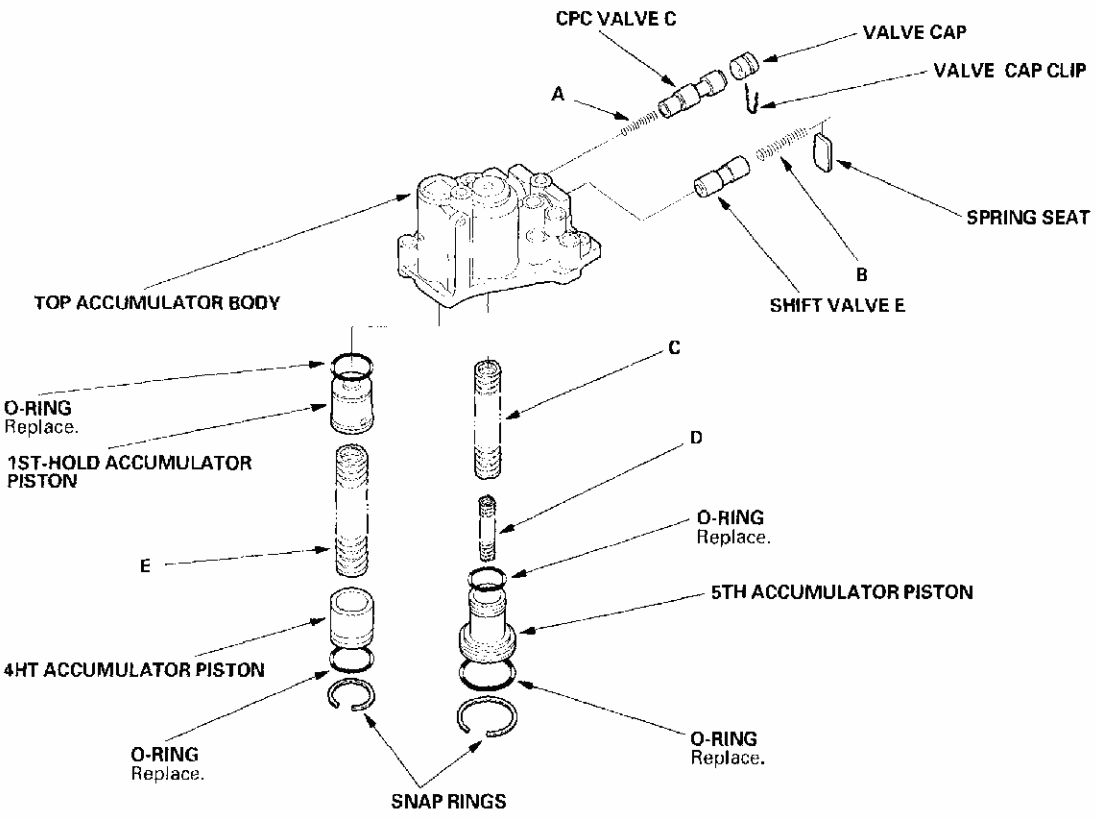

Fig. 37: Exploded View Of The Top Accumulator Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	CPC valve C spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	Shift valve E spring	0.8 (0.031)	7.1 (0.280)	49.0 (1.929)	17.2
C	5th accumulator spring A	2.2 (0.087)	16.4 (0.646)	75.7 (2.980)	14.2
D	5th accumulator spring B	2.0 (0.079)	10.0 (0.394)	45.5 (1.791)	11.6
E	4th/1st-hold accumulator spring	3.4 (0.134)	19.6 (0.772)	57.4 (2.260)	8.4

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Fig. 38: Accumulator Body Spring Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

ACCUMULATOR BODY DISASSEMBLY, INSPECTION & REASSEMBLY

1. Do not use a magnet to remove the check balls; it may magnetize the balls.
2. Inspect the accumulator body for scoring and damage.
3. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
4. Coat all parts with ATF during assembly.

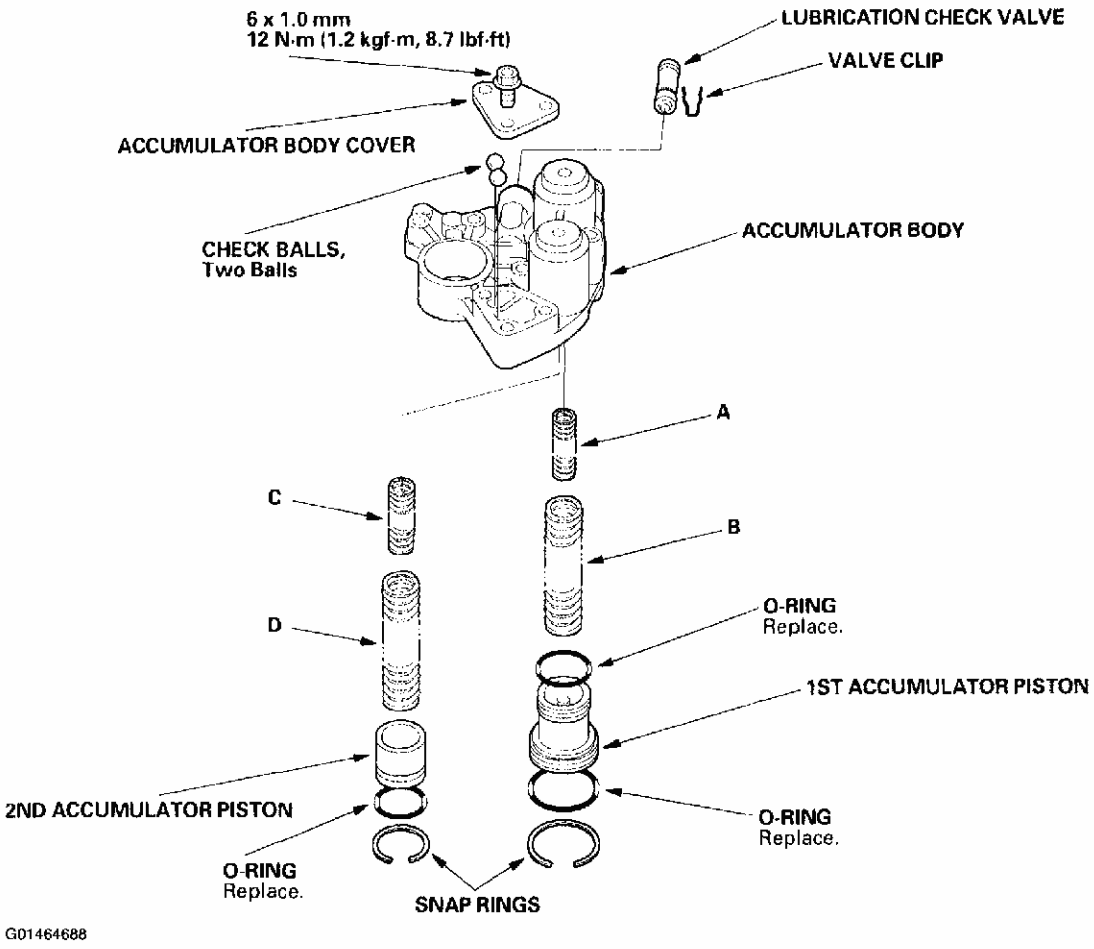

Fig. 39: Exploded View Of The Accumulator Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	1st accumulator spring B	2.3 (0.091)	12.6 (0.496)	42.0 (1.654)	9.9
B	1st accumulator spring A	2.4 (0.094)	19.5 (0.768)	67.7 (2.665)	10.2
C	2nd accumulator spring B	2.6 (0.102)	13.0 (0.512)	44.0 (1.732)	9.0
D	2nd accumulator spring A	2.5 (0.098)	19.6 (0.772)	57.7 (2.272)	9.5

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Fig. 40: Accumulator Body Spring Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3RD ACCUMULATOR & END COVER DISASSEMBLY, INSPECTION & REASSEMBLY

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

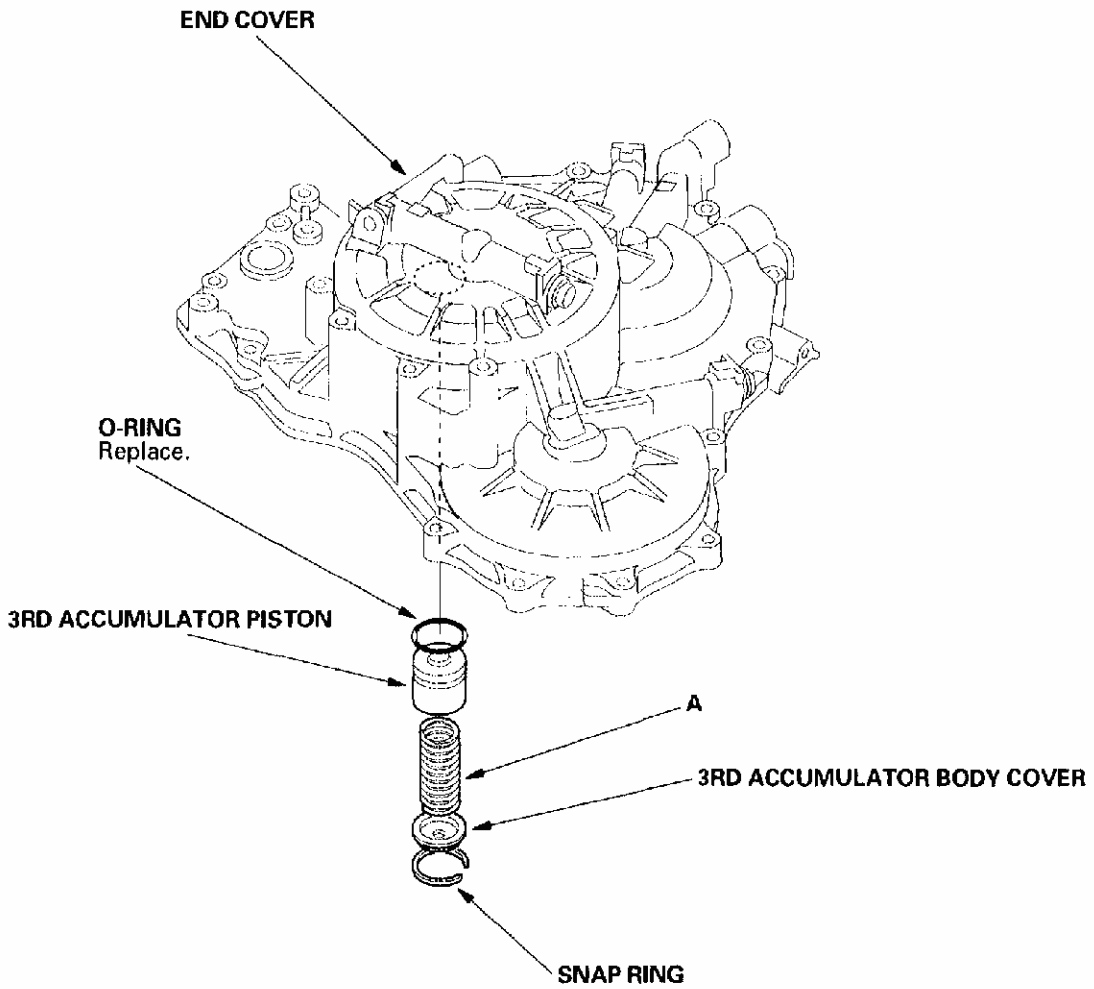

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Fig. 41: Exploded View Of The 3rd Accumulator & End Cover Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Springs		Standard (New)-Unit: mm (in.)			
		Wire Dia.	O.D.	Free Length	No. of Coils
A	3rd accumulator spring	3.1 (0.122)	19.6 (0.772)	39.4 (1.551)	5.5

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Fig. 42: 3rd Accumulator Spring Specifications
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE CONVERTER HOUSING

MAINSHAFT BEARING & 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).

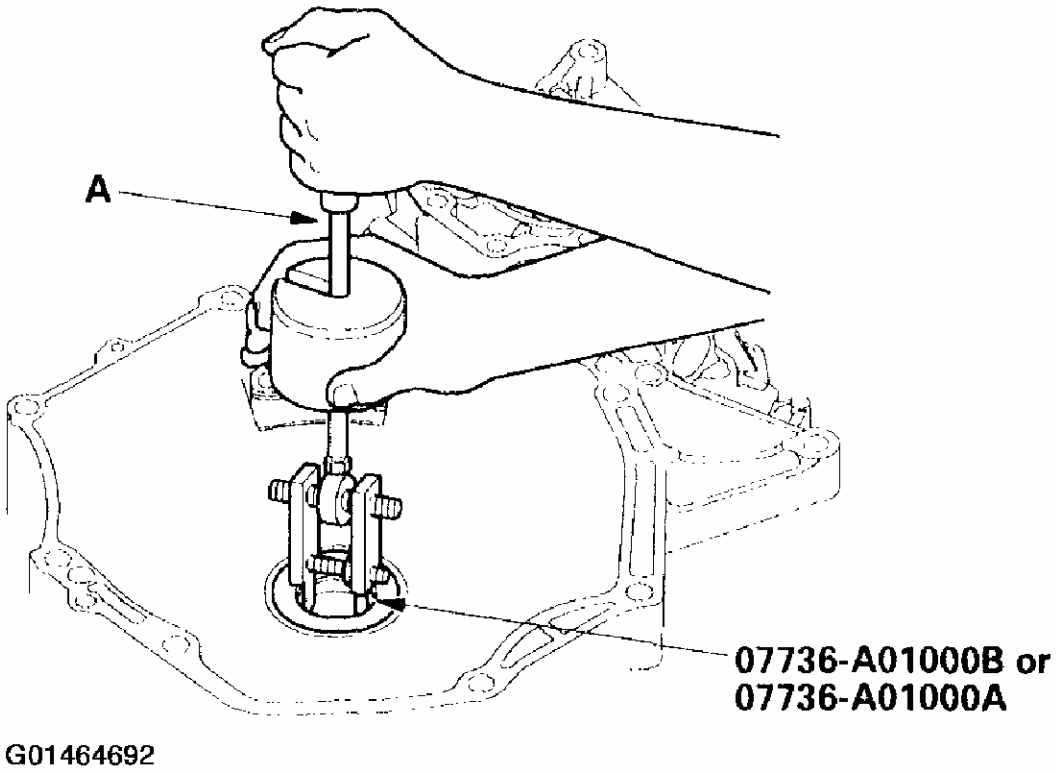

Fig. 43: Removing The Mainshaft Bearing & Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

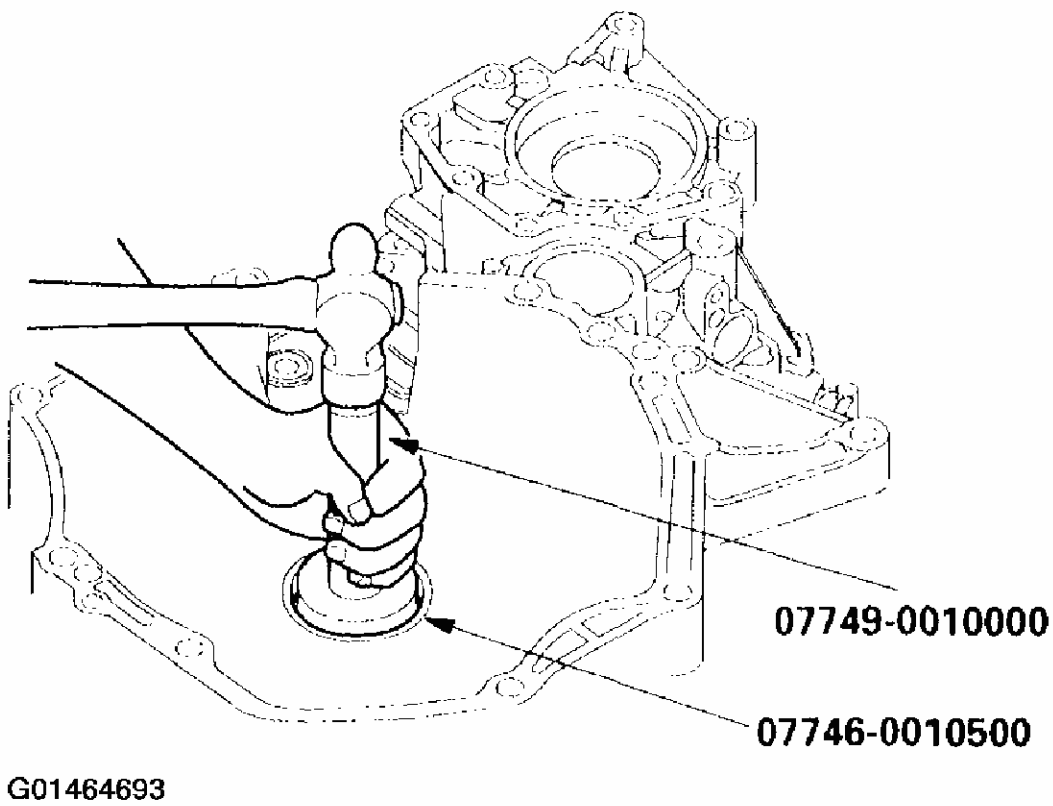

Fig. 44: Installing The Mainshaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

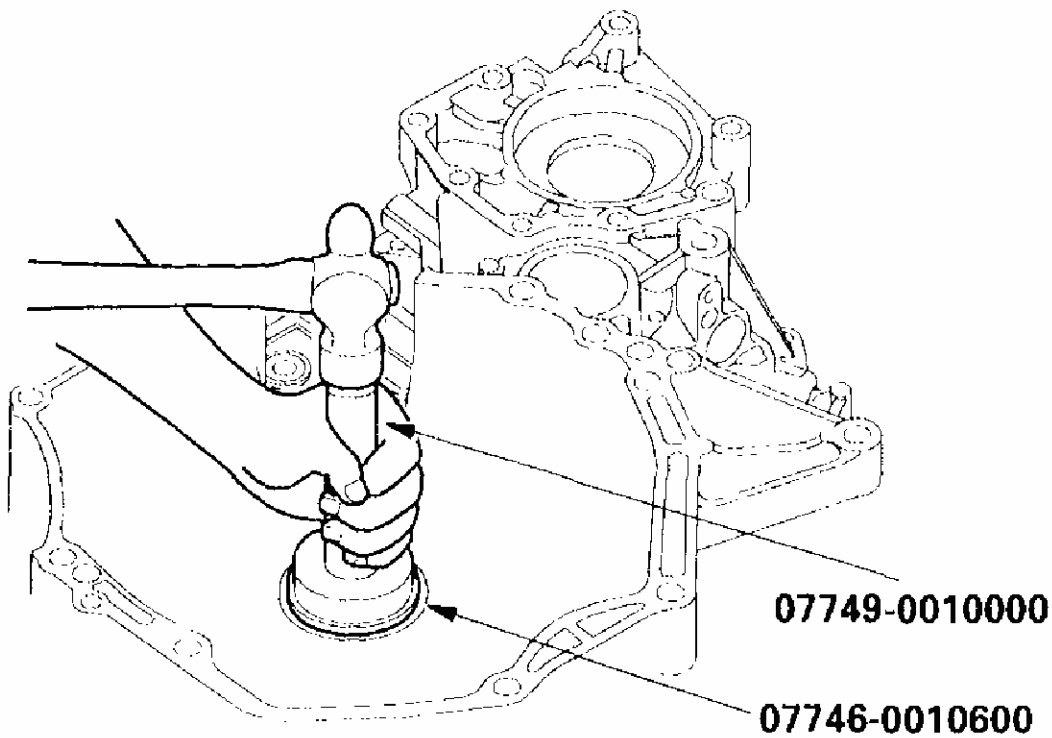

Fig. 45: Installing The Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

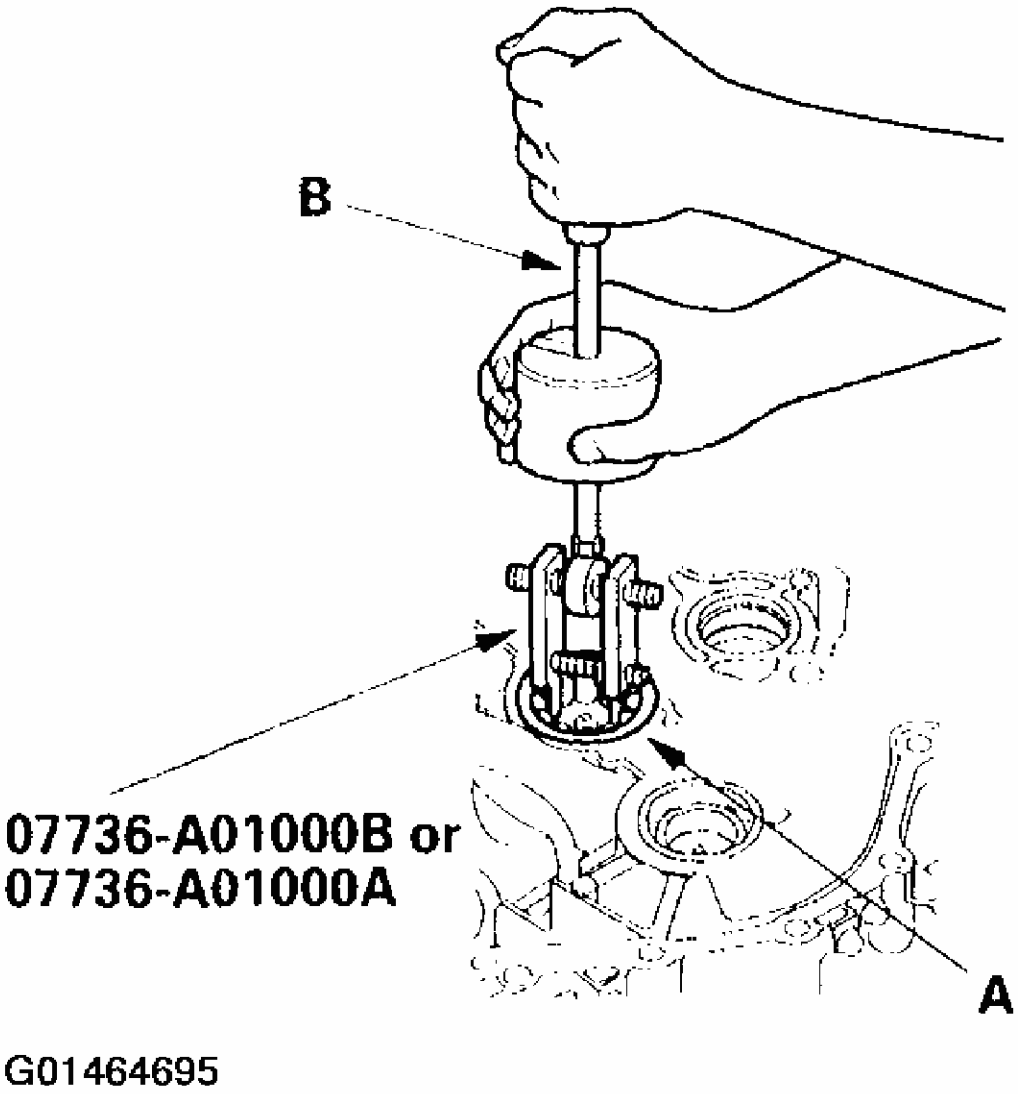

Fig. 46: Removing The Countershaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the ATF guide plate (A).

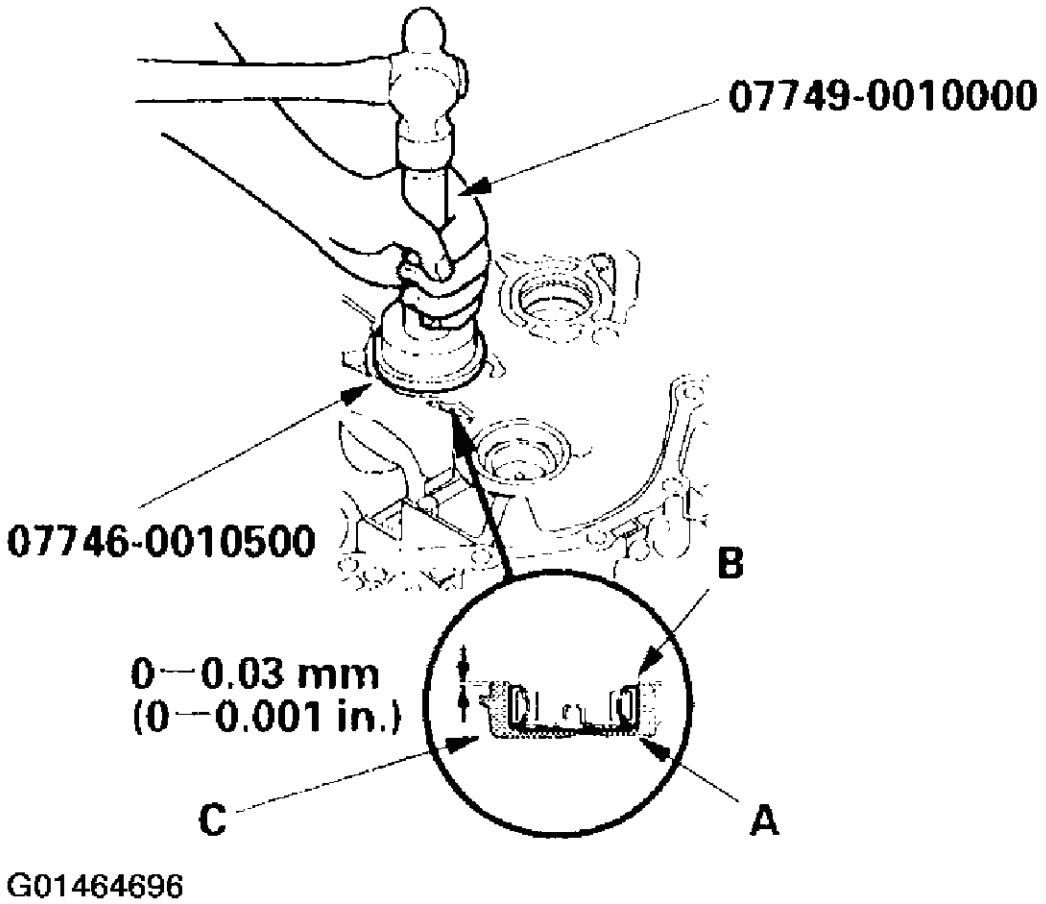

Fig. 47: Installing The ATF Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new bearing (B) into the housing (C) with the special tools.

SECONDARY SHAFT BEARING REPLACEMENT

Special Tools Required

- Adjustment bearing puller, 25-40 mm

  07736-A01000B or 07736-A01000A

- Driver 07749-0010000
- Driver attachment 07947-6340500

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

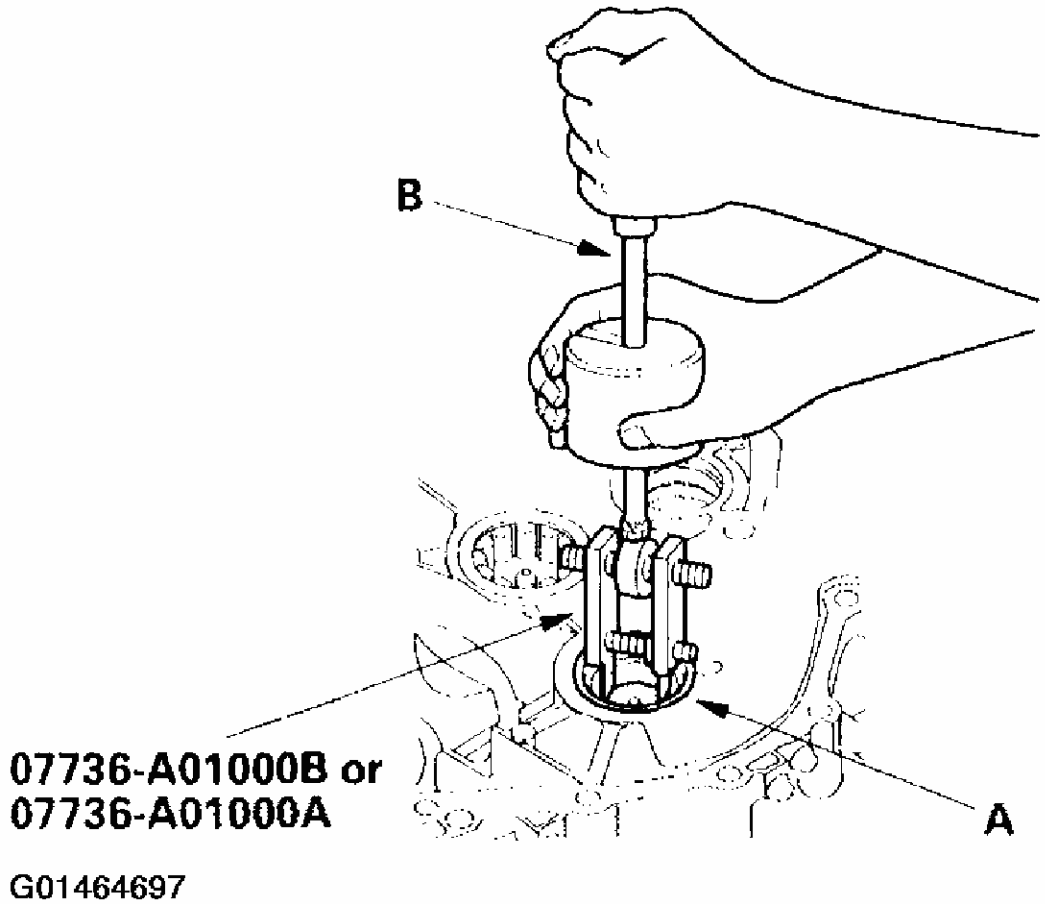

Fig. 48: Removing The Secondary Shaft Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the ATF guide plate (A).

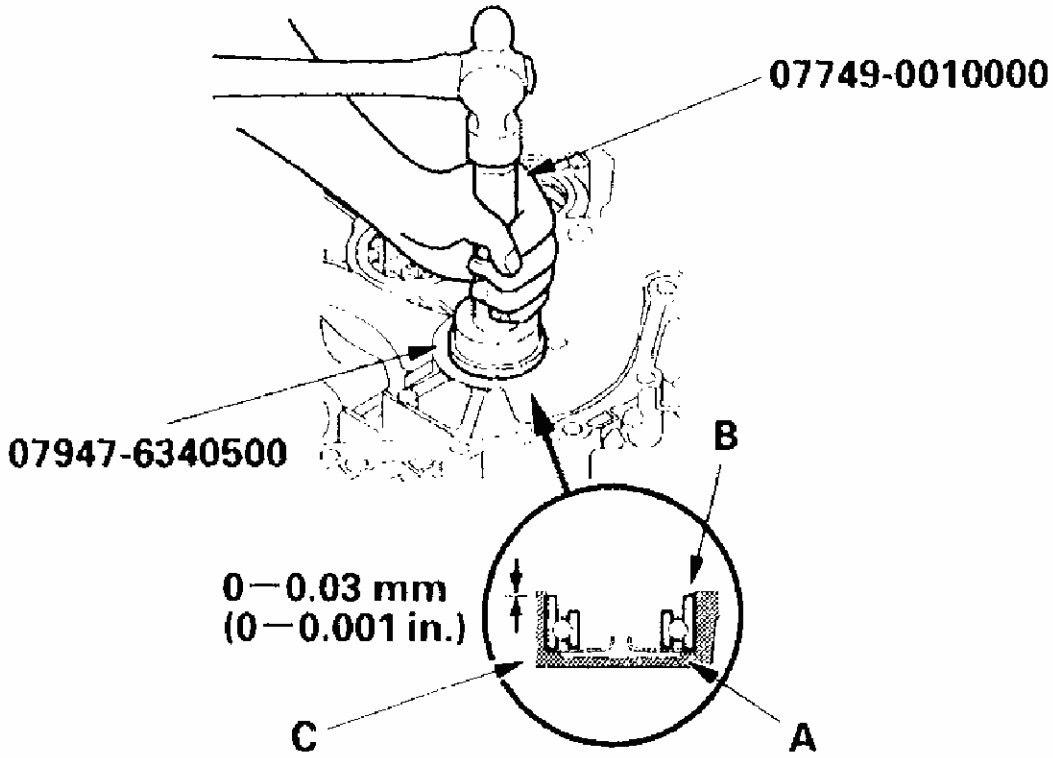

Fig. 49: Installing The ATF Guide Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new bearing (B) into the housing (C) with the special tools.

CONTROL SHAFT OIL SEAL REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

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

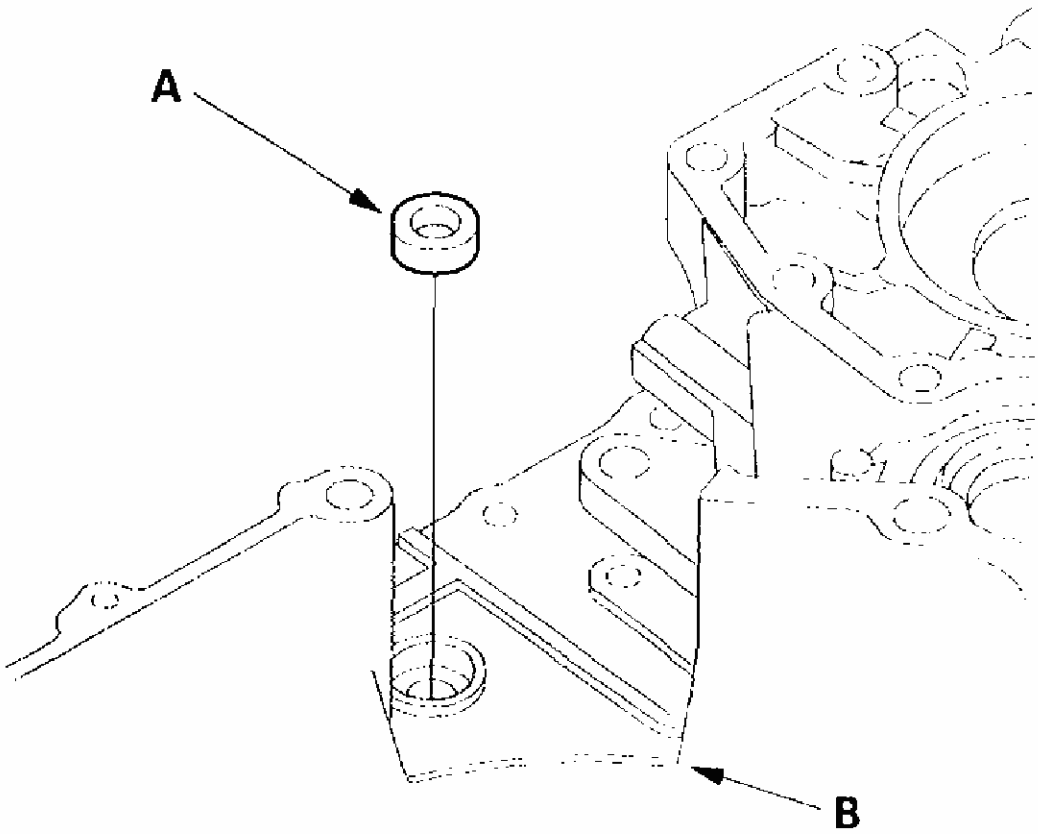

Fig. 50: Removing The Oil Seal From The Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new oil seal flush to the torque converter housing with the special tools.

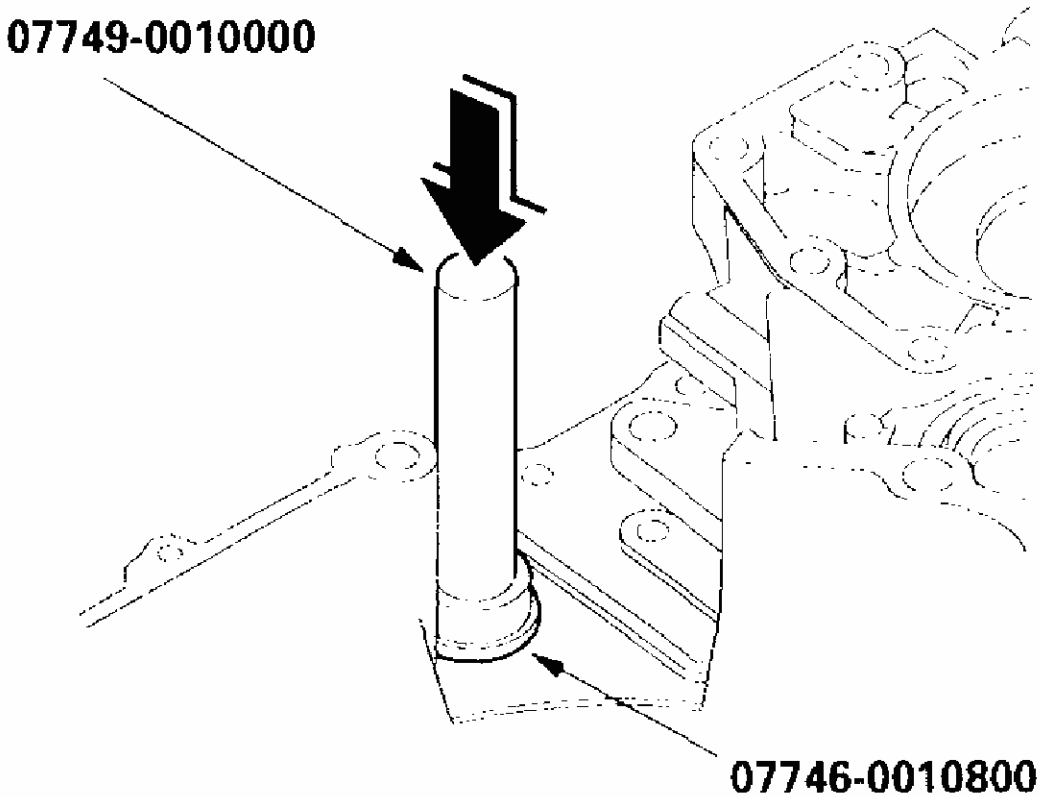

Fig. 51: Installing The Oil Seal
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SHAFTS & CLUTCHES

MAINSHAFT DISASSEMBLY, INSPECTION & REASSEMBLY

1. Lubricate all parts with ATF during assembly.

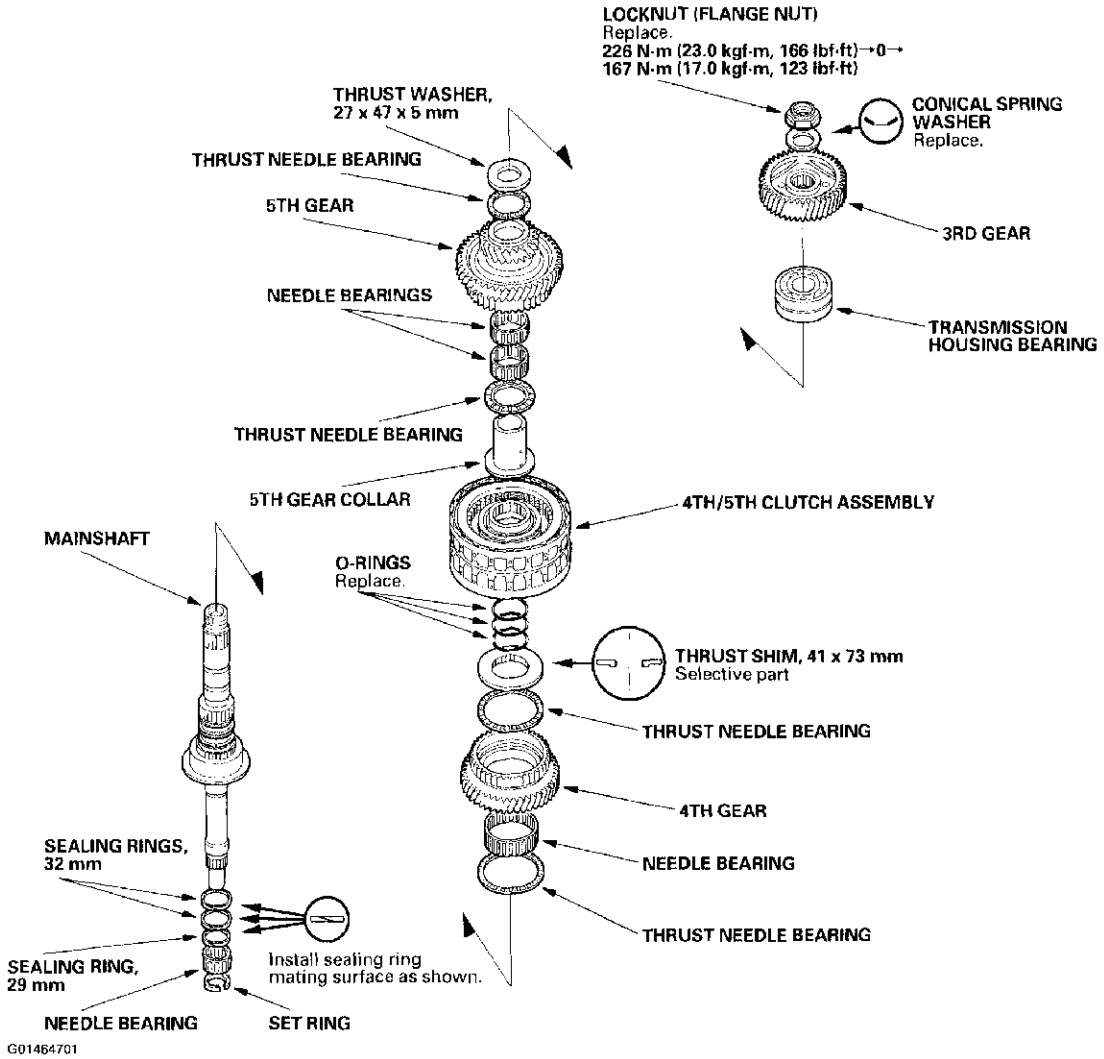

Fig. 52: Exploded View Of Mainshaft Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the clearance of the 4th/5th clutch assembly (see **4th/5th Clutch Clearance Inspection**).
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 41 x 73 mm thrust shim and conical spring washer in the direction shown.
8. Inspect the condition of the sealing rings. If the sealing rings are worn, distorted, or damaged, replace them (see **Mainshaft Sealing Ring Replacement**).

4TH/5TH CLUTCH CLEARANCE INSPECTION

1. Remove the O-rings from the mainshaft.
2. Assemble the 41 x 73 mm thrust shim (A), 4th/5th clutch assembly (B), and 5th gear collar (C) on the mainshaft (D).

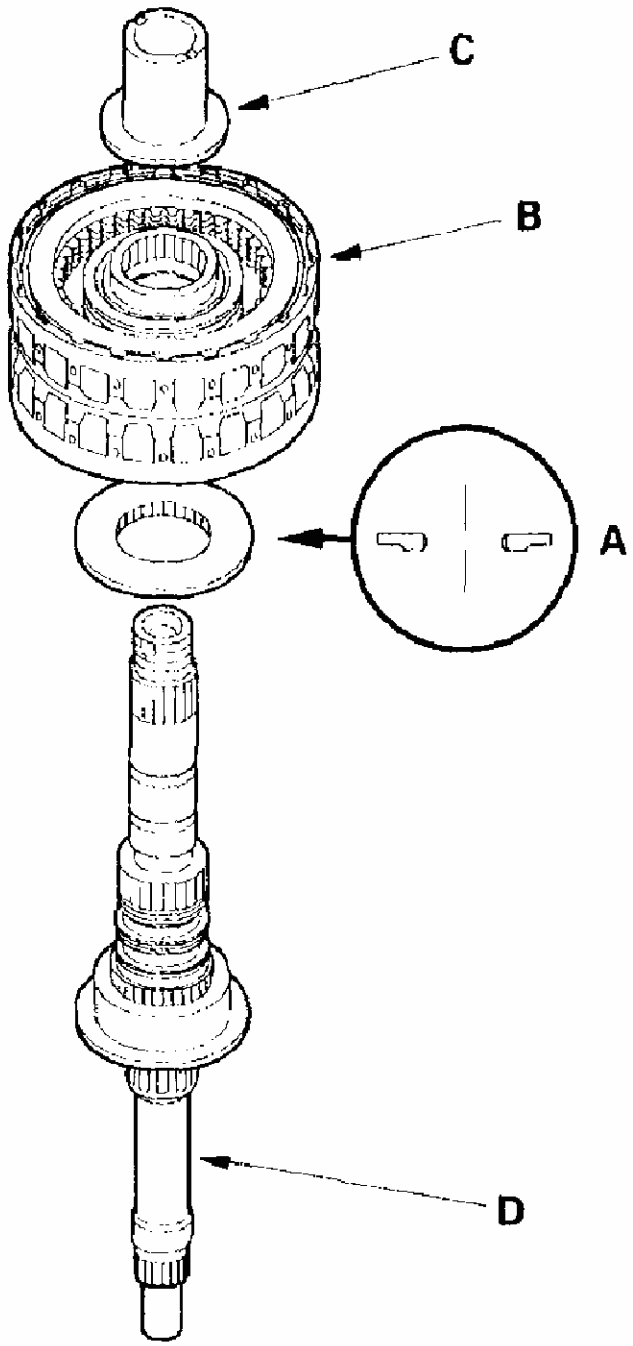

Fig. 53: Assembling The 41 X 73 mm Thrust Shim, 4th/5th Clutch Assembly & 5th Gear Collar On The Mainshaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Hold the 5th gear collar (C) against the clutch assembly (B), then measure the clearance between the clutch guide (E) and the 5th gear collar with a feeler gauge (F) in at least three places. Use the average as the actual clearance.

   Standard: 0.03-0.11 mm (0.001-0.004 in.)

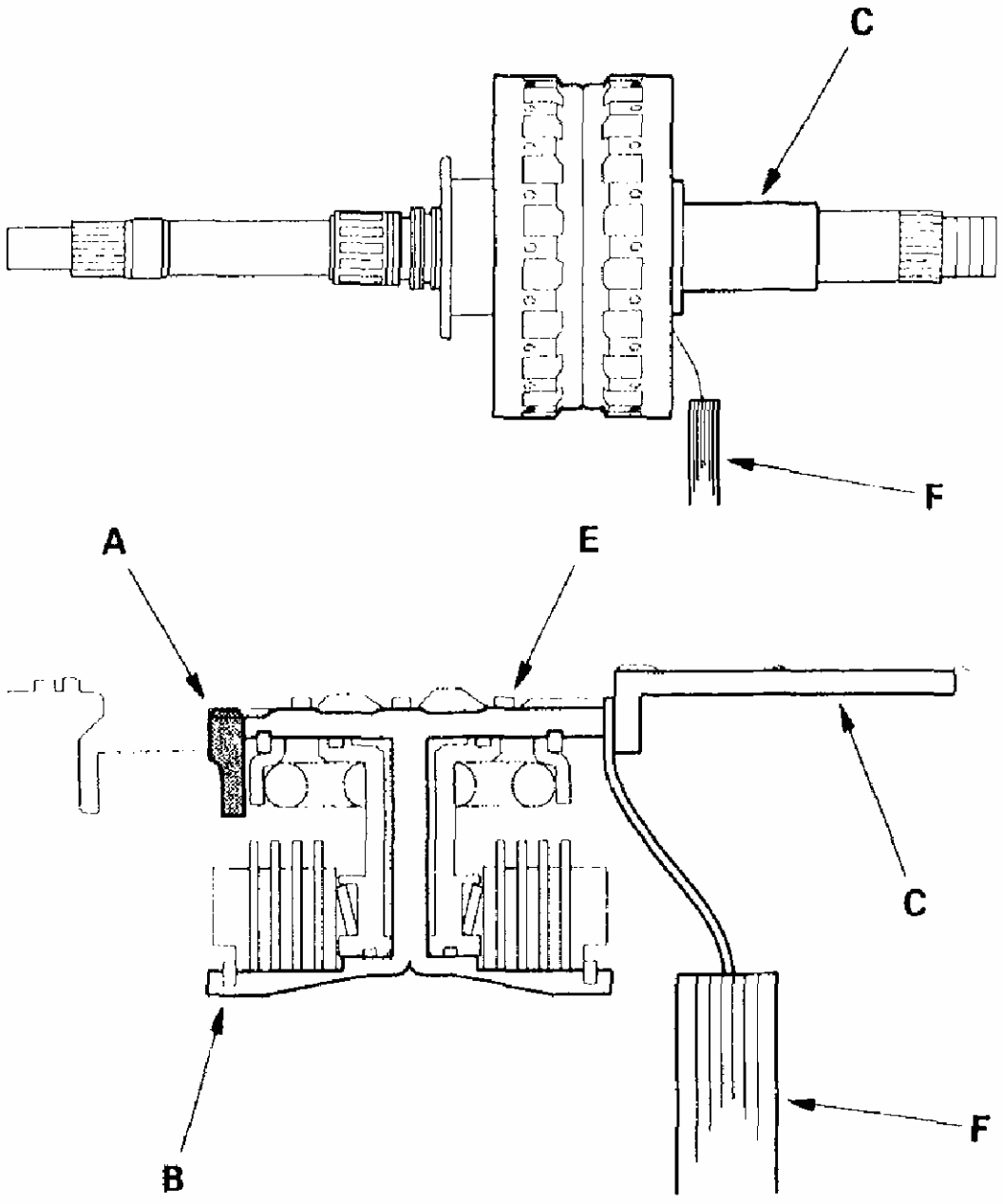

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Fig. 54: Measuring The Clearance Between The Clutch Guide & The 5th Gear Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the clearance is out of standard, remove the thrust shim and measure its thickness.
5. Select and install a new shim, then recheck.

No.	Part Number	Thickness
1	90414-P7W-000	7.85 mm (0.309 in.)
2	90415-P7W-000	7.90 mm (0.311 in.)
3	90416-P7W-000	7.95 mm (0.313 in.)
4	90417-P7W-000	8.00 mm (0.315 in.)
5	90418-P7W-000	8.05 mm (0.317 in.)
6	90419-P7W-000	8.10 mm (0.319 in.)

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Fig. 55: 41 X 73 mm Thrust Shim Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. After replacing the thrust shim, make sure the clearance is within standard.

MAINSHAFT SEALING RING REPLACEMENT

The sealing rings 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 sealing rings together slightly before installing them.

