

## 2003-06 TRANSMISSION

### Automatic Transmission - Element

## AUTOMATIC TRANSMISSION

### SPECIAL TOOLS

#### Fig. 1: Special Tools Specifications

Courtesy of AMERICAN HONDA MOTOR CO., INC.

### GENERAL TROUBLESHOOTING INFORMATION

#### How to Check for DTCs with the Honda Diagnostic System

When the powertrain control module (PCM) senses an abnormality in the input or output systems, the D indicator (A) in the gauge assembly (B) will usually blink.

#### Fig. 2: Identifying Blinking Of D Indicator In Gauge Assembly

Courtesy of AMERICAN HONDA MOTOR CO., INC.

When the Honda Diagnostic System (HDS) is connected to the data link connector (DLC) (A) (located under the driver's side of the dashboard), it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II) and appropriate menu is selected.

#### Fig. 3: Identifying Data Link Connector

Courtesy of AMERICAN HONDA MOTOR CO., INC.

If the D indicator or malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS Help menu for specific instructions.)
2. Turn the ignition switch ON (II), select A/T system and observe the DTC in the DTCs MENU on the HDS screen.
3. Record all fuel and emissions DTCs, A/T DTCs, and freeze data.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700, DTC P0700 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the **DTC TROUBLESHOOTING INDEX** . If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

### Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will not trigger diagnostic trouble codes (DTCs) or cause the D indicator to blink. If the malfunction indicator lamp (MIL) was reported on or the D indicator has been blinking, check for DTCs. If the vehicle has an abnormal symptom, and there are no DTCs stored, go to the **SYMPTOM TROUBLESHOOTING INDEX** . Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.

#### How to Check for DTCs with the SCS Mode (retrieving the flash codes)

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge assembly (B) will usually blink.

#### **Fig. 4: Identifying Blinking Of D-Indicator In Gauge Assembly** **Courtesy of AMERICAN HONDA MOTOR CO., INC.**

When the D indicator has been reported on, connect the HDS to the DLC (A) (located under the driver's side of the dashboard). Turn the ignition switch ON (II), select SCS mode, then the D indicator will indicate (blink) the DTC.

#### **Fig. 5: Identifying Data Link Connector** **Courtesy of AMERICAN HONDA MOTOR CO., INC.**

If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS Help menu for specific instructions.)
2. Turn the ignition switch ON (II), select SCS mode, then observe the D indicator in the gauge assembly. Codes 1 through 9 are indicated by individual short blinks. Codes 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

#### **Example: DTC 1-1**

#### **Fig. 6: Blinking Pattern Of MIL** **Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Record all fuel and emissions DTCs and A/T DTCs.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except DTC 70, DTC 70 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTC. If the A/T DTC returns, go to the **DTC TROUBLESHOOTING INDEX** . If the DTC does not return, there was an

intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

#### How to Troubleshoot Circuits at the PCM

### Special Tools Required

Backprobe set 07SAZ-001000A (two required)

1. Remove the glove box stops, then open the glove box.
2. Jump the SCS line with the HDS.
3. Remove the 20P harness connector (A) from its bracket.

#### **Fig. 7: Removing 20P Harness Connector From Bracket And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Disconnect all PCM connectors.
5. Remove the relays from the glove box frame.
6. Loosen the mounting nut (B) on the lower right of the PCM (E), and remove the mounting bolt (C) and nut (D) on the left of the PCM.
7. Lift the PCM up to clear the mounting nut on the lower right of the PCM, then pull out the PCM.
8. Reconnect all PCM connectors, and exit the SCS menu.
9. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a multimeter (C).

#### **Fig. 8: Connecting Backprobe Adapters To Stacking Patch Cords, And Cords To Multimeter**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.
11. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

#### DTC Clear Procedure

1. Connect the HDS to the DLC.
2. Turn the ignition switch ON (II).
3. Clear the DTC(s) on the HDS screen.

**PCM Reset Procedure**

1. Connect the HDS to the DLC.
2. Turn the ignition switch ON (II).
3. Reset the PCM with the HDS.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II), and wait for 30 seconds.
6. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
7. Do the PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE** ).

**OBD Status**

The OBD Status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully finished. The results of diagnostic tests for the DTC are displayed as:

- **PASSED:** On Board Diagnosis is successfully finished.
- **FAILED:** On Board Diagnosis has finished but failed.
- **NOT COMPLETED:** The On Board diagnosis was running but is out of the enable conditions of the DTC.

**PCM Updating and Substitution for Testing****Special Tools Required**

Honda Interface Module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good PCM in a troubleshooting procedure. Update the PCM only if the PCM does not already have the latest software loaded.

Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF, the PCM can be damaged.

**How to Update the PCM****NOTE:**

- **To ensure the latest program is installed, update the PCM whenever it is substituted or replaced.**
- **You cannot update a PCM with the program it already has. It will only accept a new program.**
- **Before you update the PCM, make sure the vehicle's battery is fully charged.**
- **To prevent PCM damage, do not operate any electrical**

**system; audio system, brakes, air conditioning, power windows, moonroof, and door locks, during the update.**

- **If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the DLC. This will prevent PCM damage.**

1. Turn the ignition switch ON (II). Do not start the engine.
2. Connect the Honda interface module (HIM) to the DLC located under the driver's side of the dashboard.
3. Update the PCM according to the procedures described on the HIM label. If the software in the PCM is the latest, replace the PCM.

#### **How to Substitute the PCM**

1. Connect the HDS to the DLC.
2. Turn the ignition switch ON (II).
3. Turn the ignition switch OFF.
4. Jump the SCS line with the HDS.
5. Remove the PCM, and install a known-good PCM.
6. Open the SCS line with the HDS.
7. Turn the ignition switch ON.

**NOTE: For 2005-2006 models: DTC P0630 "VIN Not Programmed or Mismatch" will be stored because VIN has not been programmed into the PCM; ignore it, and continue this procedure.**

8. Input the VIN to the PCM with the HDS.
9. Rewrite the immobilizer code with the PCM replacement procedure in the HDS; it allows you to start the engine.
10. Reset the PCM with the HDS.
11. Do the PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE** )
12. Do the CKP pattern clear/CKP pattern learn procedure (see **CRANK (CKP) PATTERN CLEAR/CRANK (CKP) PATTERN** ).

#### **How to Remove and Install the PCM**

1. Connect the HDS to the DLC.
2. Jump the SCS line with the HDS.

3. Remove the glove box stops, then open the glove box.
4. Remove the 20P harness connector (A) from its bracket, and disconnect PCM connectors.

**Fig. 9: Removing 20P Harness Connector From Bracket And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Disconnect all PCM connectors.
6. Remove the relays from the glove box frame.
7. Loosen the PCM mounting nut (B) on the lower right of the PCM, and remove the mounting bolt (C) and nut (D) on the left of the PCM.
8. Lift the PCM up to clear the mounting nut on the lower right of the PCM, then pull out the PCM.
9. Install the PCM in the reverse order of the removal.

**How to End a Troubleshooting Session**

This procedure must be done after any troubleshooting.

1. Turn the ignition switch OFF.
2. Connect the HDS to the DLC.
3. Turn the ignition switch ON (II).
4. Clear the DTC(s) on the HDS screen.
5. Turn the ignition switch ON (II).
6. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on).
7. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (48 km/h) or in freeze data range.

**DTC TROUBLESHOOTING INDEX**

**NOTE:** Record all freeze data and review **General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION)** before you troubleshoot.

**DTC TROUBLESHOOTING (1 OF 3)**

DTC <sup>(1)</sup>	D Indicaor	MIL	Detection Item
<b>P0705</b> (5-2) (2)	Blinks	ON	Transmission range switch (multiple shift-position input)
<b>P0706</b> (6-2)	OFF	ON	Transmission range switch (open)

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<b>P0711</b> (28-5) (2)	Blinks	OFF	ATF temperature sensor (range/performance)
<b>P0712</b> (28-3) (2)	Blinks	OFF	ATF temperature sensor (short)
<b>P0713</b> (28-4) (2)	Blinks	OFF	ATF temperature sensor (open)
<b>P0716</b> (15-5) (2)	Blinks	ON	Input shaft (mainshaft) speed sensor (range/performance)
<b>P0717</b> (15-3) (2)	Blinks	ON	Input shaft (mainshaft) speed sensor (no signal input)
<b>P0718</b> (15-6) (2)	Blinks	ON	Input shaft (mainshaft) speed sensor (intermittent failure)
<b>P0721</b> (9-5) (2)	Blinks	ON	Output shaft (countershaft) speed sensor (range/performance)
<b>P0722</b> (9-3) (2)	Blinks	ON	Output shaft (countershaft) speed sensor (no signal input)
<b>P0723</b> (9-6) (2)	Blinks	ON	Output shaft (countershaft) speed sensor (intermittent failure)
<b>P0731</b> (64-1)	Blinks	OFF	1st gear incorrect ratio
<b>P0732</b> (64-2)	Blinks	OFF	2nd gear incorrect ratio
<b>P0733</b> (64-3)	Blinks	OFF	3rd gear incorrect ratio
<b>P0734</b> (64-4)	Blinks	OFF	4th gear incorrect ratio
<b>P0741</b> (40-3)	Blinks	OFF	Torque converter clutch circuit performance or stuck OFF
<b>P0747</b> (76-4)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck ON
<b>P0752</b> (70-4)	Blinks	ON	Shift solenoid valve A stuck ON
<b>P0761</b> (72-3)	Blinks	ON	Shift solenoid valve C stuck OFF

(1) The DTC in parentheses in the Honda code that you will see when you use the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector is connected to the HDS, and in SCS mode.

(2) This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** )

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**before you troubleshoot.****DTC TROUBLESHOOTING (2 OF 3)**

<b>DTC <sup>(1)</sup></b>	<b>D Indicator</b>	<b>MILL</b>	<b>Detection Item</b>
<b>P0771</b> (74-3)	Blinks	ON	Shift solenoid valve E stuck OFF
<b>P0776</b> (77-3)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck OFF
<b>P0777</b> (77-4)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck ON
<b>P0780</b> (45-1)	Blinks	ON	Shift control system
<b>P0796</b> (78-3)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck OFF
<b>P0797</b> (78-4)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck ON
<b>P0812</b> (62-2) (2)	Blinks	OFF	Transmission range switch ATP RVS switch
<b>P0842</b> (25-3) (2)	Blinks	ON	2nd clutch transmission fluid pressure switch (short or stuck ON)
<b>P0843</b> (25-4) (2)	Blinks	ON	2nd clutch transmission fluid pressure switch (open or stuck OFF)
<b>P0847</b> (26-3) (2)	Blinks	OFF	3rd clutch transmission fluid pressure switch (short or stuck ON)
<b>P0848</b> (26-4) (2)	Blinks	OFF	3rd clutch transmission fluid pressure switch (open or stuck OFF)
<b>P0962</b> (16-3) (2)	Blinks	ON	A/T clutch pressure control solenoid valve A (open/short)
<b>P0963</b> (16-4) (2)	Blinks	ON	A/T clutch pressure control solenoid valve A
<b>P0966</b> (23-3) (2)	Blinks	ON	A/T clutch pressure control solenoid valve B (open/short)
<b>P0967</b> (23-4) (2)	Blinks	ON	A/T clutch pressure control solenoid valve B
<b>P0970</b> (29-3) (2)	Blinks	ON	A/T clutch pressure control solenoid valve C (open/short)
<b>P0971</b> (29-4) (2)	Blinks	ON	A/T clutch pressure control solenoid valve C
<b>P0973</b> (7-3)	Blinks	ON	Shift solenoid valve A (short)



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(2)

(1) The DTC in parentheses in the Honda code that you will see when you use the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector is connected to the HDS, and in SCS mode.

(2) This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION**) before you troubleshoot.

### DTC TROUBLESHOOTING (3 OF 3)

DTC <sup>(1)</sup>	D Indicator	MILL	Detection Item
<b>P0974</b> (7-4) (2)	Blinks	ON	Shift solenoid valve A (open)
<b>P0976</b> (8-3) (2)	Blinks	ON	Shift solenoid valve B (short)
<b>P0977</b> (8-4) (2)	Blinks	ON	Shift solenoid valve B (open)
<b>P0979</b> (22-3) (2)	Blinks	ON	Shift solenoid valve C (short)
<b>P0980</b> (22-4) (2)	Blinks	ON	Shift solenoid valve C (open)
<b>P0985</b> (61-3) (2)	Blinks	ON	Shift solenoid valve E (short)
<b>P0986</b> (61-4) (2)	Blinks	ON	Shift solenoid valve E (open)
<b>P1731</b> (45-3)	Blinks	ON	Shift control system <ul style="list-style-type: none"> <li>• Shift solenoid valve E stuck ON               <ul style="list-style-type: none"> <li>• Shift valve E stuck</li> </ul> </li> <li>• A/T clutch pressure control solenoid valve A stuck OFF               <ul style="list-style-type: none"> <li>• CPC valve A stuck</li> </ul> </li> </ul>
<b>P1732</b> (45-4)	Blinks	ON	Shift control system <ul style="list-style-type: none"> <li>• Shift solenoid valves B or C stuck ON               <ul style="list-style-type: none"> <li>• Shift valves B or C stuck</li> </ul> </li> </ul>

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<b>P1735</b> (45-7)	Blinks	ON	<p style="text-align: center;">Shift control system</p> <ul style="list-style-type: none"> <li>• Shift solenoid valves B or C stuck OFF                             <ul style="list-style-type: none"> <li>• Shift solenoid valve E stuck ON                                     <ul style="list-style-type: none"> <li>• Shift valves B, C, or E stuck</li> </ul> </li> </ul> </li> <li>• A/T clutch pressure control solenoid valve A stuck OFF                             <ul style="list-style-type: none"> <li>• CPC valve A stuck</li> </ul> </li> </ul>
<b>P1736</b> (45-8)	Blinks	ON	<p style="text-align: center;">Shift control system</p> <ul style="list-style-type: none"> <li>• Shift solenoid valve B stuck OFF</li> <li>• Shift solenoid valve E stuck ON                             <ul style="list-style-type: none"> <li>• Shift valve B or E stuck</li> </ul> </li> <li>• A/T clutch pressure control solenoid valve A stuck OFF                             <ul style="list-style-type: none"> <li>• CPC valve A stuck</li> </ul> </li> </ul>

(1) The DTC in parentheses in the Honda code that you will see when you use the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector is connected to the HDS, and in SCS mode.

(2) This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

### SYMPTOM TROUBLESHOOTING INDEX

#### SYMPTOM TROUBLESHOOTING

Symptom	Probable cause(s)	Notes
When you turn the ignition switch ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	Communication line between multiplex control unit and gauge assembly defective	Check if the MIL indicates a code for the communication line between the multiplex control unit and gauge assembly (see <b><u>TROUBLESHOOTING</u></b> ).
D, 2, or 1 indicator does not come on when the shift lever is in that	Communication line between multiplex control unit and gauge assembly defective	Check if the MIL indicates a code for the communication line between the multiplex control unit and gauge assembly (see <b><u>TROUBLESHOOTING</u></b> ).

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position		
The transmission still shifts into 4th gear in D even though the O/D switch is pushed	A problem in the O/D switch circuit	Check the O/D switch circuit (see <b><u>O/D SWITCH CIRCUIT TROUBLESHOOTING</u></b> ).
Shift lever cannot be moved from P while you are pressing on the brake pedal	A problem in the shift lock system (interlock system)	Check the interlock system - shift lock system circuit (see <b><u>SHIFT LOCK SYSTEM CIRCUIT TROUBLESHOOTING</u></b> ).
Ignition switch cannot be moved from ACC (I) to LOCK (0) (key is pushed in, shift lever in P)	A problem in the key interlock system (interlock system)	Check the interlock system - key interlock system circuit (see <b><u>KEY INTERLOCK SYSTEM CIRCUIT TROUBLESHOOTING</u></b> ).
Engine runs, but vehicle does not move in any gear	<ol style="list-style-type: none"> <li>1. Low ATF level</li> <li>2. Shift cable broken or out of adjustment</li> <li>3. Connection between the shift cable at transmission or body is worn</li> <li>4. ATF pump worn or binding</li> <li>5. Regulator valve stuck or spring worn</li> <li>6. ATF strainer clogged</li> <li>7. Mainshaft worn or damaged</li> <li>8. Final gears worn or damaged</li> <li>9. Transmission-to-engine</li> </ol>	<ul style="list-style-type: none"> <li>• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines.</li> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.</li> <li>• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak.             <ul style="list-style-type: none"> <li>• Check the line pressure.</li> </ul> </li> <li>• Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools.</li> <li>• Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid</li> </ul>

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	<p style="text-align: center;">assembly error</p> <p style="text-align: center;">10. Axle disengaged</p>	<p style="text-align: center;">return passage and result in damage.</p> <ul style="list-style-type: none"> <li>● Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter.</li> <li>● Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and clean the torque converter, cooler, and lines.</li> </ul>
<p>Vehicle moves in 2 and Ft, but not in D or 1</p>	<ol style="list-style-type: none"> <li>1. 1st accumulator defective</li> <li>2. 1st gears worn or damaged</li> <li>3. 1st clutch defective</li> </ol>	<ul style="list-style-type: none"> <li>● Check the 1st clutch pressure.</li> <li>● Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</li> <li>● Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover.             <ul style="list-style-type: none"> <li>● Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.</li> </ul> </li> </ul>
<p>Vehicle moves in D, 1, and R, but not in 2</p>	<ol style="list-style-type: none"> <li>1. 2nd accumulator defective</li> <li>2. 2nd gears worn or damaged</li> </ol>	<ul style="list-style-type: none"> <li>● Check the 2nd clutch pressure.</li> <li>● Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the</li> </ul>

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	<p style="text-align: center;">3. 2nd clutch defective</p>	<p style="text-align: center;">clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</p>
<p>Vehicle moves in D, 2, and 1, but not in R</p>	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> <li>2. Shift fork shaft stuck</li> <li>3. Shift valve E defective</li> <li>4. 4th/reverse accumulator defective</li> <li>5. 4th clutch defective</li> <li>6. Reverse gears worn or damaged</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the shift solenoid valve E for seizure, and O-rings for wear and damage.</li> <li>• Check for a missing shift fork bolt on the shift fork shaft.             <ul style="list-style-type: none"> <li>• Check the 4th clutch pressure.</li> </ul> </li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</li> <li>• Inspect the reverse selector gear teeth chambers, and inspect the engagement teeth chambers of the countershaft 4th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes a clicking, grinding, or whirring noise, also replace the mainshaft 4th gear, reverse idler gear, and countershaft 4th gear.</li> </ul>
<p>Poor</p>	<ol style="list-style-type: none"> <li>1. Low ATF level</li> </ol>	<ul style="list-style-type: none"> <li>• Check the ATF level, and check the</li> </ul>

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<p>acceleration; flares when starting off in D; stall speed high in 2 and 1, and in D in 1st and 2nd</p>	<ol style="list-style-type: none"> <li>2. Shift cable broken or out of adjustment</li> <li>3. ATF pump worn or binding</li> <li>4. Regulator valve stuck or spring worn</li> <li>5. ATF strainer clogged</li> <li>6. Torque converter check valve defective</li> </ol>	<p>ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines.</p> <ul style="list-style-type: none"> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.</li> <li>• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak.</li> <li>• Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter.</li> </ul>
<p>Poor acceleration; flares when starting off in D; stall speed high when starting off in 2</p>	<p>2nd clutch defective</p>	<ul style="list-style-type: none"> <li>• Check the 2nd clutch pressure.</li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</li> </ul>
<p>Poor acceleration; flares when starting off in D; stall speed high in R</p>	<ol style="list-style-type: none"> <li>1. Shift cable broken or out of adjustment</li> <li>2. 4th clutch defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.</li> <li>• Check the 4th clutch pressure in the D and R positions.</li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for</li> </ul>

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		<p>wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</p>
<p>Poor acceleration; stall speed low in 2 and 1, and in D in 1 stand 2nd</p>	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> <li>2. Torque converter one-way clutch defective</li> <li>3. Engine output low</li> <li>4. Torque converter clutch piston defective</li> <li>5. Lock-up shift valve defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the shift solenoid valve E for seizure, and O-ring for wear and damage.</li> <li>• Replace the torque converter.</li> </ul>
<p>Poor acceleration; stall speed low in R</p>	<ol style="list-style-type: none"> <li>1. Engine output low</li> <li>2. Torque converter clutch piston defective</li> <li>3. Lock-up shift valve defective</li> </ol>	<p style="text-align: center;">Replace the torque converter.</p>
<p>Engine idle vibration</p>	<ol style="list-style-type: none"> <li>1. Misadjusted engine and transmission mounts</li> <li>2. Low ATF level</li> <li>3. Shift solenoid valve E defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check the ATF level, and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines.</li> <li>• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak.</li> </ul>

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	<ol style="list-style-type: none"> <li>4. Drive plate defective or transmission misassembled</li> <li>5. Engine output low</li> <li>6. Torque converter clutch piston defective</li> <li>7. ATF pump worn or binding</li> <li>8. Lock-up shift valve defective</li> </ol>	<ul style="list-style-type: none"> <li>• Inspect the ATF strainer for clogging with particles of steel or aluminum. If the ATF strainer is clogged, replace it, and clean the torque converter, cooler, and lines.</li> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the shift solenoid valve E for seizure, and O-rings for wear and damage.</li> <li>• Check for a misinstalled/damaged drive plate.             <ul style="list-style-type: none"> <li>• Adjust the engine and transmission mounts.</li> <li>• Replace the torque converter.</li> </ul> </li> </ul>
<p>Vehicle moves in N</p>	<ol style="list-style-type: none"> <li>1. Excessive ATF</li> <li>2. Foreign material in separator plate orifice</li> <li>3. Relief valve defective</li> <li>4. 1st clutch defective</li> <li>5. 2nd clutch defective</li> <li>6. 3rd clutch defective</li> <li>7. 4th clutch defective</li> <li>8. Clutch end-plate-to-top-disc clearance incorrect</li> <li>9. Needle bearing seized up, worn, or damaged</li> <li>10. Thrust washer seized up, worn, or damaged</li> </ol>	<ul style="list-style-type: none"> <li>• Check the ATF level, and drain the ATF if it is over-filled.</li> <li>• Check the 1st, 2nd, 3rd, and 4th clutch pressures.             <ul style="list-style-type: none"> <li>• Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for contamination is found, replace the torque converter.</li> </ul> </li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal (1st and 2nd) for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</li> </ul>



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		<ul style="list-style-type: none"> <li>• Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide.</li> <li>• Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.</li> <li>• Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide.</li> <li>• Replace the mainshaft if the bushing for the 3rd clutch feed pipe is loose or damaged.</li> </ul>
<p>Late shift after shifting from N to D, or excessive shock when shifted into D</p>	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> <li>2. A/T clutch pressure control solenoid valve A defective</li> <li>3. A/T clutch pressure control solenoid valve B defective</li> <li>4. A/T clutch pressure control solenoid valve C defective</li> <li>5. Shift cable broken or out of adjustment</li> <li>6. Connection between the shift cable and transmission or body is worn</li> <li>7. Input shaft (mainshaft) speed sensor defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure.</li> <li>• Check the input shaft (mainshaft) speed sensor and output shaft (countershaft) speed sensor installation.</li> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.             <ul style="list-style-type: none"> <li>• Check the 1st clutch pressure.</li> </ul> </li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</li> <li>• Inspect the 1st clutch feed pipe. If the</li> </ul>

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	<ol style="list-style-type: none"> <li>8. Output shaft (countershaft) speed sensor defective</li> <li>9. ATF temperature sensor defective</li> <li>10. Foreign material in separator plate orifice</li> <li>11. Servo control valve defective</li> <li>12. 1st accumulator defective</li> <li>13. 1st check ball stuck</li> <li>14. Lock-up shift valve defective</li> <li>15. 1st clutch defective</li> </ol>	<p>1st clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide.</p> <ul style="list-style-type: none"> <li>• Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.</li> </ul>
<p>Late shift after shifting from N to R, or excessive shock when shifted into R</p>	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> <li>2. A/T clutch pressure control solenoid valve A defective</li> <li>3. Shift cable broken or out of adjustment</li> <li>4. Connection between the shift cable at transmission or body is worn</li> <li>5. Input shaft (mainshaft) speed sensor defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure.</li> <li>• Check the input shaft (mainshaft) speed sensor and output shaft (countershaft) speed sensor installation.</li> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.</li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or</li> </ul>

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	<ol style="list-style-type: none"> <li>6. Output shaft (countershaft) speed sensor defective</li> <li>7. ATF temperature sensor defective</li> <li>8. Shift fork shaft stuck</li> <li>9. Foreign material in separator plate orifice</li> <li>10. Shift valve E defective</li> <li>11. 4th/reverse accumulator defective</li> <li>12. Lock-up shift valve defective</li> <li>13. 4th clutch defective</li> </ol>	<p>damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</p> <ul style="list-style-type: none"> <li>• Check for a missing shift fork bolt on the shift fork shaft.             <ul style="list-style-type: none"> <li>• Check the 4th clutch pressure.</li> </ul> </li> <li>• Inspect the servo valve and O-ring.</li> </ul>
<p>The transmission does not shift</p>	<ol style="list-style-type: none"> <li>1. Input shaft (mainshaft) speed sensor defective</li> <li>2. Output shaft (countershaft) speed sensor defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Check the input shaft (mainshaft) and output shaft (countershaft) speed sensor installation.</li> </ul>
<p>Excessive shock or flares on all upshifts and downshifts</p>	<ol style="list-style-type: none"> <li>1. A/T clutch pressure control solenoid valve B defective</li> <li>2. A/T clutch pressure control solenoid valve C defective</li> <li>3. Input shaft (mainshaft)</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure.</li> <li>• Check the input shaft (mainshaft) speed sensor and output shaft (countershaft) speed sensor installation.</li> </ul>

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	<p style="text-align: center;">speed sensor defective</p> <p>4. Output shaft (countershaft) speed sensor defective</p> <p>5. ATF temperature sensor defective</p> <p>6. Foreign material in separator plate orifice</p>	
<p>Excessive shock or flares on 1-2 upshift or 2-1 downshift</p>	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> <li>2. A/T clutch pressure control solenoid valve A defective</li> <li>3. A/T clutch pressure control solenoid valve B defective</li> <li>4. A/T clutch pressure control solenoid valve C defective</li> <li>5. 2nd clutch transmission fluid pressure switch defective</li> <li>6. Foreign material in separator plate orifice</li> <li>7. 1st accumulator defective</li> <li>8. 2nd accumulator defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure.</li> <li>• Check the 1st and 2nd clutch pressures.</li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end-plate.</li> <li>• Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide.             <ul style="list-style-type: none"> <li>• Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.</li> </ul> </li> </ul>

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	<ol style="list-style-type: none"> <li>9. 1st check ball stuck</li> <li>10. 2nd check ball stuck</li> <li>11. Lock-up shift valve defective</li> <li>12. 1st clutch defective</li> <li>13. 2nd clutch defective</li> </ol>	
<p>Excessive shock or flares on 2-3 upshift or 3-2 downshift</p>	<ol style="list-style-type: none"> <li>1. A/T clutch pressure control solenoid valve B defective</li> <li>2. A/T clutch pressure control solenoid valve C defective</li> <li>3. 3rd clutch transmission fluid pressure switch defective</li> <li>4. Foreign material in separator plate orifice</li> <li>5. 2nd accumulator defective</li> <li>6. 3rd accumulator defective</li> <li>7. 2nd check ball stuck</li> <li>8. 2nd clutch defective</li> <li>9. 3rd clutch defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure.</li> <li>• Check the 2nd and 3rd clutch pressures.</li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal (2nd) for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If they are OK, adjust the clearance with the clutch end-plate.</li> <li>• Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide.</li> <li>• Replace the mainshaft if the bushing for the 3rd clutch feed pipe is loose or damaged.</li> </ul>
<p>Excessive shock or flares on 3-4 upshift or 4-3</p>	<ol style="list-style-type: none"> <li>1. A/T clutch pressure control solenoid valve</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket</li> </ul>

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downshift	<p style="text-align: center;">B defective</p> <ol style="list-style-type: none"> <li>2. A/T clutch pressure control solenoid valve C defective</li> <li>3. Foreign material in separator plate orifice</li> <li>4. 3rd accumulator defective</li> <li>5. 4th accumulator defective</li> <li>6. 3rd clutch defective</li> <li>7. 4th clutch defective</li> </ol>	<p style="text-align: center;">and O-rings for wear and damage, and inspect the solenoid valves for seizure.</p> <ul style="list-style-type: none"> <li>• Check the 3rd and 4th clutch pressures.</li> <li>• Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer and retainer seal for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch waved-plate height. If the height is out of tolerance, replace the waved-plate. If they are OK, adjust the clearance with the clutch end-plate.</li> <li>• Inspect the 3rd clutch feed pipe. If the 3rd clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide.</li> <li>• Replace the mainshaft if the bushing for the 3rd clutch feed pipe is loose or damaged.</li> </ul>
Noise from transmission in all shift lever positions	<ol style="list-style-type: none"> <li>1. ATF pump worn or binding</li> <li>2. Mainshaft bearing, countershaft bearing, or secondary shaft bearing defective</li> </ol>	<ul style="list-style-type: none"> <li>• Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak.             <ul style="list-style-type: none"> <li>• Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools.                 <ul style="list-style-type: none"> <li>• Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it tops out, it will block the fluid return passage and result in damage.</li> </ul> </li> <li>• Inspect the ATF strainer for clogging with particles of steel or aluminum. If</li> </ul> </li> </ul>

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		<p>the ATF strainer is clogged, replace it, and clean the torque converter, cooler, and lines.</p> <ul style="list-style-type: none"> <li>• Inspect the mainshaft, countershaft, and secondary shaft for wear or damage.</li> </ul>
Vehicle does not accelerate above 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace the torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	<ul style="list-style-type: none"> <li>• Check for a misinstalled/damaged drive plate.</li> <li>• Adjust the engine and transmission mounts.</li> </ul>
Shift lever does not operate smoothly	<ol style="list-style-type: none"> <li>1. Transmission range switch defective or out of adjustment</li> <li>2. Shift cable broken or out of adjustment</li> <li>3. Connection between the shift cable and transmission or body is worn</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the transmission range switch for operation.</li> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.</li> </ul>
Transmission does not shift into P	<ol style="list-style-type: none"> <li>1. Shift cable broken or out of adjustment</li> <li>2. Connection between the shift cable and transmission or body is worn</li> <li>3. Park mechanism defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.</li> <li>• Check the park pawl spring installation and the park lever spring installation. If installation is incorrect, install the spring correctly. Make sure that the park lever stop is not installed upside down. Check the distance between the park pawl shaft and park lever roller pin. If the distance is out of tolerance, adjust the distance with the park lever stop.</li> </ul>
Torque converter clutch does not disengage	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket</li> </ul>

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	<ol style="list-style-type: none"> <li>2. A/T clutch pressure control solenoid valve A defective</li> <li>3. Torque converter clutch piston defective</li> <li>4. Lock-up shift valve defective</li> <li>5. Lock-up control valve defective</li> </ol>	<p>and O-rings for wear and damage, and inspect the solenoid valves for seizure.</p> <ul style="list-style-type: none"> <li>• Replace the torque converter.</li> </ul>
Torque converter clutch does not operate smoothly	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> <li>2. A/T clutch pressure control solenoid valve A defective</li> <li>3. Torque converter clutch piston defective</li> <li>4. Torque converter check valve defective</li> <li>5. Lock-up shift valve defective</li> <li>6. Lock-up control valve defective</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure.</li> <li>• Replace the torque converter.</li> </ul>
Torque converter clutch does not engage	<ol style="list-style-type: none"> <li>1. Shift solenoid valve E defective</li> <li>2. A/T clutch pressure control solenoid valve A defective</li> <li>3. Input shaft (mainshaft) speed sensor defective</li> <li>4. Output shaft</li> </ol>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the solenoid valve filter/gasket and O-rings for wear and damage, and inspect the solenoid valves for seizure.</li> <li>• Replace the torque converter.</li> <li>• Check the input shaft (mainshaft) speed sensor and output shaft (countershaft) speed sensor installation.</li> </ul>



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	<p>(countershaft) speed sensor defective</p> <p>5. Torque converter clutch piston defective</p> <p>6. Torque converter check valve defective</p> <p>7. Lock-up shift valve defective</p> <p>8. Lock-up control valve defective</p>	
A/T gear position indicator does not indicate shift lever positions	<p>1. Transmission range switch defective or out of adjustment</p> <p>2. Shift cable broken or out of adjustment</p> <p>3. Connection between the shift cable and transmission or body is worn</p>	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the transmission range switch operation.</li> <li>• Check for a loose shift cable at the shift lever and the transmission selector control lever.</li> </ul>
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	<ul style="list-style-type: none"> <li>• Check for a stored DTC, and check for loose connectors.</li> <li>• Inspect the transmission range switch operation.</li> <li>• Check the output shaft (countershaft) speed sensor installation.</li> </ul>
The engine does not rev to high RPM, and the transmission upshifts at low RPM	VTEC rocker arms defective	Check the VTEC rocker arms as described.

### SYSTEM DESCRIPTION

#### General Operation

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The automatic transmission is a combination of a 3-element torque converter and triple-shaft electronically controlled unit which provides 4 speeds forward and 1 reverse. The entire unit is positioned in line with the engine.

### **Torque Converter, Gears, and Clutches**

The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the engine crankshaft and turns as the engine turns. Around the outside of the torque converter is a ring gear which meshes with the starter pinion when the engine is being started. The entire torque converter assembly serves as a flywheel while transmitting power to the transmission mainshaft, the transmission has three parallel shafts; the mainshaft, the countershaft, and the secondary shaft. The mainshaft is in line with the engine crankshaft, and includes the 3rd and 4th clutches, and gears for 3rd, 4th, reverse, and idler. The mainshaft reverse gear is integral with the mainshaft 4th gear. The countershaft includes the gears for 1st, 2nd, 3rd, 4th, reverse, park, and the final drive. The final drive gear is integral with the countershaft. The countershaft 4th gear and the countershaft reverse gear can be locked to the countershaft providing 4th or reverse gear, depending on which way the selector is moved. The secondary shaft includes the 1st and 2nd clutches, and gears for 1st, 2nd, and idler. The idler shaft is located between the mainshaft and secondary shaft, and the idler gear transmits power between the mainshaft and the secondary shaft. The gears on the mainshaft and the secondary shaft are in constant mesh with those on the countershaft. When certain combinations of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, then to the secondary shaft to the countershaft or through the mainshaft to the countershaft to provide drive.

### **Electronic Control**

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located below the dashboard, behind the left side of the glove box.

### **Hydraulic Control**

The valve bodies include the main valve body, the regulator valve body, and the servo body. They are bolted to the torque converter housing. The main valve body contains the manual valve, the shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the torque converter check valve, lock-up shift valve, and the 1st accumulator. The servo body contains the servo valve, the CPB valve, accumulators for 2nd, 3rd, and 4th, and shift solenoid valves for A, B, C, and E. Fluid from the regulator passes through the manual valve to the various control valves. The 1st and 3rd clutches receive fluid from their respective feed pipes, and the 2nd and the 4th clutches receive fluid from the internal hydraulic circuit.

### **Shift Control Mechanism**

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To shift gears, the PCM controls shift solenoid valves A, B, C, and E, and A/T clutch pressure control solenoid valves A, B, and C, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port leading hydraulic pressure to the clutch. A/T clutch pressure control solenoid valves A, B, and C regulate their respective pressure, and pressurize the clutches to engage it and its corresponding gear. The pressures from the A/T clutch pressure control solenoid valves also apply to the shift valves to switch the port.

### Lock-up Mechanism

The lock-up mechanism operates in the D position (2nd, 3rd, and 4th) and the D position over drive off mode (3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and amount of the lock-up mechanism. When shift solenoid valve E is turned on by the PCM, shift solenoid valve E pressure switches the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve A and the lock-up control valve controls the amount of lock-up.

### Gear Selection

The shift lever has six positions; P: PARK, R: REVERSE, N: NEUTRAL, D: DRIVE 1st through 4th gear range with over drive mode, and 1st through 3rd gear range with overdrive OFF mode, 2: 2nd gear, and 1: 1st gear.

### GEAR SELECTION POSITION AND DESCRIPTION

Position	Description
P: PARK	Front wheels locked; park pawl engaged with park gear on countershaft. All clutches are released.
R: REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 4th clutch engaged.
N: NEUTRAL	All clutches are released.
D: DRIVE with over drive mode (1st through 4th)	General driving; starts off in 1st, shifts automatically to 2nd, 3rd, then 4th, depending on vehicle speed and throttle position. Downshifts through 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, and 4th gears.
D: DRIVE with over drive OFF mode (1st through 3rd)	For rapid acceleration at highway speeds and general driving, up-hill and down-hill driving; starts off in 1st, shifts automatically to 2nd, then 3rd, depending on vehicle speed and throttle position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 3rd gear.
2: SECOND	Used for engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear, does not shift up and down.

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1: FIRST

Used for engine braking; stays in 1st gear, does not shift up.

Starting is possible only in the P and N positions because of a slide-type neutral-safety switch.

### Automatic Transmission (A/T) Gear Position Indicator

The A/T gear position indicator in the instrument panel shows which shift lever position has been selected.

### Transfer Mechanism (4WD)

The transfer mechanism consists of the transfer drive gear on the differential, the transfer shaft, the transfer drive gear (hypoid gear), the transfer output shaft (hypoid gear), and the companion flange. The transfer mechanism assembly is on the rear of the transmission, beside the differential. The transfer drive gear on the differential drives the transfer shaft and transfer drive gear (hypoid gear), and the transfer drive gear (hypoid gear) drives the transfer output shaft (hypoid gear). Power is transmitted from the transfer drive gear on the differential to the rear differential via the transfer shaft and the propeller shaft.

### Clutches and Gears

The 4-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and steel plates together, locking them so they don't slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

#### 1st Clutch

The 1st clutch engages/disengages 1st gear, and is located at the top of the secondary shaft. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

#### 2nd Clutch

The 2nd clutch engages/disengages 2nd gear, and is located at the end of the secondary shaft, opposite the end cover. The 2nd clutch is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

#### 3rd Clutch

The 3rd clutch engages/disengages 3rd gear, and is located at the top of the mainshaft. The 3rd clutch is joined back-to-back to the 4th clutch. The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

**4th Clutch**

The 4th clutch engages/disengages 4th gear, as well as reverse gear, and is located at the top of the mainshaft. The 4th clutch is joined back-to-back to the 3rd clutch. The 4th clutch is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

**Gear Operation**

Gears on the mainshaft:

- 4th gear is engaged/disengaged with the mainshaft by the 4th clutch.
- 3rd gear is engaged/disengaged with the mainshaft by the 3rd clutch.
- Reverse gear is engaged/disengaged with the mainshaft by the 4th clutch.
- Idler gear is splined with the mainshaft, and rotates with the mainshaft.

Gears on the countershaft:

- Final drive gear is integral with the countershaft.
- 1st, 2nd, 3rd, and park gears are splined with the countershaft, and rotate with the countershaft.
- 4th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 4th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so that the 4th gear and reverse gear engage with the countershaft.

Gears on the secondary shaft:

- 1st gear is engaged/disengaged with the secondary shaft by the 1st clutch.
- 2nd gear is engaged/disengaged with the secondary shaft by the 2nd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.

The idler gear on the idler shaft transmits power between the mainshaft and the secondary shaft.

