Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

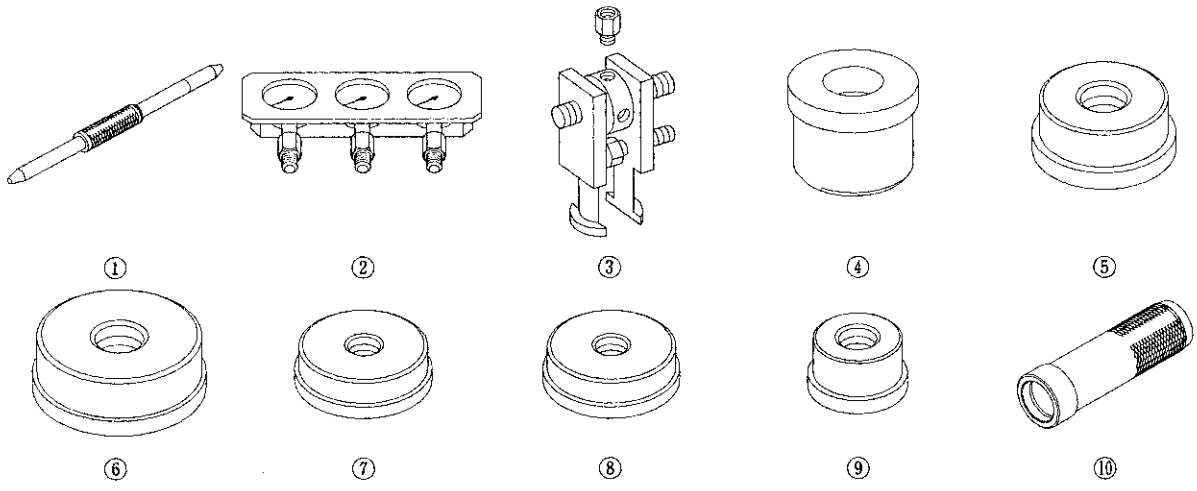
Transaxle

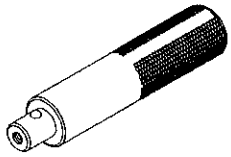
Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

Special Tools

Ref.No.	Tool Number	Description	Qty
①	070AG-SJAA10S	Subframe Alignment Pin	1
②	07406-0020400 or 07406-0020401	A/T Oil Pressure Gauge Set	1
③	07736-A01000B	Adjustable Bearing Puller, 25—40 mm	1
④	07746-0010100	Attachment, 32 x 35 mm	1
⑤	07746-0010300	Bearing Driver Attachment, 42 x 47	1
⑥	07746-0010400	Attachment, 52 x 55 mm	1
⑦	07746-0010500	Attachment, 62 x 68 mm	1
⑧	07746-0010600	Attachment, 72 x 75 mm	1
⑨	07746-001A800	Attachment, 22 x 24 mm	1
⑩	07746-0030100	Driver Handle, 40 mm I.D.	1
⑪	07749-0010000	Driver Handle, 15 x 135L	1
⑫	07947-SD90101	Oil Seal Driver Attachment	1
⑬	07947-ZV00100	Oil Seal Driver Attachment	1
⑭	07GAB-PF50101	Mainshaft Holder	1
⑮	07HAC-PK40102	Housing Puller	1
⑯	07HAJ-PK40201	Preload Inspection Tool	1
⑰	07JAD-PH80101	Oil Seal Driver Attachment	1
⑱	07LAD-PW50601	Attachment, 40 x 50 mm	1
⑲	07LAE-PX40000	Clutch Spring Compressor Set	1
⑳	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
㉑	07MAJ-PY40120	A/T Pressure Adapter	1
㉒	07NAD-PX40100	Attachment, 78 x 80 mm	1
㉓	07QAD-P0A0100	Attachment, 42 mm I.D.	1
㉔	07ZAE-PRP0100	Clutch Compressor Attachment	1

③: Must be used with commercially available 3/8"-16 slide hammer.





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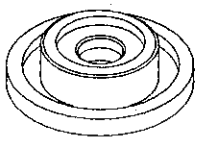

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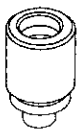

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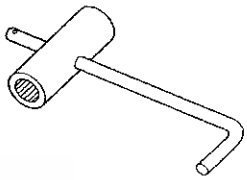

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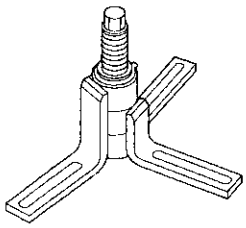

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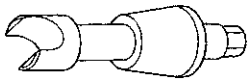

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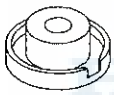

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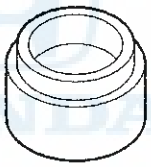

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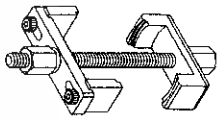

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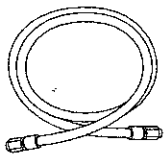

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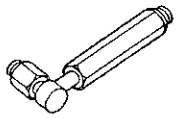

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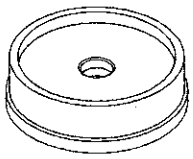

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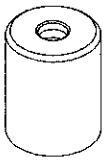

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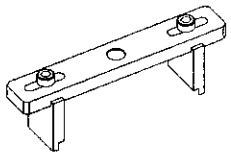

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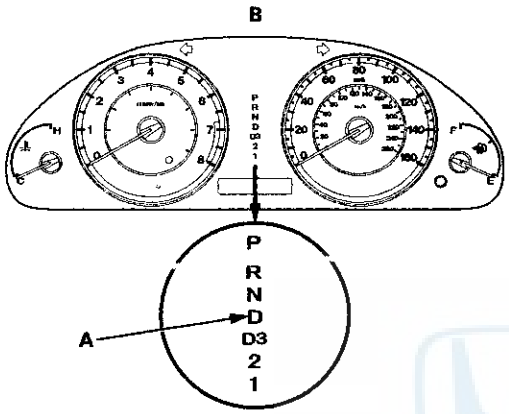
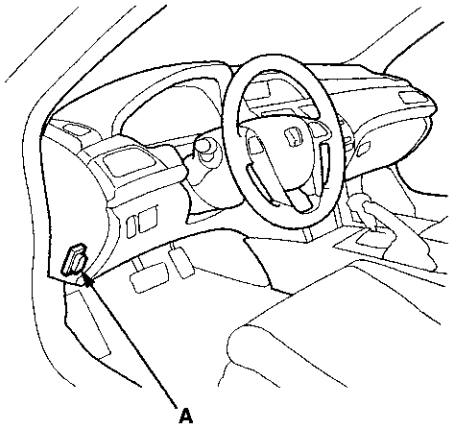
General Troubleshooting Information

How to Check for DTCs with the Honda Diagnostic System (HDS)

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



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 to ON (II) and the appropriate menu is selected.



