

1995-96 AUTOMATIC TRANSMISSIONS

SP7A & SX4A Overhaul

APPLICATION

TRANSAXLE APPLICATION

Application	Transmission Model
Integra	
1995	SP7A
1996	SX4A

IDENTIFICATION

Transaxle model and serial number are stamped on the transaxle. See **Fig. 1** . Model and serial number may be required when ordering replacement components.

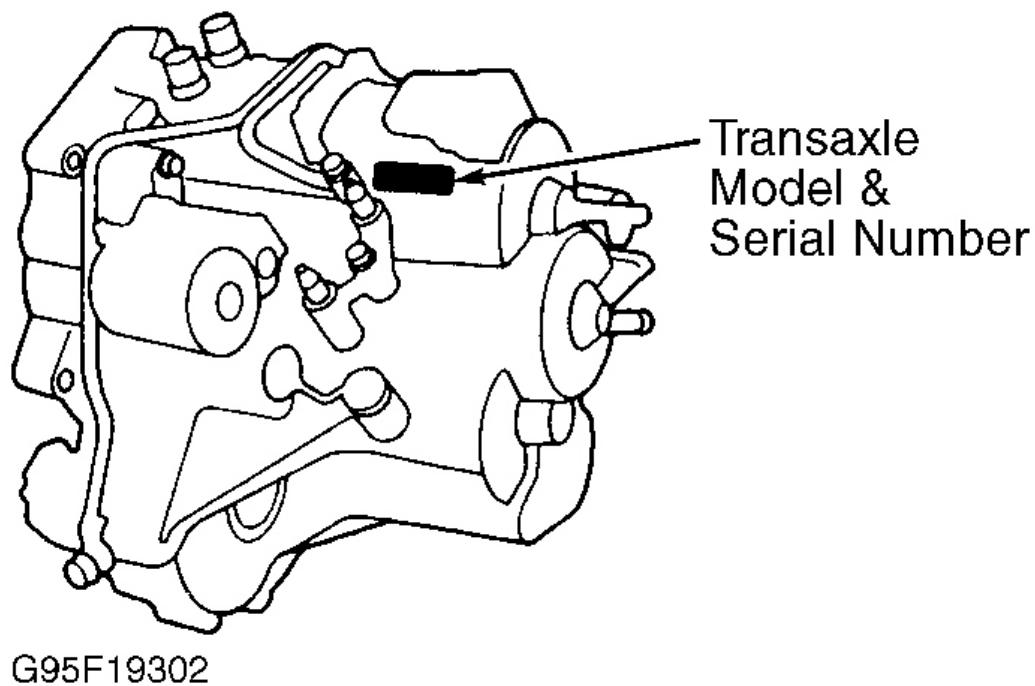


Fig. 1: Identifying Transaxle Model & Serial Number Location
Courtesy of AMERICAN HONDA MOTOR CO., INC.

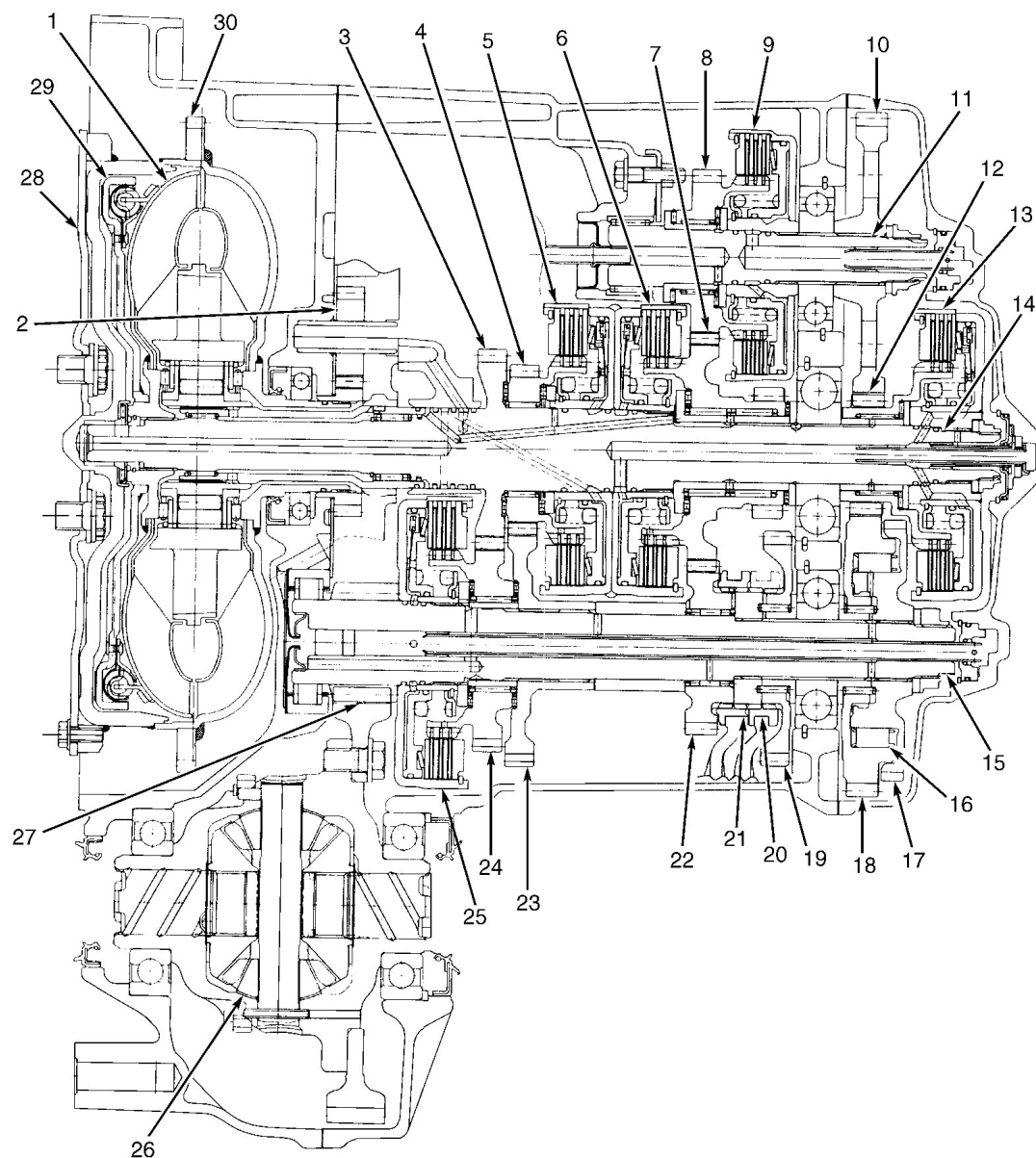
DESCRIPTION

Automatic transaxle provides 4 forward speeds and one reverse. Transaxle consists of clutches, mainshaft, countershaft, sub-shaft, shift control solenoid valves, lock-up control solenoid valves and lock-up torque converter. See **Fig. 2** .

Valve bodies consists of main valve body, secondary valve body, servo body, lock-up valve body and regulator valve body. Valve bodies are attached to torque converter housing. Transaxle shifting and torque converter lock-up are controlled by the Transmission Control Module (TCM).

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1. Torque Converter
2. Oil Pump
3. Mainshaft 3rd Gear
4. Mainshaft 2nd Gear
5. 2nd Clutch
6. 4th Clutch
7. Mainshaft 4th Gear
8. Sub-Shaft 4th Gear
9. 1st-Hold Clutch
10. Sub-Shaft 1st Gear

11. Sub-Shaft
12. Mainshaft 1st Gear
13. 1st Clutch
14. Mainshaft
15. Countershaft
16. One-Way Clutch
17. Parking Gear
18. Countershaft 1st Gear
19. Countershaft Reverse Gear
20. Reverse Selector

21. Reverse Selector Hub
22. Countershaft 4th Gear
23. Countershaft 2nd Gear
24. Countershaft 3rd Gear
25. 3rd Clutch
26. Differential Assembly
27. Differential Ring Gear
28. Drive Plate
29. Lock-Up Clutch
30. Drive Plate Ring Gear

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Fig. 2: Identifying Transaxle Components

Courtesy of AMERICAN HONDA MOTOR CO., INC.

OPERATION

When in "D" position in 3rd gear or "D4" position in 2nd, 3rd or 4th gear, torque converter lock-up exists and transaxle mainshaft rotates at the same speed as engine crankshaft. Under certain conditions, torque converter lock-up clutch is applied during deceleration when in 3rd and 4th gears. Torque converter lock-up is controlled by the TCM. The TCM receives various input signals and operates lock-up control solenoid valves. Operation of lock-up control solenoid valves controls the modulator pressure.

The TCM contains a grade logic control system which controls transaxle shifting while vehicle is ascending or descending on a slope or reducing vehicle speed. For more information on grade logic control system, see appropriate ELECTRONIC CONTROLS article.

The TCM contains self-diagnostic system, which stores Diagnostic Trouble Code (DTC) if failure or problem exists in transaxle electronic control system. The DTC code can be retrieved to determine transaxle problem area. For information on electronic transaxle components, see appropriate ELECTRONIC CONTROLS article.

Transaxle is equipped with shift and key interlock systems. Shift interlock system prevents shift lever from being moved from "P" position unless brake pedal is depressed and accelerator pedal is in idle position. In case of a malfunction, shift lever can be released by placing ignition key in release slot near shift lever. Key interlock system prevents ignition key from being removed from ignition switch unless shift lever is in "P" position. For additional information on interlock systems, see appropriate ELECTRONIC CONTROLS article.

The A/T gear position indicator on instrument panel contains lights to indicate which position A/T gear position switch on shift lever is in. For information and testing of A/T gear position indicator, see ELECTRONIC CONTROLS article.

Shift lever has 7 positions. When shift lever is moved, manual valve on main valve body is moved by the shift cable. When certain transaxle gear combinations are engaged by clutches, power is transmitted from the mainshaft to the countershaft through the sub-shaft shaft to provide different gears. Shift lever positions operate as follows:

SHIFT LEVER POSITIONS

"P" (Park)

Front wheels locked as parking pawl engages with parking gear on countershaft. All clutches are released. Neutral position switch, incorporated in A/T gear position switch, allows engine starting in this position.

"R" (Reverse)

Reverse selector engages with countershaft reverse gear and 4th gear clutch is applied. Backup light switch, incorporated in A/T gear position switch, allows back-up lights to operate.

"N" (Neutral)

All clutches are released. Neutral position switch, incorporated in A/T gear position switch, allows engine starting in this position.

"D4" (Drive/4th)

Transaxle starts in 1st gear and upshifts automatically to 2nd, 3rd and 4th gears. Transaxle will downshift through 3rd, 2nd and 1st gears until vehicle stops. When in 2nd, 3rd or 4th gear in "D4" position, TCM sends signal to operate torque converter lock-up.

"D" (Drive/3rd)

Transaxle starts off in 1st gear and upshifts automatically to 2nd gear and 3rd gear. On deceleration, transaxle will downshift through 2nd gear to 1st gear. When in 3rd gear in "D" position, TCM sends signal to operate torque converter lock-up.

"2" (Second)

Transaxle starts off and remains in 2nd gear for engine braking and better traction.

"1" (First)

Transaxle starts off and remains in 1st gear for engine braking.

LUBRICATION & ADJUSTMENTS

See SERVICING article.

ON-VEHICLE SERVICE

AXLE SHAFTS

See FWD AXLE SHAFTS article in DRIVELINE/AXLES.

OIL COOLER FLUSHING

1. Attach Oil Cooler Flusher (J38405-A) to oil cooler lines. See **Fig. 3** . Fill oil cooler flusher tank 2/3 full with Flushing Fluid (J35944-20). DO NOT use any other flushing fluid.
2. Ensure water and air valves on oil cooler flusher are off. Apply 80-120 psi (550-829 kPa) air pressure to oil cooler flusher. Turn oil cooler flusher water valve on so water will flow through oil cooler for 10 seconds. Shut water valve off. Replace oil cooler if water will not flow through oil cooler.
3. Depress and hold mixing trigger on oil cooler flusher downward. Turn water valve on and flush oil cooler for 2 minutes. Turn air valve on for 5 seconds every 15-20 seconds to create a surging action.
4. Turn water valve off. Release mixing trigger. Disconnect oil cooler flusher and reverse hoses so oil cooler can be flushed in the opposite direction.
5. Repeat steps 2) and 3). Turn water valve off. Release mixing trigger. Turn water valve on and rinse oil cooler for at least one minute. Once oil cooler is flushed in both directions, turn water off. Turn air valve on for 2 minutes or until no moisture is visible from drain hose.

CAUTION: Ensure no moisture exists in oil cooler, as it can damage transaxle.

6. Turn air off. Disconnect oil cooler flusher. Reconnect inlet line on oil cooler. Once transaxle is installed, attach drain hose on return line and place in oil container. Ensure transaxle is in "P" position. Fill transaxle with Dexron-II ATF.
7. Start engine and operate for approximately 30 seconds or until one quart (.9L) of ATF is discharged from return line. Shut engine off. Remove drain hose. Reinstall return line. Fill transaxle to proper level.

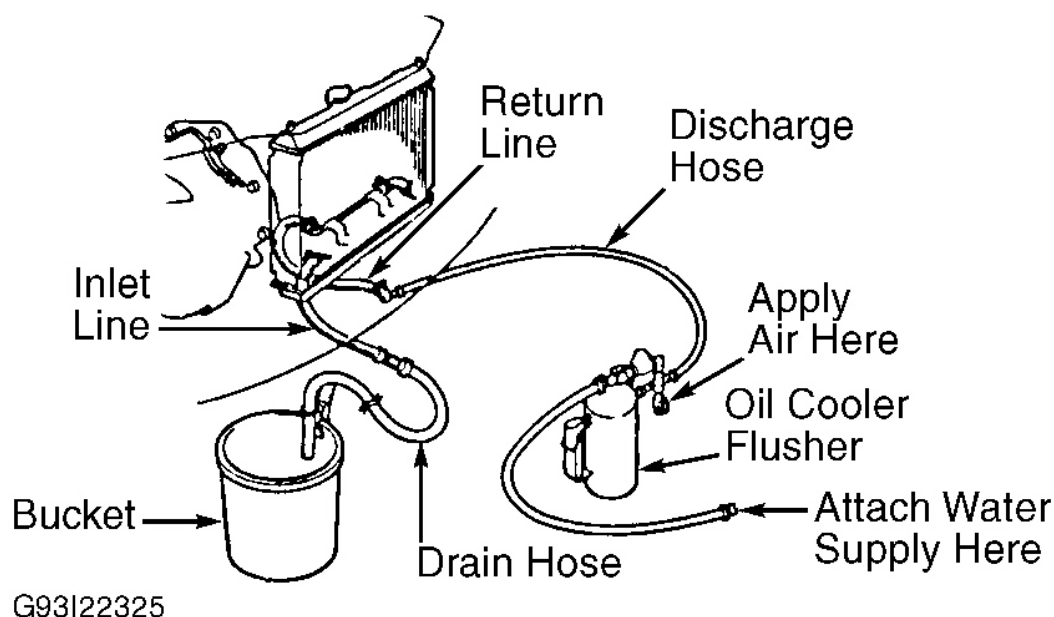


Fig. 3: Installing Oil Cooler Flusher

Courtesy of AMERICAN HONDA MOTOR CO., INC.

TROUBLE SHOOTING

PRELIMINARY INSPECTION

Transaxle malfunctions may be caused by poor engine performance, improper adjustments, or failure of hydraulic, mechanical or electronic components. Always begin by checking fluid level, fluid condition and cable adjustments. Perform road test to determine if problem has been corrected. If problem still exists, several tests must be performed on transaxle. See **TESTING**.

SYMPTOM DIAGNOSIS

Excessive Drag In Transaxle

- Binding Oil Pump

Excessive Idle Vibration

- Defective Torque Converter
- Incorrect Idle RPM

Excessive Vibration (RPM Related)

- Torque Converter Not Fully Seated In Oil Pump

Flares On 1-2 Upshift

- Clutch Pressure Control Valve Stuck
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Long

Flares On 2-3 Upshift

- Clutch Pressure Control Valve Stuck
- Defective Seal Rings Or Guide
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Long
- 2-3 Orifice Control Valve Stuck

Flares On 3-4 Upshift

- Clutch Pressure Control Valve Stuck
- Defective Seal Rings Or Guide
- Orifice Control Valve Stuck
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Long

Gear Whine That Changes With Shifts

- Defective 1st Clutch
- Defective 3rd Gears
- Mainshaft Worn Or Damaged

Gear Whine That Changes With Speed

- Defective Differential Gears
- Shift Fork Bent

Harsh Downshift At Closed Throttle

- Clutch Pressure Control Valve Stuck

- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Short

Harsh Kickdown Shifts

- Clutch Pressure Control Valve Stuck
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Short
- 3-2 Kickdown Valve Stuck
- 4-3 Kickdown Valve Stuck
- 4th Exhaust Valve Stuck

Harsh Shift When Manually Shifting To "1"

- Defective 1st-Hold Accumulator

Harsh Upshifts & Downshifts

- Check Balls Missing
- Clutch Pressure Control Valve Stuck
- Improper Type ATF
- Incorrect Clutch Clearance
- Orifice Control Valve Stuck
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Short
- 2-3 Orifice Control Valve Stuck
- 3-2 Kickdown Valve Stuck
- 4-3 Kickdown Valve Stuck

Harsh 1-2 Upshift

- Clutch Pressure Control Valve Stuck
- Defective 2nd Clutch
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Short

Harsh 2-1 Kickdown Shift

- Defective One-Way Clutch

Harsh 2-3 Upshift

- Clutch Pressure Control Valve Stuck

- Defective 3rd Clutch
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Short
- 2-3 Orifice Control Valve Stuck

Harsh 3-4 Upshift

- Clutch Pressure Control Valve Stuck
- Defective 4th Clutch
- Orifice Control Valve Stuck
- Throttle Valve "B" Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Short

Lock-Up Clutch Does Not Lock-Up Smoothly

- Defective Torque Converter
- Lock-Up Control Valve Stuck
- Lock-Up Shift Valve Stuck

Lock-Up Clutch Does Not Operate Properly

- Improperly Adjusted Throttle Valve (T.V.) Cable
- Lock-Up Control Valve Stuck
- Lock-Up Shift Valve Stuck
- Lock-Up Timing Valve "B" Stuck
- Modulator Valve Stuck
- Throttle Valve "B" Stuck
- Torque Converter Check Valve Stuck

No Engine Braking In "1"

- Defective 1st-Hold Clutch

Noise From Transaxle In All Gears

- Defective Oil Pump
- Defective Torque Converter

Noise From Transaxle With Wheels Rolling

- Damaged Reverse Gears
- Defective Differential Gears
- Reverse Selector Hub Installed Upside Down

Popping Noise When Taking Off In "R"

- Damaged Reverse Gears
- Shift Fork Bent
- Worn Reverse Selector

Ratcheting Noise When Shifting To "R"

- Damaged Reverse Gears
- Defective Oil Pump
- Pressure Regulator Stuck
- Shift Fork Bent
- Worn Reverse Selector

Ratcheting Noise When Shifting From "R" To "P" Or "N"

- Damaged Reverse Gears
- Damaged 4th Gears
- Shift Fork Bent
- Worn Reverse Selector

Shifts Erratically

- Modulator Valve Stuck
- Throttle Valve (T.V.) Cable Adjusted Too Short
- 3-2 Kickdown Valve Stuck

Slips In All Gears

- Defective Oil Pump
- Fluid Strainer Clogged
- Pressure Regulator Stuck

Slips In 1st Gear

- Defective One-Way Clutch
- Defective 1st Clutch Or 1st Accumulator
- Feedpipe "O" Ring Damaged

Slips In Reverse

- Defective 4th Clutch Or 4th Accumulator
- Feedpipe "O" Ring Damaged
- Servo Valve Stuck

Slips In 2nd Gear

- Clutch Pressure Control Valve Stuck
- Defective Seal Rings Or Guide
- Defective 2nd Clutch Or 2nd Accumulator
- 2-3 Shift Valve Stuck

Slips In 3rd Gear

- Clutch Pressure Control Valve Stuck
- Defective Seal Rings Or Guide
- Defective 3rd Clutch Or 3rd Accumulator
- 3-4 Shift Valve Stuck

Slips In 4th Gear

- Clutch Pressure Control Valve Stuck
- Defective 4th Clutch Or 4th Accumulator
- Feedpipe "O" Ring Damaged

Upshifts Late

- Modulator Valve Stuck

Vehicle Locks In "R"

- Parking Brake Lever Installed Upside Down
- Shift Fork Retaining Bolt Not Installed

Vehicle Moves In All Gears Except "R"

- Defective Or Improperly Adjusted Shift Cable
- Defective Or Worn Reverse Gears
- Defective 4th Clutch
- Servo Control Valve Stuck
- Servo Valve Stuck
- Shift Fork Bent
- Worn Reverse Selector

Vehicle Moves In All Gears Except "2"

- Defective Seal Rings Or Guide
- Defective 2nd Clutch Or 2nd Accumulator

Vehicle Moves In "N"

- Defective Or Improperly Adjusted Shift Cable
- Defective 1st, 2nd, 3rd Or 4th Clutch
- Incorrect Gear Or Clutch Clearance

Vehicle Moves In "R" & "2" Only

- Defective One-Way Clutch
- Defective 1st Clutch Or 1st Accumulator
- Feedpipe "O" Ring Damaged

Vehicle Will Not Move

- Defective Oil Pump
- Defective Or Improperly Adjusted Shift Cable
- Fluid Strainer Clogged
- Pressure Regulator Stuck

Vehicle Will Not Move In "D" Or "D4"

- One-Way Clutch Installed Upside Down

Will Not Downshift To 1st Gear

- Defective 1st-Hold Clutch
- 1-2 Shift Valve Stuck

Will Not Shift Into 4th Gear When In "D4"

- Defective Or Improperly Adjusted Shift Cable
- 3-4 Shift Valve Stuck
- 4th Accumulator Stuck
- 4th Exhaust Valve Stuck

Will Not Upshift (Stays In 1st Gear)

- Clutch Pressure Control Valve Stuck
- Modulator Valve Stuck
- 1-2 Shift Valve Stuck

TESTING

CAUTION: Vehicle is equipped with an air bag system (Supplemental Restraint

System (SRS). All wires have Yellow insulation and are located underdash or in instrument panel area. To avoid injury from accidental deployment, read and carefully follow all SERVICE PRECAUTIONS and DISABLING & ACTIVATING AIR BAG SYSTEM procedures in appropriate AIR BAG DEACTIVATION PROCEDURES article in GENERAL INFORMATION.