The reverse idler gear transmits power from the mainshaft reverse gear to the countershaft reverse gear, and changes rotational direction of the countershaft to reverse.

**Transmission Cutaway View**

**NOTE:** The illustration shows 4WD model; 2WD model does not have the transfer mechanism.

**Fig. 10: Transmission Cutaway View (4WD Model)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Power Flow****P Position**

Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

**N Position**

Engine power transmitted from the torque converter drives the mainshaft idler gear, the idler shaft idler gear, and the secondary shaft idler gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft.

In this position, the position of the reverse selector differs according to whether the shift lever shifted from the D or R position:

- When shifted from the D position, the reverse selector engages with the countershaft 4th gear and the reverse selector hub, and the 4th gear engages with the countershaft.
- When shifted from the R position, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.

**NOTE: The illustration shows 4WD model; 2WD model does not have the transfer mechanism.**

**Fig. 11: Identifying Automatic Transmission - Power Flow P And N Positions**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**1st Gear**

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD model).
- 4WD model: The transfer drive gear drives the transfer drive gear (hypoid gear) and the transfer output shaft (hypoid gear).

**NOTE: The illustration shows 4WD model; 2WD model does not have the transfer mechanism.**

**Fig. 12: Identifying Automatic Transmission - Power Flow 1ST Gear**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

### 2nd Gear

- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft idler gear drives the secondary shaft via the idler shaft idler gear and the secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD model).
- 4WD model: The transfer drive gear drives the transfer drive gear (hypoid gear) and the transfer output shaft (hypoid gear).

**NOTE: The illustration shows 4WD model; 2WD model does not have the transfer mechanism.**

**Fig. 13: Identifying Automatic Transmission - Power Flow 2ND Gear**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

### 3rd Gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the mainshaft 3rd gear with the mainshaft.
- The mainshaft 3rd gear drives the countershaft 3rd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD model).
- 4WD model: The transfer drive gear drives the transfer drive gear (hypoid gear) and the transfer output shaft (hypoid gear).

**NOTE: The illustration shows 4WD model; 2WD model does not have the transfer mechanism.**

**Fig. 14: Identifying Automatic Transmission - Power Flow 3RD Gear**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

### 4th Gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th gear and reverse selector hub while the shift lever is in the forward range (D, 2, and 1 positions).
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear,

and the transfer drive gear (4WD model).

- 4WD model: The transfer drive gear drives the transfer drive gear (hypoid gear) and the transfer output shaft (hypoid gear).

**NOTE: The illustration shows 4WD model; 2WD model does not have the transfer mechanism.**

**Fig. 15: Identifying Automatic Transmission - Power Flow 4TH Gear**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**R Position**

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear and reverse selector hub while the shift lever is in the R position.
- Hydraulic pressure is also applied to the 4th clutch, then the 4th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The rotational direction of the countershaft reverse gear is changed by the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector which drives the reverse selector hub.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear, and the transfer drive gear (4WD model).
- 4WD model: The transfer drive gear drives the transfer drive gear (hypoid gear) and the transfer output shaft (hypoid gear).

**NOTE: The illustration shows 4WD model; 2WD model does not have the transfer mechanism.**

**Fig. 16: Identifying Automatic Transmission - Power Flow R Position**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Electronic Control System**

**Functional Diagram**

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM receives input signals from the sensors, switches, and other control units, processes data, and output signals for the engine control system and A/T control system. The



A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control.

The PCM activates the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.

**Fig. 17: Electronic Control System Functional Diagram**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Electronic Controls Location**

**Fig. 18: Identifying Electronic Controls Location**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Shift Control**

The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates the shift solenoid valves A, B, C, and E to control shifting.

Also, a grade logic control system has been adopted to control shifting in the D position. The PCM compares actual driving conditions with memorized driving conditions, based on the input from the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.

**Fig. 19: Shift Control Functional Diagram**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

The PCM turns the shift solenoid valves A, B, C, and E ON and OFF to control shifting of the transmission. The combination of driving signals to shift solenoid valves A, B, C, and E are shown in table.

**DRIVING SIGNALS TO SHIFT SOLENOID VALVES COMBINATION**

Position	Gear position	Shift solenoid valves			
		A	B	C	E
D	Shifting from N position	OFF	ON	ON	OFF
	Stays in 1st	ON	ON	ON	OFF
	Shifting gears between 1st and 2nd	OFF	ON	ON	OFF
	Stays in 2nd	OFF	ON	OFF	OFF or ON
	Shifting gears between 2nd and 3rd	OFF	ON	ON	OFF or ON
	Stays in 3rd	OFF	OFF	ON	OFF or ON
	Shifting gears between 3rd and 4th	OFF	OFF	OFF	OFF or ON
	Stays in 4th	ON	OFF	OFF	OFF or ON

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2	2nd gear	OFF	ON	OFF	OFF
1	1st gear	ON	ON	ON	OFF
R	Shifting from the P and N position	OFF	ON	OFF	ON
	Stays in reverse	ON	ON	OFF	ON
	Reverse inhibitor control	OFF	OFF	ON	OFF
P	Park	OFF	ON	OFF	ON
N	Neutral	OFF	ON	ON	OFF

### Grade Logic Control

#### Grade Logic Control: Ascending Control

When the PCM determines that the vehicle is climbing a hill in the D position, the system extends the engagement area of 2nd and 3rd gears to prevent the transmission from frequently shifting between 2nd and 3rd gears, and between 3rd and 4th gears, so the vehicle can run smooth and have more power when needed. Shift schedules stored in the PCM between 2nd and 3rd gears, and between 3rd and 4th gears, enable it to automatically select the most suitable gear according to the magnitude of a gradient.

#### **Fig. 20: Identifying Grade Logic Control - Ascending Control** Courtesy of AMERICAN HONDA MOTOR CO., INC.

#### Grade Logic Control: Descending Control

When the PCM determines that the vehicle is going down a hill in the D position, the shift-up speed from 3rd to 4th gear, and from 2nd to 3rd gear (when the throttle is closed) becomes higher than the speed for flat road driving to widen the 3rd gear and 2nd gear driving area. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 3rd gear driving areas and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 4th gear, decelerating, and when you are applying the brakes on a steep hill, the transmission will downshift to a lower gear. When you accelerate, the transmission will then return to a higher gear.

#### **Fig. 21: Identifying Grade Logic Control - Descending Control** Courtesy of AMERICAN HONDA MOTOR CO., INC.

### Clutch Pressure Control

The PCM actuates A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between lower and higher gears, the clutch pressure regulated by A/T clutch pressure control solenoid valves A, B, and C engage and disengage the clutch smoothly.

The PCM receives input signals from the various sensors and switches, processes data, and

outputs a current to A/T clutch pressure control solenoid valves A, B, and C.

**Fig. 22: Clutch Pressure Control Functional Diagram**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Lock-up Control**

Shift solenoid valve E controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates shift solenoid valve E and A/T clutch pressure control solenoid valve A to control the torque converter clutch lock-up. When shift solenoid valve E is turned ON, the condition of lock-up starts.

A/T clutch pressure control solenoid valve A regulates and applies hydraulic pressure to the lock-up control valve to control the amount of lock-up.

The lock-up mechanism operates in 2nd, 3rd, and 4th gears in the D position, and 3rd gear in the D position over drive off mode.

**Fig. 23: Lock Up Control Functional Diagram**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**PCM Electrical Connections**

**Fig. 24: Identifying PCM Electrical Connections**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**PCM Inputs and Outputs**

**Fig. 25: Identifying PCM Connector Terminal Locations (PCM Connector A 31P)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Fig. 26: Identifying PCM Connector Terminal Locations And Description (C 22P)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Fig. 27: PCM Connector D (17P) Terminal Description**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Fig. 28: Identifying PCM Connector Terminal Location And Description (E 31P)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Hydraulic Controls**

The valve body includes the main valve body, the regulator valve body, and the servo body. The ATF pump is driven by splines on the left end of the torque converter, which is attached to the engine. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to the shift valves and to each of the clutches via the solenoid valves. The shift solenoid valves A, B, C, and E are bolted on

the servo body. The A/T clutch pressure control solenoid valves A, B, and C are mounted on the outside of the transmission housing.

**Fig. 29: Identifying Automatic Transmission Hydraulic Controls**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Main Valve Body**

The main valve body contains the manual valve, the shift valves A, B, C, and E, the relief valve, the lock-up control valve, the cooler check valve, the servo control valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off and to control hydraulic pressure going to the hydraulic control system.

**Fig. 30: Identifying Main Valve Body Components**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Regulator Valve Body**

The regulator valve body contains the regulator valve, the torque converter check valve, lock-up shift valve, and the 1st accumulator.

**Fig. 31: Identifying Regulator Valve Body Components**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Regulator Valve**

The regulator valve maintains a constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubrication system and torque converter. Fluid from the ATF pump flows through B and B'. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the right side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve moves to the left side. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through torque converter also changes. This operation is continued, maintaining the line pressure.

**NOTE: When used, "left" or "right" indicates direction on the illustration.**

**Fig. 32: Identifying Regulator Valve Fluid Flow**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

Increases in hydraulic pressure according to torque are performed by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or

climbing (torque converter range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.

**Fig. 33: Identifying Stator Rotation****Courtesy of AMERICAN HONDA MOTOR CO., INC.****Servo Body**

The servo body contains the servo valve, the clutch pressure back-up (CPB) valve, accumulators for 2nd, 3rd, and 4th, and shift solenoid valves for A, B, C, and E.

**Fig. 34: Identifying Servo Body Components****Courtesy of AMERICAN HONDA MOTOR CO., INC.****Accumulator**

The accumulators are located in the regulator valve body and the servo body. The regulator valve body contains the 1st accumulator, and the servo body contains the 2nd, 3rd, and 4th accumulators.

**Fig. 35: Identifying Accumulator Components****Courtesy of AMERICAN HONDA MOTOR CO., INC.****Hydraulic Flow****Distribution of Hydraulic Pressure**

As the engine turns, the ATF pump starts to operate. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that's regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve, and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves ON and OFF. The shift solenoid valve intercepts line pressure from the ATF pump via the manual valve when the shift solenoid valve is OFF. When the shift solenoid valve is turned ON, line pressure changes to shift solenoid valve pressure at the shift solenoid valve, then the solenoid valve pressure flows to the shift valve. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of the hydraulic circuit. The PCM also controls A/T clutch pressure control solenoid valves A, B, and C. The A/T clutch pressure control solenoid valves regulate hydraulic pressure, and apply the pressure to the clutches to engage smoothly. The clutches receive optimum clutch pressure which is regulated by the A/T clutch pressure control

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solenoid valves for comfortable driving and shifting under all conditions.

Hydraulic pressure at the port is as follows:

**HYDRAULIC PRESSURE DESCRIPTION**

<b>PORT No.</b>	<b>DESCRIPTION OF PRESSURE</b>
1	LINE
3	LINE
3'	LINE
4	LINE
4'	LINE
4"	LINE
7	LINE
1A	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
1B	LINE
3A	LINE
3B	LINE
3C	LINE
5A	LINE
5B	LINE
5C	LINE
5D	LINE
5E	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
5F	LINE or A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A or B
5G	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
5H	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
5K	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
SA	SHIFT SOLENOID VALVE A
SB	SHIFT SOLENOID VALVE B
SC	SHIFT SOLENOID VALVE C
SE	SHIFT SOLENOID VALVE E
10	1ST CLUTCH
20	2ND CLUTCH
30	3RD CLUTCH
40	4TH CLUTCH
55	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
55'	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A

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56	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
57	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
90	TORQUE CONVERTER
91	TORQUE CONVERTER
92	TORQUE CONVERTER
93	ATF COOLER
94	TORQUE CONVERTER
95	LUBRICATION
96	TORQUE CONVERTER
97	TORQUE CONVERTER
99	SUCTION
X	DRAIN
HX	HIGH POSITION DRAIN
AX	AIR DRAIN

**N Position**

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valves are as follows:

- Shift solenoid valve A: OFF Shift valve A stays on in the right side
- Shift solenoid valve B: ON Shift valve B moves to left side
- Shift solenoid valve C: ON Shift valve C moves to left side
- Shift solenoid valve E: OFF Shift valve E stays on in the left side

Line pressure (1) flows to the shift solenoid valves and A/T clutch pressure control solenoid valve A, and changes to A/T clutch pressure control solenoid valve A pressure (55) at A/T clutch pressure control solenoid valve A. A/T clutch pressure control solenoid valve A pressure (55) becomes line pressure (1B) at shift valve A, and stops at the manual valve. Under this condition, hydraulic pressure is not applied to the clutches.

**NOTE:** When used, "left" or "right" indicates direction on the hydraulic circuit.

**Fig. 36: Identifying Hydraulic Flow - N Position**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**D Position: 1st gear shifting from the N position**

Shift solenoid valves remain the same as in the N position when shifting to the D position from the N. The manual valve is moved to the D position, and switches the port of line pressure (4) leading to A/T clutch pressure control solenoid valve C. Hydraulic pressure to

the 1st clutch from A/T clutch pressure control solenoid valve A is created as shift solenoid valve A is OFF, B and C stay ON. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at shift valve B, and flows to the 1st clutch. A/T clutch pressure control solenoid valves B and C pressures also flow to the 2nd and 3rd clutches. The 1st clutch is engaged gently when shifting to the D position from the N.

**NOTE:** When used, "left" or "right" indicates direction on the hydraulic circuit.

**Fig. 37: Identifying Hydraulic Flow - D Position: First Gear Shifting From N Position**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**D Position: Driving in 1st gear**

The PCM turns shift solenoid valves A ON and keeps B and C ON, and E OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to uncover the port of line pressure leading to the 1st clutch, and to cover the A/T clutch pressure control solenoid valve pressures port. The A/T clutch pressure control solenoid valves pressures are released at shift valve A.

Fluid flows to the 1st clutch by way of:

Line pressure (1) --> A/T clutch pressure control solenoid valve A-A/T clutch pressure control solenoid valve A pressure (55) --> CPB valve-Line pressure (1A) --> Shift valve A-Line pressure (1B) --> Manual valve-Line pressure (5A) --> Shift valve C-Line pressure (5B) --> Shift valve B-1st clutch pressure (10) --> 1st clutch

The 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged securely.

**NOTE:** When used, "left" or "right" indicates direction on the hydraulic circuit.

**Fig. 38: Identifying Hydraulic Flow - D Position: Driving In First Gear**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**D Position: Shifting between 1st gear and 2nd gear**

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valves A OFF and keeps B and C ON, and E OFF. Shift solenoid valve A pressure (SA) in the right side of shift valve A is released. Shift valve A is moved to the right side to uncover the A/T clutch pressure control solenoid valves pressures port leading to the 1st, 2nd, and 3rd clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at shift valve A, and flows to the 2nd clutch. The 2nd clutch is



engaged gently.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 39: Identifying Hydraulic Flow - D Position: Shifting Between First Gear And Second Gear**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**D Position: Driving in 2nd gear**

The PCM turns shift solenoid valves C OFF and keeps A and E OFF, and B ON. Shift solenoid valve C pressure (SC) in the right side of shift valve C is released. Shift valve C is moved to the right side to switch the ports. This movement covers the A/T clutch pressure control solenoid valve pressure at shift valve C and B, and uncovers the line pressure port leading to the 2nd clutch.

Fluid flows to 2nd clutch by way of:

Line pressure (1) --> Manual valve-Line pressure (4) --> Shift valve C-Line pressure (5E) --> Shift valve B-Line pressure (5F) --> Shift valve A-2nd clutch pressure (20) --> 2nd clutch

The 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged securely.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 40: Identifying Hydraulic Flow - D Position: Driving In Second Gear**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**D Position: Shifting between 2nd gear and 3rd gear**

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valves C ON and keeps A and E OFF, and B ON. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C is moved to the left side to uncover the A/T clutch pressure control solenoid valve pressure ports leading to the 1st, 2nd, and 3rd clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at shift valve A, and A/T clutch pressure control solenoid valve C pressure (57) changes to 3rd clutch pressure (30) at shift valve A. The 2nd and 3rd clutches are engaged gently.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 41: Identifying Hydraulic Flow - D Position: Shifting Between Second Gear And Third Gear****Courtesy of AMERICAN HONDA MOTOR CO., INC.****D Position: Driving in 3rd gear**

The PCM turns shift solenoid valves B OFF and keeps A and E OFF, and C ON. Shift solenoid valve B pressure (SB) in the right side of shift valve B is released, and shift valve B is moved to the right side. This movement switches the port of A/T clutch pressure control solenoid valve C pressure leading to the 3rd clutch.

A/T clutch pressure control solenoid valve C pressure (57) changes to (5K) at shift valve B, and becomes 3rd clutch pressure (30) at shift valve A. 3rd clutch pressure (30) is applied to the 3rd clutch, and the 3rd clutch is engaged securely.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 42: Identifying Hydraulic Flow - D Position: Driving In Third Gear****Courtesy of AMERICAN HONDA MOTOR CO., INC.****D Position: Shifting between 3rd gear and 4th gear**

As the speed of the vehicle reaches the prescribed value, the PCM turns shift solenoid valves C OFF and keeps A, B, and E OFF. Shift solenoid valve C pressure (SC) in the right side of shift valve C is released. Shift valve C is moved to the right side to uncover A/T clutch pressure control solenoid valve A and B pressure ports leading to the 2nd and 4th clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve C pressure (57) changes to 3rd clutch pressure (30) at shift valve A, and A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at shift valve B. The 3rd clutch pressure is regulated to low by the A/T clutch pressure control solenoid valve C. The 3rd and 4th clutches are engaged gently.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 43: Identifying Hydraulic Flow - D Position: Shifting Between Third And Fourth Gear****Courtesy of AMERICAN HONDA MOTOR CO., INC.****D Position: Driving in 4th gear**

The PCM turns shift solenoid valves A ON and keeps B, C, and E OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the

left side to cover A/T clutch pressure control solenoid valve A and C pressure ports leading to the 2nd and 3rd clutches.

A/T clutch pressure control solenoid valve B pressure (56) changes to (5G) at shift valve C, and becomes 4th clutch pressure (40) at shift valve B. The 4th clutch pressure (40) is held to high by A/T clutch pressure control solenoid valve B, and the 4th clutch is engaged securely.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 44: Identifying Hydraulic Flow - D Position: Driving In Fourth Gear**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**2 Position**

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valves are as follows:

- Shift solenoid valve A: OFF Shift valve A stays on in the right side
- Shift solenoid valve B: ON Shift valve B moves to left side
- Shift solenoid valve C: OFF Shift valve C stays on in the right side
- Shift solenoid valve E: OFF Shift valve E stays on in the left side

Line pressure (1) changes (4) at the manual valve, and flows to shift valve C. Line pressure (4) becomes the 2nd clutch pressure (20) at shift valve A.

Fluid Flows to 2nd clutch by way of:

Line pressure (1) --> Manual valve-Line pressure (4) --> Shift valve C-Line pressure (5E) --> Shift valve B-Line pressure (5F) --> Shift valve A-2nd clutch pressure (20) --> 2nd clutch

The 2nd clutch pressure (20) is applied to the 2nd clutch, and the 2nd clutch is engaged.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 45: Identifying Hydraulic Flow - 2 Position**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**1 Position**

The PCM controls the shift solenoid valves. The conditions of the shift solenoid valves and positions of the shift valves are as follows:

- Shift solenoid valve A: ON Shift valve A moves to left side

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- Shift solenoid valve B: ON Shift valve B moves to left side
- Shift solenoid valve C: ON Shift valve C moves to left side
- Shift solenoid valve E: OFF Shift valve E stays on in the left side

Line pressure (1) flows to the shift solenoid valves and A/T clutch pressure control solenoid valve A, and changes to A/T clutch pressure control solenoid pressure (55) at A/T clutch pressure control solenoid valve A.

Fluid Flows to 1st clutch by way of:

A/T clutch pressure control solenoid A pressure (55) --> CPB valve-Line pressure (1A) --> Shift valve A-Line pressure (1B) --> Manual valve-Line pressure (5A) --> Shift valve C-Line pressure (5B) --> Shift valve B-1st clutch pressure (10) --> 1st clutch

The 1st clutch pressure (10) is applied to the 1st clutch, and the 1st clutch is engaged.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

### **Fig. 46: Identifying Hydraulic Flow - 1 Position** **Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**R Position: Shifting to the R position from the P or N position**

When shifting in the R position, the PCM turns shift solenoid valves B and E ON, and A and C OFF. Shift solenoid valve B pressure (SB) is applied to the right side of shift valve B, and shift valve B is moved to left side. Shift solenoid valve E pressure (SE) is applied to the left side of shift valve E, and shift valve E is moved to the right side. Line pressure (1) changes to (3) at the manual valve, and flows to the servo valve via shift valve E. The servo valve is moved to reverse range position. Movement of shift valves B and E, and servo valve creates 4th clutch pressure line between the 4th clutch and A/T clutch pressure control solenoid valve A. The 4th clutch pressure (40) is applied to the 4th clutch, and the 4th clutch is engaged gently.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

### **Fig. 47: Identifying Hydraulic Flow - R Position: Shifting To R Position From P Or N Position** **Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**R Position: Driving in reverse gear**

After starting off in reverse gear, the PCM turns shift solenoid valves A ON and keeps B and

E ON, and C OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A to cover the A/T clutch pressure control solenoid valve A pressure port, and to uncover the line pressure port leading to the 4th clutch creating full line pressure. The 4th clutch is engaged securely with line pressure.

#### **Reverse Inhibitor Control**

While the vehicle is moving forward, the PCM keeps shift solenoid valve E OFF. Shift valve E covers the port of line pressure (3') leading to the servo valve reverse position. The servo valve cannot be shifted to reverse position, and hydraulic pressure is not applied to the 4th clutch from servo valve for reverse. As a result, power is not transmitted in the reverse direction.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

#### **Fig. 48: Identifying Hydraulic Flow - R Position: Driving In Reverse Gear** **Courtesy of AMERICAN HONDA MOTOR CO., INC.**

#### **P Position**

The PCM turns shift solenoid valves B and E ON, and A and C OFF. Line pressure (1) flows to the shift solenoid valves and the A/T clutch pressure control solenoid valve A. Line pressure (3) changes to (3') at shift valve E, and flows to the servo valve. The servo valve is moved to reverse/park position. Hydraulic pressure is not applied to the clutches.

#### **Fig. 49: Identifying Hydraulic Flow - P Position** **Courtesy of AMERICAN HONDA MOTOR CO., INC.**

#### **Lock-up System**

The lock-up mechanism of the torque converter clutch operates in the D position (2nd, 3rd, and 4th) and the D position over drive off mode (3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and amount of the lock-up mechanism. When shift solenoid valve E is turned on by the PCM, the shift solenoid valve E pressure switches the lock-up shift valve lock-up on and off. A/T clutch pressure control solenoid valve A and the lock-up control valve control the amount of lock-up.

#### **Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)**

Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entering from the chamber between the pump and stator exerts pressure through the torque converter clutch piston against the torque converter cover.

The torque converter clutch piston engages with the torque converter cover; torque converter clutch lock-up ON, and the mainshaft rotates at the same as the engine.

**Fig. 50: Identifying Torque Converter Clutch Power Flow (Lock Up ON)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)**

Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out through the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter clutch lock-up is released; torque converter clutch lock-up is OFF.

**Fig. 51: Identifying Torque Converter Clutch Power Flow (Lock Up OFF)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**No Lock-up**

Shift solenoid valve E is turned OFF by the PCM, and shift solenoid valve E pressure (SE) is not applied to the lock-up shift valve. The lock-up shift valve stays to the right to uncover the torque converter pressure ports leading to the left side of the torque converter and releasing pressure from the right side of the torque converter. Torque converter pressure (92) changes to (94) at the lock-up shift valve, and enters into the left side of the torque converter to disengage the torque converter clutch. This keeps the torque converter clutch piston is kept away from the torque converter cover and the torque converter clutch lock-up is OFF.

**NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.**

**Fig. 52: Hydraulic Circuit - No Lock Up**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Partial Lock-up**

As the speed of the vehicle reaches the programmed value, shift solenoid valve E is turned ON by the PCM, and shift solenoid valve E pressure (SE) is applied to the right side of the lock-up shift valve. The lock-up shift valve is moved to the left side to switch the torque converter pressure (91) port, which goes to the right side of the torque converter, and the port of torque converter pressure (94) is released from the left side of the torque converter. Torque converter pressure (91) flows to the right side of the torque converter to engage the torque converter clutch. The PCM also controls the A/T clutch pressure control solenoid valve A, and A/T clutch pressure control solenoid valve A pressure (55) is applied to the lock-up shift valve and lock-up control valve. The position of the lock-up control valve depends on A/T clutch pressure control solenoid valve A pressure (55) and torque converter pressure released from the torque converter. The lock-up control valve controls the amount

of torque converter clutch lock-up until fluid between the clutch piston and torque converter cover is fully released; the torque converter clutch is in partial lock-up.

**NOTE:** When used, "left" or "right" indicates direction on the hydraulic circuit.

**Fig. 53: Hydraulic Circuit - Partial Lock Up**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**Full Lock-up**

When the vehicle speed increases, the PCM sends a signal to A/T clutch pressure control solenoid valve A to increase A/T clutch pressure control solenoid valve A pressure (55), and the lock-up control valve is moved to the left side by the increased pressure. Then torque converter pressure (94) from the left side of the torque converter is completely released fully at the lock-up control valve, and torque converter pressure (91) engages the torque converter clutch securely; the torque converter clutch is in full lock-up.

**NOTE:** When used, "left" or "right" indicates direction on the hydraulic circuit.

**Fig. 54: Hydraulic Circuit - Full Lock-Up**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**Circuit Diagram - PCM A/T Control System**

**Fig. 55: Circuit Diagram - PCM A/T Control System (1 Of 2)**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**Fig. 56: Circuit Diagram - PCM A/T Control System (2 Of 2)**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**DTC TROUBLESHOOTING**

**A00220581**

<b>DTC</b>	<b>Description</b>
<b>DTC P0705</b>	Short in Transmission Range Switch Circuit (Multiple Shift-position Input)
<b>DTC P0706</b>	Open in Transmission Range Switch Circuit
<b>DTC P0711</b>	Problem in ATF Temperature Sensor Circuit
<b>DTC P0712</b>	Short in ATF Temperature Sensor Circuit

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<b><u>DTC</u></b> <b><u>P0713</u></b>	Open in ATF Temperature Sensor Circuit
<b><u>DTC</u></b> <b><u>P0716</u></b>	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit
<b><u>DTC</u></b> <b><u>P0717</u></b>	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)
<b><u>DTC</u></b> <b><u>P0718</u></b>	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure
<b><u>DTC</u></b> <b><u>P0721</u></b>	Problem in Output Shaft (Countershaft) Speed Sensor Circuit
<b><u>DTC</u></b> <b><u>P0722</u></b>	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)
<b><u>DTC</u></b> <b><u>P0723</u></b>	Output Shaft (Countershaft) Speed Sensor Intermittent Failure
<b><u>DTC</u></b> <b><u>P0731</u></b>	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit
<b><u>DTC</u></b> <b><u>P0732</u></b>	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit
<b><u>DTC</u></b> <b><u>P0733</u></b>	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit
<b><u>DTC</u></b> <b><u>P0734</u></b>	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit
<b><u>DTC</u></b> <b><u>P0741</u></b>	Torque Converter Clutch Hydraulic Circuit Stuck OFF
<b><u>DTC</u></b> <b><u>P0747</u></b>	A/T Clutch Pressure Control Solenoid Valve A Stuck ON
<b><u>DTC</u></b> <b><u>P0752</u></b>	Shift Solenoid Valve A Stuck ON
<b><u>DTC</u></b> <b><u>P0761</u></b>	Shift Solenoid Valve C Stuck OFF
<b><u>DTC</u></b> <b><u>P0771</u></b>	Shift Solenoid Valve E Stuck OFF
<b><u>DTC</u></b> <b><u>P0776</u></b>	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF
<b><u>DTC</u></b> <b><u>P0777</u></b>	A/T Clutch Pressure Control Solenoid Valve B Stuck ON
<b><u>DTC</u></b> <b><u>P0780</u></b>	Shift Control System
<b><u>DTC</u></b> <b><u>P0796</u></b>	A/T Clutch Pressure Control Solenoid Valve C Stuck OFF
<b><u>DTC</u></b>	A/T Clutch Pressure Control Solenoid Valve C Stuck ON



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<b>P0797</b>	
<b>DTC P0812</b>	Open in Transmission Range Switch ATP RVS Switch Circuit
<b>DTC P0842</b>	Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON
<b>DTC P0843</b>	Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF
<b>DTC P0847</b>	Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON
<b>DTC P0848</b>	Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF
<b>DTC P0962</b>	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit
<b>DTC P0963</b>	Problem in A/T Clutch Pressure Control Solenoid Valve A
<b>DTC P0966</b>	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit
<b>DTC P0967</b>	Problem in A/T Clutch Pressure Control Solenoid Valve B
<b>DTC P0970</b>	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit
<b>DTC P0971</b>	Problem in A/T Clutch Pressure Control Solenoid Valve C
<b>DTC P0973</b>	Short in Shift Solenoid Valve A Circuit
<b>DTC P0974</b>	Open in Shift Solenoid Valve A Circuit
<b>DTC P0976</b>	Short in Shift Solenoid Valve B Circuit
<b>DTC P0977</b>	Open in Shift Solenoid Valve B Circuit
<b>DTC P0979</b>	Short in Shift Solenoid Valve C Circuit
<b>DTC P0980</b>	Open in Shift Solenoid Valve C Circuit
<b>DTC P0985</b>	Short in Shift Solenoid Valve E Circuit
<b>DTC P0986</b>	Open in Shift Solenoid Valve E Circuit
<b>DTC P1731</b>	Problem in Shift Control System:

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<b>DTC P1732</b>	Problem in Shift Control System:
<b>DTC P1735</b>	Problem in Shift Control System:
<b>DTC P1736</b>	Problem in Shift Control System:

**DTC P0705: Short in Transmission Range Switch Circuit (Multiple Shift-position Input)**

### NOTE:

- Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine.
3. Move the shift lever through all positions. Stop for least 1 second in each position, and monitor the OBD status for P0705 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 4.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for an intermittent short in the wires between the transmission range switch and PCM. If the tester indicates NOT COMPLETED, repeat this step and recheck.

4. Test the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST** ).

*Is the switch OK?*

**YES-** Go to step 5.

**NO-** Replace the transmission range switch, then go to step 55 .

5. Turn the ignition switch ON (II).
6. Shift to all positions other than P.
7. Measure the voltage between PCM connector terminals D6 and A9.

**Fig. 57: Measuring Voltage Between PCM Connector Terminals D6 And A9**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there battery voltage?*

**YES-** Go to step 14 .

**NO-** Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector D (17P).
11. Check for continuity between PCM connector terminal D6 and body ground.

**Fig. 58: Checking Continuity Between PCM Connector Terminal D6 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal D6 and the transmission range switch, then go to step 55 .

**NO-** Go to step 12.

12. Disconnect PCM connector A (31P).
13. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

**Fig. 59: Checking Continuity Between PCM Connector Terminals A8, A9 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open in the wire between PCM connector terminals A8, A9, and ground (G101), or repair poor ground (G101), then go to step 55 .

14. Shift to all positions other than R.
15. Measure the voltage between PCM connector terminals D5 and A9.

**Fig. 60: Measuring Voltage Between PCM Connector Terminals D5 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 20 .

**NO-** Go to step 16.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector D (17P).
19. Check for continuity between PCM connector terminal D5 and body ground.

**Fig. 61: Checking Continuity Between PCM Connector Terminal D5 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal D5 and the transmission range switch, then go to step 55 .

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

20. Measure the voltage between PCM connector terminals C12 and A9.

**Fig. 62: Measuring Voltage Between PCM Connector Terminals C12 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 25 .

**NO-** Go to step 21.

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector C (22P).
24. Check for continuity between PCM connector terminal C12 and body ground.

**Fig. 63: Checking Continuity Between PCM Connector Terminal C12 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C12 and the transmission range switch, then go to step 55 .

**NO-** Update the PCM if it does not have the latest software. or substitute a

known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

25. Shift to all positions other than N.
26. Measure the voltage between PCM connector terminals C20 and A9.

**Fig. 64: Measuring Voltage Between PCM Connector Terminals C20 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 31 .

**NO-** Go to step 27.

27. Turn the ignition switch OFF.
28. Jump the SCS line with the HDS.
29. Disconnect PCM connector C (22P).
30. Check for continuity between PCM connector terminal C20 and body ground.

**Fig. 65: Checking Continuity Between PCM Connector Terminal C20 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C20 and the transmission range switch, then go to step 55 .

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

31. Shift to all positions other than D.
32. Measure the voltage between PCM connector terminals C17 and A9.

**Fig. 66: Measuring Voltage Between PCM Connector Terminals C17 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 37 .

**NO-** Go to step 33.

33. Turn the ignition switch OFF.
34. Jump the SCS line with the HDS.

35. Disconnect PCM connector C (22P).
36. Check for continuity between PCM connector terminal C17 and body ground.

**Fig. 67: Checking Continuity Between PCM Connector Terminal C17 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C17 and the transmission range switch, then go to step 55 .

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

37. Shift to all positions other than 2.
38. Measure the voltage between PCM connector terminals C11 and A9.

**Fig. 68: Measuring Voltage Between PCM Connector Terminals C11 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 43 .

**NO-** Go to step 39.

39. Turn the ignition switch OFF.
40. Jump the SCS line with the HDS.
41. Disconnect PCM connector C (22P).
42. Check for continuity between PCM connector terminal C11 and body ground.

**Fig. 69: Checking Continuity Between PCM Connector Terminal C11 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C11 and the transmission range switch, then go to step 55 .

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

43. Shift to all positions other than 1.
44. Measure the voltage between PCM connector terminals C9 and A9.

**Fig. 70: Measuring Voltage Between PCM Connector Terminals C9 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 49 .

**NO-** Go to step 45.

45. Turn the ignition switch OFF.
46. Jump the SCS line with the HDS.
47. Disconnect PCM connector C (22P).
48. Check for continuity between PCM connector terminal C9 and body ground.

**Fig. 71: Checking Continuity Between PCM Connector Terminal C9 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C9 and the transmission range switch, then go to step 55 .

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

49. Shift to all positions other than D, 2, and 1.
50. Measure the voltage between PCM connector terminals C18 and A9.

**Fig. 72: Measuring Voltage Between PCM Connector Terminals C18 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Go to step 51.

51. Turn the ignition switch OFF.
52. Jump the SCS line with the HDS.

53. Disconnect PCM connector C (22P).
54. Check for continuity between PCM connector terminal C18 and body ground.

**Fig. 73: Checking Continuity Between PCM Connector Terminal C18 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C18 and the transmission range switch, then go to step 55.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

55. Clear the DTC with the HDS.
56. Move the shift lever through all positions. Stop for least 1 second in each position, and monitor the OBD status for P0705 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0706: Open in Transmission Range Switch Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.

3. Start the engine, run the vehicle in the D position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.



4. Monitor the OBD status for P0706 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 5.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and PCM. If the tester indicates NOT COMPLETED, return to step [1](#) and recheck.

5. Test the transmission range switch (see **TRANSMISSION RANGE SWITCH TEST** ).

*Is the switch OK?*

**YES-** Inspect the end of the selector control shaft (see step [6](#) ), and go to step [6](#).

**NO-** Replace the transmission range switch, then go to step [24](#) .

6. Install the transmission range switch correctly, and adjust the shift cable (see **SHIFT CABLE ADJUSTMENT** ).
7. Clear the DTC with the HDS.
8. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.  
  
2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.
9. Start the engine, run the vehicle in the D position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.
10. Monitor the OBD status for P0706 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step [11](#).

**NO-** If the tester indicates PASSED, troubleshooting is complete. If the tester indicates NOT COMPLETED, return to step [7](#) and recheck.

11. Shift the shift lever into the D position, and verify the ATP FWD and ATP D inputs with the HDS in the A/T data list.

*Is the ATP FWD and ATP D ON?*

**YES-** Go to step [12](#).

**NO-** Go to step 18 .

12. Shift to the 2 position, and verify the ATP FWD and ATP 2 inputs with the HDS in the A/T data list.

*Is the ATP FWD and ATP 2 ON?*

**YES-** Go to step 13.

**NO-** Go to step 18 .

13. Shift to the 1 position, and verify the ATP FWD and ATP 1 inputs with the HDS in the A/T data list.

*Is the ATP FWD and ATP 1 ON?*

**YES-** Go to step 14.

**NO-** Go to step 18 .

14. Clear the DTC with the HDS, and turn the ignition switch OFF.
15. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.

16. Start the engine, run the vehicle in the D position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.
17. Monitor the OBD status for P0706 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 18.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and PCM. If the tester indicates NOT COMPLETED, return to step [14](#) and recheck.

18. Turn the ignition switch OFF.
19. Disconnect the transmission range switch connector.
20. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

**Fig. 74: Checking Continuity Between Transmission Range Switch Connector Terminal No. 10 And Body Ground**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there continuity?*

**YES-** Go to step 21.

**NO-** Repair open in the wire between transmission range switch connector terminal No. 10 and ground (G101), or repair poor ground (G101), then go to step 26 .

21. Turn the ignition switch ON (II).
22. Measure the voltage between transmission range switch connector terminals No. 5 and No. 10.

**Fig. 75: Measuring Voltage Between Transmission Range Switch Connector Terminals 5 And 10**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 23.

**NO-** Repair open in the wire between the transmission range switch and PCM connector terminal C18, then go to step 26 .

23. Measure the voltage between transmission range switch connector terminals No. 8 and No. 10.

**Fig. 76: Measuring Voltage Between Transmission Range Switch Connector Terminals 8 And 10**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 24.

**NO-** Repair open in the wire between the transmission range switch and PCM connector terminal C17, then go to step 26 .

24. Measure the voltage between transmission range switch connector terminals No. 3 and No. 10.

**Fig. 77: Measuring Voltage Between Transmission Range Switch Connector Terminals 3 And 10**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 25.

**NO-** Repair open in the wire between the transmission range switch and PCM connector terminal C11, then go to step 26 .

25. Measure the voltage between transmission range switch connector terminals No. 9 and No. 10.

**Fig. 78: Measuring Voltage Between Transmission Range Switch Connector Terminals 9 And 10**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there battery voltage?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open in the wire between the transmission range switch and PCM connector terminal C9, then go to step 26.

26. Clear the DTC with the HDS.
27. Turn the ignition switch OFF.
28. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.

29. Start the engine, run the vehicle in the D position until the vehicle speed reaches 35 mph (56 km/h), then slow down and stop the wheels.
30. Monitor the OBD status for P0706 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0711: Problem in ATF Temperature Sensor Circuit**

**NOTE:**

- Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF temperature with the HDS.

*Does the ATF temperature exceed the ambient-air temperature?*

**YES-** Record the ATF temperature. Leave the engine off for more than 30 minutes, and go to step 2.

**NO-** Record the ATF temperature. Test the stall speed RPM (see **STALL SPEED TEST** ) three times. Go to step 2 after stall speed testing.