If the D indicator or the 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 user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
3. Check for Pending or Confirmed DTCs with the HDS.
4. Record the freeze data and the on-board snapshots for all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and the data.
7. 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 indicated DTC's troubleshooting. 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.

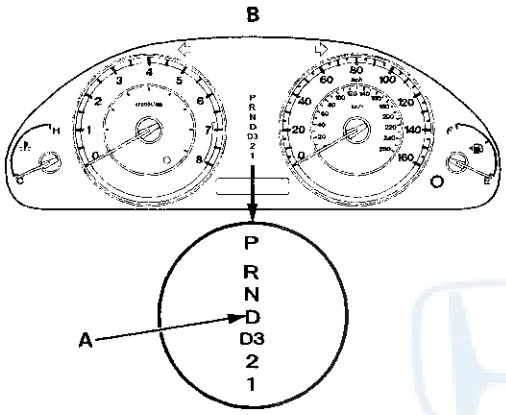
Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will not set DTCs or cause the D indicator to blink. If the 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, do the symptom troubleshooting. Check the list of probable cause(s) for the symptom, in the sequence listed, until you find the problem.

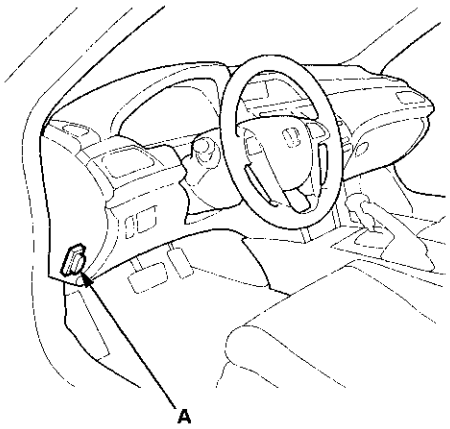
How to Check for DTCs with the SCS Mode (retrieving the flash codes)

NOTE: The preferred method is to use the HDS to retrieve the DTCs.

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



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 to ON (II), select SCS mode, then the D indicator will indicate (blink) the DTC.

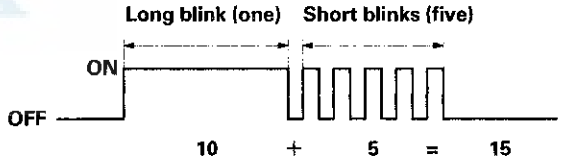


If the D indicator and the MIL come on at the same time, or if a drivability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
3. Select SCS mode, then observe the D indicator in the gauge control module. Codes 1 through 9 are indicated by individual short blinks. Code 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 P0705 (5)

Example: DTC P0717 (15)



4. Record all fuel and emissions DTCs and A/T DTCs.
5. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC.
6. Clear the DTC and the data.
7. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTCs. If the A/T DTC returns, go to the indicated DTC's troubleshooting. 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.

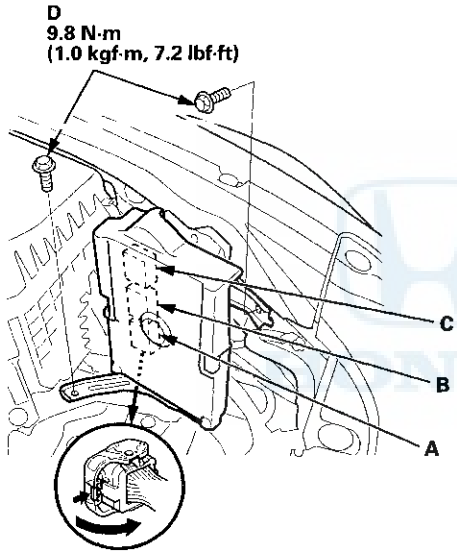
(cont'd)

General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM Connectors

NOTE: The PCM overwrites data and monitors the EVAP system for about 40 minutes after the ignition switch is turned to LOCK (0). Jumping the SCS line after turning the ignition switch to LOCK (0) cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.

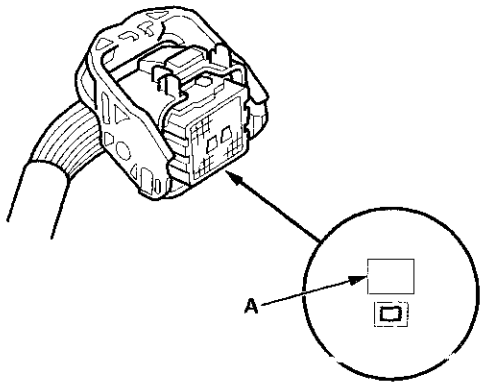
1. Jump the SCS line with the HDS.
2. Remove the bolts (D).



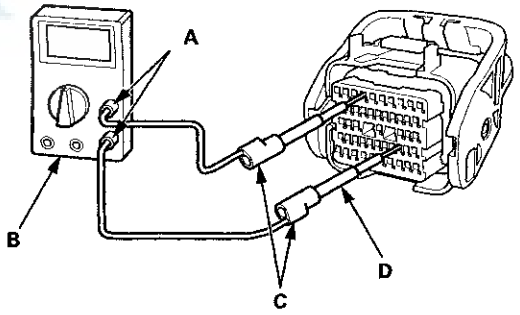
3. Disconnect PCM connectors A, B, and C.

   NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

4. When diagnosis/troubleshooting is done at the PCM connector, use the terminal test port (A) above the terminal you need to check.



5. Connect one side of the patch cord terminals (A) to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals (C) to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (D).



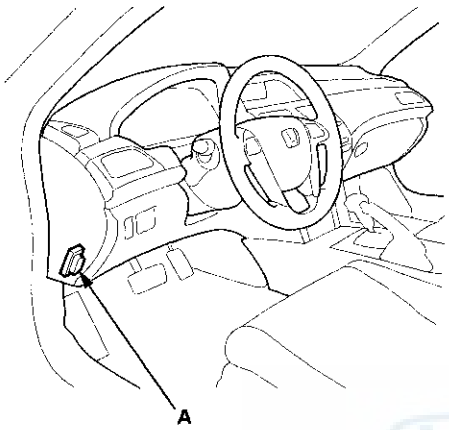
6. Gently insert the pin probe (male) into the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE

- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

Clear A/T DTCs Procedure

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
4. Clear the DTC(s) with the HDS.

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 a repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on-board diagnosis is successfully completed.
- FAILED: The on-board diagnosis is finished but failed.
- NOT COMPLETED: The on-board diagnosis was running but is out of the enable conditions of the DTC.