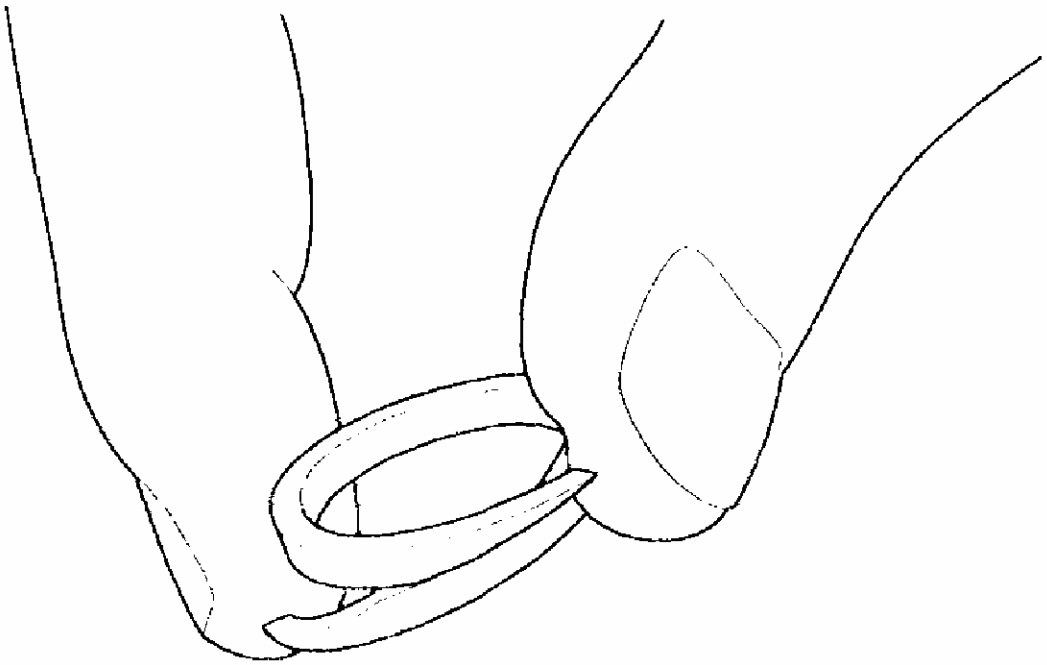

Fig. 56: Squeezing Sealing Rings Together
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

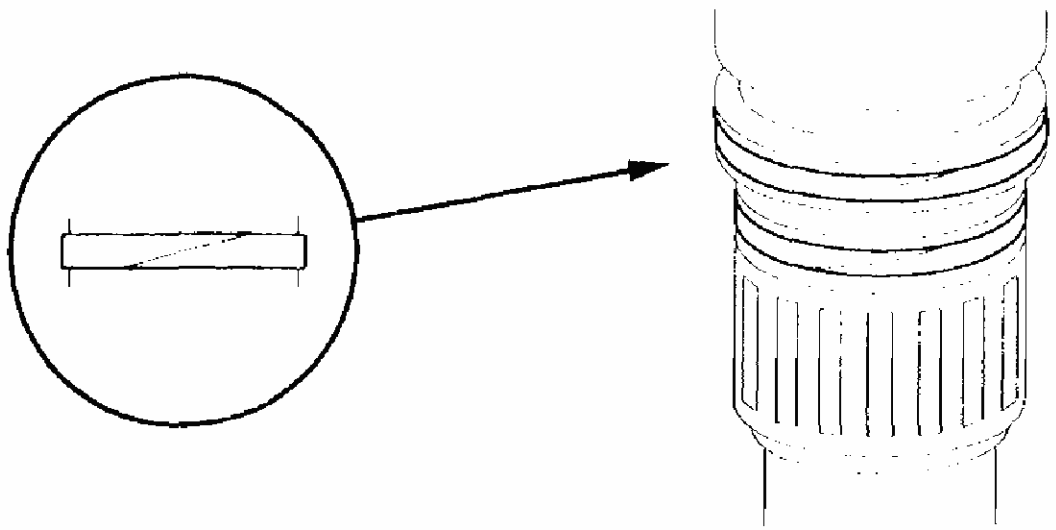

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Fig. 57: Installing The Sealing Rings On The Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

COUNTERSHAFT DISASSEMBLY, INSPECTION & REASSEMBLY

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

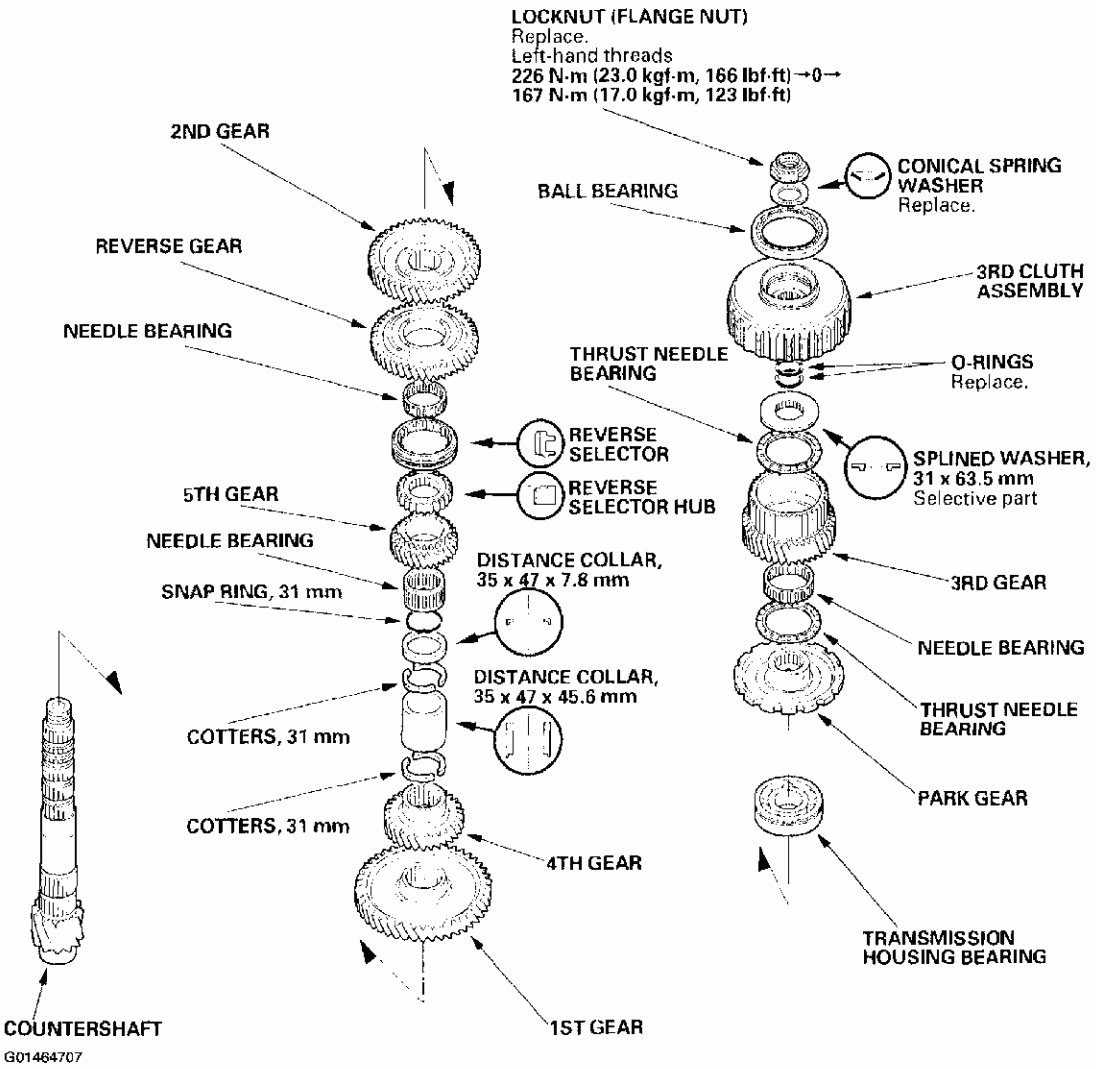

Fig. 58: Exploded View Of Countershaft Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the reverse selector hub, 4th gear, and 1st gear (see **Countershaft Reverse Selector Hub & 4th Gear Removal**).
3. Check the bearing on the 3rd clutch for wear and rough movement. If the bearing is worn or damaged, replace it (see **3rd Clutch Ball Bearing Replacement**).
4. Inspect the thrust needle bearing and the needle bearing for scoring and rough movement.
5. Check the splines for excessive wear and damage.
6. Check the shaft bearing surfaces for scoring and excessive wear.
7. Lubricate all parts with ATF, and reassemble the shaft and gears.
8. Install the distance collars, reverse selector hub, reverse selector, splined washer, and conical spring washer in the direction shown.

COUNTERSHAFT REVERSE SELECTOR HUB & 4TH GEAR REMOVAL

NOTE: Some reverse selector hubs are not press-fitted, and can be removed without using a press.

1. Remove the reverse selector hub (A) and the 5th gear (B) from the countershaft with a press. Place a shaft protector (C) between the countershaft and press to prevent damaging the countershaft.

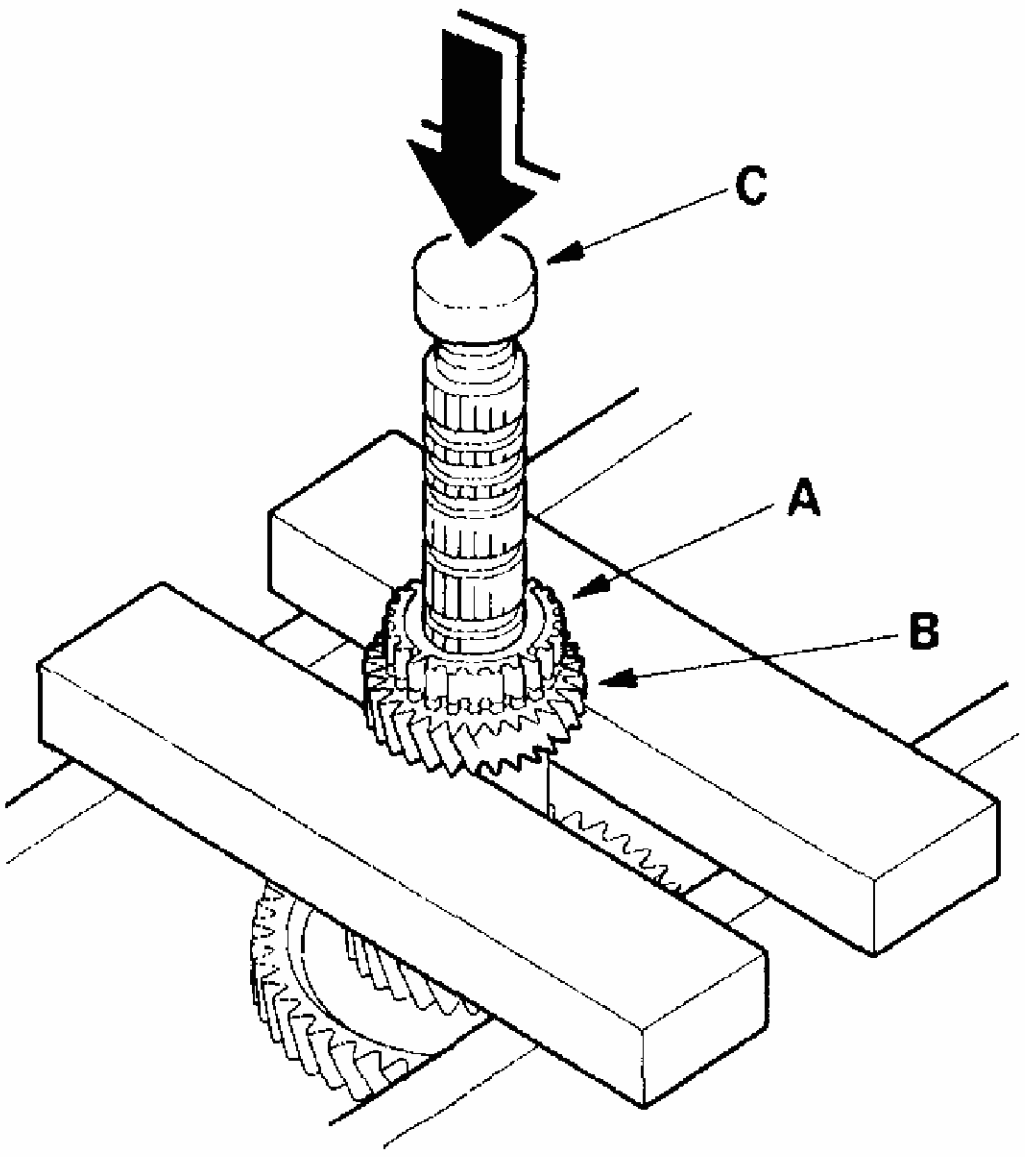

Fig. 59: Removing The Reverse Selector Hub & The 5th Gear From The Countershaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the needle bearing, snap ring, 35 x 47 x 7.8 mm distance collar, 31 mm cotters, 35 x 47 x 45.6 mm distance collar, and 31 mm cotters from the countershaft.
3. Remove the 1st gear (A) and 4th gear (B) from the countershaft with a press. Place a shaft protector (C) between the countershaft and press to prevent damaging the countershaft.

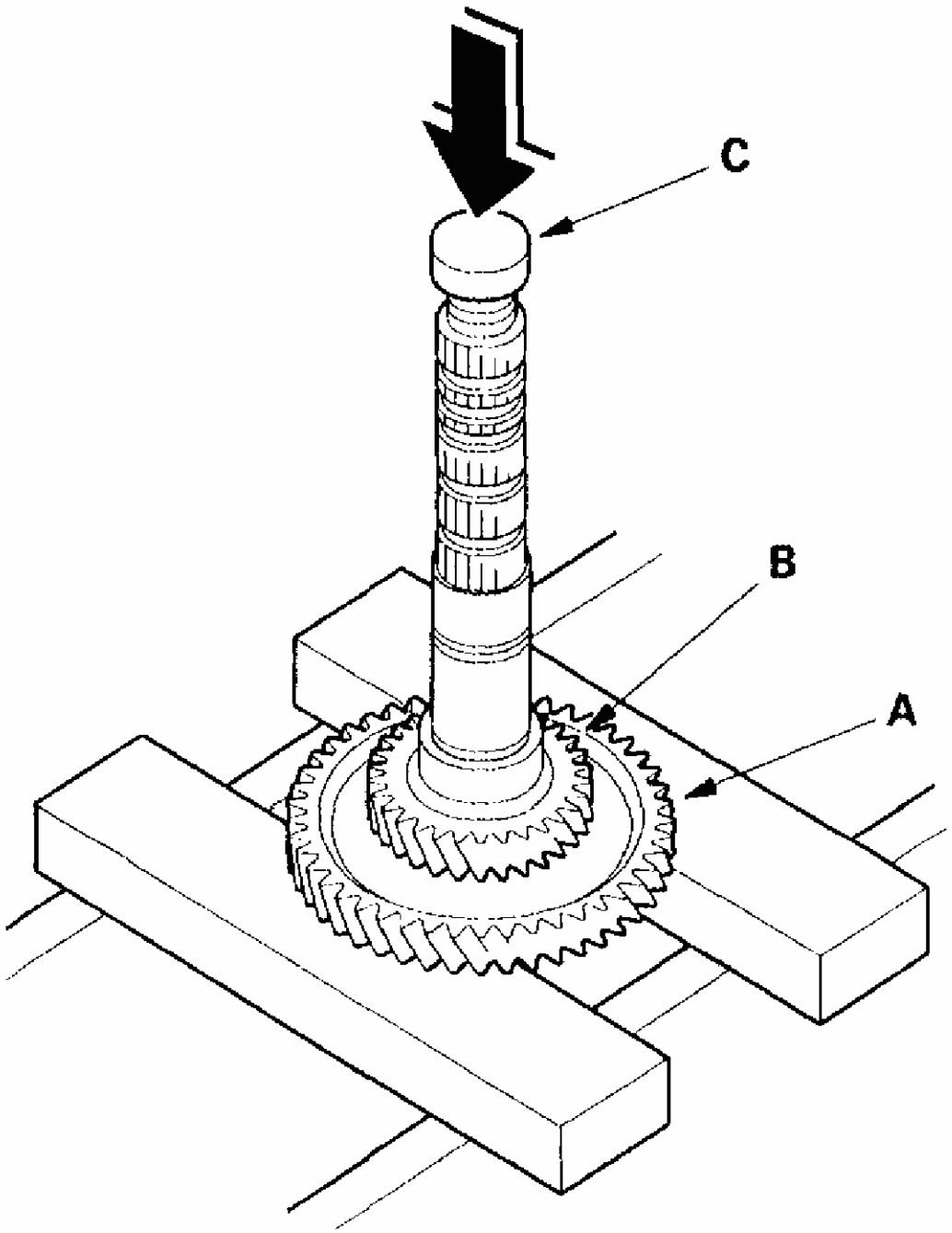

Fig. 60: Removing The 1st Gear & 4th Gear From The Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT 4TH GEAR & REVERSE SELECTOR HUB INSTALLATION

Special Tools Required

Driver, 40 mm I.D. 07746-0030100

1. Apply ATF to the parts.
2. Install the 1st gear on the countershaft by hand.
3. Align the shaft splines with those on 4th gear, then press the countershaft (A) into the 4th gear with a press. Place a shaft protector (B) between the countershaft and press to prevent damaging the countershaft.

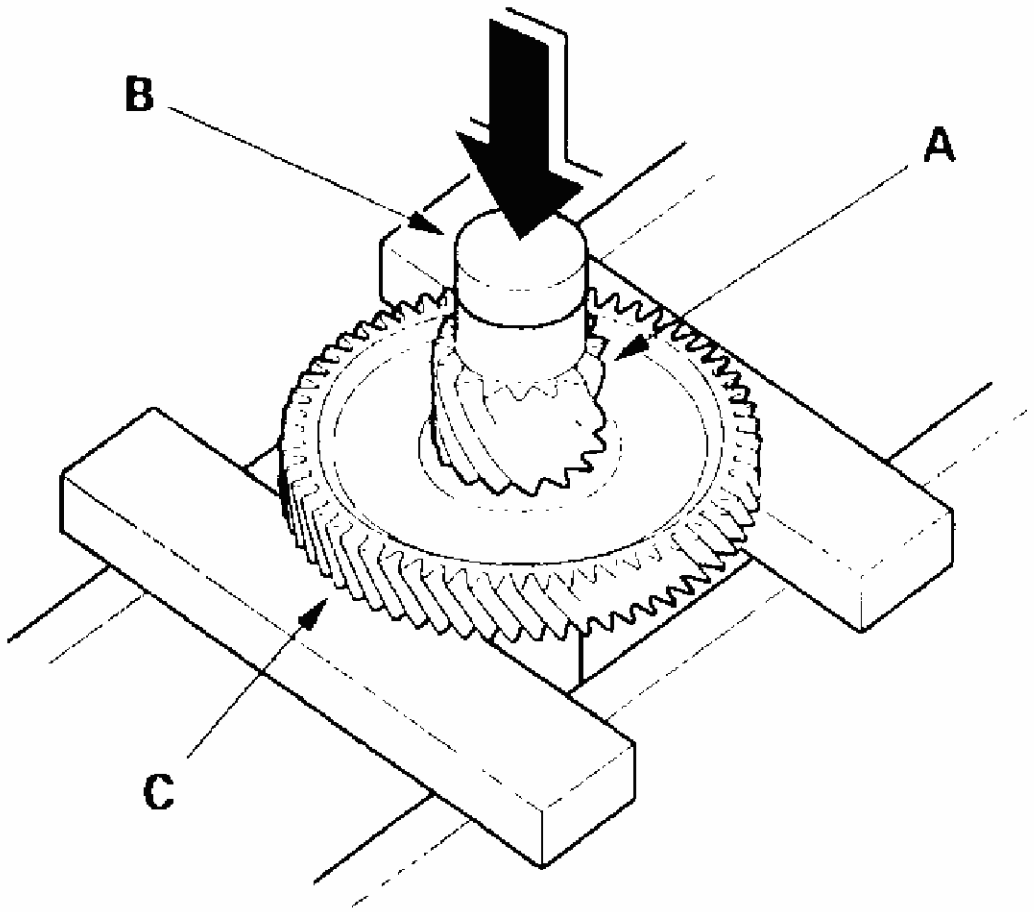

Fig. 61: Pressing The Countershaft Into The 4th Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Stop pressing the countershaft when the 4th gear contacts the 1st gear (C).
5. Install the 31 mm cotters, 35 x 47 x 45.6 mm distance collar, 31 mm cotters, 35 x 47 x

7.8 mm distance collar, snap ring, needle bearing, and 5th gear (A) on the countershaft.

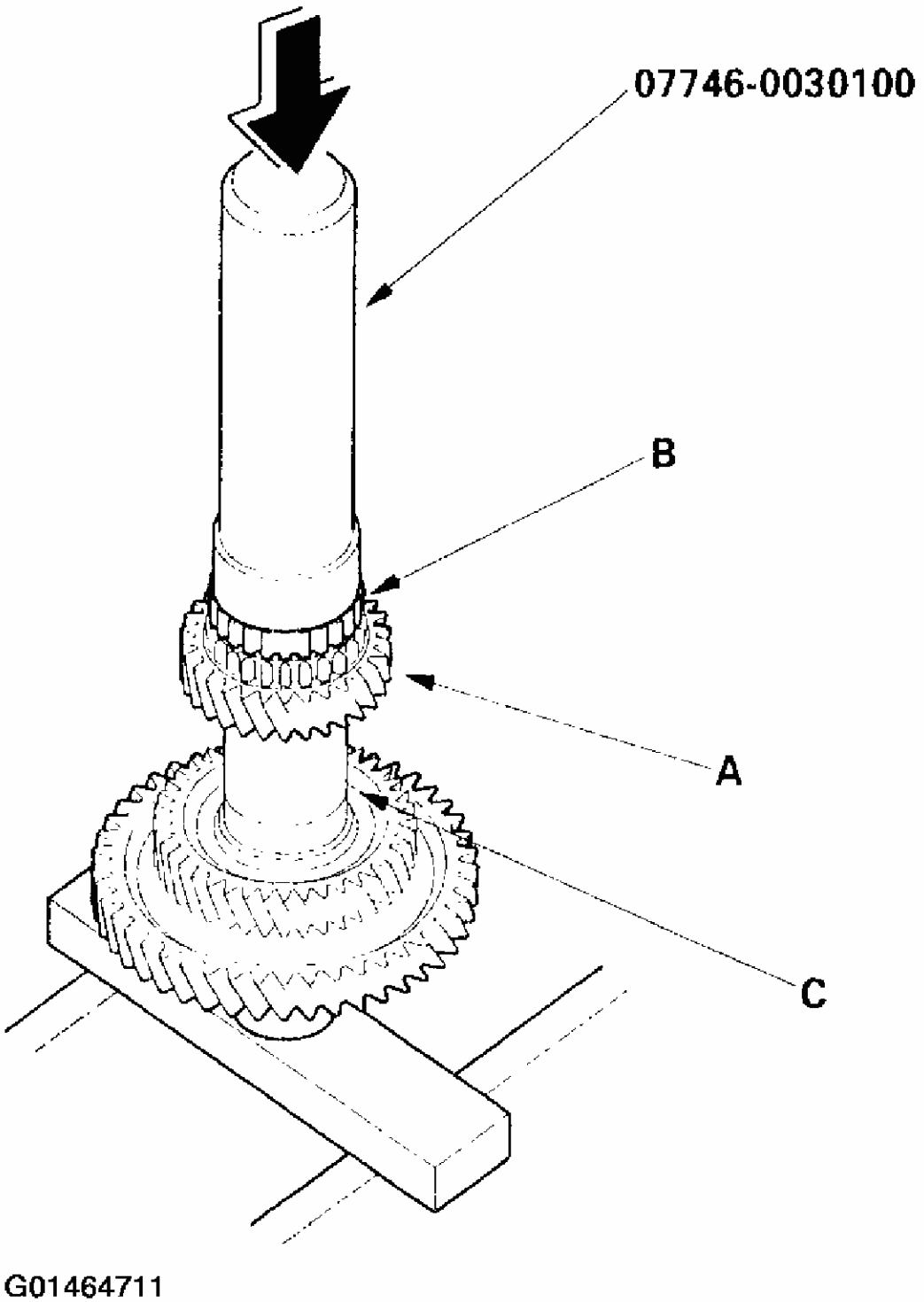

Fig. 62: Installing The 31 mm Cotters, 35 X 47 X 45.6 mm Distance Collar, 31 mm Cotters, 35 X 47 X 7.8 mm Distance Collar, Snap Ring, Needle Bearing & 5th

Gear On The Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

NOTE: Some reverse selector hubs are not press fitted, and can be installed without using the special tool and a press.

3RD CLUTCH BALL BEARING REPLACEMENT

Special Tools Required

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

NOTE: Check the bearing for wear and rough movement. If the bearing is OK, removal is not necessary.

1. Remove the ball bearing (A) from the 3rd clutch with a commercially available bearing puller (B), bearing separator (C), and stepper adapter (D).

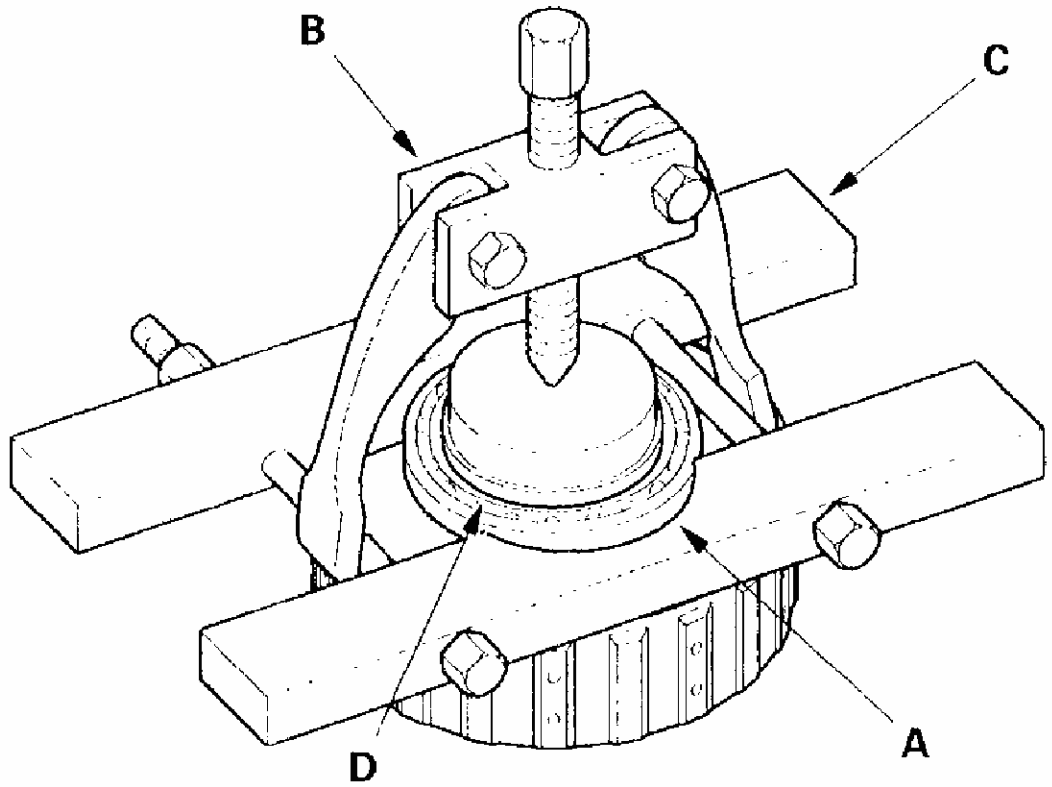

Fig. 63: Removing The Ball Bearing From The 3rd Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new bearing on the 3rd clutch with the special tools and a press.

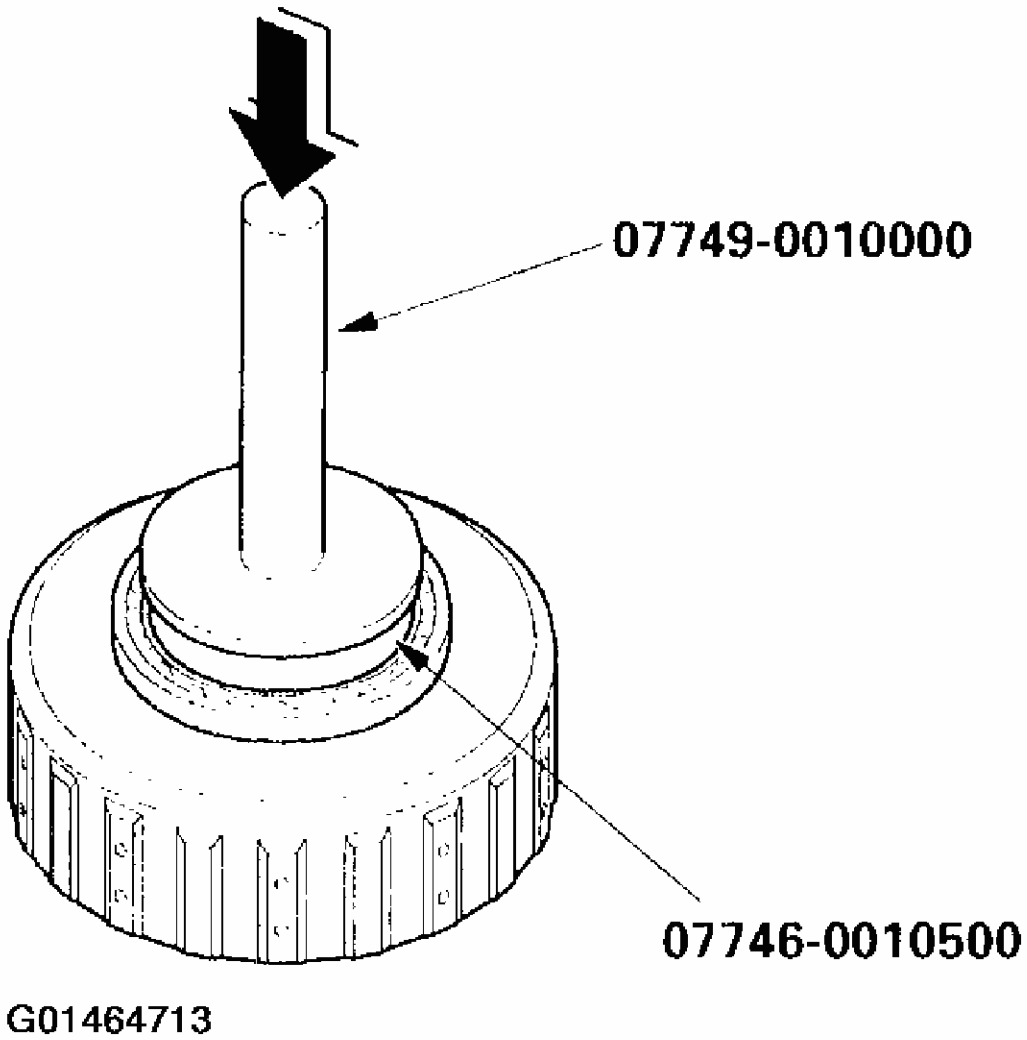

Fig. 64: Installing The Bearing On The 3rd Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SECONDARY SHAFT DISASSEMBLY, INSPECTION & REASSEMBLY

1. Remove the locknut, and disassemble the shaft and gears.

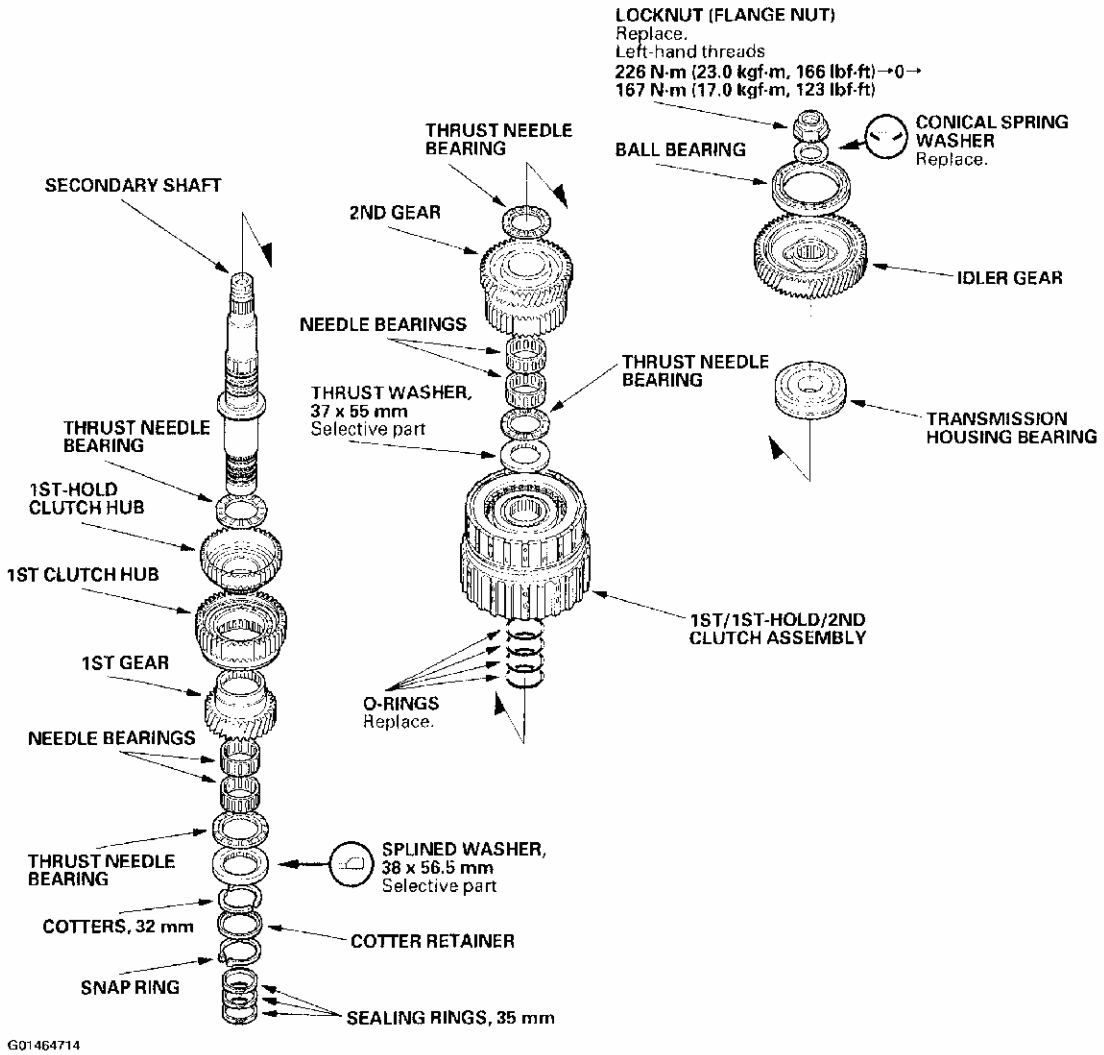

Fig. 65: Exploded View Of Secondary Shaft Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the thrust needle bearing and needle bearing for scoring and rough movement.
3. Check the clearance of the secondary shaft assembly.
4. Check the splines for excessive wear and damage.
5. Check the shaft bearing surfaces for scoring and excessive wear.
6. Check the idler gear bearing for wear and rough movement. If the bearing is worn or damaged, replace it (see **Secondary Shaft Idler Gear Bearing Replacement**).
7. Before installing the O-rings, wrap the shaft splines with tape to prevent damage to the O-rings.
8. Lubricate all parts with ATF during reassembly.
9. Install the conical spring washer and splined washer in the direction shown.

SECONDARY SHAFT CLEARANCE INSPECTION

1. Remove the O-rings from the secondary shaft.
2. Assemble the thrust needle bearing (A), 1st gear assembly (B), needle bearings (C), thrust needle bearing (D), 38 x 56.5 mm splined washer (E), 32 mm cotters (F), cotter retainer (G), and snap ring (H) on the secondary shaft (I).

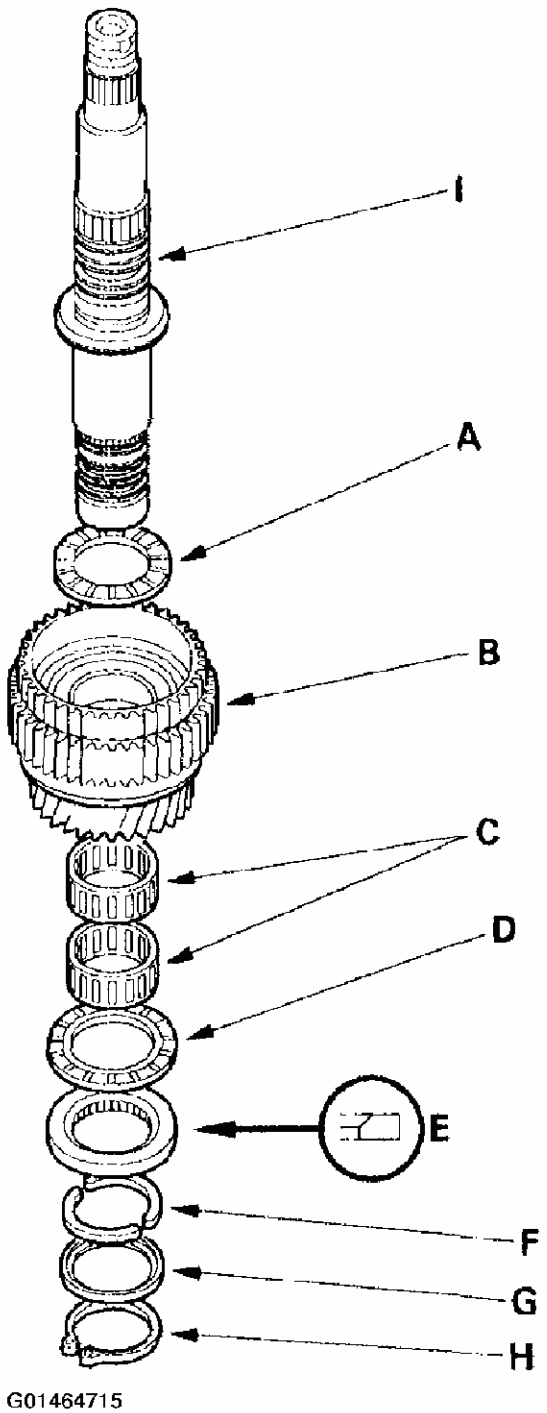

Fig. 66: Exploded View Of Secondary Shaft

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Measure the clearance between the 38 x 56.5 mm splined washer (E) and cotters (F) with a feeler gauge (J) in at least three places. Use the average as the actual clearance.

   Standard: 0.07-0.15 mm (0.003-0.006 in.)

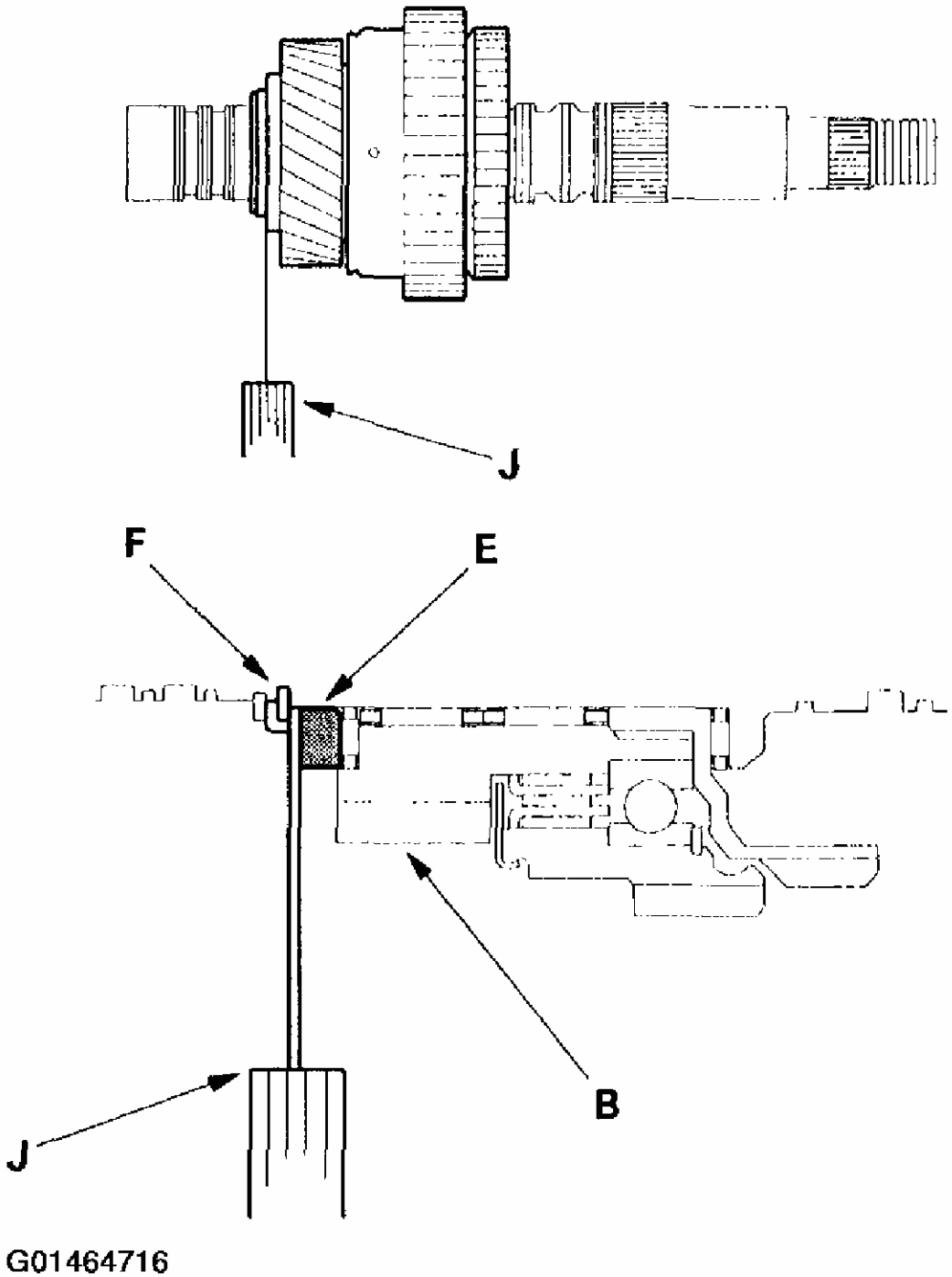

Fig. 67: Measuring The Clearance Between The 38 X 56.5 mm Splined Washer & Cotters
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. If the measurement is out of standard, remove the splined washer, and measure its

thickness.

5. Select and install a new splined washer, then recheck the clearance.

No.	Part Number	Thickness
1	90502-P0Z-000	6.85 mm (0.270 in.)
2	90503-P0Z-000	6.90 mm (0.272 in.)
3	90504-P0Z-000	6.95 mm (0.274 in.)
4	90505-P0Z-000	7.00 mm (0.276 in.)
5	90506-P0Z-000	7.05 mm (0.278 in.)
6	90507-P0Z-000	7.10 mm (0.280 in.)

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Fig. 68: 38 X 56.5 mm Splined Washer Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Remove the 27 x 47 x 5 mm thrust washer from the mainshaft.
7. Assemble the 1st/1st-hold/2nd clutch assembly (A), 37 x 55 mm thrust washer (B), thrust needle bearing (C), needle bearings (D), 2nd gear (E), thrust needle bearing (F), and 27 x 47 x 5 mm thrust washer (removed from mainshaft) (G) on the secondary shaft subassembly (H).

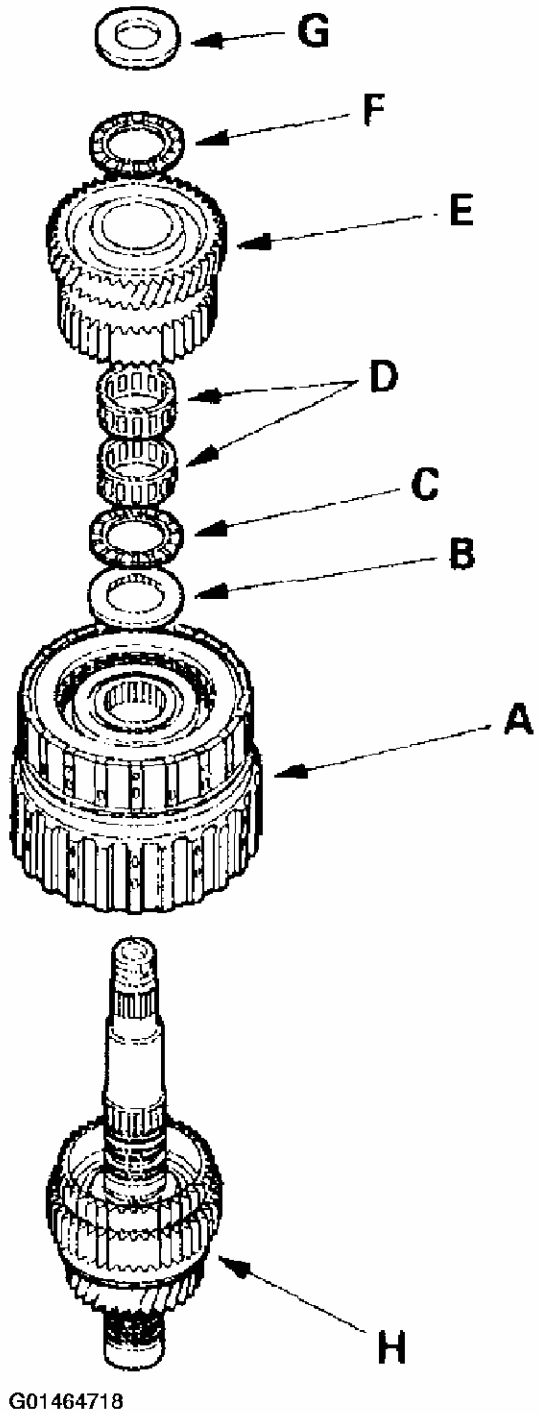

Fig. 69: Assembling Secondary Shaft Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Set the dial indicator (I) on the 2nd gear (E).

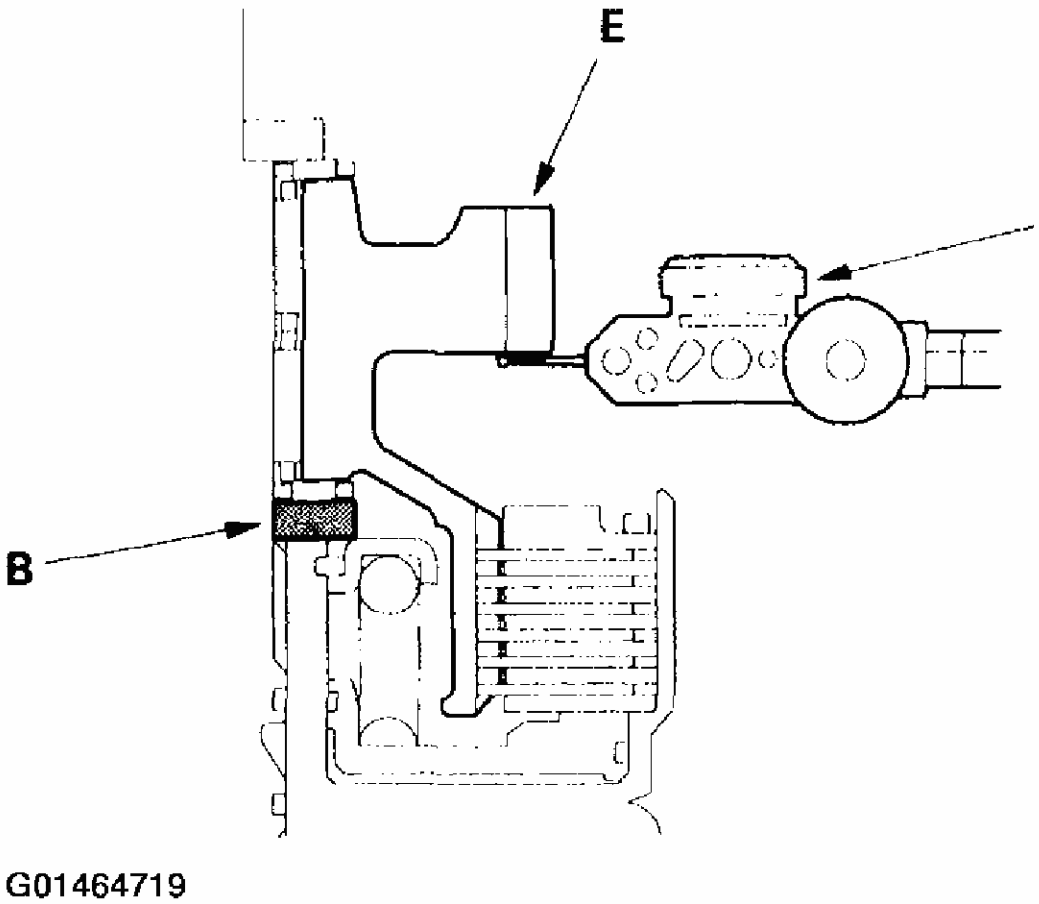

Fig. 70: Setting The Dial Indicator On The 2nd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Hold the 27 x 47 x 5 mm thrust washer (G) against the clutch assembly (A), and measure the 2nd gear axial clearance in at least three places while moving the 2nd gear (E). Use the average as the actual clearance.

   Standard: 0.04-0.12 mm (0.002-0.005 in.)