ROAD TEST

NOTE: If shift lever cannot be moved from "P" position with brake pedal depressed and accelerator at idle position, check shift interlock system. See appropriate **ELECTRONIC CONTROLS** article.

1. Warm engine to normal operating temperature. Apply parking brake, and block wheels. Start engine. Move shift lever to "D4" position while depressing brake pedal. Depress accelerator pedal and release it suddenly. Engine should not stall.
2. Repeat step 1) with shift lever in "D" position. Ensure engine does not stall. Manufacturer recommends monitoring of throttle position sensor voltage when performing road test to ensure proper throttle opening for verifying shift points and lock-up of torque converter.
3. On 1995 models, remove door scuff plate from passenger's side door opening and passenger's side kick panel for access to Engine Control Module (ECM), mounted on kick panel area. See **Fig. 4** . Remove ECM cover, located above ECM.
4. Ensure ignition is off. Disconnect electrical connectors from ECM and install Test Harness (07LAJ-PT3010A) between electrical connectors and ECM. See **Fig. 4** .
5. Connect Digital Volt-Ohmmeter (DVOM) to terminals D11 (+) and D22 (-) on test harness for monitoring of throttle position sensor voltage. See **Fig. 4** .
6. On 1996 models, remove left kick panel. Remove Transmission Control Module (TCM) and turn over to gain access to connectors. Install Backprobe Test Set (07SAZ-001000A) or equivalent between TCM and DVOM leads. See **Fig. 5** .
7. Using DVOM, with positive lead at terminal B4 and negative lead at terminal A13 or A26. See **Fig. 5** . Ensure digital volt-ohmmeter is set for measuring voltage.
8. On all models, road test vehicle and check for abnormal noise and clutch slippage. See **CLUTCH APPLICATION** table for clutch engagement.
9. Ensure upshift and downshift points and lock-up of torque converter are correct in relation to throttle position sensor voltage or throttle opening and vehicle speed. See **Fig. 6** or **Fig. 7** .
10. With shift lever in "D4" position, accelerate to about 35 MPH so transaxle is in 4th gear. Move shift lever to "2" position. Ensure engine braking occurs.
11. Place shift lever in "1" position. Accelerate from a stop at full throttle. Check for abnormal noise or clutch slippage. Upshifts and downshifts should not occur in this shift lever position.
12. Place shift lever in "2" position. Accelerate from a stop at full throttle. Check for abnormal noise or clutch slippage. Upshifts and downshifts should not occur in this shift lever position.
13. Place shift lever in "R" position. Accelerate from a stop at full throttle. Check for abnormal noise or clutch slippage.
14. Park vehicle on a slope. Apply parking brake. Place shift lever in "P" position. Release parking brake. Ensure vehicle does not move. If vehicle moves, check for defective shift cable or parking components.

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15. Ensure ignition is off. Remove test harness and reinstall ECM cover, carpet and door scuff plate.

CLUTCH APPLICATION

Shift Lever Position	Elements In Use
"P" Or "N"	No Clutches Are Applied
"R"	4th Clutch
"D4"	
1st Gear	(1) 1st Clutch
2nd Gear	(2) 2nd Clutch
3rd Gear	(2) 3rd Clutch
4th Gear	(2) 4th Clutch
"D"	
1st Gear	1st Clutch
2nd Gear	(2) 2nd Clutch
3rd Gear	(2) 3rd Clutch
"2"	(2) 2nd Clutch
"1"	1st-Hold Clutch & 1st Clutch
(1) One-way clutch engages on acceleration and slips on deceleration, no engine braking.	
(2) The 1st clutch engages, but driving power is not transmitted, as one-way clutch slips.	

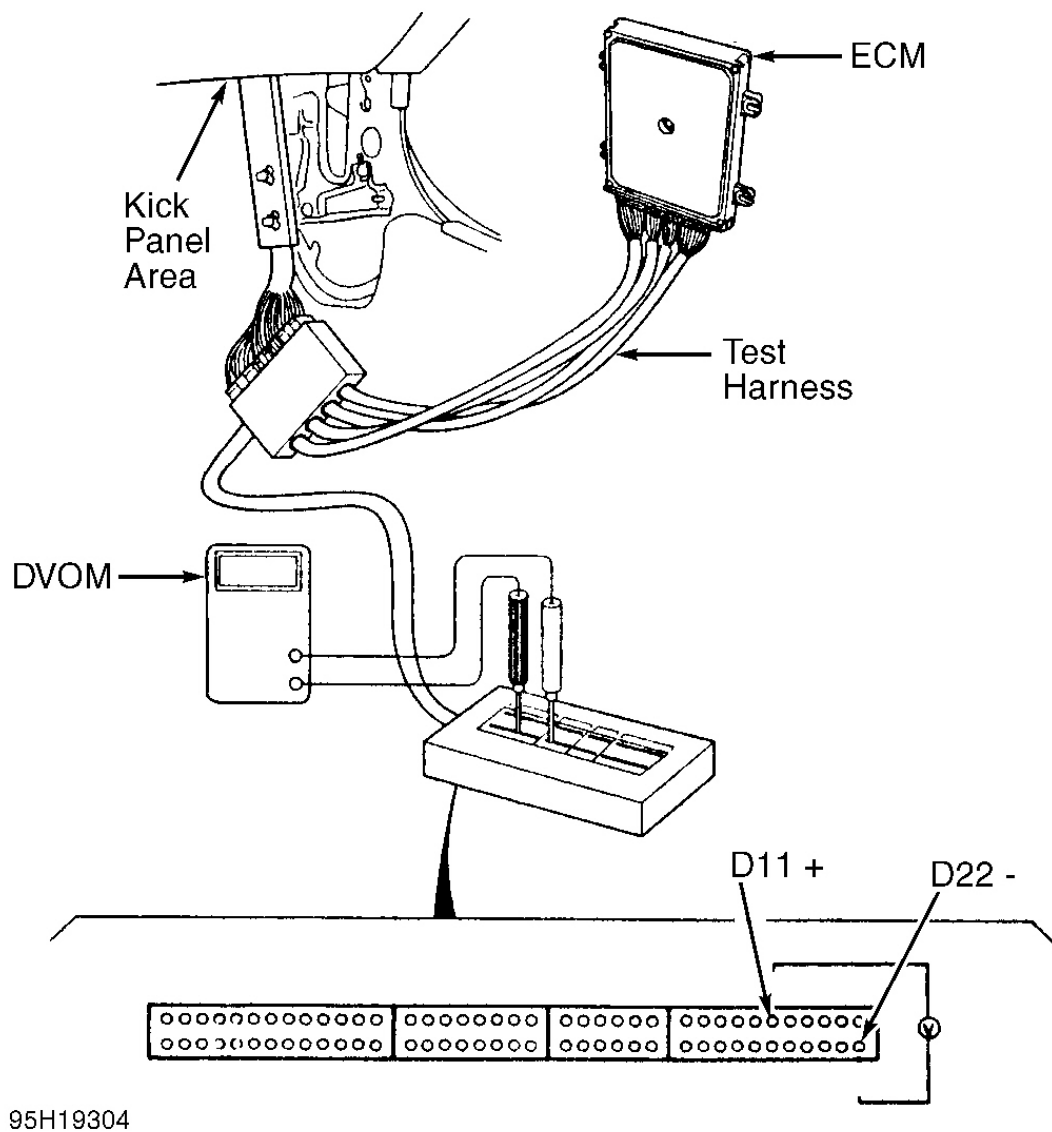
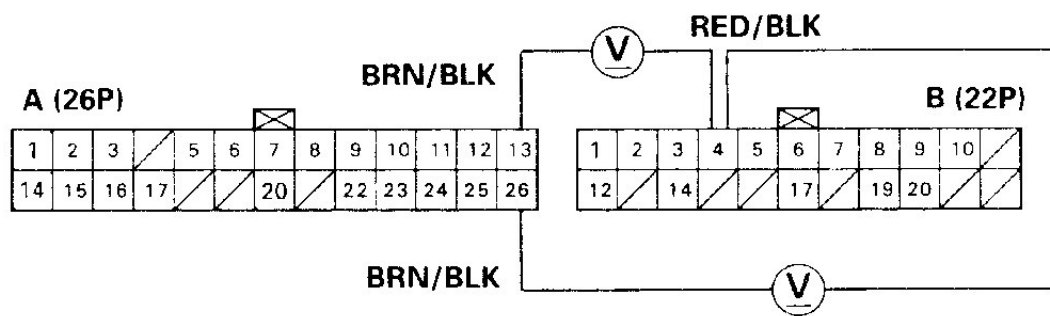
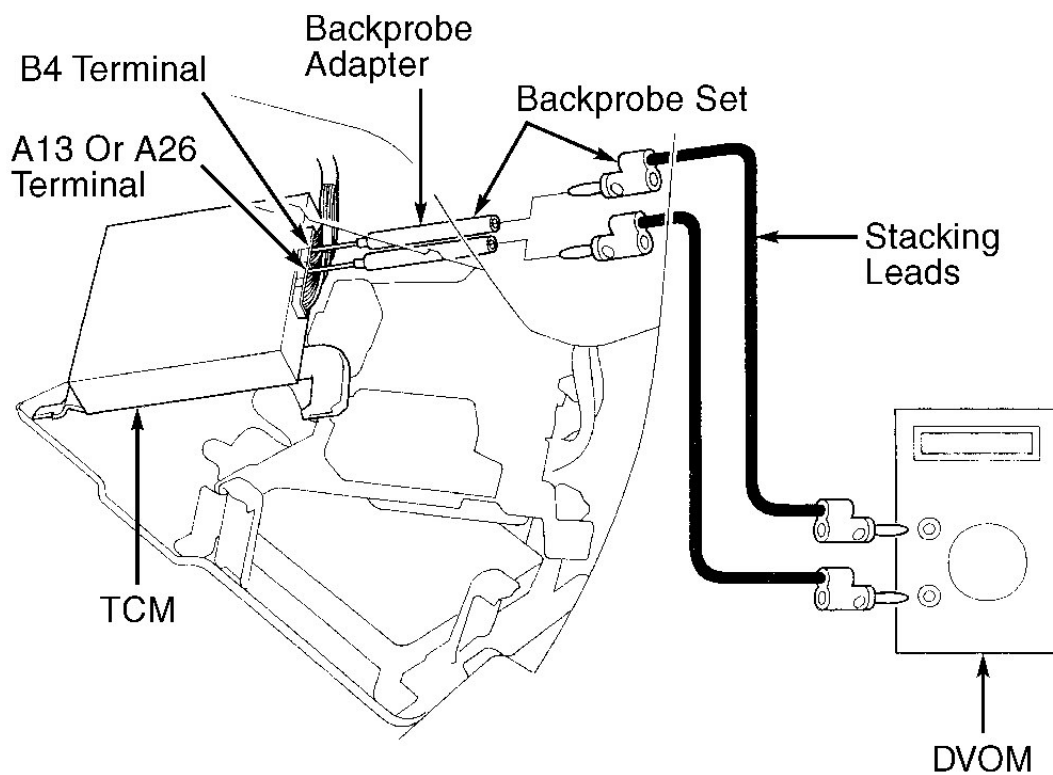


Fig. 4: Identifying ECM & Installing Test Harness
Courtesy of AMERICAN HONDA MOTOR CO., INC.



TCM CONNECTORS
WIRE SIDE OF FEMALE TERMINALS

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Fig. 5: Installing Backprobe Set At TCM
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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"D₄" Or "D₃" Position

● Upshift

Throttle Opening	Unit of speed	1st→2nd	2nd→3rd	3rd→4th
Throttle position sensor voltage: 0.75 V	mph	11–12	20–22	27–30
	Km/h	17.0–19.0	32.5–35.5	43.5–48.5
Throttle position sensor voltage: 2.5 V	mph	21–23	35–39	55–59
	Km/h	33.5–36.5	57.0–63.0	89.0–95.0
Full-opened throttle	mph	30–34	62–65	98–101
	Km/h	49.0–55.0	99.0–105.0	157.0–163.0

● Downshift

Throttle Opening	Unit of speed	4th→3rd	3rd→2nd	2nd→1st
Full-closed throttle	mph	18–21	6–9 (3rd→1st)	—
	Km/h	29.0–33.0	10–14 (3rd→1st)	—
Full-opened throttle	mph	85–89	54–58	23–27
	Km/h	137.0–143.0	87.0–93.0	37.0–43.0

● Lock-up

Throttle Opening	Unit of speed	D ₄ Position	
		Lock-up control solenoid valve A ON	Lock-up control solenoid valve B ON
Throttle position sensor voltage: 2.5 V	mph	13–16	17–20
	km/h	21.0–25.0	28.0–32.0
Full-opened throttle	mph	92–96	92–96
	km/h	148.0–154.0	148.0–154.0

Throttle Opening	Unit of speed	D ₃ Position	
		Lock-up control solenoid valve A ON	Lock-up control solenoid valve B ON
Throttle position sensor voltage: 1.0 V	mph	61–63	61–63
	km/h	98–102	98–102
Full-opened throttle	mph	85–89	85–89
	km/h	137–143	137–143

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Fig. 6: Upshift & Downshift Specifications (1995)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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- Upshift: "D₄" & "D₅" Position

Throttle Opening	Unit of speed	1st → 2nd	2nd → 3rd	3rd → 4th
Throttle position sensor voltage: 1.0 V	mph	8.0 – 10.0	20.0 – 23.0	27.0 – 31.0
	km/h	13.5 – 16.1	32.2 – 37.0	43.5 – 49.9
Throttle position sensor voltage: 2.5 V	mph	21.0 – 25.0	38.0 – 43.0	58.0 – 64.0
	km/h	33.8 – 40.2	61.2 – 69.2	93.3 – 103.0
Fully-opened throttle	mph	31.0 – 36.0	63.0 – 71.0	97.0 – 108.0
	km/h	49.9 – 57.9	101.4 – 114.3	156.1 – 173.8

- Downshift: "D₄" & "D₅" Position

Throttle Opening	Unit of speed	4th → 3rd	3rd → 2nd	2nd → 1st
Throttle position sensor voltage: 0.5 V	mph	17.5 – 20.5	6.0 – 9.0 (3rd→1st)	———
	km/h	28.2 – 33.0	9.7 – 14.5 (3rd→1st)	———
Fully-opened throttle	mph	85.0 – 95.0	54.0 – 61.0	23.0 – 28.0
	km/h	137.0 – 152.9	86.9 – 98.2	37.0 – 45.1

- Lock-Up: "D₄" Position

Throttle Opening	Unit of speed	Lock-up control solenoid valve A: ON	Lock-up control solenoid valve B: ON
Throttle position sensor voltage: 1.0 V	mph	14.0 – 17.0	17.0 – 20.0
	km/h	22.5 – 27.4	27.4 – 32.2
Fully-opened throttle	mph	92.0 – 96.0	92.0 – 96.0
	km/h	148.1 – 154.5	148.1 – 154.5

- Lock-Up: "D₅" Position

Throttle Opening	Unit of speed	Lock-up control solenoid valve A: ON	Lock-up control solenoid valve B: ON
Throttle position sensor voltage: 1.0 V	mph	61.0 – 68.0	60.0 – 67.0
	km/h	98.2 – 109.4	96.6 – 107.8
Fully-opened throttle	mph	85.0 – 94.0	85.0 – 94.0
	km/h	136.8 – 151.3	136.8 – 151.3

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Fig. 7: Upshift & Downshift Specifications (1996)
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE CONVERTER STALL SPEED TEST

CAUTION: DO NOT perform torque converter stall speed test for more than 10 seconds or transaxle may be damaged. DO NOT move shift lever while increasing engine speed.

1. Apply parking brake and block all wheels. Connect tachometer. Start engine. Ensure A/C is off. Warm engine to normal operating temperature. Place shift lever in "2" position.
2. Fully depress brake pedal. Fully depress accelerator for 6-8 seconds and note engine speed. This is torque converter stall speed.
3. Allow transaxle to cool for 2 minutes. Repeat test procedure with shift lever in "D4", "1" and "R"

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positions.

4. Torque converter stall speed should be the same in "D4", "2", "1" and "R" positions and within specification. Refer to the **TORQUE CONVERTER STALL SPEED SPECIFICATIONS** table. If torque converter stall speed does not fall within specification, for possible causes, see the **TORQUE CONVERTER STALL SPEED TROUBLE SHOOTING** table.

TORQUE CONVERTER STALL SPEED SPECIFICATIONS

Application	Engine RPM
Standard	2400
Service Limit	2200-2600

TORQUE CONVERTER STALL SPEED TROUBLE SHOOTING

Stall Speed Test Results (RPM)	Probable Cause
RPM High In "D4", "2", "1" & "R"	Low Fluid Level, Low Oil Pump Output, Clogged Fluid Strainer, Pressure Regulator Valve Stuck Closed, Slipping Clutch
RPM High In "R"	Slipping 4th Clutch
RPM High In "D4"	Slipping 1st Clutch, Defective One-Way Clutch
RPM High In "2"	Slipping 2nd Clutch
RPM High In "1"	Slipping 1st-Hold Or 1st Clutch, Defective One-Way Clutch
RPM Low In "D4", "2", "1" & "R"	Engine Output Low, Torque Converter One-Way Clutch Slipping

HYDRAULIC PRESSURE TEST

Pressure Test Preparation

Ensure transaxle fluid level is correct. Warm engine to normal operating temperature. Apply parking brake, and block rear wheels. Raise and support vehicle so front wheels can rotate.

Line Pressure Test

1. With engine off, remove pressure tap plug from line pressure tap on transaxle. See **Fig. 8** . Attach Pressure Gauge Set (07406-0020400) to line pressure tap using NEW seal washer. Tighten hose fitting to 13 ft. lbs. (18 N.m).
2. With shift lever in "P" or "N" position, start and operate engine at 2000 RPM. Note line pressure. Line pressure should be within specification. See **HYDRAULIC PRESSURE TEST SPECIFICATIONS** table.
3. If line pressure is not within specification, see **HYDRAULIC PRESSURE TROUBLE SHOOTING** table. Shut engine off.
4. Using NEW seal washer, install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS** .

Clutch Pressure Test

1. Clutch pressure should be checked at each clutch pressure tap on transaxle. See **Fig. 8**.
2. With engine off, remove pressure plug from appropriate clutch pressure tap on transaxle. See **Fig. 8**. Attach Pressure Gauge Set (07406-0020400) to appropriate pressure tap using NEW seal washer. Tighten hose fitting to 13 ft. lbs. (18 N.m).

NOTE: On some applications clutch pressure may vary with position of throttle control lever on transaxle. The Throttle Valve (T.V.) cable is connected to throttle control lever on transaxle. The T.V. cable may need to be disconnected from throttle control lever for some tests. Ensure shift lever is in proper position when checking clutch pressures.

3. Start and operate engine at 2000 RPM. Note clutch pressure reading with shift lever in proper location. Refer to the specifications in the **HYDRAULIC PRESSURE TEST SPECIFICATIONS** table.
4. Clutch pressure should be within specification. If not within specification, see **HYDRAULIC PRESSURE TROUBLE SHOOTING** table. Shut engine off.
5. Using NEW seal washer, install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**.

Clutch Low/High Pressure Test

1. Clutch low/high pressure is tested at 2nd, 3rd and 4th clutch pressure taps on transaxle. See **Fig. 8**. Disconnect Throttle Valve (T.V.) cable from throttle control lever on transaxle.

NOTE: When disconnecting T.V. cable, unhook cable from throttle control lever. **DO NOT** loosen lock nuts used for cable adjustment.

2. With engine off, remove pressure tap plug from appropriate clutch pressure tap on transaxle. Attach Pressure Gauge Set (07406-0020400) to appropriate pressure tap using NEW seal washer. Tighten hose fitting to 13 ft. lbs. (18 N.m).
3. Start engine and allow to idle. Move shift lever to "D4" position. Slowly increase engine speed until pressure is indicated on pressure gauge. Release throttle. Allow engine to idle and note clutch low pressure reading.
4. With engine idling, lift throttle control lever on transaxle upward approximately 1/2 the distance of throttle control lever travel. Increase engine speed and note highest pressure reading. This is the clutch high pressure.
5. Repeat procedure on remaining clutches. The clutch low/high pressure should be within specification. Refer to the **HYDRAULIC PRESSURE TEST SPECIFICATIONS** table. If low/high pressure is not within specification, see **HYDRAULIC PRESSURE TROUBLE SHOOTING** table.
6. Shut engine off. Remove pressure gauge set. Using NEW seal washer, install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**. Reconnect T.V. cable.