How to End a Troubleshooting Session (required after any troubleshooting)

NOTE: Reset the PCM/TCM with the HDS while the engine is stopped.

1. Turn the ignition switch to LOCK (0).
2. Turn the ignition switch to ON (II), and wait for 30 seconds.
3. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
4. Start the engine with the shift lever in P or N, and warm it up to normal operating temperature (the radiator fan comes on).
5. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 31 mph (50 km/h) or under the same conditions as those indicated by the freeze data.

PCM/TCM Reset

NOTE: To reset the PCM/TCM, initialize only the automatic transmission memory stored in the PCM or the TCM.

1. Select the A/T system with the HDS.
2. Reset the PCM/TCM with the HDS while the engine is stopped.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II), and wait for 30 seconds.
5. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.

(cont'd)

General Troubleshooting Information (cont'd)

Failure Reproduction Technique

Make sure to follow these points while the vehicle is raised on a lift for the test-drive.

- Disable the VSA by pressing the VSA OFF button.
- ABS or VSA DTC(s) may come on when test-driving on a lift. If the ABS or VSA DTC(s) come on, clear the DTC (s) with the HDS.

DTC Troubleshooting Index

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

DTC*(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P062F (0)	———	Blinks	ON or OFF*(3)	Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	DTC Troubleshooting (see page 14-77)
P0705 (5)*(2)	———	Blinks	ON	Short in Transmission Range Switch Circuit (Multiple Shift-position Input)	DTC Troubleshooting (see page 14-78)
P0706 (6)*(2)	○	OFF	ON	Open in Transmission Range Switch Circuit	DTC Troubleshooting (see page 14-79)
P0711 (28)*(2) *(4)	———	Blinks	OFF	Problem in ATF Temperature Sensor Circuit	DTC Troubleshooting (see page 14-80)
P0711 (28)*(2) *(5)	○	Blinks	OFF	Problem in ATF Temperature Sensor Circuit	DTC Troubleshooting (see page 14-80)
P0712 (28)*(2) *(4)	———	Blinks	OFF	Short in ATF Temperature Sensor Circuit	DTC Troubleshooting (see page 14-82)
P0712 (28)*(2) *(5)	○	Blinks	OFF	Short in ATF Temperature Sensor Circuit	DTC Troubleshooting (see page 14-82)
P0713 (28)*(2) *(4)	———	Blinks	OFF	Open in ATF Temperature Sensor Circuit	DTC Troubleshooting (see page 14-83)
P0713 (28)*(2) *(5)	○	Blinks	OFF	Open in ATF Temperature Sensor Circuit	DTC Troubleshooting (see page 14-83)
P0716 (15)*(2)	———	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit	DTC Troubleshooting (see page 14-86)
P0717 (15)*(2)	———	Blinks	ON	Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)	DTC Troubleshooting (see page 14-87)
P0718 (15)*(2)	○	Blinks	ON	Input Shaft (Mainshaft) Speed Sensor Intermittent Failure	DTC Troubleshooting (see page 14-87)
P0721 (9)*(2)	———	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit	DTC Troubleshooting (see page 14-86)
P0722 (9)*(2)	———	Blinks	ON	Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)	DTC Troubleshooting (see page 14-89)
P0723 (9)*(2)	○	Blinks	ON	Output Shaft (Countershaft) Speed Sensor Intermittent Failure	DTC Troubleshooting (see page 14-89)
P0731 (64)	○	Blinks	OFF	Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)	DTC Troubleshooting (see page 14-91)
P0732 (64)	○	Blinks	OFF	Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)	DTC Troubleshooting (see page 14-92)
P0733 (64)	○	Blinks	OFF	Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)	DTC Troubleshooting (see page 14-93)

NOTE:
*1: The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
*2: This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
*3: The MIL comes on when the PGM-FI system detects the same failure.
*4: '08-09 models
*5: '10 model

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC*(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0734 (64)	○	Blinks	OFF	Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)	DTC Troubleshooting (see page 14-94)
P0735 (64)	○	Blinks	OFF	Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)	DTC Troubleshooting (see page 14-95)
P0741 (40)	○	Blinks	OFF	Torque Converter Clutch Hydraulic Circuit Stuck OFF	DTC Troubleshooting (see page 14-96)
P0747 (76)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve A Stuck ON	DTC Troubleshooting (see page 14-97)
P0752 (70)	○	Blinks	ON	Shift Solenoid Valve A Stuck ON	DTC Troubleshooting (see page 14-98)
P0756 (71)	○	Blinks	ON	Shift Solenoid Valve B Stuck OFF	DTC Troubleshooting (see page 14-99)
P0757 (71)	○	Blinks	ON	Shift Solenoid Valve B Stuck ON	DTC Troubleshooting (see page 14-99)
P0761 (72)	○	Blinks	ON	Shift Solenoid Valve C Stuck OFF	DTC Troubleshooting (see page 14-100)
P0771 (74)	○	Blinks	ON	Shift Solenoid Valve E Stuck OFF	DTC Troubleshooting (see page 14-101)
P0776 (77)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck OFF	DTC Troubleshooting (see page 14-102)
P0777 (77)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve B Stuck ON	DTC Troubleshooting (see page 14-102)
P0780 (45)	○	Blinks	ON	Shift Control System	DTC Troubleshooting (see page 14-103)
P0796 (78)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck OFF	DTC Troubleshooting (see page 14-104)
P0797 (78)	○	Blinks	ON	A/T Clutch Pressure Control Solenoid Valve C Stuck ON	DTC Troubleshooting (see page 14-104)
P0842 (25)*(2)	○	Blinks	ON	Short in Transmission Fluid Pressure Switch A (2nd Clutch) Circuit, or Transmission Fluid Pressure Switch A (2nd Clutch) Stuck ON	DTC Troubleshooting (see page 14-105)
P0843 (25)	○	Blinks	ON	Open in Transmission Fluid Pressure Switch A (2nd Clutch) Circuit, or Transmission Fluid Pressure Switch A (2nd Clutch) Stuck OFF	DTC Troubleshooting (see page 14-107)
P0847 (26)*(2)	○	Blinks	OFF	Short in Transmission Fluid Pressure Switch B (3rd Clutch) Circuit, or Transmission Fluid Pressure Switch B (3rd Clutch) Stuck ON	DTC Troubleshooting (see page 14-110)

NOTE:
*1: The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
*2: This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
*3: The MIL comes on when the PGM-FI system detects the same failure.
*4: '08-09 models
*5: '10 model