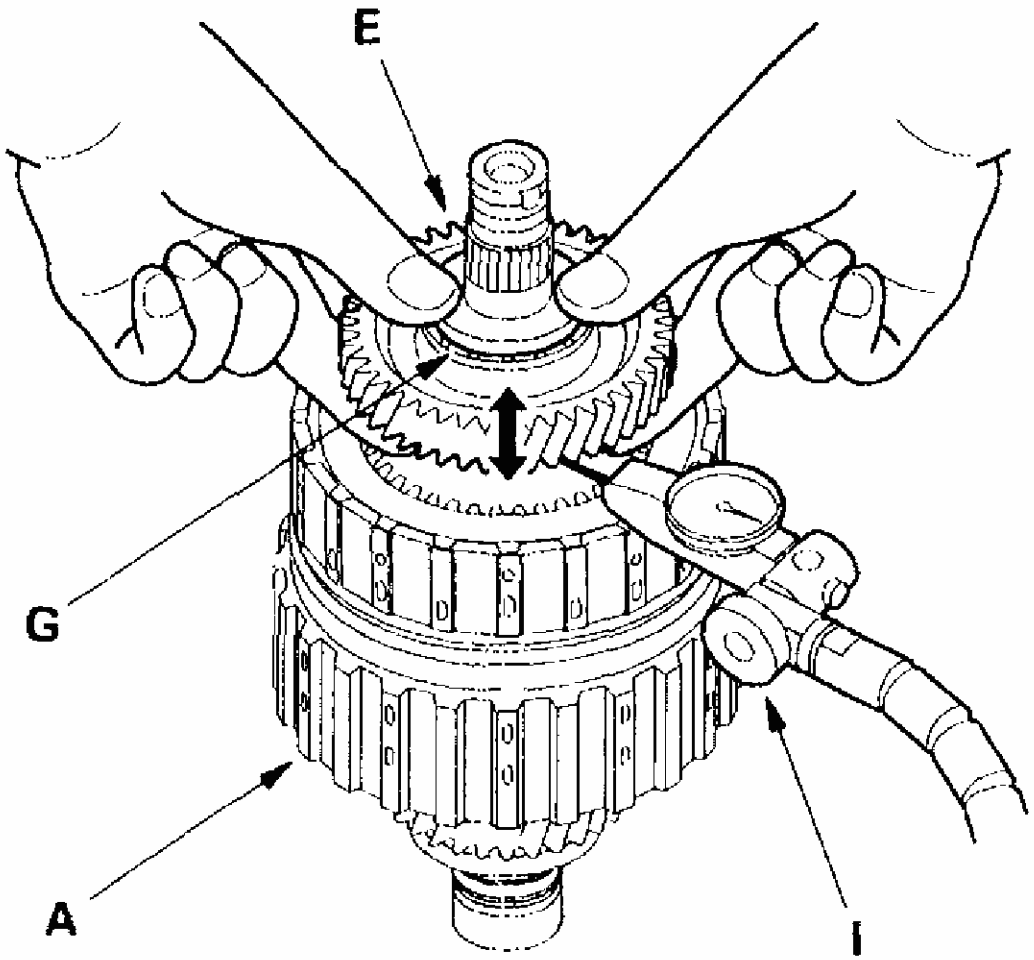

Fig. 71: Measuring The 2nd Gear Axial Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. If the measurement is out of standard, remove the 37 x 55 mm thrust washer and measure its thickness.
11. Select and install a new thrust washer, then recheck the clearance.

No.	Part Number	Thickness
1	90406-P0Z-000	4.90 mm (0.193 in.)
2	90407-P0Z-000	4.95 mm (0.195 in.)
3	90408-P0Z-000	5.00 mm (0.197 in.)
4	90409-P0Z-000	5.05 mm (0.199 in.)
5	90410-P0Z-000	5.10 mm (0.201 in.)
6	90411-P0Z-000	5.15 mm (0.203 in.)
7	90412-P0Z-000	5.20 mm (0.205 in.)

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Fig. 72: 37 X 55 mm Thrust Shim Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Disassemble the shaft and gears.
13. Reinstall the 27 x 47 x 5 mm thrust washer on the mainshaft.

SECONDARY SHAFT IDLER GEAR BEARING REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Attachment, 78 x 90 mm 07GAD-SD40101

1. Check the bearing for wear, damage, and rough movement. If the bearing is worn or damaged, go to step 2.
2. Place the secondary shaft idler gear in a vise with soft jaws.
3. Remove the bearing (A) from the secondary shaft idler gear (B) with a commercially available bearing puller (C).

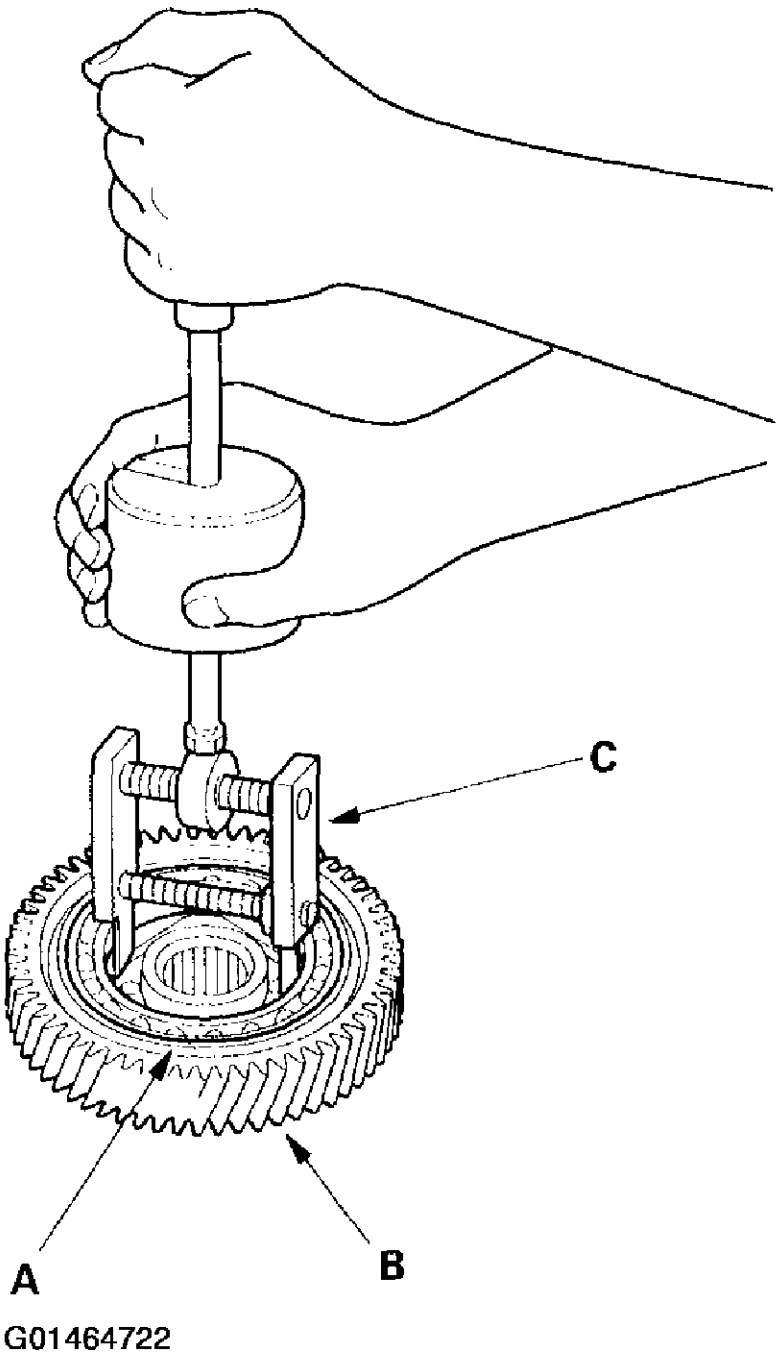

Fig. 73: Removing The Bearing From The Secondary Shaft Idler Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the bearing on the secondary shaft idler gear with the special tools and a press.

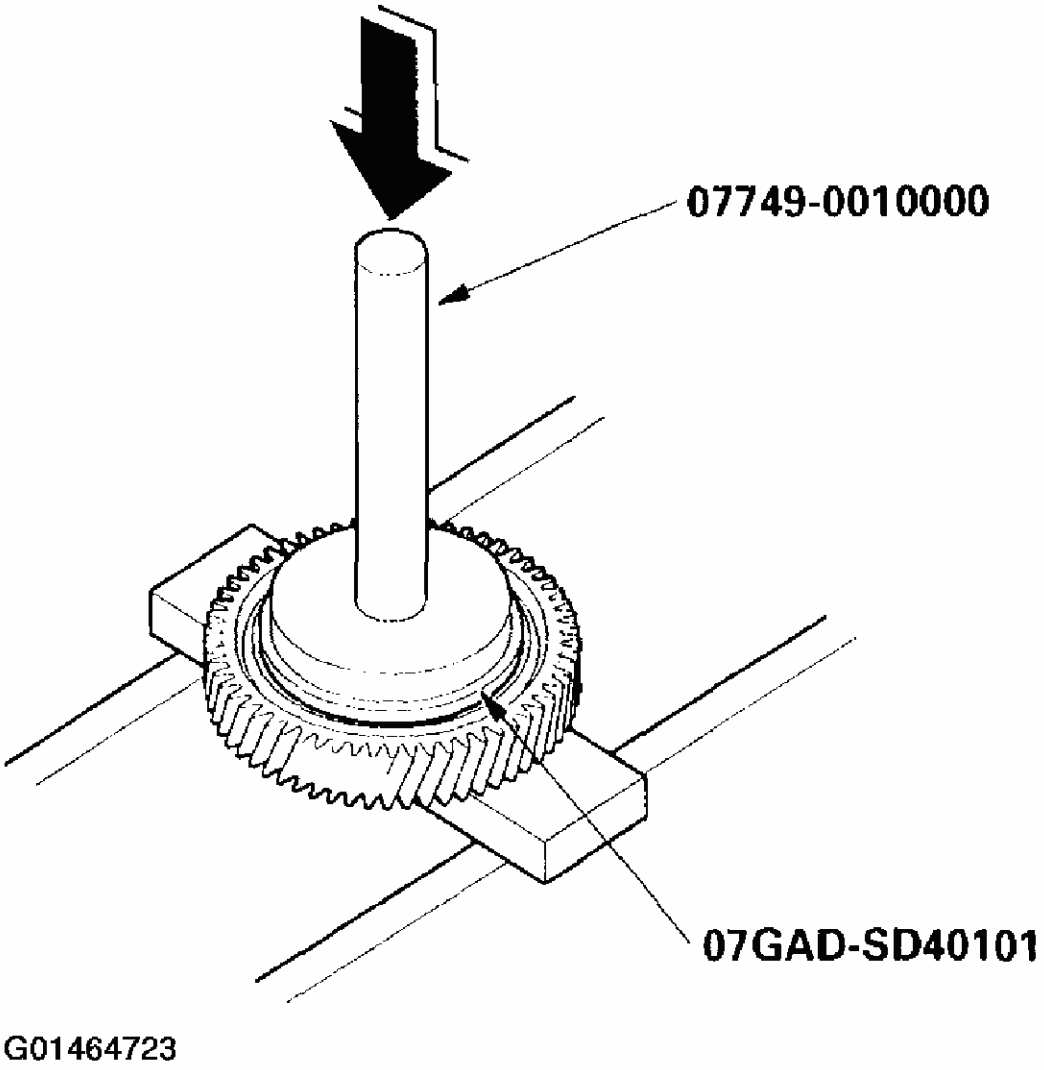

Fig. 74: Installing The Bearing On The Secondary Shaft Idler Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1ST GEAR ONE-WAY CLUTCH INSPECTION

1. Hold the 1st-hold clutch hub (A), and turn the 1st gear (B) in the direction shown to be sure it turns freely. Also make sure the 1st gear does not turn in the opposite direction.

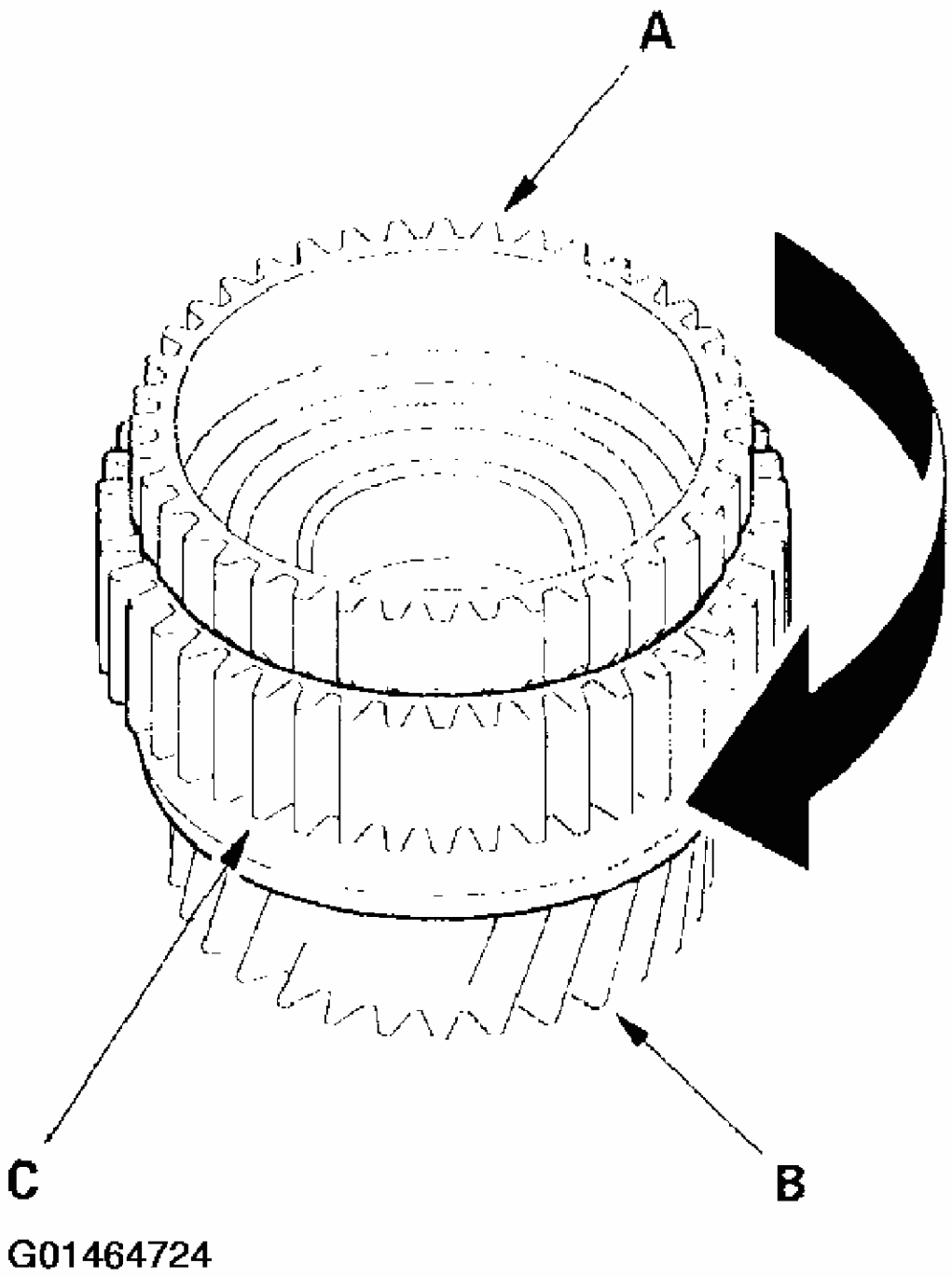

Fig. 75: Holding The 1st-Hold Clutch Hub & Turning The 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If any problem occurs on the 1st gear one-way clutch, replace the 1st clutch hub (C). The 1st gear one-way clutch is not available separately from the 1st clutch hub.

1ST CLUTCH HUB REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Driver attachment 07947-6340500
- Attachment, 78 x 90 mm 07GAD-SD40101

1. Remove the 1st-hold clutch hub (A) from the 1st gear (B) with the special tools and a press.

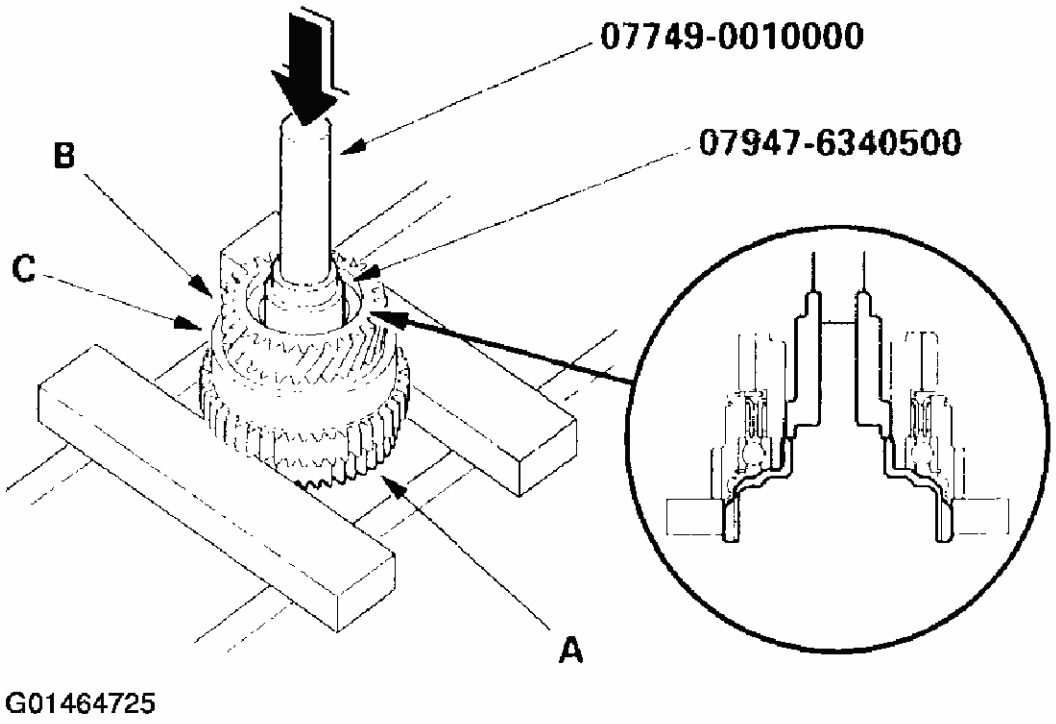

Fig. 76: Removing The 1st-Hold Clutch Hub From The 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the 1st clutch hub (C) from the 1st gear, then install the new 1st clutch hub in the 1st gear.
3. Install the 1st-hold clutch hub (A) in the 1st gear (B) with the special tools and a press.

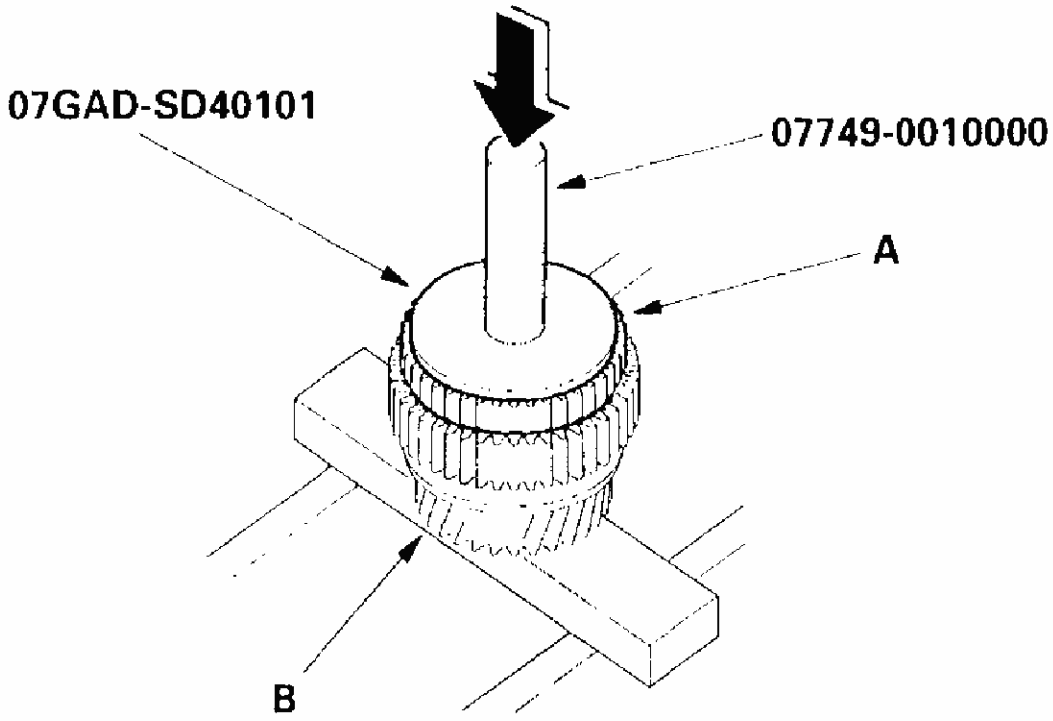

Fig. 77: Installing The 1st-Hold Clutch Hub In The 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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).

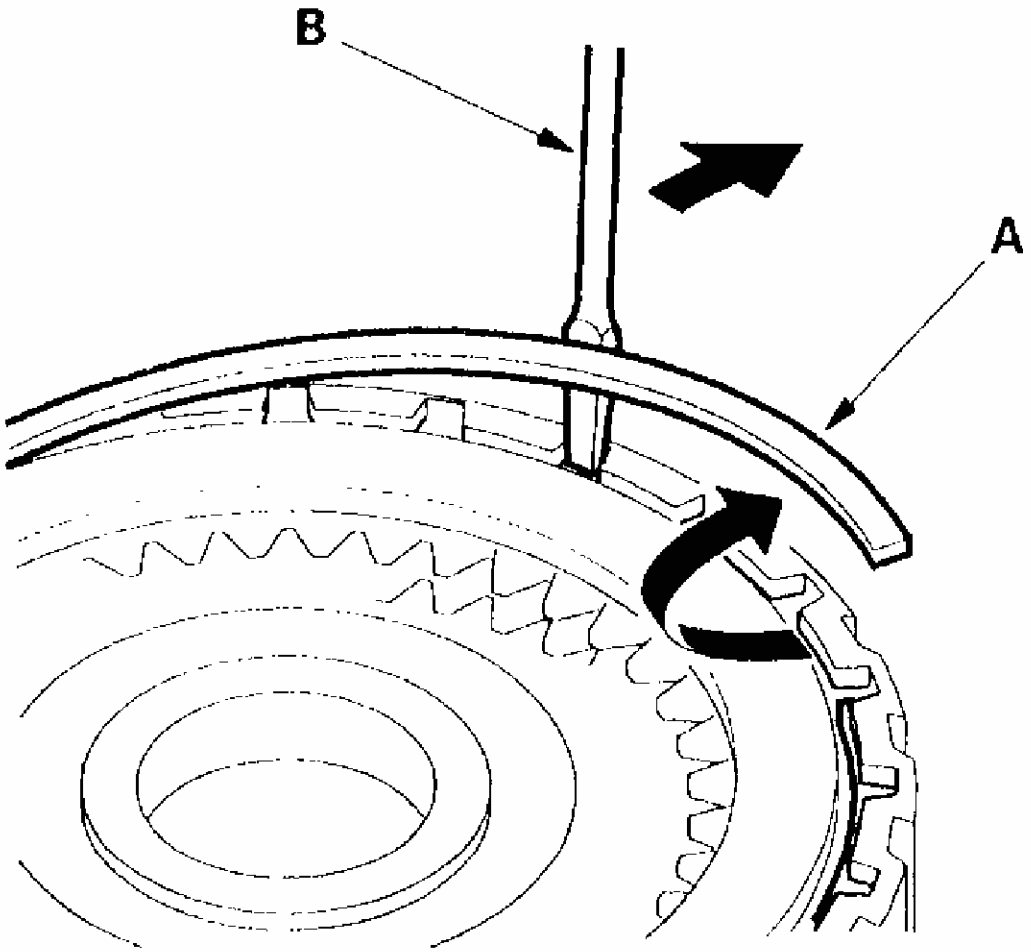

Fig. 78: Removing The Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: The 2nd clutch and 1st-hold clutch do not have a disc spring.

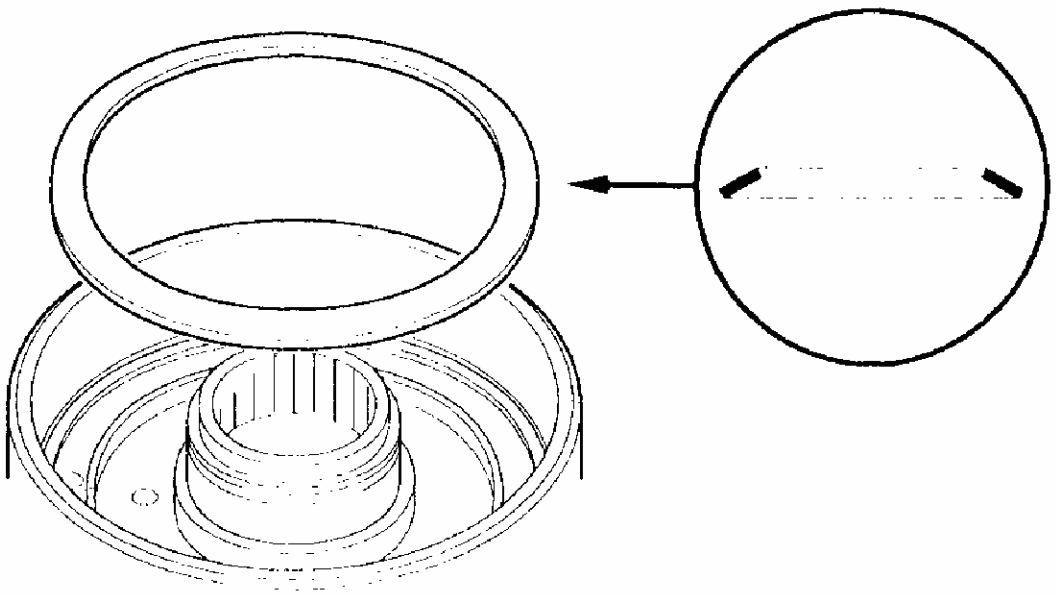

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Fig. 79: Removing The Disc Spring From The 1st, 3rd, 4th & 5th Clutches
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the disc spring from the 1st, 3rd, 4th, and 5th clutches.
3. Install the special tools on the clutch assembly.

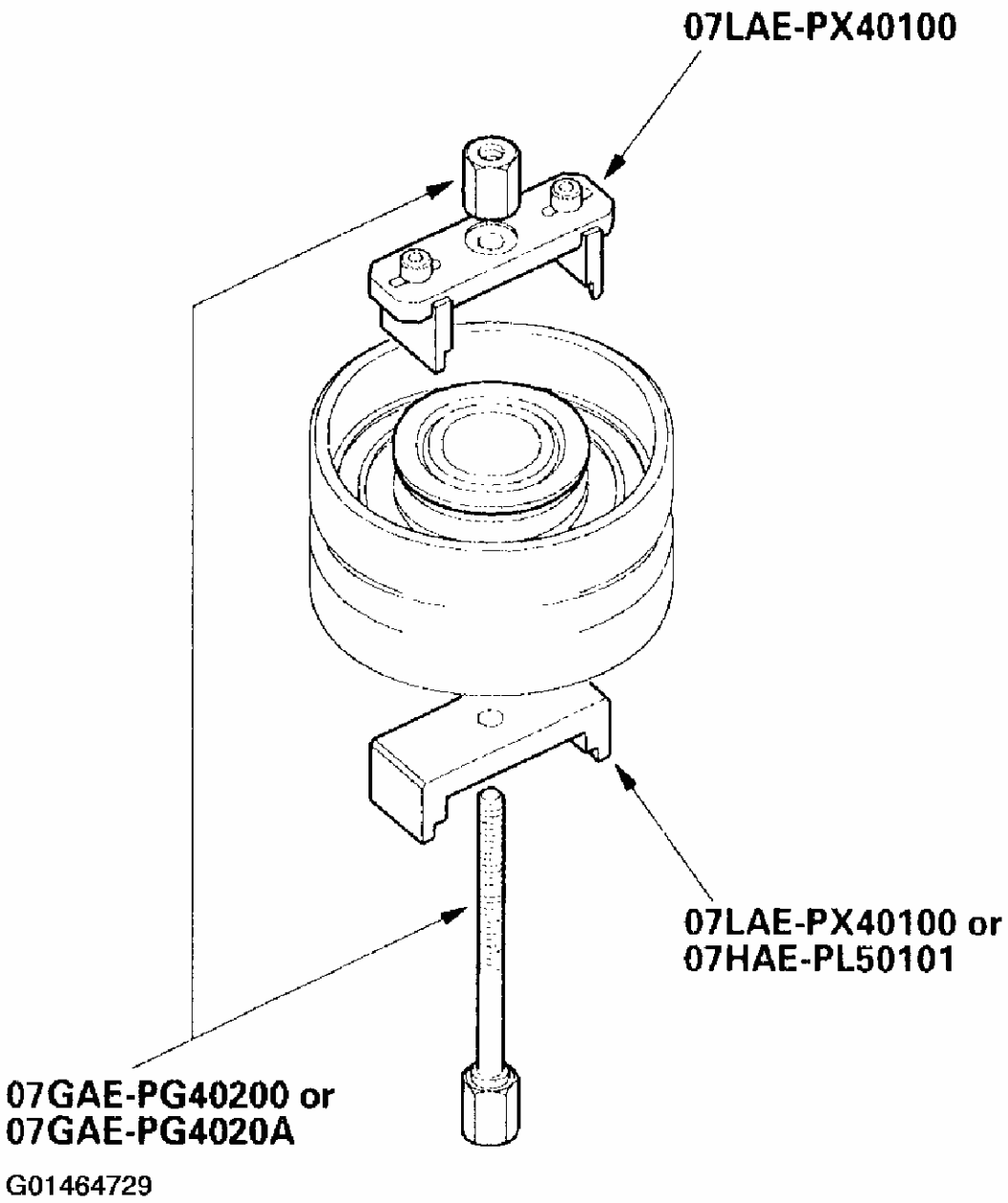

Fig. 80: Installing The Special Tools On The Clutch Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 4th, 5th and 1st clutches.

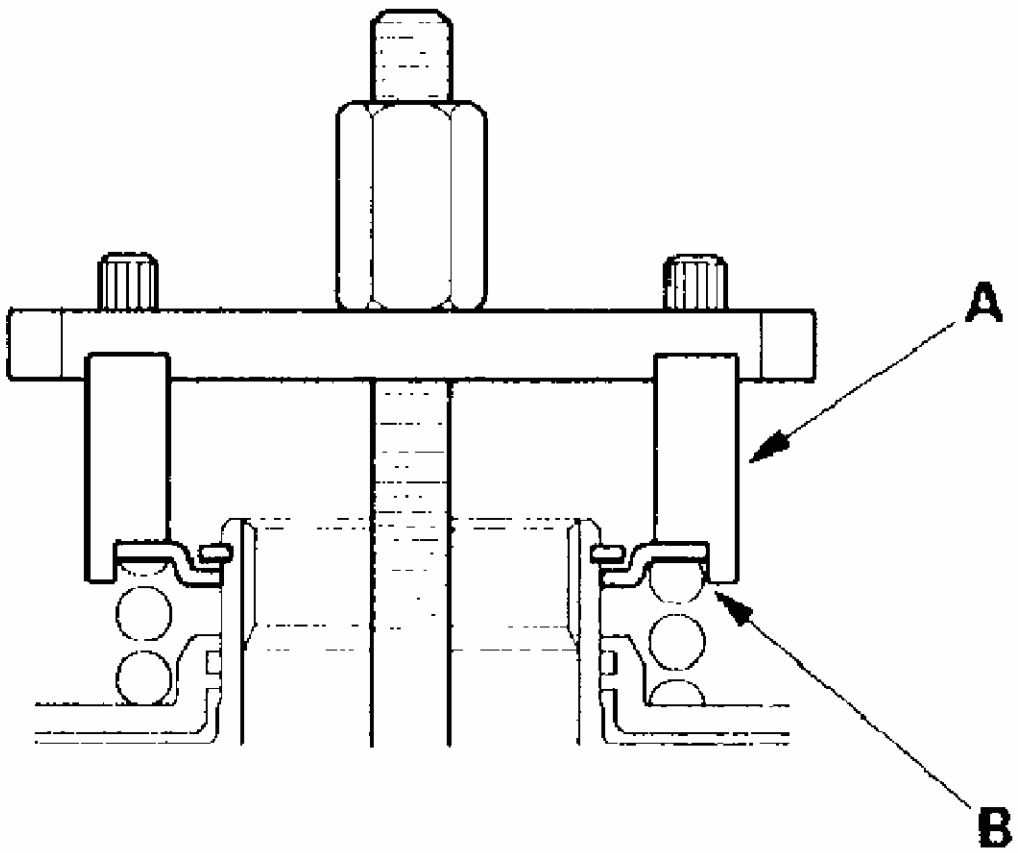

Fig. 81: Ensuring The Special Tool Is Adjusted Properly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Set the special tool (A) on the spring retainer (B) of the 2nd and 3rd clutches in such a way that the special tool works on the clutch return spring (C).

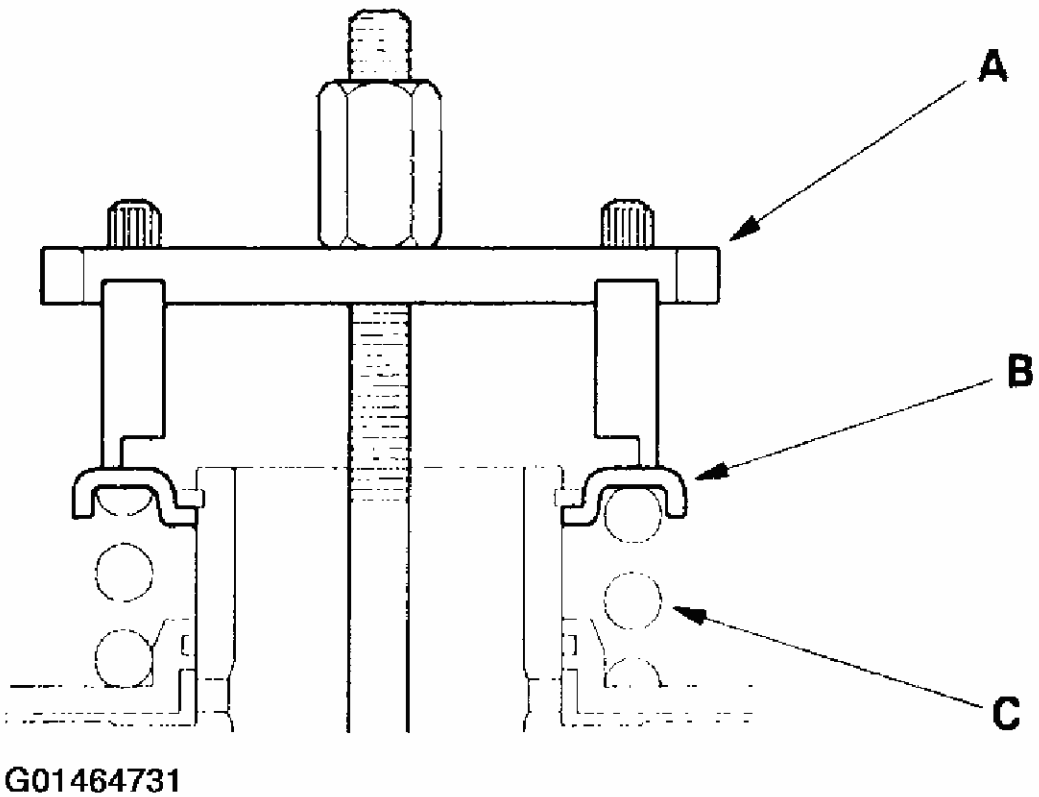

Fig. 82: Setting The Special Tool On The Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. 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.

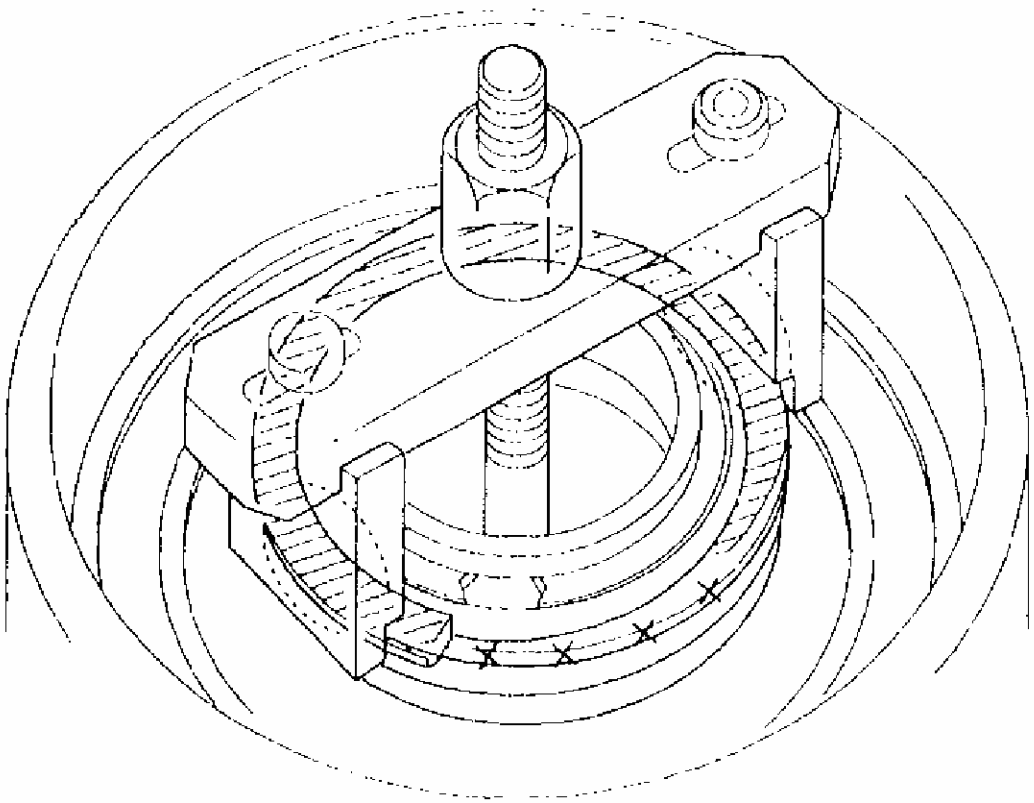

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Fig. 83: Ensuring Special Tool Is Not Set Over An Unsupported Area Of The Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

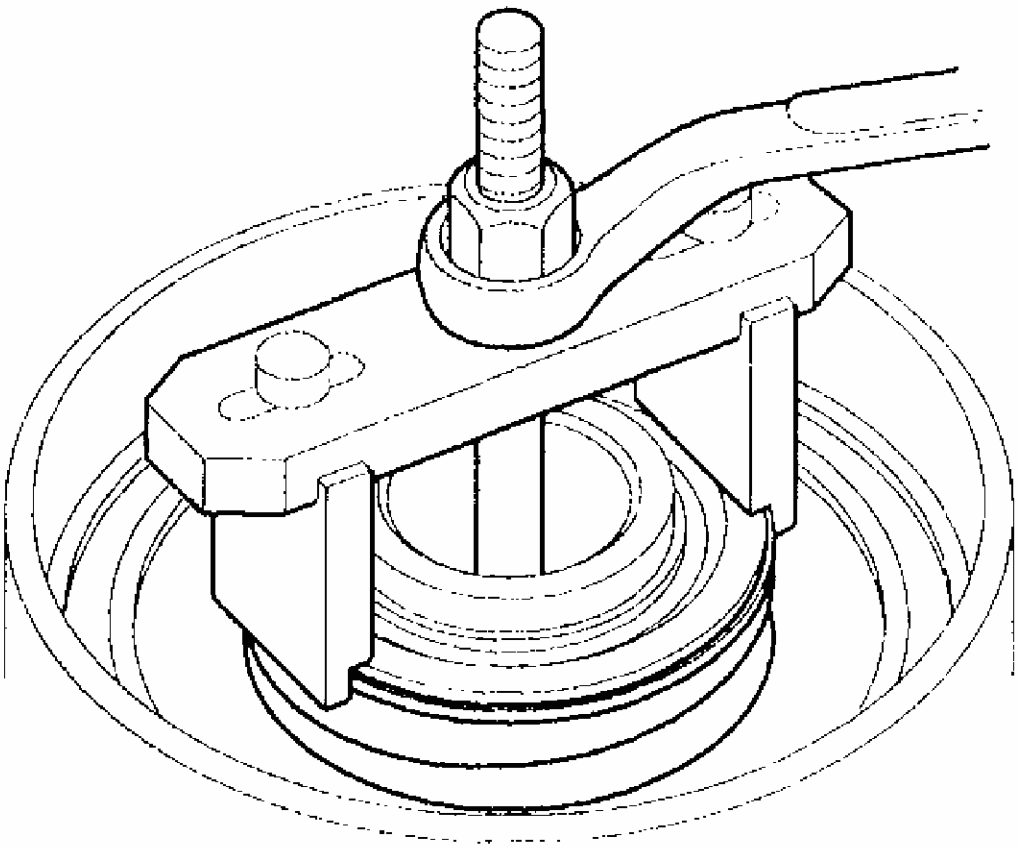

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Fig. 84: Compressing The Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

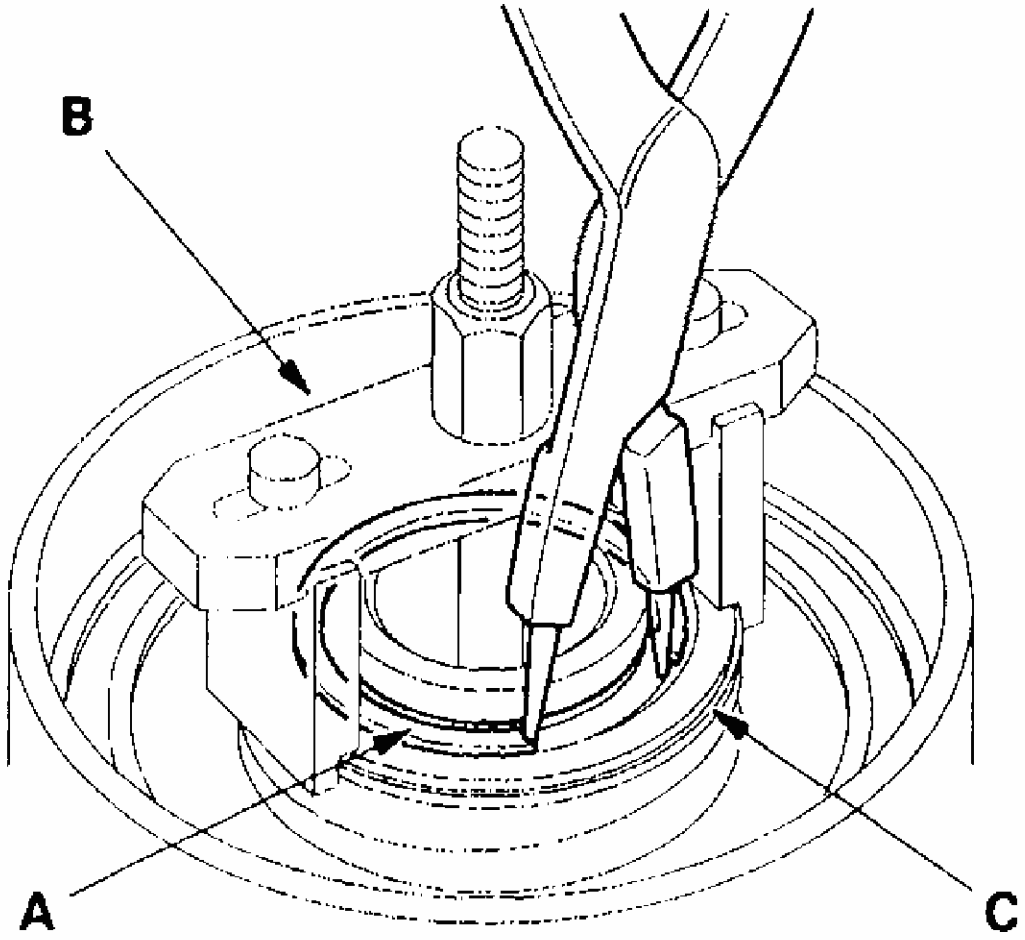

Fig. 85: Removing The Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. 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.

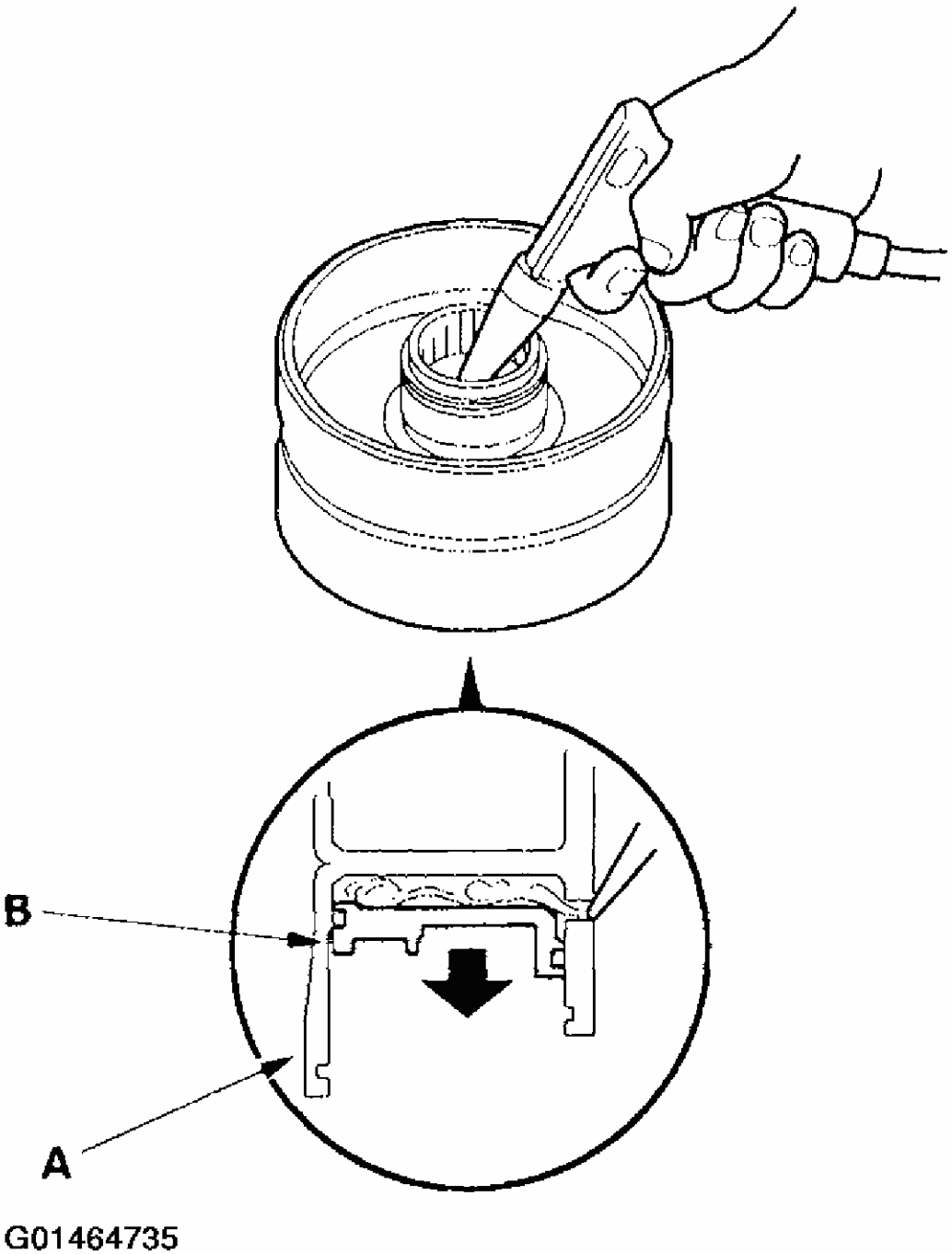

Fig. 86: Applying Air Pressure To The Fluid Passage
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CLUTCH INSPECTION

1st/1st-hold/2nd Clutch

Clutch disc standard thickness:

- 1.94 mm (0.076 in.)

Clutch plate standard thickness:

- 1st clutch: 1.6 mm (0.063 in.)
- 2nd clutch: 1.6 mm (0.063 in.)
- 1st-hold clutch: 1.8 mm (0.071 in.)

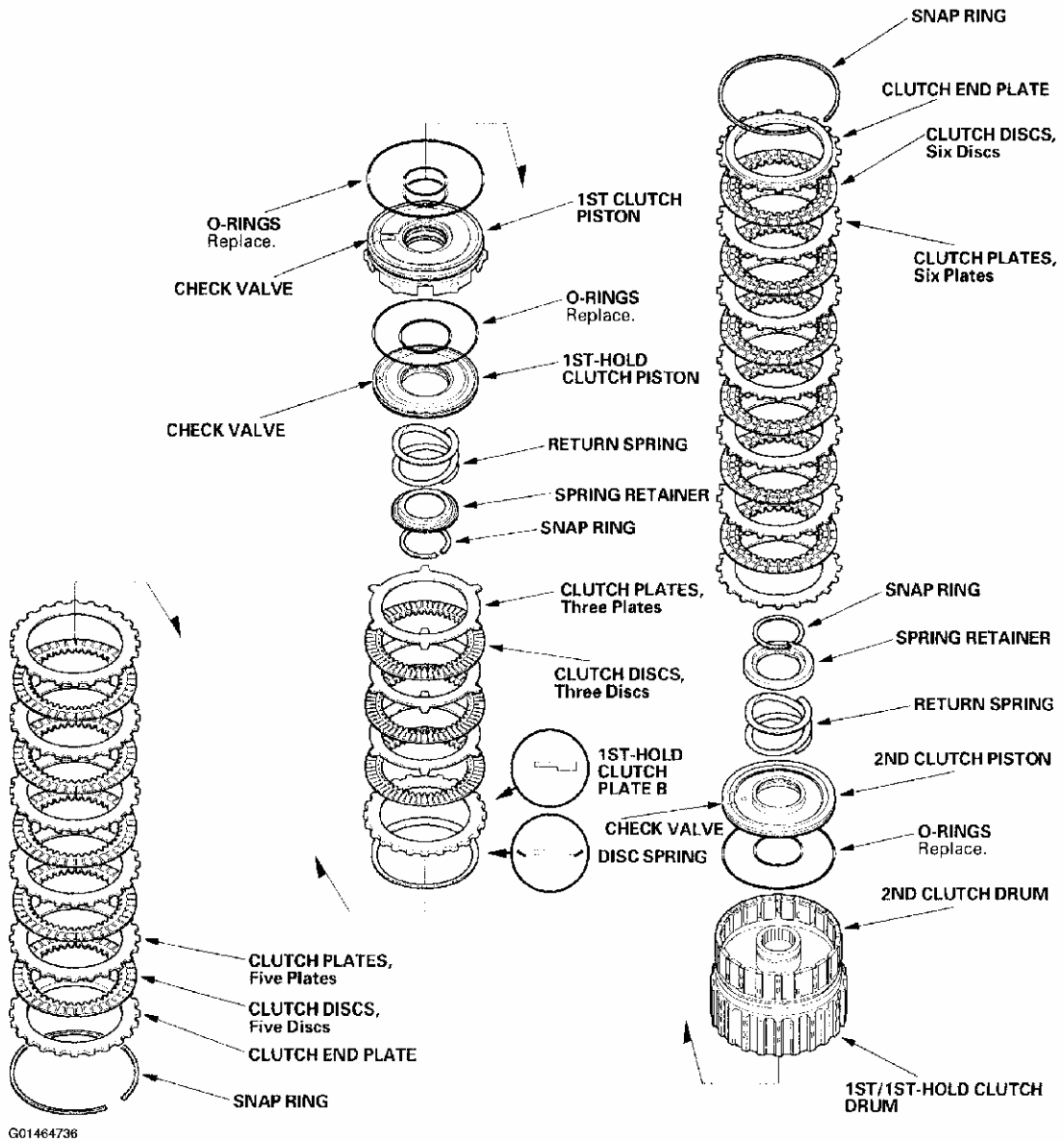

Fig. 87: Exploded View Of 1st/1st-Hold/2nd Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3rd Clutch

Clutch disc standard thickness:

- 1.94 mm (0.076 in.)