Throttle "B" Pressure Test

1. Disconnect Throttle Valve (T.V.) cable from throttle control lever on transaxle.

NOTE: When disconnecting T.V. cable, unhook cable from throttle control lever. DO NOT loosen lock nuts used for cable adjustment.

2. With engine off, remove pressure tap plug from throttle "B" pressure tap on transaxle. See **Fig. 8**.
3. Attach Pressure Gauge Set (07406-0020400) to throttle "B" pressure tap using NEW seal washer. Tighten hose fitting to 13 ft. lbs. (18 N.m).
4. Start and operate engine at 1000 RPM with shift lever in "D" or "D4" position. Note pressure with throttle control lever closed (released position). Throttle "B" pressure should be within specification. See **HYDRAULIC PRESSURE TEST SPECIFICATIONS** table.
5. Lift throttle control lever on transaxle to fully open position with engine at 1000 RPM. Note throttle "B" pressure reading.
6. Throttle "B" pressure should be within specification. See **HYDRAULIC PRESSURE TEST SPECIFICATIONS** table. If pressure is not within specification, see **HYDRAULIC PRESSURE TROUBLE SHOOTING** table. Shut engine off. Remove pressure gauge set.
7. Using NEW seal washer, install and tighten pressure tap plug to specification. See **TORQUE SPECIFICATIONS**. Reconnect T.V. cable.

HYDRAULIC PRESSURE TEST SPECIFICATIONS

Application	Shift Lever Position	Pressure - psi (kPa)
Line Pressure		
Engine Speed At 2000 RPM	"P" Or "N"	113-130 (780-880)
Clutch Pressure		
1st Clutch		
Engine Speed At 2000 RPM	"1" Or "D4"	113-130 (780-880)
1st-Hold Clutch		
Engine Speed At 2000 RPM	"1"	113-130 (780-880)
2nd Clutch		
Engine Speed At 2000 RPM	"2"	113-130 (780-880)
Throttle Control Lever Fully Closed ⁽¹⁾	"D4"	58-70 (400-480)
Throttle Control Lever Open More Than 3/16 ⁽²⁾	"D4"	113-130 (780-880)
3rd Clutch		
Throttle Control Lever Fully Closed ⁽¹⁾	"D4"	58-70 (400-480)
Throttle Control Lever Open More Than 3/16 ⁽²⁾	"D4"	113-130 (780-880)
4th Clutch		

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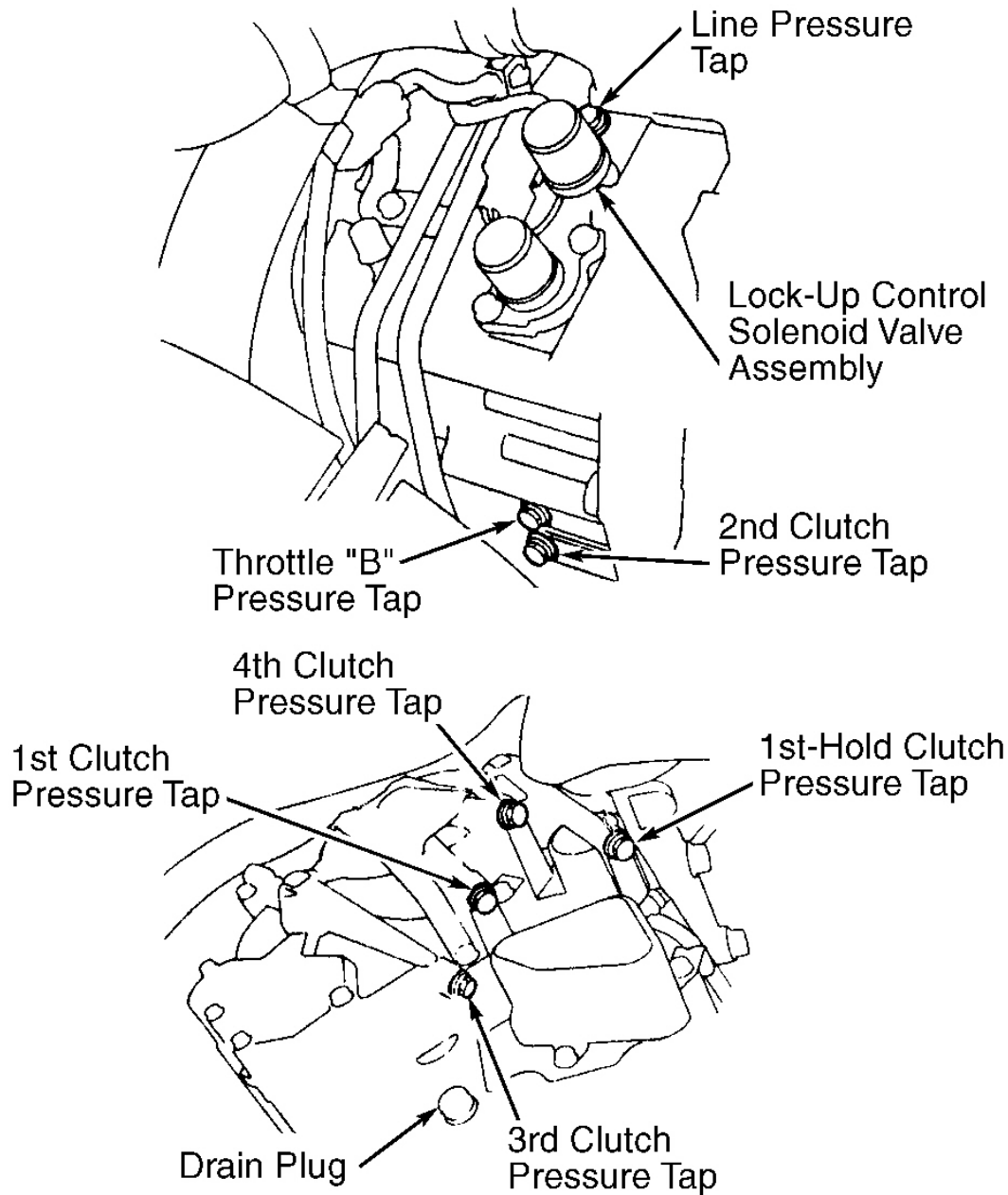
Engine Speed At 2000 RPM	"R"	113-130 (780-880)
Throttle Control Lever Fully Closed ⁽¹⁾	"D4"	58-70 (400-480)
Throttle Control Lever Open More Than 3/16 ⁽²⁾	"D4"	113-130 (780-880)
Clutch Low Pressure		
Throttle Control Lever Fully Closed 2nd, 3rd Or 4th Clutch	"D4"	58-70 (400-480)
Clutch High Pressure		
Throttle Control Lever Lifted Upward 1/2 Distance Of Throttle Control Lever Travel - 2nd, 3rd Or 4th Clutch	"D4"	113-130 (780-880)
Throttle "B" Pressure		
Throttle Control Lever Fully Closed ⁽³⁾	"D3"/ "D4"	0-2.2 (0-15)
Throttle Control Lever Fully Open ⁽³⁾	"D3"/ "D4"	113-130 (780-880)
<p>(1) Check pressure with engine speed at 2000 RPM. Fully closed position is with throttle control on transaxle in released position and not being pulled upward by T.V. cable.</p> <p>(2) Check pressure with engine speed at 2000 RPM. Open position is with transaxle T.V. lever being pulled upward 3/16 the distance of throttle control lever travel on 1995 models and 3/8 the distance of throttle control lever travel on 1996 models.</p> <p>(3) Check pressure with engine speed at 1000 RPM.</p>		

HYDRAULIC PRESSURE TROUBLE SHOOTING

Application	Probable Cause
Line Pressure	
Low Or No Line Pressure	Defective Torque Converter, Defective Torque Converter Check Valve, Defective Oil Pump Pressure Regulator, Defective Oil Pump
Clutch Pressure	
Low Or No 1st Clutch Pressure	Defective 1st Clutch
Low Or No 1st-Hold Clutch Pressure	Defective 1st-Hold Clutch
Low Or No 2nd Clutch Pressure	Defective 2nd Clutch
Low Or No 3rd Clutch Pressure	Defective 3rd Clutch
Low Or No 4th Clutch Pressure	Defective 4th Clutch, Defective Servo Valve On 4th Clutch
Clutch Low/High Pressure	
Low Or No 2nd Clutch Pressure	Defective 2nd Clutch
Low Or No 3rd Clutch Pressure	Defective 3rd Clutch
Low Or No 4th Clutch Pressure	Defective 4th Clutch
Throttle "B" Pressure	

High, Low Or No Throttle "B" Pressure

Defective Throttle Valve "B"



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Fig. 8: Identifying Transaxle Pressure Taps
Courtesy of AMERICAN HONDA MOTOR CO., INC.

REMOVAL & INSTALLATION

ELECTRICAL COMPONENTS

See appropriate ELECTRONIC CONTROLS article.

TRANSAXLE

See **REMOVAL & INSTALLATION** article.

TORQUE CONVERTER

Torque converter consists of pump, turbine and stator assembled as a unit. Torque converter cannot be serviced and must be replaced if defective.

NOTE: For torque converter stall speed test, see **TORQUE CONVERTER STALL SPEED TEST** under TESTING.

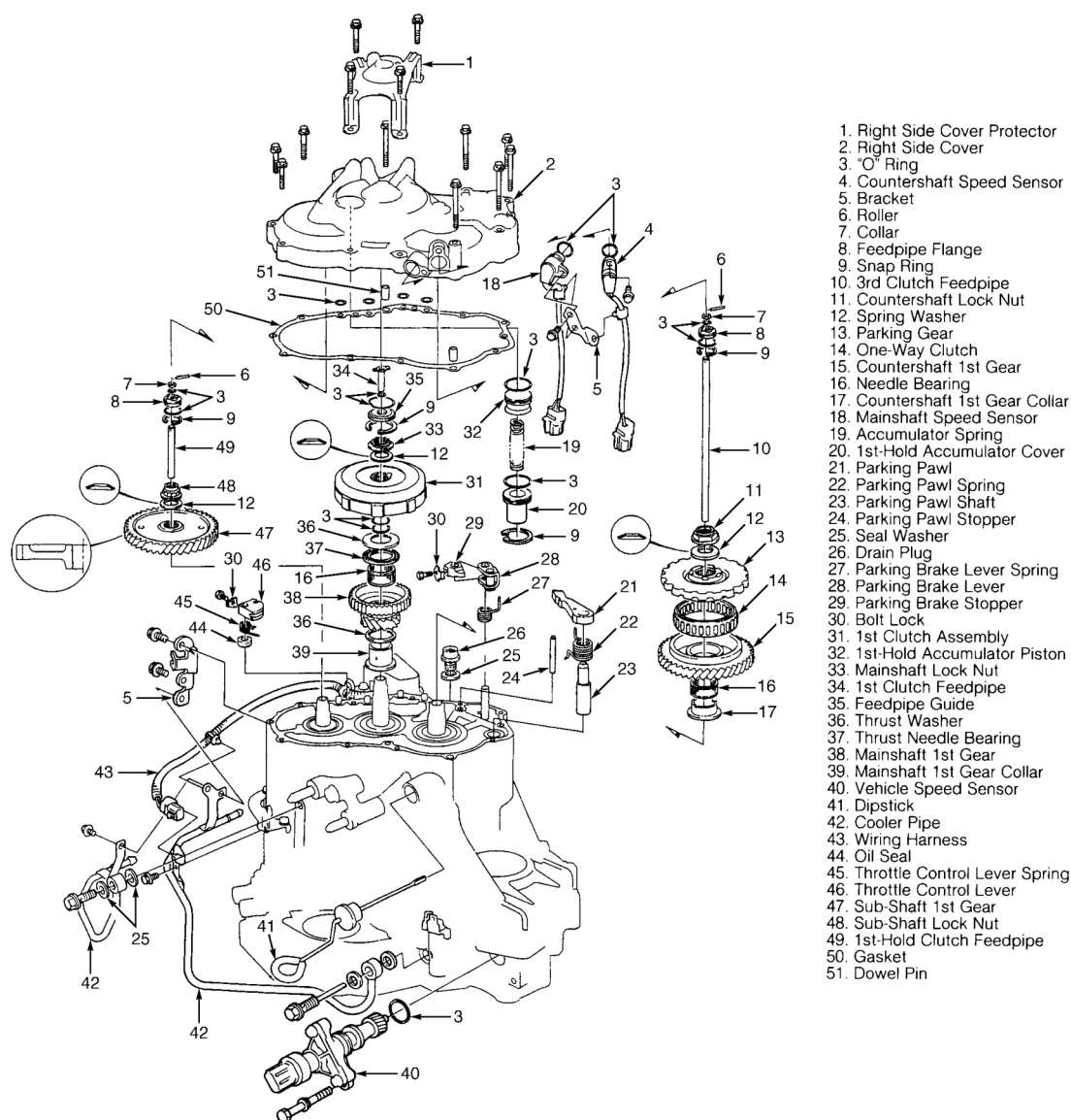
TRANSAXLE DISASSEMBLY

VALVE BODIES & INTERNAL COMPONENTS

1. Remove bolts, right side cover protector, right side cover and gasket. See **Fig. 9** . Install Mainshaft Holder (07GAB-PF50101) on mainshaft to secure mainshaft. See **Fig. 10** .
2. Engage parking pawl with parking gear. Align hole in sub-shaft 1st gear with hole in transaxle housing. Install pin in sub-shaft 1st gear and transaxle housing to prevent sub-shaft 1st gear from rotating. See **Fig. 11** .
3. Using hammer and chisel, cut lock tabs on countershaft and sub-shaft lock nuts. Pry lock tabs on mainshaft lock nut upward. Remove all lock nuts and spring washers from countershaft, mainshaft and sub-shaft. See **Fig. 11** .

NOTE: Mainshaft and countershaft lock nuts contain left-hand threads.

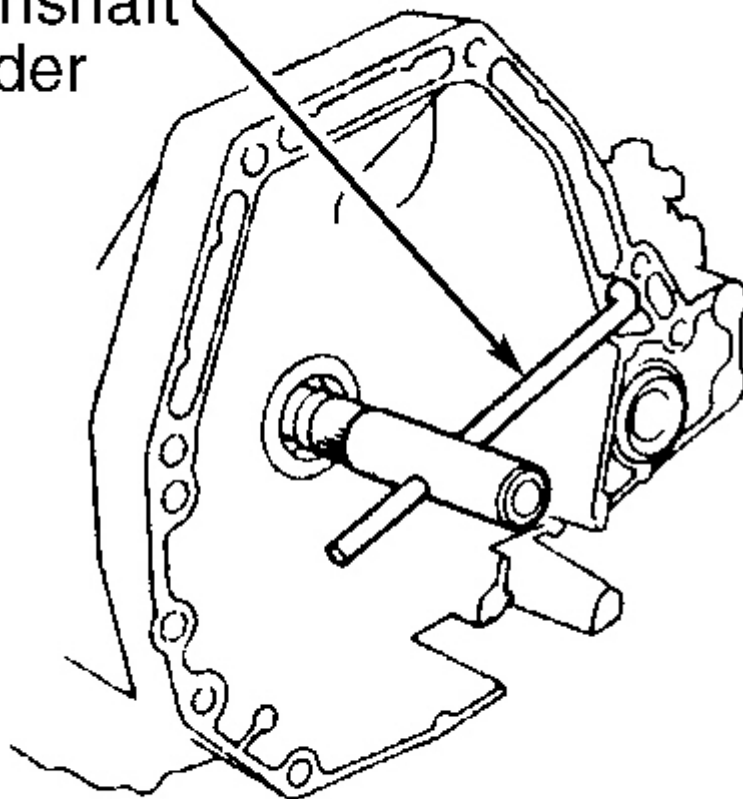
4. Remove mainshaft holder once all lock nuts are removed. Remove pin securing sub-shaft 1st gear. Remove 1st clutch assembly, mainshaft 1st gear, thrust washer and mainshaft 1st gear collar from mainshaft. See **Fig. 9** .
5. Remove sub-shaft 1st gear. Remove parking pawl. Using puller, remove parking gear, one-way clutch and countershaft 1st gear from countershaft. Remove needle bearing and countershaft 1st gear collar from countershaft. See **Fig. 9** .
6. Remove parking brake lever and parking brake lever spring from control shaft. Remove throttle control lever and throttle control lever spring from throttle control shaft. See **Fig. 9** .
7. Remove dipstick, vehicle speed sensor, joint bolts and cooler pipes. Remove mount bracket from transaxle housing. See **Fig. 13** . Remove transaxle housing bolts and transaxle hanger.
8. Align spring pin on control shaft with groove in transaxle housing by rotating control shaft. Using Puller (07HAC-PK4010A), remove transaxle housing. See **Fig. 12** . Remove gasket for transaxle housing.



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Fig. 9: Exploded View Of Right Side Cover & Components
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

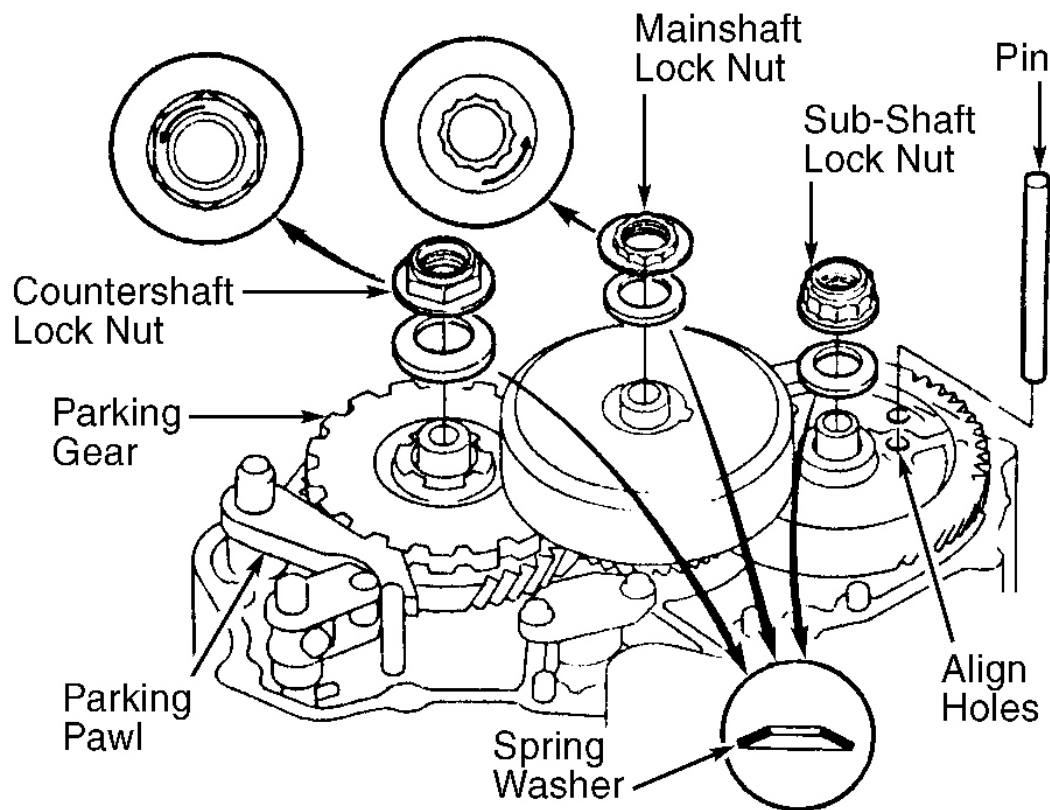
Mainshaft
Holder



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Fig. 10: Installing Mainshaft Holder

Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 11: Securing Sub-Shaft 1st Gear
Courtesy of AMERICAN HONDA MOTOR CO., INC.