DTC*(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P0848 (26)	○	Blinks	OFF	Open in Transmission Fluid Pressure Switch B (3rd Clutch) Circuit, or Transmission Fluid Pressure Switch B (3rd Clutch) Stuck OFF	DTC Troubleshooting (see page 14-112)
P0962 (16)*(2)	—	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit	DTC Troubleshooting (see page 14-115)
P0963 (16)*(2)	—	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve A	DTC Troubleshooting (see page 14-118)
P0966 (23)*(2)	—	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit	DTC Troubleshooting (see page 14-120)
P0967 (23)*(2)	—	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve B	DTC Troubleshooting (see page 14-123)
P0970 (29)*(2)	—	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit	DTC Troubleshooting (see page 14-125)
P0971 (29)*(2)	—	Blinks	ON	Problem in A/T Clutch Pressure Control Solenoid Valve C	DTC Troubleshooting (see page 14-128)
P0973 (7)*(2)	—	Blinks	ON	Short in Shift Solenoid Valve A Circuit	DTC Troubleshooting (see page 14-130)
P0974 (7)*(2)	—	Blinks	ON	Open in Shift Solenoid Valve A Circuit	DTC Troubleshooting (see page 14-133)
P0976 (8)*(2)	—	Blinks	ON	Short in Shift Solenoid Valve B Circuit	DTC Troubleshooting (see page 14-136)
P0977 (8)*(2)	—	Blinks	ON	Open in Shift Solenoid Valve B Circuit	DTC Troubleshooting (see page 14-138)
P0979 (22)*(2)	—	Blinks	ON	Short in Shift Solenoid Valve C Circuit	DTC Troubleshooting (see page 14-141)
P0980 (22)*(2)	—	Blinks	ON	Open in Shift Solenoid Valve C Circuit	DTC Troubleshooting (see page 14-144)
P0982 (60)*(2)	—	Blinks	ON	Short in Shift Solenoid Valve D Circuit	DTC Troubleshooting (see page 14-148)
P0983 (60)*(2)	—	Blinks	ON	Open in Shift Solenoid Valve D Circuit	DTC Troubleshooting (see page 14-151)
P0985 (61)*(2)	—	Blinks	ON	Short in Shift Solenoid Valve E Circuit	DTC Troubleshooting (see page 14-154)
P0986 (61)*(2)	—	Blinks	ON	Open in Shift Solenoid Valve E Circuit	DTC Troubleshooting (see page 14-157)
P16C0 (99)	—	OFF	ON	PCM A/T Control System Incomplete Update	DTC Troubleshooting (see page 14-160)
P1717 (62)*(2)	○	Blinks	OFF	Open in Transmission Range Switch ATP RVS Switch Circuit	DTC Troubleshooting (see page 14-160)

NOTE:

*1: The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.

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

*3: The MIL comes on when the PGM-FI system detects the same failure.

*4: '08-09 models

*5: '10 model

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC*(1)	Two Drive Cycle Detection	D Indicator	MIL	Detection Item	Page
P1730 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves A or D Stuck OFF • Shift Solenoid Valve B Stuck ON • Shift Valves A, B, or D Stuck	DTC Troubleshooting (see page 14-162)
P1731 (45)	○	Blinks	ON	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	DTC Troubleshooting (see page 14-163)
P1732 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves B or C Stuck ON • Shift Valves B or C Stuck	DTC Troubleshooting (see page 14-164)
P1733 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valve D Stuck ON • Shift Valve D Stuck • A/T Clutch Pressure Control Solenoid Valve C Stuck OFF	DTC Troubleshooting (see page 14-165)
P1734 (45)	○	Blinks	ON	Problem in Shift Control System: • Shift Solenoid Valves B or C Stuck OFF • Shift Valves B or C Stuck	DTC Troubleshooting (see page 14-166)
U0029 (107)	———	Blinks	ON*(3) or OFF	F-CAN Malfunction (F-CAN BUS-OFF (PCM))	DTC Troubleshooting (see page 14-167)
U0122 (107)	———	Blinks	OFF	F-CAN Malfunction (PCM-VSA Modulator-Control Unit)	DTC Troubleshooting (see page 14-168)
U0155 (107)	———	Blinks	ON*(3) or OFF	F-CAN Malfunction (PCM-Gauge Control Module)	DTC Troubleshooting (see page 14-169)

NOTE:
*1: The DTC in parentheses is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.
*2: This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.
*3: The MIL comes on when the PGM-FI system detects the same failure.
*4: '08-09 models
*5: '10 model

Symptom Troubleshooting Index

NOTE: Do an all DTC check with the HDS and troubleshoot those first before following the repair procedures listed in the index.

Symptom	Probable Cause(s)	Notes
HDS does not communicate with the PCM	DLC circuit error	Troubleshoot the DLC circuit (see page 11-181).
When you turn the ignition switch to ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	• F-CAN communication line error • Gauge control module defective • PCM defective	• Check the F-CAN communication line (see page 11-172). • Check the A/T gear position indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-332).
A/T gear position indicator does not come on while the shift lever is in that position; shift indicator does not work	• F-CAN communication line error • Gauge control module defective • PCM defective • Transmission range switch defective or out of adjustment	• Check the F-CAN communication line (see page 11-172). • Check the F-CAN communication line by using the gauge control module self-diagnostic function (see page 22-332). • Check the A/T gear position indicator drive circuit in the gauge control module by using the gauge control module self-diagnostic function (see page 22-332). • Inspect the transmission range switch (see page 14-238).
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	• Inspect the transmission range switch operation. • Check the output shaft (countershaft) speed sensor installation.
Shift lever cannot be moved from P while pressing on the brake pedal	• Accelerator pedal position sensor circuit • Accelerator pedal position sensor defective • Brake pedal position switch circuit • Brake pedal position switch defective • Shift lock solenoid defective • Shift lock solenoid control circuit • Shift lock mechanism defective • Throttle body defective • Transmission range switch ATPP switch stuck OFF • Transmission range switch ATPP switch circut open • PCM defective	• Inspect the APP sensor signal (see page 11-239). • Troubleshoot the shift lock system circuit (see page 14-249). • Test the shift lock solenoid (see page 14-253). • Inspect the transmission range switch (see page 14-238).
Ignition switch cannot be moved from ACCESSORY (I) to LOCK (0) (key is pushed in, the shift lever in P)	• Interlock control system circuit • Key interlock solenoid stuck ON • Park pin switch stuck OFF • Transmission range switch defective or out of adjustment	• Troubleshoot the key interlock system circuit (see page 22-100). • Inspect the transmission range switch (see page 14-238).