Clutch plate standard thickness:

- 2.3 mm (0.091 in.)

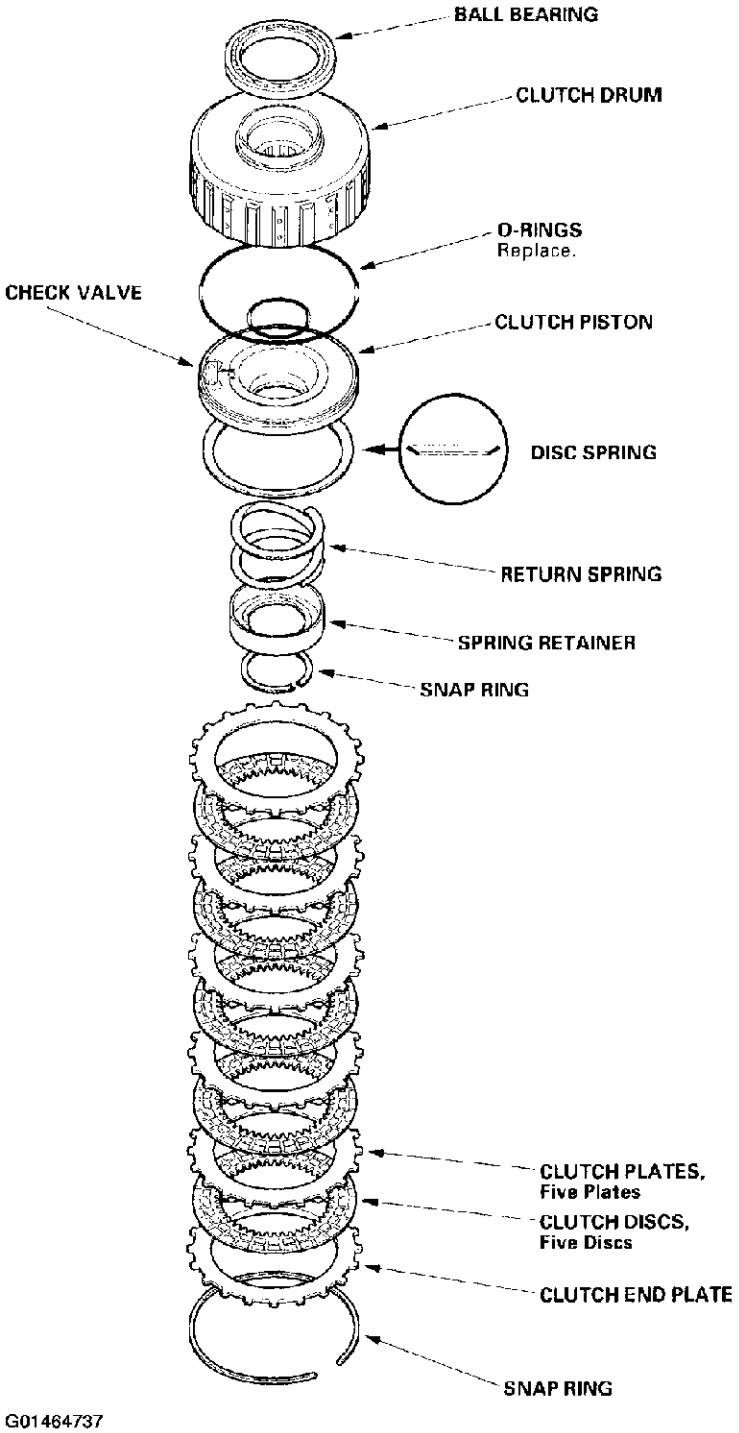

Fig. 88: Exploded View Of 3rd Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4th/5th Clutch

Clutch disc standard thickness:

- 1.94 mm (0.076 in.)

Clutch plate standard thickness:

- 4th clutch: 2.3 mm (0.091 in.)
- 5th clutch: 2.0 mm (0.079 in.)

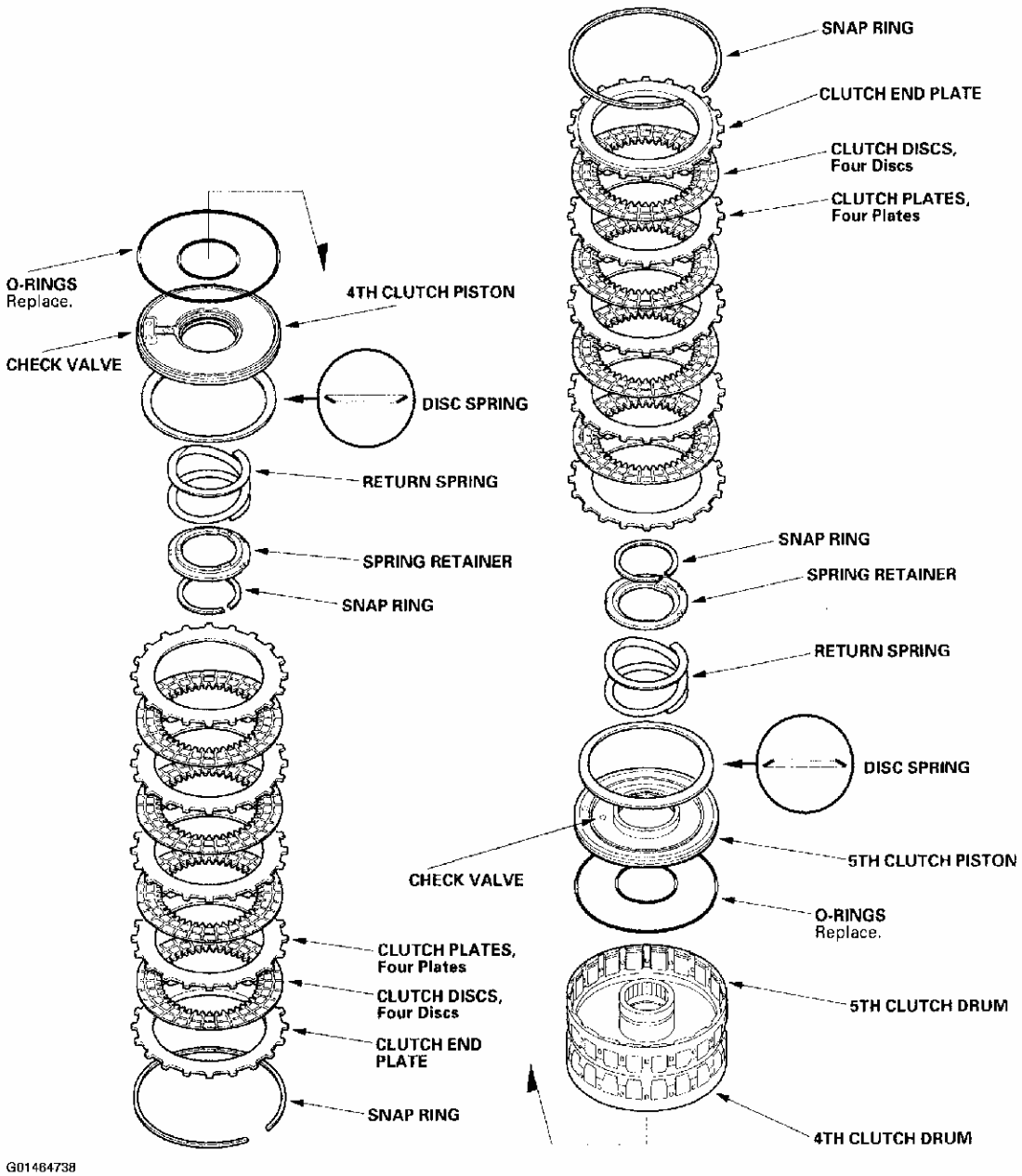

Fig. 89: Exploded View Of 4th/5th Clutch
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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
- Clutch compressor attachment 07ZAE-PRP0100

NOTE: Note these items during reassembly:

- **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. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.
2. Inspect the check valve (A) on the clutch pistons (B). If the check valve is loose or stuck, replace the piston.

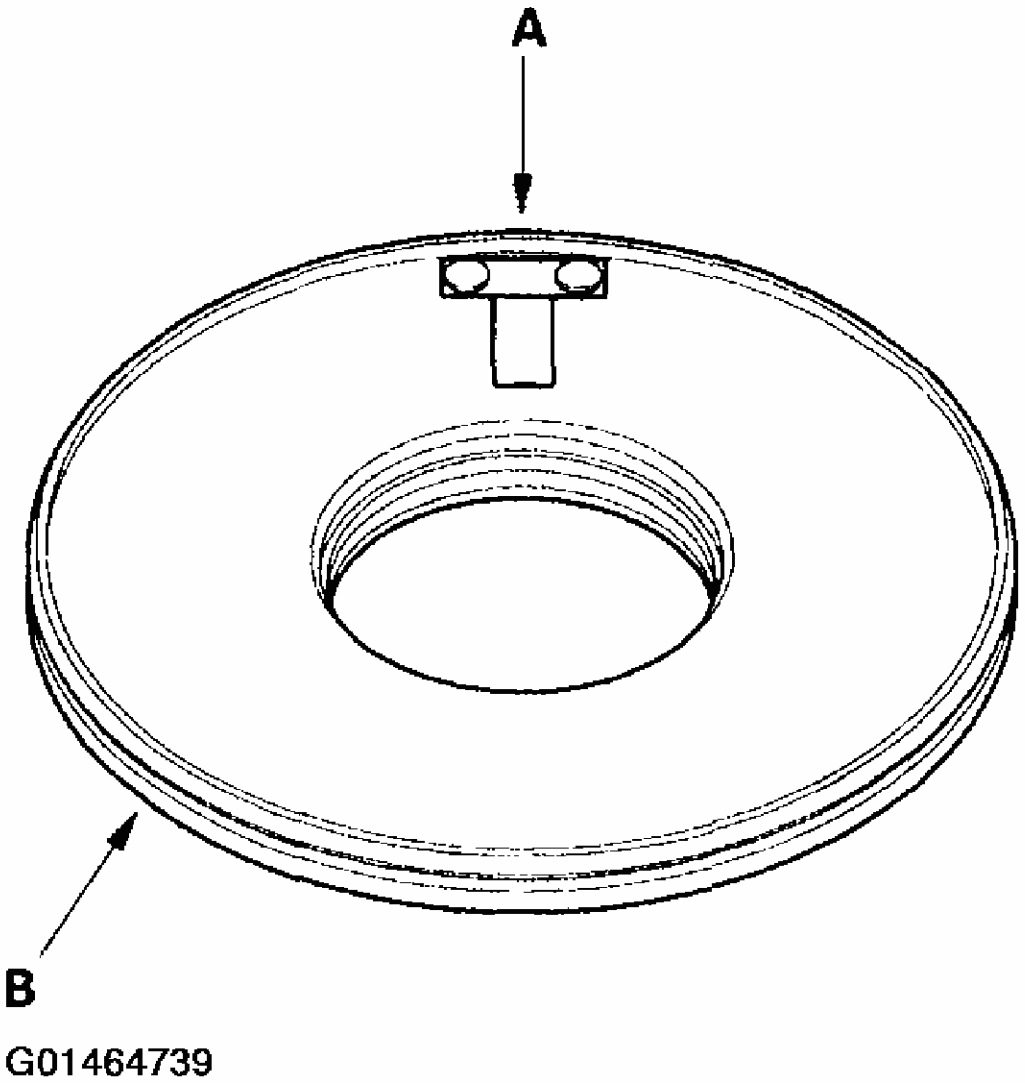

Fig. 90: Inspecting The Check Valve On The Clutch Pistons
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

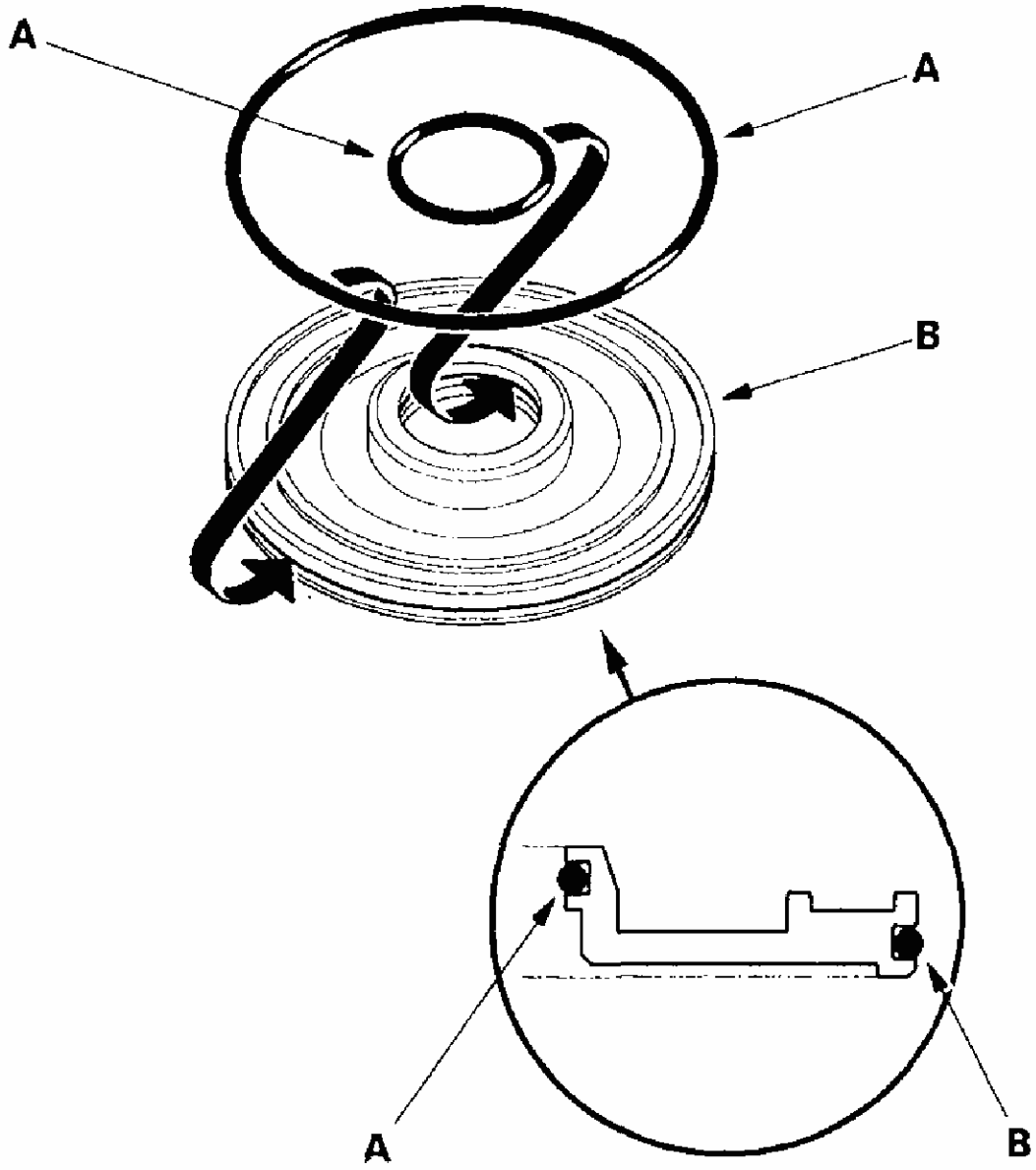

Fig. 91: Installing O-Rings On The Piston
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

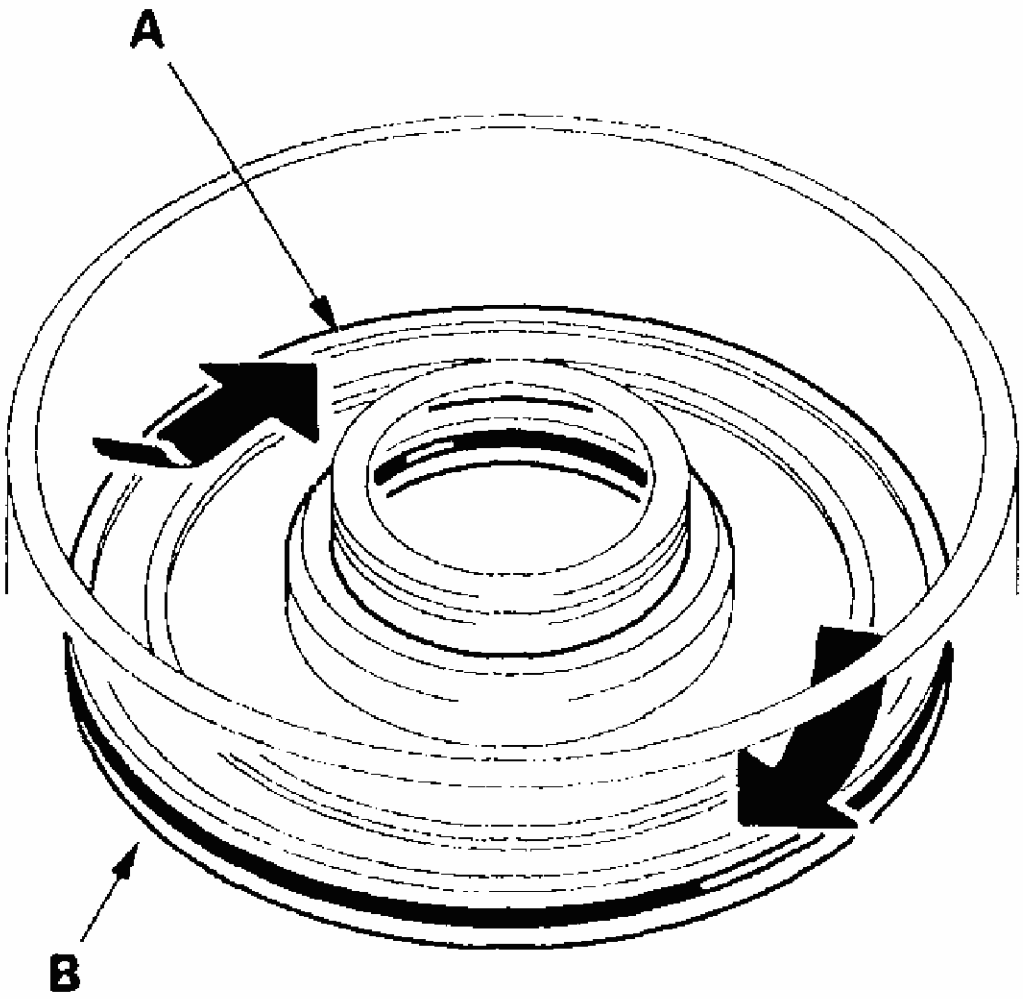

Fig. 92: Installing The Piston In The Clutch Drum
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Check the 1st-hold clutch end-plate-to-top-disc clearance; starting with a clutch plate, alternately install the clutch plate and discs in the 1st-hold clutch drum, then install the 1st-hold clutch plate B.
6. Measure the 1st-hold clutch clearance between the 1st-hold clutch plate B and the top disc (A) with a feeler gauge (C) while pressing the 1st-hold clutch plate B down. Take measurements in a least three places, and use the average as the actual clearance.

1st-hold Clutch End-Plate (B) to-Top-disc Clearance Service Limit: 0.5-0.9 mm (0.020-0.035 in.)

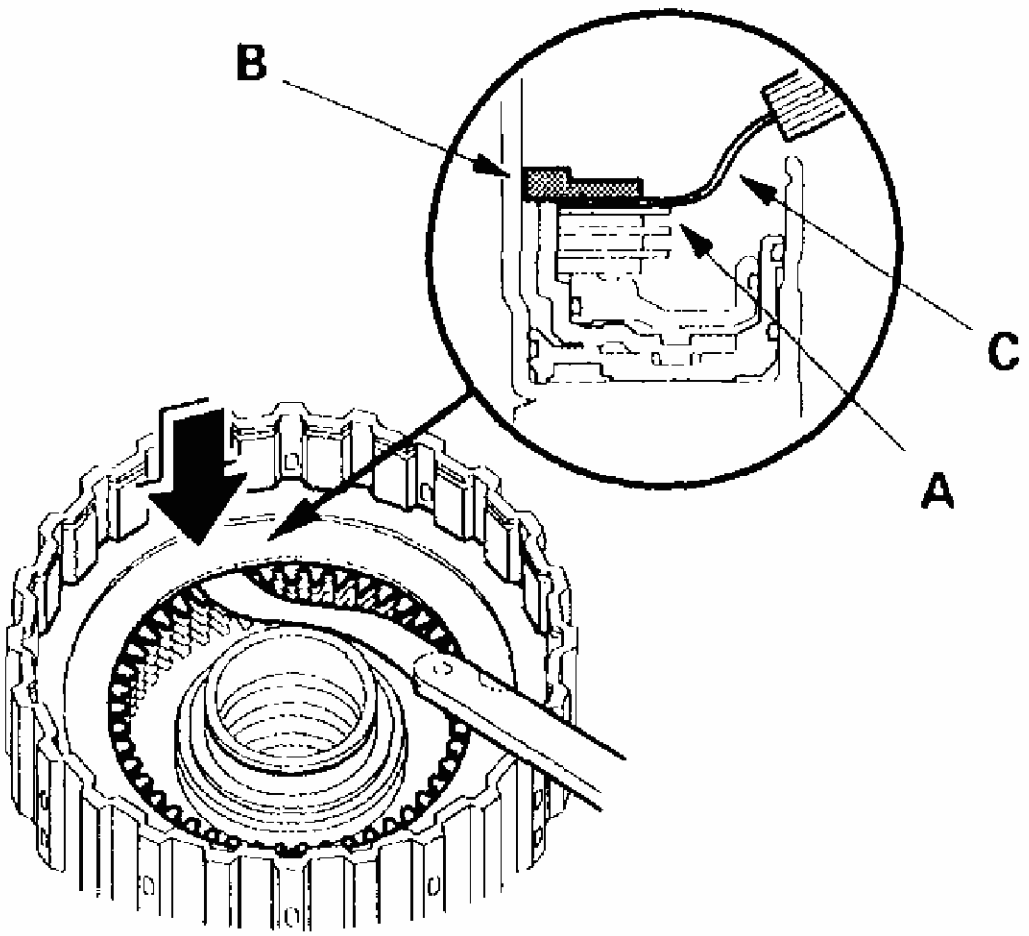

Fig. 93: Measuring The 1st-Hold Clutch Clearance Between The 1st-Hold Clutch Plate & The Top Disc
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. If the clearance is out of standard, replace the 1st-hold clutch plates and discs as a set, and recheck.
8. Install the return spring (A) and spring retainer (B), and position the snap ring (C) on the retainer.

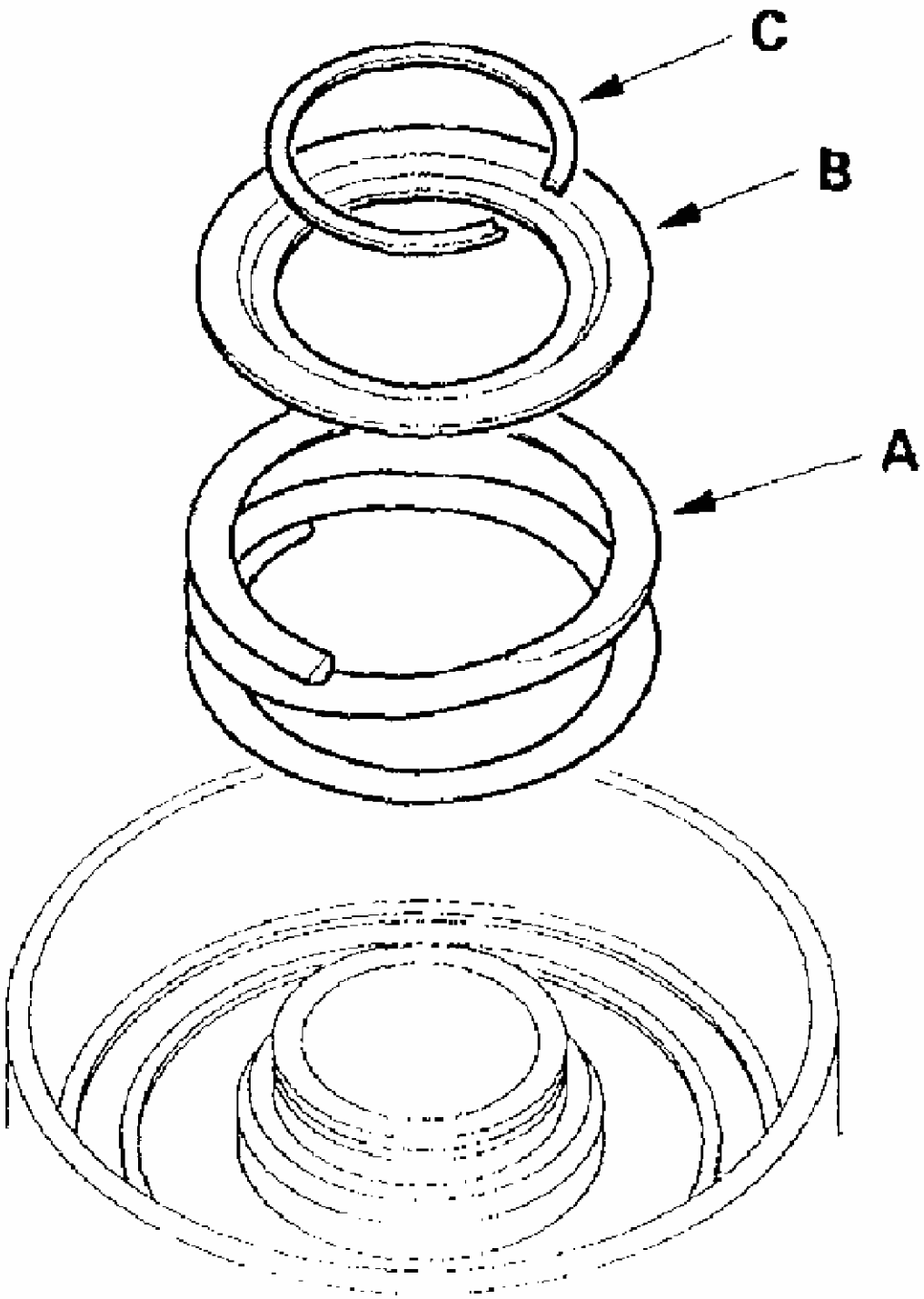

Fig. 94: Installing The Return Spring & Spring Retainer, & Positioning The Snap Ring On The Retainer

Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the special tools on the clutch assembly.

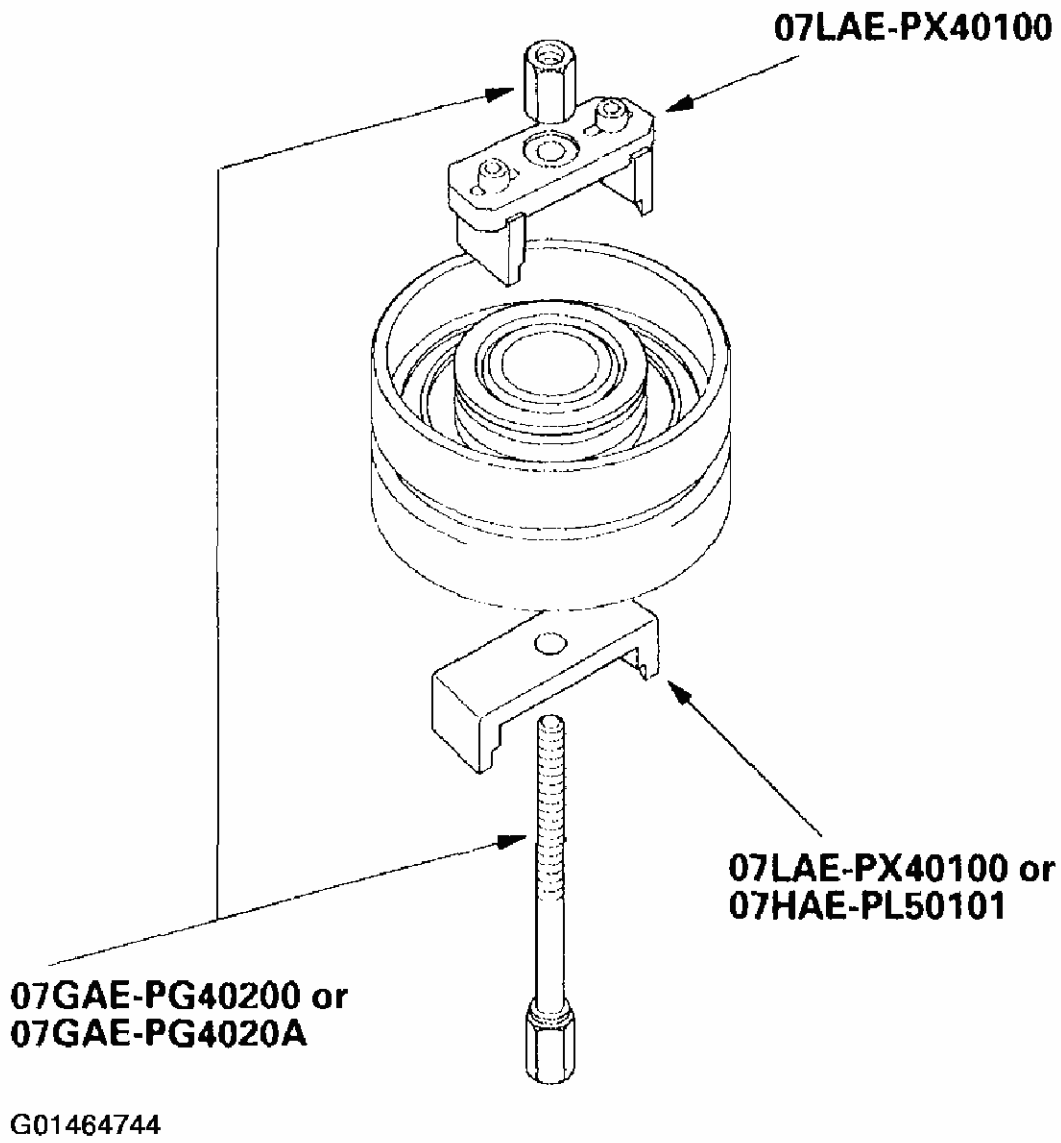

Fig. 95: Installing The Special Tools On The Clutch Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 4th, and 5th clutches.

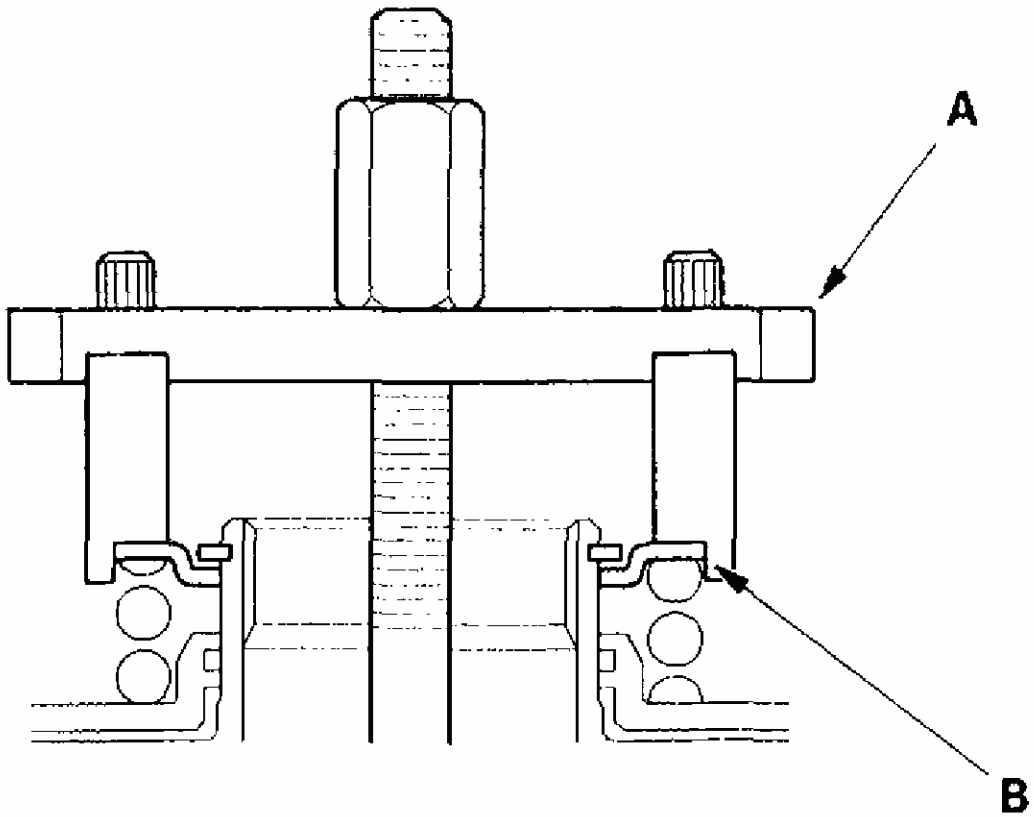

Fig. 96: Ensuring The Special Tool Is Adjusted To Have Full Contact With The Spring Retainer On The 1st, 4th & 5th Clutches
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Set the special tool (A) on the spring retainer (B) of the 2nd and 3rd clutches so the tool works on the clutch return spring (C).

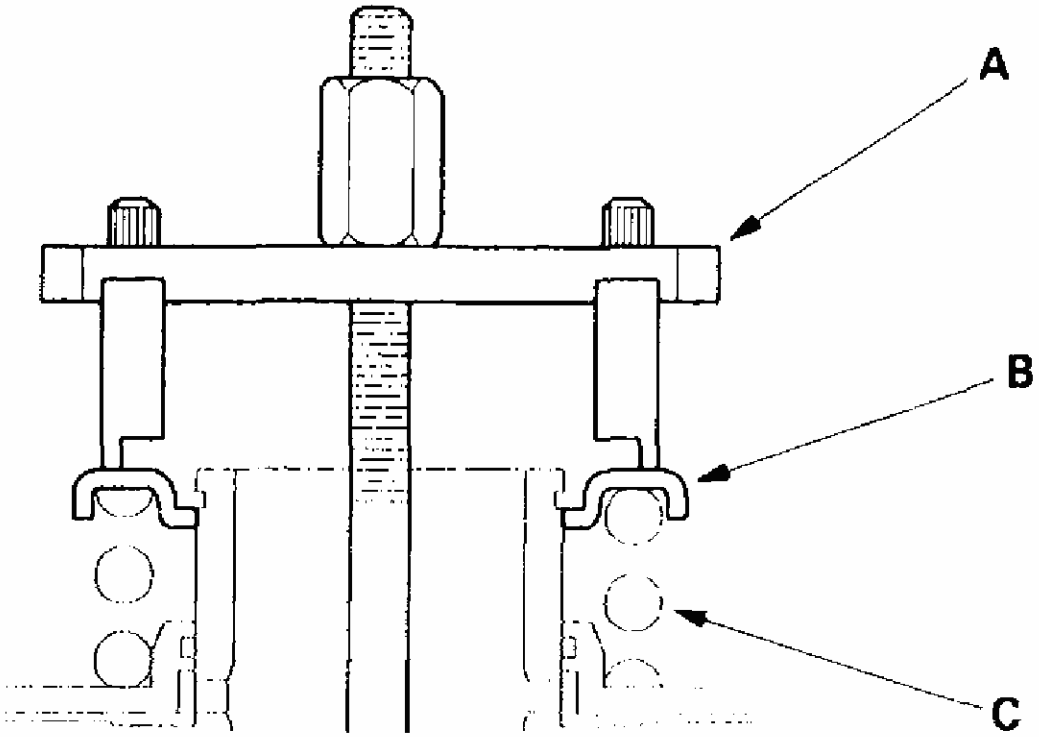

Fig. 97: Setting The Special Tool On The Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. 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.

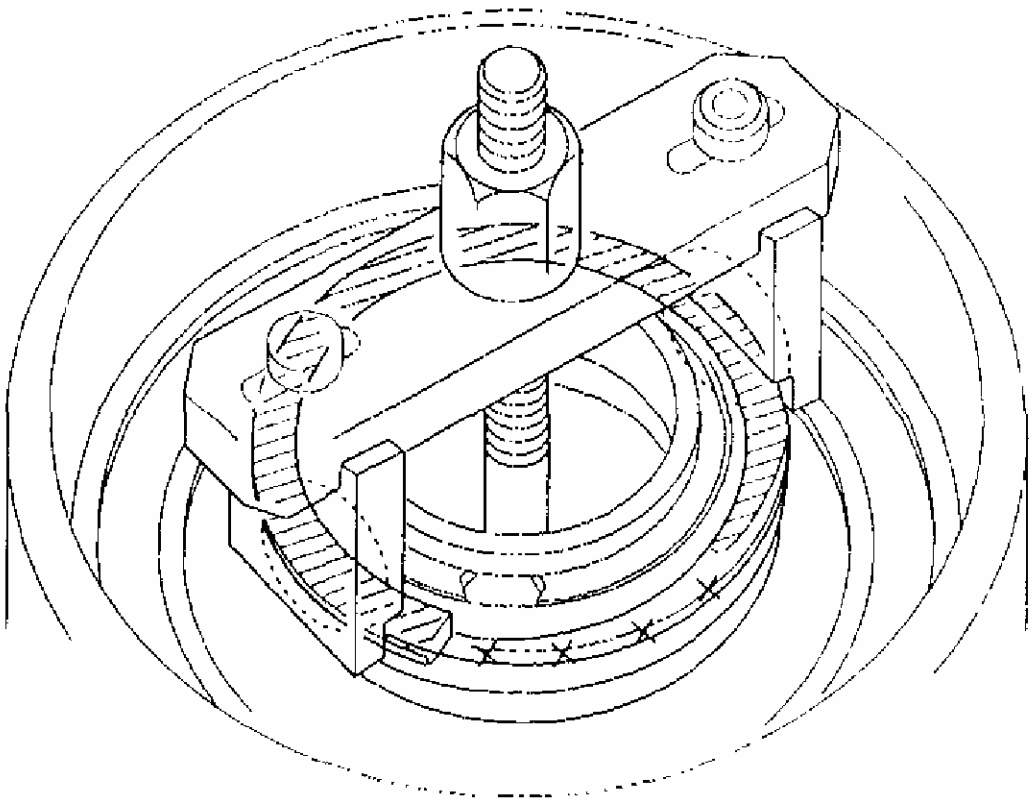

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Fig. 98: Ensuring Special Tool Is Not Set Over An Unsupported Area Of The Spring Retainer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Compress the return spring.

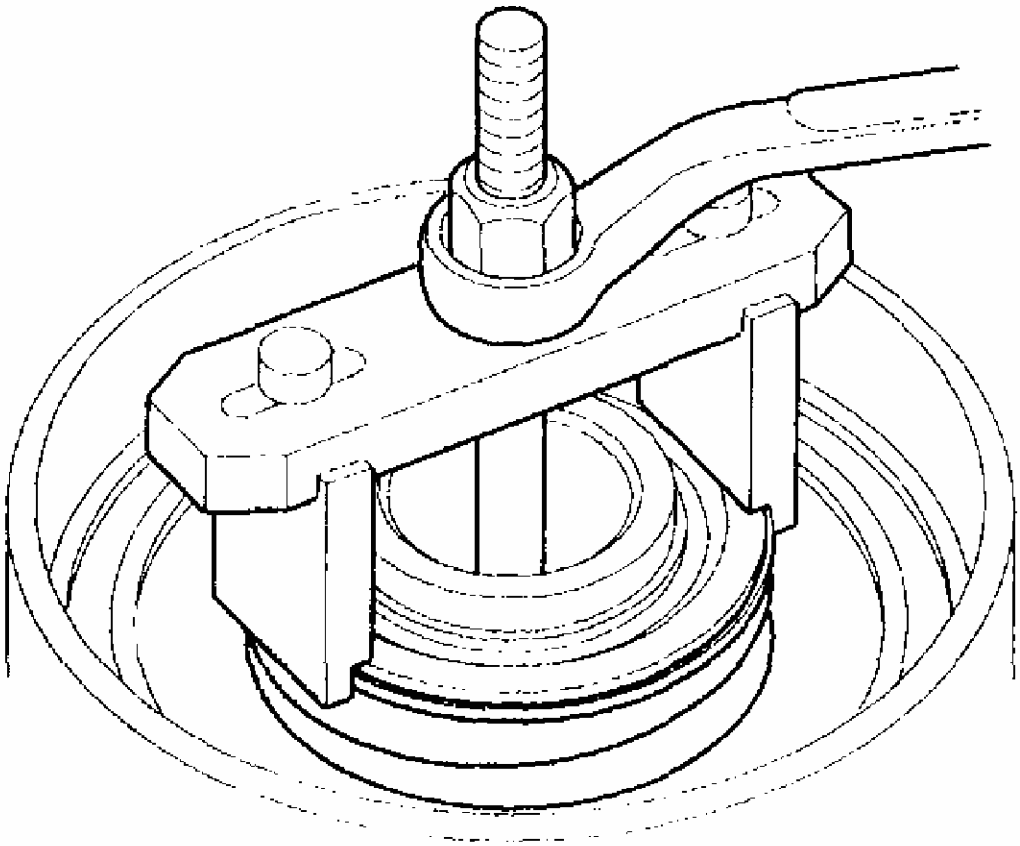

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Fig. 99: Compressing The Return Spring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Install the snap ring (A).

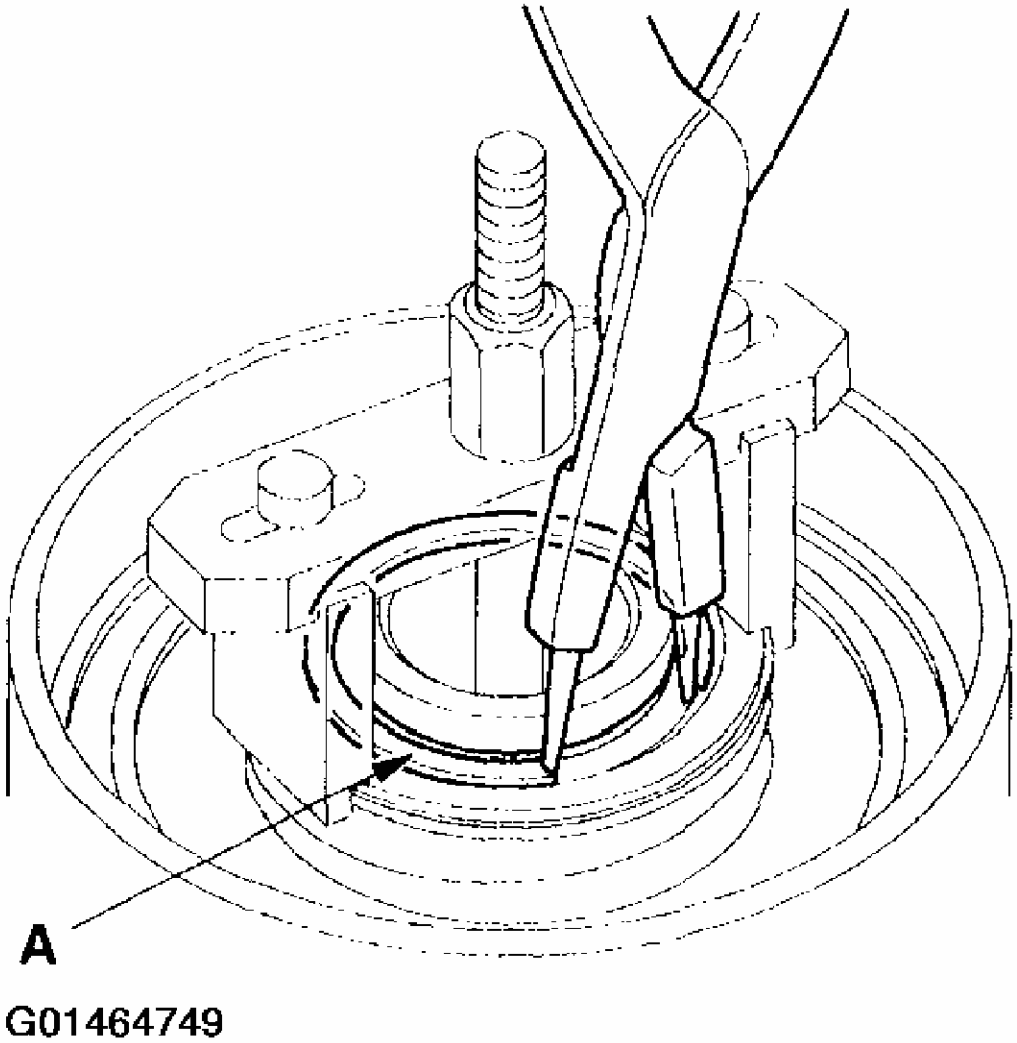

Fig. 100: Installing The Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Remove the special tools.

NOTE: The 2nd clutch and 1st-hold clutch do not have a disc spring.

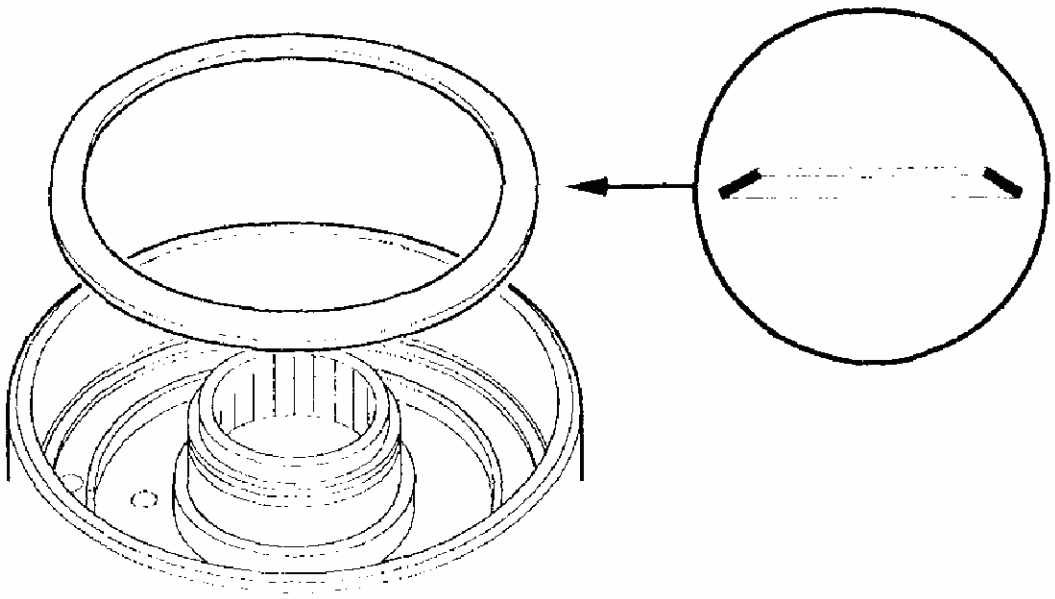

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Fig. 101: Installing The Disc Spring In The 1st, 3rd, 4th & 5th Clutches
Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Install the disc spring in the 1st, 3rd, 4th, and 5th clutches in the direction shown.
17. Make sure the inside of the clutch drum is free of dirt and other foreign particles.
18. 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).