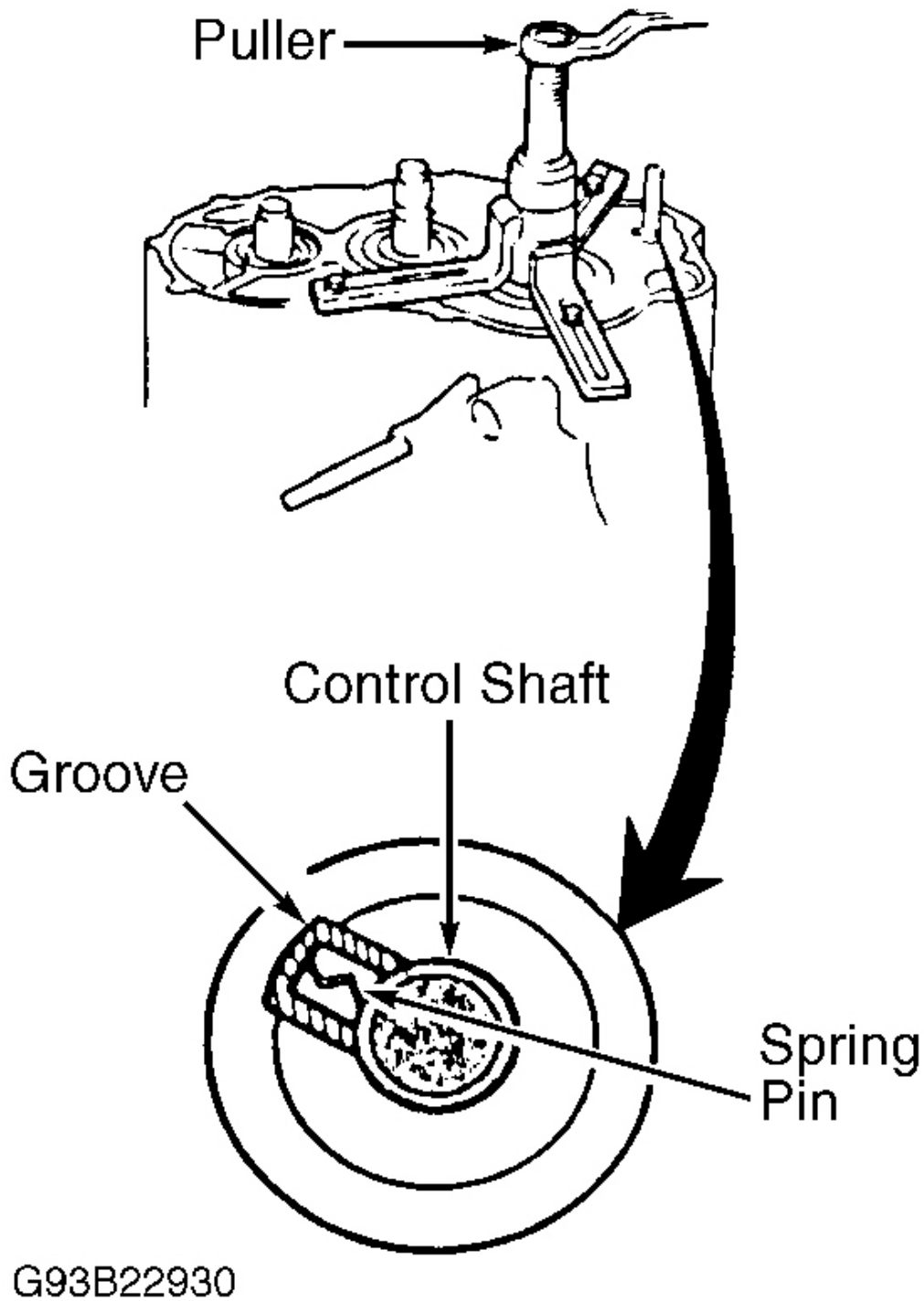
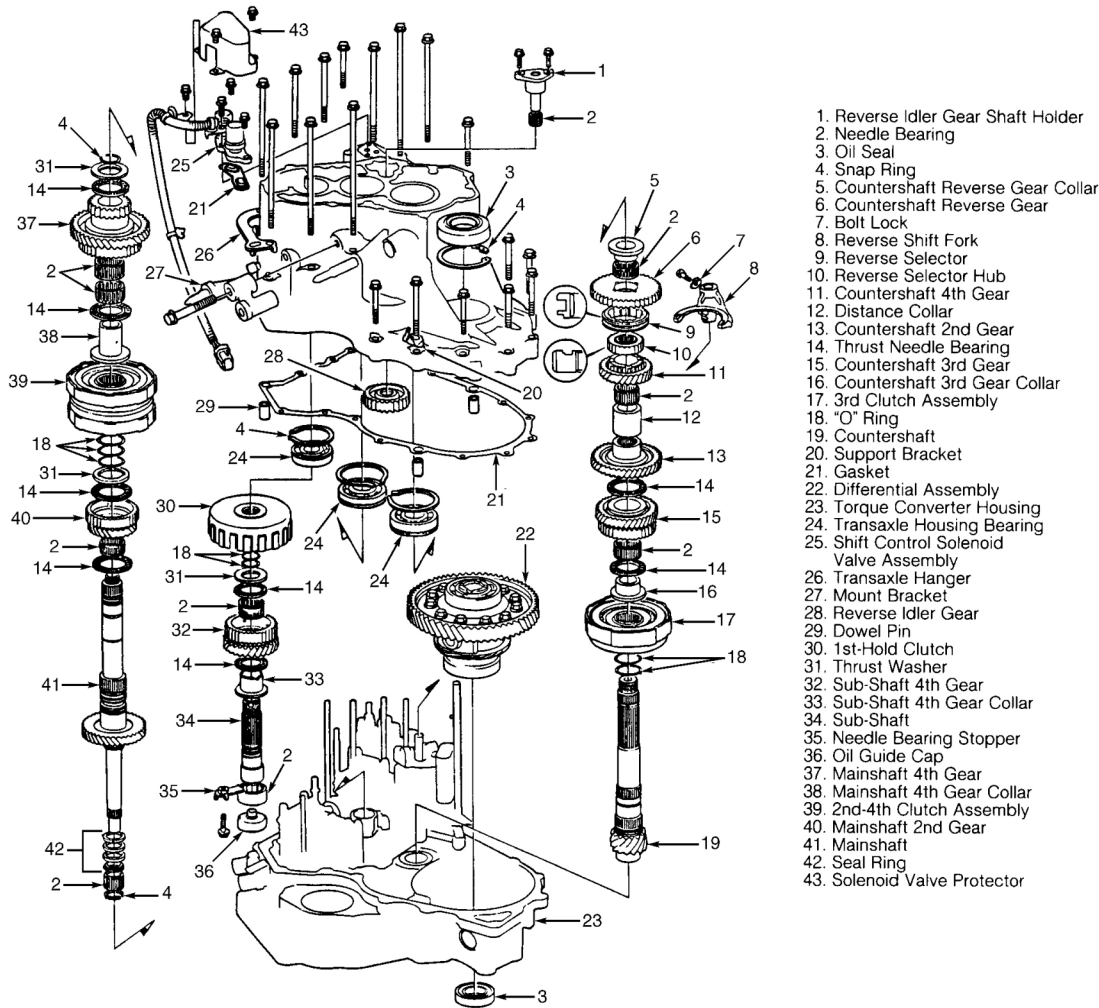


Fig. 12: Aligning Spring Pin & Removing Transaxle Housing

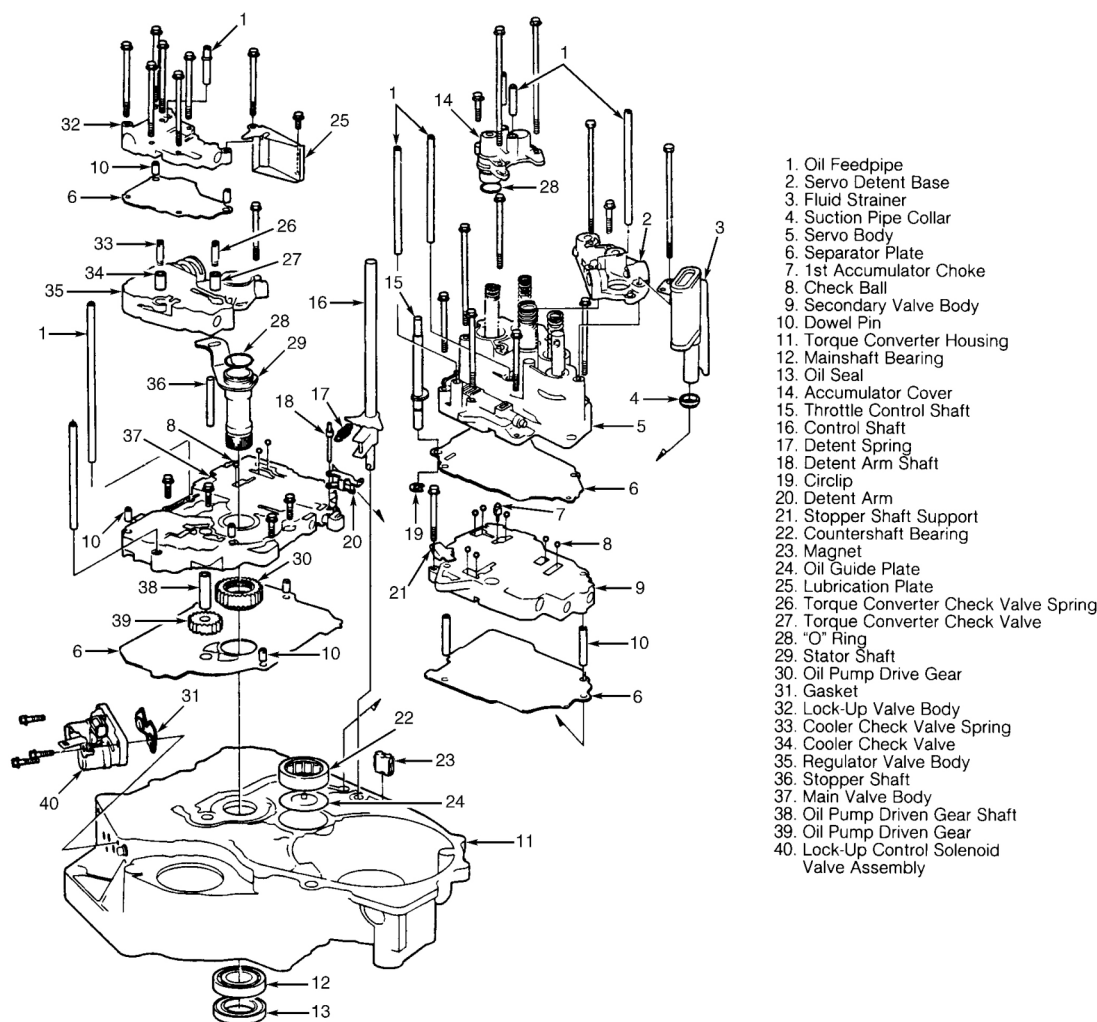
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove countershaft reverse gear collar, needle bearing and countershaft reverse gear from countershaft. See **Fig. 13** . Remove bolt and bolt lock from reverse shift fork. Remove reverse shift fork with reverse selector from countershaft.
10. Remove countershaft and mainshaft together from torque converter housing. Remove differential assembly. Remove bolts, reverse idler gear shaft holder, reverse idler gear and needle bearing from transaxle housing (if necessary).
11. Remove oil feedpipes from servo body, servo detent base, accumulator cover, lock-up valve body and main valve body. See **Fig. 14** . Remove bolts and accumulator cover. Remove bolts, fluid strainer and servo detent base.
12. Remove bolts, servo body and separator plate. See **Fig. 14** . Remove bolt, secondary valve body and separator plate. DO NOT lose check balls in secondary valve body.
13. Remove bolts, lubrication plate, lock-up valve body and separator plate. Remove regulator valve body. Remove stopper shaft and stator shaft. Remove detent spring from detent arm. Remove control shaft from torque converter housing.
14. Remove detent arm shaft and detent arm from main valve body. Remove bolts and main valve body. DO NOT lose check balls in main valve body. See **Fig. 14** .
15. Remove oil pump driven gear shaft and oil pump gears. See **Fig. 14** . Remove separator plate for main valve body and dowel pins. Remove magnet. Remove lock-up control solenoid valve assembly (if necessary).



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Fig. 13: Exploded View Of Transaxle Housing & Components
 Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 14: Exploded View Of Torque Converter Housing & Components
Courtesy of AMERICAN HONDA MOTOR CO., INC.

COMPONENT DISASSEMBLY & REASSEMBLY

MAIN VALVE BODY

CAUTION: When disassembling main valve body, place main valve body components in order and mark spring locations for reassembly reference. **DO NOT** use force to remove components. **DO NOT** use magnet to remove check balls, as check balls may become magnetized. Note direction of valve cap installation before removing from main valve body.

Disassembly

Disassemble main valve body. See **Fig. 15**. Use care when removing valve caps or spring seat, as they are

under spring pressure.

Cleaning & Inspection

1. Clean components with solvent and dry with compressed air. Replace main valve body if any parts are worn or damaged.
2. Ensure all valves slide freely in their bores. If valves do not slide freely, polish burrs or rough areas using No. 600 sandpaper soaked in ATF for at least 30 minutes. Thoroughly clean main valve body and components if polishing was needed.
3. Ensure spring free length is within specification. See **SPRING SPECIFICATIONS** table. Replace springs if not within specification.

NOTE: Oil pump clearance must be checked in main valve body. See **OIL PUMP** under **COMPONENT DISASSEMBLY & REASSEMBLY**.

Reassembly

Coat all components and bores with Dexron-II ATF. To reassemble, reverse disassembly procedure. Ensure all components are installed in correct location. See **Fig. 15**.

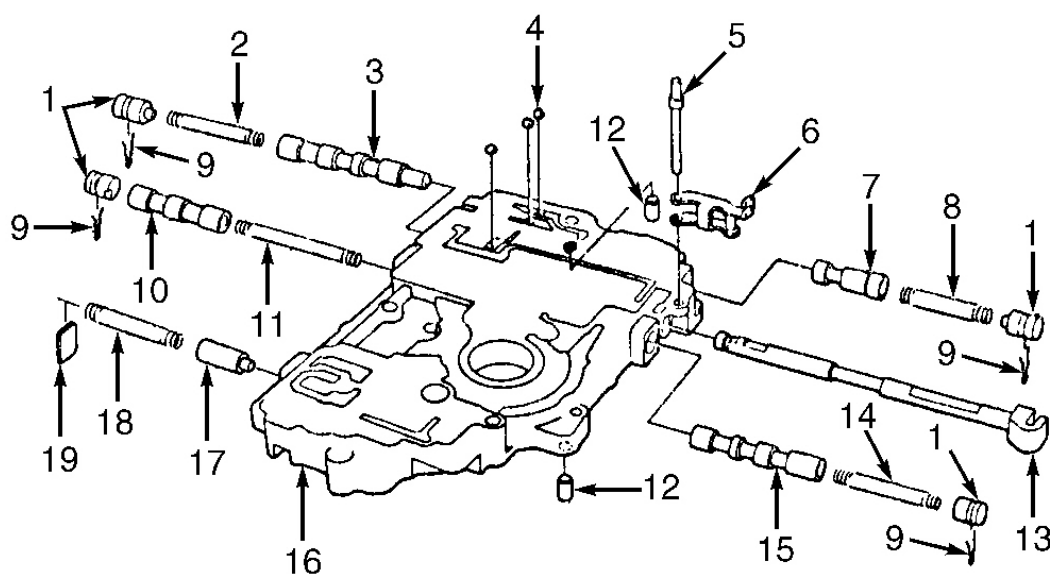
SPRING SPECIFICATIONS

Application	Free Length: In. (mm)
Lock-Up Valve Body	
Lock-Up Shift Valve Spring	2.902 (73.70)
Lock-Up Timing Valve "B" Spring	2.394 (60.80)
Main Valve Body Clutch Pressure Control Valve	1.390 (35.30)
Main Valve Body	
Relief Valve Spring	1.461 (37.10)
1-2 Shift Valve Spring	1.591 (40.40)
2-3 Shift Valve Spring	2.244 (57.00)
4th Exhaust Valve Spring	2.374 (60.30)
Regulator Valve Body	
Cooler Check Valve Spring	1.331 (33.80)
Lock-Up Control Valve Spring	1.638 (41.60)
Regulator Valve Spring "A"	3.457 (87.80)
Regulator Valve Spring "B"	1.732 (44.00)
Stator Reaction Spring	1.193 (30.30)
Torque Converter Check Valve Spring	1.331 (33.80)
Secondary Valve Body	
Modulator Valve Spring	1.469 (37.30)
Orifice Control Valve Spring	1.898 (48.20)
Servo Control Valve Spring	1.343 (34.10)

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2-3 Orifice Control Valve Spring	1.299 (33.00)
3-2 Kickdown Valve Spring	1.795 (45.60)
3-4 Shift Valve Spring	2.047 (52.00)
4-3 Kickdown Valve Spring	1.122 (28.50)
Servo Body	
Throttle Valve "B" Adjusting Spring	1.339 (34.00)
Throttle Valve "B" Spring	(1)
1st Accumulator Spring	4.150 (105.40)
2nd Accumulator Spring	4.287 (108.90)
3rd Accumulator Spring	4.142 (105.20)
4th Accumulator Spring	4.067 (103.30)
(1) Free length may be 1.634" (41.50 mm) or 1.638" (41.60 mm).	



- | | |
|---|------------------------------|
| 1. Valve Cap | 10. 4th Exhaust Valve |
| 2. 2-3 Shift Valve Spring | 11. 4th Exhaust Valve Spring |
| 3. 2-3 Shift Valve | 12. Dowel Pin |
| 4. Check Ball | 13. Manual Valve |
| 5. Detent Arm Shaft | 14. 1-2 Shift Valve Spring |
| 6. Detent Arm | 15. 1-2 Shift Valve |
| 7. Clutch Pressure Control Valve | 16. Main Valve Body |
| 8. Clutch Pressure Control Valve Spring | 17. Relief Valve |
| 9. Clip | 18. Relief Valve Spring |
| | 19. Spring Seat |

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Fig. 15: Exploded View Of Main Valve Body

Courtesy of AMERICAN HONDA MOTOR CO., INC.

OIL PUMP**Disassembly**

Note direction of oil pump gear installation in main valve body. Remove oil pump driven gear shaft and oil pump gears from main valve body (if not previously removed).

Cleaning & Inspection

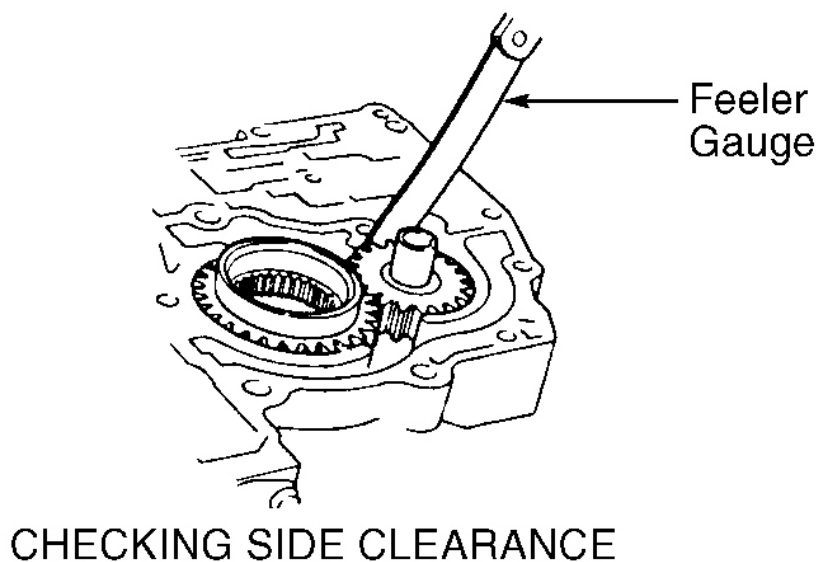
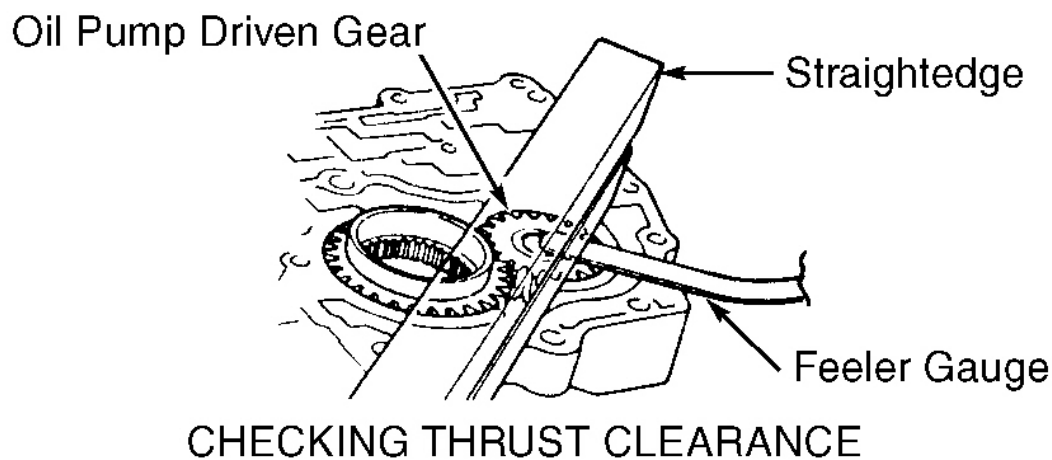
1. Clean components with solvent and dry with compressed air. Inspect components and replace if damaged.
2. Install oil pump gears in main valve body. Ensure chamfered and grooved side of oil pump driven gear is facing upward (toward separator plate side of main valve body).
3. Place straightedge across main valve body surface. Using feeler gauge, measure thrust clearance between oil pump driven gear and straightedge. See **Fig. 16** . Replace oil pump gears and/or main valve body if thrust clearance is not within specification. See the **OIL PUMP SPECIFICATIONS** table.
4. Install oil pump driven gear shaft in oil pump driven gear. Using feeler gauge, measure side clearance of both gears between tip of gear teeth and main valve body. See **Fig. 16** . Replace oil pump gears and/or main valve body if side clearance is not within specification. See **OIL PUMP SPECIFICATIONS** table.