2. Check the ATF temperature with the HDS.

*Did the ATF temperature change?*

**YES-** Leave the engine off for at least 30 minutes, and go to step 3.

**NO-** Replace ATF temperature sensor (see step **ATF TEMPERATURE SENSOR TEST/REPLACEMENT** ), then go to 5 .

3. Check the ECT SENSOR with the HDS.

*Is the ECT SENSOR equal to the ambient-air temperature?*

**YES-** Go to step 4.

**NO-** Leave the engine off until ECT sensor equals ambient-air temperature, then go to step 4.

4. Check the ATF temperature with the HDS.

*Is the ATF temperature almost equal to ECT SENSOR?*

**YES-** Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and PCM.

**NO-** Replace ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT** ), then go to step 5.

5. Clear the DTC with the HDS.
6. Test-drive the vehicle for several minutes in the D position through all four gears.
7. Monitor the OBD status for P0711 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0712: Short in ATF Temperature Sensor Circuit**

**NOTE:**

- Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING**)

**INFORMATION ) before you troubleshoot.**

- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Check ATF temperature sensor voltage with the HDS in the A/T data list.

*Is ATF temperature sensor voltage 0.07 V or less?*

**YES-** Go to step 2.

**NO-** Intermittent failure, the system is OK at this time. Check for intermittent short in the wires between the ATF temperature sensor and PCM.

2. Disconnect the shift solenoid harness connector at the shift solenoid valve cover.
3. Check ATF temperature sensor voltage with the HDS.

*Is ATF temperature sensor voltage 0.07 V or less?*

**YES-** Go to step 4.

**NO-** Check for a short to ground in the shift solenoid harness wire in the transmission (see step **ATF TEMPERATURE SENSOR TEST/REPLACEMENT** ). If the wire is OK, replace ATF temperature sensor (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT** ), then go to 8 .

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect PCM connector C (22P).
7. Check for continuity between shift solenoid harness connector terminal No. 6 and body ground.

**Fig. 79: Checking Continuity Between Shift Solenoid Harness Connector Terminal 6 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C14 and the shift solenoid harness connector, then go to step 8.

**NO-** Check for a short to ground in the shift solenoid harness wire in the transmission (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT** ). If the wire is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a

known-good PCM, replace the original PCM.

8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the D position through all four gears.
10. Monitor the OBD status for P0712 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

#### DTC P0713: Open in ATF Temperature Sensor Circuit

#### NOTE:

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Check ATF temperature sensor voltage with the HDS in the A/T data list.

*Does ATF temperature sensor voltage exceed 4.93 V?*

**YES-** Go to step 2.

**NO-** Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and PCM.

2. Turn the ignition switch OFF.
3. Disconnect the shift solenoid harness connector.
4. Turn the ignition switch ON (II).
5. Measure the voltage between shift solenoid harness connector terminal No. 6 and body ground.

#### **Fig. 80: Measuring Voltage Between Shift Solenoid Harness Connector Terminal 6 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 6.

**NO-** Go to step 7 .

6. Measure the voltage between shift solenoid harness connector terminals No. 6 and No.

7.

**Fig. 81: Measuring Voltage Between Shift Solenoid Harness Connector Terminals 6 And 7****Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there about 5 V?*

**YES-** Check the ATF temperature sensor and shift solenoid harness in the transmission housing (see **ATF TEMPERATURE SENSOR TEST/REPLACEMENT** ).

**NO-** Repair open in the wire between PCM connector terminal A23 and the shift solenoid harness connector, then go to step 8 .

7. Measure the voltage between PCM connector terminal C14 and body ground.

**Fig. 82: Measuring Voltage Between PCM Connector C (22P) Terminal C14 And Body Ground****Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal C14 and the shift solenoid harness connector, then go to step 8.

**NO-** Check for loose or poor connections at PCM connector terminal C14. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the D position in all four gears.
10. Monitor the OBD status for P0713 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit****NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.**



- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check for proper input shaft (mainshaft) speed sensor installation (see **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ).
3. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.

4. Start the engine, run the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.
5. Monitor the OBD status for P0716 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and input shaft (mainshaft) speed sensor connectors. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector A (31P) and input shaft (mainshaft) speed sensor connector.
9. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

**Fig. 83: Checking Continuity Between PCM Connector Terminals A8, A9 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 10.

**NO-** Repair open in the wires between PCM connector terminals A8, A9, and ground (G101), or repair poor ground (G101), then go to step 29 .

10. Connect PCM connector A (31P).

11. Turn the ignition switch ON (II).
12. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

**Fig. 84: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 1 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 13.

**NO-** Go to step 24 .

13. Turn the ignition switch OFF.
14. Disconnect PCM connector C (22P).
15. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 85: Checking Continuity Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C19 and input shaft (mainshaft) speed sensor, then go to step 29 .

**NO-** Go to step 16.

16. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 3 and body ground.

**Fig. 86: Checking Continuity Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 3 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 17.

**NO-** Repair open in the wire between the input shaft (mainshaft) speed sensor connector and ground (G101), then go to step 29 .

17. Connect PCM connector C (22P).
18. Turn the ignition switch ON (II).
19. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.

**Fig. 87: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminals 2 And 3**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 20.

**NO-** Go to step 28 .

20. Connect the input shaft (mainshaft) speed sensor connector.
21. Measure the voltage between PCM connector terminals C19 and A9.

**Fig. 88: Measuring Voltage Between PCM Connector Terminals C19 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 0 V or about 5 V?*

**YES-** Go to step 22.

**NO-** Replace the input shaft (mainshaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 29 .

22. Shift to the P position. Start the engine, and let it idle.
23. With the engine idling, measure the voltage between PCM connector terminals C19 and A9.

**Fig. 89: Measuring Voltage Between PCM Connector Terminals C19 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 1.5-3.5 V?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Replace the input shaft (mainshaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 29 .

24. Measure the voltage between PCM connector terminals A20 and A9.

**Fig. 90: Measuring Voltage Between PCM Connector Terminals A20 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal A20 and the input shaft (mainshaft) speed sensor connector, then go to step 29 .

**NO-** Go to step 25.

25. Turn the ignition switch OFF.
26. Disconnect PCM connector A (31P).
27. Check for continuity between PCM connector terminal A20 and body ground.

**Fig. 91: Checking Continuity Between PCM Connector Terminal A20 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal A20 and the input shaft (mainshaft) speed sensor connector, then go to step 29 .

**NO-** Check for loose or poor connections at PCM connector terminal A20. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

28. Measure the voltage between PCM connector terminals C19 and A9.

**Fig. 92: Measuring Voltage Between PCM Connector Terminals C19 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal C19 and the input shaft (mainshaft) speed sensor connector, then go to step 29.

**NO-** Check for loose or poor connections at PCM connector terminal C19. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

29. Clear the DTC with the HDS.
30. Start the engine, drive the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.
31. Monitor the OBD status for P0716 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)****NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check for proper input shaft (mainshaft) speed sensor installation (see INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT ).
3. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.

4. Start the engine, run the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.
5. Monitor the OBD status for P0717 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and input shaft (mainshaft) speed sensor connectors. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector A (31P) and input shaft (mainshaft) speed sensor connector.
9. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

**Fig. 93: Checking Continuity Between PCM Connector A ( 31P) Terminals A8, A9 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 10.

**NO-** Repair open in the wires between PCM connector terminals A8, A9, and ground (G101), or repair poor ground (G101), then go to step 29 .

10. Connect PCM connector A (31P).
11. Turn the ignition switch ON (II).
12. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

**Fig. 94: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 1 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 13.

**NO-** Go to step 24 .

13. Turn the ignition switch OFF.
14. Disconnect PCM connector C (22P).
15. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 95: Checking Continuity Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C19 and input shaft (mainshaft) speed sensor, then go to step 29 .

**NO-** Go to step 16.

16. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 3 and body ground.

**Fig. 96: Checking Continuity Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 3 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 17.

**NO-** Repair open in the wire between the input shaft (mainshaft) speed sensor connector and ground (G101), then go to step 29 .

17. Connect PCM connector C (22P).
18. Turn the ignition switch ON (II).
19. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.

**Fig. 97: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminals 2 And 3**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 20.

**NO-** Go to step 28 .

20. Connect the input shaft (mainshaft) speed sensor connector.
21. Measure the voltage between PCM connector terminals C19 and A9.

**Fig. 98: Measuring Voltage Between PCM Connector Terminals C19 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 0 V or about 5 V?*

**YES-** Go to step 22.

**NO-** Replace the input shaft (mainshaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 29 .

22. Shift to the P position. Start the engine, and let it idle.
23. With the engine idling, measure the voltage between PCM connector terminals C19 and A9.

**Fig. 99: Measuring Voltage Between PCM Connector Terminals C19 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 1.5-3.5 V?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Replace the input shaft (mainshaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 29 .

24. Measure the voltage between PCM connector terminals A20 and A9.

**Fig. 100: Measuring Voltage Between PCM Connector A (31P) Terminals A20**

**And A9****Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal A20 and the input shaft (mainshaft) speed sensor connector, then go to step 29 .

**NO-** Go to step 25.

25. Turn the ignition switch OFF.
26. Disconnect PCM connector A (31P).
27. Check for continuity between PCM connector terminal A20 and body ground.

**Fig. 101: Checking Continuity Between PCM Connector A (31P) Terminal A20 And Body Ground****Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal A20 and the input shaft (mainshaft) speed sensor connector, then go to step 29 .

**NO-** Check for loose or poor connections at PCM connector terminal A20. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

28. Measure the voltage between PCM connector terminals C19 and A9.

**Fig. 102: Measuring Voltage Between PCM Connector Terminals C19 And A9****Courtesy of AMERICAN HONDA MOTOR CO., INC.***Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal C19 and the input shaft (mainshaft) speed sensor connector, then go to step 29.

**NO-** Check for loose or poor connections at PCM connector terminal C19. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

29. Clear the DTC with the HDS.
30. Start the engine, drive the vehicle in the D position and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds.



31. Monitor the OBD status for P0717 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 . and recheck.

**DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in the D position through all four gears.
3. Monitor the OBD status for P0718 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 4.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and PCM. If the tester indicates NOT COMPLETED, return to step 2 and recheck.

4. Turn the ignition switch OFF.
5. Disconnect the input shaft (mainshaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

*Are the connector terminals OK?*

**YES-** Go to step 6.

**NO-** Repair the connector terminals, then go to step 6.

6. Connect the input shaft (mainshaft) speed sensor connector.
7. Test-drive the vehicle for several minutes, and monitor the OBD status for P0718 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, troubleshooting is complete. If the tester indicates NOT COMPLETED, return to step 7 and recheck.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector C (22P).
11. Disconnect the input shaft (mainshaft) speed sensor connector.
12. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 103: Checking Continuity Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C19 and the input shaft (mainshaft) speed sensor connector, then go to step 19 .

**NO-** Go to step 13.

13. Connect PCM connector C (22P).
14. Turn the ignition switch ON (II).
15. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 104: Measuring Voltage Between Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Replace the input shaft (mainshaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 19 .

**NO-** Go to step 16.

16. Turn the ignition switch OFF.
17. Disconnect PCM connector C (22P).
18. Check for continuity between PCM connector terminal C19 and input shaft (mainshaft) speed sensor connector terminal No. 2.

**Fig. 105: Checking Continuity Between PCM Connector Terminal C19 And Input Shaft (Mainshaft) Speed Sensor Connector Terminal 2**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open in the wire between PCM connector terminal C19 and the input shaft (mainshaft) speed sensor, then go to step 19.

19. Clear the DTC with the HDS.
20. Test-drive the vehicle for several minutes in the D position through all four gears.
21. Monitor the OBD status for P0718 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 . and recheck.

**DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit**

- NOTE:**
- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
  - **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.

3. Start the engine, run the vehicle in the D position with engine speed 2,000 RPM or higher for more than 10 seconds, then slow down and stop the wheels.
4. Monitor the OBD status for P0721 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 5.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (31P) and output shaft (countershaft) speed sensor connector.
8. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

**Fig. 106: Checking Continuity Between PCM Connector Terminals A8, A9 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 9.

**NO-** Repair open in the wire between PCM connector terminals A8, A9, and ground (G101), or repair poor ground (G101), then go to step 28 .

9. Connect PCM connector A (31P).
10. Turn the ignition switch ON (II).
11. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

**Fig. 107: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 1 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 12.

**NO-** Go to step 23 .

12. Turn the ignition switch OFF.
13. Disconnect PCM connector A (31P).
14. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 108: Checking Continuity Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 2 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal A18 and the output shaft (countershaft) speed sensor, then go to step 28 .

**NO-** Go to step 15.

15. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 3 and body ground.

**Fig. 109: Checking Continuity Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 3 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 16.

**NO-** Repair open in the wire between the output shaft (countershaft) speed sensor and ground (G101), or repair poor ground (G101), then go to step 28 .

16. Connect PCM connector A (31P).
17. Turn the ignition switch ON (II).
18. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

**Fig. 110: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminals 2 And 3**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 19.

**NO-** Go to step 27 .

19. Connect output shaft (countershaft) speed sensor connector.
20. Measure the voltage between PCM connector terminals A18 and A9.

**Fig. 111: Measuring Voltage Between PCM Connector A (31P) Terminals A18 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 0 V or about 5 V?*

**YES-** Go to step 21.

**NO-** Replace the output shaft (countershaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 28 .

21. Shift to the P position. Start the engine, and let it idle.
22. Shift to the D position, and measure the voltage between PCM connector terminals A18 and A9.

**Fig. 112: Measuring Voltage Between PCM Connector A (31P) Terminals A18 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 1.5-3.5 V?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Replace the output shaft (countershaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 28 .

23. Measure the voltage between PCM connector terminals A21 and A9.

**Fig. 113: Measuring Voltage Between PCM Connector A (31P) Terminals A21 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal A21 and the output shaft (countershaft) speed sensor, then go to step 28 .

**NO-** Go to step 24.

24. Turn the ignition switch OFF.
25. Disconnect PCM connector A (31P).
26. Check for continuity between PCM connector terminal A21 and body ground.

**Fig. 114: Checking Continuity Between PCM Connector A (31P) Terminal A21 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal A21 and the output shaft (countershaft) speed sensor, then go to step 28 .

**NO-** Check for loose or poor connections at PCM connector terminal A21. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace

the original PCM.

27. Measure the voltage between PCM connector terminals A18 and A9.

**Fig. 115: Measuring Voltage Between PCM Connector A (31P) Terminals A18 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal A18 and the output shaft (countershaft) speed sensor, then go to step 28.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

28. Clear the DTC with the HDS.
29. Start the engine, run the vehicle in the D position with engine speed 2,000 RPM or higher for more than 10 seconds.
30. Monitor the OBD status for P0721 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely. Or raise the vehicle.

3. Start the engine, run the vehicle in the D position with engine speed 2,000 RPM or

higher for more than 10 seconds, then slow down and stop the wheels.

4. Monitor the OBD status for P0722 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 5.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector A (31P) and output shaft (countershaft) speed sensor connector.
8. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

**Fig. 116: Checking Continuity Between PCM Connector A (31P) Terminals A8, A9 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 9.

**NO-** Repair open in the wires between PCM connector terminals A8, A9, and ground (G101), or repair poor ground (G101), then go to step 28 .

9. Connect PCM connector A (31P).
10. Turn the ignition switch ON (II).
11. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

**Fig. 117: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 1 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 12.

**NO-** Go to step 23 .

12. Turn the ignition switch OFF.
13. Disconnect PCM connector A (31P).



14. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 118: Checking Continuity Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 2 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal A18 and output shaft (countershaft) speed sensor, then go to step 28 .

**NO-** Go to step 15.

15. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 3 and body ground.

**Fig. 119: Checking Continuity Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 3 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 16.

**NO-** Repair open in the wire between the output shaft (countershaft) speed sensor connector and ground (G101), then go to step 28 .

16. Connect PCM connector A (31P).
17. Turn the ignition switch ON (II).
18. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

**Fig. 120: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminals 2 And 3**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Go to step 19.

**NO-** Go to step 27 .

19. Connect the output shaft (countershaft) speed sensor connector.
20. Measure the voltage between PCM connector terminals A18 and A9.

**Fig. 121: Measuring Voltage Between PCM Connector A (31P) Terminals A18 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 0 V or about 5 V?*

**YES-** Go to step 21.

**NO-** Replace the output shaft (countershaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 28 .

21. Shift to the P position. Start the engine, and let it idle.
22. Shift to the D position, and measure the voltage between PCM connector terminals A18 and A9.

**Fig. 122: Measuring Voltage Between PCM Connector A (31P) Terminals A18 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 1.5-3.5 V?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Replace the output shaft (countershaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 28 .

23. Measure the voltage between PCM connector terminals A21 and A9.

**Fig. 123: Measuring Voltage Between PCM Connector A (31P) Terminals A21 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal A21 and the output shaft (countershaft) speed sensor, then go to step 28 .

**NO-** Go to step 24.

24. Turn the ignition switch OFF.
25. Disconnect PCM connector A (31P).
26. Check for continuity between PCM connector terminal A21 and body ground.

**Fig. 124: Checking Continuity Between PCM Connector A (31P) Terminal A21 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal A21

and the output shaft (countershaft) speed sensor, then go to step 28 .

**NO-** Check for loose or poor connections at PCM connector terminal A21. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

27. Measure the voltage between PCM connector terminals A18 and A9.

**Fig. 125: Measuring Voltage Between PCM Connector A (31P) Terminals A18 And A9**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal A18 and the output shaft (countershaft) speed sensor, then go to step 28.

**NO-** Check for loose or poor connections at PCM connector terminal A18. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

28. Clear the DTC with the HDS.  
29. Test-drive the vehicle for several minutes in the D position through all four gears.  
30. Monitor the OBD status for P0722 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.  
2. Test-drive the vehicle for 10 minutes under the same conditions as those indicated by

the freeze data, and monitor the OBD status for P0723 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 3.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and PCM. If the tester indicates NOT COMPLETED, return to step 2 and recheck.

3. Turn the ignition switch OFF.
4. Disconnect the output shaft (countershaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

*Are the connector terminals OK?*

**YES-** Go to step 5.

**NO-** Repair the connector terminals, then go to step 5.

5. Connect the output shaft (countershaft) speed sensor connector.
6. Test-drive the vehicle for several minutes, and monitor the OBD status for P0723 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, troubleshooting is complete. If the tester indicates NOT COMPLETED, return to step 6 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (31P).
10. Disconnect the output shaft (countershaft) speed sensor connector.
11. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 126: Checking Continuity Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 2 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal A18 and the output shaft (countershaft) speed sensor, then go to step 18 .

**NO-** Go to step 12.

12. Connect PCM connector A (31P).
13. Turn the ignition switch ON (II).
14. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

**Fig. 127: Measuring Voltage Between Output Shaft (Countershaft) Speed Sensor Connector Terminal 2 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Replace the output shaft (countershaft) speed sensor (see step **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT** ), then go to 18 .

**NO-** Go to step 15.

15. Turn the ignition switch OFF.
16. Disconnect PCM connector A (31P).
17. Check for continuity between PCM connector terminal A18 and output shaft (countershaft) speed sensor connector terminal No. 2.

**Fig. 128: Checking Continuity Between PCM Connector A (31P) Terminal A18 And Output Shaft (Countershaft) Speed Sensor Connector Terminal 2**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open in the wire between PCM connector terminal A18 and the output shaft (countershaft) speed sensor, then go to step 18.

18. Clear the DTC with the HDS.
19. Test-drive the vehicle for several minutes in the D position through all four gears.
20. Monitor the OBD status for P0723 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit**

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION**) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST** ).

*Is the line pressure within service limit?*

**YES-** Go to step 5.

**NO-** Repair the ATF pump and regulator valve, or replace the transmission.

5. Measure the 1st clutch pressure (see **PRESSURE TEST** ).

*Is the 1st clutch pressure within service limits?*

**YES-** Go to step 6.

**NO-** Shift valves B and C are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

6. Test stall speed in the 1 position (see **STALL SPEED TEST** ).

*Is the stall speed test within service limits?*

**YES-** Go to step 7.

**NO-** Shift valves A and D are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

7. Clear the DTC with the HDS.
8. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 1st gear in the D position at 10 mph (16 km/h) for 20 seconds.
9. Monitor the OBD status for P0731 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair the 1st clutch, or replace the transmission.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 8 and recheck.

**DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit**

**NOTE:** Record all freeze data and review **General Troubleshooting Information** (see **GENERAL TROUBLESHOOTING INFORMATION**) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST** ).

*Is the line pressure within service limit?*

**YES-** Go to step 5.

**NO-** Repair the ATF pump and regulator valve, or replace the transmission.

5. Measure the 2nd clutch pressure (see **PRESSURE TEST** ).

*Is the 2nd clutch pressure within service limits?*

**YES-** Go to step 6.

**NO-** Shift valves A and B are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

6. Test stall speed in the 2 position (see **STALL SPEED TEST** ).

*Is the stall speed test within service limits?*

**YES-** Go to step 7.

**NO-** Shift valve C is stuck. Repair the shift valve C and hydraulic circuit, or replace the transmission.

7. Clear the DTC with the HDS.

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8. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 2nd gear in the D position at 10 mph (16 km/h) for 20 seconds.
9. Monitor the OBD status for P0732 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair the 2nd clutch, or replace the transmission.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 8 and recheck.

### DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit

**NOTE:** Record all freeze data and review **General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION)** before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST** ).

*Is the line pressure within service limits?*

**YES-** Go to step 5.

**NO-** Repair the ATF pump and regulator valve, or replace the transmission.

5. Measure the 3rd clutch pressure (see **PRESSURE TEST** ).

*Is the 3rd clutch pressure within service limits?*

**YES-** Go to step 6.

**NO-** Shift valves A and D are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated



by the freeze data, or drive in 3rd gear in the D position at speeds over 10 mph (16 km/h) for 20 seconds.

8. Monitor the OBD status for P0733 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair the 3rd clutch, or replace the transmission.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 7 and recheck.

**DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit**

**NOTE:** Record all freeze data and review **General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION )** before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see step 4 ), then go to step 4.

4. Measure the line pressure (see **PRESSURE TEST** ).

*Is the line pressure within service limits?*

**YES-** Go to step 5.

**NO-** Repair the ATF pump and regulator valve, or replace the transmission.

5. Measure the 4th clutch pressure (see **PRESSURE TEST** ).

*Is the 4th clutch pressure within service limits?*

**YES-** Go to step 6.

**NO-** Shift valve B, shift valve C, servo control valve, and servo valve are stuck. Repair these valves and hydraulic circuit, or replace the transmission.

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in the 4th gear in the D position at speeds over 10 mph (16

km/h) for 20 seconds.

8. Monitor the OBD status for P0734 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair the 4th clutch, or replace the transmission.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 7 and recheck.

**DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF**

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION**) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Select Shift Solenoid E in Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 6.

**NO-** Replace shift solenoid valve E (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 10 .

6. Run the engine until the engine coolant temperature reaches 176°F (80°C).
7. Select Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

*Is the system OK?*

**YES-** Go to step 8.

**NO-** Follow the instructions indicated on the HDS by the test result. Go to step 10

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if any part was replaced.

8. Test-drive the vehicle at 55 mph (88 km/h) for 2 minutes while monitoring the vehicle speed with the HDS.
9. Monitor the OBD status for P0741 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Faulty torque converter mechanism, torque converter clutch hydraulic circuit, lock-up shift valve, or lock-up control valve, or replace the transmission.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 8 and recheck.

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
12. Monitor the OBD status for P0741 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 7 and recheck.

**DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON**

**NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph

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(20 km/h) for more than 20 seconds, then slow down to a stop.

7. Monitor the OBD status for P0747 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

*Is the system OK?*

**YES-** Intermittent failure, the system is OK at this time.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .

10. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST** ).

*Does A/T clutch pressure control solenoid valve A work properly?*

**YES-** Repair hydraulic system related with shift valve B and E, or replace the transmission, then go to step 11.

**NO-** Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT** ), then go to step 11.

11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD status for P0747 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P0752: Shift Solenoid Valve A Stuck ON**

**NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0752 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Shift Solenoid A in Miscellaneous Test Menu, and check that shift solenoid valve A operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 10.

**NO-** Replace shift solenoid valve A (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 13 .

10. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

12. Monitor the OBD status for P0752 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair shift valve A, or replace the transmission, then go to step 13.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 10 and recheck.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down and to a stop.
16. Monitor the OBD status for P0752 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P0761: Shift Solenoid Valve C Stuck OFF**

**NOTE:** Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

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7. Monitor the OBD status for P0761 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Shift Solenoid C in Miscellaneous Test Menu, and check that shift solenoid valve C operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 10.

**NO-** Replace shift solenoid valve C (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 13 .

10. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0761 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair shift valve C, or replace the transmission, then go to step 13 .

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 10 and recheck.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0761 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P0771: Shift Solenoid Valve E Stuck OFF**

**NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0771 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Shift Solenoid E in Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 10.

**NO-** Replace shift solenoid valve E (see step SHIFT SOLENOID VALVE REPLACEMENT ), then go to 13 .

10. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.



12. Monitor the OBD status for P0771 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair shift valve E, or replace the transmission, then go to step 13.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 10 and recheck.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0771 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF**

**NOTE:** Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

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7. Monitor the OBD status for P0776 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid B in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

*Is the system OK?*

**YES-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 9 and recheck.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .

10. Inspect A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C TEST**).

*Does A/T clutch pressure control solenoid valve B work properly?*

**YES-** Repair hydraulic system related with shift valve B, or replace the transmission, then go to step 11.

**NO-** Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**), then go to step 11.

11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD status for P0776 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON**

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION**) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0777 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid B in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

*Is the system OK?*

**YES-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 9 and recheck.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .

10. Inspect A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C TEST** ).

*Does A/T clutch pressure control solenoid valve B work properly?*

**YES-** Repair hydraulic system related with shift valve B, or replace the transmission, then go to step 11.

**NO-** Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ), then go to step 11.

11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD status for P0777 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

#### **DTC P0780: Shift Control System**

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.

1. Check for other DTCs indicated simultaneous with the code P0780.

**NOTE:** P0780 means there is one or more A/T DTCs stored.

*Are there other DTCs?*

**YES-** Go to step 2.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM.

2. Perform the troubleshooting for the codes:
  - P1731: (see **DTC P1731: PROBLEM IN SHIFT CONTROL SYSTEM:** )
  - P1732: (see **DTC P1732: PROBLEM IN SHIFT CONTROL SYSTEM:** )
  - P1735: (see **DTC P1735: PROBLEM IN SHIFT CONTROL SYSTEM:** )

- P1736: (see **DTC P1736: PROBLEM IN SHIFT CONTROL SYSTEM:** )

**DTC P0796: A/T Clutch Pressure Control Solenoid Valve C Stuck OFF**

**NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0796 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid C in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

*Is the system OK?*

**YES-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 9 and recheck.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .

10. Inspect A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE**

**CONTROL SOLENOID VALVE B AND C TEST** ).

*Does A/T clutch pressure control solenoid valve C work properly?*

**YES-** Repair hydraulic system related with shift valves B and C, or replace the transmission, then go to step 11.

**NO-** Replace A/T clutch pressure control solenoid valve C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ), then go to step 11.

11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD status for P0796 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P0797: A/T Clutch Pressure Control Solenoid Valve C Stuck ON**

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

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7. Monitor the OBD status for P0797 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid C in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

*Is the system OK?*

**YES-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 9 and recheck.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 10. If any part was replaced, go to step 11 .

10. Inspect A/T clutch pressure control solenoid valve C (see A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C TEST).

*Does A/T clutch pressure control solenoid valve C work properly?*

**YES-** Repair hydraulic system related with shift valves B and C, or replace the transmission, then go to step 11.

**NO-** Replace A/T clutch pressure control solenoid valve C (see A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT), then go to step 11.

11. Clear the DTC with the HDS.
12. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Monitor the OBD status for P0797 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

## DTC P0812: Open in Transmission Range Switch ATP RVS Switch Circuit

**NOTE:**

- Record all freeze data and review **General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION )** before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch ON (II).
2. Shift to the R position, and verify the A/T R SWITCH signal with the HDS in the A/T data list.

*Is the A/T R SWITCH ON?*

**YES-** Go to step 3.

**NO-** Inspect the end of the selector control shaft (see step 6 ), adjust the shift cable (see step **SHIFT CABLE ADJUSTMENT** ), then recheck. If problem still exists, go to 4 .

3. Check the REVERSE SWITCH signal with the HDS.

*Is the REVERSE SWITCH ON?*

**YES-** Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and PCM.

**NO-** Go to step 4.

4. Turn the ignition switch OFF.
5. Check for continuity between PCM connector terminals A8 and body ground, and between A9 and body ground.

**Fig. 129: Checking Continuity Between PCM Connector A (31P) Terminals A8, A9 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 6.

**NO-** Repair open in the wires between PCM connector terminals A8,A9, and ground (G101), and repair poor ground (G101), then go to step 12 .

6. Turn the ignition switch ON (II).
7. Shift to the R position.
8. Measure the voltage between PCM connector terminals C12 and A9.



**Fig. 130: Measuring Voltage Between PCM Connector Terminals C12 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

**YES-** Go to step 9.

**NO-** Check for loose or poor connections at PCM connector terminal C12. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

9. Turn the ignition switch OFF.
10. Disconnect the transmission range switch connector.
11. Check for continuity between the transmission range switch connector terminals No. 1 and No. 10. The shift position must be the R position.

**Fig. 131: Checking Continuity Between Transmission Range Switch Connector Terminals 1 And 10**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Check for loose or poor connections at the transmission range switch connector terminal No. 1. If the connection is OK, repair open in the wire between PCM connector terminal C12 and the transmission range switch, then go to step 12.

**NO-** Replace the transmission range switch, then go to step 12.

12. Clear the DTC with the HDS.
13. Start the engine, and shift the shift lever slowly into the P, R, then N position.
14. Monitor the OBD status for P0812 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0842: Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**

- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check the 2nd PRES SWITCH signal with the HDS in the A/T data list when not in 2nd gear.

*Is the 2nd PRES SWITCH OFF?*

**YES-** Go to step 3.

**NO-** Go to step 5 .

3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 2nd gear in the 2 position for more than 5 seconds, then shift to the D position, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
4. Monitor the OBD status for P0842 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 5.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check the BLU/RED wire for an intermittent short to ground between the 2nd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

5. Turn the ignition switch OFF .
6. Disconnect the 2nd clutch transmission fluid pressure switch connector.
7. Turn the ignition switch ON (II).
8. Check the 2nd PRES SWITCH signal with the HDS in the A/T data list.

*Is the 2nd PRES SWITCH OFF?*

**YES-** Replace the 2nd clutch transmission fluid pressure switch (see step **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT** ), then go to 13 .

**NO-** Go to step 9.

9. Turn the ignition switch OFF .
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (22P).
12. Check for continuity between PCM connector terminal C13 and body ground.

**Fig. 132: Checking Continuity Between PCM Connector C (22P) Terminal C13 And Body Ground**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C13 and the 2nd clutch transmission fluid pressure switch, then go to step 13.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

13. Clear the DTC with the HDS.
14. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 2nd gear in the 2 position for more than 5 seconds, then shift to the D position, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
15. Monitor the OBD status for P0842 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0843: Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Shift into the 2 position while pressing the brake pedal, and verify that the SHIFT CONTROL indicates 2nd with the HDS in the A/T data list.
3. Check the 2nd PRES SWITCH signal with the HDS in the A/T data list.

*Is the 2nd PRES SWITCH ON?*

**YES-** Go to step 4.

**NO-** Go to step 6 .

4. Drive the vehicle in 2nd gear in the 2 position for more than 5 seconds, then shift to the D position, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
5. Monitor the OBD status for P0843 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 2nd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the 2nd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

**Fig. 133: Measuring Voltage Between 2ND Clutch Transmission Fluid Pressure Switch Connector Terminal And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Replace the 2nd clutch transmission fluid pressure switch (see **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT** ), then go to 11 .

**NO-** Go to step 10.

10. Measure the voltage between PCM connector terminal C13 and body ground.

**Fig. 134: Measuring Voltage Between PCM Connector C (22P) Terminal C13 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal C13 and the 2nd clutch transmission fluid pressure switch, then go to step 11.

**NO-** Check for loose or poor connections at PCM connector terminal C13. If the connection is OK, update the PCM if it does not have the latest software, or

substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM.

11. Clear the DTC with the HDS.
12. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 2nd gear in the 2 position for more than 5 seconds, then shift to the D position, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
13. Monitor the OBD status for P0843 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list when not in 3rd gear.

*Is the 3rd PRES SWITCH OFF?*

**YES-** Go to step 3.

**NO-** Go to step 5 .

3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 3rd gear in the D position with the over drive off (press the O/D switch) for more than 5 seconds, then press the O/D switch one more, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
4. Monitor the OBD status for P0847 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 5.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check the BLU/WHT wire for an intermittent short to ground between the 3rd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Disconnect the 3rd clutch transmission fluid pressure switch connector.
7. Turn the ignition switch ON (II).
8. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list.

*Is the 3rd PRES SWITCH OFF?*

**YES-** Replace the 3rd clutch transmission fluid pressure switch (see step **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT** ), then go to 13 .

**NO-** Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (22P).
12. Check for continuity between PCM connector terminal C10 and body ground.

**Fig. 135: Checking Continuity Between PCM Connector C (22P) Terminal C10 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C10 and the 3rd clutch transmission fluid pressure switch, then go to step 13.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

13. Clear the DTC with the HDS.
14. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 3rd gear in the D position (press the O/D switch) for more than 5 seconds, then press the O/D switch one more, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
15. Monitor the OBD status for P0847 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in the 3rd gear in the D position with the over drive off (press the O/D switch), and verify that the SHIFT CONTROL indicates 3rd with the HDS in the A/T data list.
3. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list.

*Is the 3rd PRES SWITCH ON?*

**YES-** Go to step 4.

**NO-** Go to step 6 .

4. Drive the vehicle in 3rd gear in the D position with the over drive off (press the O/D switch), for more than 5 seconds, then press the O/D switch one more, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
5. Monitor the OBD status for P0848 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the 3rd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).

9. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

**Fig. 136: Measuring Voltage Between 3RD Clutch Transmission Fluid Pressure Switch Connector Terminal And Body Ground**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there about 5 V?*

**YES-** Replace the 3rd clutch transmission fluid pressure switch (see step **2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT** ), then go to 11 .

**NO-** Go to step 10.

10. Measure the voltage between PCM connector terminal C10 and body ground.

**Fig. 137: Measuring Voltage Between PCM Connector C(22P) Terminal C10 And Body Ground**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there about 5 V?*

**YES-** Repair open in the wire between PCM connector terminal C10 and the 3rd clutch transmission fluid pressure switch, then go to step 11.

**NO-** Check for loose or poor connections at PCM connector terminal C10. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

11. Clear the DTC with the HDS.
12. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on). Drive the vehicle in 3rd gear in the D position with the over drive off (press the O/D switch), for more than 5 seconds, then press the O/D switch one more, and drive in 4th gear for more than 5 seconds. Slow down to a stop.
13. Monitor the OBD status for P0848 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.



**NOTE:**

- Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check that DTC P0962 recurs.

*Is DTC P0962 indicated?*

**YES-** Go to step 6 .

**NO-** Go to step 3.

3. Select Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.
4. Drive with A/T clutch pressure control solenoid valve A at 1.0 A in Clutch Pressure Control Solenoid Control Menu
5. Monitor the OBD status for P0962 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve A connector.
8. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

**Fig. 138: Measuring A/T Clutch Pressure Control Solenoid Valve A Resistance At Solenoid Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 3-10 ohm?*

**YES-** Go to step 9.

**NO-** Replace A/T clutch pressure control solenoid valve A (see step **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A**

**REPLACEMENT** ), then go to 12 .

9. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

**Fig. 139: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminal 2 And Body Ground**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there continuity?*

**YES-** Go to step 10.

**NO-** Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101), or repair poor ground (G101), then go to step 12 .

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

**Fig. 140: Measuring Voltage Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminals 1 And 2**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there about 11 V as the ignition switch is turned to the ON (II) position?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open or short to power in the wire between PCM connector terminal C1 and A/T clutch pressure control solenoid valve A, then go to step 12.

12. Clear the DTC with the HDS.
13. Test-drive the vehicle for several minutes in the D position through all four gears.
14. Monitor the OBD status for P0962 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A**

**NOTE:**

- Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING**

**INFORMATION ) before you troubleshoot.**

- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0963 recurs.

*Is DTC P0963 indicated?*

**YES-** Go to step 6 .

**NO-** Go to step 3.

3. Select Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.
4. Drive with A/T clutch pressure control solenoid valve A at 0.2 A in Clutch Pressure Control Solenoid Control Menu.
5. Monitor the OBD status for P0963 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve A and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve A connector.
8. Measure A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

**Fig. 141: Measuring A/T Clutch Pressure Control Solenoid Valve A Resistance At Solenoid Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 3-10 ohm?*

**YES-** Go to step 9.

**NO-** Replace A/T clutch pressure control solenoid valve A (see step **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT** ), then go to 10 .

9. Check for continuity between A/T clutch pressure control solenoid valve A connector

terminal No. 2 and body ground.

**Fig. 142: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve A Connector Terminal 2 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open in the wire between A/T clutch pressure control solenoid valve A and ground (G101), or repair poor ground (G101), then go to step 10.

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the D position through all four gears.
12. Monitor the OBD status for P0963 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit**

- NOTE:**
- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
  - **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0966 recurs.

*Is DTC P0966 indicated?*

**YES-** Go to step 6 .

**NO-** Go to step 3.

3. Select Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

4. Drive with A/T clutch pressure control solenoid valve B at 1.0 A in Clutch Pressure Control Solenoid Control Menu.
5. Monitor the OBD status for P0966 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at A/T clutch pressure control solenoid valve B and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve B connector.
8. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

**Fig. 143: Measuring A/T Clutch Pressure Control Solenoid Valve B Resistance At Solenoid Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 3-10 ohm?*

**YES-** Go to step 9.

**NO-** Replace A/T clutch pressure control solenoid valve B (see step **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ), then go to 12 .

9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

**Fig. 144: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve B Connector Terminal 2 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Go to step 10.

**NO-** Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101), or repair poor ground (G101), then go to step 12 .

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

**Fig. 145: Measuring Voltage Between A/T Clutch Pressure Control Solenoid Valve B Connector Terminals 1 And 2**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there about 11 V as the ignition switch is turned to the ON (II) position?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open or short to power in the wire between PCM connector terminal C15 and A/T clutch pressure control solenoid valve B, then go to step 12.

12. Clear the DTC with the HDS.
13. Test-drive the vehicle for several minutes in the D position through all four gears.
14. Monitor the OBD status for P0966 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0967 recurs.

*Is DTC P0967 indicated?*

**YES-** Go to step 6 .

**NO-** Go to step 3.

3. Select Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.
4. Drive with A/T clutch pressure control solenoid valve B at 0.2 A in Clutch Pressure Control Solenoid Control Menu.

5. Monitor the OBD status for P0967 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve B and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve B connector.
8. Measure A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

**Fig. 146: Measuring A/T Clutch Pressure Control Solenoid Valve B Resistance At Solenoid Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 3-10 ohm?*

**YES-** Go to step 9.

**NO-** Replace A/T clutch pressure control solenoid valve B (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ), then go to 10 .

9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

**Fig. 147: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve B Connector Terminal 2 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open in the wire between A/T clutch pressure control solenoid valve B and ground (G101), or repair poor ground (G101), then go to step 10.

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the D position through all four gears.

12. Monitor the OBD status for P0967 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0970 recurs.

*Is DTC P0970 indicated?*

**YES-** Go to step 6 .

**NO-** Go to step 3.

3. Select Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.
4. Drive with A/T clutch pressure control solenoid valve C at 1.0 A in Clutch Pressure Control Solenoid Control Menu.
5. Monitor the OBD status for P0970 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve C connector.
8. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid connector.