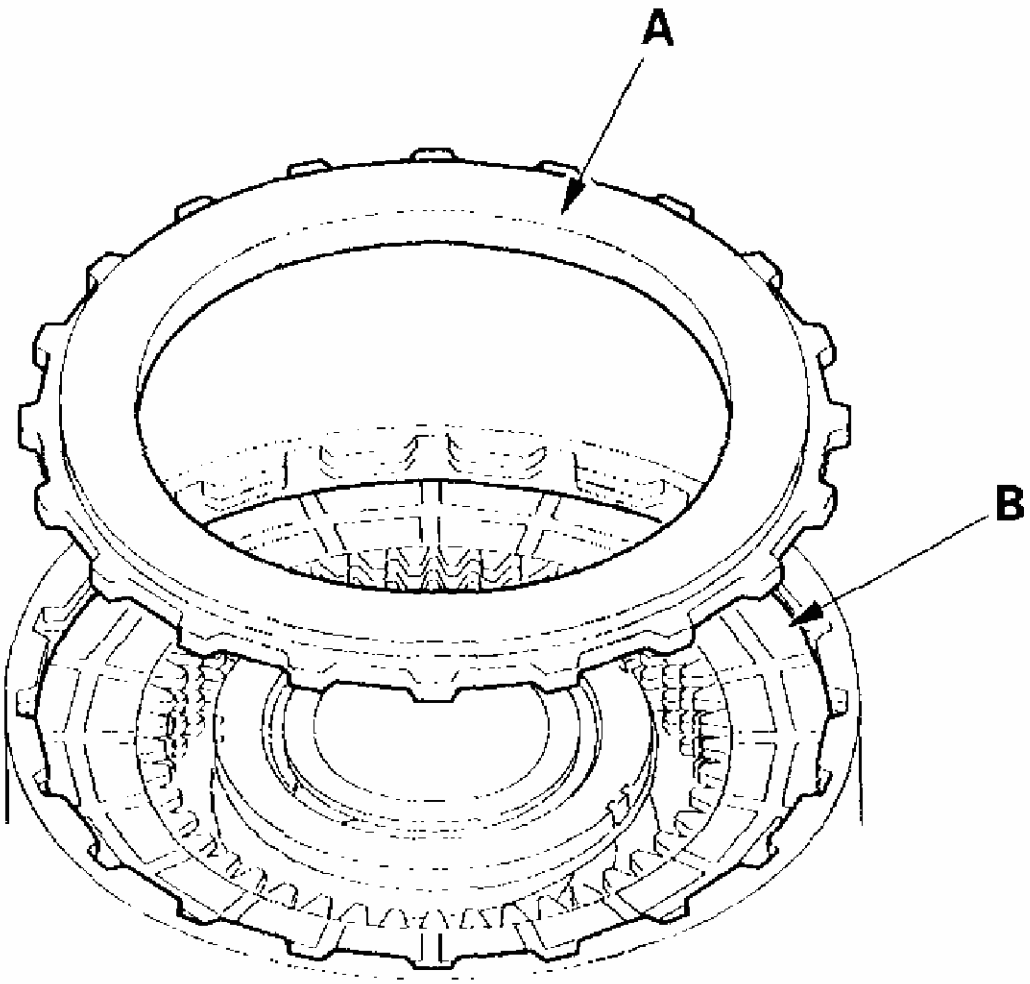

Fig. 102: Installing The Clutch Plates & Discs
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

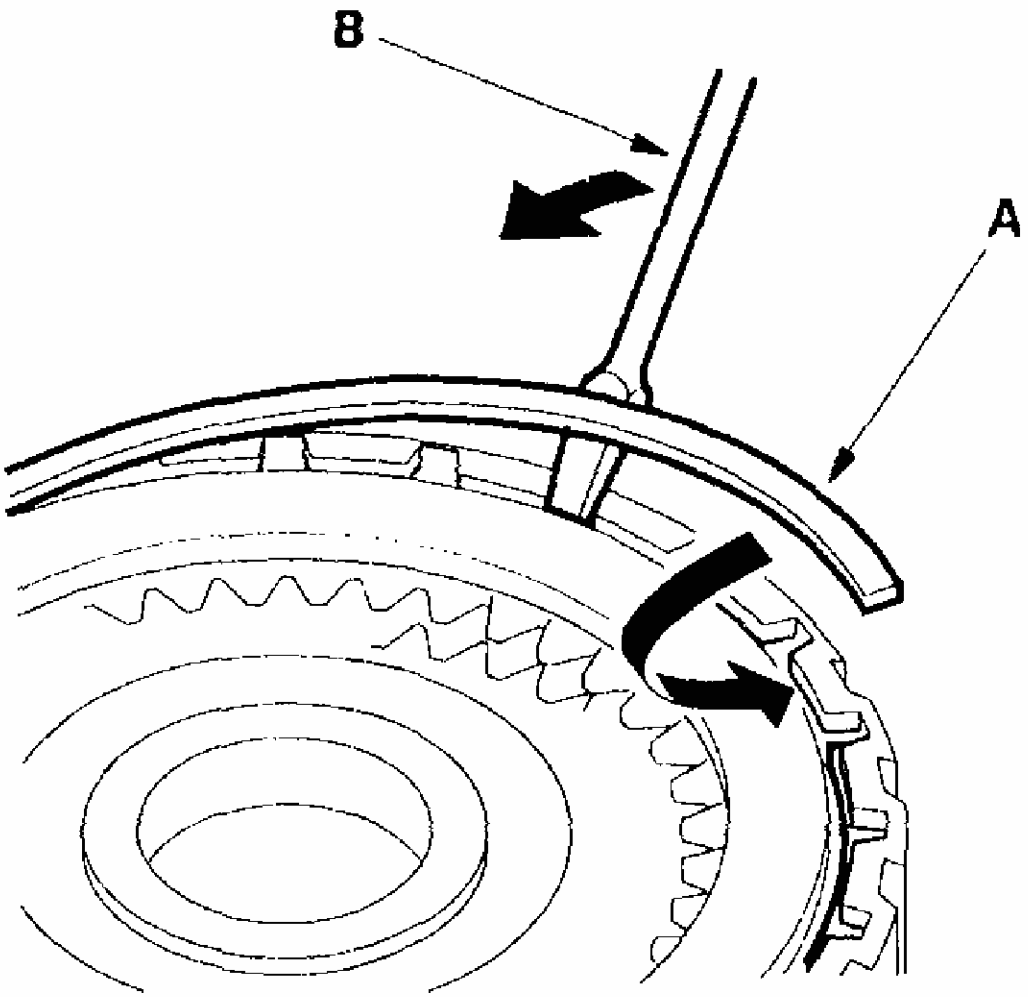

Fig. 103: Installing The Snap Ring
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Set a dial indicator (A) on the clutch end plate (B).

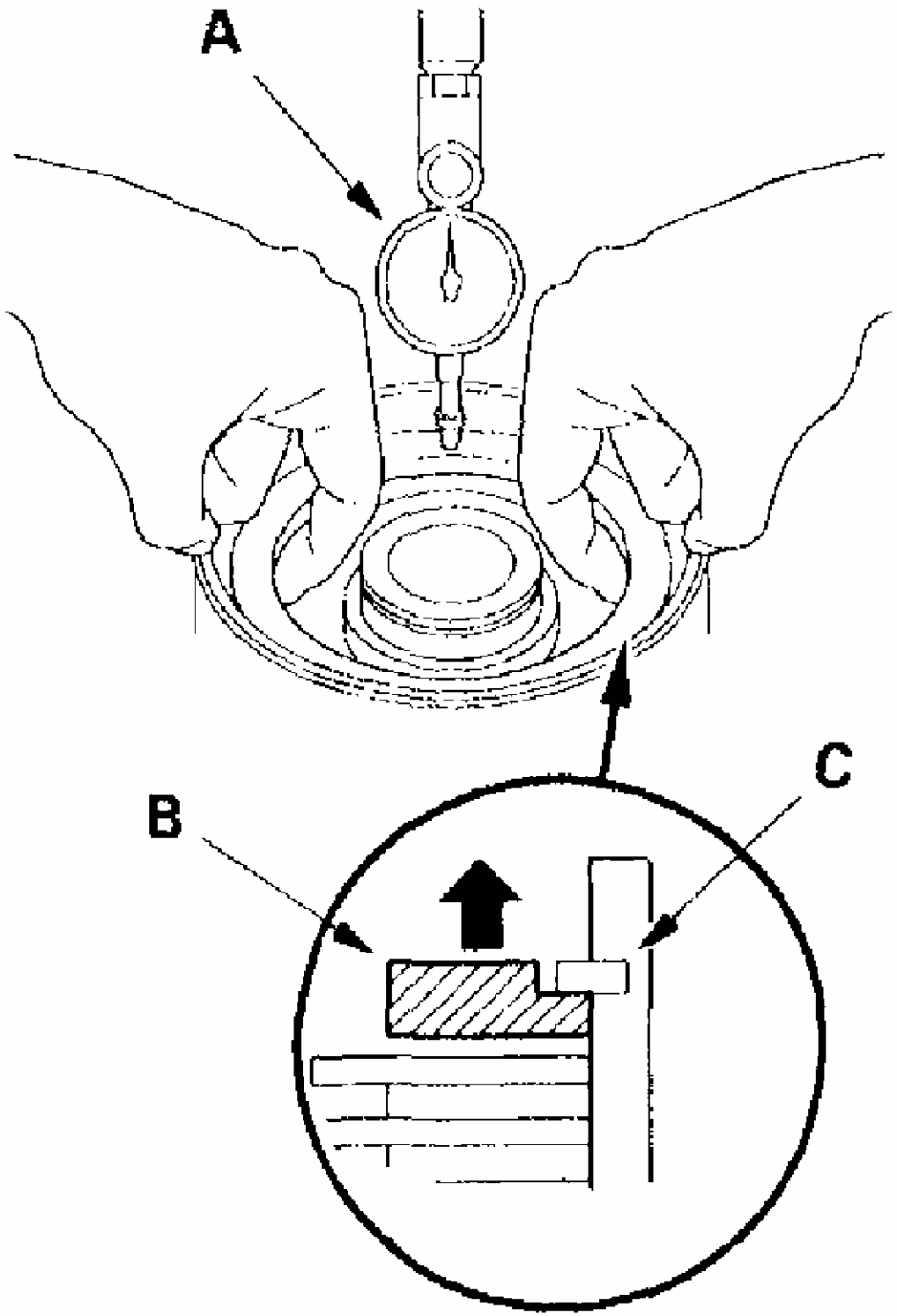

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Fig. 104: Setting A Dial Indicator On The Clutch End Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Zero the indicator with the clutch end plate lifted up to the snap ring (C).
22. Release the clutch end plate to lower it, then put the special tool on the end plate (A)

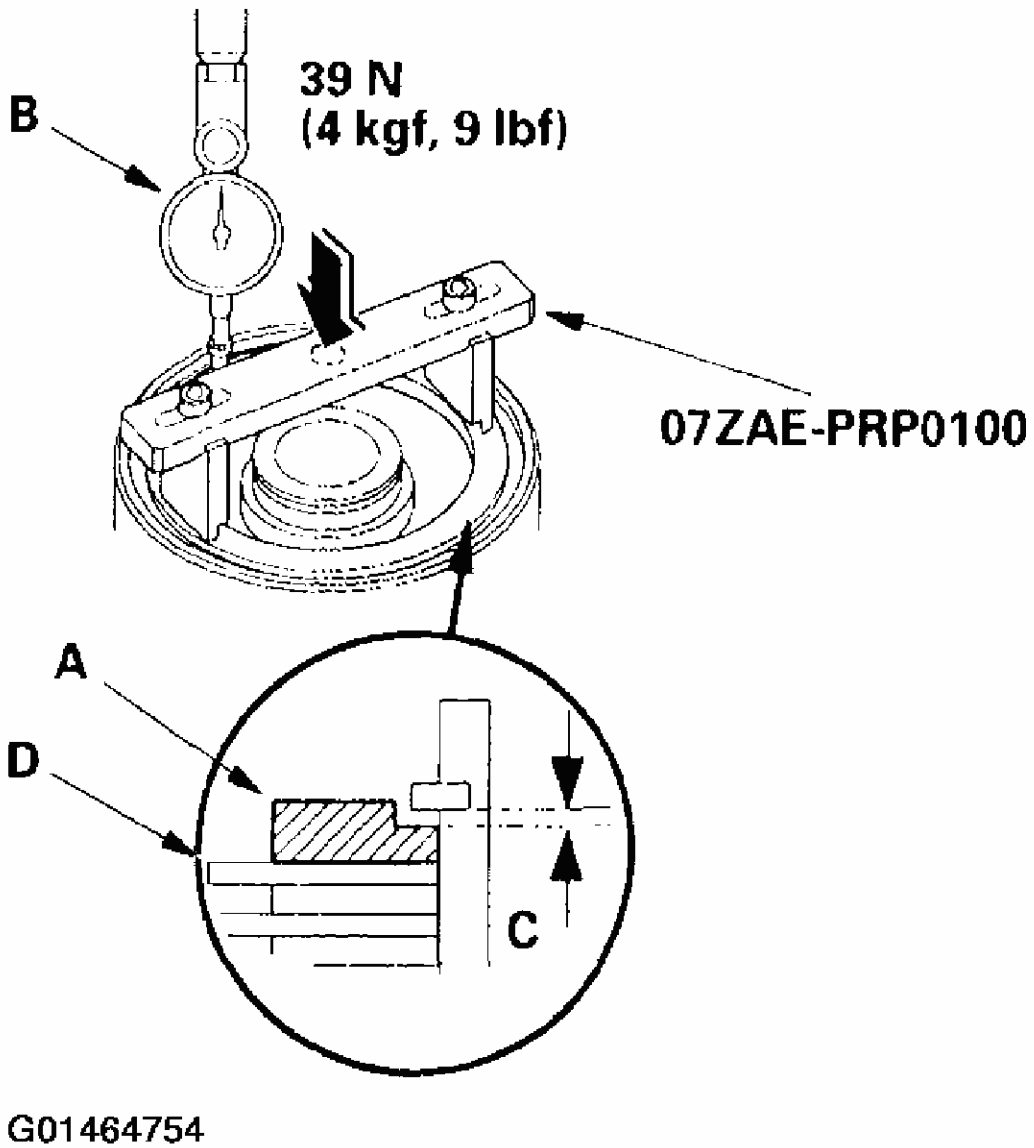

Fig. 105: Releasing The Clutch End Plate
Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Press the special tool down with 39 N (4 kgf, 9 lbf) using a force gauge, and read the dial indicator (B) to read the clearance between the clutch end plate and top disc (C). Take

measurements in at least three places, and use the average as the actual clearance.

Clutch End-Plate-to-Top-Disc Clearance Service Limit:

1st Clutch: 1.1-1.3 mm (0.043-0.051 in.)

2nd Clutch: 0.85-1.05 mm (0.033-0.041 in.)

3rd Clutch: 0.7-0.9 mm (0.028-0.035 in.

4th Clutch: 0.55-0.75 mm (0.022-0.030 in.)

5th Clutch: 0.55-0.75 mm (0.022-0.030 in.)

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

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Fig. 106: Measuring Clutch End Plate Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Mark	Part Number	Thickness
1	22551-P7W-003	3.1 mm (0.122 in.)
2	22552-P7W-003	3.2 mm (0.126 in.)
3	22553-P7W-003	3.3 mm (0.130 in.)
4	22554-P7W-003	3.4 mm (0.134 in.)
5	22555-P7W-003	3.5 mm (0.138 in.)
6	22556-P7W-003	3.6 mm (0.142 in.)
7	22557-P7W-003	3.7 mm (0.146 in.)
8	22558-P7W-003	3.8 mm (0.150 in.)
9	22559-P7W-003	3.9 mm (0.154 in.)

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Fig. 107: 1st Clutch End Plate Selection Tables
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Mark	Part Number	Thickness
1	22551-PY4-003	2.1 mm (0.083 in.)
2	22552-PY4-003	2.2 mm (0.087 in.)
3	22553-PY4-003	2.3 mm (0.091 in.)
4	22554-PY4-003	2.4 mm (0.094 in.)
5	22555-PY4-003	2.5 mm (0.098 in.)
6	22556-PY4-003	2.6 mm (0.102 in.)
7	22557-PY4-003	2.7 mm (0.106 in.)
8	22558-PY4-003	2.8 mm (0.110 in.)
9	22559-PY4-003	2.9 mm (0.114 in.)

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Fig. 108: 2nd Clutch End Plate Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Mark	Part Number	Thickness
1	22556-RAY-A010-M1	3.1 mm (0.122 in.)
2	22557-RAY-A010-M1	3.2 mm (0.126 in.)
3	22558-RAY-A010-M1	3.3 mm (0.130 in.)
4	22559-RAY-A010-M1	3.4 mm (0.134 in.)
6	22560-PGV-003	2.6 mm (0.102 in.)
7	22561-PGV-013	2.7 mm (0.106 in.)
8	22562-PGV-013	2.8 mm (0.110 in.)
9	22563-PGV-013	2.9 mm (0.114 in.)
0	22564-PGV-013	3.0 mm (0.118 in.)

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Fig. 109: 3rd Clutch End Plate Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Mark	Part Number	Thickness
1	22561-P7T-003	2.1 mm (0.083 in.)
2	22562-P7T-003	2.2 mm (0.087 in.)
3	22563-P7T-003	2.3 mm (0.091 in.)
4	22564-P7T-003	2.4 mm (0.094 in.)
5	22565-P7T-003	2.5 mm (0.098 in.)
6	22566-P7T-003	2.6 mm (0.102 in.)
7	22567-P7T-003	2.7 mm (0.106 in.)
8	22568-P7T-003	2.8 mm (0.110 in.)
9	22569-P7T-003	2.9 mm (0.114 in.)

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Fig. 110: 4th & 5th Clutch End Plate Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

24. If the clearance is out of service limit, select a new clutch end plate from the following table. Install the new clutch end plate, then recheck the clearance.

VALVE BODY

VALVE BODY & ATF STRAINER INSTALLATION

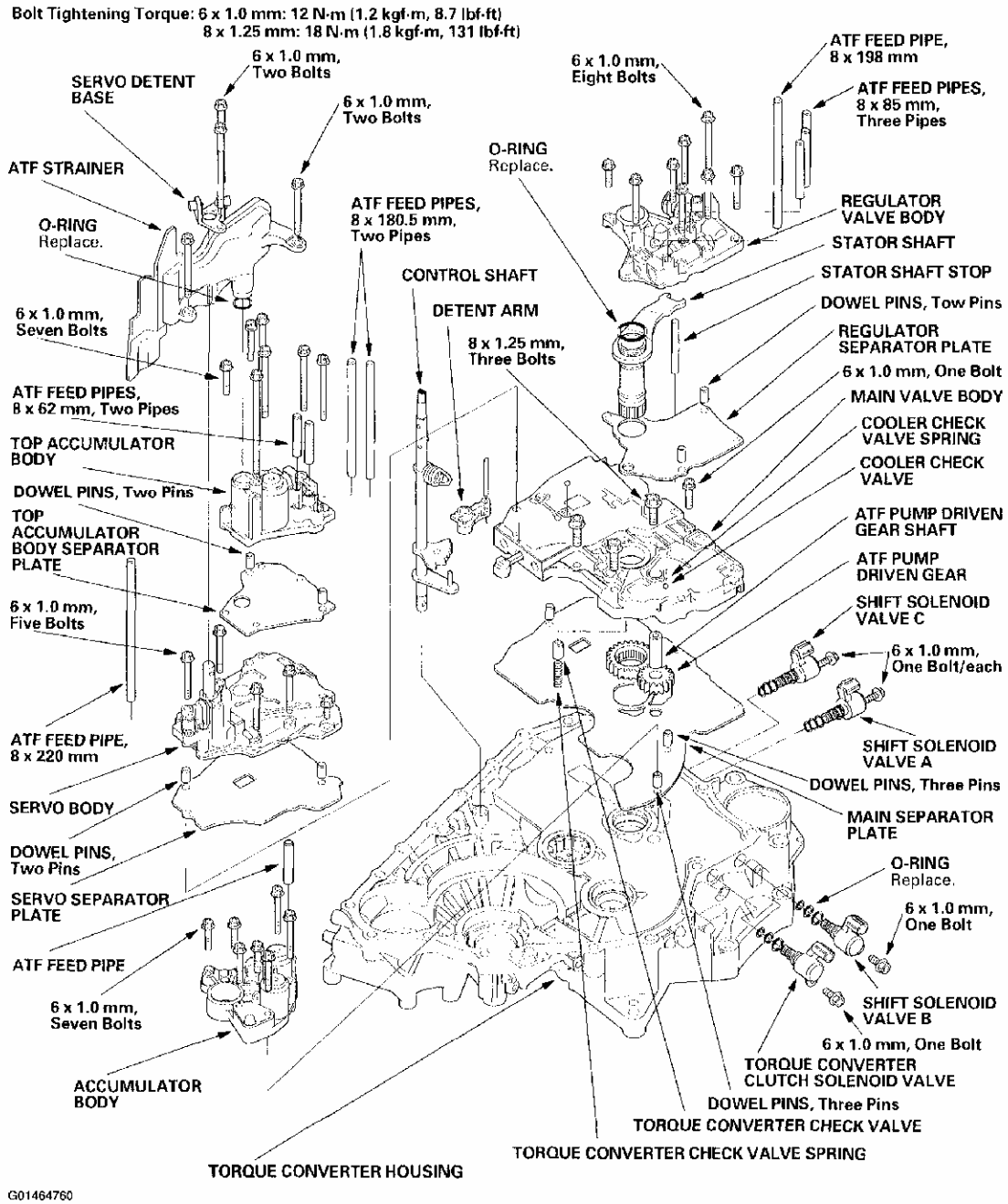

Fig. 111: Exploded View Of Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. Install the main separator plate (A) and three 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.

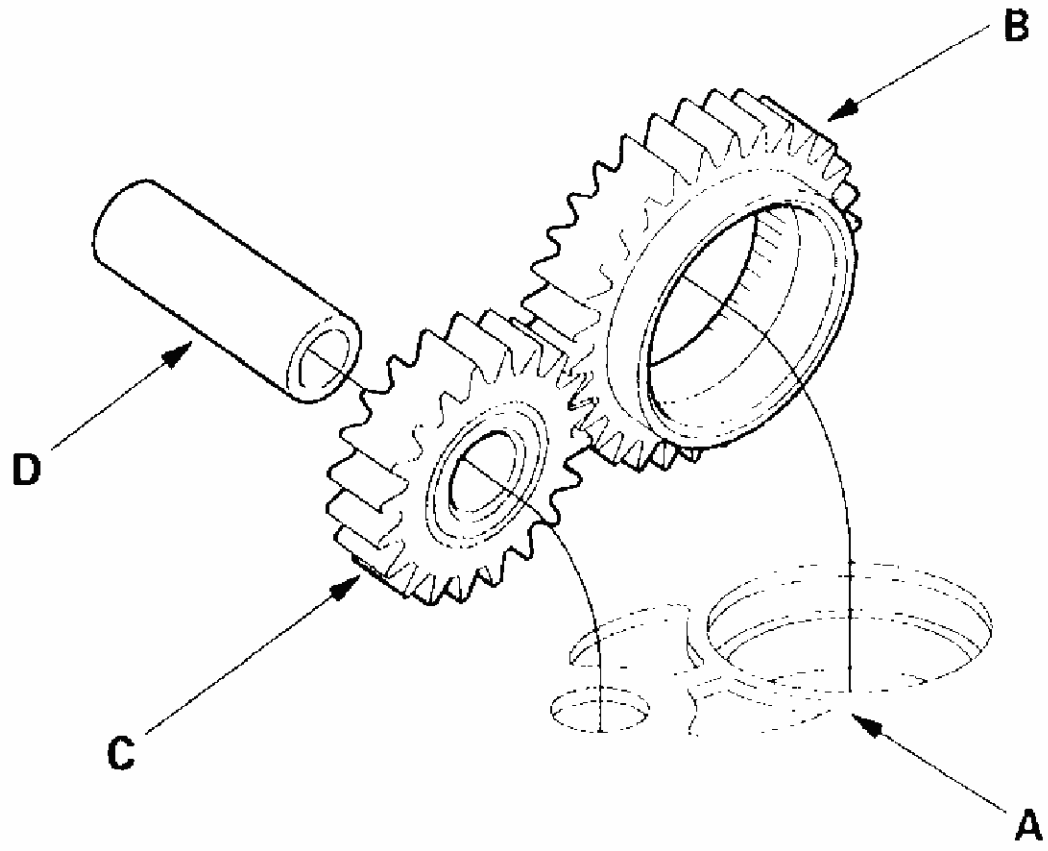

Fig. 112: Installing The Main Separator Plate, The ATF Pump Drive Gear, Driven Gear & ATF Pump Driven Gear Shaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the main valve body (one 6 mm bolt and three 8 mm bolts). Make sure the ATF pump drive gear (B) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (D) moves smoothly in the axial and normal operating direction.

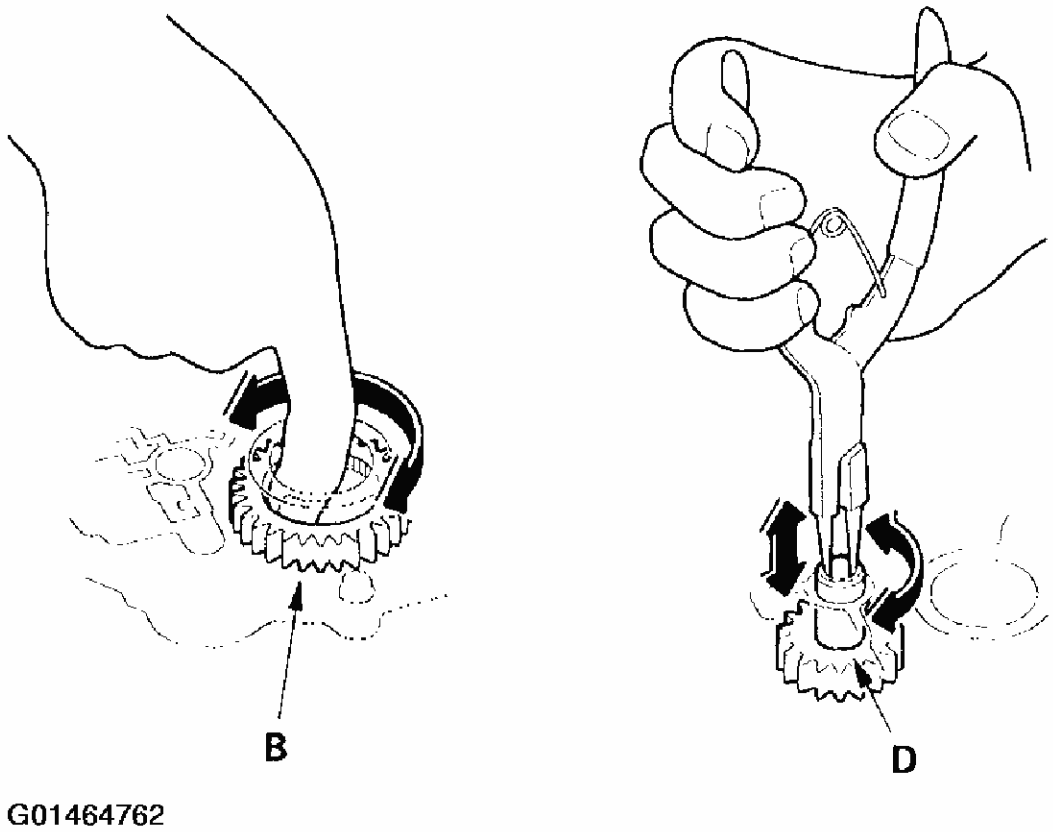

Fig. 113: Ensuring The ATF Pump Drive Gear Rotates Smoothly In The Normal Operating Direction, & The ATF Pump Driven Gear Shaft Moves Smoothly In The Axial & Normal Operating Direction
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If the ATF pump drive gear and ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, 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.
4. Install the torque converter check valve and spring, and the cooler check valve and spring on the main valve body, then install the two dowel pins and the regulator separator plate.
5. Install the stator shaft and stator shaft stop.
6. Install the regulator valve body (eight bolts).
7. Install the two dowel pins and the servo separator plate on the main valve body.
8. Install the control shaft (A) in the torque converter housing along with the manual valve (B).

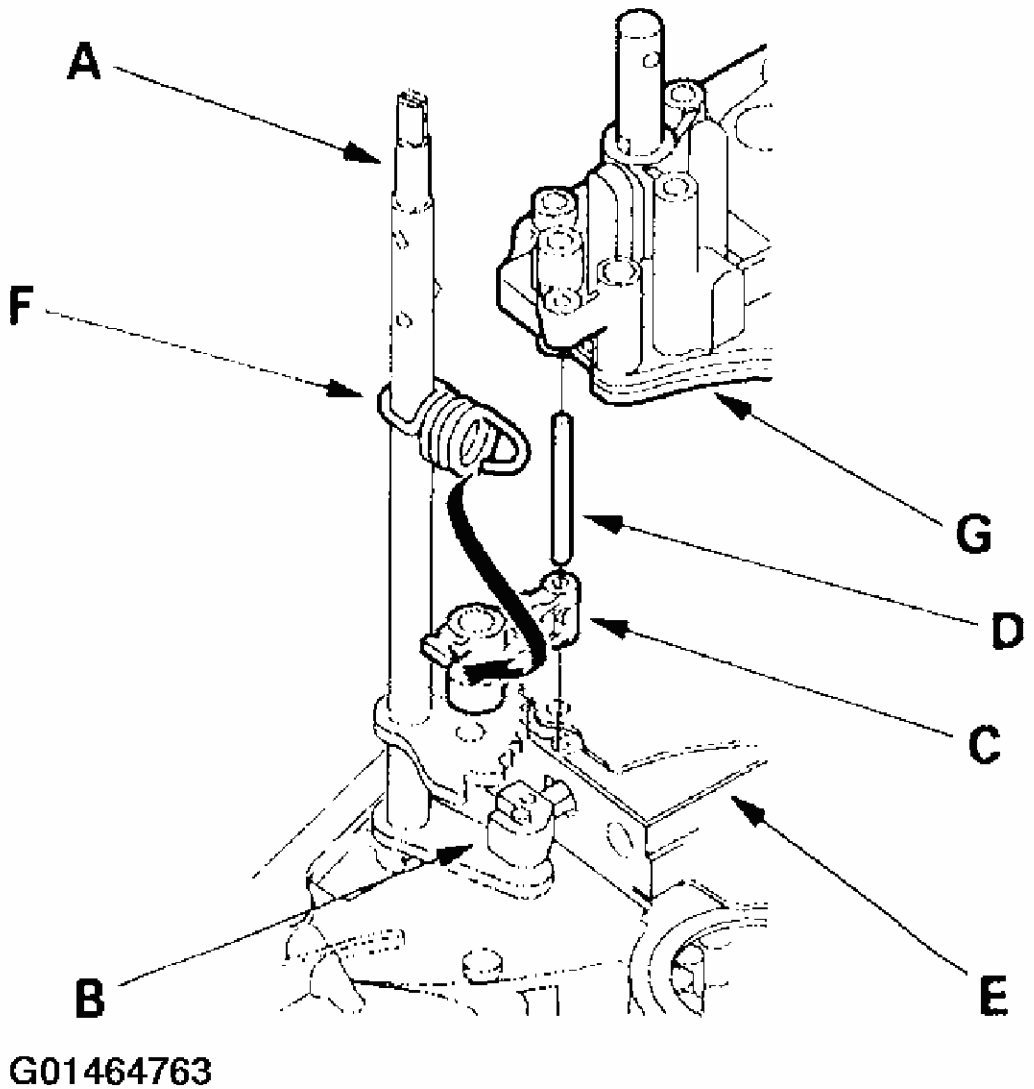

Fig. 114: Installing The Control Shaft & The Manual Valve In The Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the detent arm (C) and arm shaft (D) in the main valve body (E), then hook the detent arm spring (F) to the detent arm.
10. Install the servo body (G) (five bolts).
11. Install the top accumulator body separator plate with two dowel pins on the servo body, then install the top accumulator body (seven bolts).
12. Install the ATF strainer (two bolts).
13. Install the servo detent base (two bolts).

14. Install the accumulator body (seven bolts).
15. Install the one ATF feed pipe in the servo body, four pipes in the regulator valve body, four pipes in the top accumulator body, and one pipe in the accumulator body.

TRANSMISSION HOUSING

SHAFT ASSEMBLY & HOUSING INSTALLATION

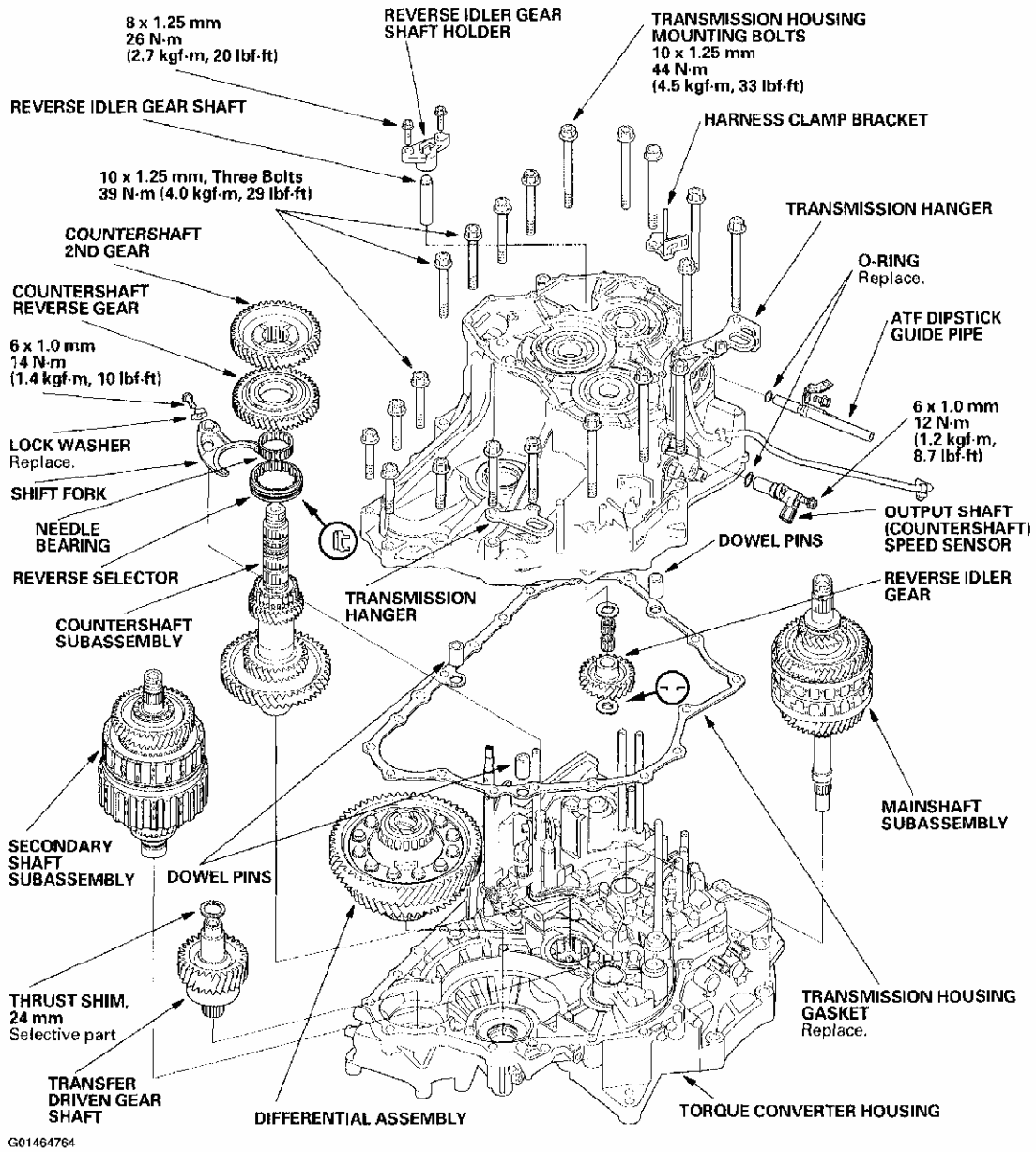

Fig. 115: Exploded View Of Shaft Assembly & Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: Refer to the Exploded View as needed during the following

procedure.

1. Install the 24 mm thrust shim on the transfer driven gear shaft, then install the shaft in the torque converter housing.
2. Install the differential assembly in the torque converter housing.
3. If the reverse selector hub is press-fitted, join the mainshaft, countershaft, and secondary shaft together, then install the assembly into the torque converter housing.

   If the reverse selector hub is not press-fitted, install the countershaft, mainshaft, and secondary shaft in the torque converter housing. Then install the countershaft 5th gear and reverse selector hub onto the countershaft.

4. 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 (C) together on the shift fork shaft and countershaft (D). Secure the shift fork to the shift fork shaft with the lock bolt (E) and a new lock washer (F), then bend the lock washer against the bolt head.

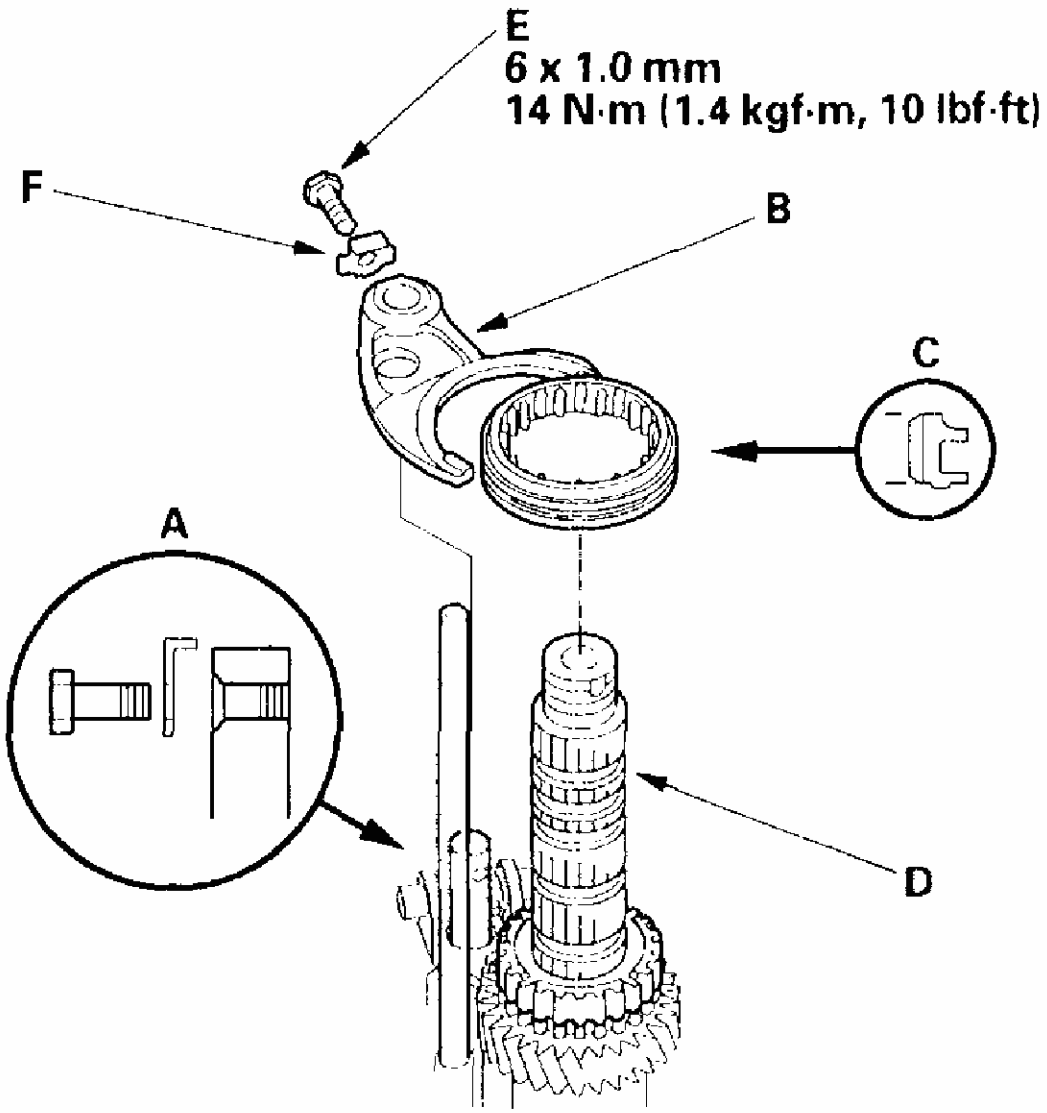

Fig. 116: Installing The Shift Fork & Reverse Selector On The Shift Fork Shaft & Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the needle bearing, countershaft reverse gear, and countershaft 2nd gear on the countershaft.
6. Place the thrust washer (A) in the transmission housing.

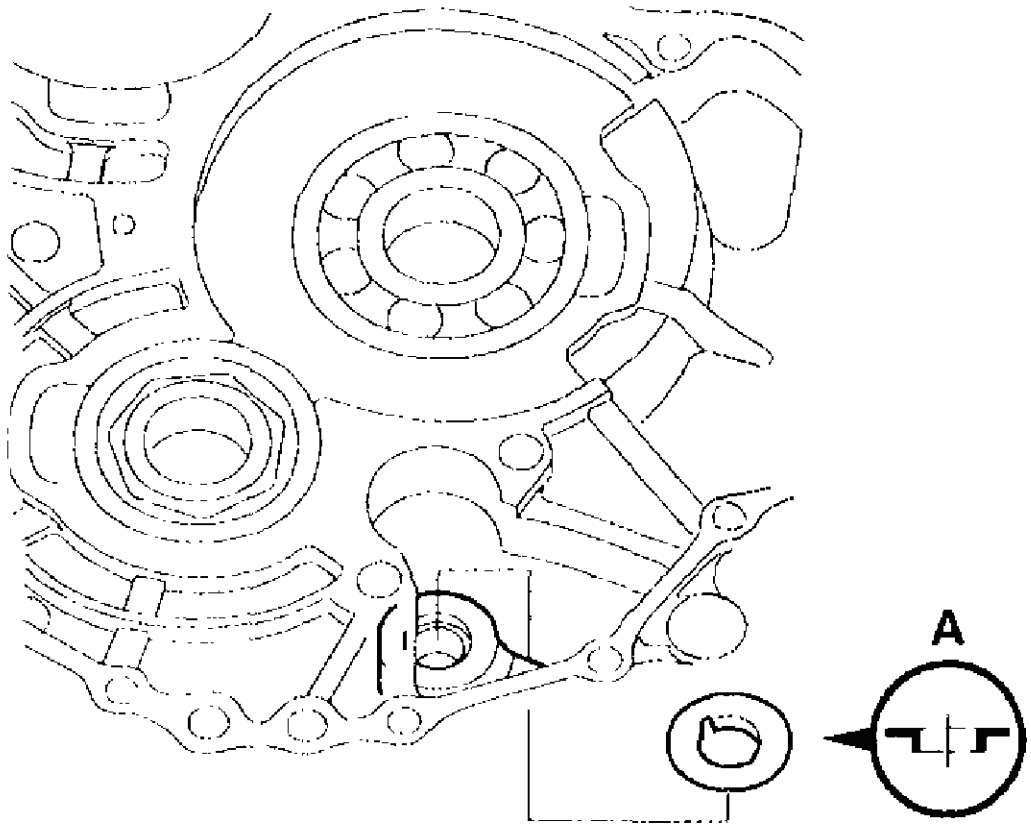

Fig. 117: Placing The Thrust Washer In The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Place the reverse idler gear (A) in the transmission housing, and slide it in the direction shown.

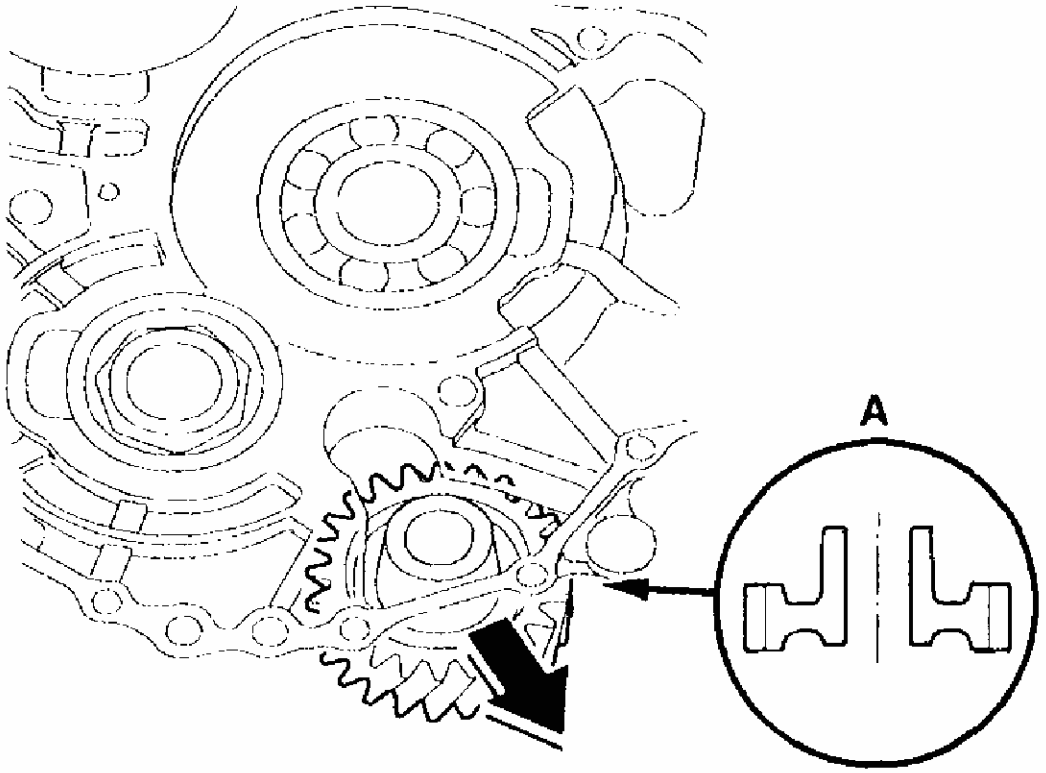

Fig. 118: Placing The Reverse Idler Gear In The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

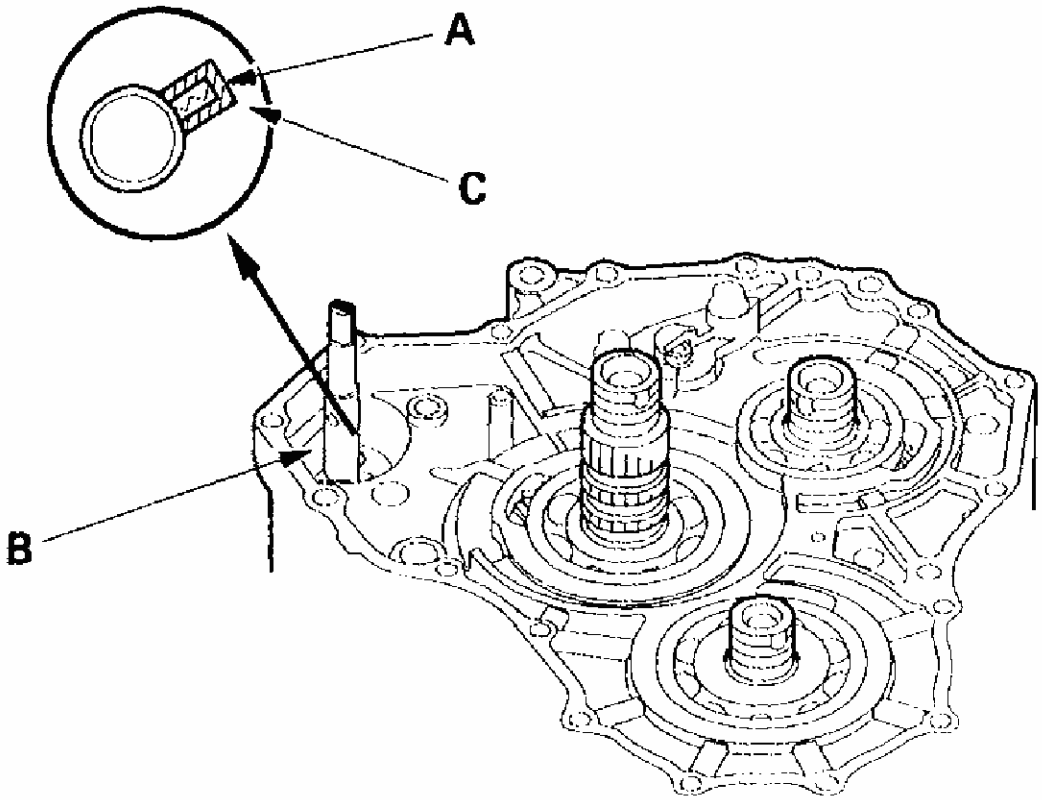

Fig. 119: Aligning The Spring Pin On The Control Shaft With The Transmission Housing Groove
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Align the spring pin (A) on the control shaft (B) with the transmission housing groove (C) by turning the control shaft.
9. Install three dowel pins and a new gasket on the torque converter housing.
10. Place the transmission housing on the torque converter housing, then install the transmission housing mounting bolts along with the harness clamp bracket (A) and transmission hangers (B). Tighten the bolts in a crisscross pattern in two or more steps.

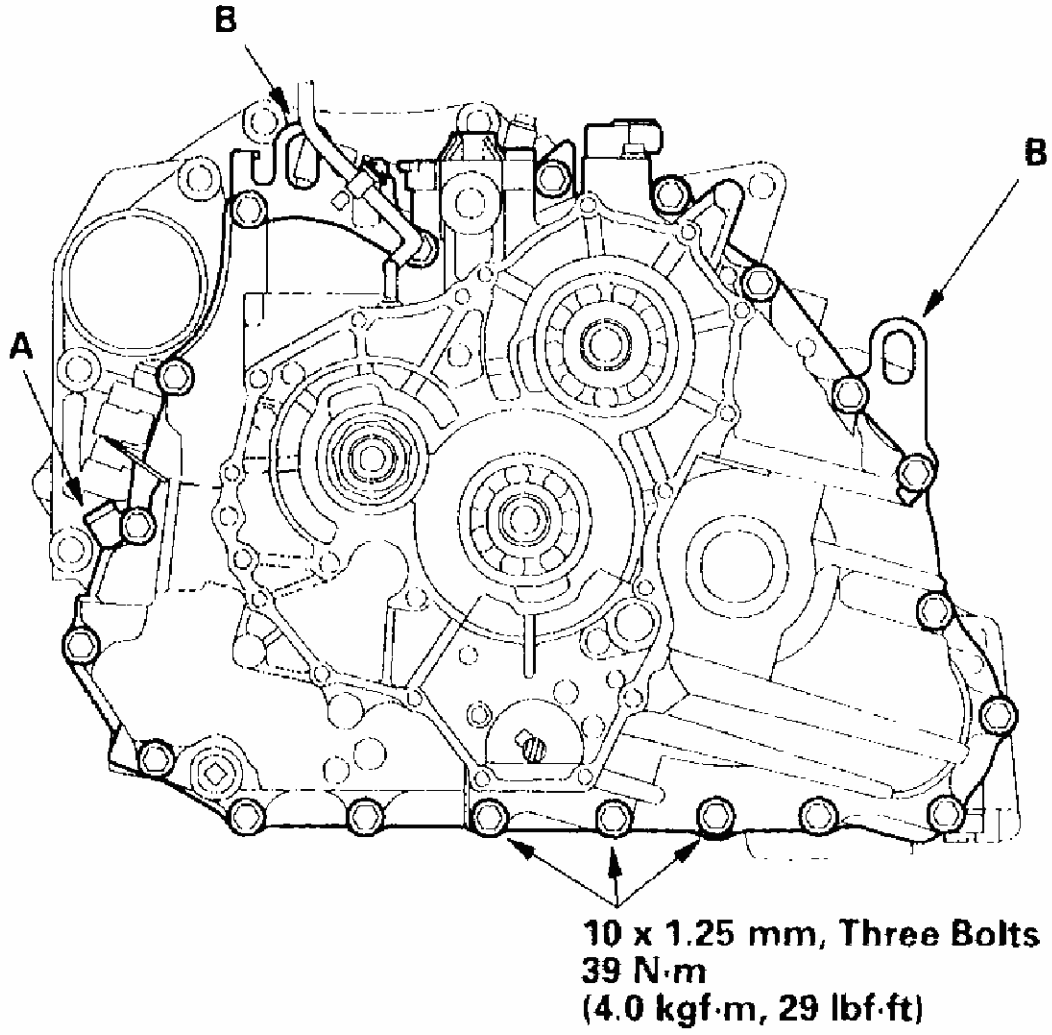

Fig. 120: Installing The Transmission Housing Mounting Bolts, Harness Clamp Bracket & Transmission Hangers
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Engage the reverse idler gear with the countershaft reverse gear and the mainshaft reverse gear. Then install the needle bearings (A), reverse idler gear shaft (B), and thrust washer (C) in the reverse idler gear, and install the reverse idler gear shaft holder (D) on the transmission housing.