OIL PUMP SPECIFICATIONS

Application	In. (mm)
Side Clearance	
Oil Pump Drive Gear	.0083-.0104 (.210-.265)
Oil Pump Driven Gear	.0028-.0049 (.070-.125)
Thrust Clearance	
Standard	.0010-.0020 (.030-.050)
Wear Limit	.0028 (.070)

Reassembly

Coat components with Dexron-II ATF. To reassemble, reverse disassembly procedure. Ensure chamfered and grooved side of oil pump driven gear is facing of oil pump driven gear faces upward (toward separator plate side of main valve body).



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Fig. 16: Checking Oil Pump Clearances

Courtesy of AMERICAN HONDA MOTOR CO., INC.

REGULATOR VALVE BODY

CAUTION: Regulator spring cap is under spring pressure. Ensure regulator spring cap is held down when removing stopper bolt. Use care when removing valve cap, as valve cap is under spring pressure.

Disassembly

Note direction of valve cap installation before removing from regulator valve body. Hold regulator spring cap

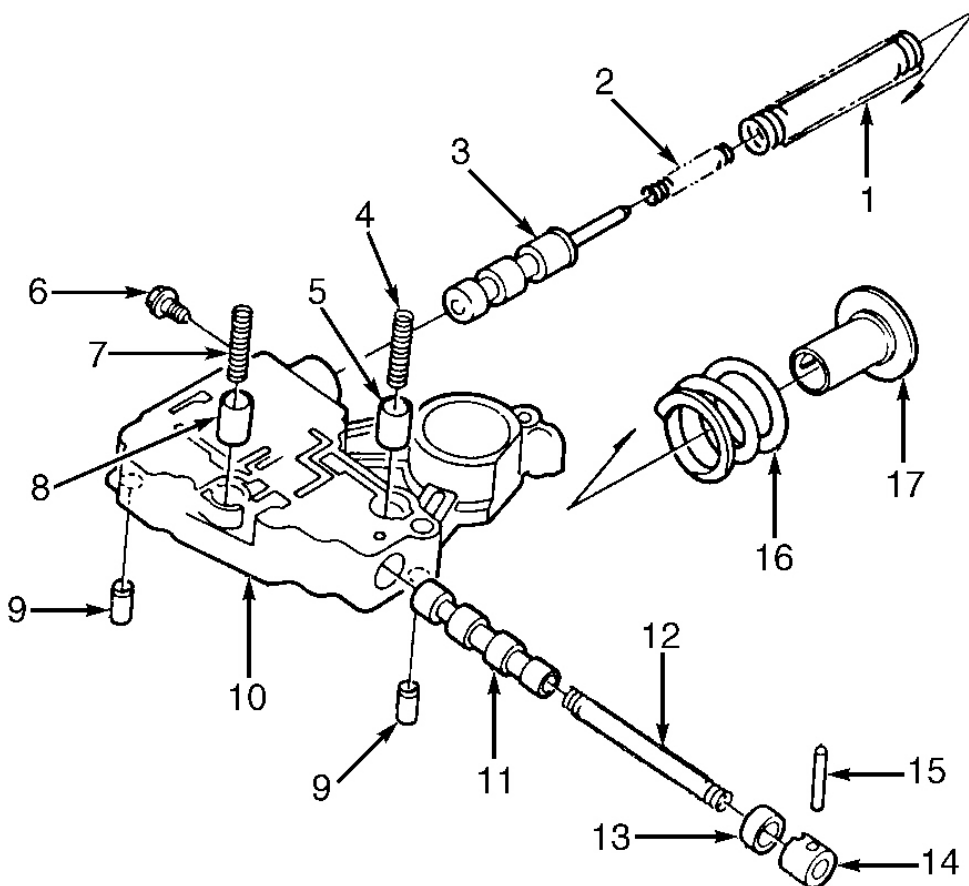
down, and remove stopper bolt. Slowly remove regulator spring cap and components from regulator valve body. See [Fig. 17](#) .

Cleaning & Inspection

1. Clean components with solvent and dry with compressed air. Replace regulator valve body assembly if any parts are worn or damaged.
2. Ensure all valves slide freely in their bores. If valves do not slide freely, polish burrs or rough areas using No. 600 sandpaper soaked in ATF for at least 30 minutes. Thoroughly clean regulator valve body and components if polishing was needed.
3. Ensure spring free length is within specification. See **SPRING SPECIFICATIONS** table. Replace springs if not within specification.

Reassembly

Coat all components and bores with Dexron-II ATF. To reassemble, reverse disassembly procedure. Ensure all components are installed in correct location. See [Fig. 17](#) . Tighten stopper bolt to specification. See **TORQUE SPECIFICATIONS** .



- | | |
|--|----------------------------------|
| 1. Regulator Valve Spring "A" | 10. Regulator Valve Body |
| 2. Regulator Valve Spring "B" | 11. Lock-Up Control Valve |
| 3. Regulator Valve | 12. Lock-Up Control Valve Spring |
| 4. Torque Converter Check Valve Spring | 13. Sleeve |
| 5. Torque Converter Check Valve | 14. Valve Cap |
| 6. Stopper Bolt | 15. Roller |
| 7. Cooler Check Valve Spring | 16. Stator Reaction Spring |
| 8. Cooler Check Valve | 17. Regulator Spring Cap |
| 9. Dowel Pin | |

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Fig. 17: Exploded View Of Regulator Valve Body
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

LOCK-UP VALVE BODY

Disassembly

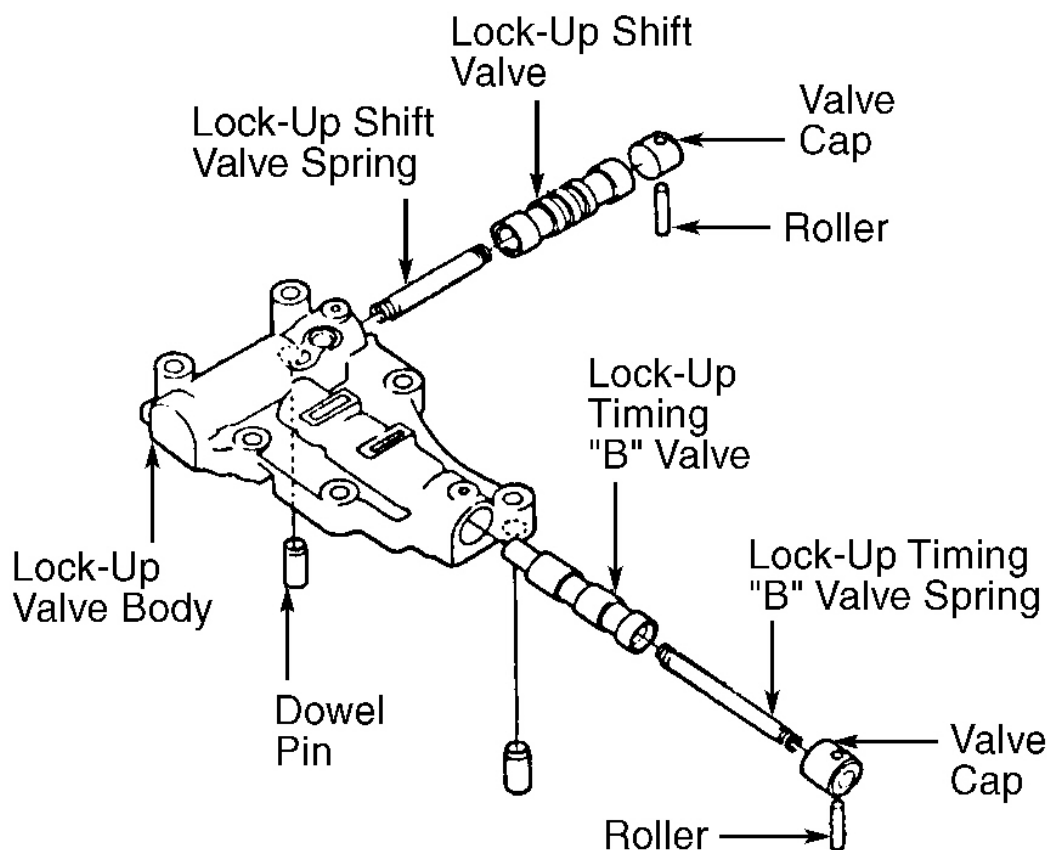
Note direction of valve cap installation before removing from lock-up valve body. Disassemble lock-up valve body. See **Fig. 18** . Use care when removing valve caps, as they are under spring pressure.

Cleaning & Inspection

1. Clean components with solvent and dry with compressed air. Replace lock-up valve body assembly if any parts are worn or damaged.
2. Ensure all valves slide freely in their bores. If valves do not slide freely, polish burrs or rough areas using No. 600 sandpaper soaked for 30 minutes in ATF. Thoroughly clean lock-up valve body and components if polishing was needed.
3. Ensure spring free length is within specification. See **SPRING SPECIFICATIONS** table. Replace springs if not within specification.

Reassembly

Coat all components and bores with Dexron-II ATF. To reassemble, reverse disassembly procedure. See **Fig. 18** .



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Fig. 18: Exploded View Of Lock-Up Valve Body

Courtesy of AMERICAN HONDA MOTOR CO., INC.

SECONDARY VALVE BODY

CAUTION: When disassembling secondary valve body, place secondary valve body components in order and mark spring locations for reassembly reference. **DO NOT** use force to remove components. **DO NOT** use magnet to remove check balls, as check balls may become magnetized. Note direction of valve cap installation before removing from secondary valve body.

Disassembly

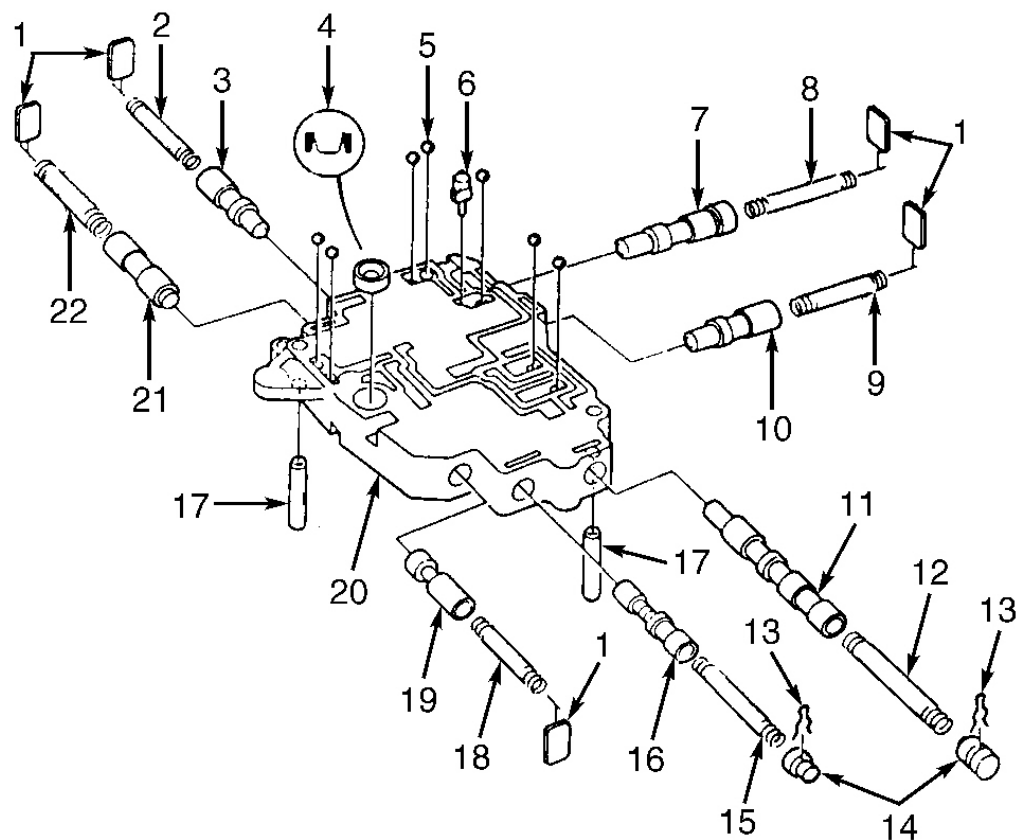
Disassemble secondary valve body. See **Fig. 19** . Use care when removing valve caps or spring seats, as they are under spring pressure.

Cleaning & Inspection

1. Clean components with solvent and dry with compressed air. Replace secondary valve body assembly if any parts are worn or damaged.
2. Ensure all valves slide freely in their bores. If valves do not slide freely, polish burrs or rough areas using No. 600 sandpaper soaked for 30 minutes in ATF. Thoroughly clean secondary valve body and components if polishing was needed.
3. Ensure spring free length is within specification. See **SPRING SPECIFICATIONS** table. Replace springs if not within specification.

Reassembly

Coat all components and bores with Dexron-II ATF. To reassemble, reverse disassembly procedure. Install NEW filter. Ensure all components are installed in correct location. See **Fig. 19** .



- | | |
|-------------------------------------|--------------------------------|
| 1. Spring Seat | 12. 3-4 Shift Valve Spring |
| 2. 4-3 Kickdown Valve Spring | 13. Clip |
| 3. 4-3 Kickdown Valve | 14. Valve Cap |
| 4. Filter | 15. Servo Control Valve Spring |
| 5. Check Ball | 16. Servo Control Valve |
| 6. 1st Accumulator Choke | 17. Dowel Pin |
| 7. Orifice Control Valve | 18. Modulator Valve Spring |
| 8. Orifice Control Valve Spring | 19. Modulator Valve |
| 9. 2-3 Orifice Control Valve Spring | 20. Secondary Valve Body |
| 10. 2-3 Orifice Control Valve | 21. 3-2 Kickdown Valve |
| 11. 3-4 Shift Valve | 22. 3-2 Kickdown Valve Spring |

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Fig. 19: Exploded View Of Secondary Valve Body
Courtesy of AMERICAN HONDA MOTOR CO., INC.

SERVO BODY

Disassembly

Disassemble servo body. See **Fig. 20** . DO NOT loosen or remove throttle adjusting bolt.

Cleaning & Inspection

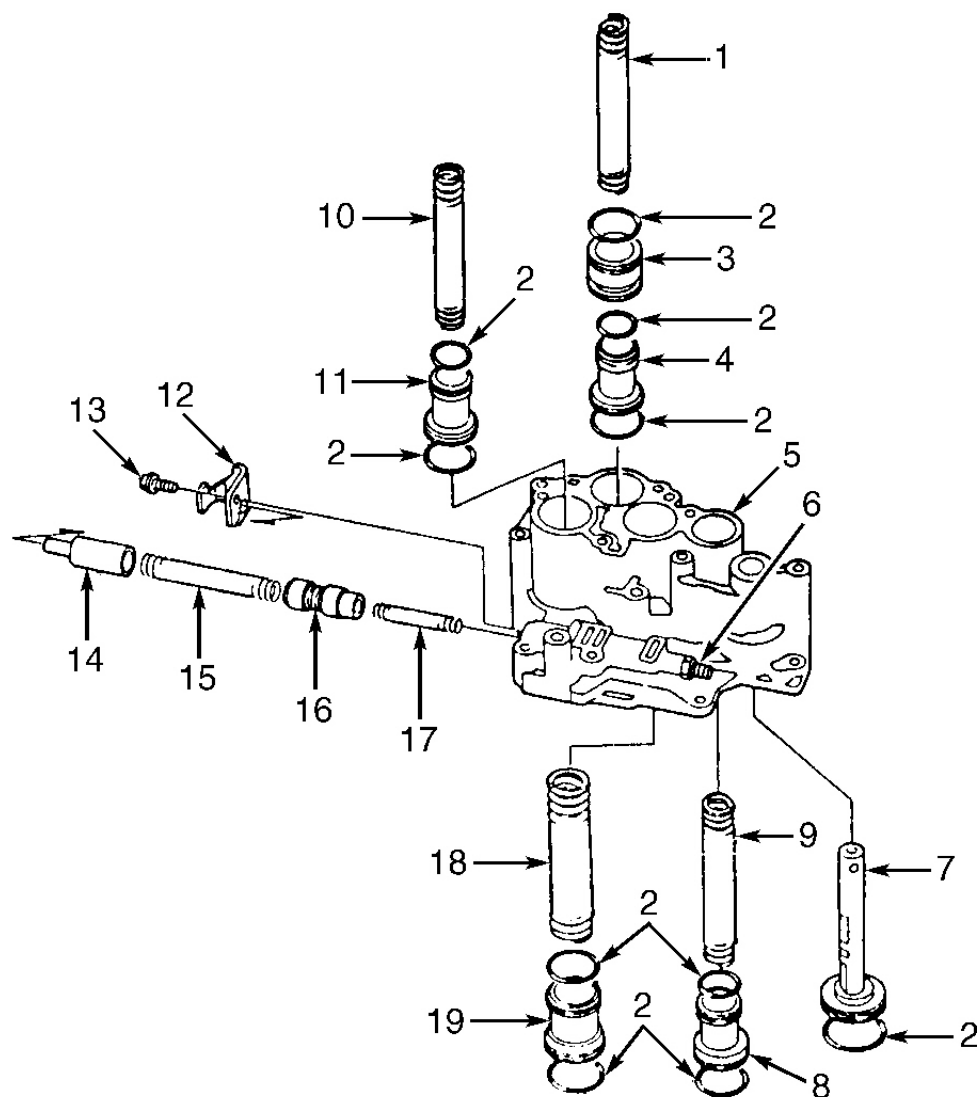
1. Clean components with solvent and dry with compressed air. Replace servo body assembly if any parts are worn or damaged. Ensure all valves slide freely in their bores.
2. Ensure spring free length is within specification. See **SPRING SPECIFICATIONS** table. Replace springs if not within specification.

Reassembly

Coat all components and bores with Dexron-II ATF. To reassemble, reverse disassembly procedure using NEW "O" rings. Tighten throttle cam stopper bolt to specification. See **TORQUE SPECIFICATIONS** .

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- | | |
|---|--|
| 1. 1st Accumulator Spring | 11. 4th Accumulator Piston |
| 2. "O" Ring | 12. Throttle Cam Stopper |
| 3. 1st Accumulator Collar | 13. Throttle Cam Stopper Bolt |
| 4. 1st Accumulator Piston | 14. Throttle Valve "B" |
| 5. Servo Body | 15. Throttle Valve "B" Spring |
| 6. Throttle Adjusting Bolt
(DO NOT Loosen Or Remove) | 16. Throttle Long Valve |
| 7. Shift Fork Shaft | 17. Throttle Valve "B" Adjusting
Spring |
| 8. 3rd Accumulator Piston | 18. 2nd Accumulator Spring |
| 9. 3rd Accumulator Spring | 19. 2nd Accumulator Piston |
| 10. 4th Accumulator Spring | |

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Fig. 20: Exploded View Of Servo Body

Courtesy of AMERICAN HONDA MOTOR CO., INC.

1ST-HOLD ACCUMULATOR**Disassembly**

Remove snap ring, 1st-hold accumulator cover, "O" ring, accumulator spring and 1st-hold accumulator piston from right side cover. See **Fig. 9**.

Cleaning & Inspection

Clean components with solvent and dry with compressed air. Replace components if worn or damaged. Ensure accumulator spring free length 2.823" (71.70 mm). Replace accumulator spring if not within specification.

Reassembly

Coat all components and bores with Dexron-II ATF. To reassemble, reverse disassembly procedure using NEW "O" rings.

MAINSHAFT**Disassembly**

Note location of mainshaft components. See **Fig. 21**. Remove mainshaft components.

Cleaning & Inspection

Clean components with solvent and dry with compressed air. Inspect splines for excessive wear and bearing surfaces for scoring or wear. Inspect all bearings for galling and rough movement.