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable Cause(s)	Notes
Engine runs, but vehicle does not move in any gear	• Low ATF level • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn • ATF pump worn or binding • Regulator valve stuck or spring worn • ATF strainer clogged • Mainshaft worn or damaged • Final gears worn or damaged • Transmission-to-engine assembly error • Axle disengaged • Torque converter defective	• Check the ATF level, and check the ATF cooler lines for leaks and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the selector control lever. • Improper alignment of the ATF pump and the torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure (see page 14-175). • 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. • 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 return passage and result in damage. • 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. • 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.
Vehicle moves in 2 and R, but not in D, D3, or 1	• 1st accumulator defective • 1st gears worn or damaged • 1st clutch defective	• Check the 1st clutch pressure (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.
Vehicle moves in D, D3, 1, and R, but not in 2	• 2nd accumulator defective • 2nd gears worn or damaged • 2nd clutch defective	• Check the 2nd clutch pressure (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate.

Symptom	Probable Cause(s)	Notes
Vehicle moves in D, D3, 2, and 1, but not in R	• Shift solenoid valve E defective • Shift fork shaft stuck • Shift valve E defective • 4th/reverse accumulator defective • 4th clutch defective • Reverse gears worn or damaged	• Check the 4th clutch pressure (see page 14-175). • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Check for a missing shift fork bolt on the shift fork shaft. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the reverse selector gear teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 4th gear and the 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, the reverse idler gear, and the countershaft 4th gear.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in 2 and 1, and in D and D3 in 1st and 2nd	• Low ATF level • Shift cable broken or out of adjustment • ATF pump worn or binding • Regulator valve stuck or spring worn • ATF strainer clogged • Torque converter check valve defective	• Check the ATF level, and check the ATF cooler lines for leaks and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the selector control lever. • Improper alignment of the ATF pump and the torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • 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.
Poor acceleration; flares when starting off in D, D3, and R; stall speed high when starting off in 2	• Low ATF level • 2nd clutch defective	• Check the ATF level, and check the ATF cooler lines for leaks and loose connections. If necessary, clean the ATF cooler lines. • Check the 2nd clutch pressure (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable Cause(s)	Notes
Poor acceleration; flares when starting off in D, D3, and R; stall speed high in R	• Low ATF level • Shift cable broken or out of adjustment • 4th clutch defective	• Check the ATF level, and check the ATF cooler lines for leaks and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the selector control lever. • Check the 4th clutch pressure (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate.
Poor acceleration; stall speed low in 2 and 1, and in D and D3 in 1st and 2nd; the engine does not rev to high rpm, and the transmission only upshifts at low rpm (engin at normal operating temperature)	• Engine output low • Shift solenoid valve E defective • Torque converter one-way clutch defective • Torque converter clutch piston defective • Lock-up shift valve defective	• Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage • Check fuel pressure (see page 11-308). • Check for exhaust restriction. • Check for intake restriction. • Check the VTEC rocker arms (see page 6-7). • Replace the torque converter.
Poor acceleration; stall speed low in R	• Engine output low • Torque converter clutch piston defective • Lock-up shift valve defective • Torque converter one-way clutch defective	• Check fuel pressure (see page 11-308). • Check for exhaust restriction. • Check for intake restriction. • Check the VTEC rocker arms (see page 6-7). • Replace the torque converter.
Engine idle vibration; engine stalls, idles low or rough	• Low ATF level • Worn engine or transmission mounts • Shift solenoid valve E defective • Drive plate defective or transmission misassembled • Engine output low • Torque converter clutch piston defective • ATF pump worn or binding • Lock-up shift valve defective • Tight valves	• Check the ATF level, and check the ATF cooler lines for leaks and loose connections. If necessary, clean the ATF cooler lines. • Check the engine and the transmission mounts. • Improper alignment of the ATF pump and the torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • 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, the cooler, and the lines. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Check for a misinstalled/damaged drive plate. • Check that the idle rpm in gear is the specified idle speed (see page 11-292). If the idle speed is correct, adjust the engine and the transmission mounts. • Replace the torque converter. • Check valve adjustment.

Symptom	Probable Cause(s)	Notes
Vehicle moves in N	• Excessive ATF • Foreign material in separator plate orifice • Relief valve defective • 1st clutch defective • 2nd clutch defective • 3rd clutch defective • 4th clutch defective • 5th clutch defective • Clearance between the clutch end-plate and the top disc incorrect • Needle bearing seized, worn, or damaged • Thrust washer seized, worn, or damaged	• Check the ATF level, and drain the ATF if it is over-filled. • Check the 1st, 2nd, 3rd, 4th, and 5th clutch pressures (see page 14-175). • 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. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal (1st, 2nd, and 3rd) for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • 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. • Replace the secondary shaft if the bushing for the 1st or the 3rd clutch feed pipe is loose or damaged. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable Cause(s)	Notes
Delayed engagement after shifting from N to D and D3, or excessive shock when shifted into D and D3	• Worn or damaged engine or transmission mounts • Shift solenoid valve E defective • A/T clutch pressure control solenoid valve A defective • A/T clutch pressure control solenoid valve B defective • A/T clutch pressure control solenoid valve C defective • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn • Transmission range switch out of adjustment • Input shaft (mainshaft) speed sensor defective • Output shaft (countershaft) speed sensor defective • ATF temperature sensor defective • Foreign material in separator plate orifice • Servo control valve defective • 1st accumulator defective • 1st check ball stuck • Lock-up shift valve defective • 1st clutch defective	• Check the engine and the transmission mounts. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect A/T clutch pressure control solenoid valves A, B, and C filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a loose shift cable at the shift lever and the selector control lever. • Check the 1st clutch pressure (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged. • Check the transmission range switch adjustment.
Delayed engagement after shifting from N to R, or excessive shock when shifted into R	• Worn or damaged engine or transmission mounts • Shift solenoid valve E defective • A/T clutch pressure control solenoid valve A defective • Shift cable broken or out of adjustment • Loose or poor connection between the shift cable and transmission or body is worn • Transmission range switch out of adjustment • Input shaft (mainshaft) speed sensor defective • Output shaft (countershaft) speed sensor defective • ATF temperature sensor defective • Shift fork shaft stuck • Foreign material in separator plate orifice • Shift valve E defective • 4th/reverse accumulator defective • Lock-up shift valve defective • 4th clutch defective	• Check the engine and the transmission mounts. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect A/T clutch pressure control solenoid valve A filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check for a loose shift cable at the shift lever and the selector control lever. • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Check for a missing shift fork bolt on the shift fork shaft. • Check the 4th clutch pressure (see page 14-175). • Inspect the servo valve and the O-ring. • Check the transmission range switch adjustment.