**Fig. 148: Measuring A/T Clutch Pressure Control Solenoid Valve C Resistance At Solenoid Connector**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there 3-10 ohm ?*

**YES-** Go to step 9.

**NO-** Replace A/T clutch pressure control solenoid valve C (see step **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ), then go to 12 .

9. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

**Fig. 149: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve C Connector Terminal 2 And Body Ground**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there continuity?*

**YES-** Go to step 10.

**NO-** Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101), then go to step 12 .

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

**Fig. 150: Measuring Voltage Between A/T Clutch Pressure Control Solenoid Valve C Connector Terminals 1 And 2**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there about 11 V as the ignition switch is turned to the ON (II) position?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open or short to power in the wire between PCM connector terminal C7 and A/T clutch pressure control solenoid valve C, then go to step 12.

12. Clear the DTC with the HDS.
13. Test-drive the vehicle for several minutes in the D position through all four gears.
14. Monitor the OBD status for P0970 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Check that DTC P0971 recurs.

*Is DTC P0971 indicated?*

**YES-** Go to step 6 .

**NO-** Go to step 3.

3. Select Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.
4. Drive with A/T clutch pressure control solenoid valve C at 0.2 A in Clutch Pressure Control Solenoid Control Menu.
5. Monitor the OBD status for P0971 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 6.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at A/T clutch pressure control solenoid valve C and PCM. If the tester indicates NOT COMPLETED, return to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve C connector.
8. Measure A/T clutch pressure control solenoid valve C resistance at the solenoid connector.

**Fig. 151: Measuring A/T Clutch Pressure Control Solenoid Valve C Resistance At Solenoid Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 3-10 ohm ?*

**YES-** Go to step 9.

**NO-** Replace A/T clutch pressure control solenoid valve C (see step **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ), then go to 10 .

9. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

**Fig. 152: Checking Continuity Between A/T Clutch Pressure Control Solenoid Valve C Connector Terminal 2 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Repair open in the wire between A/T clutch pressure control solenoid valve C and ground (G101), or repair poor ground (G101), then go to step 10.

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the D position through all four gears.
12. Monitor the OBD status for P0971 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0973: Short in Shift Solenoid Valve A Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.

2. Start the engine, and shift to the D position.
3. Check that DTC P0973 recurs.

*Is DTC P0973 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid A in Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.
5. Start the engine, and shift to the D position.
6. Monitor the OBD status for P0973 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check the BLU/BLK wire for an intermittent short to ground between shift solenoid valve A and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C6 and A9.

**Fig. 153: Measuring Resistance Between PCM Connector Terminals C6 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there less than 12 ohm ?*

**YES-** Go to step 11.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C6 and A9.

**Fig. 154: Checking Continuity Between PCM Connector Terminals C6 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

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**YES-** Repair short to ground in the wire between PCM connector terminal C6 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve A, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve A and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Start the engine, and shift to the D position.
15. Monitor the OBD status for P0973 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

### DTC P0974: Open in Shift Solenoid Valve A Circuit

#### **NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the P position.
3. Check that DTC P0974 recurs.

*Is DTC P0974 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid A in Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.
5. Start the engine in the P position.
6. Monitor the OBD status for P0974 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve A and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C6 and A9.

**Fig. 155: Measuring Resistance Between PCM Connector Terminals C6 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 12-25 ohm ?*

**YES-** Check for loose or poor connections at PCM connector terminal C6. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Go to step 11.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Measure the resistance between shift solenoid harness connector terminal No. 5 and body ground.

**Fig. 156: Measuring Resistance Between Shift Solenoid Harness Connector Terminal 5 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 12-25 ohm ?*

**YES-** Repair open in the wire between PCM connector terminal C6 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve A, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve A and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Start the engine in the P position.
15. Monitor the OBD status for P0974 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is completed.

**NO-** Return to step 1 and recheck.

**DTC P0976: Short in Shift Solenoid Valve B Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the P position.
3. Check that DTC P0976 recurs.

*Is DTC P0976 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid B in Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.
5. Start the engine in the P position.
6. Monitor the OBD status for P0976 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check the GRN/WHT wire for an intermittent short to ground between shift solenoid valve B and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C4 and A9.

**Fig. 157: Measuring Resistance Between PCM Connector Terminals C4 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there less than 12 ohm ?*

**YES-** Go to step 11.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C4 and A9.

**Fig. 158: Checking Continuity Between PCM Connector Terminals C4 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C4 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve B, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve B and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Start the engine in the P position.
15. Monitor the OBD status for P0976 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0977: Open in Shift Solenoid Valve B Circuit**

**NOTE:**

- Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in 1st, 2nd, and 3rd gears in the D position with the over drive off (press the O/D switch).
3. Check that DTC P0977 recurs.



*Is DTC P0977 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid B in Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.
5. Test-drive the vehicle for several minutes in 1st, 2nd and 3rd gears in the D position with the over drive off (press the O/D switch).
6. Monitor the OBD status for P0977 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve B and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C4 and A9.

**Fig. 159: Measuring Resistance Between PCM Connector Terminals C4 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 12-25 ohm ?*

**YES-** Check for loose or poor connections at PCM connector terminal C4. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Go to step 11.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Measure the resistance between shift solenoid harness connector terminal No. 2 and body ground.

**Fig. 160: Measuring Resistance Between Shift Solenoid Harness Connector Terminal 2 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 12-25 ohm ?*

**YES-** Repair open in the wire between PCM connector terminal C4 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve B, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve B and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle for several minutes in 1st, 2nd, and 3rd gears in the D position with the over drive off (press the O/D switch).
15. Monitor the OBD status for P0977 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0979: Short in Shift Solenoid Valve C Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine, and shift to the D position.
3. Check that DTC P0979 recurs.

*Is DTC P0979 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid C in Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.
5. Start the engine, and shift to the D position.
6. Monitor the OBD status for P0979 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check the GRN wire for an intermittent short to ground between shift solenoid valve C and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C2 and A9.

**Fig. 161: Measuring Resistance Between PCM Connector Terminals C2 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there less than 12 ohm ?*

**YES-** Go to step 11.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C2 and A9.

**Fig. 162: Checking Continuity Between PCM Connector Terminals C2 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C2 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve C, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve C and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Start the engine, and shift to the D position.
15. Monitor the OBD status for P0979 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0980: Open in Shift Solenoid Valve C Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the P position.
3. Check that DTC P0980 recurs.

*Is DTC P0980 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid C in Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.
5. Start the engine in the P position.
6. Monitor the OBD status for P0980 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve C and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C2 and A9.

*Is there 12-25 ohm ?*

**Fig. 163: Measuring Resistance Between PCM Connector Terminals C2 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**YES-** Check for loose or poor connections at PCM connector terminal C2. If the

connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Go to step 11.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Measure the resistance between shift solenoid harness connector terminal No. 1 and body ground.

**Fig. 164: Measuring Resistance Between Shift Solenoid Harness Connector Terminal 1 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 12-25 ohm ?*

**YES-** Repair open in the wire between PCM connector terminal C2 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve C, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve C and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Start the engine in the P position.
15. Monitor the OBD status for P0980 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0985: Short in Shift Solenoid Valve E Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Start the engine in the P position.
3. Check that DTC P0985 recurs.

*Is DTC P0985 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid E in Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.
5. Start the engine in the P position.
6. Monitor the OBD status for P0985 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check the YEL wire for an intermittent short to ground between shift solenoid valve E and PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C3 and A9.

**Fig. 165: Measuring Resistance Between PCM Connector Terminals C3 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there less than 12 ohm ?*

**YES-** Go to step 11.

**NO-** Update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C3 and A9.

**Fig. 166: Checking Continuity Between PCM Connector Terminals C3 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity?*

**YES-** Repair short to ground in the wire between PCM connector terminal C3 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve E, and check for a short in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve E and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Start the engine in the P position.
15. Monitor the OBD status for P0985 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.

**DTC P0986: Open in Shift Solenoid Valve E Circuit**

**NOTE:**

- **Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**
- **This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in 1st and 2nd gears in the D position.
3. Check that DTC P0986 recurs.

*Is DTC P0986 indicated?*

**YES-** Go to step 7 .

**NO-** Go to step 4.

4. Select Shift Solenoid E in Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.
5. Test-drive the vehicle for several minutes in 1st and 2nd gears in the D position.
6. Monitor the OBD status for P0986 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 7.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve E and

PCM. If the tester indicates NOT COMPLETED, return to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connectors A (31P) and C (22P).
10. Measure the resistance between PCM connector terminals C3 and A9.

**Fig. 167: Measuring Resistance Between PCM Connector Terminals C3 And A9**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 12-25 ohm ?*

**YES-** Check for loose or poor connections at PCM connector terminal C3. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see **DTC CLEAR PROCEDURE** ), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM.

**NO-** Go to step 11.

11. Disconnect the shift solenoid harness connector at the transmission housing.
12. Check for continuity between shift solenoid harness connector terminal No. 3 and body ground.

**Fig. 168: Checking Continuity Between Shift Solenoid Harness Connector Terminal 3 And Body Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there 12-25 ohm ?*

**YES-** Repair open in the wire between PCM connector terminal C3 and the shift solenoid harness connector, then go to step 13.

**NO-** Check shift solenoid valve E, and check for an open in the shift solenoid harness in the transmission (see **SHIFT SOLENOID VALVE TEST** ). Replace shift solenoid valve E and/or shift solenoid harness, then go to step 13.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle for several minutes in 1st and 2nd gears in the D position.
15. Monitor the OBD status for P0986 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 1 and recheck.



**DTC P1731: Problem in Shift Control System:**

- Shift Solenoid Valve E Stuck ON
- Shift Valve E Stuck
- A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

**NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION) before you troubleshoot.**

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P1731 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Shift Solenoid E in Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 10.

**NO-** Replace shift solenoid valve E (see step SHIFT SOLENOID VALVE REPLACEMENT ), then go to 12 .

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10. Select Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

*Is the system OK?*

**YES-** Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 10 and recheck.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 11. If any part was replaced, go to step 12 .

11. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST** ).

*Dose A/T clutch pressure control solenoid valve A work properly?*

**YES-** Repair hydraulic system related with shift valve E, or replace the transmission, then go to step 12.

**NO-** Replace A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT** ), then go to step 12.

12. Clear the DTC with the HDS.
13. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Monitor the OBD status for P1731 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P1732: Problem in Shift Control System:**

- Shift Solenoid Valves B or C Stuck ON
- Shift Valves B or C Stuck

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION** ) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on)

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2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P1732 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Shift Solenoid B in Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 10.

**NO-** Replace shift solenoid valve B (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 14 .

10. Select Shift Solenoid C in Miscellaneous Test Menu, and check that shift solenoid valve C operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 11.

**NO-** Replace shift solenoid valve C (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 14 .

11. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph

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(20 km/h) for more than 20 seconds, then slow down to a stop.

13. Monitor the OBD status for P1732 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair hydraulic system related with shift valves B and C, or replace the transmission, then go to step 14.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 14 and recheck.

14. Clear the DTC with the HDS.
15. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
17. Monitor the OBD status for P1732 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

### **DTC P1735: Problem in Shift Control System:**

- Shift Solenoid Valves B and C Stuck OFF
- Shift Solenoid Valve E Stuck ON
- Shift Valves B, C, and E Stuck
- A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

**NOTE:** Record all freeze data and review General Troubleshooting Information (see **GENERAL TROUBLESHOOTING INFORMATION**) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P1735 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Shift Solenoid B in Miscellaneous Test Menu, and check that the shift solenoid valve B operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 10.

**NO-** Replace shift solenoid valve B (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 17 .

10. Select Clutch Pressure Control (Linear) Solenoid C in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 11.

**NO-** Replace shift solenoid valve C (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 17 .

11. Select Shift Solenoid E in Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 12.

**NO-** Replace shift solenoid valve E (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 17 .

12. Select Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

*Is the system OK?*

**YES-** Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 12 and recheck.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 13. If any part was replaced, go to step 17 .

13. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST** ).

*Does A/T clutch pressure control solenoid valve A work properly?*

**YES-** Repair hydraulic system related with shift valve E, or replace the transmission, then go to step 12 .

**NO-** Replace A/T clutch pressure control solenoid valve A (see step **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT** ), then go to 12 .

14. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P1735 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair hydraulic system related with shift valves B, C, and E, or replace the transmission, then go to step 17.

**NO-** If the tester indicates PASSED, Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 14 and recheck.

17. Clear the DTC with the HDS.
18. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
19. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
20. Monitor the OBD status for P1735 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

**DTC P1736: Problem in Shift Control System:**

- Shift Solenoid Valves B Stuck OFF
- Shift Solenoid Valve E Stuck ON
- Shift Valves B and E Stuck
- A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

**NOTE: Record all freeze data and review General Troubleshooting Information (see GENERAL TROUBLESHOOTING INFORMATION ) before you troubleshoot.**

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 ) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

*Does the strainer contain metal debris or excessive clutch material?*

**YES-** Replace the transmission.

**NO-** Replace the ATF (see step 4 ), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P1736 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Go to step 8.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 5 and recheck.

8. Clear the DTC with the HDS.
9. Select Shift Solenoid B in Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 10.

**NO-** Replace shift solenoid valve B (see step SHIFT SOLENOID VALVE)

**REPLACEMENT** ), then go to 16 .

10. Select Shift Solenoid E in Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

*Is a clicking sound heard?*

**YES-** Go to step 11.

**NO-** Replace shift solenoid valve E (see step **SHIFT SOLENOID VALVE REPLACEMENT** ), then go to 16 .

11. Select Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

*Is the system OK?*

**YES-** Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 11 and recheck.

**NO-** Follow the instructions indicated on the HDS by the test result, but if the tester has not determined the cause of the failure, go to step 12. If any part was replaced, go to step 16 .

12. Inspect A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST** ).

*Does A/T clutch pressure control solenoid valve A work properly?*

**YES-** Repair hydraulic system related with shift valve E, or replace the transmission, then go to step 16 .

**NO-** Replace A/T clutch pressure control solenoid valve A (see step **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT** ), then go to 16 .

13. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
14. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Monitor the OBD status for P1736 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate FAILED?*

**YES-** Repair hydraulic system related with shift valves B and E, or replace the transmission, then go to step 16.

**NO-** If the tester indicates PASSED, intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETED, return to step 13 and recheck.



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16. Clear the DTC with the HDS.
17. Test-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
18. Retest-drive the vehicle in the D position through all four gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
19. Monitor the OBD status for P1736 with the DTC Monitor Tool in DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

*Does the result indicate PASSED?*

**YES-** Troubleshooting is complete.

**NO-** Return to step 8 and recheck.

### ROAD TEST

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Apply the parking brake, and block both rear wheels. Start the engine, then shift to the D position while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
3. Repeat step 2 in the 2, 1, and R positions.
4. Connect the HDS to the DLC (A), and go to the A/T data list.

### **Fig. 169: Identifying Data Link Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Test-drive the vehicle on a flat road in the D position. Check for abnormal noise and clutch slippage. While driving, check that the shift points occur at the proper speeds by monitoring the throttle position sensor voltage with the HDS and comparing your shift point speeds and voltage to those in the table. (The throttle position sensor voltage represents the throttle opening.)

### **Upshift: D Position**

#### **UPSHIFT D POSITION**

<b>Throttle position sensor voltage: 0.8 V</b>	
1st-->2nd	9-12 mph (15-19 km/h)
2nd-->3rd	21-24 mph (34-39 km/h)
3rd-->4th	28-32 mph (45-52 km/h)
Lock-up ON in 4th gear	55-61 mph (88-98 km/h)
<b>Throttle position sensor voltage: 2.25 V</b>	
1st-->2nd	23-27 mph (37-43 km/h)
2nd-->3rd	39-44 mph (63-71 km/h)

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3rd-->4th	58-63 mph (93-102 km/h)
Lock-up ON in 4th gear	67-78 mph (108-125 km/h)
<b>Fully-opened throttle position sensor voltage: 4.5 V</b>	
1st-->2nd	39-43 mph (62-70 km/h)
2nd-->3rd	56-64 mph (90-103 km/h)
3rd-->4th	102-112 mph (164-181 km/h)
Lock-up ON in 4th gear	-

**Downshift: D Position****DOWNSHIFT D POSITION**

<b>Throttle position sensor voltage: 0.8 V</b>	
Lock-up OFF in 4th gear	53-60 mph (86-96 km/h)
4th-->3rd	19-22 mph (30-35 km/h)
3rd-->1st	5-8 mph (8-13 km/h)
<b>Throttle position sensor voltage: 2.25 V</b>	
Lock-up OFF in 4th gear	55-63 mph (89-102 km/h)
<b>Fully-opened throttle position sensor voltage: 4.5 V</b>	
Lock-up OFF in 4th gear	83-93 mph (134-150 km/h)
4th-->3rd	83-93 mph (134-150 km/h)
3rd-->2nd	53-60 mph (85-96 km/h)
2nd-->1st	26-31 mph (42-50 km/h)

- Accelerate to about 35 mph (57 km/h) so the transmission is in 4th, then shift from the D position to the 2 position. The vehicle should immediately begin to slow down from engine braking.
- Check for abnormal noise and clutch slippage in the following positions.

**1 (1st Gear) Position**

Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage. Upshifts should not occur with the shift lever in this position.

**2 (2nd Gear) Position**

Accelerate from a stop at full throttle. Check that there is no abnormal noise or clutch slippage. Upshifts and downshifts should not occur with the shift lever in this position.

**R (Reverse) Position**

Accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.

## 8. Test in P (Park) Position.

Park the vehicle on a slope (about 16 degrees), apply the brake, and shift into the P position. Release the brake; the vehicle should not move.

**NOTE:** Always use the brake to hold the vehicle, when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released. If the vehicle is allowed to roll backwards while the transmission is in a forward position, the engine may stall, resulting in reduced steering and braking efficiency.

## STALL SPEED TEST

1. Make sure the transmission fluid is filled to the proper level (see **ATF LEVEL CHECK**).
2. Apply the parking brake, and block all four wheels.
3. Connect the HDS to the DLC (A), and go to the A/T data list.

### **Fig. 170: Identifying Data Link Connector** Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Make sure the A/C switch is OFF.
5. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the 2 position.
6. Fully press the brake pedal and accelerator pedal for 6 to 8 seconds, and note engine speed. Do not move the shift lever while raising engine speed.
7. Allow 2 minutes for cooling, then repeat the test in the D, 1, and R positions.

**NOTE:**

- Do not test stall speed for more than 10 seconds at a time.
- Stall speed tests should be used for diagnostic purposes only.
- Stall speed should be the same in D, 2, 1, and R positions.
- Do not test stall speed with the A/T pressure gauges installed.

**Stall Speed RPM:**

**Specification: 2,400 RPM**

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### Service Limit: 2,250-2,550 RPM

8. If the measurements are out of the service limit, problems and probable causes are listed in the table:

#### PROBLEM POSSIBLE CAUSE

Problem	Probable causes
Stall speed RPM high in the D, 2, 1, and R positions	<ul style="list-style-type: none"><li>• ATF pump output low</li><li>• ATF pump defective</li><li>• Clogged ATF strainer</li><li>• Regulator valve stuck</li><li>• Slipping clutch</li></ul>
Stall speed high in the 1 position	Slippage of 1st clutch
Stall speed high in the 2 position	Slippage of 2nd clutch
Stall speed high in the R position	Slippage of 4th clutch
Stall speed low in the D, 2, 1, and R positions	<ul style="list-style-type: none"><li>• Engine output low</li><li>• Engine throttle valve closed</li><li>• Torque converter one-way clutch slipping</li></ul>

#### PRESSURE TEST

##### Special Tools Required

- A/T oil pressure gauge set w/panel 07406-0020400 or 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

1. Make sure the transmission is filled to the proper level.
2. 4WD model: Raise the vehicle, make sure it is securely supported, and allow all four wheels to rotate freely.

2WD model: Raise the front of the vehicle, and make sure it is securely supported. Set the parking brake, block rear wheels securely, and allow the front wheels to rotate freely. Or raise the vehicle.

3. Connect the oil pressure gauge to the line pressure inspection port (A) and 4th clutch pressure inspection port (B). Do not allow dust or other foreign particles to enter the holes while connecting the gauges.

**Fig. 171: Connecting Oil Pressure Gauge To Line Pressure Inspection Port And**

**Fourth Clutch Pressure Inspection Port****Courtesy of AMERICAN HONDA MOTOR CO., INC.**

- Remove the air cleaner housing, and connect the oil pressure gauge to the 2nd clutch pressure inspection port (C). Then temporarily reinstall the air cleaner housing.

**Fig. 172: Connecting Oil Pressure Gauge To Second Clutch Pressure Inspection Port****Courtesy of AMERICAN HONDA MOTOR CO., INC.**

- Connect the oil pressure gauges to the 1st clutch pressure inspection port (D) and 3rd clutch pressure inspection port (E).

**Fig. 173: Connecting Oil Pressure Gauges To First Clutch Pressure Inspection Port (D) And Third Clutch Pressure Inspection Port****Courtesy of AMERICAN HONDA MOTOR CO., INC.**

- Warm up the engine (the radiator fan comes on), then stop it and connect the HDS to the DLC.
- Start the engine, and run it at 2,000 RPM.
- Shift to the N or P position, and measure the line pressure the at the line pressure inspection port (A).

**NOTE:** Higher pressure may be indicated if measurements are made in shift lever position other than N or P.

**LINE A FLUID PRESSURE**

Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	900-960 kPa (9.2-9.8 kgf/cm <sup>2</sup> , 130-140 psi)	850 kPa (8.7 kgf/cm <sup>2</sup> , 120 psi)

- Shift to the 1 position, and measure the 1st clutch pressure at the 1st clutch pressure inspection port (D) while holding engine speed at 2,000 RPM.
- Shift to the 2 position, and measure the 2nd clutch pressure at the 2nd clutch pressure inspection port (C) while holding engine speed at 2,000 RPM.
- Shift to the P position, then press the brake pedal and hold it.
- Shift to the D position, and turn the over drive off mode by pressing the O/D switch. Release the brake pedal; the transmission is in 1st gear.
- Press the accelerator pedal to increase engine speed to 2,500 RPM; the transmission shifts to 2nd gear.

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14. Release the accelerator pedal to close fully the throttle over 5 seconds; the engine speed decrease to 1,000 RPM with the transmission in 2nd gear.
15. Press the accelerator pedal very slowly to increase the engine speed to 2,000 RPM over 5 seconds, and hold the accelerator; the transmission shifts to 3rd gear. Measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (D) while holding engine speed at 2,000 RPM.
16. Release the over drive mode by pressing the O/D switch; the transmission shifts to 4th gear. Measure the 4th clutch pressure at the 4th clutch pressure inspection port (B) while holding engine speed at 2,000 RPM.
17. Shift to the R position, and measure the 4th clutch pressure at the 4th clutch pressure inspection port (B) while holding engine speed at 2,000 RPM.

### 1ST TO 4TH CLUTCH FLUID PRESSURE

Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (D)	890-970 kPa	840 kPa
2nd clutch (C)	(9.1-9.9 kgf/cm <sup>2</sup> , 130-140psi)	(8.6 kgf/cm <sup>2</sup> , 120 psi)
3rd clutch (E)		
4th clutch (B)		

18. If the measurements are out of service limit, problems and probable causes are listed in the table:

### PROBLEMS AND PROBABLE CAUSES

Problem	Probable causes
No or low line pressure	<ul style="list-style-type: none"> <li>• Torque converter</li> <li>• Regulator valve</li> <li>• Torque converter check valve                             <ul style="list-style-type: none"> <li>• ATF pump</li> </ul> </li> <li>• Clogged ATF strainer</li> </ul>
No or low 1st clutch pressure	<ul style="list-style-type: none"> <li>• 1st clutch</li> <li>• O-rings</li> </ul>
No or low 2nd clutch pressure	<ul style="list-style-type: none"> <li>• 2nd clutch</li> <li>• O-rings</li> </ul>
No or low 3rd clutch pressure	<ul style="list-style-type: none"> <li>• 3rd clutch</li> <li>• O-rings</li> </ul>
No or low 4th clutch pressure in the D position	<ul style="list-style-type: none"> <li>• 4th clutch</li> <li>• O-rings</li> </ul>

No or low 4th clutch pressure in the R position	<ul style="list-style-type: none"> <li>• Servo valve</li> <li>• 4th clutch</li> <li>• O-rings</li> </ul>
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19. Install the sealing bolts with new sealing washers, and tighten the bolts to the specified torque.

**Torque: 18 N.m (1.8 kgf.m, 13 lbf.ft)**

**NOTE: Do not reuse old sealing washers.**

20. Install the air cleaner housing.

#### SHIFT SOLENOID VALVE TEST

1. Connect the HDS to the DLC (A).

##### **Fig. 174: Identifying Data Link Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Select Shift Solenoid A, B, C, and E in Miscellaneous Test Menu on the HDS.
3. Check that shift solenoid valve A, B, C, and E operate with the HDS. A clicking sound should be heard.
4. Shift solenoid valves test has finished if the test results are OK.

If no sound is heard, remove the shift solenoid valves and test.

5. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

##### **Fig. 175: Identifying Loosening Torque Of Drain Plug**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Reinstall the drain plug with a new sealing washer (B).
7. Place the transmission jack under the transmission, and lift it up to create clearance between the transmission and front subframe.
8. Disconnect the shift solenoid harness connector.
9. Remove the bolt (A) securing the bracket (B) of the ATF cooler inlet line (C) on the shift solenoid valve cover (D), and remove the line bolt (E) with sealing washers (F).

##### **Fig. 176: Identifying Loosening Torque Of Solenoid Valve Cover And Bracket Bolts**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Remove the shift solenoid valve cover (D), gasket (G), and dowel pins (H).
11. Remove the bolt (A), and remove the shift solenoid harness connector (B).

**Fig. 177: Removing Bolt And Shift Solenoid Harness Connector And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Measure shift solenoid valves resistance between shift solenoid harness connector terminals No. 1, No. 2, No. 3, No. 5 and body ground.
  - Shift solenoid valve A: No. 5 terminal (BLU)
  - Shift solenoid valve B: No. 2 terminal (ORN)
  - Shift solenoid valve C: No. 1 terminal (GRN)
  - Shift solenoid valve E: No. 3 terminal (RED)

**Standard: 12-25 ohm**

13. If the resistance is out of standard, disconnect the shift solenoid valve connector, and measure its resistance at the solenoid valve connector. Replace the shift solenoid valve if the resistance is out of standard.
14. Connect the battery negative terminal to body ground, and connect the battery positive terminal to the shift solenoid harness connector terminals individually. A clicking sound should be heard.
15. If no sound is heard, connect the battery positive terminal to the shift solenoid valve terminal, and check for a clicking sound.

Replace the shift solenoid valve if no clicking sound is heard.

16. Replace the solenoid harness if the tests results are OK.
17. Install the new O-ring on the shift solenoid harness connector, and install the connector in the transmission housing.
18. Install the shift solenoid valve cover, dowel pins, and a new gasket.
19. Install the ATF cooler inlet line with the line bolt and the new sealing washers. Create clearance with the jack between the transmission and the front subframe to tighten the line bolt to the specified torque with the torque wrench.
20. Secure the ATF cooler inlet line bracket on the shift solenoid valve cover with the bolt.
21. Check the connector for rust, dirt, or oil, then connect the connector securely.
22. Remove the transmission jack.
23. Refill the transmission with the ATF (see step 5 ).

**SHIFT SOLENOID VALVE REPLACEMENT**



1. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

**Fig. 178: Identifying Loosening Torque Of Drain Plug**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Reinstall the drain plug with a new sealing washer (B).
3. Place the transmission jack under the transmission, and lift it up to create clearance between the transmission and front subframe.
4. Remove the bolt (A) securing the bracket (B) of the ATF cooler inlet line (C) on the shift solenoid valve cover (D), and remove the line bolt (E) with sealing washers (F).

**Fig. 179: Identifying Loosening Torque Of Shift Solenoid Valve Cover And Bracket Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Remove the shift solenoid valve cover (D), gasket (G), and dowel pins (H).
6. Disconnect the shift solenoid valve connectors.
7. Remove the bolts, and hold the shift solenoid valve body, then remove them. Do not hold the connector to remove.
8. Install the new O-rings (two O-rings per a solenoid valve) (F) on the good solenoid valve. The replacement solenoid valve comes with new O-rings.

**Fig. 180: Installing O-Rings On Good Solenoid Valve And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Install shift solenoid valves A, C, and E by holding the shift solenoid valve body; be sure to install the solenoid valves until their mounting bolt brackets contact the servo body.

**NOTE:**        **Do not install shift solenoid valve B before installing shift solenoid valve E. If solenoid valve B is installed before solenoid valve E, it may damage the hydraulic control system.**

10. Install shift solenoid valve B by holding the shift solenoid valve body; be sure to install the solenoid valve until its mounting bolt bracket contacts the bracket of installed solenoid.
11. Connect the shift solenoid valve A connector (G) with the ATF temperature sensor.
12. Connect the solenoid valve B connector (ORN wire), solenoid valve C connector (GRN wire), and solenoid valve E connector (RED wire).
13. Install the shift solenoid valve cover, dowel pins, and a new gasket.
14. Install the ATF cooler inlet line with the line bolt and the new sealing washers. Create

clearance with the jack between the transmission and the front subframe to tighten the line bolt to the specified torque with the torque wrench.

15. Secure the ATF cooler inlet line bracket on the shift solenoid valve cover with the bolt.
16. Check the connector for rust, dirt, or oil, then connect the connector securely.
17. Remove the transmission jack.
18. Refill the transmission with the ATF (see step 5 ).

#### **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A TEST**

1. Connect the HDS to the DLC (A).

##### **Fig. 181: Identifying Data Link Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Select Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu on the HDS.
3. Test A/T clutch pressure control solenoid valve A with the HDS.
4. Follow the instructions indicated on the HDS by the test result. If the HDS has not determined the cause of the failure, remove A/T clutch pressure control solenoid valve A and test.
5. Remove the air cleaner housing.
6. Disconnect the A/T clutch pressure control solenoid valve A connector.

##### **Fig. 182: Disconnecting A/T Clutch Pressure Control Solenoid Valve A Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Measure A/T clutch pressure control solenoid valve A resistance between the solenoid valve A connector terminals No. 1 and No. 2.

**Standard: 3-10 ohm**

8. If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A.
9. Connect the battery positive terminal to A/T clutch pressure control solenoid valve A connector terminal No. 1, and connect the battery negative terminal to terminal No. 2. A clicking sound should be heard.
10. If no sound is heard, remove A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT** ).
11. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust or dirt.
12. Connect A/T clutch pressure control solenoid valve A connector terminal No. 1 to the battery positive terminal, and connect the terminal No. 2 to the battery negative

terminal. Make sure the A/T clutch pressure control solenoid valve moves.

**Fig. 183: Checking Movement Of A/T Clutch Pressure Control Solenoid Valve**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Disconnect one of the battery terminals, and check valve movement.

**NOTE:** You can see valve movement through the fluid passage in the mounting surface of the A/T clutch pressure control solenoid valve A body.

14. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve A.
15. Install A/T clutch pressure control solenoid valve A (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT** ).

**A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A REPLACEMENT**

1. Remove the air cleaner housing.
2. Disconnect the A/T clutch pressure control solenoid valve A connector.
3. Remove the mounting bolts and A/T clutch pressure control solenoid valve A.

**Fig. 184: Identifying Loosening Torque Of A/T Clutch Pressure Control Solenoid Valve A Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Remove the ATF pipe (B), ATF joint pipes (C), O-rings (D), and gasket (E).
5. Clean the mounting surface and fluid passage of the transmission housing.
6. Install the new gasket on the transmission housing, and install the ATF pipe and ATF joint pipes.
7. Install the new O-rings over the ATF joint pipes.
8. Install the new A/T clutch pressure control solenoid valve A.
9. Check the A/T clutch pressure control solenoid valve A connector for rust, dirt, and oil, clean if needed, then connect it securely.
10. Install the air cleaner housing.

**A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C TEST**

1. Connect the HDS to the DLC (A).

**Fig. 185: Identifying Data Link Connector**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Select Clutch Pressure Control (Linear) Solenoid B and C in Miscellaneous Test Menu on the HDS.
3. Test A/T clutch pressure control solenoid valves B and C with the HDS.
4. Follow the instructions indicated on the HDS by the test result. If the HDS has not determined the cause of the failure, remove A/T clutch pressure control solenoid valves B, C and test.
5. Remove the air cleaner housing.
6. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.

**Fig. 186: Disconnecting A/T Clutch Pressure Control Solenoid Valves B And C Connectors**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Measure A/T clutch pressure control solenoid valve B resistance between the solenoid valve B connector terminals No. 1 and No. 2, and measure A/T clutch pressure control solenoid valve C resistance between the solenoid valve C connector terminals No. 1 and No. 2.

**Standard: 3-10 ohm**

8. If the resistance of either of the A/T clutch pressure control solenoid valves is out of standard, replace A/T clutch pressure control solenoid valves B and C.
9. Connect the battery positive terminal to A/T clutch pressure control solenoid valves B and C connector terminal No. 1, and connect the battery negative terminal to terminal No. 2. A clicking sound should be heard.
10. If no sound is heard, remove A/T clutch pressure control solenoid valves B and C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ).
11. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust or dirt.
12. Connect A/T clutch pressure control solenoid valves B and C connector terminal No. 1 to the battery positive terminal, and connect terminal No. 2 to the battery negative terminal. Make sure A/T clutch pressure control solenoid valves B and C move.

**Fig. 187: Checking Movement Of A/T Clutch Pressure Solenoid Valves B And C**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Disconnect one of the battery terminals, and check valve movement.

**NOTE:** You can see valve movement through the fluid passage in the mounting surface of the A/T clutch pressure control solenoid valves B and C body.

14. If either valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.
15. Install A/T clutch pressure control solenoid valve B and C (see **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT** ).

#### **A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B AND C REPLACEMENT**

1. Remove the air cleaner housing.
2. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.
3. Remove the mounting bolts, harness clamp brackets (A), and A/T clutch pressure control solenoid valves B and C.

**Fig. 188: Removing Mounting Bolts, Harness Clamp Brackets, And A/T Clutch Pressure Control Solenoid Valves B And C With Specified Torques**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Remove the ATF joint pipes (D), O-rings (E), and gasket (F).
5. Clean the mounting surface and fluid passage of the transmission housing.
6. Install the new gasket on the transmission housing, and install the ATF joint pipes.
7. Install the new O-rings over the ATF joint pipes.
8. Install the new A/T clutch pressure control solenoid valves B and C, and harness clamp brackets.
9. Check the A/T clutch pressure control solenoid valves B and C connectors for rust, dirt, and oil, clean if needed, then connect them securely.
10. Install the air cleaner housing.

#### **INPUT SHAFT (MAINSHAFT) SPEED SENSOR REPLACEMENT**

1. Disconnect the input shaft (mainshaft) speed sensor connector.
2. Remove the input shaft (mainshaft) speed sensor (A).

**Fig. 189: Identifying Loosening Torque Of Input Shaft (Mainshaft) Speed Sensor Bolt**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the new O-ring (B) on the input shaft (mainshaft) speed sensor, and install the input shaft (mainshaft) speed sensor in the transmission housing.
4. Check the connector for rust, dirt, and oil, clean if needed, then connect the connector securely.

#### **OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR REPLACEMENT**

1. Disconnect the output shaft (countershaft) speed sensor connector.

2. Remove the output shaft (countershaft) speed sensor (A).

**Fig. 190: Identifying Loosening Torque Of Output Shaft (Countershaft) Speed Sensor Bolt**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the new O-ring (B) on the output shaft (countershaft) speed sensor, and install the output shaft (countershaft) speed sensor in the transmission housing.
4. Check the connector for rust, dirt, and oil, clean if needed, then connect the connector securely.

**2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**

1. Remove the air cleaner housing.
2. Disconnect the connector from the 2nd clutch pressure switch (A), and remove the switch.

**Fig. 191: Identifying Loosening Torque Of Second Clutch Transmission Fluid Pressure Switch**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the 2nd clutch pressure switch with a new sealing washer (B). Tighten the switch to the specified torque on the metal part, not the plastic part.
4. Reconnect the connector, make sure there is no water, oil, dust, or foreign particles inside it.
5. Install the air cleaner housing.

**3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH REPLACEMENT**

1. Disconnect the connector from the 3rd clutch pressure switch (A), and remove the switch.

**Fig. 192: Identifying Loosening Torque Of Third Clutch Transmission Fluid Pressure Switch**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Install the 3rd clutch pressure switch with a new sealing washer (B). Tighten the switch to the specified torque on the metal part, not the plastic part.
3. Reconnect the connector, make sure there is no water, oil, dust, or foreign particles inside it.

**ATF TEMPERATURE SENSOR TEST/REPLACEMENT**

1. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

**Fig. 193: Identifying Loosening Torque Of Drain Plug**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Reinstall the drain plug with a new sealing washer (B).
3. Place the transmission jack under the transmission, and lift it up to create clearance between the transmission and front subframe.
4. Disconnect the shift solenoid harness connector.
5. Remove the bolt (A) securing the bracket (B) of the ATF cooler inlet line (C) on the shift solenoid valve cover (D), and remove the line bolt (E) with sealing washers (F).

**Fig. 194: Identifying Loosening Torque Of Shift Solenoid Valve Cover And Bracket Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Remove the shift solenoid valve cover (D), gasket (G), and dowel pins (H).
7. Remove the bolt (A), and remove the shift solenoid harness connector (B).

**Fig. 195: Removing Shift Solenoid Harness Connector And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Measure ATF temperature sensor resistance between shift solenoid harness connector terminals No. 6 and No. 7.

**Standard: 50 ohm - 25 k ohm**

9. If the resistance is out of standard, replace the shift solenoid harness. The ATF temperature sensor is not available separately from the shift solenoid harness.
10. Disconnect the connectors from the shift solenoid valves.
11. Connect the shift solenoid valve A connector (BLU wire) with the ATF temperature sensor (F) on the new solenoid harness.

**Fig. 196: Connecting Shift Solenoid Valve A Connector (BLU Wire) With ATF Temperature Sensor On Solenoid Harness And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Connect the solenoid valve B connector (ORN wire), solenoid valve C connector (GRN wire), and solenoid valve E connector (RED wire).
13. Install the new O-ring (G) on the shift solenoid harness connector (H), and install the connector in the transmission housing.
14. Install the shift solenoid valve cover, dowel pins, and a new gasket.
15. Install the ATF cooler inlet line with the line bolt and the new sealing washers. Create clearance with the jack between the transmission and the front subframe to tighten the line bolt with the torque wrench.

16. Secure the ATF cooler inlet line bracket on the shift solenoid valve cover with the bolt.
17. Check the connector for rust, dirt, or oil, clean if needed, then connect the connector securely.
18. Remove the transmission jack.
19. Refill the transmission with the ATF (see step 5 ).

#### ATF LEVEL CHECK

**NOTE: Keep all foreign particles out of the transmission.**

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.

**NOTE: Check the fluid level within 60-90 seconds after turning the engine off.**

3. Remove the dipstick (yellow loop) (A) from the transmission, and wipe it with a clean cloth.

**Fig. 197: Removing Dipstick From Transmission**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Insert the dipstick back into the transmission.
5. Remove the dipstick (A), and check the fluid level. It should be at the upper mark (B).

**Fig. 198: Identifying Fluid Level On Dipstick**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. If the level is below the upper mark, check for fluid leaks at the transmission, hose and line joints, and cooler lines.

If a problem is found, fix it before filling the transmission.