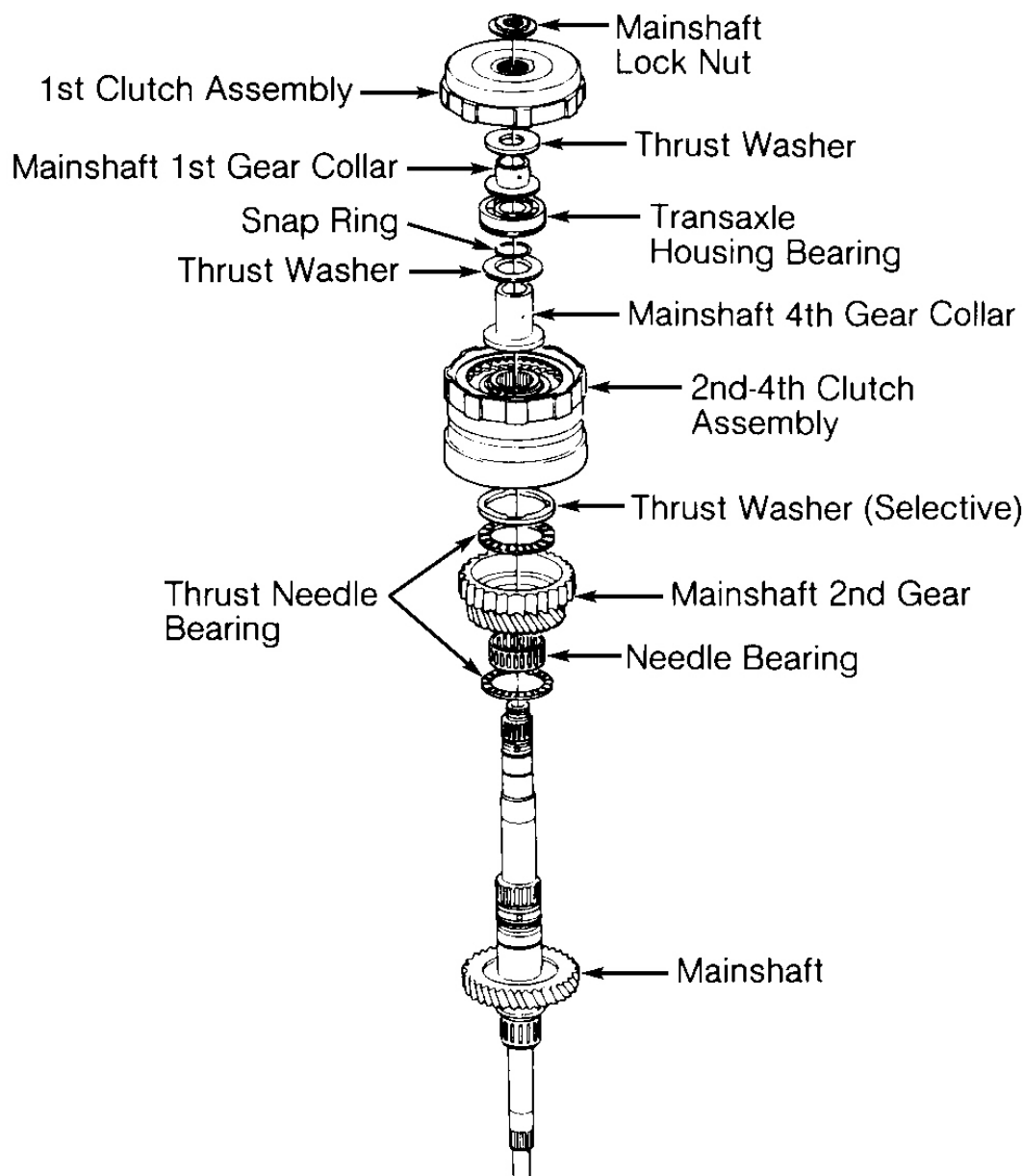
NOTE: Mainshaft 2nd gear-to-3rd gear clearance must be checked during reassembly.

Reassembly

1. To check mainshaft 2nd gear-to-3rd gear clearance, install proper components, except "O" rings and mainshaft 4th gear on mainshaft. See **Fig. 22** .
2. Install used mainshaft lock nut on mainshaft. Tighten mainshaft lock nut to 22 ft. lbs. (30 N.m). Hold mainshaft 2nd gear against 2nd clutch.
3. Using feeler gauge, measure clearance between mainshaft 2nd gear and mainshaft 3rd gear. See **Fig. 23** . If mainshaft 2nd gear-to-3rd gear clearance is not .002-.005" (.05-.13 mm), replace thrust washer, located between mainshaft 2nd gear and 2nd clutch. Different thickness thrust washers are available. See **THRUST WASHER SPECIFICATIONS** table. Replace thrust washer and recheck mainshaft 2nd gear-to-3rd gear clearance.
4. Once correct thickness thrust washer is obtained, lubricate all components with Dexron-II ATF. Reassemble mainshaft.
5. Ensure thrust needle bearings are installed with unrolled edge of bearing retainer facing washer. See **Fig. 21** . Before installing NEW "O" rings on mainshaft, wrap splines with tape.

THRUST WASHER SPECIFICATIONS

Washer No.	Part Number	Thickness: In. (mm)
1	90441-PG4-010	.157 (4.00)
2	90442-PG4-010	.159 (4.05)
3	90443-PG4-010	.161 (4.10)
4	90444-PG4-010	.163 (4.15)
5	90445-PG4-010	.165 (4.20)
6	90446-PG4-010	.167 (4.25)
7	90447-PG4-010	.169 (4.30)
8	90448-PG4-010	.171 (4.35)
9	90449-PG4-010	.173 (4.40)
10	190450-PG4-000	.175 (4.45)



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Fig. 22: Assembling Mainshaft To Measure 2nd Gear-To-3rd Gear Clearance
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

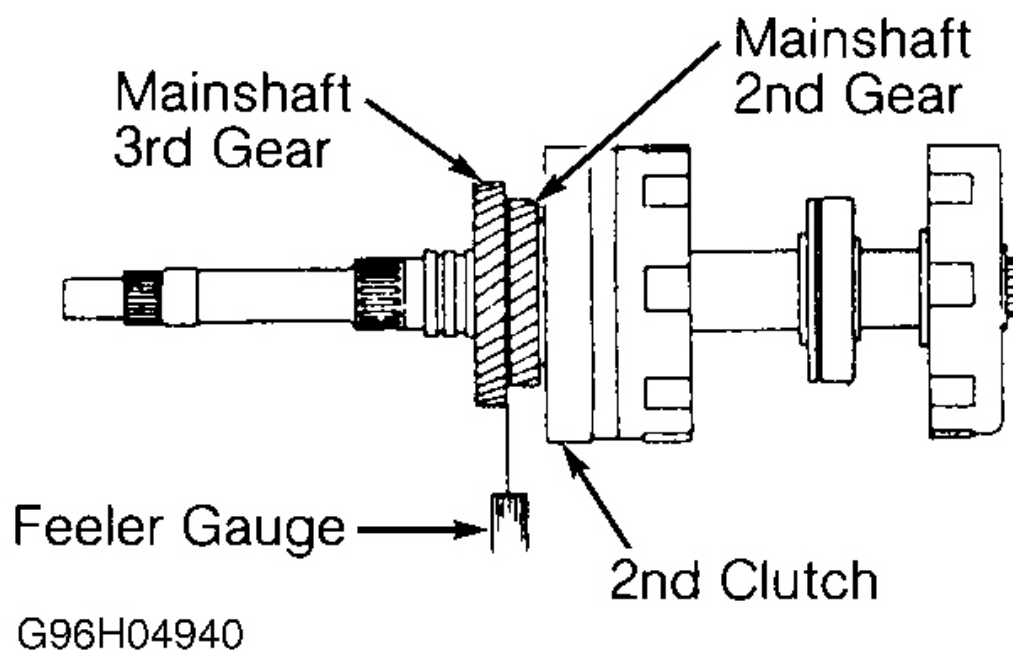


Fig. 23: Measuring Mainshaft 2nd Gear-To-3rd Gear Clearance

Courtesy of AMERICAN HONDA MOTOR CO., INC.

COUNTERSHAFT

NOTE: Reverse selector hub is press-fit on countershaft. Countershaft must be pressed from reverse selector hub.

Disassembly

1. Note location of countershaft components. See **Fig. 13** . Remove all components from countershaft down to the reverse selector hub.
2. Place countershaft in hydraulic press while supporting countershaft 4th gear. Threaded end of countershaft must be facing upward (toward ram of press). Place a protective cap between hydraulic press and countershaft to prevent damage to countershaft.
3. Press countershaft from reverse selector hub and countershaft 4th gear. Separate remaining components from countershaft. See **Fig. 13** .

Cleaning & Inspection

Clean components with solvent and dry with compressed air. Inspect splines for excessive wear. Check bearing surfaces for scoring or wear. Inspect all needle bearings for galling and rough movement.

NOTE: Countershaft 2nd gear clearance must be checked during reassembly.

Reassembly

1. To check countershaft 2nd gear clearance, install all components on countershaft up to the reverse selector hub. See **Fig. 13** . DO NOT install "O" rings on countershaft at this time.
2. Install reverse selector hub on countershaft in proper direction. Support countershaft in press. Press reverse selector hub onto countershaft.
3. Install countershaft reverse gear collar on countershaft. See **Fig. 13** . DO NOT install reverse selector, countershaft reverse gear and needle bearing on countershaft at this time.
4. Install transaxle housing bearing on countershaft. Install countershaft 1st gear collar, needle bearing and countershaft 1st gear with one-way clutch and parking gear on countershaft. See **Fig. 9** .
5. Install spring washer and used countershaft lock nut on countershaft. Tighten countershaft lock nut to 22 ft. lbs. (30 N.m).
6. Using feeler gauge, measure countershaft 2nd gear clearance between distance collar and countershaft 2nd gear. See **Fig. 24** . Measure countershaft 2nd gear clearance in 3 areas. Determine the average of the measurements. Countershaft 2nd gear clearance should be .002-.005" (.05-.13 mm).
7. If countershaft 2nd gear clearance is not within specification, install different length distance collar between countershaft 2nd gear and countershaft 4th gear and recheck clearance. See **DISTANCE COLLAR SPECIFICATIONS** table.
8. If shortest distance collar is installed and clearance still exceeds specification, check components for wear. During final reassembly, lubricate all components with Dexron-II ATF.
9. Before installing NEW "O" rings on countershaft, wrap splines with tape. Ensure NEW "O" rings are installed on countershaft.
10. Ensure reverse selector hub is installed on countershaft in proper direction. See **Fig. 13** . Ensure thrust needle bearings and needle bearings are installed with unrolled edge of bearing retainer facing washer surface.

DISTANCE COLLAR SPECIFICATIONS

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

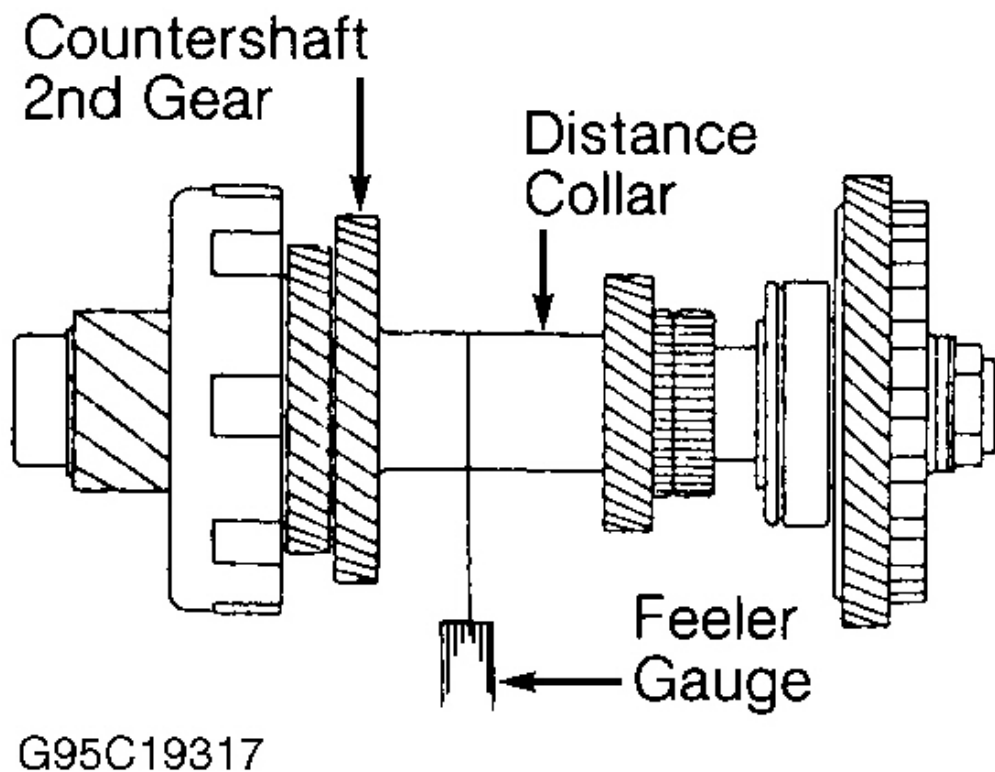


Fig. 24: Checking Countershaft 2nd Gear Clearance
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

PARKING GEAR & ONE-WAY CLUTCH

Disassembly

1. To separate parking gear from countershaft 1st gear, hold countershaft 1st gear with parking gear facing upward. Rotate parking gear counterclockwise and remove from countershaft 1st gear.
2. Note direction of one-way clutch installation in countershaft 1st gear. To remove one-way clutch from countershaft 1st gear, using screwdriver, gently pry between one-way clutch and countershaft 1st gear.

Cleaning & Inspection

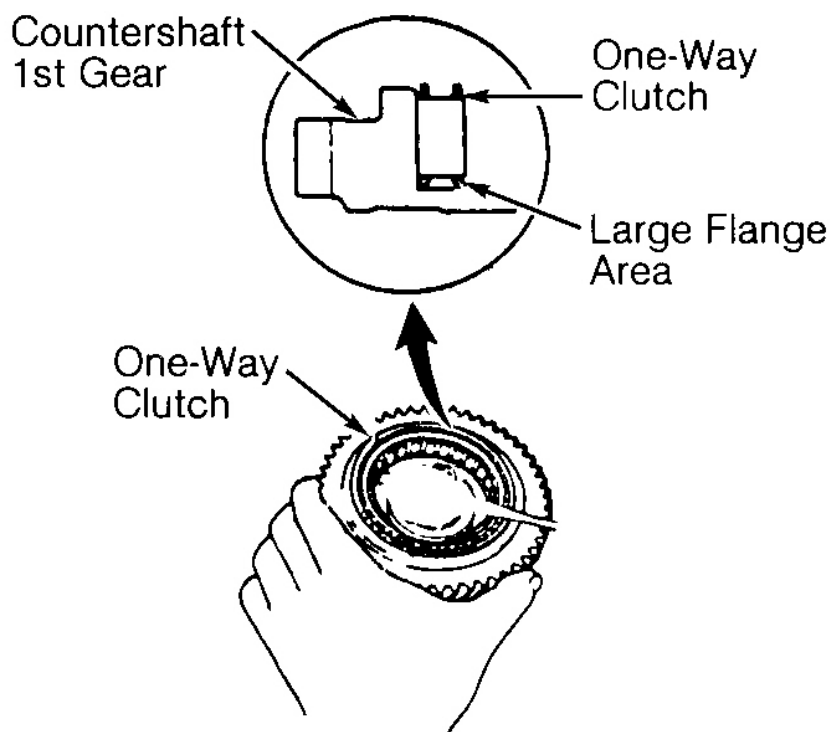
Clean components with solvent and dry with compressed air. Inspect components for damage.

Reassembly

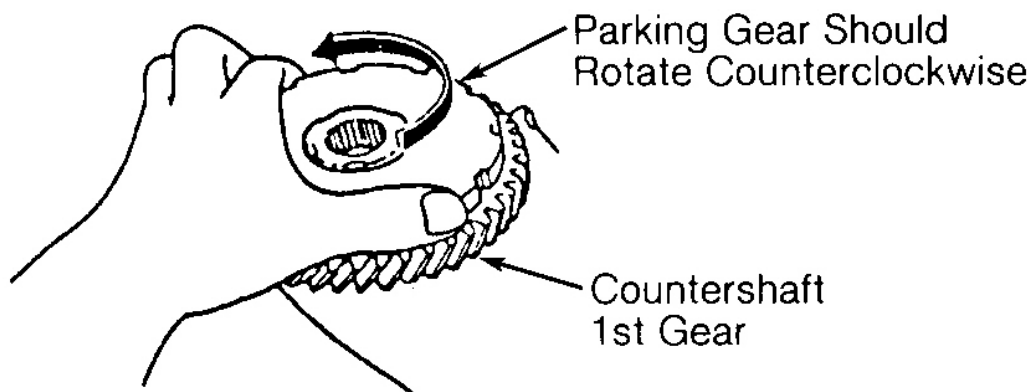
1. Lubricate all components with Dexron-II ATF. Install one-way clutch in countershaft 1st gear with large

flange area on one-way clutch toward countershaft 1st gear. See **Fig. 25**.

2. Install parking gear. To check one-way clutch operation, hold countershaft 1st gear with parking gear facing upward. Ensure parking gear rotates freely counterclockwise.



INSTALLING ONE-WAY CLUTCH



CHECKING ONE-WAY CLUTCH OPERATION

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Fig. 25: Installing & Checking One-Way Clutch Operation

Courtesy of AMERICAN HONDA MOTOR CO., INC.

SUB-SHAFT & COMPONENTS

Disassembly

1. Note sub-shaft and components. See **Fig. 13** . Remove oil guide cap from transaxle housing by using hammer and driver and tapping on end of sub-shaft. Remove sub-shaft, sub-shaft 4th gear, 1st-hold clutch and components.
2. If removing needle bearing from transaxle housing, remove needle bearing stopper bolt and needle bearing stopper. Using hammer and drift, tap needle bearing from transaxle housing.
3. If removing transaxle housing bearing, expand snap ring. Using press, press bearing from transaxle housing. Remove snap ring (if necessary).

Cleaning & Inspection

1. Clean components with solvent and dry with compressed air. Inspect splines on sub-shaft for excessive wear and bearing surfaces for scoring or wear.
2. Inspect all needle bearings for galling and rough movement. Inspect sub-shaft 4th gear for damage.

Reassembly

1. Lubricate all components with Dexron-II ATF. If installing needle bearing in transaxle housing, use press, press needle bearing into transaxle housing.
2. Install needle bearing stopper. Tighten needle bearing stopper bolt to specification. See **TORQUE SPECIFICATIONS** .
3. If installing transaxle housing bearing in transaxle housing, expand snap ring. Using press, press bearing part way into transaxle housing.

CAUTION: Ensure transaxle housing bearing is installed with groove facing toward outside of transaxle housing so snap ring will engage with bearing.

4. Release snap ring. Continue pressing bearing into transaxle housing until snap ring engages in bearing. Ensure snap ring is fully seated.
5. Before installing "O" rings on sub-shaft, wrap splines with tape. Use NEW "O" rings on sub-shaft. Reassemble sub-shaft.
6. Ensure thrust needle bearings are installed with unrolled edge of bearing retainer facing washer. Install NEW oil guide cap.

CLUTCH ASSEMBLIES

Disassembly

1. Remove snap ring, clutch end plate, clutch discs and clutch plates. See **Fig. 26** . Note direction of disc spring installation. Remove disc spring.

- Using spring compressor, compress return spring. Remove snap ring. Release and remove spring compressor. Remove spring retainer and return spring.
- Wrap shop towel around clutch drum. Apply light air pressure to oil passage on clutch drum to remove clutch piston. Remove "O" rings.

Cleaning & Inspection

- Clean metal components with solvent and dry with compressed air. Ensure check valve on rear of clutch piston (except 1st-hold clutch) is thoroughly cleaned and secured tightly on clutch piston.
- Inspect components for damage. Replace as necessary. Ensure no rough edges exist on "O" ring sealing areas.

Reassembly

- Lubricate all components with Dexron-II ATF. Install NEW "O" rings. Install clutch piston in clutch drum. Slightly rotate clutch piston back and forth during installation to prevent damaging "O" rings.

CAUTION: DO NOT apply excessive force on clutch piston or "O" rings will be damaged.

- Install return spring and spring retainer in clutch drum. Place snap ring on spring retainer. Using spring compressor, compress return spring. Install snap ring. Remove spring compressor.

CAUTION: Disc spring on 2nd clutch is opposite all other clutch assemblies. Ensure clutch discs are soaked in Dexron-II ATF for at least 30 minutes before installing.

- Install disc spring. Ensure disc spring is installed in proper direction. See **Fig. 26**.
- Alternately install clutch plates and clutch discs starting with clutch plate. Install clutch end plate with flat side toward clutch disc. Install snap ring.
- Using dial indicator, measure clutch clearance between clutch end plate and top clutch disc. See **Fig. 27**. Zero dial indicator with clutch end plate lowered. Lift clutch end plate upward against snap ring. Distance measured is clutch clearance.
- Measure clutch clearance at 3 different locations. Clutch clearance should be within specification. See **CLUTCH CLEARANCE SPECIFICATIONS** table.
- If clutch clearance is not within specification, install different thickness clutch end plate. See **CLUTCH END PLATE SPECIFICATIONS** table.

NOTE: If thickest clutch end plate is installed and clutch clearance still exceeds specification, replace clutch discs and clutch plates.