Symptom	Probable Cause(s)	Notes
Transmission does not shift	• Input shaft (mainshaft) speed sensor defective • Output shaft (countershaft) speed sensor defective • Engine output low	• Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Check the engine control system. • Check fuel pressure (see page 11-308). • Check for exhaust restriction. • Check for intake restriction.
Excessive shock or flares on all upshifts and downshifts	• Worn or damaged engine or transmission mounts • A/T clutch pressure control solenoid valve B defective • A/T clutch pressure control solenoid valve C defective • Input shaft (mainshaft) speed sensor defective • Output shaft (countershaft) speed sensor defective • ATF temperature sensor defective • Foreign material in separator plate orifice	• Check the engine and the transmission mounts. • Inspect A/T clutch pressure control solenoid valves B and C filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	• Worn or damaged engine or transmission mounts • Shift solenoid valve E defective • A/T clutch pressure control solenoid valve A defective • A/T clutch pressure control solenoid valve B defective • A/T clutch pressure control solenoid valve C defective • Transmission fluid pressure switch A (2nd clutch) defective • Foreign material in separator plate orifice • 1st accumulator defective • 2nd accumulator defective • 1st check ball stuck • 2nd check ball stuck • Lock-up shift valve defective • 1st clutch defective • 2nd clutch defective	• Check the engine and the transmission mounts. • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect A/T clutch pressure control solenoid valves A, B, and C filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 1st and the 2nd clutch pressures (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 1st clutch feed pipe. If the 1st clutch feed pipe is scored, replace the end cover. • Replace the secondary shaft if the bushing for the 1st clutch feed pipe is loose or damaged.

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Symptom Troubleshooting Index (cont'd)

Symptom	Probable Cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	• Worn or damaged engine or transmission mounts • A/T clutch pressure control solenoid valve B defective • A/T clutch pressure control solenoid valve C defective • Transmission fluid pressure switch B (3rd clutch) defective • Foreign material in separator plate orifice • 2nd accumulator defective • 3rd accumulator defective • 2nd check ball stuck • 2nd clutch defective • 3rd clutch defective	• Check the engine and the transmission mounts. • Inspect A/T clutch pressure control solenoid valves B and C filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 2nd and the 3rd clutch pressures (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • 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. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.
Excessive shock or flares on 3-4 upshift or 4-3 downshift	• A/T clutch pressure control solenoid valve B defective • A/T clutch pressure control solenoid valve C defective • Foreign material in separator plate orifice • 3rd accumulator defective • 4th/reverse accumulator defective • 3rd clutch defective • 4th clutch defective	• Inspect A/T clutch pressure control solenoid valves B and C filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 3rd and the 4th clutch pressures (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer and the retainer seal (3rd) for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • 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. • Replace the secondary shaft if the bushing for the 3rd clutch feed pipe is loose or damaged.

Symptom	Probable Cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	• A/T clutch pressure control solenoid valve B defective • A/T clutch pressure control solenoid valve C defective • Foreign material in separator plate orifice • 4th/reverse accumulator defective • 5th accumulator defective • 4th clutch defective • 5th clutch defective	• Inspect A/T clutch pressure control solenoid valves B and C filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the 4th and the 5th clutch pressures (see page 14-175). • Inspect the clutch piston, the clutch piston check valve, and the O-rings. Check the spring retainer for wear and damage. Inspect the clearance between the clutch end-plate and the top disc. If the clearance is out of tolerance, inspect the clutch discs and the plates for wear and damage. If the discs are worn or damaged, replace them as a set. Inspect the clutch wave-plate height. If the height is out of tolerance, replace the wave-plate. If the discs and the plates are OK, adjust the clearance with the clutch end-plate. • Inspect the 5th clutch feed pipe. If the 5th clutch feed pipe is scored, replace it and the O-ring under the feed pipe guide. • Replace the mainshaft if the bushing for the 5th clutch feed pipe is loose or damaged.
Noise from transmission in all shift lever positions	• ATF pump worn or binding • Mainshaft bearing, countershaft bearing, or secondary shaft bearing defective	• Improper alignment of the ATF pump and the torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • 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. • 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 return passage and result in damage. • 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. • Inspect the mainshaft, the countershaft, and the secondary shaft for wear or damage.
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	• Worn engine or transmission mounts • Torque converter defective • ATF pump worn or defective • Drive plate defective or transmission misassembled	• Check for a misinstalled/damaged drive plate. • Check that the idle rpm in gear is the specified idle speed (see page 11-292). If the idle speed is correct, adjust the engine and the transmission mounts.
Shift lever does not operate smoothly	• Transmission range switch defective or out of adjustment • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn • Shift lever mechanism worn or defective	• Inspect the transmission range switch operation. • Check for a loose shift cable at the shift lever and the selector control lever.