If the level is above the upper mark, drain the ATF to proper level (see step 3 ).

7. If necessary fill the transmission through the dipstick hole to bring the fluid level up to the upper mark. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.
8. Insert the dipstick (A) back into the transmission with the handle pointing toward the breather pipe (B).

**Fig. 199: Inserting Dipstick Into Transmission**



Courtesy of AMERICAN HONDA MOTOR CO., INC.

#### ATF REPLACEMENT

**NOTE:** Keep all foreign particles out of the transmission.

1. Bring the transmission up to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.
3. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).

**NOTE:** If a cooler cleaner is to be used, refer to ATF cooler cleaning (see ATF COOLER CLEANING ).

**Fig. 200: Identifying Loosening Torque Of Drain Plug**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Reinstall the drain plug with a new sealing washer (B).
5. Remove the dipstick, and refill the transmission with the recommended fluid amount through the dipstick hole until the level reaches the upper mark on the dipstick. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

**Automatic Transmission Fluid Capacity:**

**4WD model:**

**3.1 L (3.3 US qt) at change**

**7.2 L (7.6 US qt) at overhaul**

**2WD model:**

**3.2 L (3.4 US qt) at change**

**6.8 L (7.2 US qt) at overhaul**

6. Insert the dipstick (A) back into the transmission with the handle pointing toward the breather pipe (B).

**Fig. 201: Inserting Dipstick Into Transmission With Handle Pointing Toward Breather Pipe**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

1. Raise the vehicle, and make sure it is supported securely.
2. Shift the transmission into the N position.
3. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).

**Fig. 202: Identifying Loosening Torque Of Propeller Shaft Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Separate the propeller shaft from the transfer assembly.
5. Set a dial indicator (A) on the transfer companion flange (B), and measure the transfer gear backlash.

**Standard: 0.06-0.16 mm (0.02-0.06 in.)**

**Fig. 203: Measuring Transfer Gear Backlash**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. If the measurement is out of standard, remove the transfer assembly, and adjust the transfer gear backlash (see **TRANSFER ASSEMBLY** ).
7. Check for fluid leaks between the mating surfaces of the transfer assembly and transmission.
8. If there is a leak, remove the transfer assembly, and replace the O-ring. Also check for fluid leaks between the mating surfaces of the transfer housing and transfer cover. If there is a leak, remove the transfer cover, and replace the O-ring.
9. Check for leaks between the transfer companion flange and transfer oil seal.
10. If there is a leak, remove the transfer assembly from the transmission, and replace the transfer oil seal and O-ring on the transfer output shaft. If oil seal and O-ring replacement is required, you will need to check and adjust the transfer gear tooth contact, transfer gear backlash, the tapered roller bearing starting torque, and the total starting torque (see **REASSEMBLY** ). Do not replace the oil seal with the transfer assembly on the transmission.

#### **TRANSFER ASSEMBLY REMOVAL**

1. Raise the vehicle, and make sure it is supported securely.
2. Remove the drain plug (A), and drain the automatic transmission fluid (ATF). Reinstall the drain plug with a new sealing washer (B).

**Fig. 204: Identifying Loosening Torque Of Drain Plug**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C).

**Fig. 205: Separating Propeller Shaft From Transfer Assembly**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Separate the propeller shaft from the transfer assembly.
5. Remove the transfer assembly.

**Fig. 206: Removing Transfer Assembly**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**TRANSFER ASSEMBLY INSTALLATION**

1. Clean the area where the transfer assembly contacts the transmission with solvent or carburetor cleaner, and dry with compressed air. Then apply transmission fluid to the contact areas. When installing the transfer assembly, be sure not to allow dust or other foreign particles to enter the transmission.
2. Install the new O-ring (A) on the transfer.

**Fig. 207: Installing Transfer Assembly And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Insert the four bolts (B) in the transfer housing, then install the transfer assembly with the dowel pin (C).
4. Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).

**Fig. 208: Identifying Tightening Torque Of Propeller Shaft Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Refill the transmission fluid (see step 5 ).
6. Start the engine, and run it to normal operating temperature (the radiator fan comes on). Turn the engine off, and check the fluid level (see **ATF LEVEL CHECK** ).

**TRANSMISSION REMOVAL**

**Special Tools Required**

- Engine hanger adapter VSB02C000015
- Engine support hanger, A and Reds AAR-T-12566
- Front subframe adapter VSB02C000016 (Available through the Honda Tool and Equipment Program 1-888-424-6857)

**NOTE: Use fender covers to avoid damaging painted surfaces.**

1. Before disconnecting the battery, make sure you have the anti-theft code for the radio, then write down the audio preset.
2. Raise the vehicle, and make sure it is securely supported.
3. Remove the splash shield.
4. Remove the drain plug (A), and drain the automatic transmission fluid (ATF). Reinstall the drain plug with a new sealing washer (B).

**Fig. 209: Identifying Loosening Torque Of Drain Plug**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Disconnect the battery negative terminal, then disconnect the battery positive terminal.
6. Remove the air cleaner housing and the air intake duct.
7. Remove the battery hold-down bracket, then remove the battery and battery tray.
8. Remove the harness clamp from the battery base, then remove the battery base.
9. Remove the transmission ground terminal (A).

**Fig. 210: Removing Transmission Ground Terminal**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Disconnect the 2nd clutch transmission fluid pressure switch connector (B) and A/T clutch pressure control solenoid valve A connector (C), and remove the harness clamps (D) from the clamp brackets (E).
11. Disconnect the output shaft (countershaft) speed sensor connector (A) and input shaft (mainshaft) speed sensor (B).

**Fig. 211: Disconnecting Second Clutch Transmission Fluid Pressure Switch Connector And A/T Clutch Pressure Control Solenoid Valve Connector**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Remove the transmission range switch connector (C) from its bracket (D), then disconnect it.
13. Disconnect the 3rd clutch transmission fluid pressure switch connector.

**Fig. 212: Disconnecting Third Clutch Transmission Fluid Pressure Switch Connector**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

14. Disconnect the shift solenoid harness connector (A), A/T clutch pressure control solenoid valve B connector, and solenoid valve C connector, then remove the harness clamps (D) from the clamp brackets (E).

**Fig. 213: Disconnecting Shift Solenoid Harness Connector, A/T Clutch Pressure**

**Control Solenoid Valve Connectors**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the ATF cooler hoses up to prevent ATF from flowing out, then plug the ATF cooler hoses and lines.

**Fig. 214: Removing ATF Cooler Hoses From ATF Cooler Lines**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

16. Check for any signs of leakage at the hose joints.
17. Remove the harness clamp (A) from the clamp bracket (B), and remove the engine wire harness cover (C) from its bracket (D).

**Fig. 215: Removing Engine Wire Harness Cover From Bracket**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

18. Remove the bolts (A) securing the water line and harness brackets (B).

**Fig. 216: Removing Bolts Securing Water Line And Harness Brackets**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

19. Attach the special tool adapter (VSB02C000015) to the threaded hole (A) in the cylinder head.

**Fig. 217: Attaching Special Tool Adapter To Threaded Hole In Cylinder Head**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

20. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook (A) to the special tool adapter (VSB02C000015). Tighten the wing nut (B) by hand, and lift and support the engine.

**Fig. 218: Installing Engine Support Hanger To Vehicle, And Hook To Special Tool Adapter**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

21. Insert a 5 mm hex wrench (A) in the top of the ball joint pin (B), and remove the nut (C), then separate the stabilizer link (D) from the lower arm.

**Fig. 219: Separating Stabilizer Link From Lower Arm**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

22. Remove the lock pin (E) and castle nuts (F). Install the ball joint thread protector (07AAF-SDAA100) on the ball joint threads, and separate the lower arms (G) from the knuckles (H) (see step 10 on **KNUCKLE AND HUB REPLACEMENT**).

23. Remove the torque converter cover (A), and remove the eight drive plate bolts (B) while rotating the crankshaft pulley.

**Fig. 220: Removing Torque Converter Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

24. 4WD model: Remove the shift cable.
- 1 Remove the bolts (A) securing the shift cable bracket (B), then remove the shift cable cover (C).
  - 2 Remove the spring clip (D) and control pin (E), then separate the shift cable (F) from the selector control lever (G). Do not bend the shift cable excessively.
  - 3 Remove the bolts (H) securing the shift cable bracket (I), then remove the shift cable bracket (I) from the shift cable.

**Fig. 221: Removing Shift Cable (4WD Model)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

25. 2WD model: Remove the shift cable.
- 1 Remove the shift cable cover (A).
  - 2 Remove the spring clip (B) and control pin (C), then separate the shift cable (D) from the selector control lever (E).
  - 3 Remove the bolts securing the shift cable bracket (F). Do not bend the shift cable excessively.

**Fig. 222: Removing Shift Cable (2WD Model)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

26. Disconnect the ATF cooler hose (A) from the ATF cooler line (B), then plug the end of the hose.

**Fig. 223: Disconnecting ATF Cooler Hose From ATF Cooler Line**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

27. Remove the front mount bolt (C) and nut (D).
28. Remove the rear mount bolts.

**Fig. 224: Removing Rear Mount Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

29. Make the appropriate reference lines at positions A and B that line up with the center of the subframe mounting bolts (C).

**Fig. 225: Aligning Reference Lines With Center Of Subframe Mounting Bolts**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

30. Attach the special tool to the subframe with hanging the hook of the special tool over the front of the subframe, then tighten the special tool screw.

**Fig. 226: Attaching Special Tool To Subframe**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

31. Raise the jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then attach them with the bolts securely.
32. Remove the four subframe mounting bolts, then lower the subframe.

**Fig. 227: Removing Subframe Mounting Bolts**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

33. 4WD model: Make a reference mark (A) across the propeller shaft (B) and the transfer companion flange (C), then separate the propeller shaft from the transfer assembly.

**Fig. 228: Separating Propeller Shaft From Transfer Assembly (4WD Model)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

34. Pry the left driveshaft out of the differential (see step 9 on **FRONT DRIVESHAFT REMOVAL** ).
35. Remove the driveshafts from the differential and intermediate shaft.

**Fig. 229: Removing Driveshafts From Differential And Intermediate Shaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

36. Remove the intermediate shaft cover (A).

**Fig. 230: Removing Intermediate Shaft Cover**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

37. Remove the intermediate shaft (B). Coat all precision finished surfaces with clean engine oil, then tie plastic bags over the driveshaft and intermediate shaft ends.
38. Place a jack under the transmission.
39. Remove the transmission housing upper mounting bolts.

**Fig. 231: Removing Transmission Housing Upper Mounting Bolts**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

40. Remove the transmission mount bracket bolt (A) and nuts (B), then remove the transmission mount bolt (C).

**Fig. 232: Removing Transmission Mount Bracket Bolt And Nuts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

41. Remove the transmission housing front mounting bolts located on front lower of the transmission.

**Fig. 233: Removing Transmission Housing Front Mounting Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

42. Remove the transmission housing rear mounting bolts located on the rear lower of the transmission.

**Fig. 234: Removing Transmission Housing Rear Mounting Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

43. Slide the transmission away from the engine to remove it from the vehicle.
44. Remove the torque converter assembly.

**Fig. 235: Removing Torque Converter Assembly**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

45. Remove the front mount.

**Fig. 236: Removing Front Mount**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

46. Remove the rear mount/bracket.

**NOTE:** The illustration shows 4WD model; 2WD model is similar.

**Fig. 237: Removing Rear Mount/Bracket (4WD Model)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

47. Remove the air cleaner housing mounting bracket.

**Fig. 238: Removing Air Cleaner Housing Mounting Bracket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

48. Inspect the drive plate, and replace it if it's damaged.

**DRIVE PLATE REMOVAL AND INSTALLATION**

1. Remove the transmission assembly (see **TRANSMISSION REMOVAL** ).
2. Remove the drive plate (A) and washer (B) from the engine crankshaft.



**Fig. 239: Identifying Loosening Torque Of Drive Plate Bolts**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the drive plate and washer on the engine crankshaft, and tighten the eight bolts in a crisscross pattern in two or more steps.
4. Install the transmission assembly (see TRANSMISSION INSTALLATION ).

**TRANSMISSION INSTALLATION**

**Special Tools Required**

- Engine hanger adapter VSB02C000015
- Engine support hanger, A and Reds AAR-T-12566
- Front subframe adapter VSB02C000016 (Available through the Honda Tool and Equipment Program 1-888-424-6857)

**NOTE: Use fender covers to avoid damaging painted surfaces.**

1. Clean the ATF cooler (see ATF COOLER CLEANING ).
2. Install the air cleaner housing mounting bracket.

**Fig. 240: Installing Air Cleaner Housing Mounting Bracket And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the front mount.

**Fig. 241: Installing Front Mount And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the rear mount/bracket.

**NOTE: The illustration shows 4WD model; 2WD model is similar.**

**Fig. 242: Installing Rear Mount/Bracket (4WD Model) And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the torque converter assembly (A) on the mainshaft (B) with the new O-ring (C).

**Fig. 243: Installing Torque Converter Assembly On Mainshaft With New O-Ring**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Install the 14 x 20 mm dowel pins (D) in the torque converter housing.
7. Place the transmission on a jack, and raise the transmission to the engine level.
8. Attach the transmission to the engine, then install the transmission housing rear mounting bolts.

**Fig. 244: Installing Transmission Housing Rear Mounting Bolts And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Install the transmission housing front mounting bolts.

**Fig. 245: Installing Transmission Housing Front Mounting Bolts And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Install the transmission housing upper mounting bolts.

**Fig. 246: Installing Transmission Housing Upper Mounting Bolts And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

11. Install the transmission mount bracket. Tighten the mount bolt (A) loosely, and tighten the transmission mount bracket bolt and nuts to the specified torque, then tighten the mount bolt to the specified torque.

**Fig. 247: Installing Transmission Mount Bracket Bolts And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Install the new set ring (A) on the intermediate shaft (B).

**Fig. 248: Identifying Intermediate Shaft Mounting Bolts Tightening Torque**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Clean the areas where the intermediate shaft contacts the transmission (differential) with solvent or carburetor cleaner, and dry with compressed air. Then install the intermediate shaft in the differential. While installing the intermediate shaft, be sure not to allow dust or other foreign particles to enter the transmission.
14. Install the intermediate shaft cover (C), but do not tighten the bolts.
15. Tighten the upper right bolt (D) on the cover first, then lower right bolt (E), and lastly the left bolt (F).
16. Install the new set ring (A) on the left driveshaft (B).

**Fig. 249: Installing New Set Ring On Left Driveshaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. Install the right and left driveshaft (see **FRONT DRIVESHAFT INSTALLATION**). While installing the left driveshaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission.

**NOTE:**

- Clean the areas where the left driveshaft contacts the transmission (differential) with solvent or carburetor cleaner, and dry with compressed air.
- Turn the right and left steering knuckle fully outward, and slide the left driveshaft into the differential until you feel its set ring engage the side gear. Slide the right driveshaft over the intermediate shaft splines until you feel the driveshaft engage the intermediate shaft set ring.

18. Install the propeller shaft (A) to the transfer companion flange (B) by aligning the reference mark (C).

**Fig. 250: Installing Propeller Shaft To Transfer Companion Flange And Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Support the subframe with the special tool and a jack, and lift it up to body.

**Fig. 251: Supporting Subframe Using Special Tool And Jack**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Loosely install the new subframe mounting bolts.

**Fig. 252: Installing New Subframe Mounting Bolts And Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Align the reference marks (A) with the center of the subframe mounting bolts (B), then tighten the bolts to the specified torque.

**Fig. 253: Identifying Reference Marks And Subframe Mounting Bolts**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

22. Install the rear mount bolts.

**Fig. 254: Installing Rear Mount Bolts And Torque Specifications**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

23. Install the front mount bolt (A) and nut (B), connect the ATF cooler hose (C) to the ATF cooler line, then secure the hose with the clip (see **ATF COOLER HOSE**

**REPLACEMENT ).****Fig. 255: Installing Front Mount Bolt And Nut And Torque Specifications  
Courtesy of AMERICAN HONDA MOTOR CO., INC.**

24. 4WD model: Install the shift cable.
- 1 Face the dot (A) on the shift cable (B) down, then install the shift cable bracket (C) on the shift cable.
  - 2 Attach the shift cable end (D) to the selector control lever (E), then insert the control pin (F) into the selector control lever hole through the shift cable end.
  - 3 Secure the control pin with the spring clip (G). Do not bend the shift cable excessively.
  - 4 Secure the shift cable bracket (H) with the bolts, and install the shift cable cover (I), but do not tighten the bolts.
  - 5 Tighten the front bolt (J) on the cover first, then the lower bolt (K), and lastly the middle bolt (L).

**Fig. 256: Installing Shift Cable (4WD Model) And Torque Specifications  
Courtesy of AMERICAN HONDA MOTOR CO., INC.**

25. 2WD model: Install the shift cable.
- 1 Attach the shift cable end (A) to the selector control lever (B), then insert the control pin (C) into the selector control lever hole through the shift cable end, and secure the control pin with the spring clip (D). Do not bend the shift cable excessively.
  - 2 Secure the shift cable bracket (E) with the bolt, and install the shift cable cover (F), but do not tighten the bolts.
  - 3 Tighten the front bolt (G) on the cover first, then the lower bolt (H), and lastly the middle bolt (I).

**Fig. 257: Installing Shift Cable (2WD Model) And Torque Specifications  
Courtesy of AMERICAN HONDA MOTOR CO., INC.**

26. Attach the torque converter to the drive plate with eight bolts (A). Rotate the crankshaft pulley as necessary to tighten the bolts to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.

**Fig. 258: Identifying Torque Converter To Drive Plate Bolts Tightening Torque  
Courtesy of AMERICAN HONDA MOTOR CO., INC.**

27. Install the torque converter cover (B).
28. Connect the ball joints (A) to the lower arms (B), and install the castle nuts (C) and

lock pins (D). Keep the ball joint threads free of grease. Install the spring clips from the inside of the vehicle, with their hooked sides facing the front (E) of the vehicle in the direction shown.

**Fig. 259: Connecting Ball Joints To Lower Arms And Installing Castle Nuts And Lock Pins With Specified Torques**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

29. Connect the ball joints (F) to the lower arms, and install the nuts (G). Insert a 5 mm hex wrench (H) in the top of the ball joint pins, and tighten the nuts.
30. Remove the engine support hanger, and remove the special tool adapter from the engine.

**Fig. 260: Removing Special Tool Adapter From Engine**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

31. Install the removed bolts and the water line and harness bracket.

**Fig. 261: Installing Special Tool Adapter Bolts And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

32. Connect the ATF cooler hoses (A) to the ATF cooler lines (B) (see **ATF COOLER HOSE REPLACEMENT** ).

**Fig. 262: Connecting ATF Cooler Hoses To ATF Cooler Lines**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

33. Connect the shift solenoid harness connector (A), A/T clutch pressure control solenoid valve B connector, and solenoid valve C connector. Install the harness clamps (D) on the clamp brackets (E).

**Fig. 263: Identifying Solenoid Harness Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

34. Connect the 3rd clutch transmission fluid pressure switch connector.

**Fig. 264: Connecting Third Clutch Transmission Fluid Pressure Switch Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

35. Install the engine wire harness cover (A) on its bracket (B), and install the harness clamp (C) on the bracket (D).

**Fig. 265: Installing Engine Wire Harness Cover And Harness Clamp**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

36. Connect the transmission range switch connector (A), and install it on its bracket (B).

**Fig. 266: Connecting Transmission Range Switch Connector**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

37. Connect the connectors to the input shaft (mainshaft) speed sensor (C) and output shaft (countershaft) speed sensor (D).
38. Connect the A/T clutch pressure control solenoid valve A connector and 2nd clutch transmission fluid pressure switch connector (B), and install the harness clamps (C) on the clamp brackets (D).

**Fig. 267: Installing Transmission Ground Terminal And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

39. Install the transmission ground terminal (E).
40. Install the battery base, then install the harness clamp on the clamp bracket on the base.
41. Refill the transmission with ATF (see step 5 ).
42. Install the air intake duct and air cleaner housing.
43. Install the battery tray and battery, then secure the battery with its hold-down bracket.
44. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
45. Set the parking brake. Start the engine, and shift the transmission through all gears three times.
46. Check the shift lever operation, A/T gear position indicator operation, and shift cable adjustment.
47. Check and adjust the front wheel alignment (see **WHEEL ALIGNMENT** ).
48. Install the splash shield.
49. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on).
50. Turn off the engine, and check the ATF level (see **ATF LEVEL CHECK** ).
51. Do the power window control unit reset procedure (see **RESETTING THE POWER WINDOW CONTROL UNIT** ).
52. Perform the road test (see **ROAD TEST** ).
53. Loosen the bolts of the front mount, rear mount, and transmission mount after the road test.
54. Tighten the transmission mount bolt to 54 N.m (5.5 kgf.m, 40 lbf.ft), tighten the rear mount bolt to 64 N.m (6.5 kgf.m, 47 lbf.ft), and lastly tighten the front mount bolt to 64 N.m (6.5 kgf.m, 47 lbf.ft).
55. Enter the anti-theft code for the radio, then enter the audio presets, and set the clock.

## ATF COOLER CLEANING

### Special Tools Required

- ATF Cooler Cleaner GHTTTCF6H
- Magnetic Nonbypass Spin-on Filter GTHGNBP2 (Available through the Honda Tool and Equipment Program 1-888-424-6857)

Before installing an overhauled or re-manufactured automatic transmission, you must thoroughly clean the ATF cooler to prevent system contamination. Failure to do so could cause a repeat automatic transmission failure.

The cleaning procedure involves heated ATF-Z1 delivered under high pressure (100 psi). Check the security of all hoses and connections. Always wear safety glasses or a face shield, along with gloves and protective clothing. If you get ATF in your eyes or on your skin, rinse with water immediately.

#### **WARNING:**

- **Improper use of the ATF cooler cleaner can result in burns and other serious injuries.**
- **Always wear eye protection and protective clothing, and follow this procedure.**

1. Check the fluid in the cooler cleaner tank. (The fluid level should be 4.5 inches from the top of the filler neck.) Adjust the level if needed; do not overfill. Use only Honda ATF-Z1; do not use any additives.

**Fig. 268: Identifying Fluid Level In Cooler Cleaner Tank**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Plug the cooler cleaner into a 110 V grounded electrical outlet.

**NOTE:** **Make sure the outlet has no other appliances (light fixtures, drop lights, extension cords) plugged into it. Also, never plug the cooler cleaner into an extension cord or drop light; you would damage the unit.**

**Fig. 269: Plugging Cooler Cleaner Into 110 V Grounded Electrical Outlet**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Flip the HEAT toggle switch to ON; the green indicator above the toggle switch comes on. Wait 1 hour for the cooler cleaner to reach its operating temperature. (The cooler cleaner is ready to use when the temperature gauge reads 140 to 150°F.)

**NOTE:** **If the red indicator above the HEAT toggle switch comes on,**

**the fluid level in the tank is too low for the tank heater to work (see step 1 of this procedure).**

4. Select the appropriate pair of fittings, and attach them to the radiator, to the hoses, or to the banjo bolts for flow through the ATF cooler cleaner.

**Fig. 270: Attaching Fittings To Radiator, Hoses Or Banjo Bolts**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Connect the red hose to the cooler outlet line (the line that normally goes to the external filter on the transmission).
6. Connect the blue hose to the cooler inlet line.
7. Connect a shop air hose (regulated to 100 to 125 psi) to the air purge valve.

**NOTE:**        **The quick-connect fitting has a one-way check valve to keep ATF from entering your shop's air system. Do not remove or replace the fitting. Attach the coupler provided with the cooler cleaner to your shop air line if your coupler is not compatible.**

8. Flip the MOTOR toggle switch to ON; the green indicator above the toggle switch comes on. Let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically to cause agitation and improve the cleaning process. Always open the valve slowly. At the end of the 5 minutes cleaning period, leave the air purge valve open.

**NOTE:**        **While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.**

**Fig. 271: Locating Air Purge Valve Opening And Closing Position**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. With the air purge valve open, flip the MOTOR toggle switch to OFF; the green indicator goes off. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.
10. Disconnect the red and blue hoses from the ATF cooler. Now connect the red hose to the cooler inlet line.
11. Now connect the blue hose to the cooler outlet line.
12. Flip the MOTOR toggle switch to ON, and let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically. Always open the valve slowly. At the end of the 5 minutes cleaning period, leave the air purge valve open.



**NOTE:** While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.

13. With the air purge valve open, flip the MOTOR toggle switch to OFF. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.
14. Disconnect the red and blue hoses from the ATF cooler lines.
15. Connect the red and blue hoses to each other.
16. Disconnect the shop air from the air purge valve. Disconnect and stow the coupler if used.
17. Disconnect and stow the fittings from the ATF cooler inlet and outlet lines.
18. Unplug the cooler cleaner from the 110 V outlet.

#### **Tool Maintenance**

Follow these instructions to keep the ATF cooler cleaner working properly:

- Replace the two magnetic nonbypass spin-on filters once a year or when you notice a restriction in the ATF flow.
- Check the level and condition of the fluid in the tank before each use.
- Replace the ATF in the tank when it looks dark or dirty.

**Fig. 272: Identifying ATF Cooler Tank Components**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

#### **ATF COOLER HOSE REPLACEMENT**

1. Slide the ATF cooler hoses (A) on the ATF filter (B) until they are 5-6 mm (0.20-0.24 in.) (C) away from the filter housing.

**Fig. 273: Identifying ATF Cooler Hoses And Clips**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Secure the hoses with the clips (D) at 10-12 mm (0.4-0.5 in.) (E) from the filter housing.
3. Slide the ATF cooler hoses (F) over the ATF cooler lines (G), then secure the hoses with the clips (H) at 2-4 mm (0.1-0.2 in.) (I) from the hose ends.
4. Install the hose clamp (J) at the marks (K) on the ATF cooler hoses.

#### **SHIFT LEVER REMOVAL**

1. Remove the center lower cover (see **CENTER LOWER COVER**

**REMOVAL/INSTALLATION** ).

2. Remove the shift lever console trim (see **SHIFT LEVER TRIM REMOVAL/INSTALLATION** ).
3. Shift the shift lever into the R position.
4. Remove the shift cable insulator (A) from the shift cable (B).

**Fig. 274: Removing Shift Cable Insulator From Shift Cable**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Slide the lock tab (A) down on the shift cable end holder (B).

**Fig. 275: Sliding Lock Tab Down On Shift Cable End Holder**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.
7. Separate the shift cable end (A) from the shift cable, end holder (B).

**Fig. 276: Separating Shift Cable End From Shift Cable**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the shift cable bracket (E). Then slide the holder to remove the shift cable from the shift cable bracket. Do not remove the shift cable by twisting the shift cable guide (F) and damper (G).

**Fig. 277: Removing Shift Cable From Shift Cable Bracket**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

9. Remove the shift lever mounting bolts.

**Fig. 278: Removing Shift Lever Mounting Bolts**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Disconnect the park pin switch connector.
11. Remove the shift lever mounting bolt (A), and remove the shift cable bracket (B).

**Fig. 279: Removing Shift Lever Mounting Bolt And Shift Cable Bracket**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Remove the O/D switch/shift lock solenoid connector (C), then disconnect the connector.
13. Cover around the opening of the console with tape to prevent damage to the console.

14. Remove the shift lever assembly.

#### **SHIFT LEVER INSTALLATION**

1. Cover around the opening of the console with tape to prevent damage to the console.
2. Position the shift lever in the console.
3. Install the shift lever mounting bolt (A) loosely.

**Fig. 280: Installing Shift Lever Mounting Bolt And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Install the shift cable bracket (B) with aligning the projections (C) to the holes of the shift lever bracket, and install the mounting bolt (D).
5. Connect the O/D switch/shift lock solenoid connector (E), and install it on the shift cable bracket.
6. Secure the shift lever assembly with the mounting bolts.

**Fig. 281: Securing Shift Lever Assembly With Mounting Bolts And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Connect the park pin switch connector (A).
8. Tighten the shift lever mounting bolt that was loosely installed in step 3 .
9. Turn the ignition switch ON (II), and verify that the R position indicator comes on.

**Fig. 282: Identifying Indicator Position**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Turn the ignition switch OFF.
11. Install the shift cable to the shift lever, refer to shift cable adjustment (see **SHIFT CABLE ADJUSTMENT** ).

#### **SHIFT LEVER DISASSEMBLY/REASSEMBLY**

**Fig. 283: Exploded View Of Shift Lever**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

#### **SHIFT LEVER BRACKET ASSEMBLY REPLACEMENT**

1. Remove the shift lever assembly (see **ATF COOLER HOSE REPLACEMENT** ).
2. Pry the O/D switch cover (A), and remove it.

**Fig. 284: Removing O/D Switch Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Remove the O/D switch (A) by expanding its locks, and remove the screws (B), shift lever button (C), spring (D), and shift lever knob (E).

**Fig. 285: Removing Shift Lever Knob Components**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Remove the A/T gear position indicator panel light socket (A), then separate the A/T gear position indicator panel (B) from the shift lever bracket (C).

**Fig. 286: Removing A/T Gear Position Indicator Panel Light Socket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Pry the lock tabs on the back of the O/D switch/shift lock solenoid connector (A), and remove the back cover (B).

**Fig. 287: Removing Terminal**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Remove the terminal (C) from the connector by pushing the lock tab (D) up in the connector using a thin blade screwdriver (E). Remove all four terminals.
7. Remove the O/D switch harness clamp from the shift lever bracket and from the harness, and pull the O/D switch harness out to remove the shift lever assembly.
8. Remove the shift lock solenoid harness clamp from the shift lever bracket, and remove the shift lock solenoid.
9. Remove the park pin switch from the shift lever bracket.
10. Replace the shift lever/bracket assembly.
11. Install the shift lock solenoid (A) on the shift lever/bracket assembly (B) with aligning the shift lock solenoid plunger (C) with the tip of the shift lock stop (D).

**Fig. 288: Installing Shift Lock Solenoid On Shift Lever/Bracket Assembly**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Install the harness clamp (E) on the shift lock solenoid harness (F) at 128-138 mm (5.0-5.4 in.) (G) from the harness terminal end.
13. Install the clamp in the hole (H) of the shift lever bracket.
14. Install the shift lever ring (A) to the shift lever (B).

**Fig. 289: Installing Shift Lever Ring To Shift Lever**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. Insert the O/D switch harness (C) into the shift lever ring, and route the harness through the groove (D) of the shift lever into the hole (E). Do not pinch the harness.
16. Wind the O/D switch harness (A) one turn around the clamp (B) on the bottom of the

shift lever.

**Fig. 290: Installing Harness Clamp At Reference Tape On Harness**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. Install the harness clamp (C) at the reference tape (D) on the harness, then install the clamp in the hole (E) of the shift lever bracket (F).
18. Apply silicone grease to the shift lever button (A) and push rod (B) of the shift lever (C), and install the spring (D), shift lever button, and shift lever knob (E). Install the screws (F) to secure the shift lever knob to the shift lever.

**Fig. 291: Installing Shift Lever Components And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

19. Install the O/D switch (G) and the O/D switch cover (H), and install the A/T gear position indicator panel (I) on the shift lever bracket.
20. Install the park pin switch (A). Apply non-hardening thread lock sealant to screw threads, and secure the switch with the screw.

**Fig. 292: Installing A/T Gear Position Indicator Panel Light Socket And Connector And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

21. Install the A/T gear position indicator panel light socket (B), and install the connector (C).
22. Install BLU/RED harness terminal (A) of the shift lock solenoid in the No. 3 cavity, and BLK harness terminal (B) in the No. 4 cavity.

**Fig. 293: Installing O/D Switch Harness Terminals In No. 1 And No. 2 Cavities**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

23. Install the O/D switch harness terminals (C) in the No. 1 and No. 2 cavities. Either O/D switch harness terminal can be installed in No. 1 and No. 2 cavities.
24. Make sure that the all four terminals lock securely, then install the back cover (D) securely in place.
25. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION** ).

**SHIFT LEVER RING REPLACEMENT**

1. Remove the shift lever assembly (see **ATF COOLER HOSE REPLACEMENT** ).
2. Pry the O/D switch cover (A), and remove it.

**Fig. 294: Removing O/D Switch Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Remove the O/D switch (A) by expanding its locks, and remove the screws (B), shift lever button (C), spring (D), and shift lever knob (E).

**Fig. 295: Removing O/D Switch**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Remove the A/T gear position indicator panel light socket (A), then separate the A/T gear position indicator panel (B) from the shift lever bracket (C).

**Fig. 296: Removing A/T Gear Position Indicator Panel Light Socket**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Pry the lock tabs on the back of the O/D switch/shift lock solenoid connector (A), and remove the back cover (B).

**Fig. 297: Removing Terminal From Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Remove the terminal (C) from the connector by pushing the lock tab (D) up in the connector using a thin blade screwdriver (E). Remove all four terminals.
7. Remove the O/D switch harness clamp from the shift lever bracket and from the harness, and pull the O/D switch harness out to remove the shift lever assembly.
8. Replace the shift lever ring, and install the new shift lever ring (A) to the shift lever (B).

**Fig. 298: Installing New Shift Lever Ring To Shift Lever**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Insert the O/D switch harness (C) into the shift lever ring, and route the harness through the groove (D) of the shift lever into the hole (E). Do not pinch the harness.
10. Wind the O/D switch harness (A) one turn around the clamp (B) on the bottom of the shift lever.

**Fig. 299: Installing Harness Clamp At Reference Tape On Harness**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

11. Install the harness clamp (C) at the reference tape (D) on the harness, then install the clamp in the hole (E) of the shift lever bracket (F).
12. Apply silicone grease to the shift lever button (A) and push rod (B) of the shift lever (C), and install the spring (D), shift lever button, and shift lever knob (E). Install the screws (F) to secure the shift lever knob to the shift lever.

**Fig. 300: Installing Shift Lever Components And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Install the O/D switch (G) and the O/D switch cover (H), and install the A/T gear position indicator panel (I) on the shift lever bracket.
14. Install the A/T gear position indicator panel light socket.

**Fig. 301: Installing A/T Gear Position Indicator Panel Light Socket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. Install BLU/RED harness terminal (A) of the shift lock solenoid in the No. 3 cavity, and BLK harness terminal (B) in the No. 4 cavity.

**Fig. 302: Installing BLU/RED And BLK Harness Terminal**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

16. Install the O/D switch harness terminals (C) in the No. 1 and No. 2 cavities. Either O/D switch harness terminal can be installed in No. 1 and No. 2 cavities.
17. Make sure that the all four terminals lock securely, then install the back cover (D) securely in place.
18. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION** ).

#### **SHIFT CABLE REPLACEMENT**

1. Raise the front of the vehicle, or lift the vehicle up, and make sure it is securely supported.
2. Remove the center lower cover (see **CENTER LOWER COVER REMOVAL/INSTALLATION** ).
3. Shift the shift lever into the R position.
4. Remove the shift cable insulator (A) from the shift cable (B).

**Fig. 303: Removing Shift Cable Insulator From Shift Cable**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Slide the lock tab (A) down on the shift cable end holder (B).

**Fig. 304: Sliding Lock Tab Down On Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.
7. Separate the shift cable end (A) from the shift cable end holder (B).

**Fig. 305: Separating Shift Cable End From Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the shift cable bracket (E). Then slide the holder to remove the shift cable from the shift cable bracket. Do not remove the shift cable by twisting shift cable guide (F) and damper (G).

**Fig. 306: Removing Shift Cable From Shift Cable Bracket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Remove the heat shield under the body, and remove the shift cable bracket.

**Fig. 307: Removing Shift Cable Bracket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Remove the grommet, and pull out the shift cable.
11. 4WD model: Replace the shift cable.
  - 1 Remove the bolts (A) securing the shift cable bracket (B), then remove the shift cable cover (C).
  - 2 Remove the spring clip (D) and control pin (E), then separate the shift cable (F) from the selector control lever (G).
  - 3 Remove the bolts (H) securing the shift cable bracket (I), then remove the shift cable bracket (I) from the shift cable.
  - 4 Replace the shift cable, and insert it through the grommet hole. Do not bend the shift cable excessively. Face the dot (J) on the shift cable (F) down, then install the shift cable bracket (I) on the shift cable.
  - 5 Attach the shift cable end (K) to the selector control lever (G), then insert the control pin (E) into the selector control lever hole through the shift cable end. Secure the control pin with the spring clip (D).
  - 6 Secure the shift cable bracket (B) with the bolts (A), and install the shift cable cover (C), but do not tighten the bolts.
  - 7 Tighten the front bolt (L) on the cover first, then the lower bolt (M), and lastly the middle bolt (N).

**Fig. 308: Replacing Shift Cable (4WD Model)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. 2WD model: Replace the shift cable.
  - 1 Remove the shift cable cover (A).
  - 2 Remove the spring clip (B) and control pin (C), then separate the shift cable (D) from the selector control lever (E).
  - 3 Remove the bolts securing the shift cable bracket (F).
  - 4 Replace the shift cable, and insert it through the grommet hole. Do not bend the



shift cable excessively.

- 5 Attach the shift cable end (D) to the selector control lever (E), then insert the control pin (C) into the selector control lever hole through the shift cable end, and secure the control pin with the spring clip (B).
- 6 Secure the shift cable bracket (F) with the bolt, and install the shift cable cover (A), but do not tighten the bolts.
- 7 Tighten the front bolt (G) on the cover first, then the lower bolt (H), and lastly the middle bolt (I).

**Fig. 309: Replacing Shift Cable (2WD Model)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Install the shift cable bracket (A) on the body, then install the grommet (B) in its hole (C).

**Fig. 310: Installing Shift Cable Bracket On Body And Grommet In Its Hole**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

14. Turn the ignition switch ON (II), and verify that the R position indicator comes on.

**Fig. 311: Identifying R Position Indicator**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. Install the shift cable to the shift lever, refer to shift cable adjustment (see **SHIFT CABLE ADJUSTMENT** ).

**SHIFT CABLE ADJUSTMENT**

1. Remove the center lower cover (see **CENTER LOWER COVER REMOVAL/INSTALLATION** ).
2. Shift the shift lever into the R position.
3. Remove the shift cable insulator (A) from the shift cable (B).

**Fig. 312: Removing Shift Cable Insulator From Shift Cable**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Slide the lock tab (A) down on the shift cable end holder (B).

**Fig. 313: Sliding Lock Tab Down On Shift Cable End Holder**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.

6. Separate the shift cable end (A) from the shift cable end holder (B).

**Fig. 314: Separating Shift Cable End From Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the shift cable bracket (E). Then slide the holder to remove the shift cable from the shift cable bracket. Do not remove the shift cable by twisting shift cable guide (F) and damper (G).

**Fig. 315: Removing Shift Cable From Shift Cable Bracket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Push the shift cable down until it stops, then release it. Pull the shift cable back one step so that the shift cable is in R. Do not hold the shift cable guide (A) to adjust the shift cable (B).

**Fig. 316: Identifying Shift Cable R Position**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Turn the ignition switch ON (II), and verify that the R position indicator comes on.
10. Turn the ignition switch OFF.
11. Insert a 6.0 mm (0.24 in.) pin (A) into the positioning hole (B) on the shift lever bracket through the positioning hole on the shift lever. The shift lever is secured in the R position.

**Fig. 317: Inserting 6.0 MM (0.24 In.) Pin Into Positioning Hole On Shift Lever Bracket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Rotate the socket holder (A) on the shift cable (B) to face the tab (C) on the holder opposite the opening (D) in the shift cable bracket (E). Align the holder with the opening in the bracket, then slide the holder into the bracket. Rotate the holder a quarter turn to secure the shift cable. Do not install the shift cable by twisting the shift cable guide (F) and damper (G).