CLUTCH CLEARANCE SPECIFICATIONS

Application	Clearance: In. (mm)
1st & 2nd Clutches	.026-.033 (.65-.85)

1995 Acura Integra GS-R

1995-96 AUTOMATIC TRANSMISSIONS SP7A & SX4A Overhaul

1st-Hold Clutch	.020-.031 (.50-.80)
3rd & 4th Clutches	.016-.024 (.40-.60)

CLUTCH END PLATE SPECIFICATIONS (1995)

Plate No.	Part Number	Thickness: In. (mm)
1st Clutch		
1	22551-PF4-000	.083 (2.10)
2	22552-PF4-000	.087 (2.20)
3	22553-PF4-000	.091 (2.30)
4	22554-PF4-000	.094 (2.40)
5	22555-PF4-000	.098 (2.50)
6	22556-PF4-000	.102 (2.60)
7	22557-PF4-000	.106 (2.70)
8	22558-PF4-000	.110 (2.80)
9	22559-PF4-000	.114 (2.90)
10	22560-PF4-000	.118 (3.00)
11	22561-PF4-000	.122 (3.10)
12	22562-PF4-000	.126 (3.20)
13	22563-PF4-000	.130 (3.30)
14	22564-PF4-000	.134 (3.40)
1st-Hold Clutch		
1	22551-PS5-003	.083 (2.10)
2	22552-PS5-003	.087 (2.20)
3	22553-PS5-003	.091 (2.30)
4	22554-PS5-003	.094 (2.40)
5 (No Mark)	22555-PS5-003	.098 (2.50)
6	22556-PS5-003	.102 (2.60)
7	22557-PS5-003	.106 (2.70)
2nd, 3rd & 4th Clutches		
1	22551-P56-N00	.083 (2.10)
2	22552-P56-N00	.087 (2.20)
3	22553-P56-N00	.091 (2.30)
4	22554-P56-N00	.094 (2.40)
5	22555-P56-N00	.098 (2.50)
6	22556-P56-N00	.102 (2.60)
7	22557-P56-N00	.106 (2.70)
8	22558-P56-N00	.110 (2.80)
9	22559-P56-N00	.114 (2.90)
10	22560-P56-N00	.118 (3.00)

CLUTCH END PLATE SPECIFICATIONS (1996)

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1995 Acura Integra GS-R

1995-96 AUTOMATIC TRANSMISSIONS SP7A & SX4A Overhaul

Plate No.	Part Number	Thickness: In. (mm)
1st-Hold Clutch		
1	22551-PS5-003	.083 (2.10)
2	22552-PS5-003	.087 (2.20)
3	22553-PS5-003	.091 (2.30)
4	22554-PS5-003	.094 (2.40)
5 (No Mark)	22555-PS5-003	.098 (2.50)
6	22556-PS5-003	.102 (2.60)
7	22557-PS5-003	.106 (2.70)
1st, 2nd, 3rd & 4th Clutches		
1	22551-P56-N00	.083 (2.10)
2	22552-P56-N00	.087 (2.20)
3	22553-P56-N00	.091 (2.30)
4	22554-P56-N00	.094 (2.40)
5	22555-P56-N00	.098 (2.50)
6	22556-P56-N00	.102 (2.60)
7	22557-P56-N00	.106 (2.70)
8	22558-P56-N00	.110 (2.80)
9	22559-P56-N00	.114 (2.90)
10	22560-P56-N00	.118 (3.00)

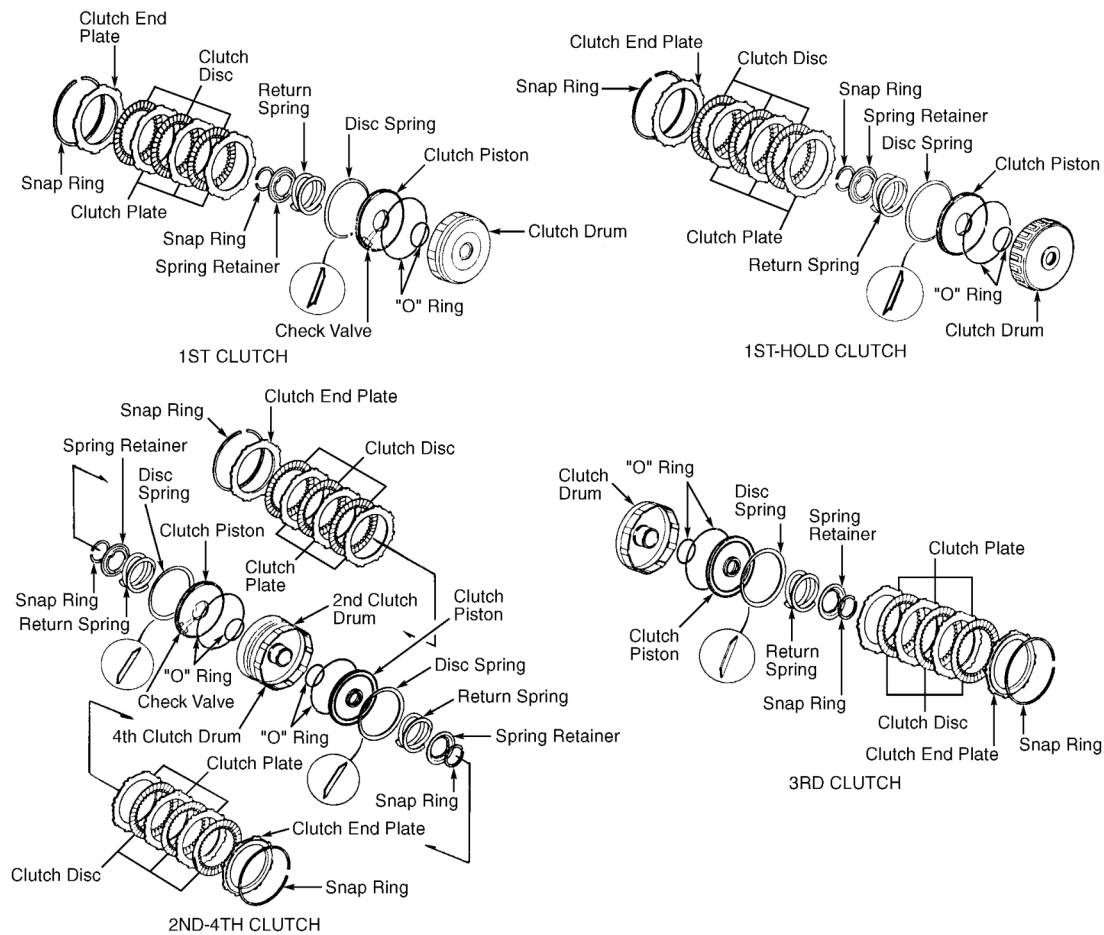
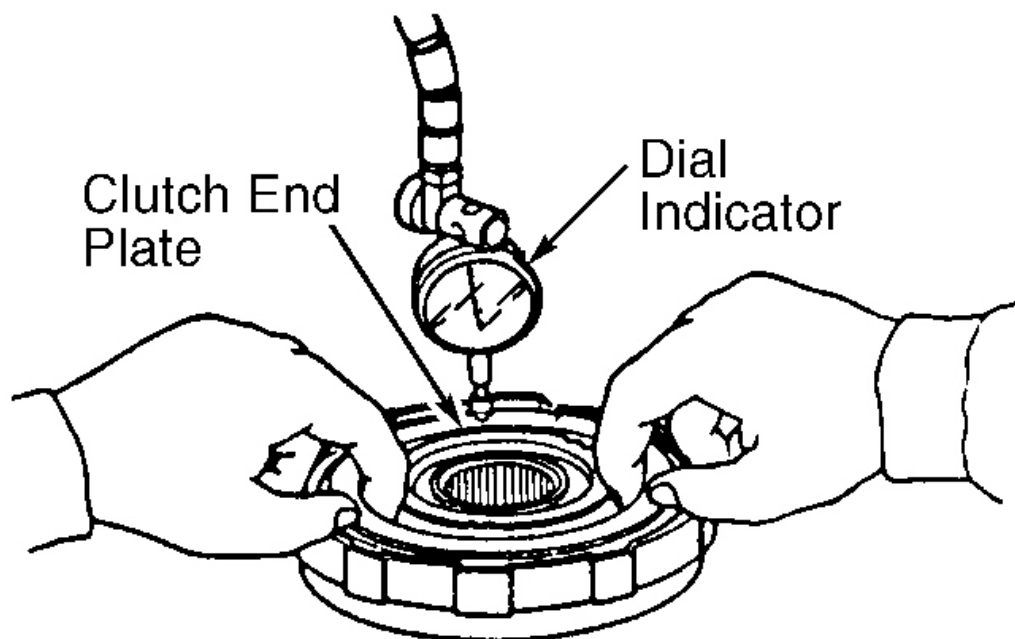


Fig. 26: Exploded View Of Clutch Assemblies
 Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 27: Measuring Clutch Clearance

Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE CONVERTER HOUSING

Disassembly

1. Remove countershaft bearing from torque converter housing using slide hammer (if necessary). Remove oil guide plate from torque converter housing. See **Fig. 14**.
2. Remove mainshaft bearing and oil seal using hammer and driver. Using hammer and drift, tap differential oil seal from torque converter housing.

Cleaning & Inspection

Clean components with solvent and dry with compressed air. Inspect torque converter housing for cracks and damage in bearing areas. Replace torque converter housing if damaged.

Reassembly

1. Coat components with Dexron-II ATF. To install mainshaft bearing, using hammer and driver, drive mainshaft bearing in torque converter housing until bearing bottoms in torque converter housing.
2. Using hammer and oil seal installer, install mainshaft oil seal in torque converter housing. Oil seal should

be flush with surface of torque converter housing.

3. To install countershaft bearing, install NEW oil guide plate in countershaft bearing bore of torque converter housing. Ensure oil guide plate is installed with tab in center facing upward (away from torque converter housing surface). See **Fig. 14**.
4. Using hammer and driver, drive countershaft bearing into torque converter housing. Ensure surface of countershaft bearing is flush with surface of torque converter housing.

CAUTION: If any differential components, transaxle housing, torque converter housing, snap rings or differential bearings are replaced, differential bearing side clearance must be checked. See DIFFERENTIAL BEARING SIDE CLEARANCE under TRANSAXLE REASSEMBLY.

5. Once correct differential bearing side clearance is obtained, install differential oil seal. Using hammer and oil seal installer, drive oil seal into torque converter housing until oil seal is fully seated.

TRANSAXLE HOUSING

Disassembly

1. To remove countershaft, mainshaft and sub-shaft bearings, expand snap ring retaining bearing in transaxle housing. Press bearings from transaxle housing.
2. DO NOT remove snap ring from transaxle housing unless necessary to clean groove in transaxle housing. Using hammer and drift, tap differential oil seal from transaxle housing.

Cleaning & Inspection

Clean components with solvent and dry with compressed air. Inspect transaxle housing for cracks and damage in bearing areas. Replace transaxle housing if damaged.

Reassembly

1. Coat components with Dexron-II ATF. To install bearings, expand snap ring. Using press and driver, press bearing part way into transaxle housing.

CAUTION: Ensure bearing is installed with groove facing toward outside of transaxle housing so snap ring will engage with bearing.

2. Release snap ring. Continue pressing bearing into transaxle housing until snap ring engages in bearing. Ensure snap ring is fully seated.

CAUTION: If differential carrier, differential bearings, transaxle housing, torque converter housing or snap rings are replaced, differential bearing side clearance must be checked. See DIFFERENTIAL BEARING SIDE CLEARANCE under TRANSAXLE REASSEMBLY.

3. Once correct differential bearing side clearance is obtained, install differential oil seal using hammer and

oil seal installer until oil seal is fully seated.

DIFFERENTIAL ASSEMBLY

Disassembly

1. Before disassembling differential assembly, check side gear backlash. Place differential assembly on "V" blocks with both axle shafts installed.
2. Install dial indicator with stem resting against pinion gear. See **Fig. 28** . Check side gear backlash. Side gear backlash should be .003-.006" (.08-.15 mm). If side gear backlash is not within specification, replace differential carrier.
3. If replacing differential bearings, use bearing puller to remove differential bearings from differential carrier. Remove bolts and ring gear.

NOTE: Ring gear bolts have left-hand threads.

4. If removing speedometer drive gear, remove snap ring, speedometer drive gear and roller. See **Fig. 29** .

Cleaning & Inspection

Clean components with solvent and dry with compressed air. Inspect components for wear and damage. Replace components as necessary.

Reassembly

1. Install roller for speedometer drive gear in differential carrier. Install speedometer drive gear with chamfered side on inside of gear toward differential carrier. See **Fig. 29** . Ensure cutout area on speedometer drive gear is aligned with roller.

CAUTION: Ensure speedometer drive gear is installed with chamfered side on inside of gear toward differential carrier.

2. Aligned hooked end of snap ring with pinion shaft on differential carrier and install snap ring. See **Fig. 30** . Ensure snap ring is installed so hooked end of snap ring is facing in proper direction. See **Fig. 30** .

CAUTION: Ensure ring gear is installed with chamfered side on inside of ring gear toward differential carrier.

3. Install ring gear on differential carrier with chamfered side on inside of ring gear toward differential carrier. See **Fig. 29** . Install and tighten ring gear bolts to specification. Refer to the **TORQUE SPECIFICATIONS** table. Using press, install NEW differential bearings on differential carrier (if removed).

CAUTION: If differential carrier, differential bearings, transaxle housing, torque converter housing or snap rings are replaced, differential bearing side

clearance must be checked. See **DIFFERENTIAL BEARING SIDE CLEARANCE** under **TRANSAXLE REASSEMBLY**.

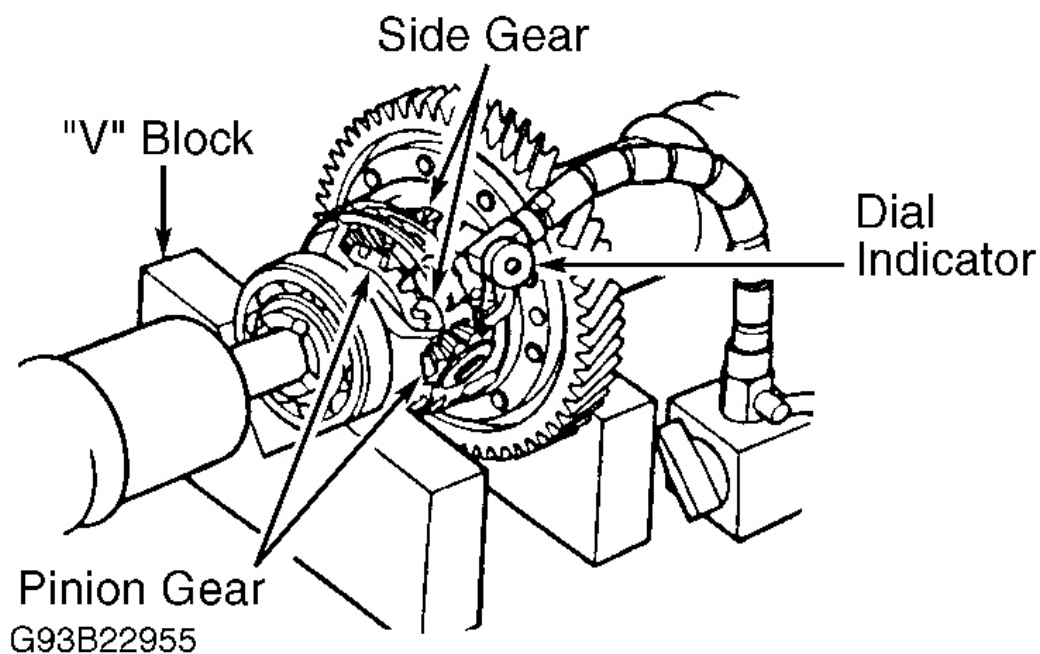
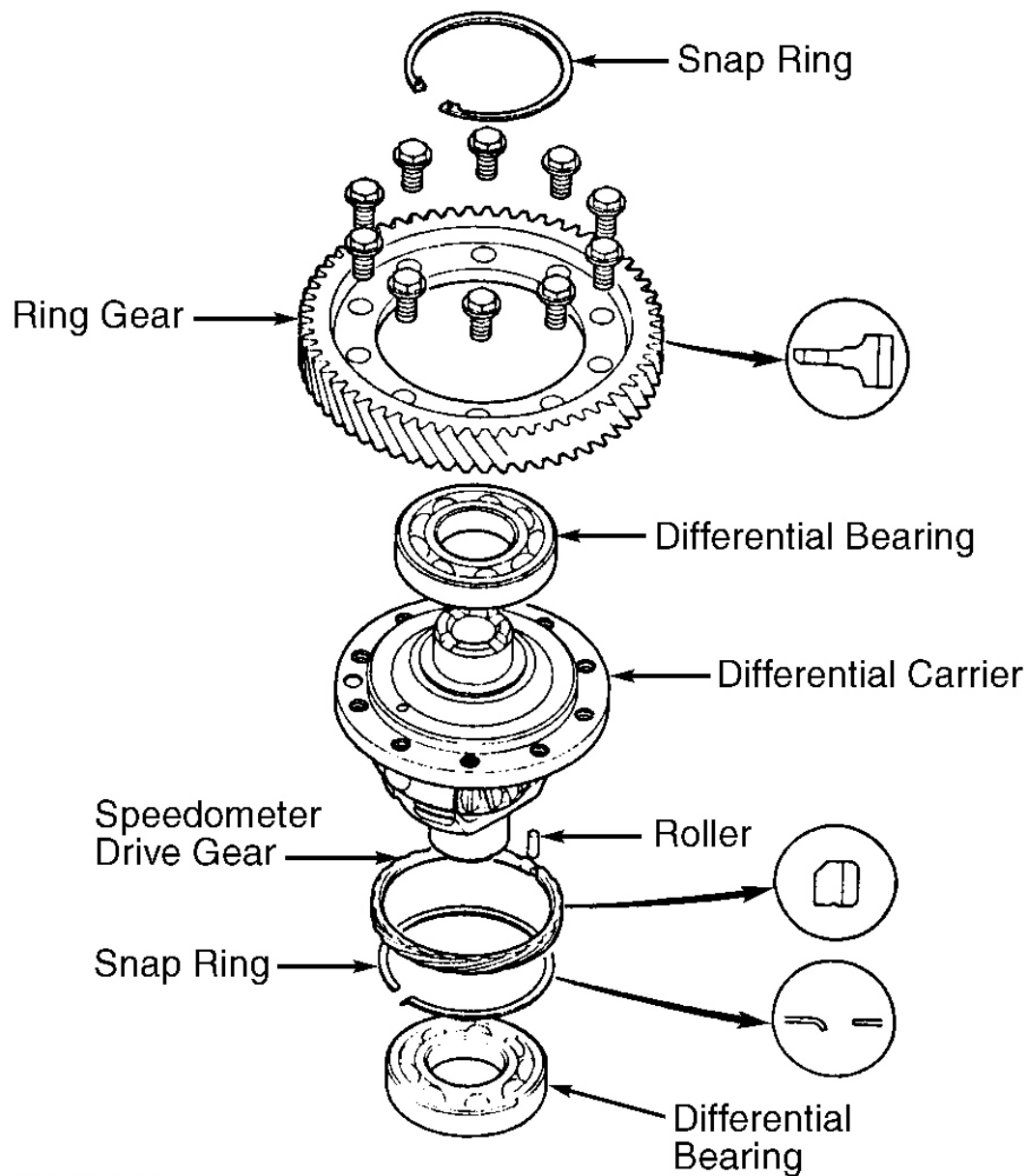


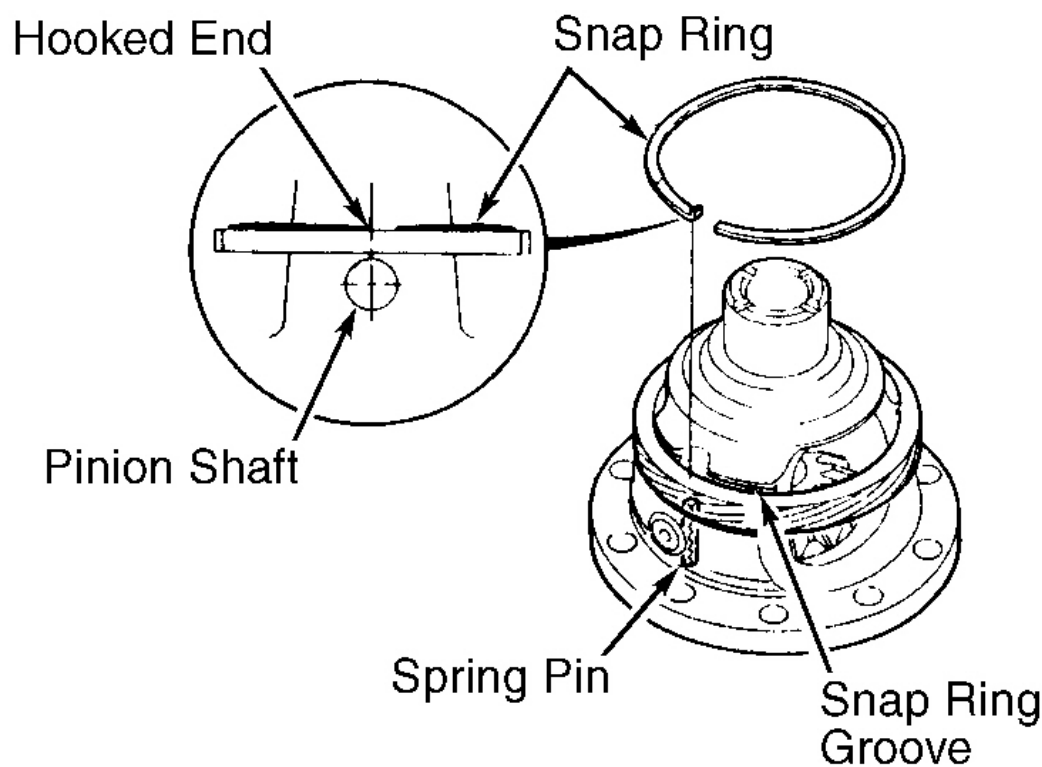
Fig. 28: Checking Side Gear Backlash

Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 29: Exploded View Of Differential Assembly
 Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 30: Installing Speedometer Drive Gear Retaining Snap Ring
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

TRANSAXLE REASSEMBLY

DIFFERENTIAL BEARING SIDE CLEARANCE

CAUTION: If differential carrier, differential bearings, transaxle housing, torque converter housing or snap rings are replaced, differential bearing side clearance must be checked.