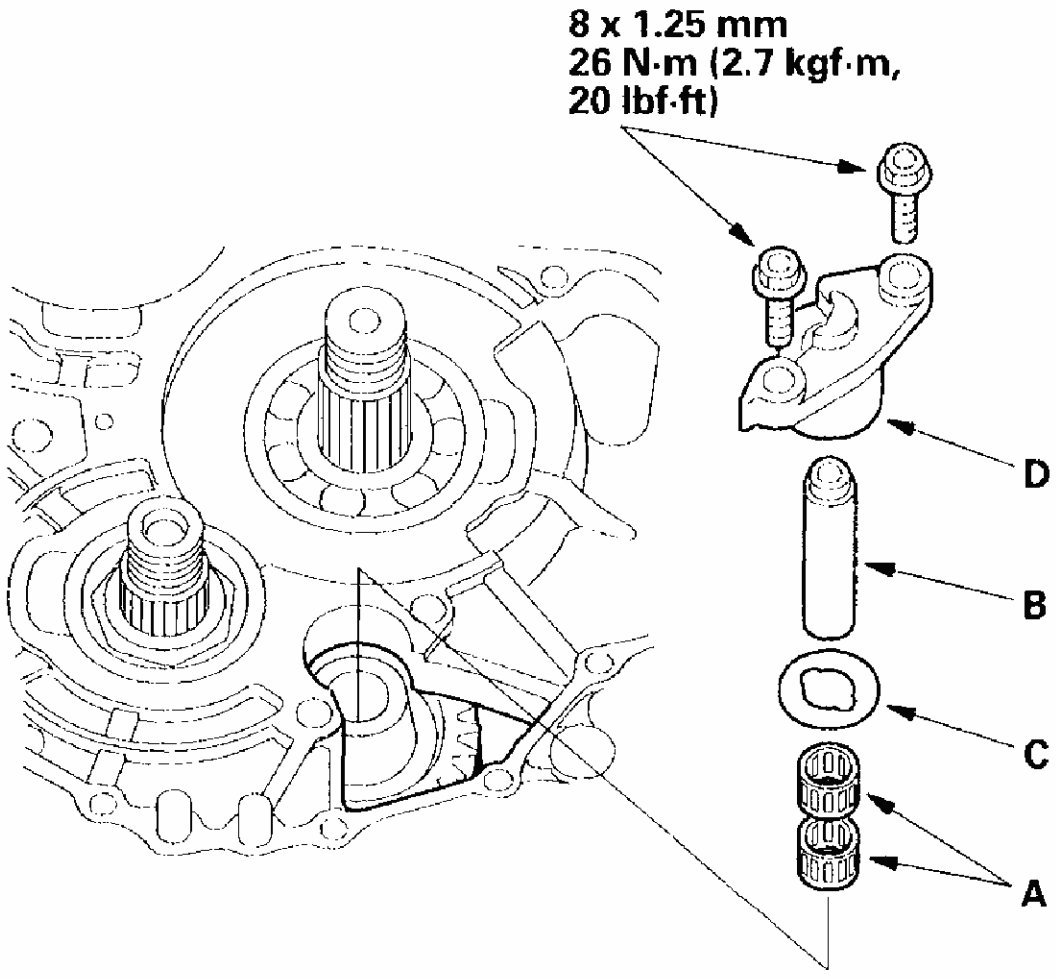

Fig. 121: Installing The Needle Bearings, Reverse Idler Gear Shaft, & Thrust Washer In The Reverse Idler Gear, & Installing The Reverse Idler Gear Shaft Holder On The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TRANSMISSION END COVER

END COVER, 3RD GEAR, IDLER GEAR & 3RD CLUTCH INSTALLATION

Special Tools Required

- Mainshaft holder

  07GAB-PF50101 or 07GAB-PF50100

- Adjustable bearing puller, 25-40 mm

07736-A01000B or 07736-A01000A

1. Install the park lever (A) and park 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 28 .

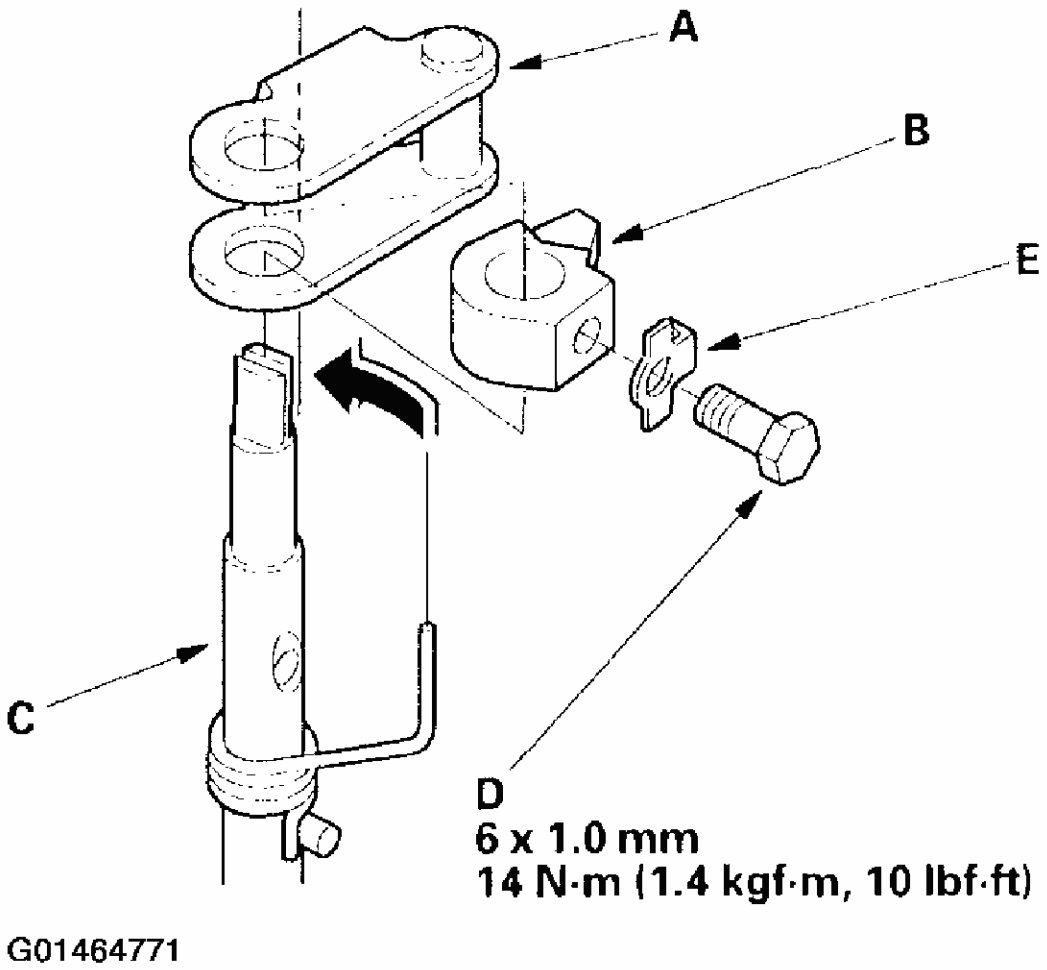

Fig. 122: Installing The Park Lever & Park Stop On The Control Shaft, & Installing The Lock Bolt & Lock Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Lubricate the following parts with ATF:
   - Splines of the countershaft, the park gear, and the old locknut.
   - Threads of the countershaft and the old locknut.
   - Old conical spring washer.

NOTE:
- **Do not use an impact wrench.**
- **Countershaft locknut has left-hand threads.**

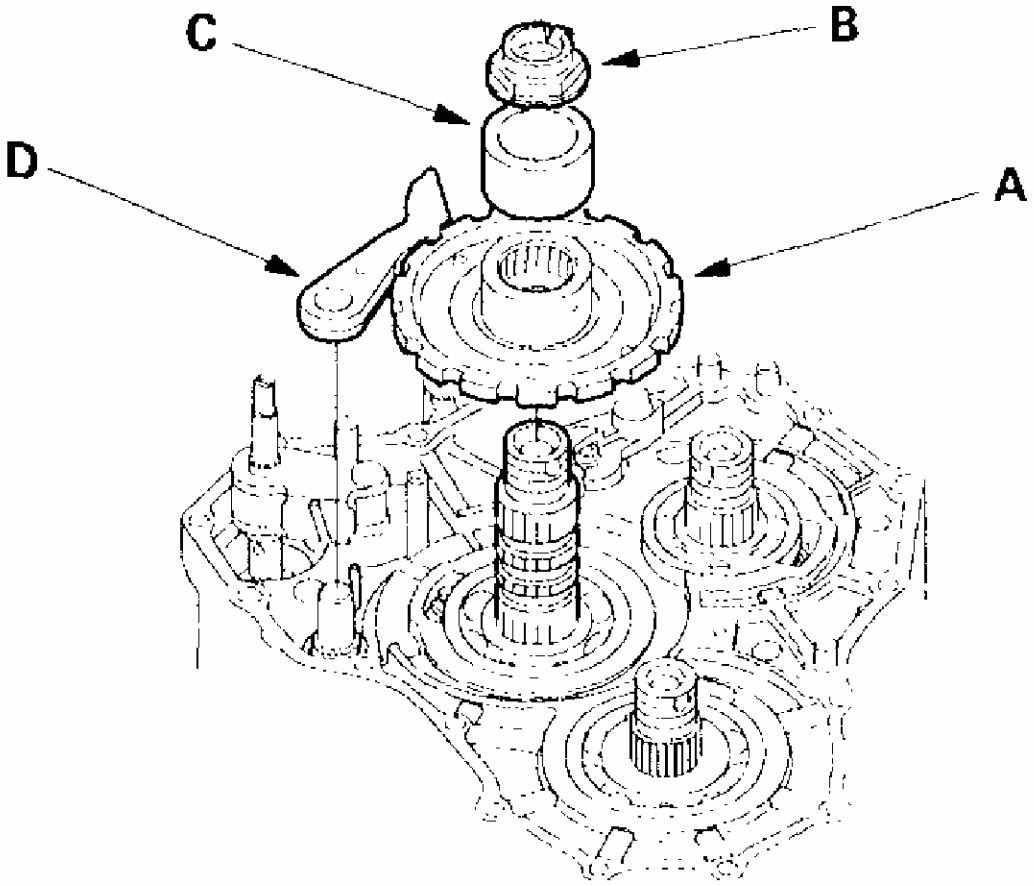

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Fig. 123: Installing The Park Gear, The Locknut & Collar
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the park gear (A) using the old locknut (B) and a collar (C). Hold the park pawl (D) against the park gear, then tighten the old locknut until the shaft splines come out over the park gear splines.
4. Remove the locknut and collar.

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

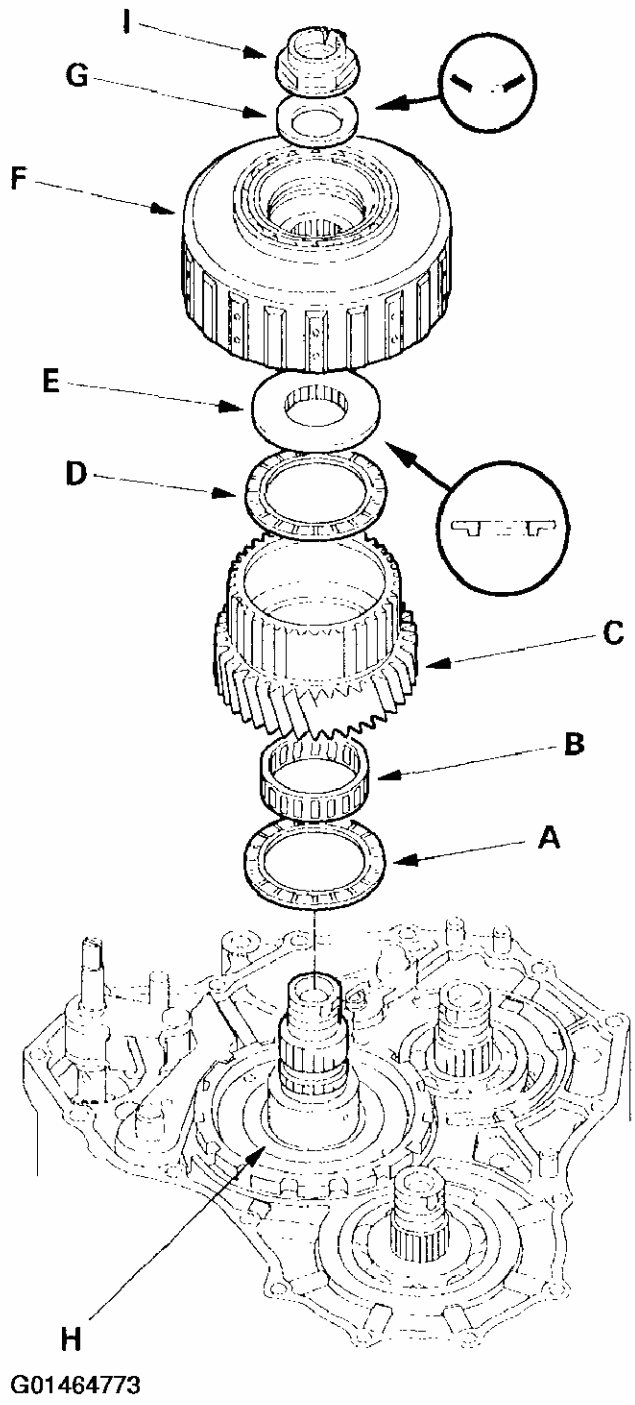

Fig. 124: Installing The Thrust Needle Bearing, Needle Bearing, 3rd Gear, Thrust Needle Bearing, 31 X 63.5 mm Splined Washer), 3rd Clutch Assembly & Old Conical Spring Washer On The Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the thrust needle bearing (A), needle bearing (B), 3rd gear (C), thrust needle bearing (D), 31 X 63.5 mm splined washer (E), 3rd clutch assembly (F), and old conical

spring washer (G) on the countershaft (H). Tighten the old locknut (I) to 226 N.m (23.0 kgf.m, 166 lbf.ft).

6. Set the dial indicator (A) to the countershaft 3rd gear (B).

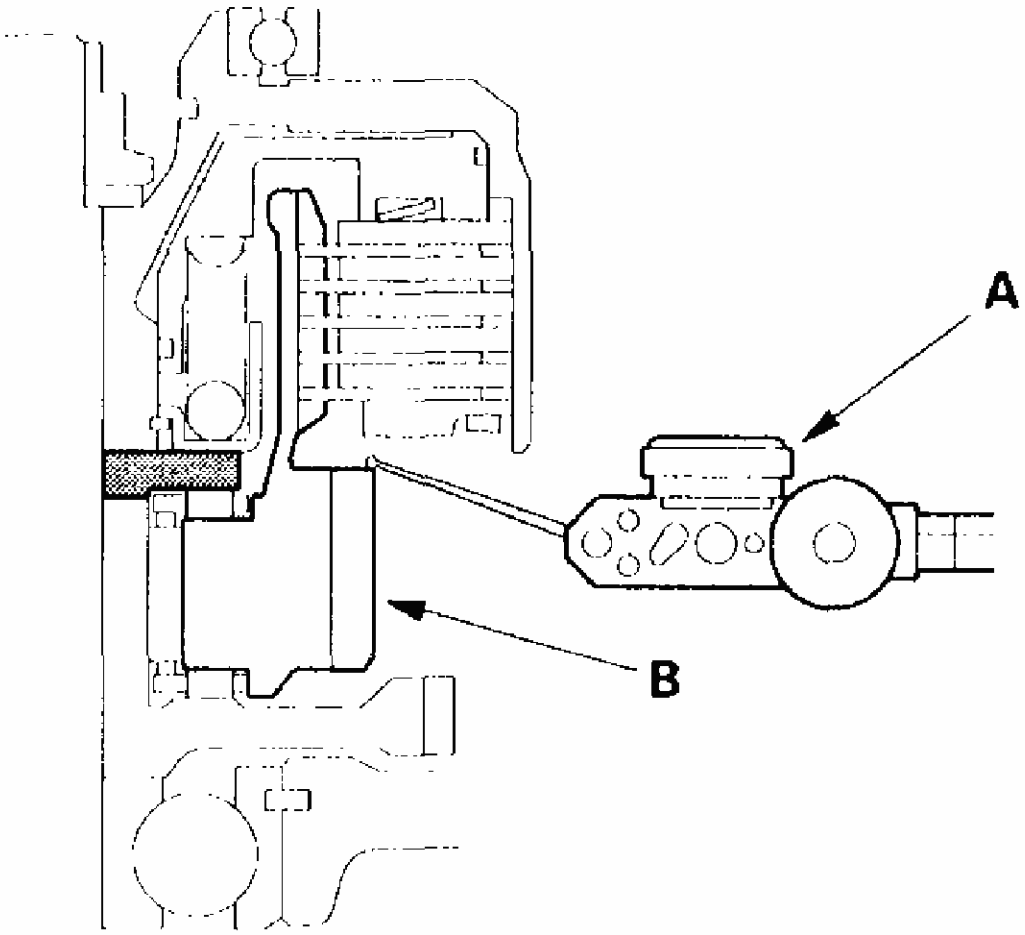

Fig. 125: Setting The Dial Indicator To The Countershaft 3rd Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Measure the countershaft 3rd gear axial clearance in at least three places, while moving the countershaft 3rd gear (A). Use the average as the actual clearance. If the clearance is out of standard, select the appropriate 31 X 63.5 mm splined washer in step 16 .

Standard: 0.015-0.045 mm (0.0006-0.0018 in.)

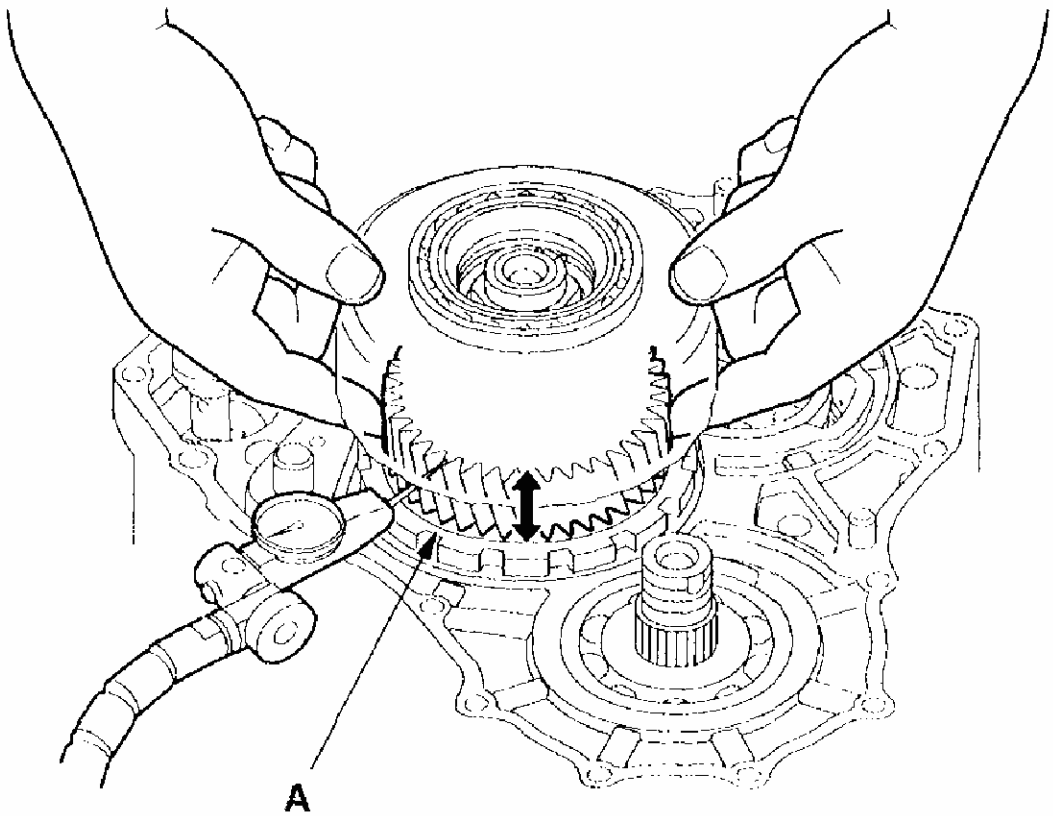

Fig. 126: Measuring The Countershaft 3rd Gear Axial Clearance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the locknut and conical spring washer.
9. Remove the 3rd clutch assembly (A) with the special tool and a commercially available 3/8-16" slide hammer (B).

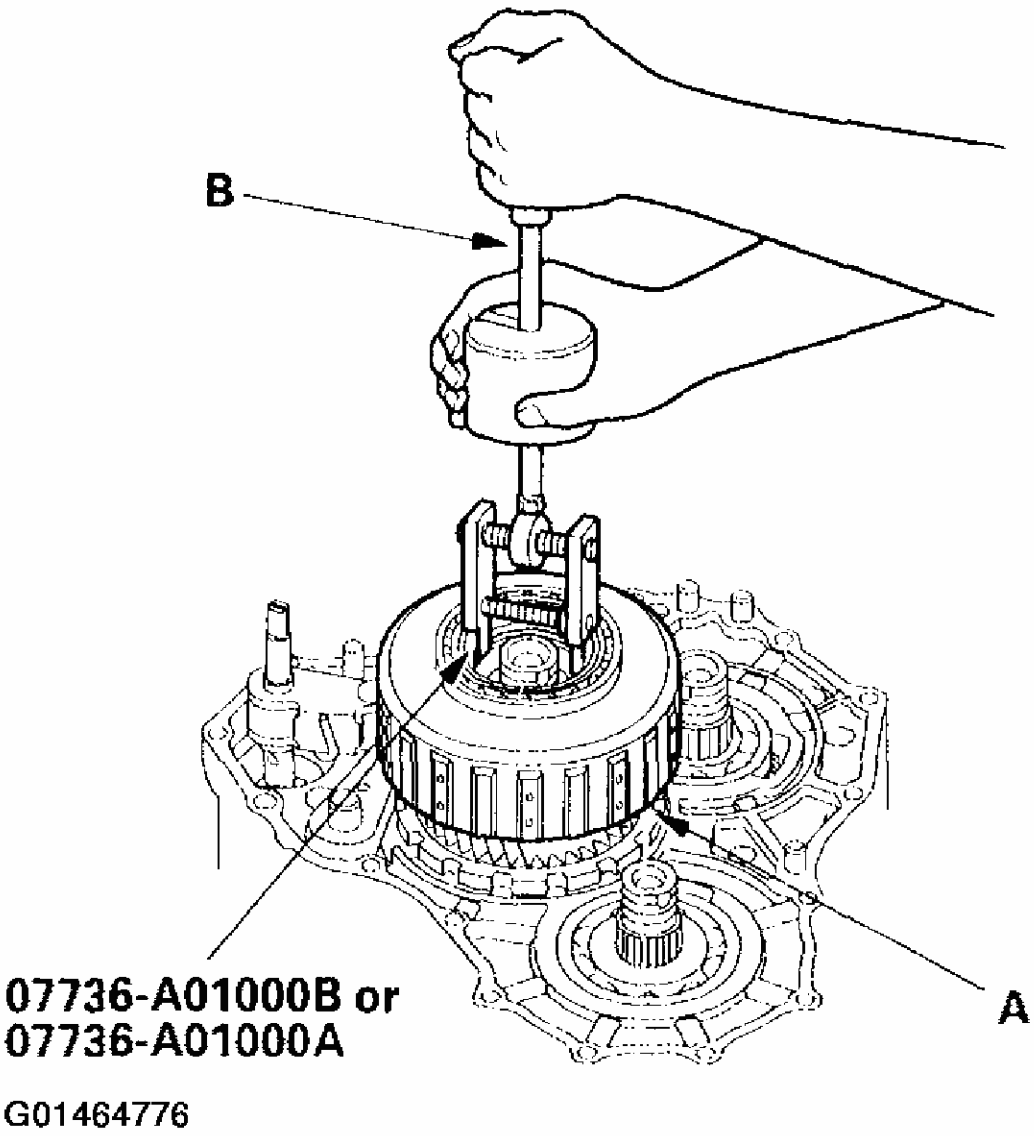

Fig. 127: Removing The 3rd Clutch Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the parts that were installed in step 5 .
11. Install the special tool onto the mainshaft.

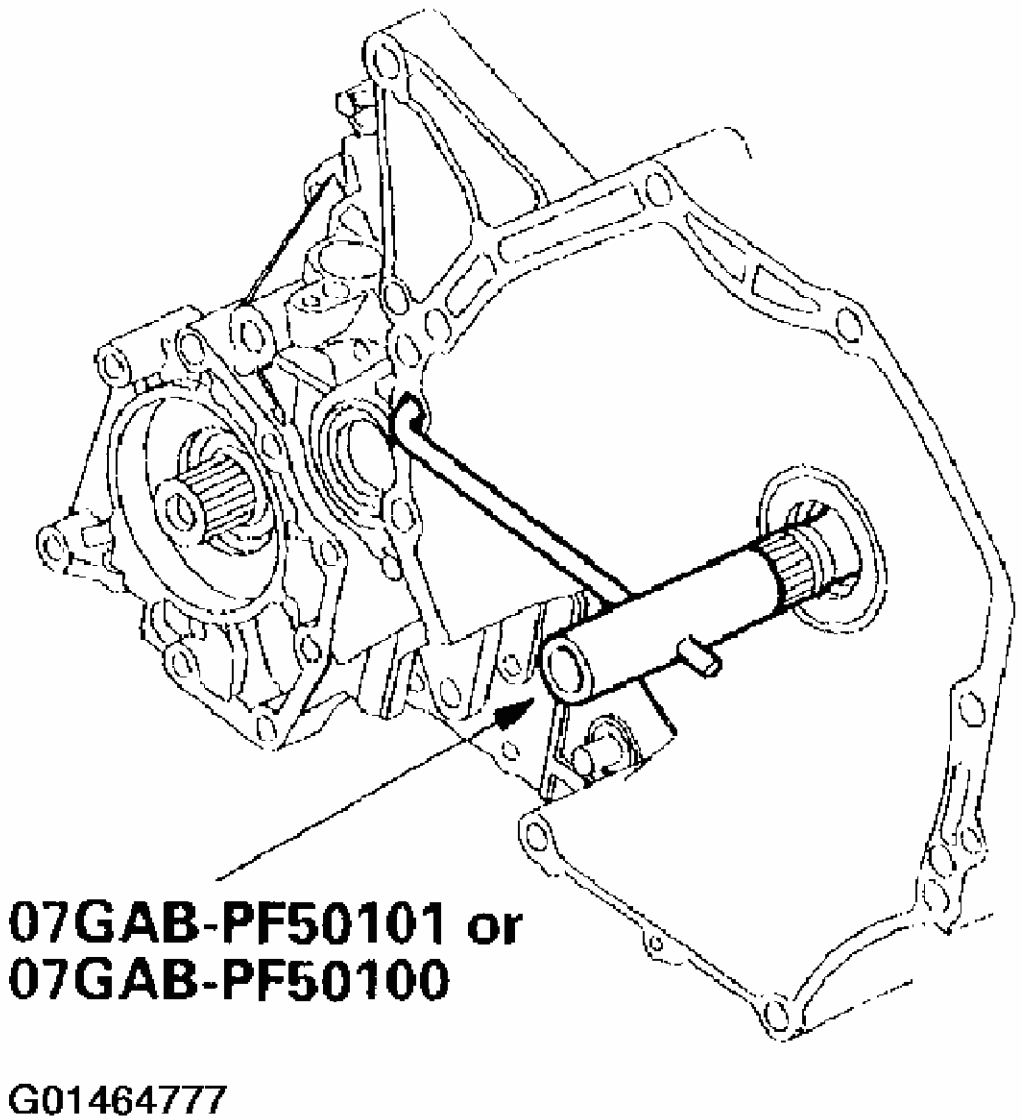

Fig. 128: Installing The Special Tool Onto The Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Lubricate the following parts with ATF:
    - Splines of the mainshaft 3rd gear and secondary shaft idler gear.
    - Threads of the mainshaft and secondary shaft.
    - Threads of the old mainshaft and secondary shaft locknuts.
    - Old conical spring washer.

NOTE: Use a torque wrench to tighten the locknut. Do not use an

impact wrench.

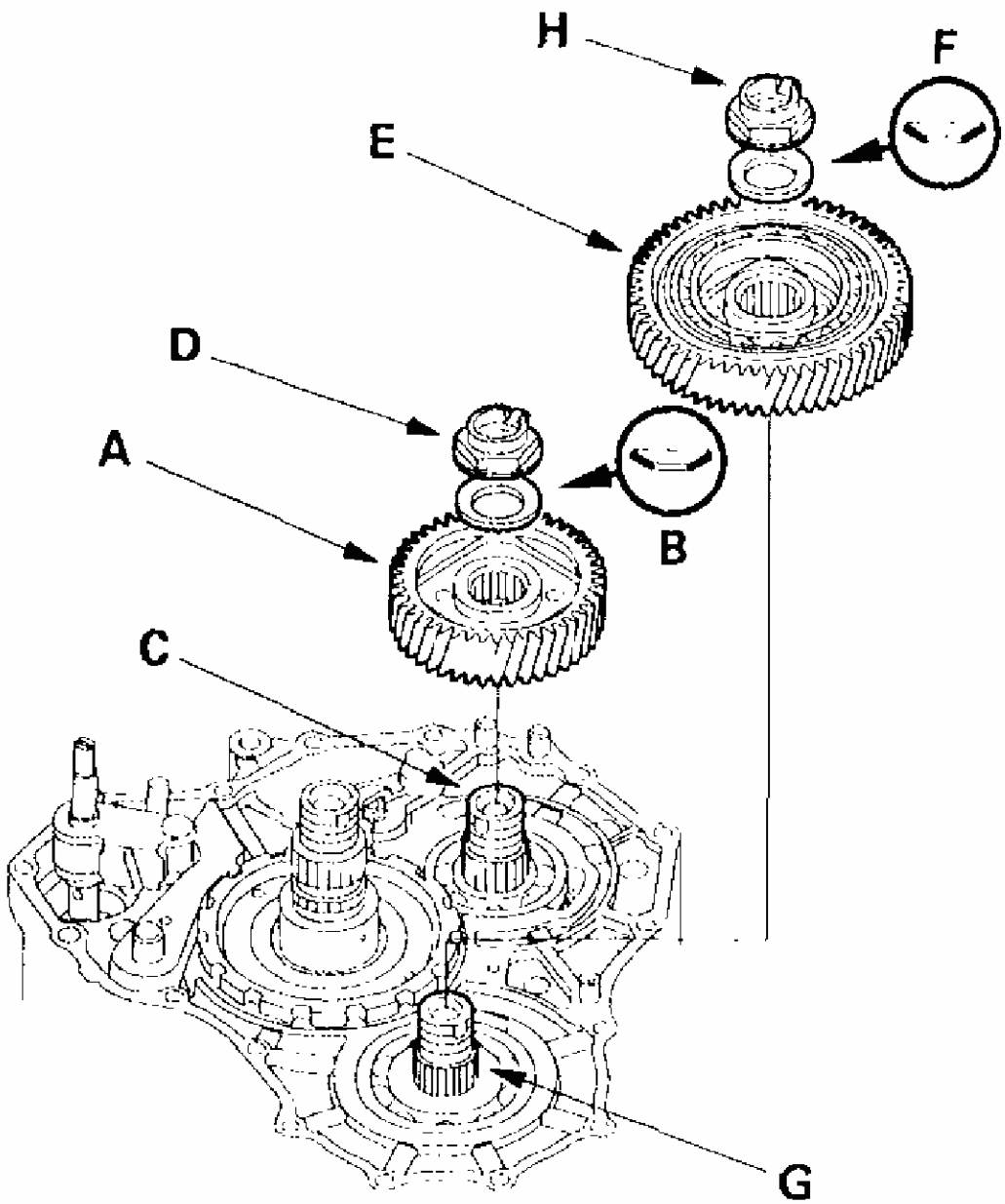

Fig. 129: Installing The Mainshaft 3rd Gear & Conical Spring Washer On The Mainshaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Install the mainshaft 3rd gear (A) and the old conical spring washer (B) on the mainshaft

(C). Tighten the old locknut (D) to seat the 3rd gear to 226 N.m (23.0 kgf.m, 166 lbf.ft).

NOTE:

- **Use a torque wrench to tighten the locknut. Do not use an impact wrench.**
- **Secondary shaft locknut has left-hand threads.**

14. Install the secondary shaft idler gear (E) and the old conical spring washer (F) on the secondary shaft (G). Tighten the old locknut (H) to seat the secondary shaft idler gear to 226 N.m (23.0 kgf.m, 166 lbf.ft).
15. Remove the old locknuts and old conical spring washers from the mainshaft and secondary shaft.
16. If the 3rd gear axial clearance is out of standard (measured in step 7), measure the difference of the 31 X 63.5 mm splined washer, and select the appropriate splined washer from the table.

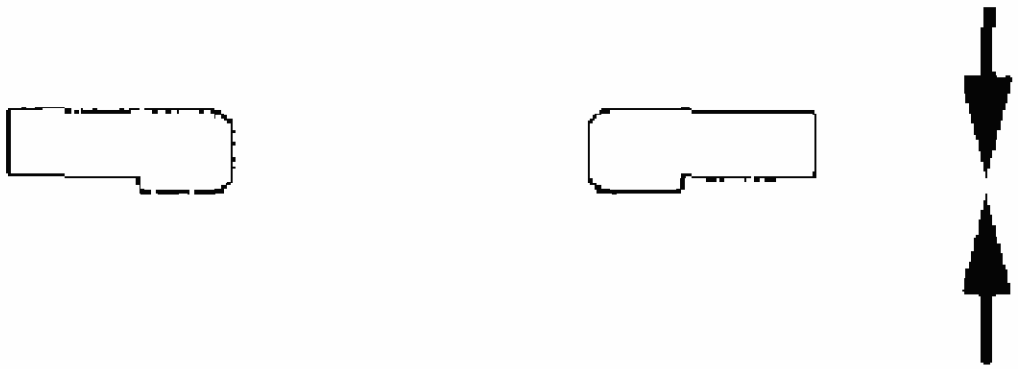

Fig. 130: Measuring The Difference Of The 31 X 63.5 mm Splined Washer
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Mark	Part Number	Difference
A	90520-P7W-000	3.503 mm (0.1379 in.)
B	90521-P7W-000	3.490 mm (0.1374 in.)
C	90522-P7W-000	3.477 mm (0.1369 in.)
D	90523-P7W-000	3.464 mm (0.1364 in.)

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Fig. 131: 31 X 63.5 mm Splined Washer Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

17. Install the thrust needle bearing (A), needle bearing (B), 3rd gear (C), thrust needle bearing (D), and 31 X 63.5 mm splined washer (E) on the countershaft (F).

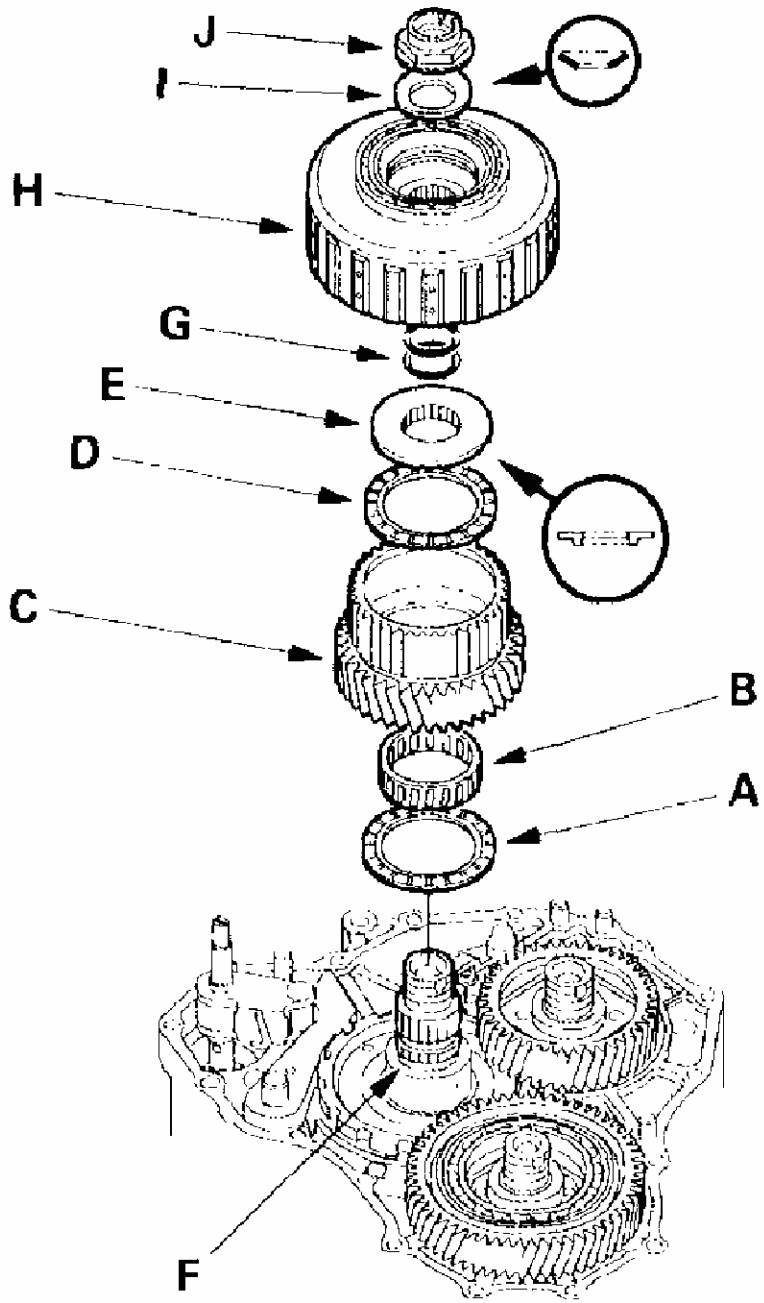

Fig. 132: Installing The Thrust Needle Bearing, Needle Bearing, 3rd Gear, Thrust Needle Bearing & 31 X 63.5 mm Splined Washer On The Countershaft
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Wrap the shaft splines with tape to prevent O-ring damage, then install new O-rings (G).

NOTE: Use a torque wrench to tighten the locknut. Do not use an

impact wrench.

19. Remove the tape, then install the 3rd clutch assembly (H), and old conical spring washer (I). Tighten the old locknut (J) to 226 N.m (23.0 kgf.m, 166 lbf.ft).
20. Remove the old locknut and old conical spring washer from the countershaft.
21. Lubricate the threads of each shaft, the new locknuts, and new conical spring washers with ATF.
22. Install the new conical spring washers (A) in the direction shown, and install the new locknuts (B).

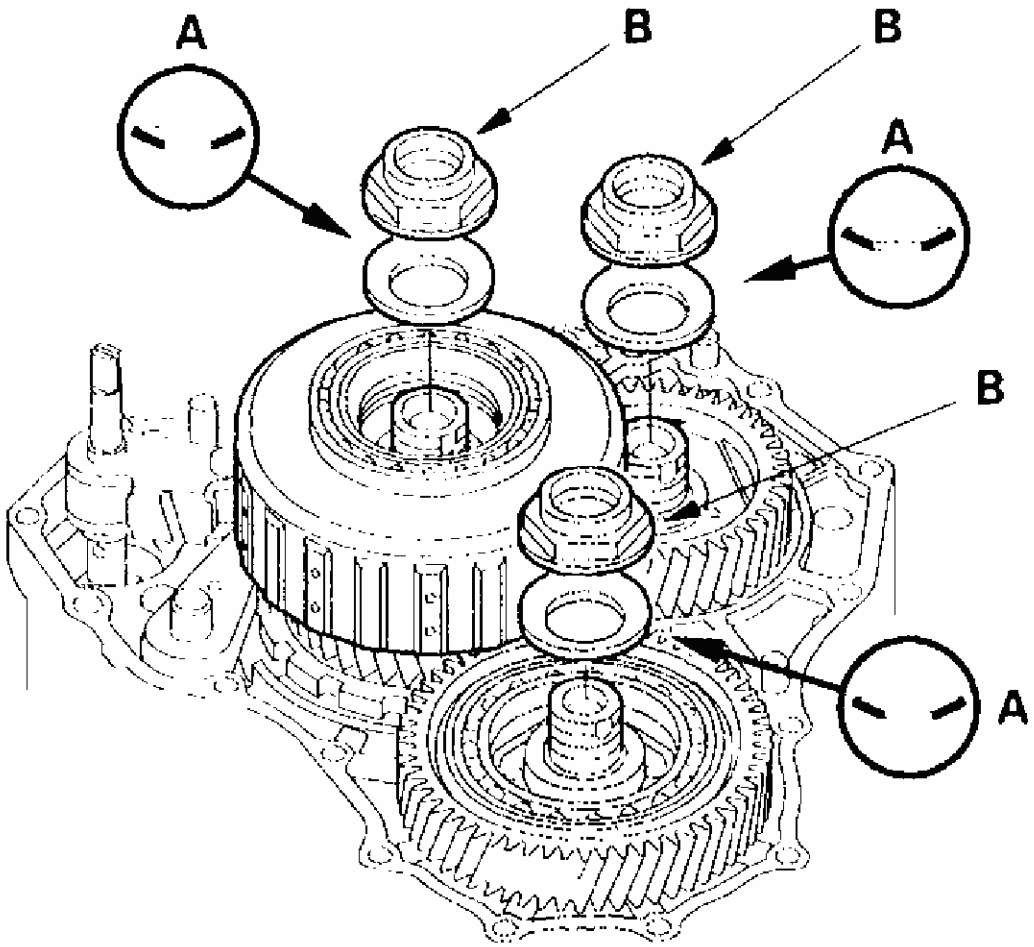

Fig. 133: Installing The Conical Spring Washers & Locknuts
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE:

- **Use a torque wrench to tighten the locknuts. Do not use an impact wrench.**
- **Countershaft and secondary shaft locknuts have left-hand threads.**
- **Remove the special tool from the mainshaft.**

23. Tighten the locknuts to 167 N.m (17.0 kgf.m, 123 lbf.ft).
24. Stake each locknut into its shaft using a 3.5 mm punch.

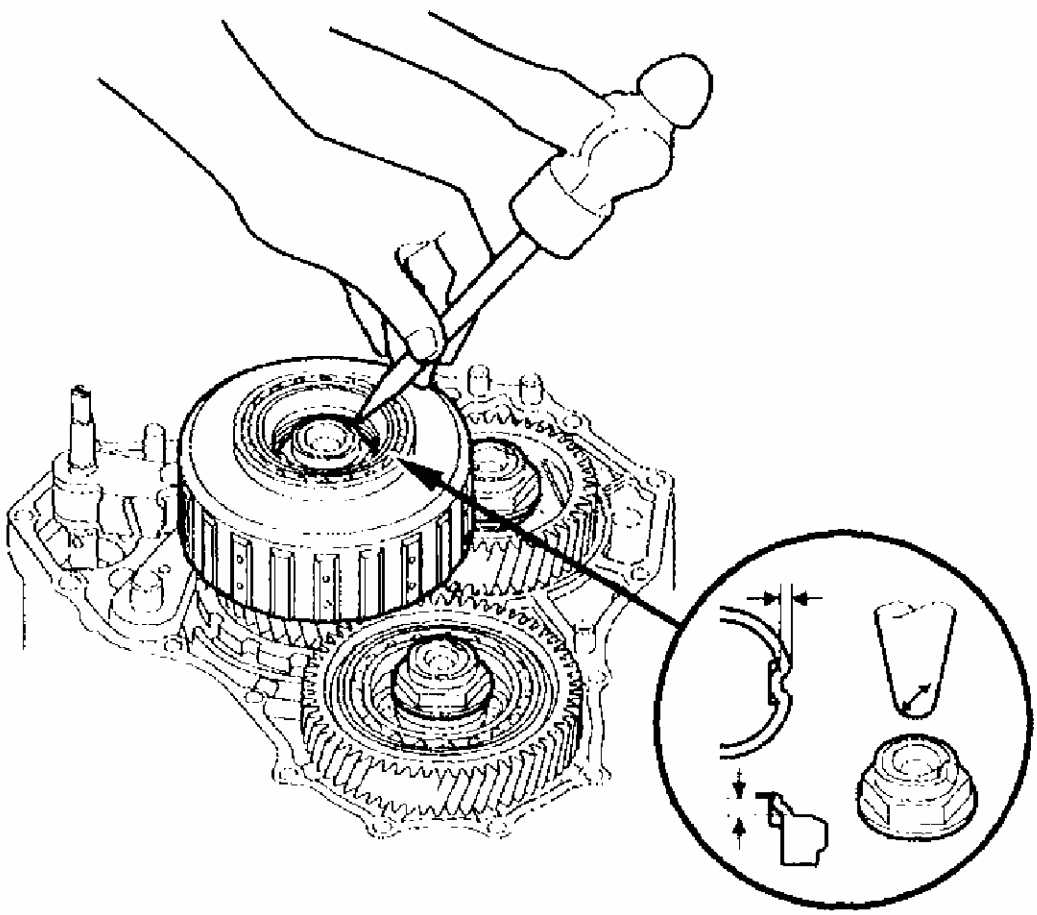

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Fig. 134: Staking The Locknut
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

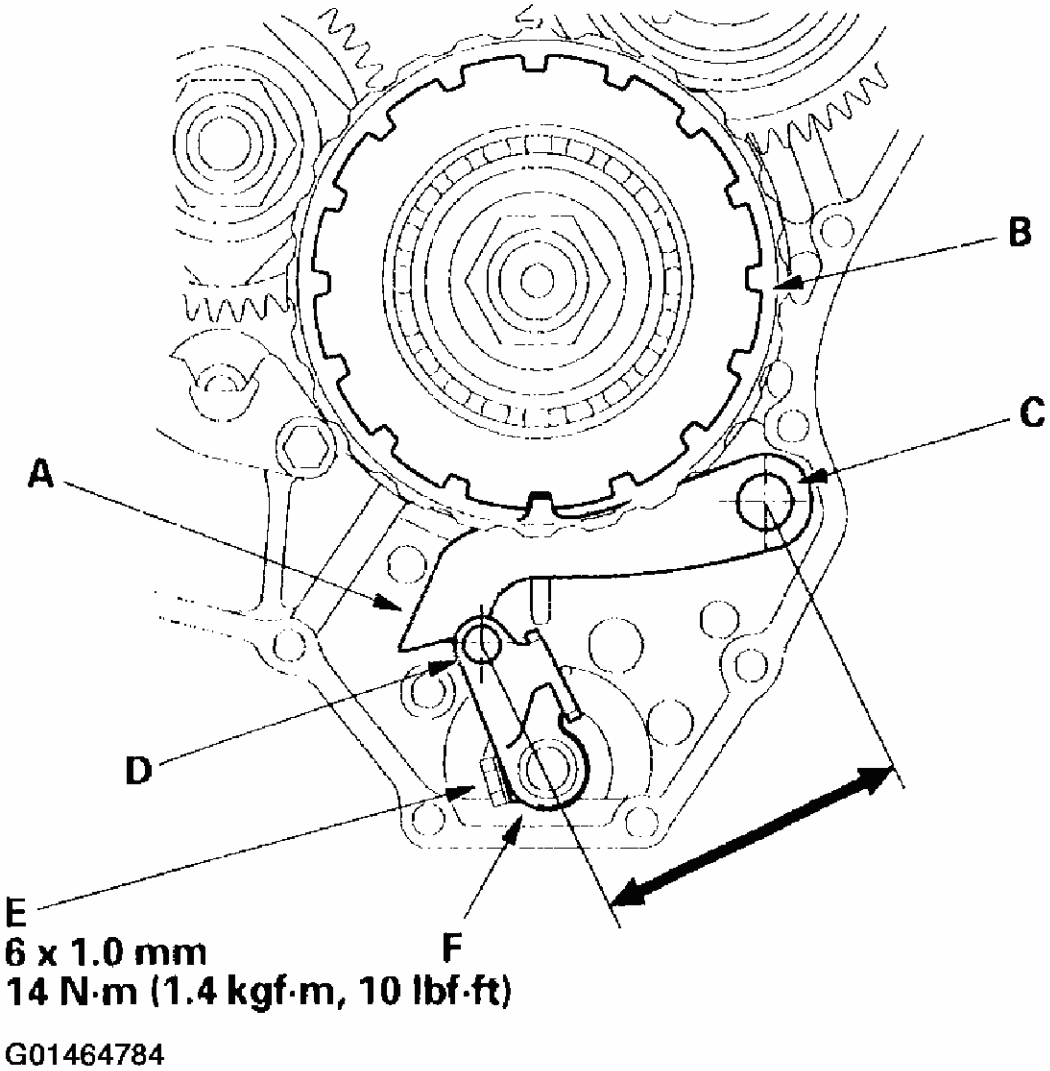

Fig. 135: Verifying That The Park Pawl Engages The Park Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. If the park pawl does not engage fully, check the distance between the pawl shaft (C) and the park lever roller pin (D) (see **Park Lever Stop Inspection & Adjustment**).
27. Tighten the lock bolt (E), and bend the lock tab of the lock washer (F) against the lock bolt head.
28. Install the end cover (A) with the two dowel pins, new O-rings, new gasket, harness clamp bracket (B), and connector bracket (C). Tighten the 13 bolts to 12 N.m (1.2 kgf.m, 8.7 lbf.ft).