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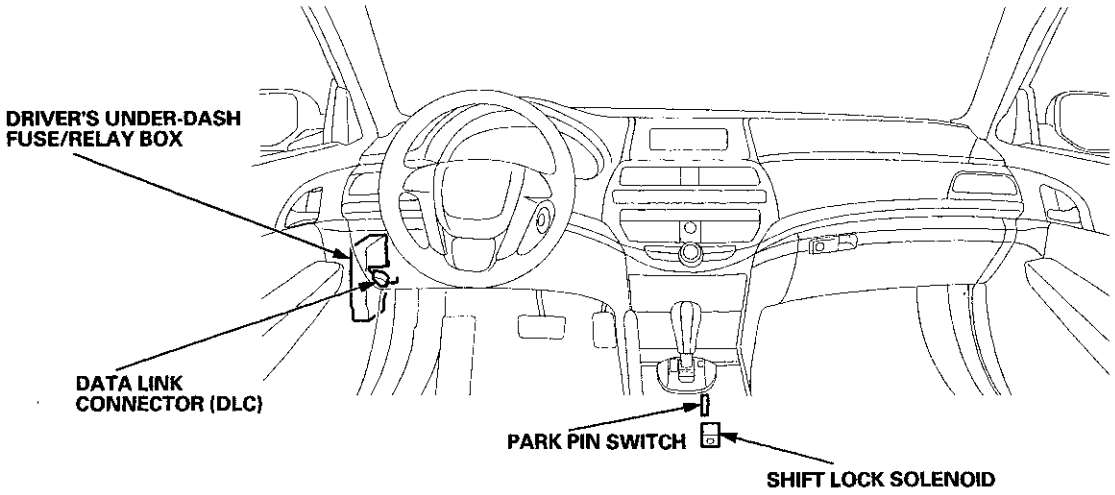
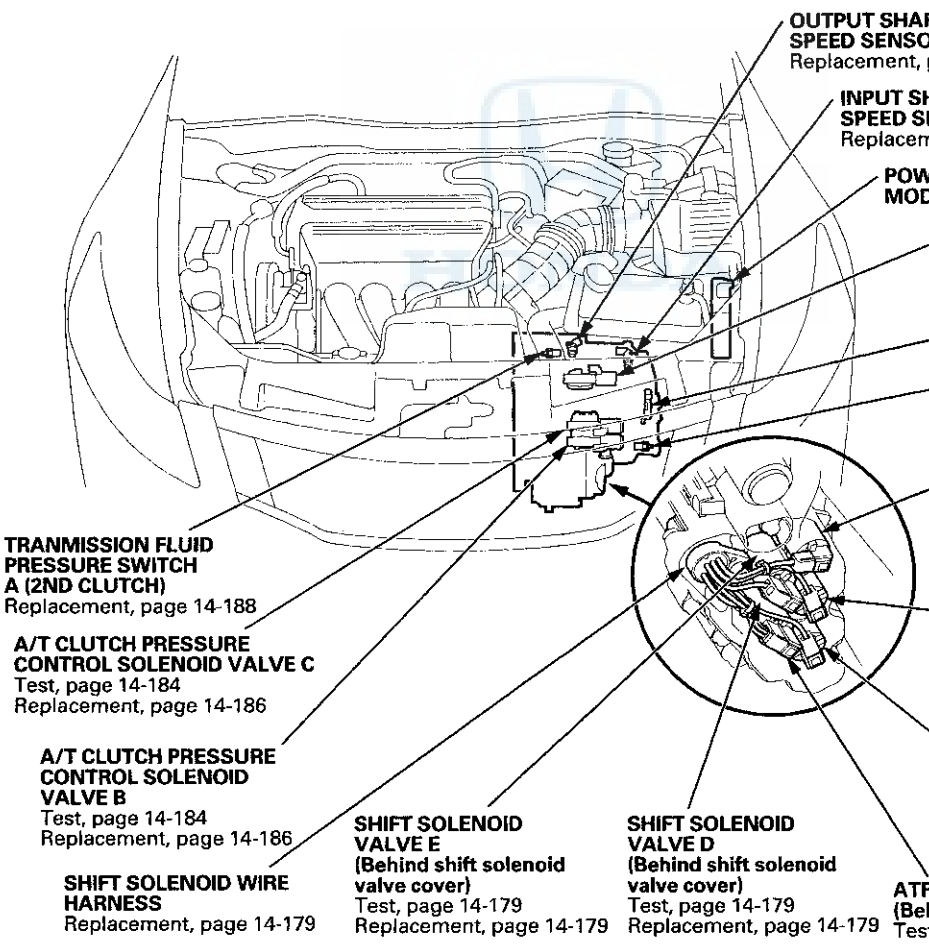
Symptom Troubleshooting Index (cont'd)

Symptom	Probable Cause(s)	Notes
Transmission does not shift into P	• Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn • Park mechanism defective	• Check for a loose shift cable at the shift lever and the transmission control shaft. • 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 the park lever roller pin. If the distance is out of tolerance, adjust the distance with the park lever stop.
Torque converter clutch does not operate smoothly; torque converter cluch dose not engage or disengage	• Shift solenoid valve E defective • A/T clutch pressure control solenoid valve A defective • Torque converter clutch piston defective • Torque converter check valve defective • Lock-up shift valve defective • Lock-up control valve defective • Input shaft (mainshaft) speed sensor defective • Outpur shaft (countershaft) speed sensor defective	• Inspect shift solenoid valve E operation with the HDS (see page 14-179). • Inspect A/T clutch pressure control solenoid valve A with the HDS (see page 14-182). • Inspect shift solenoid valve E for seizure, and the O-rings for wear and damage. • Inspect A/T clutch pressure control solenoid valve A filter/gasket and the O-rings for wear and damage, and inspect the solenoid valves for seizure. • Check the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor installation. • Replace the torque converter.
A/T gear position indicator does not indicate shift lever positions	• Transmission range switch defective or out of adjustment • Shift cable broken or out of adjustment • Connection between the shift cable and transmission or body is worn	• Inspect the transmission range switch operation. • Check for a loose shift cable at the shift lever and the selector control lever.

Component Location Index





System Description

General Description

The automatic transmission is a transverse-mounted three-shaft design, implemeting an electronically controlled hydraulic circuit that provides five forward speeds and one in reverse. Engine power is transmitted through the torque converter, a combination of shafts which hold gears and clutches and a differential that transmits power to the driving wheels.

Shaft, Gears and Clutches

Three parallel shafts hold gears and clutches. The gears on the input shaft (mainshaft) and secondary shaft are in constant mesh with those on the output shaft (countershaft). When specific gears are engaged by the clutches, power is transmitted through the mainshaft, to the secondary shaft, and/or the countershaft, then to the final drive gear of the differential to provide drive.

Shift Control Mechanism

To shift gears, the PCM controls shift solenoid valves A, B, C, D and E, and automatic transmission (A/T) clutch pressure control solenoid valves A, B, and C. The shift solenoid valves change the positions of the shift valves in the valve body which open and close ports to send hydraulic pressure to the appropriate clutch. A/T clutch pressure control solenoid valves A, B, and C change the position of CPC valves A, B and C to control hydraulic pressure going to the clutches, which allows smooth shifts between gears.

Electronic Control

Shifting and lock-up is achieved by a system of solenoid valves driven by the PCM to control ATF flow through various valves in the valve bodies to select the appropriate gears for all driving conditions.

Hydaulic Control

The valve bodies include the main valve body, the regulator valve body, the secondary valve body. They are mounted to the torque converter housing. Fluid from the regulator valve passes through the manual valve to the various control valves. All the clutches receive fluid from the internal hydraulic circuit.

Torque Converter

The torque converter is a fluid coupling, which allows the engine to spin independently of the transmission yet connects them together as needed. It is an assembly that consists of an impeller (pump), turbine, stator and lock-up clutch, which uses automatic transmission fluid (ATF) to transmit engine power to the input shaft (mainshaft), and acts as a flywheel to help the engine run smoothly. During certain conditions the lock-up clutch is engaged by the PCM to mechanically connect the engine's crankshaft with the input shaft (mainshaft) which improves fuel economy. Around the outside of the torque converter housing is a ring gear which meshes with the starter ring gear, when the engine is being started.

Lock-up Mechanism

The lock-up mechanism causes the input shaft (mainshaft) to rotate at the same speed as the engine crankshaft. Pressurized ATF is drained from between the torque converter cover and the torque converter clutch piston through a fluid passage, causing the torque converter clutch piston to be held against the torque converter housing. Together with the hydraulic control, the PCM optimizes the timing and degree of lock-up. The lock-up mechanism operates in D (2nd, 3rd, 4th, and 5th gears) and D3 (1st, 2nd, and 3rd gears).