1. Install .098" (2.50 mm) thick snap ring in transaxle housing. This is the snap ring that differential bearing seats against. Ensure snap ring is fully seated.
2. Tap differential assembly into torque converter housing using Driver (07746-0030100). Perform STEP 1. See **Fig. 31** . Ensure differential bearing on differential carrier is fully seated on torque converter housing.
3. Install gasket and transaxle housing on torque converter housing. Install and tighten transaxle housing bolts to 33 ft. lbs. (45 N.m) in 2 steps using proper sequence. See **Fig. 32** .
4. Using driver, tap on transaxle housing side of differential assembly to fully seat differential bearings.

Perform STEP 2. See **Fig. 31** . Ensure differential bearings are fully seated in both housing.

5. Using feeler gauge, measure differential bearing side clearance between snap ring and bearing on the transaxle housing. See **Fig. 33** . Replace snap ring if differential bearing side clearance exceeds .006" (.15 mm). Different thickness snap rings are available. See the **SNAP RING SPECIFICATIONS** table. Recheck differential bearing side clearance. Remove transaxle housing and differential assembly.

SNAP RING SPECIFICATIONS

Part Number	Thickness: In. (mm)
90414-689-000	.098 (2.50)
90415-689-000	.102 (2.60)
90416-689-000	.106 (2.70)
90417-689-000	.110 (2.80)
90418-689-000	.114 (2.90)
90419-689-000	.118 (3.00)

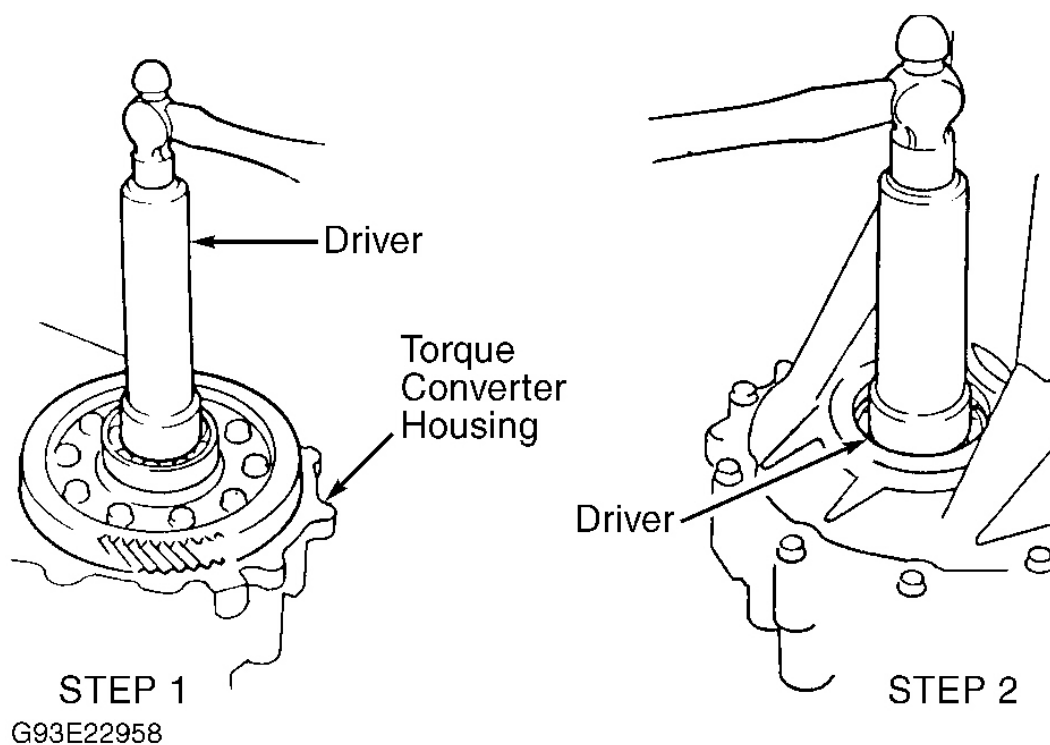
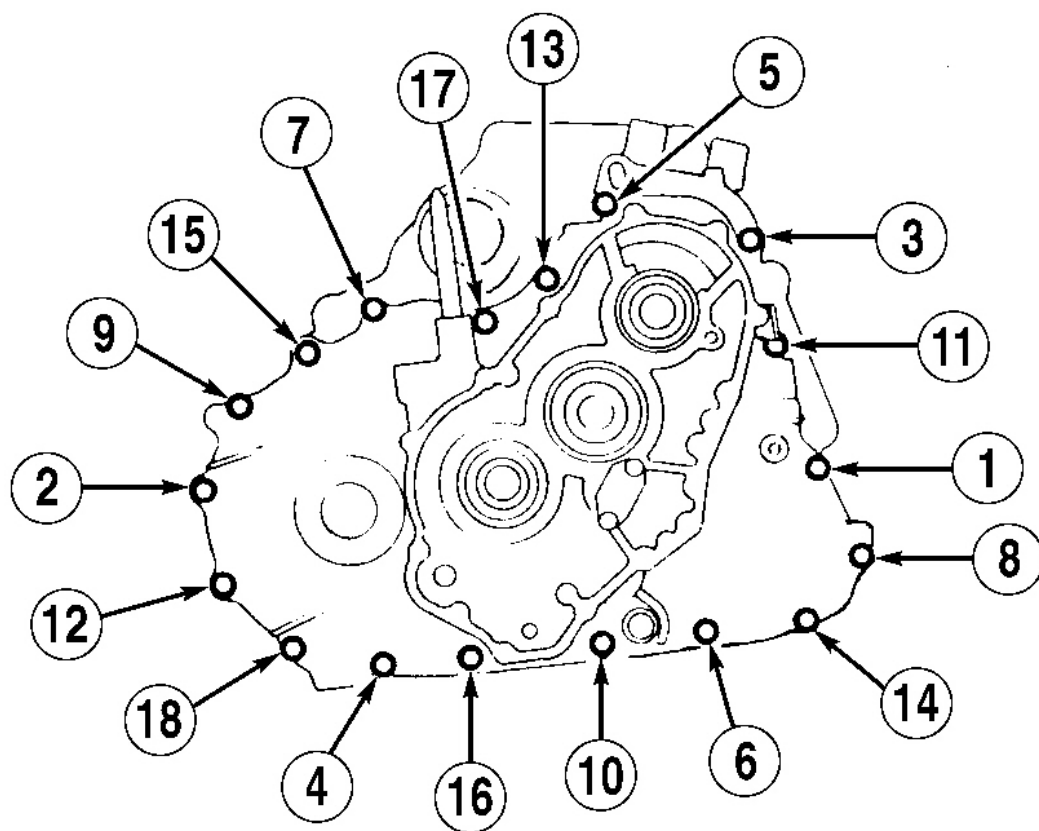


Fig. 31: Installing Differential Assembly

Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 32: Transaxle Housing Bolt Tightening Sequence
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

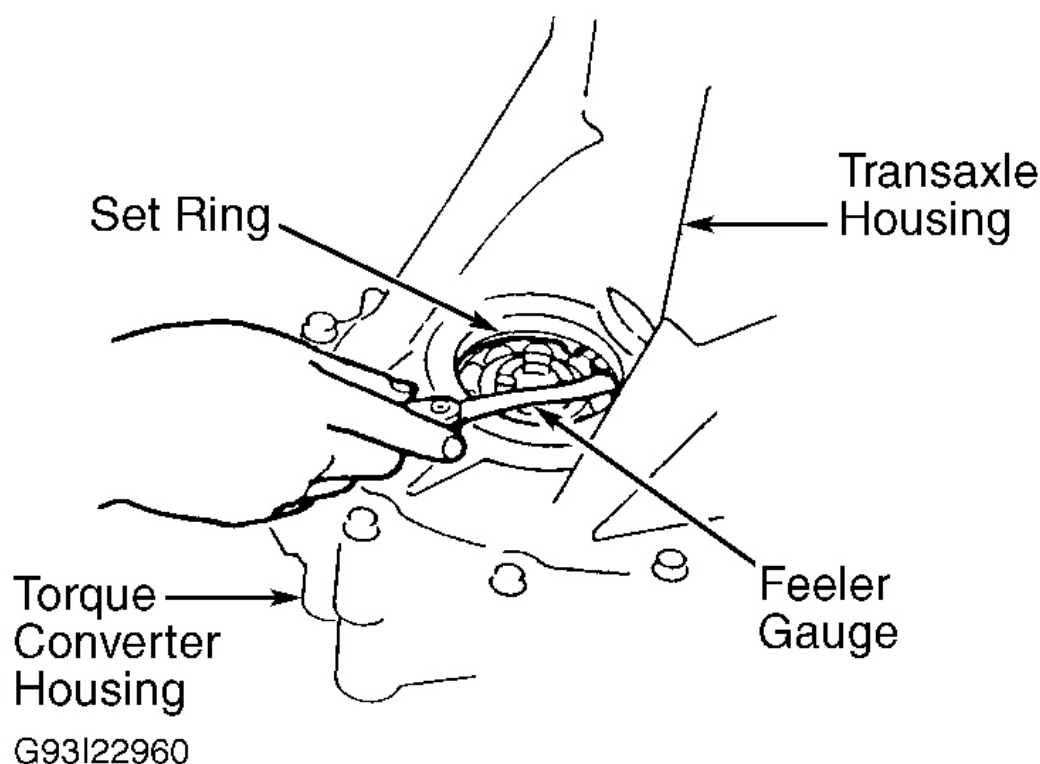


Fig. 33: Checking Differential Bearing Side Clearance
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

VALVE BODIES & INTERNAL COMPONENTS

CAUTION: If differential carrier, differential bearings, transaxle housing, torque converter housing or snap rings are replaced, differential bearing side clearance must be checked. See **DIFFERENTIAL BEARING SIDE CLEARANCE** .

NOTE: Coat all components with Dexron-II ATF before reassembly.

1. Install needle bearing on end of reverse idler gear shaft holder. Install reverse idler gear in transaxle housing (if removed). Install reverse idler gear shaft holder on transaxle housing. Install and tighten reverse idler gear shaft holder bolts to specification. See **TORQUE SPECIFICATIONS** .
2. Install magnet and suction pipe collar on torque converter housing. See **Fig. 14** . Install dowel pins and separator plate for main valve on torque converter housing.

CAUTION: Ensure oil pump driven gear is installed with groove and chamfered

side facing downward (toward main separator plate).

3. Install oil pump drive gear, oil pump driven gear and oil pump driven gear shaft. Install main valve body. Install and tighten main valve body bolts to specification.

CAUTION: Ensure oil pump gears rotate smoothly and oil pump driven gear shaft moves freely once main valve body is installed. If components do not operate correctly, loosen bolts, and realign oil pump gears and oil pump driven gear shaft. Failure to align oil pump driven gear shaft may result in seized oil pump gears or shaft.

4. Ensure check balls are installed in main valve body. See **Fig. 15** . Install separator plate, dowel pins and secondary valve body on main valve body. Install and tighten bolts to specification. Ensure check balls and 1st accumulator choke are installed in secondary valve body. See **Fig. 19** .
5. Install control shaft on torque converter housing so control shaft engages manual valve on main valve body. Install detent arm and detent arm shaft on main valve body. Hook detent spring on detent arm.
6. Install separator plate and servo body. Install and tighten bolts to specification. Using NEW "O" ring, install accumulator cover. Install and tighten bolts to specification.
7. Install servo detent base and fluid strainer. Install NEW bolt locks on servo detent base bolts. Install and tighten bolts to specification. Bend over tabs on bolt locks.
8. Install stator shaft, NEW "O" ring and stopper shaft. Install stopper shaft support on secondary valve body. Install regulator valve body. Install and tighten bolt to specification.
9. Install cooler check valve and torque converter check valve and springs on regulator valve body. See **Fig. 17** . Install separator plate, dowel pins, lock-up valve body and lubrication plate on regulator valve body. Install and tighten bolts to specification.
10. Install oil feedpipes in accumulator cover, servo detent base, servo body, lock-up valve body and main valve body. See **Fig. 14** .
11. Install sub-shaft and components in transaxle housing (if removed). See **SUB-SHAFT & COMPONENTS** under COMPONENT DISASSEMBLY & REASSEMBLY.
12. Install differential assembly in torque converter housing. Using Driver (07746-0030100), tap differential assembly into torque converter housing. Perform STEP 1. See **Fig. 31** . Ensure differential bearing on differential carrier is fully seated on torque converter housing.
13. Install mainshaft and countershaft as an assembly on torque converter housing. Rotate shift fork shaft on servo body so large chamfered hole aligns with hole in reverse shift fork.
14. Install reverse shift fork and reverse selector. See **Fig. 13** . Install reverse shift fork bolt and NEW bolt lock. Tighten bolt to specification. Bend over tabs on bolt lock.
15. Install countershaft reverse gear, needle bearing and countershaft reverse gear collar on countershaft. See **Fig. 13** . Install dowel pins and NEW gasket on torque converter housing.
16. Align spring pin on control shaft with groove on transaxle housing by rotating control shaft. See **Fig. 12** .
17. Install transaxle housing on torque converter housing. Install and tighten transaxle housing bolts to specification in 2 steps using proper sequence. See **Fig. 32** .
18. Install mount bracket on transaxle housing. See **Fig. 13** . Install and tighten mount bracket bolts to specification.

19. Install mainshaft holder on mainshaft. See **Fig. 10** . Install parking brake lever with parking brake stopper and parking brake lever spring on control shaft. See **Fig. 9** .
20. Install mainshaft 1st gear collar and thrust washer on mainshaft. Install countershaft 1st gear collar, needle bearing and countershaft 1st gear with one-way clutch and parking gear on countershaft.
21. Install parking pawl stopper, parking pawl shaft, parking pawl spring and parking pawl on transaxle housing.
22. Engage parking pawl with parking gear. Install old spring washer and lock nut on countershaft. Tighten nut to 76 ft. lbs. (103 N.m) to seat parking gear and countershaft 1st gear on countershaft. Remove old lock nut and spring washer from countershaft.
23. Install sub-shaft 1st gear on sub-shaft. Wrap splines on mainshaft with tape. Install NEW "O" rings on mainshaft. Install mainshaft 1st gear on mainshaft. See **Fig. 9** . Install needle bearing, thrust needle bearing, thrust washer and 1st clutch assembly on mainshaft.
24. Align hole in sub-shaft 1st gear with hole in transaxle housing. Install pin in sub-shaft 1st gear and transaxle housing to prevent sub-shaft 1st gear from rotating. See **Fig. 11** .

CAUTION: Ensure spring washers are installed in correct direction. See Fig. 11 .

25. Install NEW spring washers and NEW lock nuts on mainshaft, countershaft and sub-shaft. Ensure spring washers are installed with large area against the gear. See **Fig. 11** .

NOTE: Mainshaft and countershaft contain left-hand threads.

26. Tighten lock nuts on mainshaft, countershaft and sub-shaft to specification. Remove pin from sub-shaft 1st gear. Remove mainshaft holder.
27. Stake flange area of mainshaft lock nut against 1st clutch assembly. Stake thread area of countershaft lock nut against threads on countershaft. Stake thread area of sub-shaft lock nut against threads of sub-shaft.

CAUTION: Ensure all lock nuts are securely staked.

28. Place parking brake lever in "P" position. Ensure parking pawl engages parking gear. Measure parking brake stopper distance between parking pawl shaft and pin on the parking brake lever. See **Fig. 34** .
29. Parking brake stopper distance should be 2.87-2.91" (72.9-73.9 mm). If parking brake stopper distance is not within specification install different size parking brake stopper, and recheck parking brake stopper distance. Parking brake stopper is available in 3 different sizes. Consult parts department for parking brake stopper sizes.
30. Once correct parking brake stopper distance is obtained, install NEW bolt lock on bolt for parking brake stopper. Tighten parking brake stopper bolt to specification. Bend over tabs on bolt lock.
31. Using NEW gasket, install right side cover and right side cover protector. Install and tighten bolts to specification. Install throttle control lever with spring on throttle control shaft. Install and tighten bolt to specification.
32. To install remaining components, reverse removal procedure. Use NEW seal washers when installing

joint bolts for cooler pipes. Use NEW "O" ring when installing mainshaft or countershaft speed sensors. Tighten all fasteners to specification.

CAUTION: If transaxle failure existed, flush oil cooler. See OIL COOLER FLUSHING under ON-VEHICLE SERVICE.

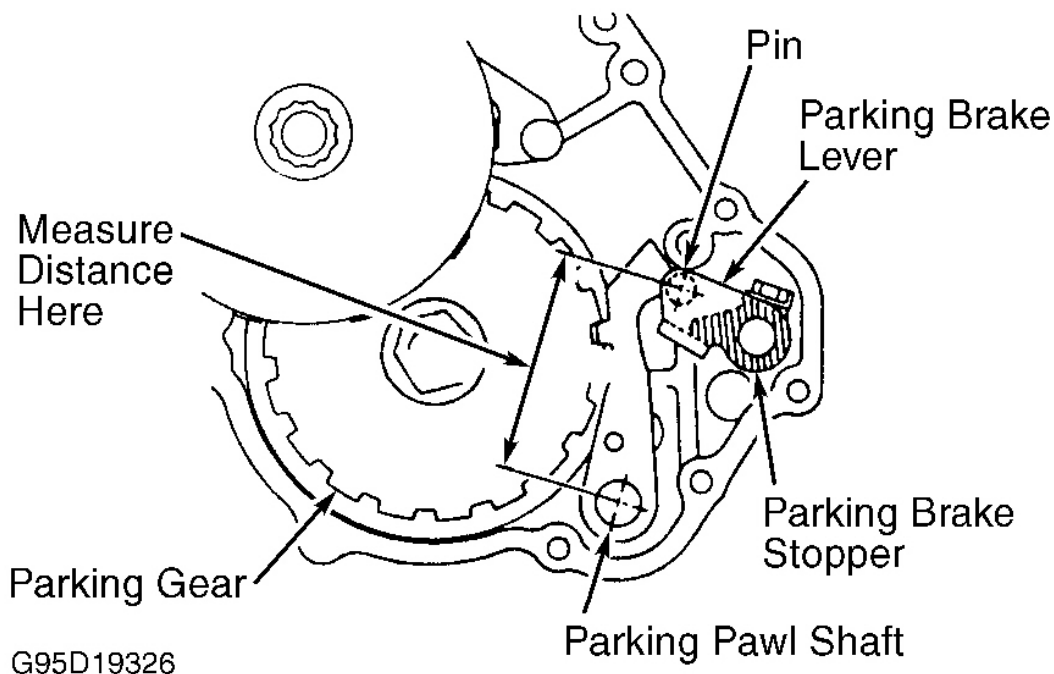


Fig. 34: Measuring Parking Brake Stopper Distance
Courtesy of AMERICAN HONDA MOTOR CO., INC.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Application	Ft. Lbs. (N.m)
Countershaft Lock Nut	76 (103)
Drain Plug	36 (49)
Joint Bolt	21 (29)
Mainshaft Lock Nut	58 (78)
Mount Bracket Bolt	47 (64)
Parking Brake Stopper Bolt	10 (14)
Pressure Tap Plug	13 (18)
Reverse Shift Fork Bolt	10 (14)

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Ring Gear Bolt	74 (100)
Sub-Shaft Lock Nut	69 (94)
Transaxle Housing Bolt ⁽¹⁾	33 (45)
Vehicle Speed Sensor Bolt	16 (22)
INCH Lbs. (N.m)	
Accumulator Cover Bolt	106 (12.0)
Countershaft Speed Sensor Bolt	106 (12.0)
Lock-Up Control Solenoid Valve Assembly Bolt	106 (12.0)
Lock-Up Valve Body Bolt	106 (12.0)
Mainshaft Speed Sensor Bolt	106 (12.0)
Main Valve Body Bolt	106 (12.0)
Needle Bearing Stopper Bolt	106 (12.0)
Regulator Valve Body Bolt	106 (12.0)
Reverse Idler Gear Shaft Holder Bolt	106 (12.0)
Right Side Cover Bolt	106 (12.0)
Secondary Valve Body Bolt	106 (12.0)
Servo Body Bolt	106 (12.0)
Servo Detent Base Bolt	106 (12.0)
Shift Control Solenoid Valve Assembly Bolt	106 (12.0)
Stopper Bolt	106 (12.0)
Throttle Cam Stopper Bolt	106 (12.0)
Throttle Control Lever Bolt	69 (7.8)
(1) Tighten bolts to specification in sequence. See Fig. 32 .	

TRANSAXLE SPECIFICATIONS

TRANSAXLE SPECIFICATIONS

Application	Specification - In. (mm)
Clutch Clearance	
1st & 2nd Clutches	.026-.033 (.65-.85)
1st-Hold Clutch	.020-.031 (.50-.80)
3rd & 4th Clutches	.016-.024 (.40-.60)
Differential Bearing Side Clearance	⁽¹⁾ .006 (.15)
Differential Side Gear Backlash	.003-.006 (.08-.15)
Gear Clearances	
Countershaft 2nd Gear	.002-.005 (.05-.13)
Mainshaft 2nd Gear-To-3rd Gear	.002-.005 (.05-.13)
Oil Pump Side Clearances	
Oil Pump Drive Gear	.0083-.0104 (.210-.265)
Oil Pump Driven Gear	.0028-.0049 (.070-.125)

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Oil Pump Thrust Clearance

Standard	.0010-.0020 (.030-.050)
Wear Limit	.0028 (.070)
Parking Brake Stopper Distance	2.87-2.91 (72.9-73.9)

(1) This is the maximum clearance. Replace snap ring with different thickness snap ring if clearance exceeds specification.