**Fig. 318: Rotating Socket Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Install the shift cable end (A) in the shift cable end holder (B). Keep the shift cable end and end holder free of grease.

**Fig. 319: Installing Shift Cable End In Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

14. Install the new shift cable lock (A) to secure the shift cable end and shift cable end holder, then push the lock tab (B) up until it stops to lock joint.

**Fig. 320: Installing New Shift Cable Lock****Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
16. Install the shift cable insulator (A) along the slot (B) over the shift cable (C), and position the shift cable in the left end (D) of the slot.

**Fig. 321: Installing Shift Cable Insulator Along Slot Over Shift Cable****Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. Push the insulator down so that it covers the shift cable grommet (E).
18. Allow the wheels to rotate freely.
19. Start the engine, and move the shift lever to each position. Verify that the A/T gear position indicator follows the transmission range switch, and check the shift lever operation in all gear.
20. Install the center lower cover (see **CENTER LOWER COVER REMOVAL/INSTALLATION** ).

**A/T GEAR POSITION INDICATOR****COMPONENT LOCATION INDEX****Fig. 322: Identifying A/T Gear Position Indicator Component Location****Courtesy of AMERICAN HONDA MOTOR CO., INC.****CIRCUIT DIAGRAM****Fig. 323: Circuit Diagram - A/T Gear Position Indicator****Courtesy of AMERICAN HONDA MOTOR CO., INC.****INDICATOR INPUT TEST**

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX** ), and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES** ) before performing repairs or service.

1. If the MIL has been reported, check for a DTC, and repair the system as indicated by DTC.
2. If the MIL does not come on, and the A/T gear position indicator P, N, or R does not come on, remove the gauge assembly from the dashboard, then disconnect gauge assembly connector A (30P).

3. Inspect the connectors and connector terminals to be sure they are making good contact.
4. If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
5. Turn the ignition switch ON (II).
6. Shift to the P position, and check for voltage between A2 terminal (BLK/BLU) and ground.

There should be 0 V in the P position. There should be battery voltage in any other shift lever position. If the test results are different, check for a faulty transmission range switch or an open in the wire.

**Fig. 324: Checking Voltage Between A2 Terminal (BLK/BLU) And Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Shift to the R position, and check for voltage between A6 terminal (WHT) and ground.

There should be 0 V in the R position. There should be battery voltage in any other shift lever position. If the test results are different, check for a faulty transmission range switch or an open in the wire.

8. Shift to the N position, and check for voltage between A1 terminal (BLK/RED) and ground.

There should be 0 V in the N position. There should be battery voltage in any other shift lever position. If the test results are different, check for faulty transmission range switch or an open in the wire.

9. Check for voltage A14 terminal (YEL) and ground with the ignition in switch ON (II).

There should be battery voltage. If the test result is different, check for a blown No. 10 (7.5 A) fuse in the under-dash fuse/relay box or an open in the wire.

**Fig. 325: Checking Voltage A14 Terminal (YEL) And Ground**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Turn the ignition switch OFF, and check for continuity between A30 terminal (BLK) and ground under all conditions.

There should be continuity. If the test result is different, check for a poor ground (G502) or an open in the wire.

11. If all input tests prove OK, but the indicator is faulty, replace the gauge assembly.

**TRANSMISSION RANGE SWITCH TEST**

1. Remove the transmission range switch harness connector (A) from the connector bracket (B), then disconnect the connector.

**Fig. 326: Removing Transmission Range Switch Harness Connector From Connector Bracket**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**Connector Terminal Specification****CONNECTOR TERMINAL SPECIFICATION**

Terminal	Signal	Terminal	Signal
1	ATP NP (ST)	6	ATP RVS
2	ATP FWD	7	D
3	Ground (E)	8	N
4	1	9	R
5	2	10	P

2. Check for continuity between terminals at the harness connector. There should be continuity between the terminals in the following table for each switch position.

**Fig. 327: Connector Terminal Continuity Checking Table**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. If there is no continuity between any terminals, remove the transmission range switch cover, and disconnect the connector at the switch.

**Fig. 328: Disconnecting Connector At Switch**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**Connector Terminal Specification****CONNECTOR TERMINAL SPECIFICATION**

Terminal	Signal	Terminal	Signal
1	ATP RVS	6	P
2	N	7	R
3	2	8	D
4	ATP NP (ST)	9	1
5	ATP FWD	10	Ground (E)

4. Check for continuity between terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

**Fig. 329: Connector Terminal Continuity Checking Table**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. If the transmission range switch continuity check is OK, replace the faulty transmission range switch harness.
6. If there is no continuity between any terminals, remove the transmission range switch, and check the end of the selector control shaft (A).

**Standard**

**Selector Control Shaft Width (B):**

**6.1-6.2 mm (0.240-0.244 in.)**

**Selector Control Shaft End Gap (C):**

**1.8-2.0 mm (0.07-0.08 in.)**

**Fig. 330: Identifying Selector Control Shaft Width And End Gap**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. The measurement of the selector control shaft end is within the standard, replace the transmission range switch. If the measurement is out of the standard, repair the selector control shaft end, and recheck the transmission range switch continuity.

**TRANSMISSION RANGE SWITCH REPLACEMENT**

1. Raise the vehicle, and make sure it is securely supported.
2. Shift to the N position.
3. Remove the transmission range switch cover.

**Fig. 331: Removing Transmission Range Switch Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Disconnect the transmission range switch connector.

**Fig. 332: Disconnecting Transmission Range Switch Connector**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Remove the old transmission range switch.
6. Make sure that the selector control shaft (A) is in the N position. If necessary, move the shift lever to the N position.

**Fig. 333: Identifying Selector Control Shaft N Position**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

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

**Fig. 334: Putting Feeler Gauge Blade In Cutouts**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 335: Installing Transmission Range Switch**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 336: Identifying Transmission Range Switch Bolts Tightening Torque**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Connect the connector securely, then install the transmission range switch cover (A).

**Fig. 337: Installing Transmission Range Switch Cover And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

11. Turn the ignition switch ON (II). Move the shift lever through all gear positions, and check the transmission range switch synchronization with the A/T gear position indicator.
12. Check that the engine can start in the P and N positions, and cannot start in any other shift lever position.
13. Check that the back-up lights come on when the shift lever is in the R position.
14. Allow the wheels to rotate freely, then start the engine, and check the shift lever operation.

#### **O/D SWITCH CIRCUIT TROUBLESHOOTING**

1. Turn the ignition switch OFF.
2. Disconnect the O/D switch/shift lock solenoid connector.
3. Check for continuity between O/D switch/shift lock solenoid terminals No. 1 and No. 2 while pressing the O/D switch and when the switch is released.

**Fig. 338: Checking Continuity Between O/D Switch/Shift Lock Solenoid Terminals No. 1 And 2**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity while pressing the O/D switch, and no continuity when the switch released?*

YES-Go to step 4.

NO-Replace the O/D switch (see **O/D SWITCH TEST/REPLACEMENT** ).

4. Turn the ignition switch ON (II).
5. Shift the shift lever to the D position.
6. Measure the voltage between O/D switch/shift lock solenoid connector terminals No. 1 and No. 2.

**Fig. 339: Measuring Voltage Between O/D Switch/Shift Lock Solenoid Connector Terminals No. 1 And 2**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

YES- O/D switch circuit is OK. Check for loose terminals.

NO- Go to step 7.

7. Measure the voltage between O/D switch/shift lock solenoid connector terminal No. 1 and body ground.

**Fig. 340: Measuring Voltage Between O/D Switch/Shift Lock Solenoid Connector Terminal No. 1 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

YES- Repair open in the wire between O/D switch/shift lock solenoid connector terminal No. 2 and ground (G451), or repair poor ground (G451).

NO- Go to step 8.

8. Measure the voltage between PCM connector terminal D3 and body ground.

**Fig. 341: Measuring Voltage Between PCM Connector Terminal D3 And Body Ground**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there battery voltage?*

YES- Repair open or short in the wire between PCM connector terminal D3 and



O/D switch/shift lock solenoid connector.

**NO-** Check for a short in the wire between PCM terminal D3 and O/D switch/shift lock solenoid connector. Check for loose or poor connections at PCM connector terminal D3. If the wire and connections are OK, substitute a known-good PCM and recheck.

#### **O/D SWITCH TEST/REPLACEMENT**

1. Remove the center lower cover (see **CENTER LOWER COVER REMOVAL/INSTALLATION** ).
2. Remove the shift lever console trim (see **SHIFT LEVER TRIM REMOVAL/INSTALLATION** ).
3. Shift the shift lever into the R position.
4. Remove the shift cable insulator (A) from the shift cable (B).

**Fig. 342: Removing Shift Cable Insulator From Shift Cable**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Slide the lock tab (A) down on the shift cable end holder (B).

**Fig. 343: Sliding Lock Tab Down On Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.
7. Separate the shift cable end (A) from the shift cable end holder (B).

**Fig. 344: Separating Shift Cable End From Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the shift cable bracket (E). Then slide the holder to remove the shift cable from the shift cable bracket. Do not remove the shift cable by twisting the shift cable guide (F) and damper (G).

**Fig. 345: Removing Shift Cable From Shift Cable Bracket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Remove the shift lever mounting bolts.

**Fig. 346: Removing Shift Lever Mounting Bolts And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Remove the shift lever mounting bolt (A), and remove the shift cable bracket (B).

**Fig. 347: Removing Shift Lever/Cable Bracket And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

11. Remove the O/D switch/shift lock solenoid connector (C), then disconnect the connector.
12. Check for continuity between O/D switch/shift lock solenoid connector terminals No. 1 and No. 2 while pressing the O/D switch and when the switch is released. There should be continuity while pressing the O/D switch and no continuity when the switch is released.
13. If the O/D switch works properly, connect the connector and install the removed parts. If the switch is faulty, go to step 14, and replace the switch.
14. Remove the shift lever assembly.
15. Pry the O/D switch cover (A), and remove it.

**Fig. 348: Removing O/D Switch Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

16. Remove the O/D switch (A) by expanding its locks, and remove the screws (B), shift lever button (C), spring (D), and shift lever knob (E).

**Fig. 349: Removing O/D Switch, Screws, Shift Lever Button, Spring And Shift Lever Knob**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. Remove the A/T gear position indicator panel light socket (A), then separate the A/T gear position indicator panel (B) from the shift lever bracket (C).

**Fig. 350: Removing A/T Gear Position Indicator Panel Light Socket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

18. Pry the lock tabs on the back of the O/D switch/shift lock solenoid connector (A), and remove the back cover (B).

**Fig. 351: Prying Lock Tabs On Back Of O/D Switch/Shift Lock Solenoid Connector And Removing All Terminals**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

19. Remove the terminal (C) from the connector by pushing the lock tab (D) up in the connector using a thin blade screwdriver (E). Remove all four terminals.
20. Remove the O/D switch harness clamp from the shift lever bracket and from the harness, and pull the O/D switch harness out to remove the shift lever assembly.

21. Insert the new O/D switch harness (A) into the shift lever ring (B), and route the harness through the groove (C) of the shift lever (D) into the hole (E). Do not pinch the harness.

**Fig. 352: Inserting New O/D Switch Harness Into Shift Lever Ring**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

22. Wind the O/D switch harness (A) one turn around the clamp (B) on the bottom of the shift lever.

**Fig. 353: Installing Harness Clamp At Reference Tape On Harness**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

23. Install the harness clamp (C) at the reference tape (D) on the harness, then install the clamp in the hole (E) of the shift lever bracket (F).
24. Apply silicone grease to the shift lever button (A) and push rod (B) of the shift lever (C), and install the spring (D), shift lever button, and shift lever knob (E). Install the screws (F) to secure the shift lever knob to the shift lever.

**Fig. 354: Installing Shift Lever Components And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

25. Install the O/D switch (G) and the O/D switch cover (H), and install the A/T gear position indicator panel (I) on the shift lever bracket.
26. Install the A/T gear position indicator panel light socket.

**Fig. 355: Installing A/T Gear Position Indicator Panel Light Socket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

27. Install BLU/RED harness terminal (A) of the shift lock solenoid in the No. 3 cavity, and BLK harness terminal (B) in the No. 4 cavity.

**Fig. 356: Installing BLU/RED And BLK Harness Terminal**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

28. Install the O/D switch harness terminals (C) in the No. 1 and No. 2 cavities. Either O/D switch harness terminal can be installed in No. 1 and No. 2 cavities.
29. Make sure that the all four terminals lock securely, then install the back cover (D) securely in place.
30. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION** ).

#### **A/T GEAR POSITION INDICATOR PANEL LIGHT HARNESS REPLACEMENT**

1. Remove the shift lever assembly (see **ATF COOLER HOSE REPLACEMENT** ).

2. Remove the A/T gear position indicator panel light socket (A), and remove the bulb from the socket.

**Fig. 357: Removing Park Pin Switch And Switch Connector And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Remove the park pin switch (B) and the switch connector (C).
4. Pry the lock tabs on the back of the park pin switch connector (A), and remove the back cover (B).

**Fig. 358: Prying Lock Tabs On Back Of Park Pin Switch Connector And Remove All Terminals**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Remove the terminal (C) from the connector by pushing the lock tab (D) up in the connector using a thin blade screwdriver (E). Remove all four terminals.
6. Replace the A/T gear position indicator panel light harness with the new one.
7. Install GRN harness terminals (A) of the park pin switch in the No. 1 and No. 2 cavities. Either park pin switch harness terminal can be installed in No. 1 and No. 2.

**Fig. 359: Installing GRN And RED/BLK Harness Terminals**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Install the RED/BLK harness terminals (B) in the No. 3 and No. 4 cavities. Either A/T gear position indicator panel light harness terminal can be installed in No. 3 and No. 4 cavities.
9. Make sure that the all four terminals lock securely, then install the back cover (C) securely in place.
10. Install the park pin switch. Apply non-hardening thread lock sealant to screw threads, and secure the switch with the screw.
11. Install the A/T gear position indicator panel light bulb in the socket.
12. Install the A/T gear position indicator panel light socket, and install the connector.
13. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION** ).

## **A/T INTERLOCK SYSTEM**

### **COMPONENT LOCATION INDEX**

**Fig. 360: Identifying A/T Interlock System Component Location**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

### **CIRCUIT DIAGRAM**

**Fig. 361: Circuit Diagram - A/T Interlock System**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**SHIFT LOCK SYSTEM CIRCUIT TROUBLESHOOTING**

1. Press the brake pedal.

**NOTE:** Use the HDS to verify brake switch input.

*Are the brake lights ON?*

**YES-** Go to step 2.

**NO-** Repair faulty brake light circuit.

2. Connect the HDS. Check engine speed and throttle position in the A/T data list.

*Is the engine speed at idle, and TPS about 0.5 V?*

**YES-** Go to step 3.

**NO-** Repair engine speed or throttle position input.

3. Disconnect the O/D switch/shift lock solenoid connector (see **SHIFT LOCK SOLENOID TEST/REPLACEMENT** ).
4. Turn the ignition switch ON (II).
5. Measure the voltage between O/D switch/shift lock solenoid connector terminal No. 3 and body ground.

**Fig. 362: Measuring Voltage Between O/D Switch/Shift Lock Solenoid Connector Terminal No. 3 And Body Ground**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there battery voltage?*

**YES-** Go to step 6.

**NO-** Check for blown No. 10 fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the O/D switch/shift lock solenoid connector and the under-dash fuse/relay box.

6. Shift the shift lever into the P position, and press the brake pedal.
7. Measure the voltage between O/D switch/shift lock solenoid connector terminals No. 3 and No. 4 while pressing the brake pedal.

**Fig. 363: Measuring Voltage Between O/D Switch/Shift Lock Solenoid Connector Terminals No. 3 And 4**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there battery voltage?*

**YES-** Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see **SHIFT LOCK SOLENOID TEST/REPLACEMENT** ).

**NO-** Check for an open in the wire between PCM connector terminal E2 and shift lock solenoid connector. If the wire is OK, substitute a known-good PCM and recheck.

### **KEY INTERLOCK SYSTEM CIRCUIT TROUBLESHOOTING**

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX** ), and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES** ) before performing repairs or service.

1. Turn the ignition switch to ACC (I). The shift lever must be in the P position.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition key can be moved to LOCK (0) position, and remove the key from the cylinder.

*Is the ignition key able to move to the LOCK (0) position, and then removed?*

**YES-** Go to step 4.

**NO-** Replace the ignition key cylinder/steering lock assembly (see **STEERING LOCK REPLACEMENT** ).

4. Turn the ignition switch to ACC (I) or ON (II), and shift to the N position.
5. Check for the voltage between the No. 4 terminal of the steering lock assembly connector and body ground.

**Fig. 364: Checking Voltage Between No. 4 Terminal Of Steering Lock Assembly Connector And Body Ground**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

*Is there battery voltage?*

**YES-** Go to step 6.

**NO-** Check for an open in with WHT/RED wire between the multiplex control unit and the steering lock assembly connector. If the wire is OK, substitute a known-good multiplex control unit and recheck.

6. Turn the ignition switch to ACC (I), and shift to the P position.
7. Remove the shift lever console trim (see **SHIFT LEVER TRIM REMOVAL/INSTALLATION** ).
8. Disconnect the park pin switch connector (see **PARK PIN SWITCH TEST** ).

9. Check for continuity between park pin switch connector terminals No. 1 and No. 2 while pushing the button of the shift lever in, and when released.

**Fig. 365: Checking Continuity Between Park Pin Switch Connector Terminals No.1 And 2**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

*Is there continuity when pushing the button in, and no continuity when it's released?*

**YES-** Check for an open in the wire between the multiplex control unit and the park pin switch connector. If the wire is OK, replace the multiplex control unit.

**NO-** Replace the park pin switch (see **PARK PIN SWITCH REPLACEMENT** ).

#### **KEY INTERLOCK SOLENOID TEST**

SRS components are located in this area. Review the SRS component locations (see **COMPONENT LOCATION INDEX** ), and the precautions and procedures (see **PRECAUTIONS AND PROCEDURES** ) before performing repairs or service.

1. Remove the driver's dashboard lower cover (see **DRIVER'S DASHBOARD LOWER COVER REMOVAL/INSTAL** ), and lower steering column cover (see **STEERING COLUMN REMOVAL AND INSTALLATION** ).
2. Disconnect steering lock assembly connector.
3. Insert the ignition key in the key cylinder, then turn the ignition key to ACC (I).
4. Connect the battery positive terminal to steering lock assembly connector terminal No. 4, and connect the battery negative terminal to No. 3 terminal. Make sure that the ignition key cannot be turned to LOCK (0) position. Release the battery terminals, and make sure that the key can be turned to LOCK (0) position and removed from the cylinder.
5. If the key interlock solenoid works improperly, replace the ignition key cylinder/steering lock assembly (see **STEERING LOCK REPLACEMENT** ).

**Fig. 366: Connecting Battery Positive Terminal To Steering Lock Assembly Connector Terminal No.4, And Negative Terminal To No.3 Terminal**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

#### **SHIFT LOCK SOLENOID TEST/REPLACEMENT**

1. Remove the center lower cover (see **CENTER LOWER COVER REMOVAL/INSTALLATION** ).
2. Remove the shift lever console trim (see **SHIFT LEVER TRIM REMOVAL/INSTALLATION** ).

3. Shift the shift lever into the R position.
4. Remove the shift cable insulator (A) from the shift cable (B).

**Fig. 367: Removing Shift Cable Insulator From Shift Cable**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Slide the lock tab (A) down on the shift cable end holder (B).

**Fig. 368: Sliding Lock Tab Down On Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Grasp the shift cable lock (C) in the middle with angle-jaw needle-nose pliers (D), and remove it from the shift cable end and shift cable end holder. Do not pry the shift cable lock with a screwdriver, it may damage the shift cable end holder.
7. Separate the shift cable end (A) from the shift cable end holder (B).

**Fig. 369: Separating Shift Cable End From Shift Cable End Holder**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Rotate the socket holder (A) on the shift cable (B) a quarter turn; the tab (C) on the socket holder will be in the opening (D) of the shift cable bracket (E). Then slide the holder to remove the shift cable from the shift cable bracket. Do not remove the shift cable by twisting the shift cable guide (F) and damper (G).

**Fig. 370: Removing Shift Cable From Shift Cable Bracket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Remove the shift lever mounting bolts.

**Fig. 371: Removing Shift Lever Mounting Bolts And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Remove the shift lever mounting bolt (A), and remove the shift cable bracket (B).

**Fig. 372: Removing Shift Lever Mounting Bolt And Shift Cable Bracket And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

11. Remove the O/D switch/shift lock solenoid connector (C), then disconnect the connector.
12. Connect the battery positive terminal to O/D switch/shift lock solenoid connector terminal No. 3, and connect the battery negative terminal to connector terminal No. 4. Do not connect the battery positive terminal to the terminal No. 4 or you will damage the diode inside the solenoid.



13. Check that the shift lever can be moved from the P position. Release the battery terminals, move the shift lever back to the P, and make sure it locks.
14. If the shift lock solenoid works properly, connect the connector, and install the removed parts. If the shift lock solenoid is faulty, go to step 15, and replace the shift lock solenoid.
15. Remove the shift lever assembly.
16. Pry the O/D switch cover (A), and remove it.

**Fig. 373: Removing O/D Switch Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. Remove the O/D switch (A) by expanding its locks, and remove the screws (B), shift lever button (C), spring (D), and shift lever knob (E).

**Fig. 374: Removing O/D Switch**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

18. Remove the A/T gear position indicator panel light socket (A), then separate the A/T gear position indicator panel (B) from the shift lever bracket (C).

**Fig. 375: Removing A/T Gear Position Indicator Panel Light Socket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

19. Pry the lock tabs on the back of the O/D switch/shift lock solenoid connector (A), and remove the back cover (B).

**Fig. 376: Removing Terminal From Connector**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

20. Remove the terminal (C) from the connector by pushing the lock tab (D) up in the connector using a thin blade screwdriver (E). Remove all four terminals.
21. Remove the shift lock solenoid harness clamp from the shift lever bracket, and remove the shift lock solenoid.
22. Replace the shift lock solenoid.
23. Install the new shift lock solenoid (A) on the shift lever/bracket assembly (B) with aligning the shift lock solenoid plunger (C) with the tip of the shift lock stop (D).

**Fig. 377: Installing New Shift Lock Solenoid And Harness Clamp**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

24. Install the harness clamp (E) on the shift lock solenoid harness (F) at 128-138 mm (5.0-5.4 in.) (G) from the harness terminal end.
25. Install the clamp in the hole (H) of the shift lever bracket.

26. Apply silicone grease to the shift lever button (A) and push rod (B) of the shift lever (C), and install the spring (D), shift lever button, and shift lever knob (E). Install the screws (F) to secure the shift lever knob to the shift lever.

**Fig. 378: Installing Shift Lever Components And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

27. Install the O/D switch (G) and the O/D switch cover (H), and install the A/T gear position indicator panel (I) on the shift lever bracket.
28. Install the A/T gear position indicator panel light socket.

**Fig. 379: Installing A/T Gear Position Indicator Panel Light Socket**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

29. Install BLU/RED harness terminal (A) of the shift lock solenoid in the No. 3 cavity, and BLK harness terminal (B) in the No. 4 cavity.

**Fig. 380: Installing O/D Switch Harness Terminals In No.1 And 2 Cavities**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

30. Install the O/D switch harness terminals (C) in the No. 1 and No. 2 cavities. Either O/D switch harness terminal can be installed in No. 1 and No. 2 cavities.
31. Make sure that the all four terminals lock securely, then install the back cover (D) securely in place.
32. Install the shift lever assembly (see **SHIFT LEVER INSTALLATION** ).

**PARK PIN SWITCH TEST**

1. Remove the shift lever console trim (see **SHIFT LEVER TRIM REMOVAL/INSTALLATION** ).
2. Remove the shift lever mounting bolts.

**Fig. 381: Removing Shift Lever Mounting Bolts And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Disconnect the park pin switch connector.

**Fig. 382: Identifying Park Pin Switch Connector**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Shift the shift lever into the P position and release the shift lever button, then check for continuity between connector terminals No. 1 and No. 2. There should be no continuity.
5. Shift out of the P position or press the shift lever button while in the P position, and check for continuity between connector terminals No. 1 and No. 2. There should be

continuity.

6. If the park pin switch is faulty, replace it.

## **PARK PIN SWITCH REPLACEMENT**

1. Remove the shift lever assembly (see ATF COOLER HOSE REPLACEMENT ).
2. Remove the A/T gear position indicator panel light socket (A).

### **Fig. 383: Removing Park Pin Switch And Switch Connector And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Remove the park pin switch (B) and the switch connector (C).
4. Pry the lock tabs on the back of the park pin switch connector (A), and remove the back cover (B).

### **Fig. 384: Removing Park Pin Switch And Switch Connector**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Remove the terminal (C) from the connector by pushing the lock tab (D) up in the connector using a thin blade screwdriver (E). Remove all four terminals.
6. Replace the park pin switch with the new one.
7. Install GRN harness terminals (A) of the park pin switch in the No. 1 and No. 2 cavities. Either park pin switch harness terminal can be installed in No. 1 and No. 2.

### **Fig. 385: Installing GRN And RED/BLK Harness Terminals**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Install the RED/BLK harness terminals (B) in the No. 3 and No. 4 cavities. Either A/T gear position indicator panel light harness terminal can be installed in No. 3 and No. 4 cavities.
9. Make sure that the all four terminals lock securely, then install the back cover (C) securely in place.
10. Install the park pin switch. Apply non-hardening thread lock sealant to screw threads, and secure the switch with the screw.
11. Install the A/T gear position indicator panel light socket, and install the connector.
12. Install the shift lever assembly (see SHIFT LEVER INSTALLATION ).

## **TRANSMISSION END COVER**

### **END COVER REMOVAL**

Exploded View - 4WD Model

**Fig. 386: Exploded View Of Transmission End Cover (4WD Model)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

Exploded View - 2WD Model

**Fig. 387: Exploded View Of Transmission End Cover (2WD Model)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**Special Tools Required**

Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

**NOTE:** Refer to the **EXPLODED VIEW** as needed during the following procedure.

1. Remove the ATF cooler lines.
2. Remove the A/T clutch pressure control solenoid valve A, then remove the ATF pipe, ATF joint pipes, and gasket.
3. Remove A/T clutch pressure control solenoid valves B and C, then remove the ATF joint pipes and gasket.
4. Remove the transmission range switch cover.
5. Remove the transmission range switch harness clamps from the clamp brackets, then remove the transmission range switch.
6. Remove the end cover dowel pins, O-rings, and end cover gasket.
7. Slip the special tool onto the mainshaft.

**Fig. 388: Slipping Special Tool Onto Mainshaft**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Engage the park pawl with the park gear.
9. Cut the lock tab (A) of each shaft locknut (B) using a chisel (C). Then remove the locknuts and conical spring washers from each shaft.

- NOTE:**
- Countershaft and secondary shaft locknuts have left-hand threads.
  - Keep all of the chiseled particles out of the transmission.
  - Clean the old mainshaft and countershaft locknuts; they are used to install the press fit idler gear on the mainshaft, and park gear on the countershaft.

**Fig. 389: Cutting Lock Tab Of Each Shaft Locknut Using Chisel**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

10. Remove the special tool from the mainshaft.
11. Set a two-jaw (or three-jaw) puller (A) on the countershaft (B) by putting a spacer (C) between the puller and countershaft, then remove the park gear (D).

**Fig. 390: Removing Park Gear**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Install 6 x 1.0 mm bolts (A) on the mainshaft idler gear (B). Set a puller (C) on the mainshaft (D) by putting a spacer (E) between the puller and mainshaft, then remove the mainshaft idler gear.

**Fig. 391: Removing Mainshaft Idler Gear**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Remove the park pawl, park pawl spring, park pawl shaft, and stop shaft.
14. Remove the park lever from the selector control shaft.

**PARK LEVER STOP INSPECTION AND ADJUSTMENT**

1. Set the park lever in the P position.
2. Measure the distance (A) between the park pawl shaft (B) and the park lever roller pin (C).

**Standard: 57.7-58.7 mm (2.27-2.31 in.)**

**Fig. 392: Identifying Distance Between Park Pawl Shaft And Park Lever Roller Pin**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 393: Identifying Park Lever Stop**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**PARK LEVER STOP**

**PARK LEVER STOP REFERENCE**

<b>Mark</b>	<b>Part Number</b>	<b>B</b>	<b>C</b>
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	10.30 mm

## 2006 Honda Element LX

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(0.417 in.)

(0.406 in.)

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

### IDLER GEAR SHAFT BEARING REPLACEMENT

#### Special Tools Required

- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A
  - Driver 07749-0010000
  - Attachment, 52 x 55 mm 07746-0010400
1. Remove the idler gear shaft bearing (A) from the end cover (B) with the special tool and commercially available 3/8 "-16 slide hammer (C).

**Fig. 394: Removing Idler Gear Shaft Bearing From End Cover Using Special Tool And Slide Hammer**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Install the new bearing in the end cover with the special tools.

**Fig. 395: Installing New Bearing In End Cover Using Special Tools**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

### SELECTOR 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. 396: Removing Oil Seal From 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. 397: Installing New Oil Seal Flush To End Cover Using Special Tools**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

### SELECTOR 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. 398: Removing Oil Seal From End Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 399: Installing New Bearing Flush To End Cover Using Special Tools**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the new oil seal (see **IDLER GEAR SHAFT BEARING REPLACEMENT** )

#### **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. 400: Removing Snap Rings, ATF Feed Pipes And Feed Pipe Flanges From End Cover**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Install the new O-rings (E) over the ATF feed pipes.

3. Install the ATF feed pipes in the end cover by aligning the feed pipe tabs with the indentations in the end cover.

4. Install the new O-rings (F) in the end cover, then install the feed pipe flanges over the ATF feed pipes and O-rings.

5. Secure the ATF feed pipes and feed pipe flanges with the snap ring.

#### **TRANSMISSION HOUSING**

##### **HOUSING AND SHAFT ASSEMBLY REMOVAL**

Exploded View - 4WD Model

**Fig. 401: Exploded View Of Transmission Housing And Shaft (4WD Model)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

Exploded View - 2WD Model

**Fig. 402: Exploded View Of Transmission Housing And Shaft (2WD Model)**  
**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 feed pipe from the idler gear shaft, and the ATF lubrication pipe from the transmission housing.
2. Remove the shift solenoid valve cover (A), dowel pins (B), and gasket (C).

**Fig. 403: Removing Shift Solenoid Valve Cover, Dowel Pins And Gasket**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the bolt (A) securing the solenoid harness connector (B), and remove the connector.

**Fig. 404: Removing Connectors From Shift Solenoid Valves**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Disconnect the connectors from the shift solenoid valves.
5. Remove the input shaft (mainshaft) and output shaft (countershaft) speed sensors.
6. Remove the transmission housing mounting bolts, transmission hanger, and harness clamp brackets.
7. Align the spring pin (A) on the selector control shaft (B) with the transmission housing groove (C) by turning the selector control shaft.

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

**Fig. 405: Expanding Snap Ring Of Secondary Shaft Bearing Using Snap Ring Pliers**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. While expanding the snap ring of the secondary shaft bearing using the snap ring pliers, lift the transmission housing. Release the snap ring pliers, and remove the transmission housing.
9. Remove the countershaft reverse gear and needle bearing.
10. Remove the lock bolt securing the shift fork, then remove the shift fork with the reverse selector together.
11. Remove the selector control lever from the selector control shaft.



12. Unhook the detent spring (A) from the detent arm (B).

**Fig. 406: Unhooking Detent Spring From Detent Arm**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Remove the selector control shaft (A).

**Fig. 407: Turning Detent Arm Away From Countershaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

14. Turn the detent arm (B) away from the countershaft (C).
15. Remove the mainshaft subassembly (A), countershaft subassembly (B), and secondary shaft subassembly (C) together.

**Fig. 408: Removing Mainshaft Subassembly, Countershaft Subassembly And Secondary Shaft Subassembly**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

16. Remove the differential assembly.
17. 2005-2006 models: Remove the baffle plate.
18. 4WD model: Remove the transfer assembly.

## **BEARING REMOVAL**

### **Special Tools Required**

- Attachment, 78 x 90 mm 07GAD-SD40101
- Driver 07749-0010000
- Attachment, 42 x 47 mm 07746-0010300

1. Remove the idler gear shaft when removing the mainshaft bearing and idler gear shaft bearing.

**NOTE:** If you are only removing the countershaft bearing, idler gear shaft removal is not needed.

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

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

**Fig. 409: Removing Mainshaft And Countershaft Bearing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Expand the snap ring of the idler gear shaft bearing with the snap ring pliers, then push the bearing out.

**Fig. 410: Expanding Snap Ring Of Idler Gear Shaft Bearing Using Snap Ring Pliers**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**BEARING INSTALLATION**

**Special Tools Required**

- Attachment, 78 x 90 mm 07GAD-SD40101
  - Driver 07749-0010000
  - Attachment, 42 x 47 mm 07746-0010300
1. Install the bearings in the direction shown.
  2. Expand each snap ring with the snap ring pliers, and install the mainshaft bearing (A) and countershaft bearing (B) part-way into the housing.

**Fig. 411: Installing Mainshaft Bearing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Release the pliers, then push the bearing down into the housing until the snap ring snaps in place around it.
4. Expand the snap ring of the idler gear shaft (A) with the snap ring pliers, and install the bearing partway into the housing.

**Fig. 412: Expanding Snap Ring Of Idler Gear Shaft Using Snap Ring Pliers**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 413: Identifying Ring End Gaps**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Install the idler shaft.

**REVERSE IDLER GEAR REMOVAL AND INSTALLATION**

## Removal

1. Remove the bolt (A) securing the reverse idler gear shaft holder.

### **Fig. 414: Removing Reverse Idler Gear Shaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Install a 5 x 0.8 mm bolt (B) in the reverse idler gear shaft, and pull it to remove the reverse idler gear shaft (C) and gear shaft holder (D) together.
3. Remove the reverse idler gear.

### **Fig. 415: Removing Reverse Idler Gear**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

## Installation

1. Install the reverse idler gear in the transmission housing.
2. Lightly coat the reverse idler gear shaft (A), needle bearing (B), and new O-rings (C) with lithium grease.

### **Fig. 416: Installing Reverse Idler Gear Components**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Assemble the new O-rings and needle bearing on the reverse idler gear shaft, then install the reverse idler gear shaft in the reverse idler gear shaft holder (D). Align the D-shaped cut out (E) of the shaft with the D-shaped area (F) of the holder.
4. Install the reverse idler gear shaft/holder assembly on the transmission housing.

### **Fig. 417: Installing Reverse Idler Gear Shaft/Holder Assembly On Transmission Housing And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

## VALVE BODY

### VALVE BODY AND ATF STRAINER REMOVAL

Exploded View - 2003-2004 Models

**NOTE:** The illustration shows 4WD model; 2WD model is similar.

**Fig. 418: Exploded View Of Valve Body And ATF Strainer - 2003-2004 Models**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

Exploded View - 2005-2006 Models

**NOTE:** The illustration shows 4WD model; 2WD model is similar.

**Fig. 419: Exploded View Of Valve Body And ATF Strainer - 2005-2006 Models**  
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 and the servo body.
2. Remove the ATF strainer (two bolts).
3. 2003-2004 models: Remove the servo body (13 bolts), then remove the separator plate and dowel pins (two).
4. 2005-2006 models: Remove the servo body (11 bolts), then remove the separator plate and dowel pins (two).
5. Remove the ATF joint pipes (one bolt) from the regulator valve body.
6. Remove the regulator valve body (seven bolts).
7. Remove the stator shaft and stator shaft stop.
8. Remove the regulator separator plate and dowel pins (two).
9. Remove the cooler check valve spring and valve from the main valve body, then remove the main valve body (three bolts). Do not let the check balls fall out.
10. Remove the ATF pump driven gear shaft, then remove the ATF pump gears.
11. Remove the main separator plate and dowel pins (two).
12. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.

**Fig. 420: Identifying Inlet Opening Of ATF Strainer**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

13. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.
14. Remove the O-rings from the stator shaft and ATF strainer. Install the new ones when installing the valve bodies.

## VALVE BODY REPAIR

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

1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.

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

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

**Fig. 421: Inserting Sheet Of ATF-Soaked #600 Paper In Valve Bore Of Sticking Valve**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 422: Dropping Valve Into Its 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, AND REASSEMBLY**), regulator valve body 2003-2004 models (see **REGULATOR VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**), 2005-2006 models (see **2005-2006 MODELS**), and servo body (see **SERVO BODY DISASSEMBLY, INSPECTION, AND 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. 423: View Of Valve Cap**

**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. 424: Installing Spring Seat**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**MAIN VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY**

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

**Fig. 425: Identifying Main Valve Body Components**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**SPRING SPECIFICATIONS**

**SPRING SPECIFICATIONS**

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve A spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
B	Shift valve B spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
C	Shift valve C spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
D	Relief valve spring	1.0 (0.039)	9.6 (0.378)	34.1 (1.343)	10.2
E	Lock-up control valve spring	0.65 (0.026)	7.1 (0.280)	23.1 (0.909)	12.7
F	Cooler check valve spring	0.85 (0.033)	6.6 (0.260)	27.0 (1.063)	11.3
G	Servo control valve spring	0.7 (0.028)	6.6 (0.260)	35.7 (1.406)	17.2
H	Shift valve E spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9

## 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. 426: Installing ATF Pump Drive And Driven Gear**  
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 (0.0083-0.0104 in.)**

**ATF Pump Driven Gear**

**0.070-0.125 mm (0.0028-0.0049 in.)**

**Fig. 427: Measuring Side Clearance Of ATF Pump Drive Gear And 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): 0.03-0.05 mm (0.001-0.002 in.)**

**Service Limit: 0.07 mm (0.003 in.)**

**Fig. 428: Measuring Thrust Clearance Between ATF Pump Driven Gear And Valve Body Using Straight Edge And Feeler Gauge**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

## REGULATOR VALVE BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

**2006 Honda Element LX**

2003-06 TRANSMISSION Automatic Transmission - Element

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. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
5. Coat all parts with ATF during assembly.
6. When reassembling the valve body, align the hole in the regulator spring cap with the hole in the valve body, then press the spring cap into the valve body, and tighten the stop bolt.

**Fig. 429: Exploded View Of Regulator Valve Body (2003-2004 Models)**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**SPRING SPECIFICATIONS****SPRING SPECIFICATIONS**

Spring		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.92
B	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C	Regulator valve spring B	1.6 (0.063)	9.2 (0.362)	44.0 (1.732)	12.5
D	Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	33.8 (1.331)	12.2
E	Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
F	1st accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
G	1st accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6

**2005-2006 Models**

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.



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3. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see **VALVE BODY REPAIR** ).
4. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
5. Coat all parts with ATF during assembly.
6. When reassembling the valve body, align the hole in the regulator spring cap with the hole in the valve body, then press the spring cap into the valve body, and tighten the stop bolt.

**Fig. 430: Exploded View Of Regulator Valve Body And Torque Specifications (2005-2006 Models)**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

### SPRING SPECIFICATIONS

### SPRING SPECIFICATIONS

Spring	Standard (New)-Unit: mm (in.)			
	Wire Diameter	O.D.	Free Length	No. of Coils
A Stator reaction spring	4.5 (0.177)	35.4 (1.394)	30.3 (1.193)	1.92
B Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
C Regulator valve spring B	1.6 (0.063)	9.2 (0.362)	44.0 (1.732)	12.5
D Torque converter check valve spring	1.2 (0.047)	8.6 (0.339)	33.8 (1.331)	12.2
E Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
F 1st accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
G 1st accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6

### SERVO BODY DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Inspect the valve body for scoring and damage.
3. Check the CPB valve for free movement. If any fail to slide freely, refer to valve body repair (see **VALVE BODY REPAIR** ).