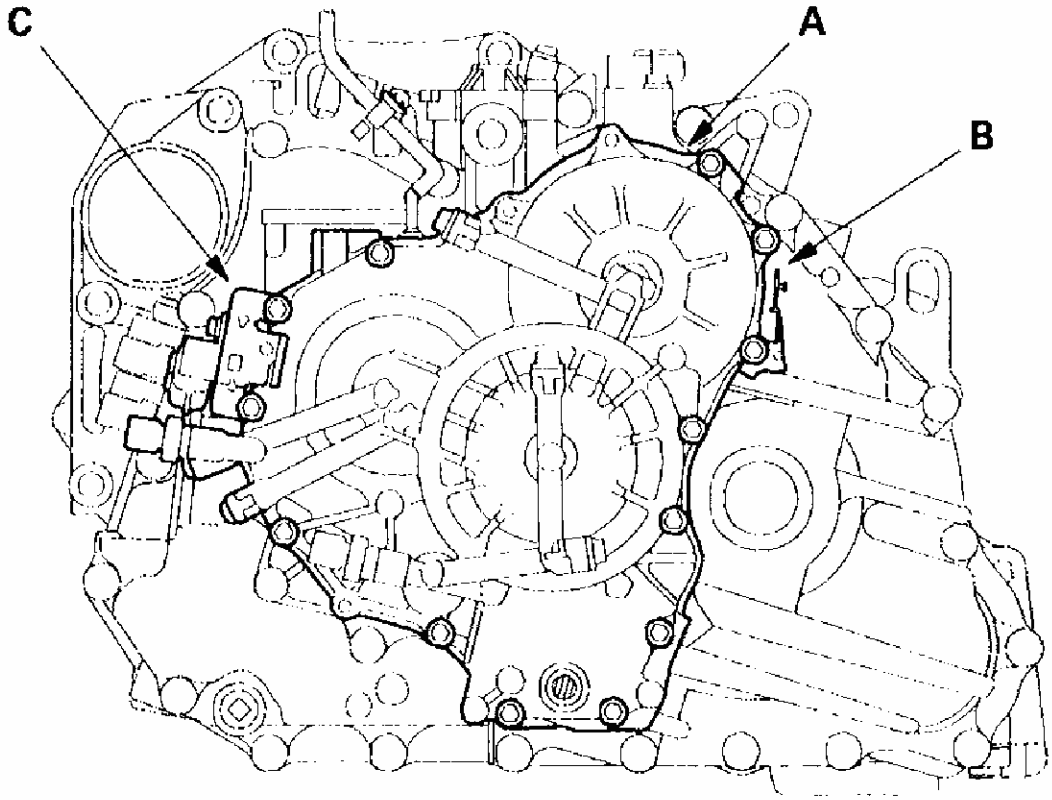

Fig. 136: Installing The End Cover, Dowel Pins, O-Rings, Gasket, Harness Clamp Bracket & Connector Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

29. Install the 8 X 12 mm ATF feed pipe (A) with its filter side into the transmission housing.

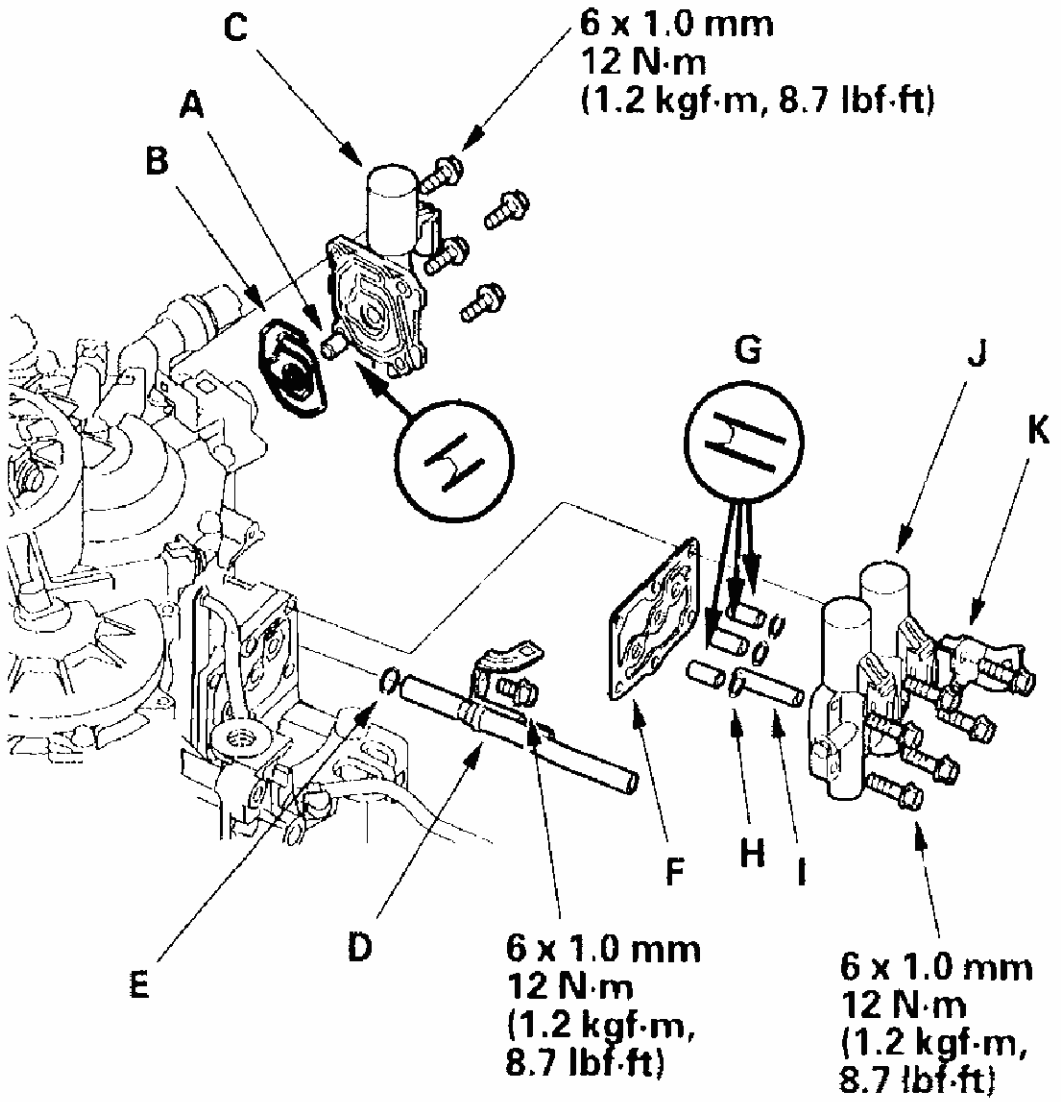

Fig. 137: Installing The 8 X 12 mm ATF Feed Pipe Into The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

30. Install the new gasket (B) in the mounting groove of the A/T clutch pressure control solenoid valve C body (C) properly, then install them on the transmission housing Do not pinch the gasket.
31. Install the ATF dipstick guide pipe (D) with the new O-ring (E).
32. Place the new gasket (F) on the transmission housing, then install the 8 X 18 mm ATF feed pipes (G) with their filter side into the transmission housing.
33. Install the new O-rings (H) over the feed pipes, and install the 8 X 40 mm ATF feed pipe

(I).

34. Install the A/T clutch pressure control solenoid valves A and B (J) and the harness clamp bracket (K).
35. Place the new ATF passage body gasket (A) on the transmission housing, then install the 8 X 14 mm dowel pin (B) and the 10 X 25.5 mm ATF feed pipe (C) with the new O-ring (D). Install the ATF passage body (E) on the transmission housing, if it was removed.

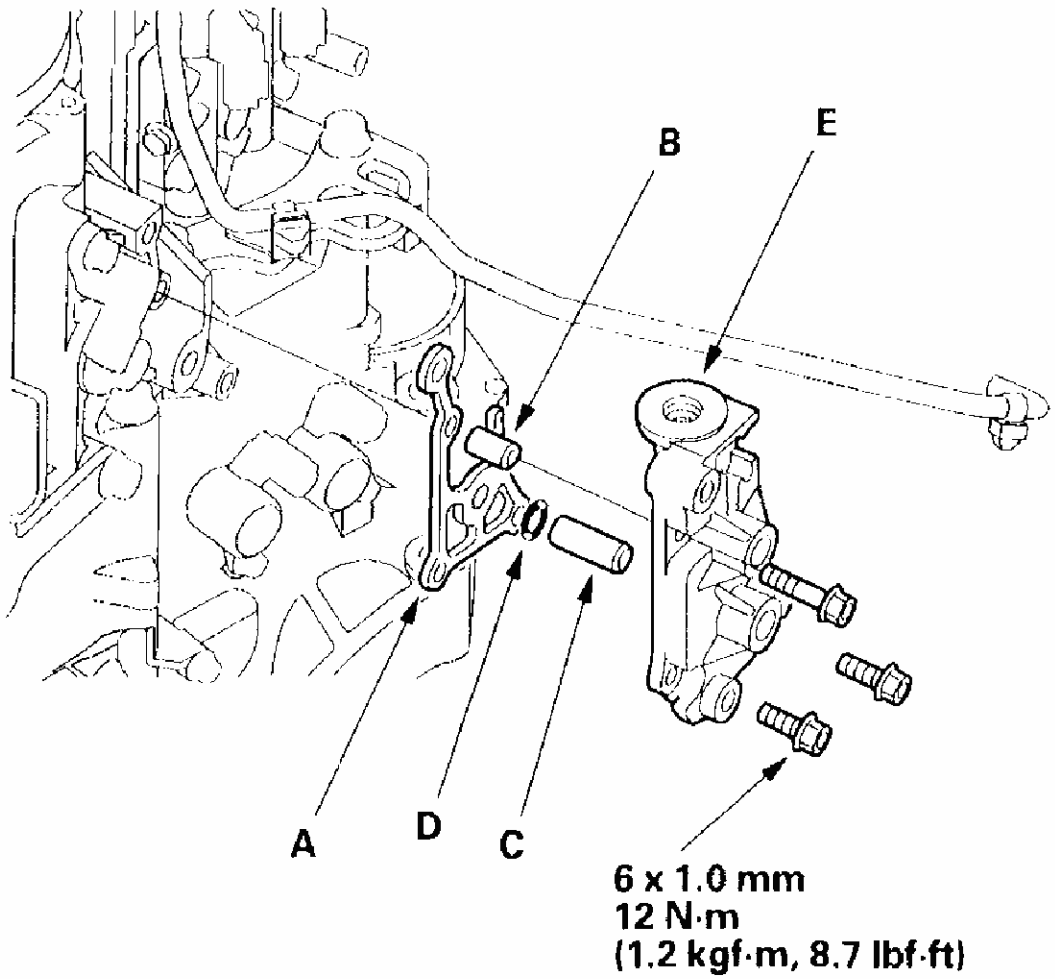

Fig. 138: Installing The ATF Passage Body On The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

36. Install the new ATF filter (A) on the transmission housing.

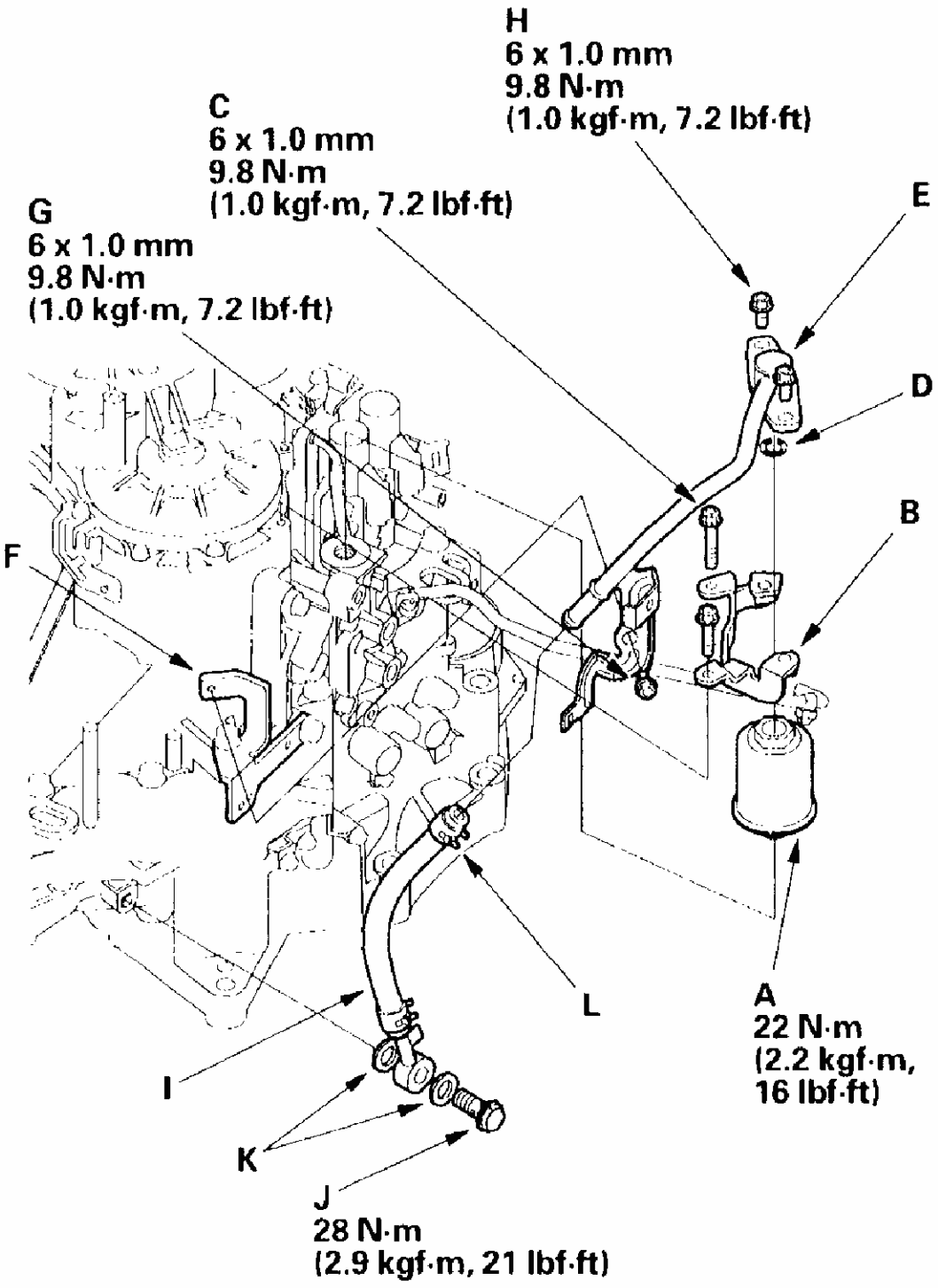

Fig. 139: Installing The New ATF Filter On The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

37. Install the filter line bracket (B) on the ATF filter, and loosely install the bolts (C).

38. Install the new O-ring (D) to the filter line (E), then install the filter line on the ATF filter.
39. Secure the end of the filter line on the bracket (F) with the bolt (G).
40. Secure the filter line of the filter line bracket with the bolts (H).
41. Tighten the bolts (C) on the filter line bracket to the specified torque.
42. Install the ATF hose (I) and line bolt (J) with the new sealing washers (K).
43. Connect the hose to the filter line, and secure it with the clip (L).
44. Install the ATF cooler lines (A) with the new sealing washers (B) and the line bolts, then install the harness clamp bracket (C).

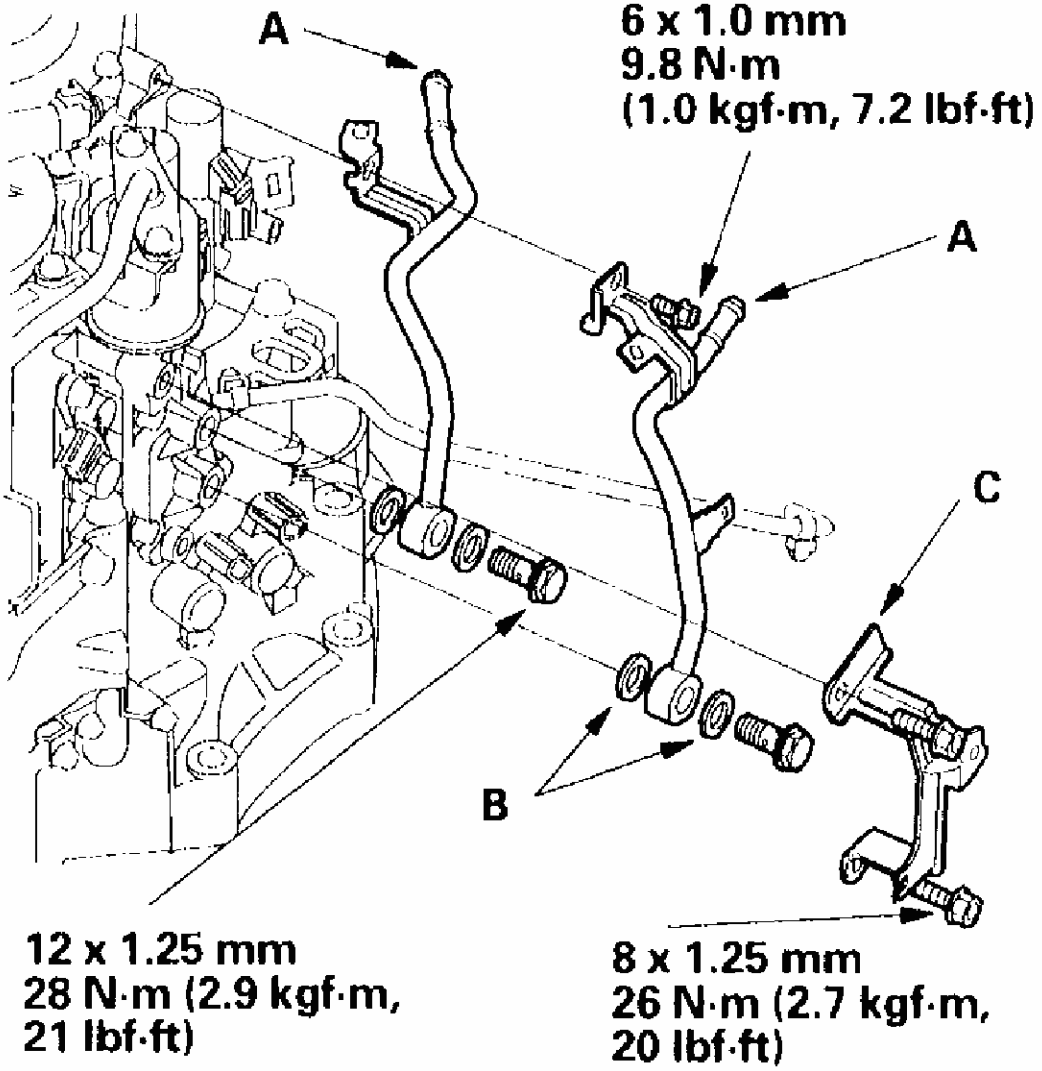

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Fig. 140: Installing The ATF Cooler Lines, Sealing Washers, Line Bolts & Harness Clamp Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE: The transmission range switch clicks in the N position.

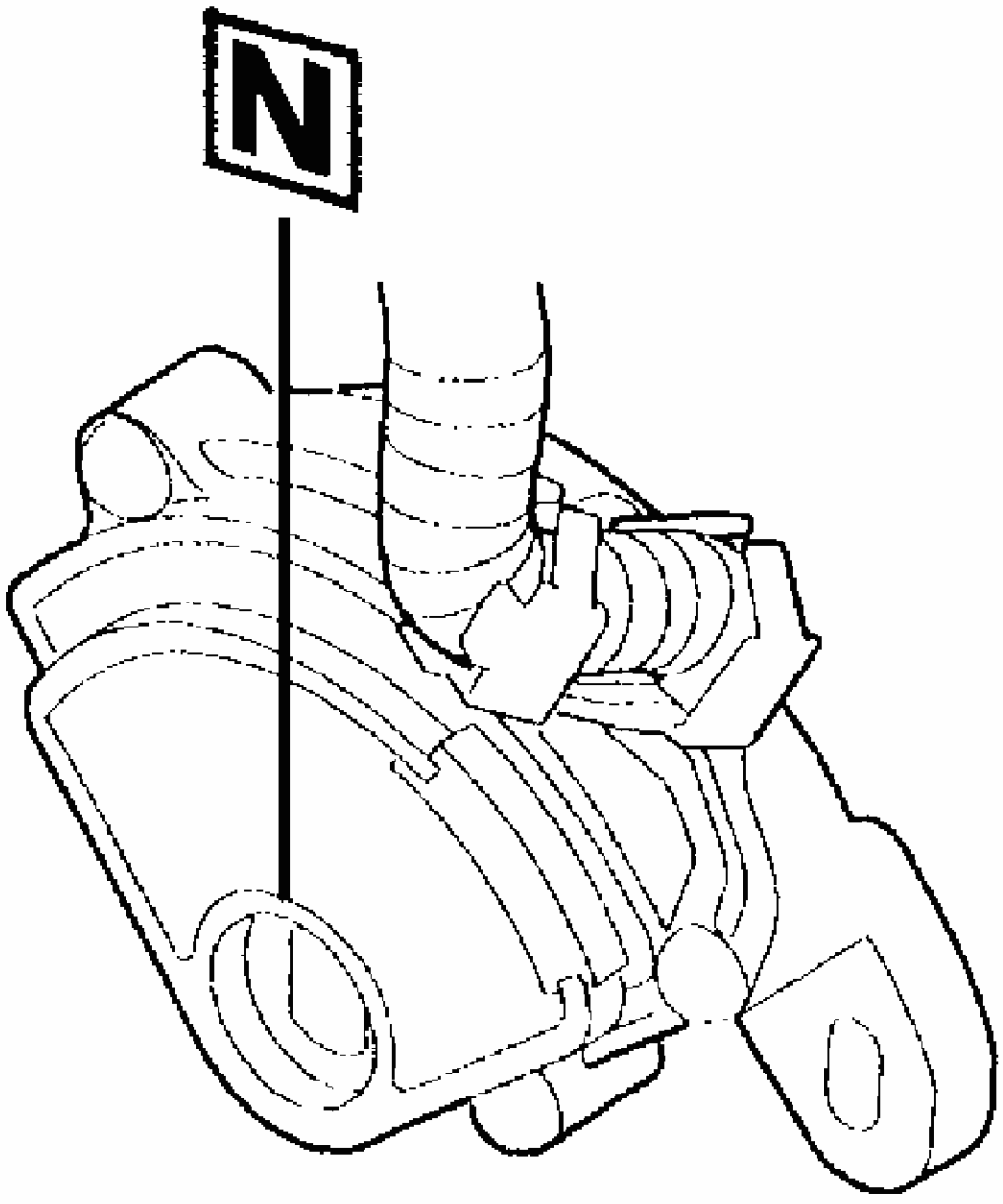

Fig. 141: Setting The Transmission Range Switch To The N Position

Courtesy of AMERICAN HONDA MOTOR CO., INC.

45. Set the transmission range switch to the N position.

NOTE: **Do not squeeze the end of the control shaft tips together when turning the shaft. If the tips are squeezed together it will cause a faulty shift position signal or position due to the play between the control shaft and the switch. The clearance (A) between control shaft tips is 2.0 mm (0.08 in.)**

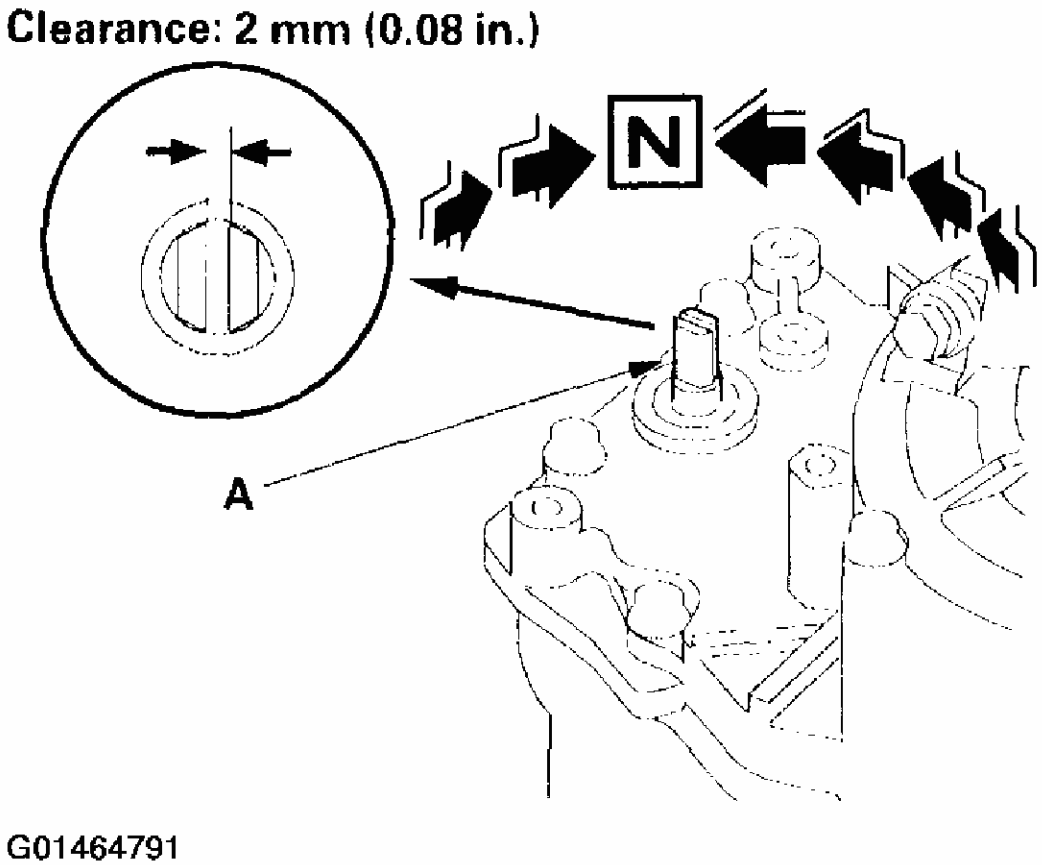

Fig. 142: Turning The Control Shaft To The N Position
Courtesy of AMERICAN HONDA MOTOR CO., INC.

46. Turn the control shaft (A) to the N position by turning it.
47. Install the transmission range switch (A) gently on the control shaft (B). Do not move the transmission range switch when tightening its bolts.
48. Install the transmission range switch cover (C): secure the harness with the bolt on the end cover (D): install the harness clips (E) on the brackets (F).

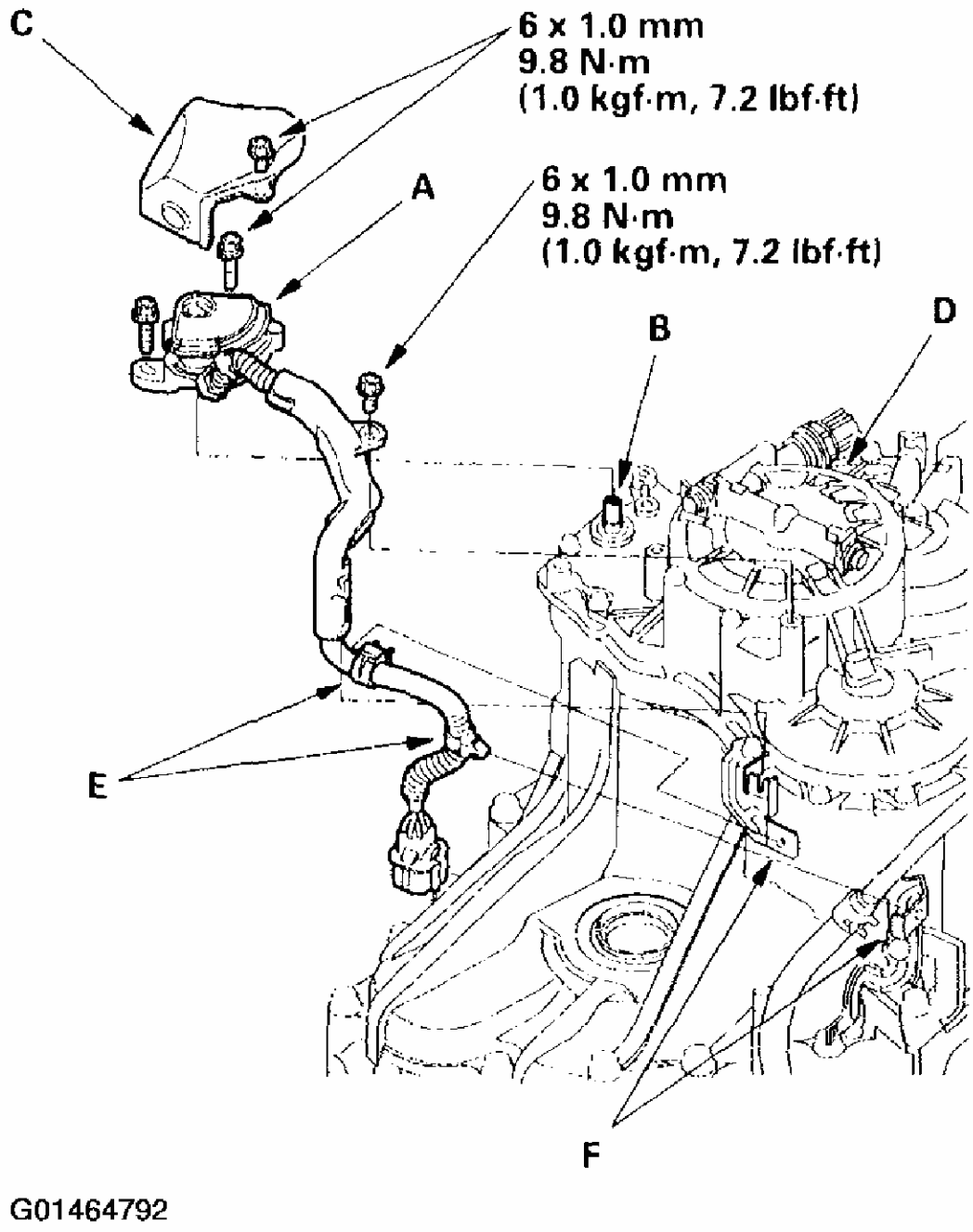

Fig. 143: Installing The Transmission Range Switch Cover & Harness Clips
Courtesy of AMERICAN HONDA MOTOR CO., INC.

49. Connect the 3rd clutch transmission fluid pressure switch connector (A) and A/T wire harness ground terminal (B) on the connector bracket (C), then install the clips (D) on the bracket (E).

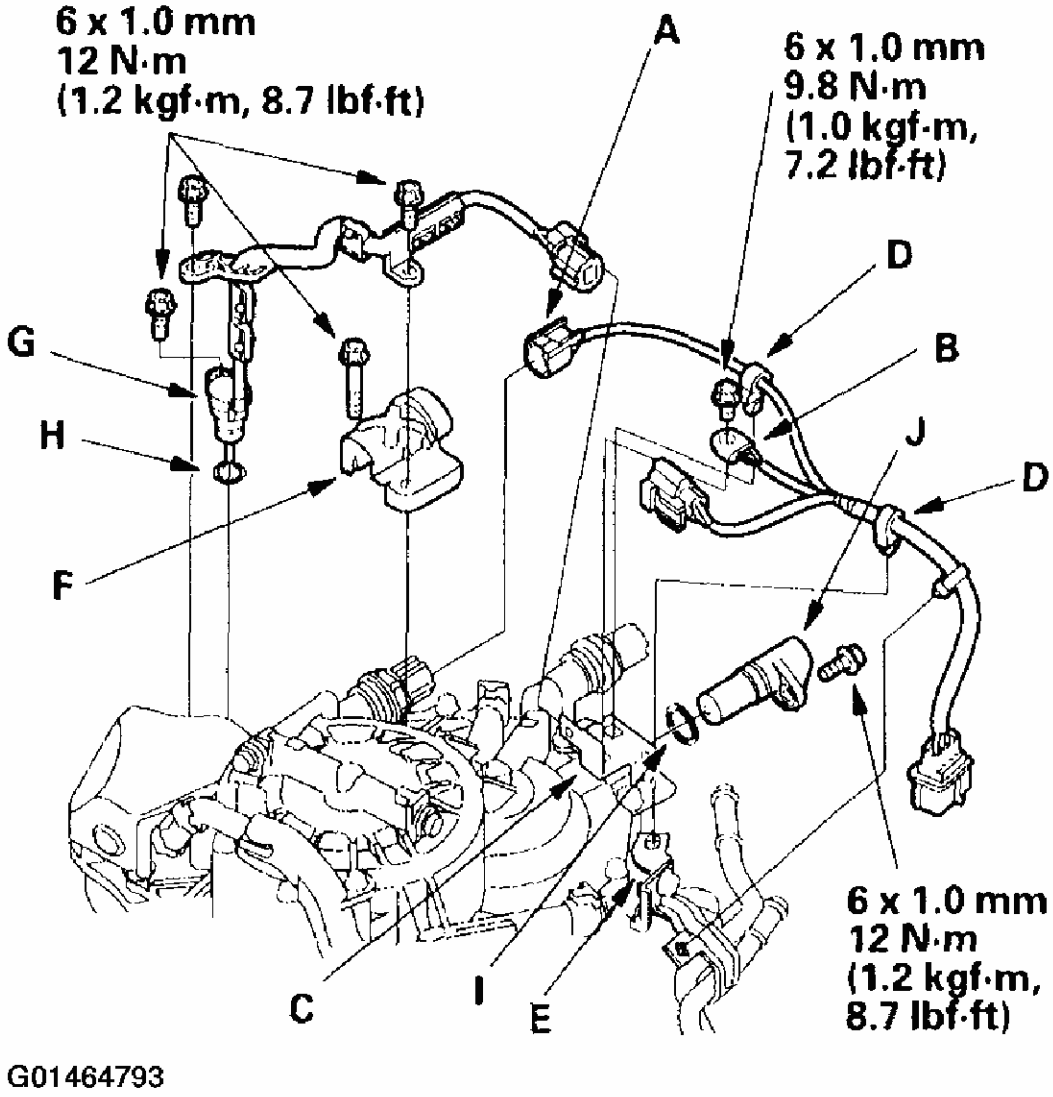

Fig. 144: Connecting The 3rd Clutch Transmission Fluid Pressure Switch Connector & A/T Wire Harness Ground Terminal On The Connector Bracket
Courtesy of AMERICAN HONDA MOTOR CO., INC.

50. Install the switch cover (F).
51. Install the ATF temperature sensor (G) with the new O-ring (H), then secure the harness with the bolts. Connect the sensor connector to the A/T wire harness connector, then install it on the connector bracket (C).
52. Install the new O-ring (I) on the input shaft (mainshaft) speed sensor (J), then install the input shaft (mainshaft) speed sensor.
53. Install the dipstick.

A/T DIFFERENTIAL

COMPONENT LOCATION INDEX

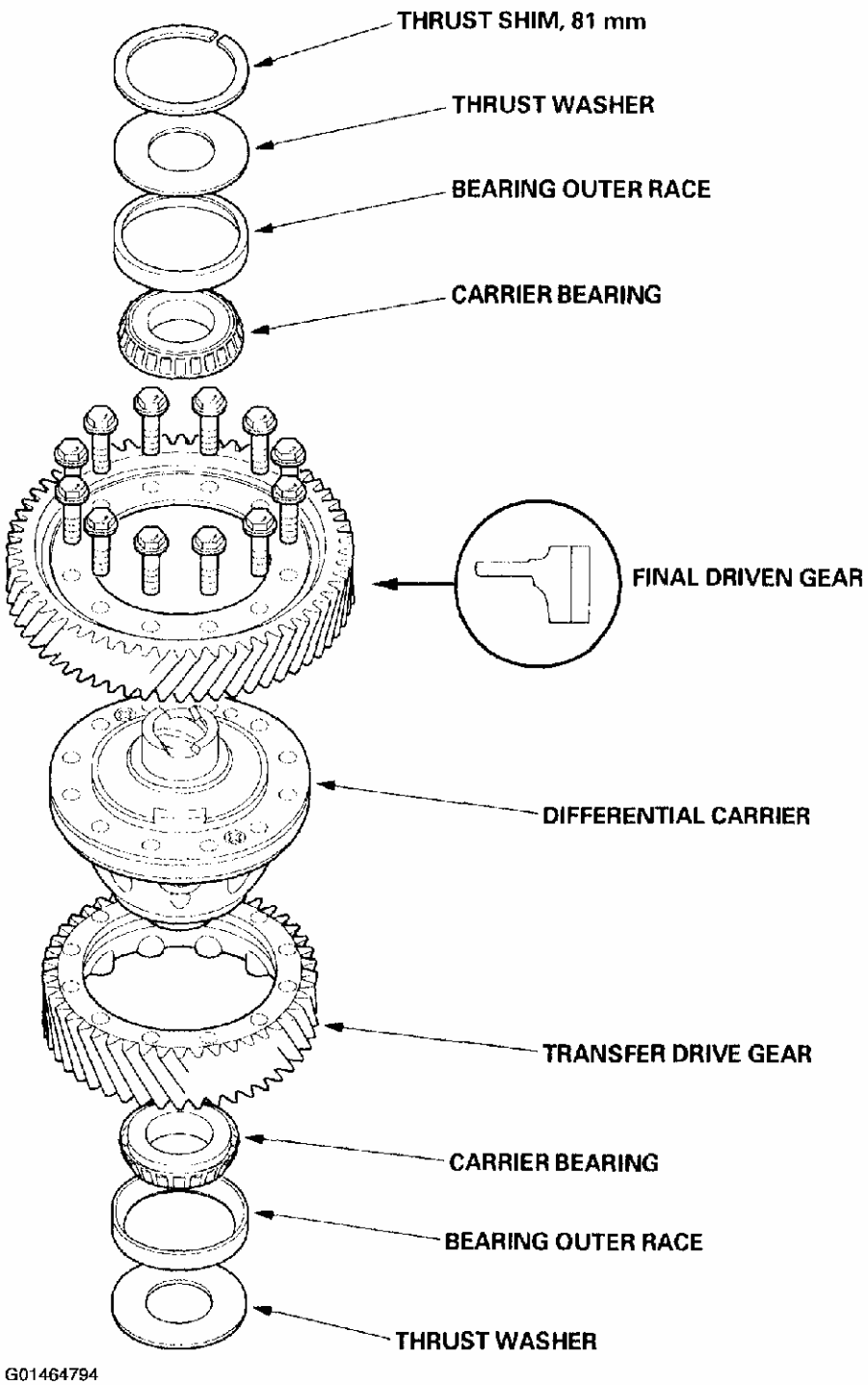

Fig. 145: Locating A/T Differential Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

BACKLASH INSPECTION

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

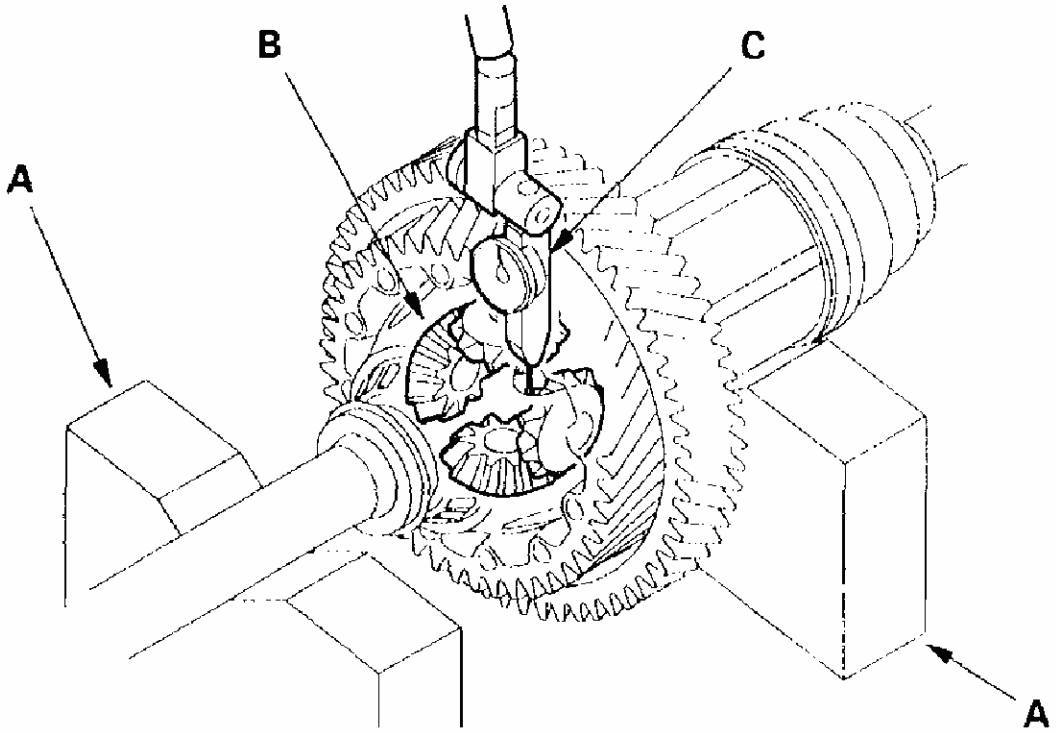

Fig. 146: Placing The Differential Assembly On V-Blocks
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Check the backlash of the pinion gears (B) with a dial indicator (C).

   Standard: 0.175-0.275 mm (0.007-0.011 in.)

3. If the backlash is out of standard, replace the differential carrier.

DIFFERENTIAL CARRIER, FINAL DRIVEN GEAR & TRANSFER DRIVE GEAR REPLACEMENT

NOTE: The final driven gear bolts have left-hand threads.

1. Remove the final driven gear (A) and transfer drive gear (B) from the differential carrier (C).

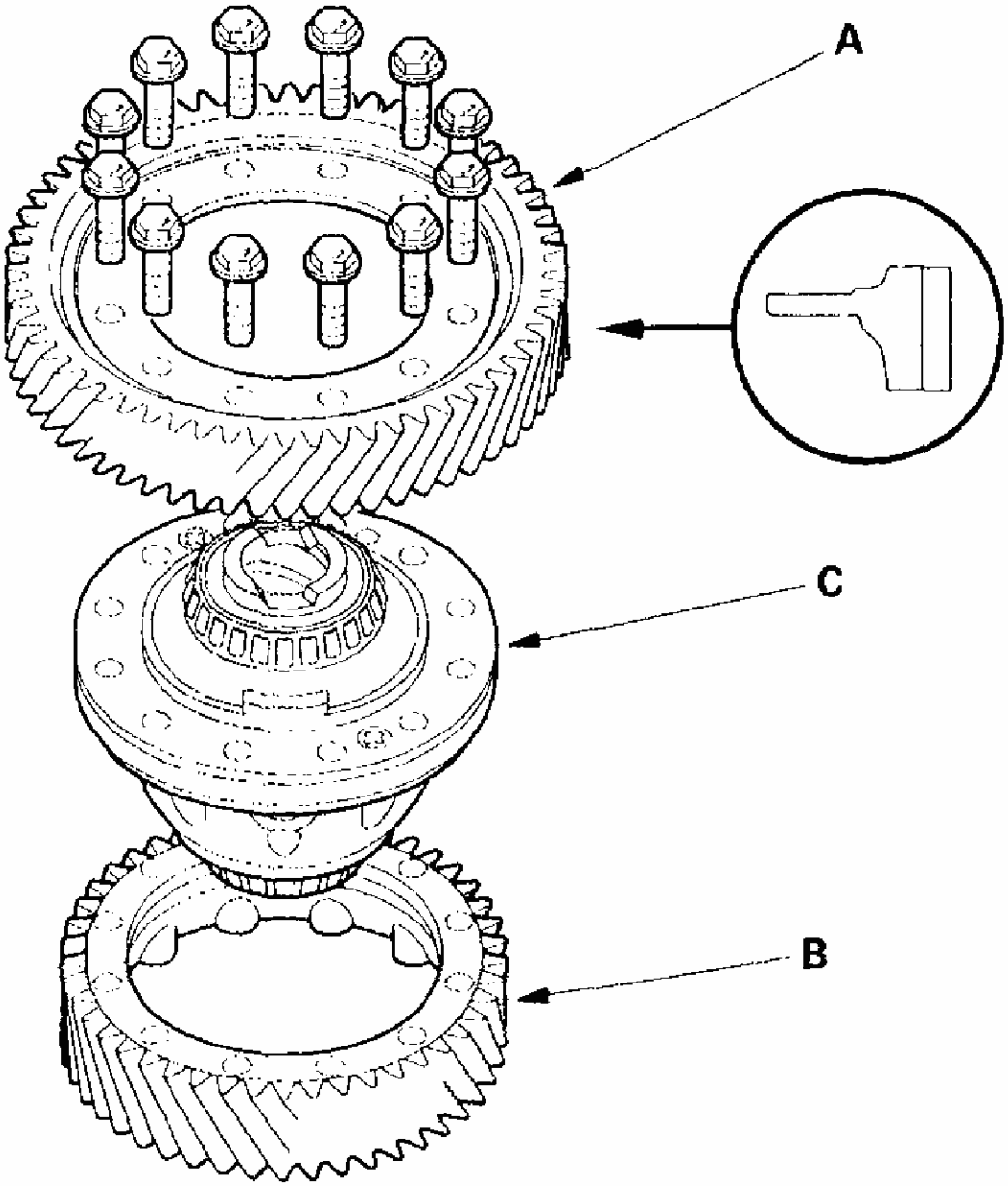

Fig. 147: Removing The Final Driven Gear & Transfer Drive Gear From The Differential Carrier
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the final driven gear with the chamfered side on the inner bore facing the differential carrier.
3. Tighten the bolts to the specified torque in a crisscross pattern.

Torque: 101 N.m (10.3 kgf.m, 74.5 lbf.ft)

CARRIER BEARING REPLACEMENT

Special Tools Required

Attachment, 40 X 50 mm 07LAD-PW50601

NOTE:

- **The bearing and outer race should be replaced as a set.**
- **Inspect and adjust the bearing preload whenever the bearing is replaced.**
- **Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.**

1. Remove the carrier bearing (A) with a commercially available bearing puller (B), bearing separator (C), and stepped adapter (D).

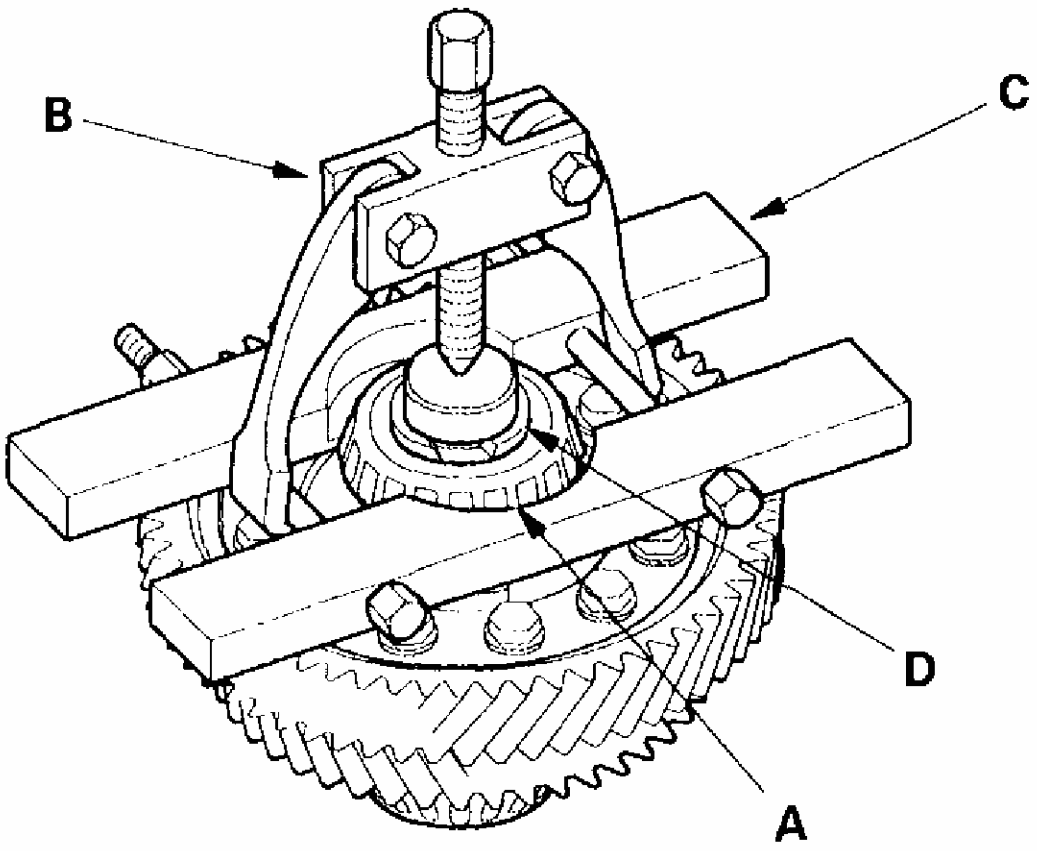

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Fig. 148: Removing The Carrier Bearing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

NOTE:

- Press the bearing on until it bottoms.
- Use the small end of the special tool to install the bearing.
- Press the bearing on securely so there is no clearance between the bearing and the differential carrier.