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2003-06 TRANSMISSION Automatic Transmission - Element

4. Do not hold the shift solenoid valve connector to remove and install it. Be sure to hold the shift solenoid valve body. When installing the shift solenoid valves, refer to Shift Solenoid Valves Installation (see **SHIFT SOLENOID VALVE INSTALLATION** ).
5. Coat all parts with ATF during assembly.
6. Replace the O-rings with new ones.

**Fig. 431: Exploded View Of Servo Body And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

### SPRING SPECIFICATIONS

### SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	CPB valve spring	0.7 (0.028)	9.1 (0.358)	32.3 (1.272)	8.6
B	4th accumulator spring B	2.3 (0.091)	12.2 (0.480)	31.5 (1.240)	6.6
C	4th accumulator spring A	2.4 (0.094)	18.6 (0.732)	49.0 (1.929)	7.1
D	2nd accumulator spring B	2.0 (0.079)	10.6 (0.417)	34.0 (1.339)	8.0
E	2nd accumulator spring A	2.2 (0.087)	16.6 (0.654)	48.2 (1.898)	8.5
F	3rd accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9

### SHIFT SOLENOID VALVE INSTALLATION

#### NOTE:

- Do not install shift solenoid valve B before installing shift solenoid valve E. If solenoid valve B is installed before solenoid valve E, it may damage the hydraulic control system.
- Do not hold the shift solenoid valve connector to install it. Be sure to hold the shift solenoid valve body.

1. Install new O-rings (F) on each shift solenoid valve.

**NOTE:** The new shift solenoid valve is equipped with new O-rings. If you install a new shift solenoid valve, there is no need to replace its O-rings.

**Fig. 432: Installing Shift Solenoid Valve And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install shift solenoid valve A by holding the shift solenoid valve body; be sure the mounting bracket contacts the servo body.
3. Install shift solenoid valve E by holding the shift solenoid valve body; be sure the

mounting bracket contacts the servo body.

4. Install shift solenoid valve B by holding the shift solenoid valve body; be sure the mounting bracket contacts the bracket on shift solenoid valve E.
5. Install shift solenoid valve C by holding the shift solenoid valve body; be sure the mounting bracket contacts the servo body.

## **TORQUE CONVERTER HOUSING**

### **MAINSHAFT BEARING AND OIL SEAL REPLACEMENT**

#### **Special Tools Required**

- Adjustable bearing puller, 25-40 mm 07736-A01000B or 07736-A01000A
  - Driver 07749-0010000
  - Attachment, 62 x 68 mm 07746-0010500
  - Attachment, 72 x 75 mm 07746-0010600
1. Remove the mainshaft bearing and oil seal with the special tool and a commercially available 3/8"-16 slide hammer (A).

#### **Fig. 433: Removing Mainshaft Bearing And Oil Seal Using Special Tool And Slide Hammer**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

#### **Fig. 434: Installing New Mainshaft Bearing**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the new oil seal flush in the torque converter housing with the special tools.

#### **Fig. 435: Installing New Oil Seal Flush In Torque Converter Housing Using Special Tools**

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

**Fig. 436: Removing Countershaft Bearing Using Special Tool And Slide Hammer**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the ATF guide plate (A).

**Fig. 437: Installing ATF Guide Plate**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

## SECONDARY SHAFT BEARING REPLACEMENT

### Special Tools Required

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

1. Remove the bolt, then remove the lock washer (A) and bearing set plate (B).

**Fig. 438: Removing Lock Washer And Bearing Set Plate With Specified Torques**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the secondary shaft bearing (A) by heating the housing to about 212°F (100°C) with a heat gun (B). Do not heat the housing in excess of 212°F (100°C).

**NOTE:** Let the housing cool to normal temperature before installing the bearing.

**Fig. 439: Removing Secondary Shaft Bearing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the new O-rings (A) on the ATF guide collar (B), then install the ATF guide collar in the housing.

**Fig. 440: Installing New O-Rings, ATF Guide Collar And Shaft Bearing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the new secondary shaft bearing (C) in the direction shown.
5. Drive the secondary shaft bearing with the special tools, and install it securely in the housing.

**Fig. 441: Installing Secondary Shaft Bearing In Housing**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Check that the bearing groove aligns with the housing surface, then install the bearing set plate with aligning the bearing groove.
7. Install the new lock washer and bolt, then bend the lock tab of the lock washer against the bolt head.

**SELECTOR 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. 442: Removing Oil Seal From 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. 443: Installing New Oil Seal Flush To Torque Converter Housing Using Special Tools**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**SHAFTS AND CLUTCHES**

**MAINSHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY**

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.

**Fig. 444: Exploded View Of Mainshaft And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Inspect the splines for excessive wear and damage.
3. Check shaft bearing surface for scoring and excessive wear.
4. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer and 41 x 68 mm thrust washer in the direction shown.
7. Replace the locknut and conical spring washer with new ones when assembling the transmission.
8. Check the clearance of the 3rd gear.

**MAINSHAFT 3RD GEAR AXIAL CLEARANCE INSPECTION**

1. Remove the mainshaft transmission housing bearing (see **BEARING REMOVAL** ).
2. Assemble the 41 x 68 mm thrust washer (A), 3rd/4th clutch (B), 4th gear collar (C), and the transmission housing bearing (D) on the mainshaft (E). Do not install the O-rings during inspection.

**Fig. 445: Assembling Thrust Washer, Third/Fourth Clutch, Fourth Gear Collar, And Transmission Housing Bearing On Mainshaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the idler gear (F) on the mainshaft with a press, then install the conical spring washer (G) and locknut (H).
4. Tighten the locknut to 29 N.m (3.0 kgf.m, 22 lbf.ft).
5. Measure the clearance between the mainshaft flange (A) and 41 x 68 mm thrust washer (B) with a feeler gauge (C) in at least three places. Use the average as the actual clearance.

**Standard: 0.03-0.31 mm (0.001-0.012 in.)**

**Fig. 446: Measuring Clearance Between Mainshaft Flange And Thrust Washer**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. If the clearance is out of standard, remove the 41 x 68 mm thrust washer and measure its thickness.

**Fig. 447: Identifying Clearance**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Select and install a new thrust washer, then recheck.

**THRUST WASHER, 41 x 68 mm****THRUST WASHER, 41 x 68 mm**

No.	Part Number	Thickness
1	90414-PRP-010	6.35 mm (0.250 in.)
2	90415-PRP-010	6.40 mm (0.252 in.)
3	90416-PRP-010	6.45 mm (0.254 in.)
4	90417-PRP-010	6.50 mm (0.256 in.)
5	90418-PRP-010	6.55 mm (0.258 in.)
6	90419-PRP-010	6.60 mm (0.260 in.)

8. After replacing the thrust washer, make sure the clearance is within standard.

9. Disassemble the shaft and gears.
10. Reinstall the bearing in the transmission housing (see **BEARING INSTALLATION** ).

#### **COUNTERSHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY**

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.

**Fig. 448: Exploded View Of Countershaft And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the splines for excessive wear and damage.
3. Check shaft bearing surface for scoring and excessive wear.
4. Lubricate all parts with ATF during assembly.
5. Install the conical spring washer, reverse selector, 35 x 47 x 7.8 mm collar, 3rd gear, 1st gear, and 2nd gear in the direction shown.
6. Replace the locknut and conical spring washer with new ones when assembling the transmission. The countershaft locknut has left-hand threads.
7. Some reverse selector hubs are press-fitted to the countershaft; special tools are needed to remove them (see **COUNTERSHAFT REVERSE SELECTOR HUB REMOVAL** ) and to install them (see **COUNTERSHAFT REVERSE SELECTOR HUB INSTALLATION** ).

#### **COUNTERSHAFT REVERSE SELECTOR HUB REMOVAL**

1. Remove the reverse selector hub (A) and the 4th gear (B) from the countershaft with a press. Place a shaft protector (C) between the countershaft and press to prevent damaging the countershaft.

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

**Fig. 449: Removing Reverse Selector Hub And Fourth Gear From Countershaft**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the needle bearing, set ring, 35 x 47 x 7.8 mm collar, 31 mm cotters, and 37 x 41 x 82.8 mm collar from the countershaft.
3. Remove 1st, 3rd, and 2nd gears from the countershaft by hand.

#### **COUNTERSHAFT REVERSE SELECTOR HUB INSTALLATION**

##### **Special Tools Required**

Driver, 40 mm I.D. 07746-0030100

1. Apply ATF to the parts.
2. Install 2nd, 1st, and 3rd gears on the countershaft by hand.
3. Install the 37 x 41 x 82.8 mm collar, 31 mm cotters, 35 x 47 x 7.8 mm collar, set ring needle bearing, and 4th gear on the countershaft.
4. Slide the reverse selector hub (A) over the countershaft (B), then press it in 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.

**Fig. 450: Installing Reverse Selector Hub On Countershaft**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

#### SECONDARY SHAFT DISASSEMBLY, INSPECTION, AND REASSEMBLY

1. Inspect the thrust needle bearing and the needle bearing for galling and rough movement.

**Fig. 451: Exploded View Of Secondary Shaft And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surfaces for scoring and excessive wear.
4. Before installing the O-rings, wrap the shaft splines with tape to prevent O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer and idler gear in the direction shown.
7. Replace the locknut and conical spring washer with new ones when assembling the transmission. The secondary shaft locknut has left-hand threads.
8. Check the clearance of 2nd and 1st gears.

#### SECONDARY SHAFT BALL BEARING, IDLER GEAR REMOVAL AND INSTALLATION

##### Special Tools Required

Attachment, 42 mm I.D. 07QAD-P0A0100

##### Removal

Place a shaft protector (A) on the secondary shaft (B), place the puller (C) on the idler gear (D), then remove the idler gear and ball bearing (E).



**Fig. 452: Removing Idler Gear And Ball Bearing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Installation**

Install the idler gear (A) on the secondary shaft (B), and install the ball bearing (C) on the shaft with the special tool and a press.

**Fig. 453: Installing Idler Gear On Secondary Shaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**SECONDARY SHAFT 2ND GEAR AXIAL CLEARANCE INSPECTION**

1. Install the thrust needle bearing (A), needle bearing (B), 2nd gear (C), thrust needle bearing (D), 37 x 58 mm thrust washer (E), and 2nd clutch (F) on the secondary shaft (G), then secure them with the snap ring (H).

**Fig. 454: Installing Thrust Needle Bearing, Needle Bearing, 2Nd Gear, Thrust Needle Bearing, On Secondary Shaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Measure the clearance between the snap ring (A) and the 2nd clutch guide (B) with a feeler gauge (C), in at least three places. Use the average as the actual clearance.

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

**Fig. 455: Measuring Clearance Between Snap Ring And 2Nd Clutch Guide**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. If the clearance is out of standard, remove the 37 x 58 mm thrust washer and measure its thickness.
4. Select and install a new thrust washer, then recheck.

**THRUST WASHER, 37 x 58 mm**

**THRUST WASHER, 37 x 58 mm**

No.	Part Number	Thickness
1	90511-PRP-010	3.900 mm (0.154 in.)
2	90512-PRP-010	3.925 mm (0.155 in.)
3	90513-PRP-010	3.950 mm (0.156 in.)
4	90514-PRP-010	3.975 mm (0.156 in.)
5	90515-PRP-010	4.000 mm (0.157 in.)
6	90516-PRP-010	4.025 mm (0.158 in.)
7	90517-PRP-010	4.050 mm (0.159 in.)

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8	90518-PRP-010	4.075 mm (0.160 in.)
9	90519-PRP-010	4.100 mm (0.161 in.)
10	90520-PRP-010	4.125 mm (0.162 in.)
11	90521-PRP-010	4.150 mm (0.163 in.)
12	90522-PRP-010	4.175 mm (0.164 in.)
13	90523-PRP-000	4.200 mm (0.165 in.)
14	90524-PRP-000	4.225 mm (0.166 in.)
15	90525-PRP-000	4.250 mm (0.167 in.)
16	90526-PRP-000	4.275 mm (0.168 in.)
17	90527-PRP-000	4.300 mm (0.169 in.)
18	90528-PRP-000	4.325 mm (0.170 in.)
19	90529-PRP-000	4.350 mm (0.171 in.)
20	90530-PRP-000	4.375 mm (0.172 in.)

5. After replacing the thrust washer, make sure the clearance is within standard.
6. Disassemble the shaft and gears.

### SECONDARY SHAFT 1ST GEAR AXIAL CLEARANCE INSPECTION

#### Special Tools Required

Attachment, 42 mm I.D. 07QAD-P0A0100

1. Install the thrust needle bearing (A), needle bearing (B), 1st gear (C), thrust needle bearing (D), 40 x 51.5 mm thrust washer (E), 1st clutch (F), and 27 x 45 x 44 mm collar (G) on the secondary shaft (H).

**Fig. 456: Installing Thrust Needle Bearing, Needle Bearing, First Gear, Thrust Needle Bearing On Secondary Shaft With Specified Torques**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the idler gear (I), then install the ball bearing (J) on the idler gear with the special tool and a press.

**Fig. 457: Installing Ball Bearing On Idler Gear**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the conical spring washer (K) and locknut (L), then tighten the locknut to 29 N.m (3.0 kgf.m, 22 lbf.ft).
4. Turn the secondary shaft assembly upside down, and set the dial indicator (A) on the 1st gear (B).

**Fig. 458: Setting Dial Indicator On First Gear**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Hold the secondary shaft, and measure the 1st gear axial clearance in at least three places while moving the 1st gear (A). Use the average as the actual clearance.

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

**Fig. 459: Measuring First Gear Axial Clearance**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. If the clearance is out of standard, remove the 40 x 51.5 mm thrust washer and measure its thickness.
7. Select and install a new thrust washer, then recheck.

**THRUST WASHER, 40 x 51.5 mm**

No.	Part Number	Thickness
1	90503-PRP-000	4.80 mm (0.189 in.)
2	90504-PRP-000	4.85 mm (0.191 in.)
3	90505-PRP-000	4.90 mm (0.193 in.)
4	90506-PRP-000	4.95 mm (0.195 in.)
5	90507-PRP-000	5.00 mm (0.197 in.)
6	90508-PRP-000	5.05 mm (0.199 in.)

8. After replacing the thrust washer, make sure the clearance is within standard.
9. Disassemble the shaft and gears.

**IDLER GEAR SHAFT REMOVAL AND INSTALLATION**

1. Remove the snap ring (A), cotter retainer (B), and cotters (C). Do not distort the snap ring.

**Fig. 460: Removing Snap Ring, Cotter Retainer, And Cotters**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Remove the idler gear shaft/idler gear assembly (D) from the transmission housing.
3. Check the snap rings and cotter retainer for wear and damage. Replace them if they are worn, distorted, or damaged.
4. Install the idler gear and shaft in the reverse order of removal.

**IDLER GEAR/IDLER GEAR SHAFT REPLACEMENT****Special Tools Required**

- Driver 07749-0010000
- Attachment, 32 x 35 mm 07746-0010100

1. Remove the snap ring from the idler gear/idler shaft assembly.

**Fig. 461: Removing Snap Ring From Idler Gear/Idler Shaft Assembly**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the idler gear shaft (A) from the idler gear (B) with the special tools and a press.

**Fig. 462: Removing Idler Gear Shaft From Idler Gear**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Replace the idler gear or idler gear shaft, and attach the idler gear shaft to the idler gear.

**Fig. 463: Installing Idler Gear Or Idler Gear Shaft**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the idler gear shaft (A) in the idler gear (B) with the special tools and a press.

**Fig. 464: Installing Idler Gear Shaft In Idler Gear**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the snap ring.

## CLUTCH DISASSEMBLY

### Special Tools Required

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

1. Remove the snap ring with a screwdriver.

**Fig. 465: Removing Snap Ring With Screwdriver**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the clutch end-plate (A), clutch discs (B) (5), clutch waved-plates (C) (5), and waved spring (D) from the 1st clutch drum (E).

**Fig. 466: Removing Clutch End-Plate, Clutch Discs, Clutch Waved-Plates, And Waved Spring**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. 2003-2004 models: Remove the clutch end-plate (A), clutch discs (B) (5), clutch waved-plates (C) (3), clutch flat-plates (D) (2), and waved spring (E) from the 2nd clutch drum (F).

**Fig. 467: Removing Clutch End-Plate, Clutch Discs, Clutch Waved-Plates, Clutch Flat-Plates**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. 2003-2004 models: Make reference marks on the clutch flat-plates (D).
5. 2005-2006 models: Remove the clutch end-plate (A), clutch discs (B) (5), clutch waved-plates (C) (3), 2.0 mm-thick flat-plate (D), 4.0 mm-thick plate (E), and waved spring (F) from the 2nd clutch drum (G).

**Fig. 468: Removing Clutch End-Plate, Clutch Discs And Clutch Waved-Plates**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. 2005-2006 models: Make reference mark on 2.0 mm-thick flat-plate (D).
7. 2003-2004 models: Remove the clutch end-plate (A), clutch discs (B) (3), clutch waved-plates (C) (3), and waved spring (D) from the 3rd clutch drum (E).

**Fig. 469: Removing Clutch End-Plate, Clutch Discs, Clutch Waved-Plates, And Waved Spring**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. 2003-2004 models: Remove the clutch end-plate (A), clutch discs (B) (3), clutch waved-plates (C) (3), and waved spring (D) from the 4th clutch drum (E).

**Fig. 470: Removing Clutch End-Plate, Clutch Discs, Clutch Waved-Plates, And Waved Spring**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. 2005-2006 models: Remove the clutch end-plate (A), clutch discs (B) (4), clutch waved-plates (C) (4), and waved spring (D) from the 3rd clutch drum (E).

**Fig. 471: Removing Clutch End-Plate, Clutch Discs, Clutch Waved-Plates, And Waved Spring**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. 2005-2006 models: Remove the clutch end-plate (A), clutch discs (B) (4), clutch waved-plates (C) (4), and waved spring (D) from the 4th clutch drum (E).

**Fig. 472: Removing Clutch End-Plate, Clutch Discs, Clutch Waved-Plates, And Waved Spring**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

11. Install the special tools.

**Fig. 473: Installing Special Tools**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 3rd and 4th clutches.

**Fig. 474: Adjusting Spring Retainer On Third And Fourth Clutches**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Set the special tool (A) on the spring retainer (B) of the 1st and 2nd clutches in such a way that the special tool works on the clutch return spring (C).

**Fig. 475: Setting Special Tool On Spring Retainer**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

14. 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.

**Fig. 476: Setting Special Tool Of Spring Retainer**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. Compress the return spring until the snap ring can be removed.

**Fig. 477: Compressing Return Spring**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

16. Remove the snap ring with snap ring pliers.

**Fig. 478: Removing Snap Ring With Snap Ring Pliers**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. Remove the special tools.
18. Remove the snap ring (A), spring retainer (B), and return spring (C).

**Fig. 479: Removing Snap Ring, Spring Retainer, And Return Spring**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

19. 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 passage while applying air pressure.

**Fig. 480: Applying Air Pressure To Fluid Passage**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

20. Remove the piston, then remove the O-rings from the 3rd and 4th clutch pistons.

**Fig. 481: Removing O-Rings From Third And Fourth Clutch Pistons**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

21. Remove the piston, then remove the O-ring from the 1st and 2nd clutch drum, and remove the O-ring from each clutch piston.

**Fig. 482: Removing O-Ring From First And Second Clutch Drum**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

### **CLUTCH INSPECTION**

1. Inspect the 3rd and 4th clutch pistons and clutch piston check valves (A).

**Fig. 483: Checking Third And Fourth Clutch Pistons And Clutch Piston Check Valves**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. If the clutch piston check valve is loose or damaged, replace the clutch piston.
3. Check the spring retainer for wear and damage.
4. Check the oil seal (A) on the spring retainer of the 1st and 2nd clutches for wear, damage, and peeling.

**Fig. 484: Checking Oil Seal On Spring Retainer**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. If the oil seal is worn, damaged, or peeling, replace the spring retainer.
6. Inspect the clutch discs, clutch plates, and clutch end-plate for wear, damage, and discoloration.

### **Standard Thickness**

**Clutch Discs: 1.94 mm (0.076 in.)**

### **Clutch Plates**

#### **2003-2004 models**

**1st clutch (waved-plates): 1.6 mm (0.063 in.)**

**2nd clutch: Waved-plates: 2.0 mm (0.079 in.)**

**Flat-plate: 2.0 mm (0.079 in.)**

**3rd clutch (waved-plates): 2.3 mm (0.091 in.)**

**4th clutch (waved-plates): 2.3 mm (0.091 in.)**

**2005-2006 models**

**1st clutch (waved-plates): 1.6 mm (0.063 in.)**

**2nd clutch: Waved-plates: 2.0 mm (0.079 in.)**

**2.0 mm-thick**

**flat-plate: 2.0 mm (0.079 in.)**

**4.0 mm-thick**

**plate: 4.0 mm (0.157 in.)**

**3rd clutch (waved-plates): 2.0 mm (0.079 in.)**

**4th clutch (waved-plates): 2.0 mm (0.079 in.)**

7. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clutch end-plate-to-top-disc clearance.
8. If any plate is worn, damaged, or discolored, replace the damaged plate with the new plate, and inspect the other waved-plates for a phase difference. If the clutch plate is replaced, inspect the clutch end-plate-to-top-disc clearance.
9. If the clutch end-plate is worn, damaged, or discolored, inspect the clutch end-plate-to-top-disc clearance, then replace the clutch end-plate.

#### **CLUTCH WAVED-PLATE PHASE DIFFERENCE INSPECTION**

1. Place the clutch waved-plate (A) on a surface plate, and set a dial indicator (B) on the waved-plate.

**Fig. 485: Placing Clutch Waved-Plate On Surface Plate**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Find the bottom (D) of a phase difference of the waved-plate, zero the dial indicator and make a reference mark on the bottom of the waved-plate.
3. Rotate the clutch waved-plate about 60 degrees (except 2003-2004 models 3rd and 4th) or 72 or 54 degrees (2003-2004 models 3rd and 4th) by holding its circumference. The dial indicator should be at top (E) of a phase difference.
4. Read the dial indicator. The dial indicator reads the phase difference (C) of the waved-plate between bottom and top.



**Standard: 0.07-0.20 mm (0.003-0.008 in.)**

**Minimum: 0.05 mm (0.002 in.)**

5. Rotate the clutch waved-plate about 60 degrees (except 2003-2004 models 3rd and 4th) or 72 or 54 degrees (2003-2004 models 3rd and 4th) from the top position. The dial indicator should be at bottom (F) of a phase difference. Zero the dial indicator.
6. Measure the phase difference between other two bottoms (F, H) and tops (G, I) of the clutch waved-plate by following steps 3 through 5.
7. If the two values of the three measurements are within the standard, the waved-plate is OK. If the two values of the three measurements are out of the standard, replace the waved-plate.

## **CLUTCH CLEARANCE INSPECTION**

### **Special Tools Required**

Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, discs, plates, and end-plate for wear and damage (see **CLUTCH INSPECTION**), and inspect clutch waved-plate phase difference (see **CLUTCH WAVED-PLATE PHASE DIFFERENCE INSPECTION**), if necessary.
2. Install the clutch piston in the clutch drum. Do not install the O-rings during inspection.

**Fig. 486: Installing Clutch Piston In Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (5) and discs (D) (5), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 487: Installing Waved Spring In First Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. 2003-2004 models: Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), clutch disc (D), and clutch flat-plate (E). Starting with the clutch disc, alternately install the clutch discs (F) (4) and clutch waved-plates (G) (3), then install the clutch end-plate (H) with the flat side toward the disc.

**Fig. 488: Installing Waved Spring In Second Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. 2005-2006 models: Install the waved spring (A) in the 2nd clutch drum (B). Install the 4.0 mm-thick plate (C) with the shear droop side (D) toward the inside of the drum, clutch disc (E), and 2.0 mm-thick flat-plate (F), then starting with the disc, alternately

install the discs (G) (4) and waved-plates (H) (3), then install the clutch end-plate (I) with the flat side toward the disc.

**Fig. 489: Installing Waved Spring In Second Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. 2003-2004 models: Install the waved spring (A) in the 3rd clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (3) and discs (D) (3), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 490: Installing Waved Spring In Third Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. 2003-2004 models: Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (3) and discs (D) (3), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 491: Installing Waved Spring In Fourth Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. 2005-2006 models: Install the waved spring (A) in the 3rd clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (4) and discs (D) (4), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 492: Installing Waved Spring In Third Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. 2005-2006 models: Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (4) and discs (D) (4), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 493: Installing Waved Spring In Fourth Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Install the snap ring with a screwdriver to secure the clutch end-plate.

**Fig. 494: Installing Snap Ring With Screwdriver**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 495: Setting Dial Indicator On Clutch End-Plate**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Zero the dial indicator with the clutch end-plate lifted up to the snap ring (C).

13. Release the clutch end-plate to lower the clutch end-plate, then put the special tool on the end-plate (A).

**Fig. 496: Removing Clutch End-Plate To Lower Clutch End-Plate**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

14. Press the special tool down with 150-160 N (15-16 kgf, 3-35 lbf) using a force gauge, and read the dial indicator (B). The dial indicator reads the clearance (C) between the clutch end-plate and top disc (D). 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: 1.28-1.48 mm (0.050-0.058 in.)**

**2nd Clutch:**

**2003-2004 models: 0.85-1.05 mm (0.033-0.041 in.)**

**2005-2006 models: 0.88-1.08 mm (0.035-0.043 in.)**

**3rd Clutch:**

**2003-2004 models: 0.73-0.93 mm (0.029-0.037 in.)**

**2005-2006 models: 0.93-1.13 mm (0.037-0.044 in.)**

**4th Clutch:**

**2003-2004 models: 0.73-0.93 mm (0.029-0.037 in.)**

**2005-2006 models: 0.93-1.13 mm (0.037-0.044 in.)**

15. If the clearance is out of the service limit, select a new clutch end-plate from the following table.

**Fig. 497: Identifying Clutch End-Plate Clearance**  
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

**1ST and 2ND CLUTCH END-PLATES**

**1ST and 2ND CLUTCH END-PLATES**

<b>Plate No.</b>	<b>Part Number</b>	<b>Thickness</b>

**2006 Honda Element LX**

2003-06 TRANSMISSION Automatic Transmission - Element

1	22551-RCL-003	2.6 mm (0.102 in.)
2	22552-RCL-003	2.7 mm (0.106 in.)
3	22553-RCL-003	2.8 mm (0.110 in.)
4	22554-RCL-003	2.9 mm (0.114 in.)
5	22555-RCL-003	3.0 mm (0.118 in.)
6	22556-RCL-003	3.1 mm (0.122 in.)
7	22557-RCL-003	3.2 mm (0.126 in.)
8	22558-RCL-003	3.3 mm (0.130 in.)
9	22559-RCL-003	3.4 mm (0.134 in.)

**3RD and 4TH CLUTCH END-PLATES****3RD and 4TH CLUTCH END-PLATES**

Plate No.	Part Number	Thickness
1	22581-RCL-003	2.1 mm (0.083 in.)
2	22582-RCL-003	2.2 mm (0.087 in.)
3	22583-RCL-003	2.3 mm (0.091 in.)
4	22584-RCL-003	2.4 mm (0.095 in.)
5	22585-RCL-003	2.5 mm (0.098 in.)
6	22586-RCL-003	2.6 mm (0.102 in.)
7	22587-RCL-003	2.7 mm (0.106 in.)
8	22588-RCL-003	2.8 mm (0.110 in.)
9	22589-RCL-003	2.9 mm (0.114 in.)

16. Install the new clutch end-plate, then recheck the clearance. If the thickest clutch end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.

**CLUTCH REASSEMBLY****Special Tools Required**

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

1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.
2. Install the new O-rings (A) on the 3rd and 4th clutch pistons (B).

**Fig. 498: Installing O-Rings On Third And Fourth Clutch Pistons**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

3. Install the new O-ring (A) in the 1st and 2nd clutch pistons (B), and install the new O-

ring (C) on the clutch drums (D).

**Fig. 499: Installing O-Ring In First And Second Clutch Pistons**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Install the clutch piston (A) in the clutch drum (B). Apply pressure and rotate it 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. 500: Installing Clutch Piston In Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 501: Installing Return Spring And Spring Retainer On Retainer**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Install the special tools.

**Fig. 502: Installing Special Tools**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 3rd and 4th clutches.

**Fig. 503: Adjusting Spring Retainer**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Set the special tool (A) on the spring retainer (B) of the 1st and 2nd clutches in such a way that the special tool works on the clutch return spring (C).

**Fig. 504: Setting Special Tool On Spring Retainer**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. 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.

**Fig. 505: Setting Special Tool On Spring Retainer**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

10. Compress the return spring.

**Fig. 506: Compressing Return Spring**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

11. Install the snap ring with snap ring pliers.

**Fig. 507: Installing Snap Ring With Snap Ring Pliers**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Remove the special tools.
13. Install the waved spring (A) in the 1st clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (5) and discs (D) (5), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 508: Installing Waved Spring In First Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

14. 2003-2004 models: Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), clutch disc (D), and clutch flat-plate (E). Starting with the clutch disc, alternately install the clutch discs (F) (4) and clutch waved-plates (G) (3), then install the clutch end-plate (H) with the flat side toward the disc.

**Fig. 509: Installing Waved Spring In Second Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. 2005-2006 models: Install the waved spring (A) in the 2nd clutch drum (B). Install the 4.0 mm-thick plate (C) with the shear droop side (D) toward the inside of the drum, clutch disc (E), and 2.0 mm-thick flat-plate (F), then starting with the clutch disc, alternately install the clutch discs (G) (4) and clutch waved-plates (H) (3), then install the clutch end-plate (I) with the flat side toward the disc.

**Fig. 510: Installing Waved Spring In Second Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

16. 2003-2004 models: Install the waved spring (A) in the 3rd clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (3) and discs (D) (3), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 511: Installing Waved Spring In Third Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. 2003-2004 models: Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (3) and discs (D) (3), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 512: Installing Waved Spring In Fourth Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

18. 2005-2006 models: Install the waved spring (A) in the 3rd clutch drum (B). Starting

with the clutch waved-plate, alternately install the clutch plates (C) (4) and discs (D) (4), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 513: Installing Waved Spring In Third Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

19. 2005-2006 models: install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch waved-plate, alternately install the clutch plates (C) (4) and discs (D) (4), then install the clutch end-plate (E) with the flat side toward the disc.

**Fig. 514: Installing Waved Spring In Fourth Clutch Drum**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

20. Install the snap ring with a screwdriver to secure the clutch end-plate.

**Fig. 515: Installing Snap Ring With Screwdriver**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

21. Check that the clutch piston moves by applying air pressure into fluid passage.

**VALVE BODY AND ATF STRAINER INSTALLATION**

Exploded View - 2003-2004 Models

**NOTE:** The illustration shows 4WD model; 2WD model is similar.

**Fig. 516: Exploded View Of Valve Body And ATF Strainer With Specified Torques (1 Of 2)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

Exploded View - 2005-2006 models

**NOTE:** The illustration shows 4WD model; 2WD model is similar.

**Fig. 517: Exploded View Of Valve Body And ATF Strainer With Specified Torques (2 Of 2)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**NOTE:** Refer to the **EXPLODED VIEW** as needed during the following procedure.

1. Install the main separator plate (A) and two dowel pins on the torque converter housing. Then install the ATF pump drive gear (B), driven gear (C), and ATF pump

driven gear shaft (D). Install the ATF pump driven gear with its grooved and chamfered side facing down.

**Fig. 518: Installing Main Separator Plate And Two Dowel Pins On Torque Converter Housing**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 519: Checking ATF Pump Drive Gear Rotates Smoothly**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. 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.
5. Make sure that the check balls (two) are in the main valve body, and install the cooler check valve and the cooler check valve spring.
6. Install the regulator separator plate and dowel pins (two) on the main valve body.
7. Install the stator shaft and stator shaft stop.
8. Install the regulator valve body (seven bolts).
9. Install the servo separator plate and dowel pins (two) on the main valve body.
10. 2003-2004 models: Install the servo body (13 bolts).
11. 2005-2006 models: Install the servo body (11 bolts).
12. Install the ATF strainer (two bolts).
13. Install the ATF joint pipes (one bolt).
14. Install the ATF feed pipes in the regulator valve body and servo body.

## **SHAFT ASSEMBLY AND HOUSING INSTALLATION**

Exploded View

**Fig. 520: Exploded View Of Shaft Assembly And Housing And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**NOTE:** Refer to the **EXPLODED VIEW** as needed during the following procedure. The Exploded View shows 4WD model; 2WD model is similar.



1. Install the differential assembly in the torque converter housing.
2. 2005-2006 models: Install the baffle plate on the servo body.
3. Assemble the mainshaft, countershaft, and secondary shaft.
4. Join the mainshaft subassembly (A), countershaft subassembly (B), and secondary shaft subassembly (C) together, and install them in the torque converter housing.

**Fig. 521: Installing Mainshaft Subassembly, Countershaft Subassembly, And Secondary Shaft Subassembly In Torque Converter Housing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. If the detent arm was removed, install the detent arm (A) with arm collar (B) on the servo body (C), and install the new lock washer (D) by aligning its cutout (E) with the projection (F) of the servo body. Install and tighten the bolt, then bend the lock tab of the lock washer against the bolt head.

**Fig. 522: Installing Detent Arm With Arm Collar On Servo Body And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Install the selector control shaft (A) in the torque converter housing aligning the manual valve lever pin (B) on the selector control shaft with the guide of the manual valve (C). Pull the manual valve gently when aligning the manual valve with the selector control shaft.

**Fig. 523: Installing Selector Control Shaft In Torque Converter Housing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Hook the detent arm spring (A) to the detent arm (B).

**Fig. 524: Hooking Detent Arm Spring To Detent Arm**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Turn the shift fork shaft (A) so the large chamfered hole (B) is facing the fork bolt hole (C) of the shift fork (D).

**Fig. 525: Installing Shift Fork Shaft On Shift Fork And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Install the shift fork and reverse selector together on the shift fork shaft and countershaft. Secure the shift fork to the shift fork shaft with the lock bolt and a new lock washer (E), then bend the lock tab of the lock washer against the bolt head.
10. Install the needle bearing and countershaft reverse gear on the countershaft.
11. Install the reverse idler gear in the transmission housing (see **REVERSE IDLER GEAR REMOVAL AND INSTALLATION** ).

12. Install the idler gear shaft (see **IDLER GEAR SHAFT REMOVAL AND INSTALLATION** ), if it was removed.
13. Install the three dowel pins and a new gasket on the torque converter housing.
14. Align the spring pin (A) on the selector control shaft (B) with the transmission housing groove (C) by turning the selector control shaft.

**NOTE:** Do not squeeze the end (D) of the selector control shaft tips together when turning the shaft. If the tips are squeezed 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 selector control shaft and the switch.

**Fig. 526: Aligning Spring Pin On Selector Control Shaft**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

15. Place the transmission housing on the torque converter housing. Do not install the input shaft (mainshaft) and output shaft (countershaft) speed sensors before installing the transmission housing on the torque converter housing.
16. While expanding the snap ring of the secondary shaft bearing using snap ring pliers, push the transmission housing down to start the secondary shaft bearing through the snap ring. Then release the pliers, and push down on the housing until it bottoms and the snap ring snaps into place in the secondary shaft bearing snap-ring groove.
17. Verify that the secondary shaft bearing snap ring (A) is seated in the bearing and housing groove, and that the ring end gap (B) is 0-7 mm (0-0.28 in.)

**Fig. 527: Identifying Secondary Shaft Bearing Snap Ring Clearance**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Install the transmission housing mounting bolts along with the transmission hanger (A) and harness clamp brackets (B), and tighten the bolts in two or three steps in a crisscross pattern.

**Fig. 528: Installing Transmission Housing Mounting Bolts And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

19. Install the input shaft (mainshaft) speed sensor (A) and output shaft (countershaft) speed sensor (B) with new O-rings (C).

**Fig. 529: Installing Input Shaft (Mainshaft) Speed Sensor And Output Shaft (Countershaft) Speed Sensor With Specified Torques**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. Install the shift solenoid harness connector (F) in the transmission housing with the new O-ring (G).

**Fig. 530: Installing Shift Solenoid Harness Connector In Transmission Housing And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

21. Connect the connector (BLU, WHT and WHT wires) to the shift solenoid valve A.
22. Connect the connectors to the respective solenoid valves:
  - ORN wire to shift solenoid valve B.
  - GRN wire to shift solenoid valve C.
  - RED wire to shift solenoid valve E.
23. Install the shift solenoid valve cover (A) with the two dowel pins (B) and the new gasket (C), and tighten the bolts (eight). Install the one bolt with the bracket for the ATF cooler line in the bolt hole (D).

**Fig. 531: Installing Shift Solenoid Valve Cover With Two Dowel Pins And Gasket With Specified Torques**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

## **END COVER INSTALLATION**

### **Special Tools Required**

Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

1. Install the special tool onto the mainshaft.

**Fig. 532: Installing Special Tool Onto Mainshaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Lubricate the following parts with ATF:
  - Splines and threads of the mainshaft.
  - Splines of the mainshaft idler gear.
  - Old conical spring washer and old locknut.
3. Install the mainshaft idler gear (A), old conical spring washer (B), and old locknut (C) on the mainshaft (D), and tighten the locknut to 226 N.m (23.0 kgf.m, 166 lbf.ft).

### **NOTE:**

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

**Fig. 533: Installing Mainshaft Idler Gear, Old Conical Spring Washer, And Old Locknut On Mainshaft**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the park lever (A) and park lever stop (B) on the selector control shaft (C), then install the lock bolt with the new lock washer (D). Do not bend the lock tab of the lock washer until step 18 .

**Fig. 534: Installing Park Lever And Park Lever Stop On Selector Control Shaft With Specified Torques**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the park pawl shaft (E), park pawl spring (F), park pawl (G), and stop shaft (H) on the transmission housing.
6. Lubricate the following parts with ATF:
  - Threads and splines of the countershaft.
  - Old conical spring washer and old locknut.
  - Areas where the park gear contacts the conical spring washer.
7. Install the park gear (I), old conical spring washer (J), and old locknut (K) on the countershaft.
8. Lift the park pawl up, and engage it with the park gear, then tighten the locknut to 226 N.m (23.0 kgf.m, 166 lbf.ft).

**NOTE:**

- Do not tap the park gear to install.
  - Use a torque wrench to tighten the locknut. Do not use an impact wrench.
  - Countershaft locknut has left-hand threads.
9. Remove the locknuts and conical spring washers from the mainshaft and countershaft.
  10. Lubricate the threads of the shafts, the new locknuts, and the new conical spring washers with ATF.
  11. Install the new conical spring washers (A) in the direction shown, and install the new mainshaft locknut (B), the new countershaft locknut (C), and the new secondary shaft locknut (D).

**Fig. 535: Installing Conical Spring Washers, Mainshaft Locknut, Coutershaft Locknut, and Secondary Shaft Locknut**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

12. Tighten the locknuts to 167 N.m (17.0 kgf.m, 123 lbf.ft).

**NOTE:**

- **Be sure to install the conical spring washers in the direction shown.**
  - **Use a torque wrench to tighten the locknut. Do not use an impact wrench.**
  - **Countershaft and secondary shaft locknuts have left-hand threads.**
13. Remove the special tool from the mainshaft.
  14. Stake the locknuts into the shafts with a punch.