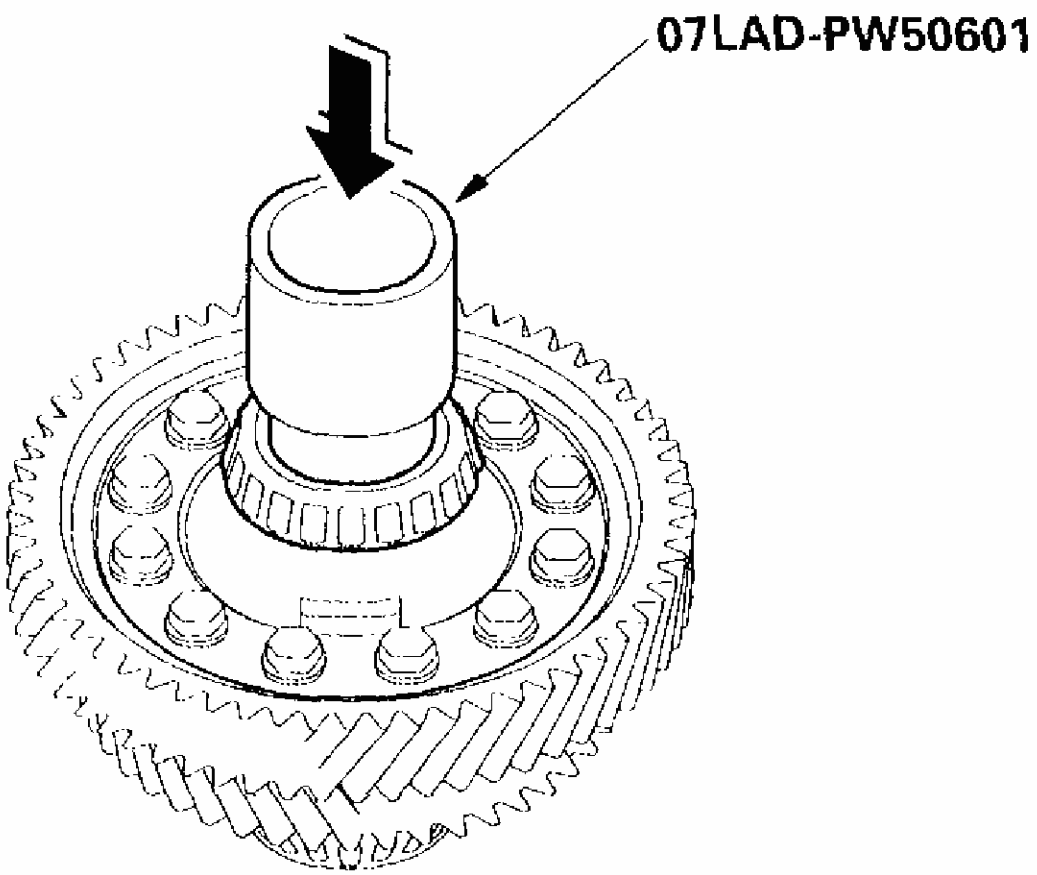

Fig. 149: Installing The Carrier Bearings
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new carrier bearings with the special tool and a press.

OIL SEAL REPLACEMENT

Special Tools Required

- Driver 07749-0010000
- Seal driver attachment 07GAD-PG40100 or 07GAD-PG40101
- Oil seal driver attachment 07JAD-PH80101

1. Remove the differential assembly.
2. Remove the oil seal from the transmission housing.

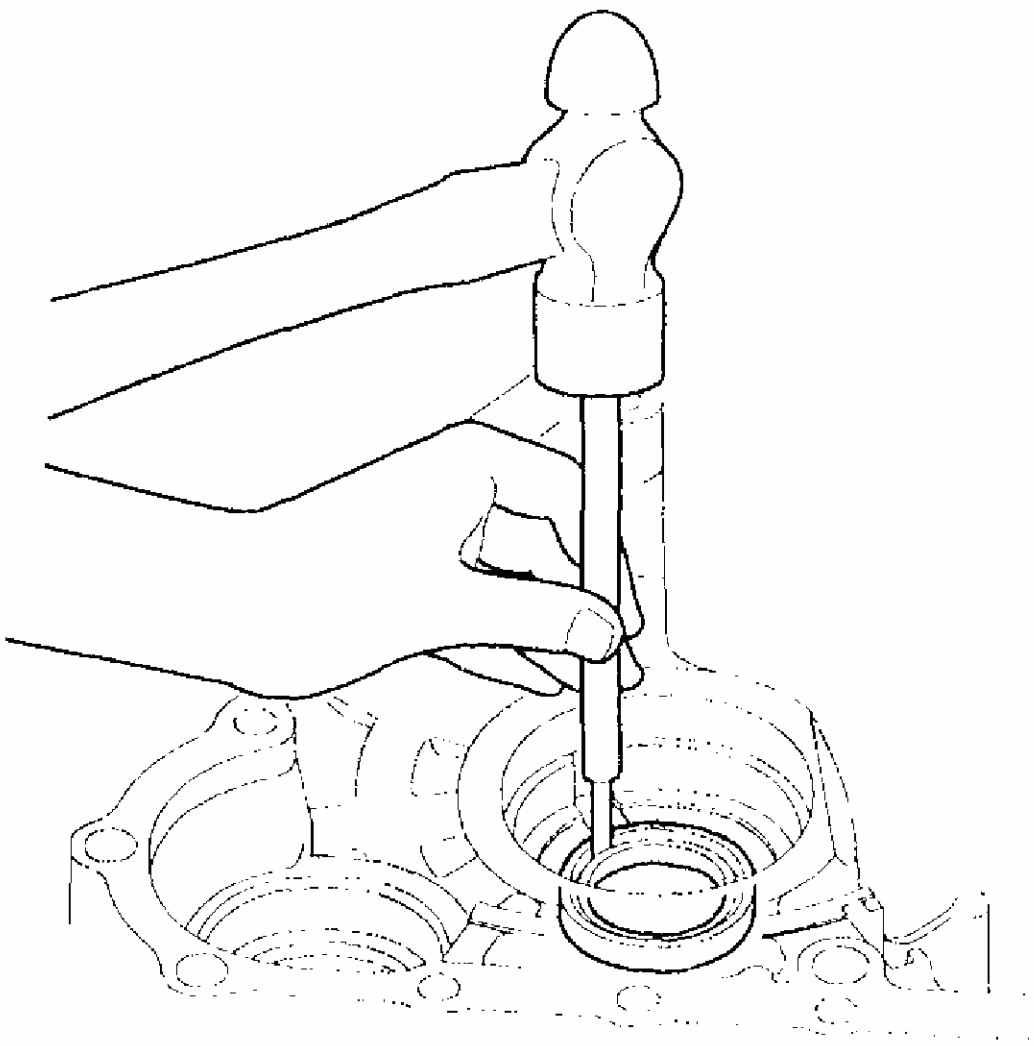

Fig. 150: Removing The Oil Seal From The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the oil seal from the torque converter housing.

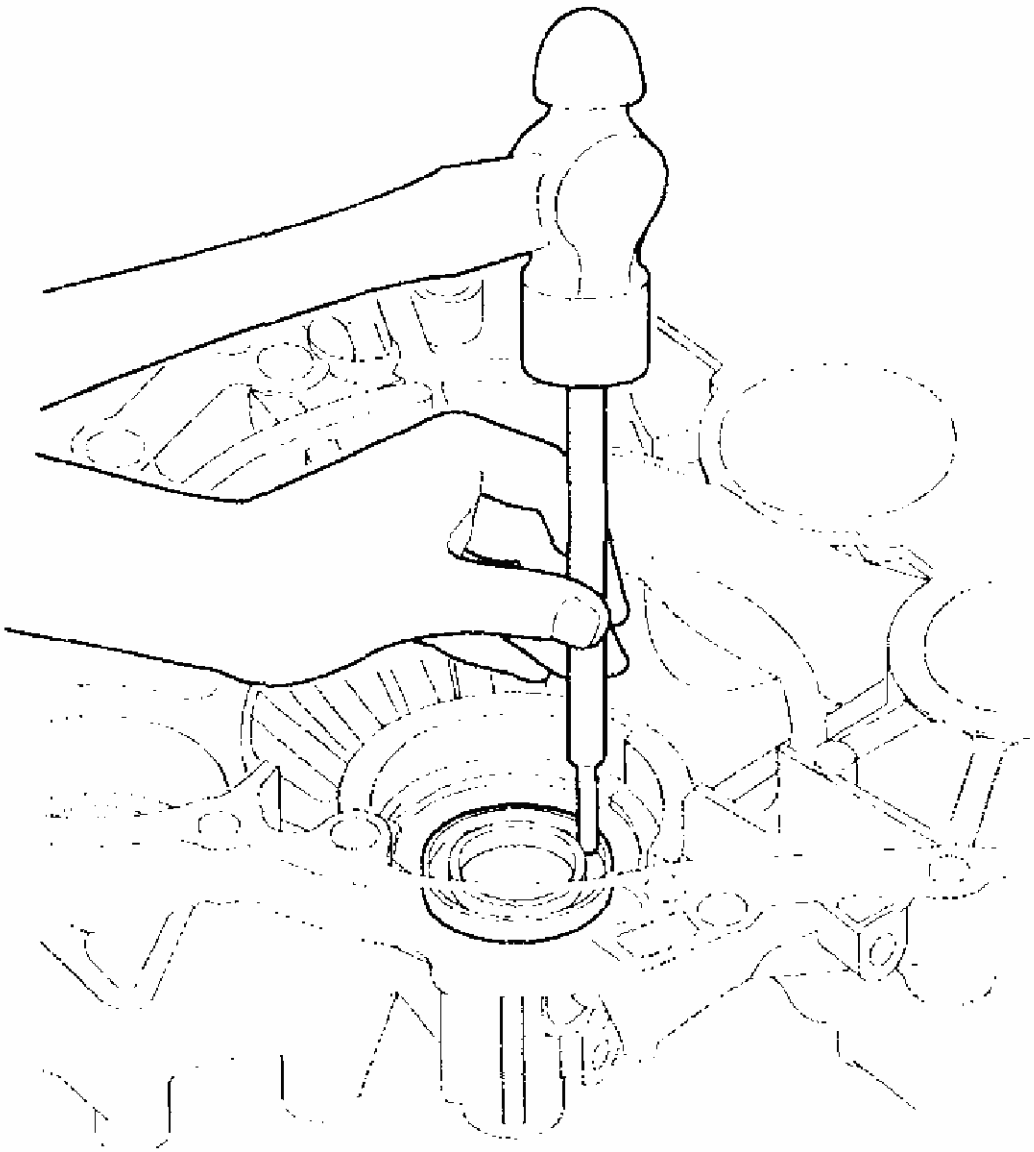

Fig. 151: Removing The Oil Seal From The Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

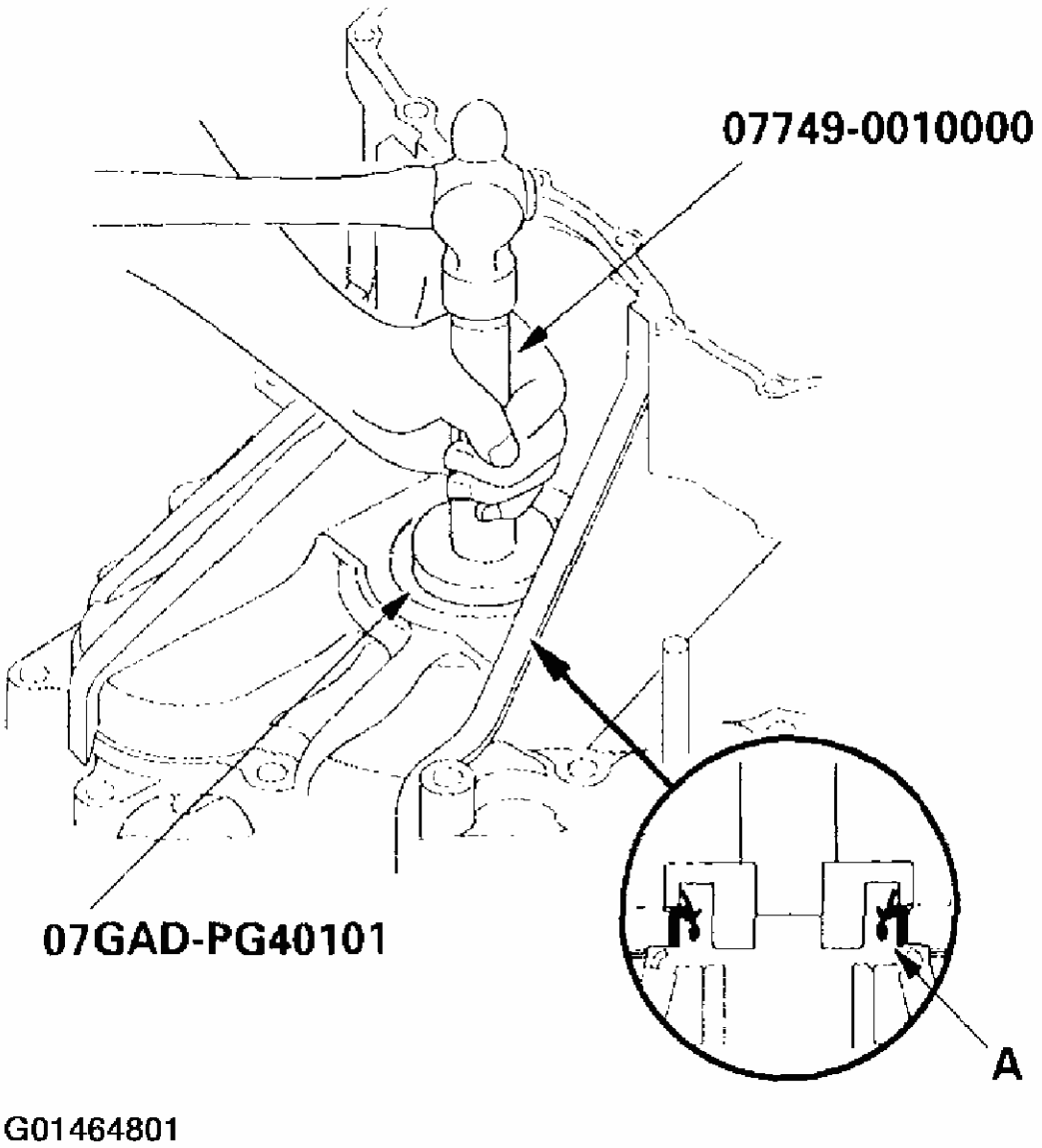

Fig. 152: Installing The Oil Seal In The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

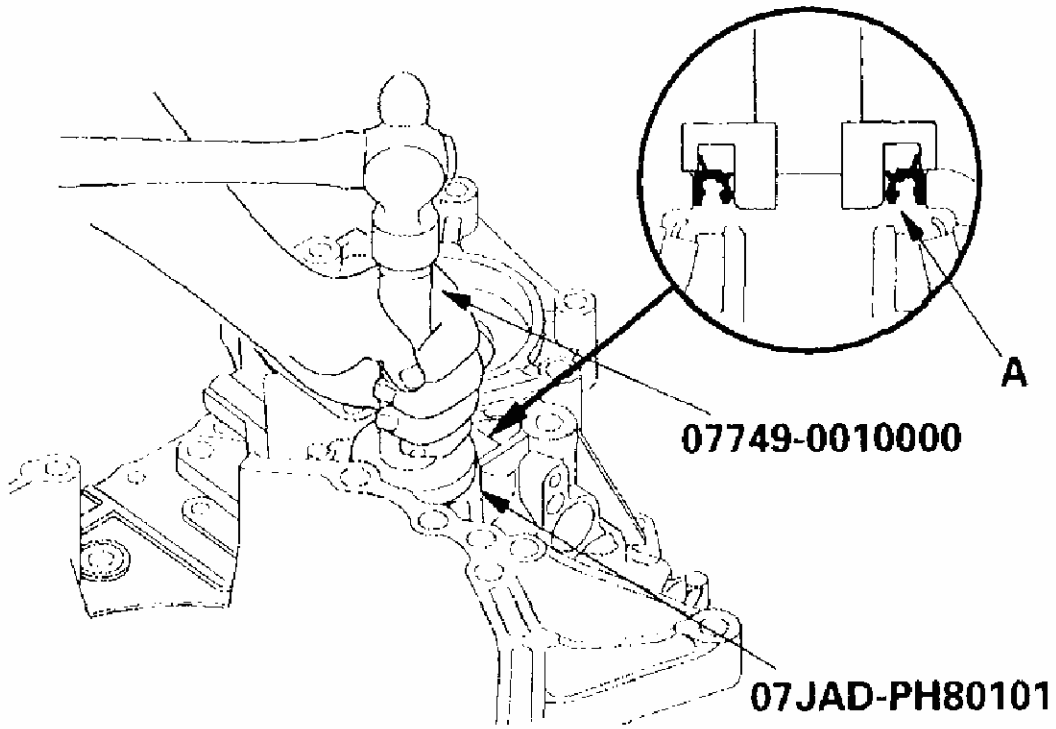

Fig. 153: Installing The Oil Seal In The Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CARRIER BEARING OUTER RACE REPLACEMENT

Special Tools Required

- Drive 07749-0010000
- Attachment, 78 X 90 mm 07GAD-SD40101

NOTE:

- **Replace the bearing with a new one whenever the outer race is replaced.**
- **Do not use shim(s) on the torque converter housing side.**
- **Adjust preload after replacing the bearing and outer race.**
- **Coat all parts with ATF during installation.**

1. Remove the bearing outer race from the transmission housing by heating the housing to about 212°F (100 °C).
2. Remove the bearing outer race from the torque converter housing.

3. Install the thrust shim (A), thrust washer (B), and outer race (C) in the transmission housing (D) with the special tools.

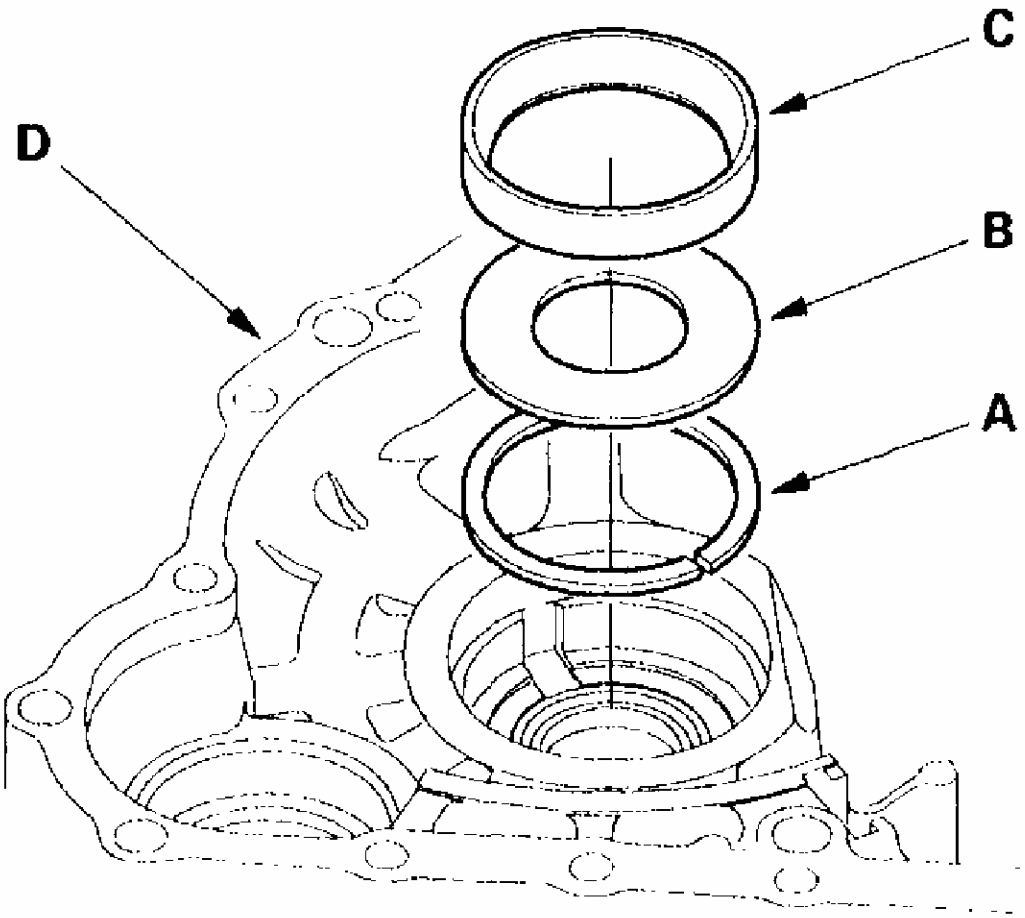

Fig. 154: Installing The Thrust Shim, Thrust Washer & Outer Race In The Transmission Housing (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

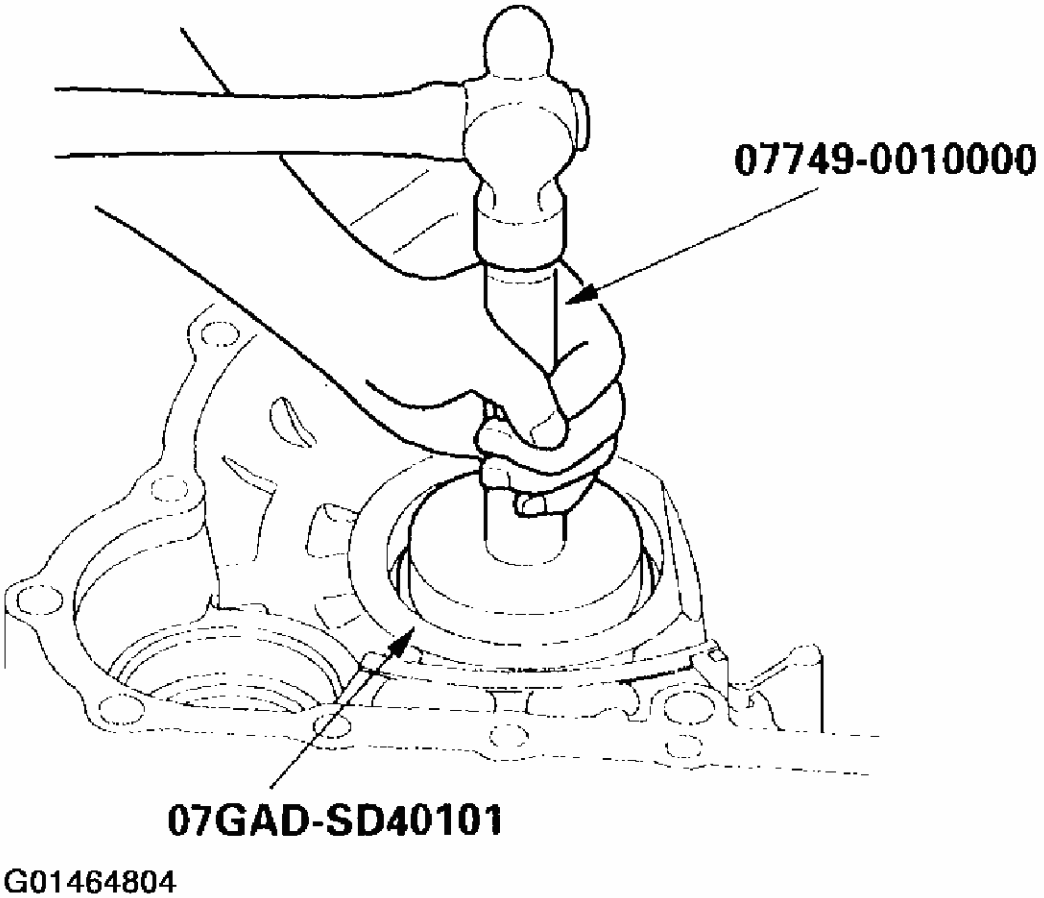

Fig. 155: Installing The Thrust Shim, Thrust Washer & Outer Race In The Transmission Housing (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the thrust washer (A) and outer race (B) in the torque converter housing (C), and use the special tools to make sure the outer race bottoms out in the housing.

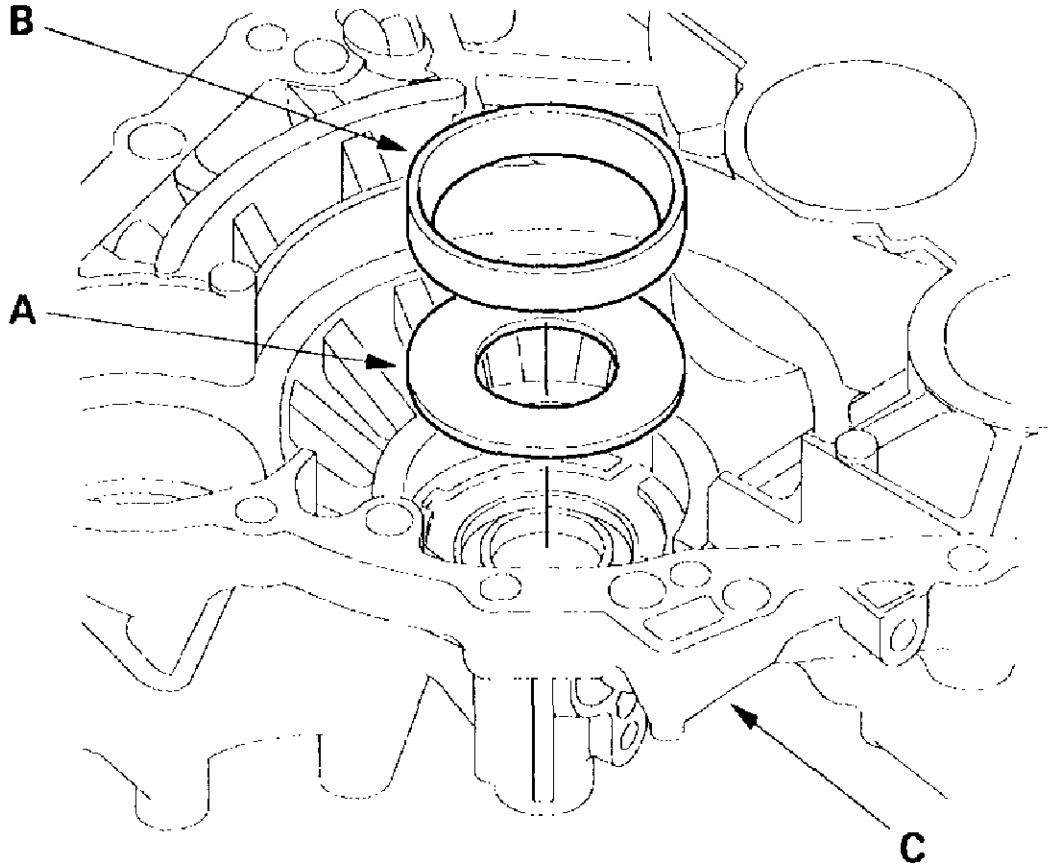

Fig. 156: Installing The Thrust Washer & Outer Race In The Torque Converter Housing (1 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

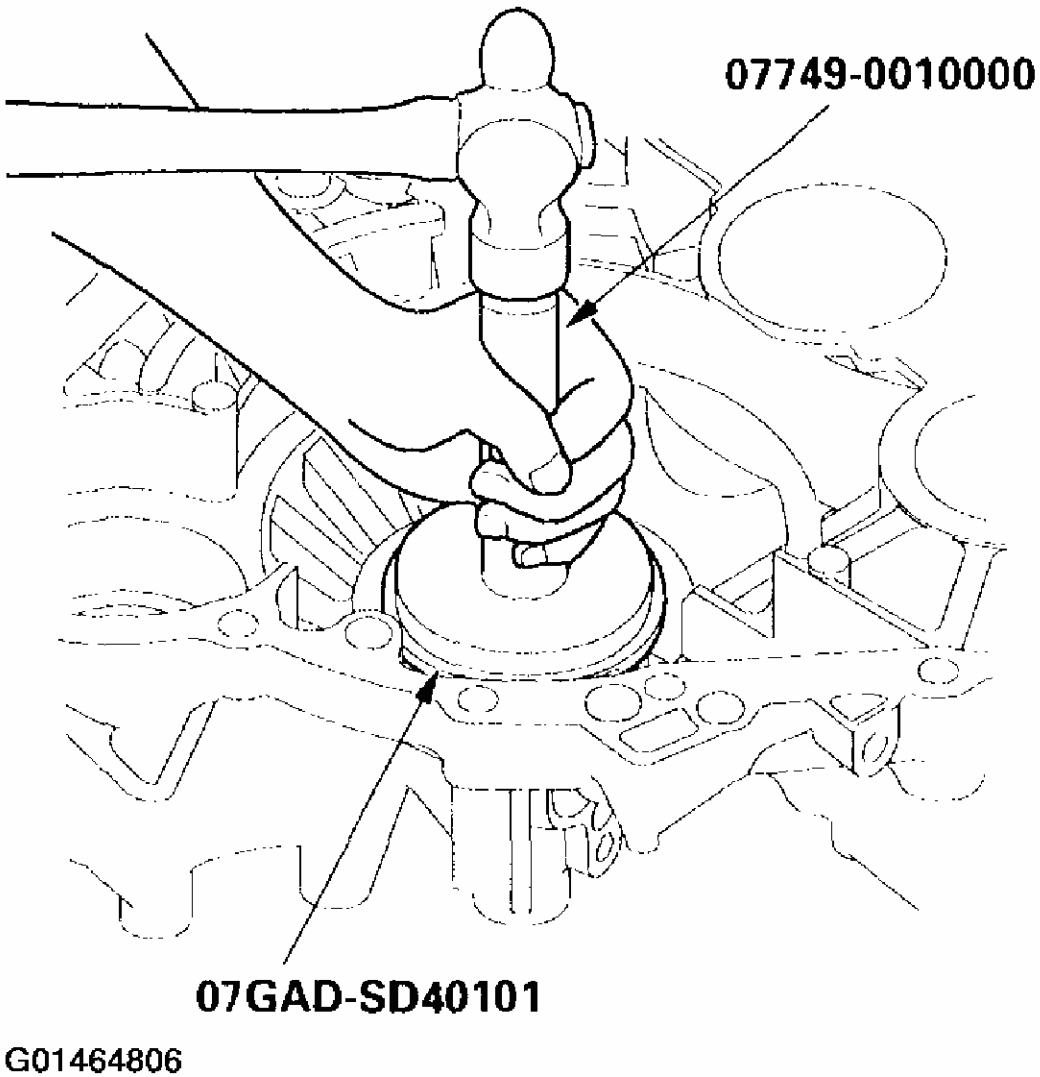

Fig. 157: Installing The Thrust Washer & Outer Race In The Torque Converter Housing (2 Of 2)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

CARRIER BEARING PRELOAD INSPECTION

Special Tools Required

- Driver 07749-0010000
- Attachment, 78 x 90 mm 07GAD-SD40101
- Preload inspection tool 07YAJ-S3V0100

NOTE: **If the transmission housing, torque converter housing,**

differential carrier, tapered roller bearing, outer race, or thrust shim were replaced, the bearing preload must be adjusted.

NOTE: Let the transmission housing cool to room temperature before adjusting the bearing preload.

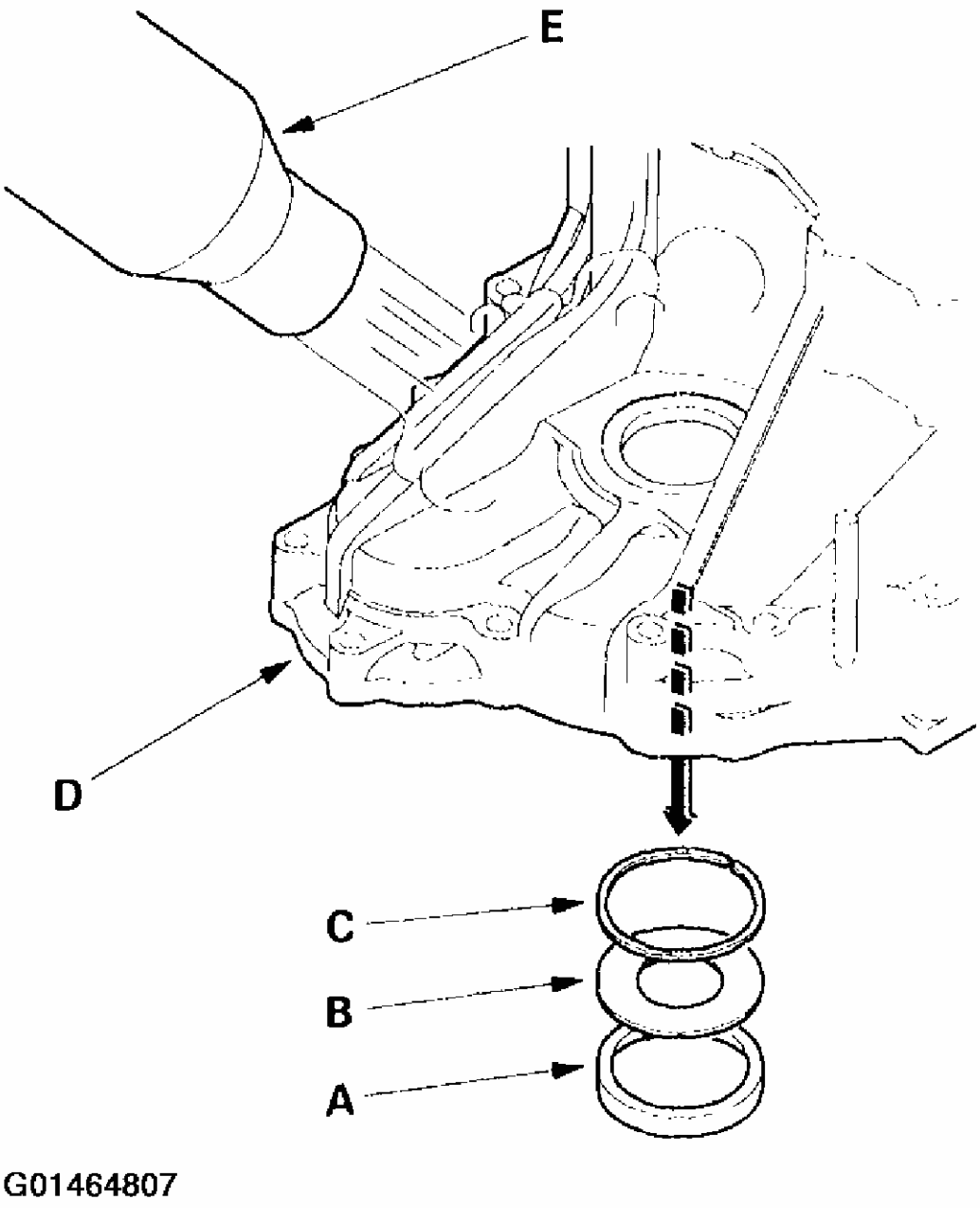

Fig. 158: Removing The Bearing Outer Race, Thrust Washer & Thrust Shim From The Transmission Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. Remove the bearing outer race (A), thrust washer (B), and thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).
2. Replace the tapered roller bearing when the outer race is to be replaced.
3. Do not use a shim on the torque converter housing side.
4. Select the 2.60 mm (0.102 in.) thrust shim from the table.

No.	Part Number	Thickness
A	41438-P7T-700	2.05 mm (0.081 in.)
AA	41438-PGH-000	2.075 mm (0.082 in.)
B	41439-P7T-700	2.01 mm (0.083 in.)
BB	41439-PGH-000	2.125 mm (0.084 in.)
C	41440-P7T-700	2.15 mm (0.085 in.)
CC	41440-PGH-000	2.175 mm (0.086 in.)
D	41441-P7T-000	2.20 mm (0.087 in.)
DD	41441-PGH-000	2.225 mm (0.088 in.)
E	41442-P7T-000	2.25 mm (0.089 in.)
EE	41442-PGH-000	2.275 mm (0.090 in.)
F	41443-P7T-000	2.30 mm (0.091 in.)
FF	41443-PGH-000	2.325 mm (0.092 in.)
G	41444-P7T-000	2.375 mm (0.094 in.)
GG	41444-PGH-000	2.35 mm (0.093 in.)
H	41445-P7T-000	2.40 mm (0.094 in.)
HH	41445-PGH-000	2.425 mm (0.095 in.)
I	41446-P7T-000	2.45 mm (0.096 in.)
II	41446-PGH-000	2.475 mm (0.097 in.)
J	41447-P7T-000	2.50 mm (0.098 in.)
JJ	41447-PGH-000	2.525 mm (0.099 in.)
K	41448-P7T-000	2.55 mm (0.100 in.)
KK	41448-PGH-000	2.575 mm (0.101 in.)
L	41449-P7T-000	2.60 mm (0.102 in.)
LL	41449-PGH-000	2.625 mm (0.103 in.)
M	41450-P7T-000	2.65 mm (0.104 in.)
MM	41450-PGH-000	2.625 mm (0.105 in.)
N	41451-P7T-000	2.70 mm (0.106 in.)
NN	41451-PGH-000	2.725 mm (0.107 in.)
O	41452-P7T-000	2.75 mm (0.108 in.)
OO	41452-PGH-000	2.775 mm (0.109 in.)
P	41453-P7T-000	2.80 mm (0.110 in.)
PP	41453-PGH-000	2.825 mm (0.111 in.)
Q	41454-P7T-000	2.85 mm (0.112 in.)
QQ	41454-PGH-000	2.875 mm (0.113 in.)
R	41455-P7T-000	2.90 mm (0.114 in.)
RR	41455-PGH-000	2.925 mm (0.115in.)
S	41456-P7T-000	2.95 mm (0.116 in.)
SS	41456-PGH-000	2.975 mm (0.117 in.)
T	41457-P7T-000	3.00 mm (0.118 in.)
TT	41457-PGH-000	3.25 mm (0.119 in.)
U	41458-P7T-000	3.05 mm (0.120 in.)

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Fig. 159: Thrust Shim Selection Table
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the thrust shim (A), thrust washer (B), and bearing outer race (C) in the transmission housing (D).

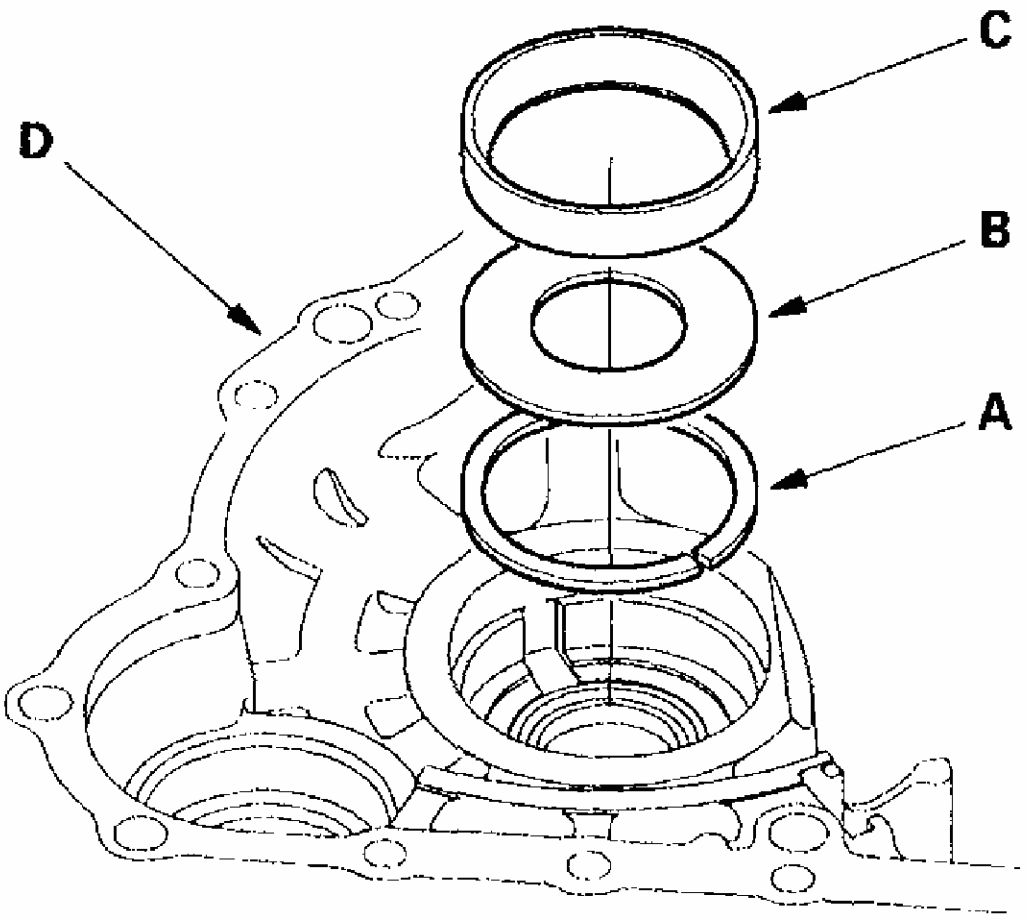

Fig. 160: Installing The Thrust Shim, Thrust Washer & Bearing Outer Race In The Transmission Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Drive the outer race with the special tools, and install it securely in the transmission housing.

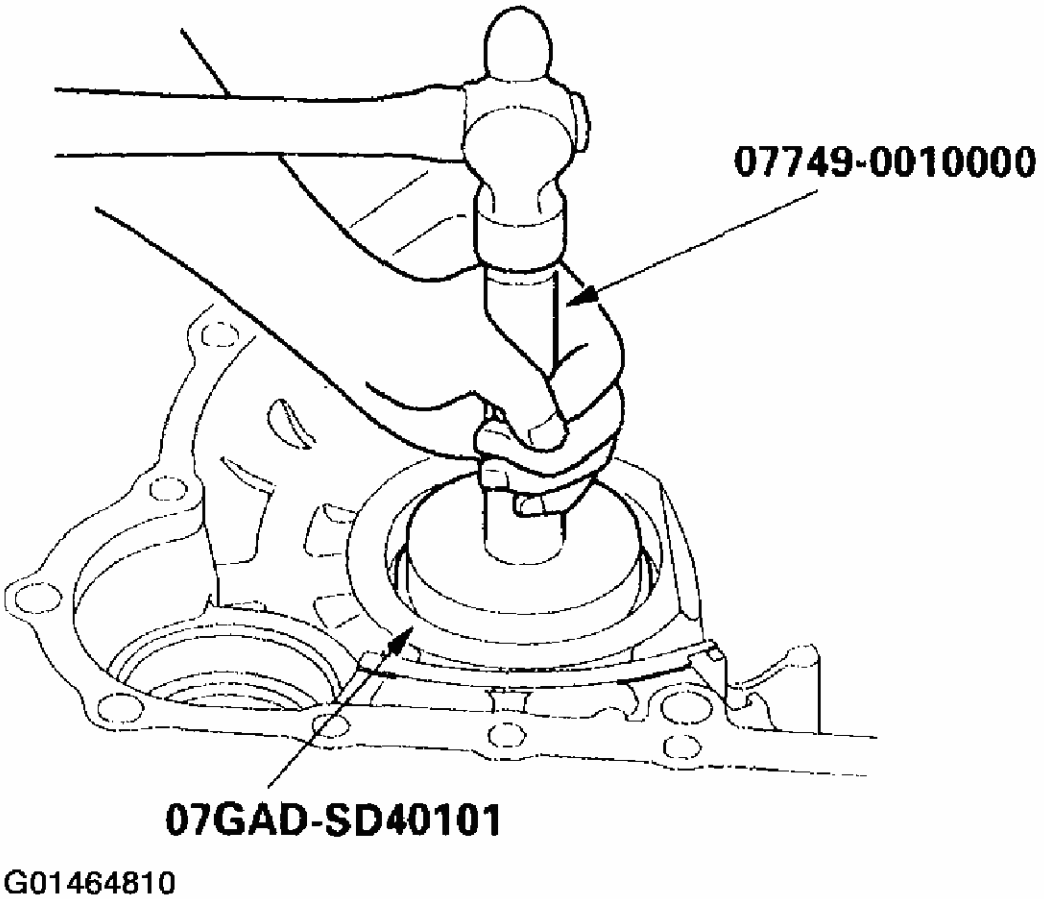

Fig. 161: Driving The Outer Race
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Check that there is no clearance between the thrust washer, outer race, shim, and transmission housing.
8. Install the differential assembly (A), gasket (B), and dowel pins (C) in the torque converter housing (D). Align the spring pin on the control shaft (E) with the transmission housing groove.

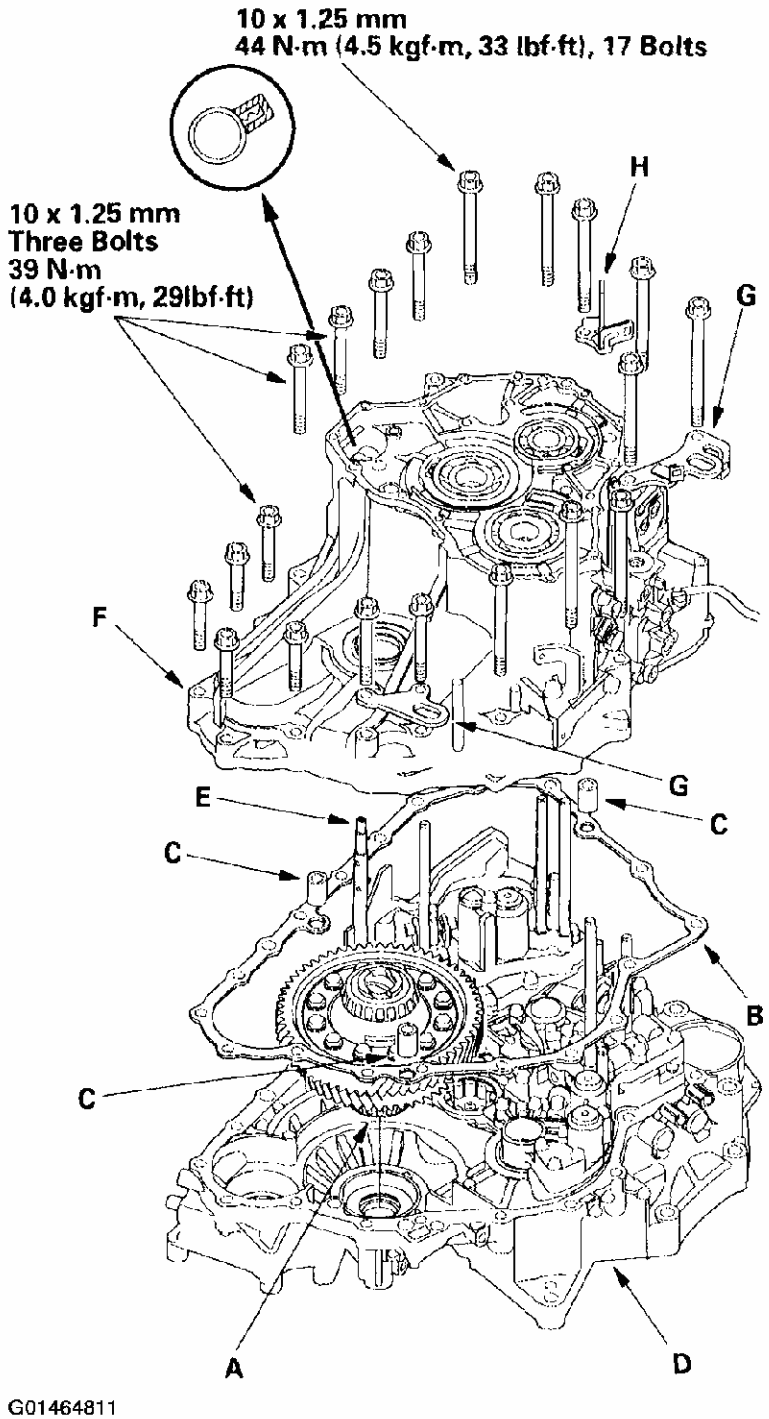

Fig. 162: Installing The Differential Assembly, Gasket & Dowel Pins In The Torque Converter Housing
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Install the transmission housing (F) with the transmission hangers (G) and harness clamp bracket (H), then tighten the bolts.
10. Rotate the differential assembly in both directions to seat the bearings.

11. Measure the starting torque of the differential assembly with the special tools, a torque wrench (A) and socket (B) at normal room temperature in both directions.

    Standard:

    New bearing: 3.8-5.3 N.m (39-54 kgf.cm, 34-47 lbf.in.)

    Reused bearings: 3.5-5.0 N.m (36-51 kgf.cm, 31-44 lbf.in.)

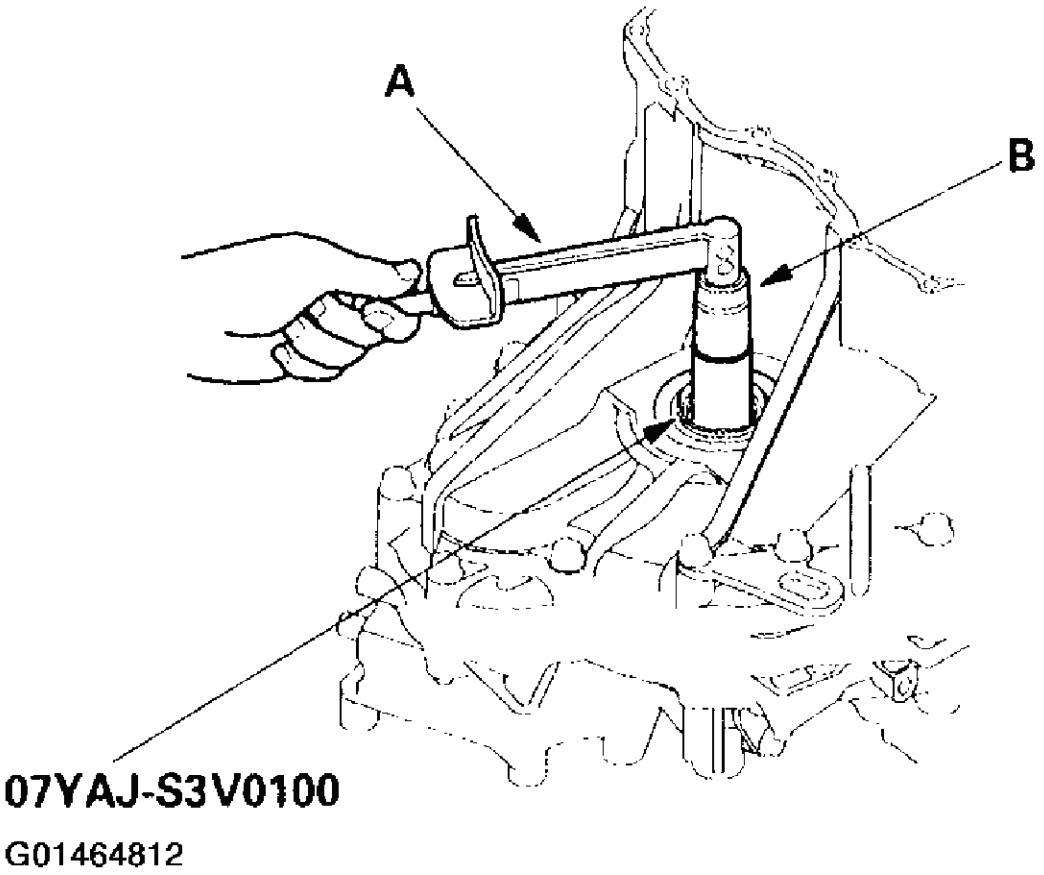

Fig. 163: Measuring The Starting Torque Of The Differential Assembly
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. To increase the starting torque, increase the thickness of the shim. To decrease the starting torque, decrease the thickness of the shim. Changing the shim to the next size will increase or decrease starting torque about 0.3-0.4 N.m (3-4 kgf.cm, 3-3 lbf.in.).

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