**Fig. 536: Staking Locknuts**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

15. Install the selector control lever (A) on the selector control shaft (B), and install the bolt with the new lock washer (C), then bend the lock tab of the lock washer against the bolt head.

**Fig. 537: Installing Selector Control Lever On Selector Control Shaft And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

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

**Fig. 538: Setting Park Lever In P Position And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

17. If the park pawl does not engage fully, check the distance (C) between the pawl shaft (D) and the park lever roller pin (E) (see **PARK LEVER STOP INSPECTION AND ADJUSTMENT** ).
18. Tighten the lock bolt, and bend the lock tab of the lock washer (F) against the bolt head.
19. Install the ATF feed pipe (A) into the idler gear shaft, and install the ATF lubrication pipe (B) into the transmission housing.

**Fig. 539: Installing ATF Feed Pipe Into Idler Gear Shaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

20. Install the end cover (A) with the two dowel pins, new O-rings, and new gasket. Tighten the 6 x 1.0 mm bolts (12) (B) and 8 x 1.0 mm bolts (3) (C).

**Fig. 540: Installing End Cover With Two Dowel Pins And Torque Specifications**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

21. Install the harness clamp bracket (D) on the end cover.
22. Set the selector control shaft (A) to the N position by turning the selector control lever on the torque converter side.

**NOTE:** Do not squeeze the end of the selector 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 selector control shaft and the switch.

**Fig. 541: Setting Selector Control Shaft To N Position**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

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

**Fig. 542: Aligning Cutouts On Rotary-Frame**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 543: Installing Transmission Range Switch On Selector Control Shaft**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 544: Tightening Transmission Range Switch Bolts And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

26. Connect the transmission range switch connector (A) securely, then install the harness clamps (B) on the clamp bracket (C).

**Fig. 545: Connecting Transmission Range Switch Connector And Torque Specifications**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

27. Install the transmission range switch cover (D).
28. Install the new gasket (B) on the transmission housing, and install the ATF pipe (C) and ATF joint pipes (D).

**Fig. 546: Installing Gasket On Transmission Housing And ATF Pipe/Joint Pipes With Specified Torques**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

29. Install the new O-rings (E) over the ATF joint pipes.
30. Install A/T clutch pressure control solenoid valve A.
31. Install the new gasket (A) on the transmission housing, and install the ATF joint pipes (D).

**Fig. 547: Installing Gasket On Transmission Housing And ATF Joint Pipes With Specified Torques**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

32. Install the new O-rings (E) over the ATF joint pipes.
33. Install A/T clutch pressure control solenoid valves B and C and harness clamp brackets (F).
34. Install the ATF cooler inlet line (A) with the new sealing washers (B), and install the bracket (C) of the ATF cooler inlet line on the shift solenoid valve cover hole (D) (see step 23 ).

**Fig. 548: Installing ATF Cooler Inlet Line And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

35. Install the ATF cooler outlet line (E) with the new sealing washers (F).
36. Install the breather cap (A) securely on the breather pipe (B) so its arrow (C) points to the front of the transmission (A/T clutch pressure control solenoid valves B and C side).

**Fig. 549: Installing Breather Cap On Breather Pipe**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

37. 4WD model: Install the transfer assembly (A) with the new O-ring (B) and dowel pin (C).

**Fig. 550: Installing Transfer Assembly With New O-Ring And Dowel Pin And Torque Specifications**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

38. Install the ATF dipstick.

## A/T DIFFERENTIAL

### COMPONENT LOCATION INDEX

#### 4WD Model

**Fig. 551: Exploded View Of A/T Differential (4Wd Model)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

#### 2WD Model

**Fig. 552: Exploded View Of A/T Differential (2Wd Model)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

### BACKLASH INSPECTION

**NOTE:** The illustration shows 4WD model; 2WD model is similar.

1. Install the driveshaft and intermediate shaft on the differential, then place the axles on V-blocks.

**Fig. 553: Checking Backlash Of Pinion Gears With Dial Indicator**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Standard: 0.05-0.15 mm (0.002-0.006 in.)**

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

### CARRIER BEARING REPLACEMENT

#### Special Tools Required

Attachment, 40 x 50 mm 07LAD-PW50601

- NOTE:**
- The bearing and bearing outer race should be replaced as a set.
  - Inspect and adjust the carrier bearing preload whenever bearing is replaced.
  - Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.
  - The illustration shows 4WD model; 2WD model is similar.



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

**Fig. 554: Removing Carrier Bearing With Puller**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new bearings with the special tool and a press. Press the bearing on securely so there is no clearance between the bearing and the differential carrier.

**Fig. 555: Installing Bearings With Special Tool**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

### **DIFFERENTIAL CARRIER, FINAL DRIVEN GEAR, AND TRANSFER DRIVE GEAR REPLACEMENT**

#### **4WD Model**

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

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

**Fig. 556: Removing Final Driven Gear And Transfer Drive Gear From Differential Carrier With Specified Torques**  
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.

### **DIFFERENTIAL CARRIER, FINAL DRIVEN GEAR REPLACEMENT**

#### **2WD Model**

1. Remove the final driven gear (A) from the differential carrier (B).

**NOTE: Differential carrier bolts have left-hand threads.**

**Fig. 557: Removing Final Driven Gear From Differential Carrier**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the final driven gear in the direction shown on the differential carrier.
3. Tighten the bolts to the specified torque in a crisscross pattern.

## OIL SEAL REPLACEMENT

### Special Tools Required

- Driver 07749-0010000
- Oil seal driver attachment 07947-SD90101
- Oil seal driver attachment 07JAD-PH80101

**NOTE:** The illustration shows 4WD model; 2WD model is similar.

1. Remove the oil seal from the transmission housing.

**Fig. 558: Removing Oil Seal From Transmission Housing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 559: Removing Oil Seal From Torque Converter Housing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 560: Installing Oil Seal In Transmission Housing With Special Tools**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

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

**Fig. 561: Installing Oil Seal In Torque Converter Housing With Special Tools**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

## CARRIER BEARING OUTER RACE REPLACEMENT

### Special Tools Required

- Driver 07749-0010000
- Attachment, 78 x 90 mm 07GAD-SD40101
- Attachment, 72 x 75 mm 07746-0010600

**NOTE:**

- The bearing and bearing outer race should be replaced as a set.
- Replace the bearing with a new one whenever the outer race is replaced.

- Do not use the thrust shim on the torque converter housing.
- Adjust bearing preload after replacing the bearing and outer race.
- Coat all parts with ATF during installation.
- The illustration shows 4WD model; 2WD model is similar.

1. Remove the bearing outer race (A), 76.2 mm thrust washer (B), and 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212°F (100°C) with heat gun (E). Do not heat the housing in excess of 212°F (100°C).

**NOTE:** Let the transmission housing cool to room temperature before installing the bearing outer race.

**Fig. 562: Removing Bearing Outer Race, Thrust Washer, And 76 Mm Thrust Shim From Transmission Housing**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Remove the bearing outer race (A) and 80 mm thrust washer (B) from the torque converter housing (C).

**Fig. 563: Removing Bearing Outer Race And Thrust Washer From Torque Converter Housing**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the 80 mm thrust washer and the new bearing outer race in the torque converter housing.
4. Drive the bearing outer race securely in the housing with the special tools.

**Fig. 564: Installing Thrust Washer And Bearing Outer Race In Torque Converter Housing**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the 76 mm thrust shim (A), 76.2 mm thrust washer (B), and the new bearing outer race (C) in the transmission housing (D).

**Fig. 565: Installing Thrust Shim, Thrust Washer, And New Bearing Outer Race In Transmission Housing**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

6. With the special tools, drive the bearing outer race in securely so there is no clearance between the outer race, thrust washer, shim, and housing.

**Fig. 566: Installing Bearing Outer Race**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

## CARRIER BEARING PRELOAD INSPECTION

### Special Tools Required

- Driver 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600
- Preload inspection tool 07HAJ-PK40201

### NOTE:

- If the transmission housing, torque converter housing, differential carrier, carrier bearing and outer race, or thrust shim were replaced, the bearing preload must be adjusted.
- Coat all parts with ATF during installation.
- Do not use the thrust shim in the torque converter housing.
- The illustration shows 4WD model; 2WD model is similar.

1. Remove the bearing outer race (A), 76.2 mm thrust washer (B), and 76 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212°F (100°C) with heat gun (E). Do not heat the housing in excess of 212°F (100°C).

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

### Fig. 567: Removing Bearing Outer Race, Thrust Washer, And Thrust Shim From Transmission Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the 76 mm thrust shim (A) in the transmission housing (B).

If you replace the 76 mm thrust shim with a new one, use the same thickness shim as the old one.

### Fig. 568: Installing Thrust Shim In Transmission Housing

Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the 76.2 mm thrust washer (C) and the bearing outer race (D) in the transmission housing.
4. With the special tools, drive the bearing outer race in securely so there is no clearance between the outer race, thrust washer, shim, and housing.

### Fig. 569: Installing Bearing Outer Race

Courtesy of AMERICAN HONDA MOTOR CO., INC.

5. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and dowel pins (D) on the housing.

**Fig. 570: Installing Gasket And Dowel Pins On Housing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

6. Install the transmission housing (E) with the transmission hanger (F) and harness clamp brackets (G), then tighten the bolts.
7. Rotate the differential assembly in both directions to seat the bearings.
8. Measure the starting torque of the differential assembly with the special tool, a torque wrench (A), and a socket (B). Measure the starting torque at normal room temperature in both directions.

**Standard**

**New Bearing: 2.7-3.9 N.m (28-40 kgf.cm, 24-35 lbf.in.)**

**Reused Bearing: 2.5-3.6 N.m (25-37 kgf.cm, 22-32 lbf.in.)**

**Fig. 571: Measuring Starting Torque Of Differential Assembly With Special Tool**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. If the measurement is out of standard, remove the thrust shim and select the thrust shim from table. Install the new thrust shim and recheck. To increase the starting torque, increase the thickness of the thrust shim. To decrease the starting torque, decrease the thickness of the shim. Changing the thickness of shim by 0.05 mm will increase or decrease starting torque about 0.3-0.4 N.m (3-4 kgf.cm, 2.7-3.5 lbf.in.).

**THRUST SHIM, 76 mm**

**THRUST SHIM, 76 mm**

<b>No.</b>	<b>Part Number</b>	<b>Thickness</b>
S	41438-PX4-700	2.05 mm (0.081 in.)
T	41439-PX4-700	2.10 mm (0.083 in.)
U	41440-PX4-700	2.15 mm (0.085 in.)
A	41441-PK4-000	2.20 mm (0.087 in.)
B	41442-PK4-000	2.25 mm (0.089 in.)
C	41443-PK4-000	2.30 mm (0.091 in.)
D	41444-PK4-000	2.35 mm (0.093 in.)
E	41445-PK4-000	2.40 mm (0.094 in.)
F	41446-PK4-000	2.45 mm (0.096 in.)
G	41447-PK4-000	2.50 mm (0.098 in.)

## 2006 Honda Element LX

2003-06 TRANSMISSION Automatic Transmission - Element

H	41448-PK4-000	2.55 mm (0.100 in.)
I	41449-PK4-000	2.60 mm (0.101 in.)
J	41450-PK4-000	2.65 mm (0.103 in.)
K	41451-PK4-000	2.70 mm (0.105 in.)
L	41452-PK4-000	2.75 mm (0.107 in.)
M	41453-PK4-000	2.80 mm (0.110 in.)
N	41454-PK4-000	2.85 mm (0.112 in.)
O	41455-PK4-000	2.90 mm (0.114 in.)
P	41456-PK4-000	2.95 mm (0.116 in.)
Q	41457-PK4-000	3.00 mm (0.118 in.)
R	41458-PK4-000	3.05 mm (0.120 in.)
0A	41428-PRP-000	1.55 mm (0.061 in.)
0B	41429-PRP-000	1.60 mm (0.063 in.)
0C	41430-PRP-000	1.65 mm (0.065 in.)
0D	41431-PRP-000	1.70 mm (0.067 in.)
0E	41432-PRP-000	1.75 mm (0.069 in.)
0F	41433-PRP-000	1.80 mm (0.071 in.)
0G	41434-PRP-000	1.85 mm (0.073 in.)
0H	41435-PRP-000	1.90 mm (0.075 in.)
0I	41436-PRP-000	1.95 mm (0.077 in.)
0J	41437-PRP-000	2.00 mm (0.079 in.)
A	41428-PAX-000	1.575 mm (0.062 in.)
B	41429-PAX-000	1.625 mm (0.064 in.)
C	41430-PAX-000	1.675 mm (0.066 in.)
D	41431-PAX-000	1.725 mm (0.068 in.)
E	41432-PAX-000	1.775 mm (0.070 in.)
F	41433-PAX-000	1.825 mm (0.072 in.)
G	41434-PAX-000	1.875 mm (0.074 in.)
H	41435-PAX-000	1.925 mm (0.076 in.)
I	41436-PAX-000	1.975 mm (0.078 in.)
J	41437-PAX-000	2.025 mm (0.080 in.)
K	41438-PAX-000	2.075 mm (0.082 in.)
L	41439-PAX-000	2.125 mm (0.084 in.)
M	41440-PAX-000	2.175 mm (0.086 in.)
N	41441-PAX-000	2.225 mm (0.088 in.)
O	41442-PAX-000	2.275 mm (0.090 in.)
P	41443-PAX-000	2.325 mm (0.092 in.)
Q	41444-PAX-000	2.375 mm (0.094 in.)
R		

## 2006 Honda Element LX

2003-06 TRANSMISSION Automatic Transmission - Element

	41445-PAX-000	2.425 mm (0.095 in.)
S	41446-PAX-000	2.475 mm (0.097 in.)
T	41447-PAX-000	2.525 mm (0.099 in.)
U	41448-PAX-000	2.575 mm (0.101 in.)
V	41449-PAX-000	2.625 mm (0.103 in.)
W	41450-PAX-000	2.675 mm (0.105 in.)
X	41451-PAX-000	2.725 mm (0.107 in.)
Y	41452-PAX-000	2.775 mm (0.109 in.)
Z	41453-PAX-000	2.825 mm (0.111 in.)
0A	41454-PAX-000	2.875 mm (0.113 in.)
0B	41455-PAX-000	2.925 mm (0.115 in.)
0C	41456-PAX-000	2.975 mm (0.117 in.)
0D	41457-PAX-000	3.025 mm (0.119 in.)

## TRANSFER ASSEMBLY

### TRANSFER ASSEMBLY INSPECTION

1. Set a dial indicator (A) on the companion flange (B).

**Fig. 572: Setting Dial Indicator On Companion Flange**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Measure the transfer gear backlash.

**Standard: 0.06-0.16 mm (0.02-0.06 in.)**

3. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.

**Fig. 573: Measuring Transfer Gear Backlash**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Rotate the companion flange several times to seat the tapered roller bearings.
5. Measure the starting torque at the companion flange (C) using a torque wrench (D).

### Standard

**2003-2004 models: 2.16-3.57 N.m (22.0-36.4 kgf.cm, 19.1-31.6 lbf.in.)**

**2005-2006 models: 2.75-4.22 N.m (28.1-43.15 kgf.cm, 24.5-37.5 lbf.in.)**

6. Remove the transfer assembly from the vise.
7. Remove the transfer holder (A) from the transfer housing (B), then remove the O-ring (C) from the transfer holder.

**2003-2004 models:**

**Fig. 574: Removing Transfer Holder From Transfer Housing And Torque Specifications(2003 - 2004 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**2005-2006 models:**

**Fig. 575: Removing Transfer Holder From Transfer Housing And Torque Specifications(2005 - 2006 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Apply Prussian Blue to both sides of the transfer drive gear teeth lightly and evenly.
9. Install the transfer holder, and tighten the bolts. Do not install the O-ring on the transfer holder.
10. Rotate the companion flange in both directions until the transfer gears rotate one full turn in both directions.
11. Remove the transfer holder, and check the transfer drive gear tooth contact pattern. The pattern should be centered on the gear teeth as shown.

**Fig. 576: Identifying Transfer Drive Gear Tooth Contact**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. If the measurements are out of standard or the tooth contact pattern are incorrect, disassemble the transfer assembly and repair it.

**DISASSEMBLY**

**Exploded View - 2003-2004 Models**

**Fig. 577: Exploded View Of Transfer Assembly And Torque Specifications(2003 - 2004 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Exploded View - 2005-2006 Models**

**Fig. 578: Exploded View Of Transfer Assembly And Torque Specifications(2005 - 2006 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Special Tools Required**



- Companion flange holder 07RAB-TB4010A or 07RAB-TB4010B
- Holder handle 07JAB-001020A

**NOTE:** Refer to the EXPLODED VIEW as needed during the following procedure.

1. Remove the transfer holder (A) from the transfer housing (B).

**2003-2004 models:**

**Fig. 579: Removing Transfer Holder From Transfer Housing (2003 - 2004 Models)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**2005-2006 models:**

**Fig. 580: Removing Transfer Holder From Transfer Housing (2005 - 2006 Models)**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Cut the lock tab on the locknut using a chisel.

**Fig. 581: Cutting Lock Tab On Locknut With Chisel**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.

**Fig. 582: Removing Companion Flange Locknut**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Install the special tool on the companion flange, then loosen the locknut.
5. Remove the special tool.
6. Remove the lockout (A), conical spring washer (B), back-up ring (C), O-ring (D), and companion flange (E) from the transfer output shaft (F).

**Fig. 583: Removing Lockout, Conical Spring Washer, Back-Up Ring, O-Ring, And Companion Flange**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

7. Remove the transfer output shaft (A) from the transfer housing (B), then remove the transfer spacer (C) from the transfer output shaft.

**Fig. 584: Removing Transfer Output Shaft From Transfer Housing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

8. Remove the oil seal (A) and tapered roller bearing (B) from the transfer housing (C).

**Fig. 585: Removing Oil Seal And Tapered Roller Bearing From Transfer Housing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

#### TRANSFER HOLDER DISASSEMBLY

1. Cut the lock tab on the locknut of the transfer shaft using a chisel.

**Fig. 586: Cutting Lock Tab On Locknut Of Transfer Shaft With Chisel**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Put a 14 mm hex wrench (A) in the transfer shaft (B), then secure the hex wrench in a bench vise.

**Fig. 587: Securing Hex Wrench In Bench Vise**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Remove the locknut (A) and conical spring washer (B).

**Fig. 588: Removing Locknut And Conical Spring Washer**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

4. Remove the tapered roller bearing (C), 25 mm thrust shim (D), transfer collar (E), transfer drive gear (F), and transfer shaft (G) from the transfer holder (H).

#### TRANSFER HOLDER ROLLER BEARING REPLACEMENT

##### Special Tools Required

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

1. Remove the roller bearing from the transfer holder.

**Fig. 589: Removing Roller Bearing From Transfer Holder**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new roller bearing in the transfer holder with the special tools.

**Fig. 590: Installing Roller Bearing In Transfer Holder With Special Tools**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

#### TRANSFER HOLDER TAPERED ROLLER BEARING OUTER RACE REMOVAL/INSTALLATION

### Special Tools Required

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

1. Remove the tapered roller bearing outer race (A) and 68 mm thrust shim (B) from the transfer holder.

**Fig. 591: Removing Tapered Roller Bearing Outer Race**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the 68 mm thrust shim (A) in the transfer holder, then install the tapered roller bearing outer race (B) with the special tools.

**Fig. 592: Installing Thrust Shim In Transfer Holder**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

### TRANSFER DRIVE GEAR BEARING REPLACEMENT

#### Special Tools Required

- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200
- Attachment, 42 x 47 mm 07746-0010300

1. Remove the tapered roller bearing (A) from the transfer drive gear (B) with the special tools, bearing separator (C) and a press.

**Fig. 593: Removing Tapered Roller Bearing From Transfer Drive Gear**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

2. Install the new tapered roller bearing (A) on the transfer drive gear (B) with the special tools and a press.

**Fig. 594: Installing Tapered Roller Bearing On Transfer Drive Gear**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

### TRANSFER OUTPUT SHAFT BEARING REMOVAL/INSTALLATION

#### Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 35 mm I.D. 07746-0030400

1. Remove the tapered roller bearing (A) from the transfer output shaft (B) with a bearing

separator (C) and a press. Place a shaft protector (D) between the transfer output shaft and the press to prevent damaging the transfer output shaft.

**Fig. 595: Removing Tapered Roller Bearing From Transfer Output Shaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Install the 35 mm thrust shim (A) on the transfer output shaft (B).
3. Install the tapered roller bearing (C) on the transfer output shaft with the special tools and a press.

**Fig. 596: Installing Tapered Roller Bearing On Transfer Output Shaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**TRANSFER HOUSING TAPERED ROLLER BEARING OUTER RACE REPLACEMENT**

**Special Tools Required**

- Driver 07749-0010000
- Oil seal driver attachment 07947-SD90101
- Bearing installer attachment 07KAF-PS30120
- Bearing installer attachment 07LAF-PZ70110
- Installer shaft 14 x 165 mm 07JAF-SJ80110
- Installer nut 14 mm 07JAF-SJ80120

**NOTE:**      **Replace the bearing with a new one whenever the outer race is replaced.**

1. Remove the bearing outer races from the transfer housing by heating the housing to about 212°F (100°C) with a heat gun. Do not heat the housing more than 212°F (100°C).

**NOTE:**      **Some 57 mm bearing outer races are not press-fitted, and can be removed without heating the housing.**

**Fig. 597: Removing Bearing Outer Races From Transfer Housing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**Bearing Outer Race Locations**

**Fig. 598: Identifying Bearing Outer Race Locations**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

2. Install the 57 mm bearing outer race (A) in the housing (B) with the special tools.

**Fig. 599: Installing Bearing Outer Race In Housing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

3. Install the 62 mm bearing outer race and 50 mm bearing outer race in the housing with the special tools.

**Fig. 600: Installing Bearing Outer Race And Bearing Outer Race In Housing**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**REASSEMBLY**

**Special Tools Required**

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 35 mm I.D. 07746-0030400
- Driver 07749-0010000
- Oil seal driver attachment 07JAD-PH80101
- Companion flange holder 07RAB-TB4010A or 07RAB-TB4010B
- Holder handle 07JAB-001020A
- Attachment, 62 x 68 mm 07746-0010500

**NOTE:**

- **While reassembling the transfer assembly:**
  - **Check and adjust the transfer gear tooth contact.**
  - **Measure and adjust the transfer gear backlash.**
  - **Check and adjust the tapered roller bearing starting torque.**
- **Coat all parts with ATF during reassembly.**
- **Replace the tapered roller bearing and the bearing outer race as a set if either part is replaced.**
- **Replace the transfer drive gear and the transfer output shaft as a set if either part is replaced.**

1. Select the 35 mm thrust shim if the transfer output shaft is replaced. Calculate the thickness of the 35 mm thrust shim using the formula, and select the shim from the table.

**NOTE:** The number on the transfer output shaft is shown in 1/100 mm.

**Fig. 601: Identifying Thrust Shim**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

**THRUST SHIM, 35 mm****THRUST SHIM, 35 mm**

<b>Shim No.</b>	<b>Part Number</b>	<b>Thickness</b>
A	41361-PS3-000	0.72 mm (0.028 in.)
B	41362-PS3-000	0.75 mm (0.030 in.)
C	41363-PS3-000	0.78 mm (0.031 in.)
D	41364-PS3-000	0.81 mm (0.032 in.)
E	41365-PS3-000	0.84 mm (0.033 in.)
F	41366-PS3-000	0.87 mm (0.034 in.)
G	41367-PS3-000	0.90 mm (0.035 in.)
H	41368-PS3-000	0.93 mm (0.037 in.)
I	41369-PS3-000	0.96 mm (0.038 in.)
J	41370-PS3-000	0.99 mm (0.039 in.)
K	41371-PS3-000	1.02 mm (0.040 in.)
L	41372-PS3-000	1.05 mm (0.041 in.)
M	41373-PS3-000	1.08 mm (0.043 in.)
N	41374-PS3-000	1.11 mm (0.044 in.)

2. Select the 35 mm thrust shim if the tapered roller bearing on the transfer output shaft is replaced. Measure the thickness of the replacement bearing and the existing bearing, and calculate the difference of the bearing thickness. Adjust the thickness of the existing 35 mm thrust shim by the amount of the difference in bearing thickness, and select the replacement 35 mm thrust shim from the table.
3. Install the 35 mm thrust shim (A) on the transfer output shaft (B), then install the tapered roller bearing (C) with the special tools and a press.

**Fig. 602: Installing Thrust Shim On Transfer Output Shaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

4. Place the tapered roller bearing (A) on the bearing outer race of the companion flange side of the transfer housing.

**Fig. 603: Placing Tapered Roller Bearing On Bearing Outer Race**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

5. Install the new oil seal (B) on the transfer housing with the special tools and a press.
6. Install the transfer output shaft (A) in the transfer housing (B). Do not install the transfer spacer on the transfer output shaft.

**Fig. 604: Installing Transfer Output Shaft In Transfer Housing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

7. Install the companion flange (A), conical spring washer (B), and locknut (C) on the transfer output shaft (D). Do not install the O-ring and back-up ring.

**Fig. 605: Installing Companion Flange, Conical Spring Washer, And Locknut On Transfer Output Shaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

8. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.

**Fig. 606: Securing Transfer Housing In Bench Vise With Soft Jaws**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

9. Install the special tool on the companion flange.
10. Tighten the locknut while measuring the starting torque so the starting torque is within 0.98-1.39 N.m (10.0-14.2 kgf.cm, 8.7-12.3 lbf.in.). Do not stake the locknut in this step.
11. Install the transfer shaft (A) in the transfer holder (B), and install the transfer drive gear (C), transfer collar (D), 25 mm thrust shim (E), tapered roller bearing (F), conical spring washer (G), and locknut (H).

**Fig. 607: Installing Transfer Shaft In Transfer Holder**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

12. Put a 14 mm hex wrench (A) in the transfer shaft (B), then secure the hex wrench in a bench vise.

**Fig. 608: Securing Hex Wrench In Bench Vise**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

13. Tighten the locknut 118 N.m (12.0 kgf.m, 86.8 lbf.ft). Do not stake the locknut in this step.
14. Apply Prussian Blue to both sides of the transfer drive gear teeth lightly and evenly.
15. Temporarily install the transfer holder (A) and dowel pin (B) without O-ring, and tighten the bolts.

**2003-2004 models:**

**Fig. 609: Installing Transfer Holder And Dowel Pin And Torque Specifications (2003 - 2004 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**2005-2006 models:**

**Fig. 610: Installing Transfer Holder And Dowel Pin And Torque Specifications (2005 - 2006 Models)**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

16. Rotate the companion flange in both directions until the transfer gears rotate one full turn in both directions.
17. Set a dial indicator (A) on the companion flange (B).

**Fig. 611: Measuring Transfer Gear Backlash**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

18. Measure the transfer gear backlash.

**Standard: 0.06-0.16 mm (0.02-0.06 in.)**

19. Remove the transfer holder, and check the transfer drive gear tooth contact pattern.

**Fig. 612: Identifying Transfer Drive Gear Tooth Contact Pattern**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

20. If the backlash measurement is out of standard, adjust the backlash with the 35 mm thrust shim and recheck. Do not use more than two 35 mm thrust shims to adjust the backlash.
21. If the transfer gear tooth contact is incorrect, adjust the tooth contact with the 25 mm or 35 mm thrust shim. Do not use more than two of each thrust shim to adjust the tooth contact.

- Toe Contact

Use a thicker 35 mm thrust shim to move the transfer output shaft toward the transfer drive gear. Because this movement causes the transfer gear backlash to change, move the transfer drive gear away from the transfer output shaft to adjust the transfer gear backlash as follows:

- Increase the thickness of the 25 mm thrust shim.
- Reduce the thickness of the 68 mm thrust shim by the amount you increased the 25 mm thrust shim.

- Heel Contact

Use a thinner 35 mm thrust shim to move the transfer output shaft away from the transfer drive gear. Because this movement causes the transfer gear backlash to change, move the transfer drive gear toward the transfer output shaft to adjust the transfer gear backlash as follows:

- Reduce the thickness of the 25 mm thrust shim.



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- Increase the thickness of the 68 mm thrust shim by amount you reduced the thickness of the 25 mm thrust shim.

- Flank Contact

Use a thinner thrust shim to move the transfer drive gear toward the transfer output shaft. Flank contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Heel Contact.

- Face Contact

Use a thicker thrust shim to move the transfer drive gear away from the transfer output shaft. Face contact must be adjusted within the limits of the transfer gear backlash. If the backlash exceeds the limits, adjust as described under Toe Contact.

### THRUST SHIM, 25 mm

### THRUST SHIM, 25 mm

Shim No.	Part Number	Thickness
1.70	29411-P1C-000	1.70 mm (0.067 in.)
1.73	29412-P1C-000	1.73 mm (0.068 in.)
1.76	29413-P1C-000	1.76 mm (0.069 in.)
1.79	29414-P1C-000	1.79 mm (0.070 in.)
1.82	29415-P1C-000	1.82 mm (0.072 in.)
1.85	29416-P1C-000	1.85 mm (0.073 in.)
1.88	29417-P1C-000	1.88 mm (0.074 in.)
1.91	29418-P1C-000	1.91 mm (0.075 in.)
1.94	29419-P1C-000	1.94 mm (0.076 in.)
1.97	29420-P1C-000	1.97 mm (0.078 in.)
2.00	29421-P1C-000	2.00 mm (0.079 in.)
2.03	29422-P1C-000	2.03 mm (0.080 in.)
2.06	29423-P1C-000	2.06 mm (0.081 in.)
2.09	29424-P1C-000	2.09 mm (0.082 in.)
2.12	29425-P1C-000	2.12 mm (0.083 in.)
2.15	29426-P1C-000	2.15 mm (0.085 in.)
2.18	29427-P1C-000	2.18 mm (0.086 in.)
2.21	29428-P1C-000	2.21 mm (0.087 in.)
2.24	29429-P1C-000	2.24 mm (0.088 in.)

22. Remove the transfer holder (A) from the transfer housing (B) after adjusting the

transfer gear backlash or transfer gear tooth contact.

**2003-2004 models:**

**Fig. 613: Removing Transfer Holder From Transfer Housing (2003 - 2004 Models)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**2005-2006 models:**

**Fig. 614: Removing Transfer Holder From Transfer Housing (2005 - 2006 Models)**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

23. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.

**Fig. 615: Securing Transfer Housing In Bench Vise With Soft Jaws**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

24. Install the special tool on the companion flange, then loosen the locknut.
25. Remove the locknut (A), conical spring washer (B), and companion flange (C) from the transfer output shaft (D).

**Fig. 616: Removing Locknut, Conical Spring Washer, And Companion Flange From Transfer Output Shaft**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

26. Remove the transfer output shaft (A) from the transfer housing (B).

**Fig. 617: Removing Transfer Output Shaft From Transfer Housing**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

27. Install the new transfer spacer (C) on the transfer output shaft in the direction shown, and install them in the transfer housing.
28. Coat the threads of the locknut and transfer output shaft with ATF.
29. Install the companion flange (A), new O-ring (B), back-up ring (C), new conical spring washer (D), and new locknut (E) on the transfer output shaft (F). Install the conical spring washer in the direction shown.

**Fig. 618: Installing Companion Flange, O-Ring, Back-Up Ring, Conical Spring Washer, And Locknut**  
**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

30. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the

transfer housing and the vise.

**Fig. 619: Tightening Locknut**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

31. Install the special tool on the companion flange.
32. Tighten the locknut while measuring the starting torque of the transfer output shaft.

**Starting Torque:**

**0.98-1.39 N.m (10.0-14.2 kgf.cm, 8.7-12.3 lbf.in.)**

**Tightening Torque:**

**132-260 N.m (13.5-26.5 kgf.m, 97.6-192 lbf.ft)**

**NOTE:**

- Rotate the companion flange several turns to seat the tapered roller bearings, then measure the starting torque.
- If the starting torque exceeds 1.39 N.m (14.2 kgf.cm, 12.3 lbf.in.), replace the transfer spacer and reassemble the parts. Do not adjust the starting torque with the locknut loose.
- If the tightening torque exceeds 260 N.m (26.5 kgf.m, 192 lbf.ft), replace the transfer spacer and reassemble the parts.

33. Remove the special tool.
34. Stake the locknut into the transfer output shaft in depth (A) of 0.7-1.2 mm (0.03-0.05 in.) using a 3.5 mm punch (B).

**Fig. 620: Staking Locknut Into Transfer Output Shaft**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

35. Temporarily install the transfer holder (A) and dowel pin (B) without the O-ring, and tighten the bolts.

**2003-2004 models:**

**Fig. 621: Installing Transfer Holder And Dowel Pin With Specified Torques(2003 - 2004 Models)**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**2005-2006 models:**

**Fig. 622: Installing Transfer Holder And Dowel Pin With Specified Torques(2005 - 2006 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

36. Secure the transfer housing (A) in a bench vise (B) with soft jaws. To prevent damage to the transfer housing, always use soft jaws or equivalent materials between the transfer housing and the vise.

**Fig. 623: Measuring Starting Torque At Companion Flange**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

37. Rotate the companion flange several times to seat the tapered roller bearings.
38. Measure the starting torque at the companion flange (C) using a torque wrench (D).

**Standard**

**2003-2004 models:**

**2.16-3.57 N.m (22.0-36.4 kgf.cm, 19.1-31.6 lbf.in.)**

**2005-2006 models:**

**2.75-4.22 N.m (28.1-43.1 kgf.cm, 24.5-37.4 lbf.in.)**

39. Remove the transfer holder from the transfer housing.
40. If the measurement is within the standard, go to step 53.
41. If the measurement is out of standard, put a 14 mm hex wrench (A) in the transfer shaft (B), then secure the hex wrench in a bench vise.

**Fig. 624: Loosening Locknut**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

42. Loosen the locknut.
43. Remove the locknut (A) and conical spring washer (B).

**Fig. 625: Removing Tapered Roller Bearing, Thrust Shim, Transfer Collar, Transfer Drive Gear, And Transfer Shaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

44. Remove the tapered roller bearing (C), 25 mm thrust shim (D), transfer collar (E), transfer drive gear (F), and transfer shaft (G) from the transfer holder (H).
45. Remove the tapered roller bearing outer race (A) and the 68 mm thrust shim (B) from the transfer holder (C).

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**Fig. 626: Removing Tapered Roller Bearing Outer Race**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

46. Measure the thickness of the 68 mm thrust shim, and select the new 68 mm thrust shim.

**THRUST SHIM, 68 mm****THRUST SHIM, 68 mm**

<b>Shim No.</b>	<b>Part Number</b>	<b>Thickness</b>
ZV	23974-P1C-020	1.41 mm (0.056 in.)
ZW	23975-P1C-020	1.44 mm (0.057 in.)
ZX	23976-P1C-020	1.47 mm (0.058 in.)
ZY	23977-P1C-020	1.50 mm (0.060 in.)
ZZ	23978-P1C-020	1.53 mm (0.060 in.)
A	23941-PW5-000	1.56 mm (0.061 in.)
B	23942-PW5-000	1.59 mm (0.063 in.)
C	23943-PW5-000	1.62 mm (0.064 in.)
D	23944-PW5-000	1.65 mm (0.065 in.)
E	23945-PW5-000	1.68 mm (0.066 in.)
F	23946-PW5-000	1.71 mm (0.067 in.)
G	23947-PW5-000	1.74 mm (0.069 in.)
H	23948-PW5-000	1.77 mm (0.070 in.)
I	23949-PW5-000	1.80 mm (0.071 in.)
J	23950-PW5-000	1.83 mm (0.072 in.)
K	23951-PW5-000	1.86 mm (0.073 in.)
L	23952-PW5-000	1.89 mm (0.074 in.)
M	23953-PW5-000	1.92 mm (0.076 in.)
N	23954-PW5-000	1.95 mm (0.077 in.)
O	23955-PW5-000	1.98 mm (0.078 in.)
P	23956-PW5-000	2.01 mm (0.079 in.)
Q	23957-PW5-000	2.04 mm (0.080 in.)
R	23958-PW5-000	2.07 mm (0.081 in.)
S	23959-PW5-000	2.10 mm (0.083 in.)
T	23960-PW5-000	2.13 mm (0.084 in.)
U	23961-PW5-000	2.16 mm (0.085 in.)
V	23962-PW5-000	2.19 mm (0.086 in.)
W	23963-PW5-000	2.22 mm (0.087 in.)
X	23964-PW5-000	2.25 mm (0.089 in.)
Y	23965-PW5-000	2.28 mm (0.090 in.)
Z	23966-PW5-000	2.31 mm (0.091 in.)

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AA	23967-PW5-000	2.34 mm (0.092 in.)
AB	23968-PW5-000	2.37 mm (0.093 in.)
AC	23969-PW5-000	2.40 mm (0.094 in.)
AD	23970-PW5-000	2.43 mm (0.096 in.)
AZ	23941-PW8-000	2.46 mm (0.097 in.)
BZ	23942-PW8-000	2.49 mm (0.098 in.)
CZ	23943-PW8-000	2.52 mm (0.099 in.)
DZ	23944-PW8-000	2.55 mm (0.100 in.)
EZ	23945-PW8-000	2.58 mm (0.102 in.)

47. Install the new 68 mm thrust shim (A) in the transfer holder, then install the tapered roller bearing outer race (B) with the special tools.

**Fig. 627: Installing Thrust Shim In Transfer Holder**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

48. Install the transfer shaft (A) in the transfer holder (B), and install the transfer drive gear (C), transfer collar (D), 25 mm thrust shim (E), tapered roller bearing (F), conical spring washer (G), and locknut (H). Install the conical spring washer in the direction shown.

**Fig. 628: Installing Transfer Shaft In Transfer Holder**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

49. Put a 14 mm hex wrench (A) in the transfer shaft (B), then secure the hex wrench in a bench vise.

**Fig. 629: Securing Hex Wrench In Bench Vise**  
Courtesy of AMERICAN HONDA MOTOR CO., INC.

50. Tighten the locknut 118 N.m (12.0 kgf.m, 86.8 lbf.ft). Do not stake the locknut in this step.
51. Temporarily install the transfer holder (A) and dowel pin (B) without the O-ring, and tighten the bolts.

**2003-2004 models:**

**Fig. 630: Installing Transfer Holder And Dowel Pin With Specified Torques(2003 - 2004 Models)**

Courtesy of AMERICAN HONDA MOTOR CO., INC.

**2005-2006 models:**

**Fig. 631: Installing Transfer Holder And Dowel Pin With Specified Torques(2005 - 2006 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

52. Rotate the companion flange several turns to seat the tapered roller bearings, and recheck the starting torque. Remove the transfer holder after adjusting the starting torque.
53. Stake the locknut into the transfer shaft in depth (A) of 0.7-1.2 mm (0.03-0.05 in.) using a 3.5 mm punch (B).

**Fig. 632: Staking Locknut Into Transfer Shaft**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

54. Install the new O-ring (A) on the transfer holder (B), then install the transfer holder with the dowel pin (C) on the transfer housing (D).

**2003-2004 models:**

**Fig. 633: Installing O-Ring On Transfer Holder And Torque Specifications (2003 - 2004 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**

**2005-2006 models:**

**Fig. 634: Installing O-Ring On Transfer Holder And Torque Specifications(2005 - 2006 Models)**

**Courtesy of AMERICAN HONDA MOTOR CO., INC.**