Gear Selection

The shift lever has seven positions; P: PARK, R: REVERSE, N: NEUTRAL, D: 1st through 5th gear ranges, D3: 1st through 3rd gear ranges, 2: 2nd gear, and 1: 1st gear.

Position	Description
P: PARK	Front wheels locked; the park pawl engaged with the park gear on countershaft. All clutches are released.
R: REVERSE	Reverse; the reverse selector engaged with the countershaft reverse gear and the 4th clutch engaged.
N: NEUTRAL	All clutches are released.
D: DRIVE (1st through 5th)	General driving; starts off in 1st gear, shifts automatically to 2nd, 3rd, 4th, then 5th gear, depending on the vehicle speed and the throttle position. Downshifts through 4th, 3rd, 2nd, and 1st on deceleration to stop. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears.
D3: DRIVE (1st through 3rd)	Used for rapid acceleration at highway speeds and general driving; up-hill and down-hill driving; starts off in 1st gear, shifts automatically to 2nd, then 3rd, depending on the vehicle speed and the throttle position. Downshifts through 2nd to 1st on deceleration to stop. The lock-up mechanism operates in 2nd and 3rd gears.
2: SECOND	Used for engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear; does not shift up or down.
1: FIRST	Used for engine braking; stays in 1st gear; does not shift up.

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

Automatic Transmission (A/T) Gear Position Indicator

The A/T gear position indicator in the gauge control module shows which shift lever position has been selected.

System Description (cont'd)

Clutches and Gears

The five-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 the steel plates together, locking them so they do not 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 the 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 middle of the secondary shaft. The 1st clutch is joined back-to-back to the 3rd clutch. 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 middle of the secondary shaft. The 3rd clutch is joined back-to-back to the 1st clutch. The 3rd clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

4th Clutch

The 4th clutch engages/disengages 4th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

5th Clutch

The 5th clutch engages/disengages 5th gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure by its ATF feed pipe within the mainshaft.

Gear operation

Gears on the mainshaft:
- 4th gear engages/disengages with the mainshaft by the 4th clutch.
- 5th gear engages/disengages with the mainshaft by the 5th clutch.
- Reverse gear engages/disengages with the mainshaft by the 4th clutch.
- Idler gear is splined with the mainshaft, and rotates with the mainshaft.

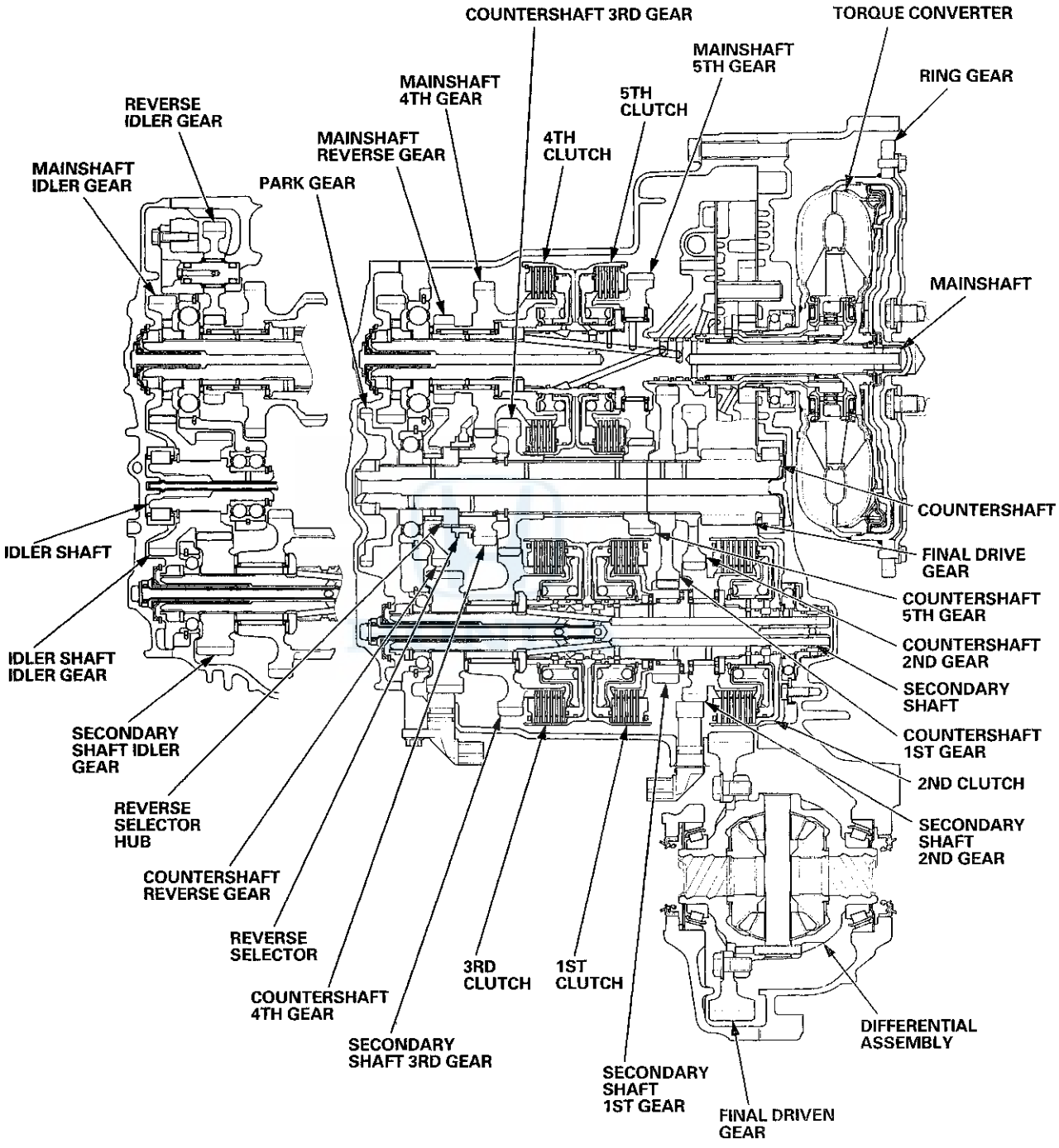
Gears on the countershaft:
- Final drive gear is integral with the countershaft.
- 1st, 2nd, 3rd, 5th, and park gears are splined with the countershaft, and rotate with the countershaft.
- 4th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 4th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so that 4th gear and the reverse gear engage with the countershaft.

Gears on the secondary shaft:
- 1st gear engages/disengages with the secondary shaft by the 1st clutch.
- 2nd gear engages/disengages with the secondary shaft by the 2nd clutch.
- 3rd gear engages/disengages with the secondary shaft by the 3rd 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



System Description (cont'd)

Power Flow

P Position

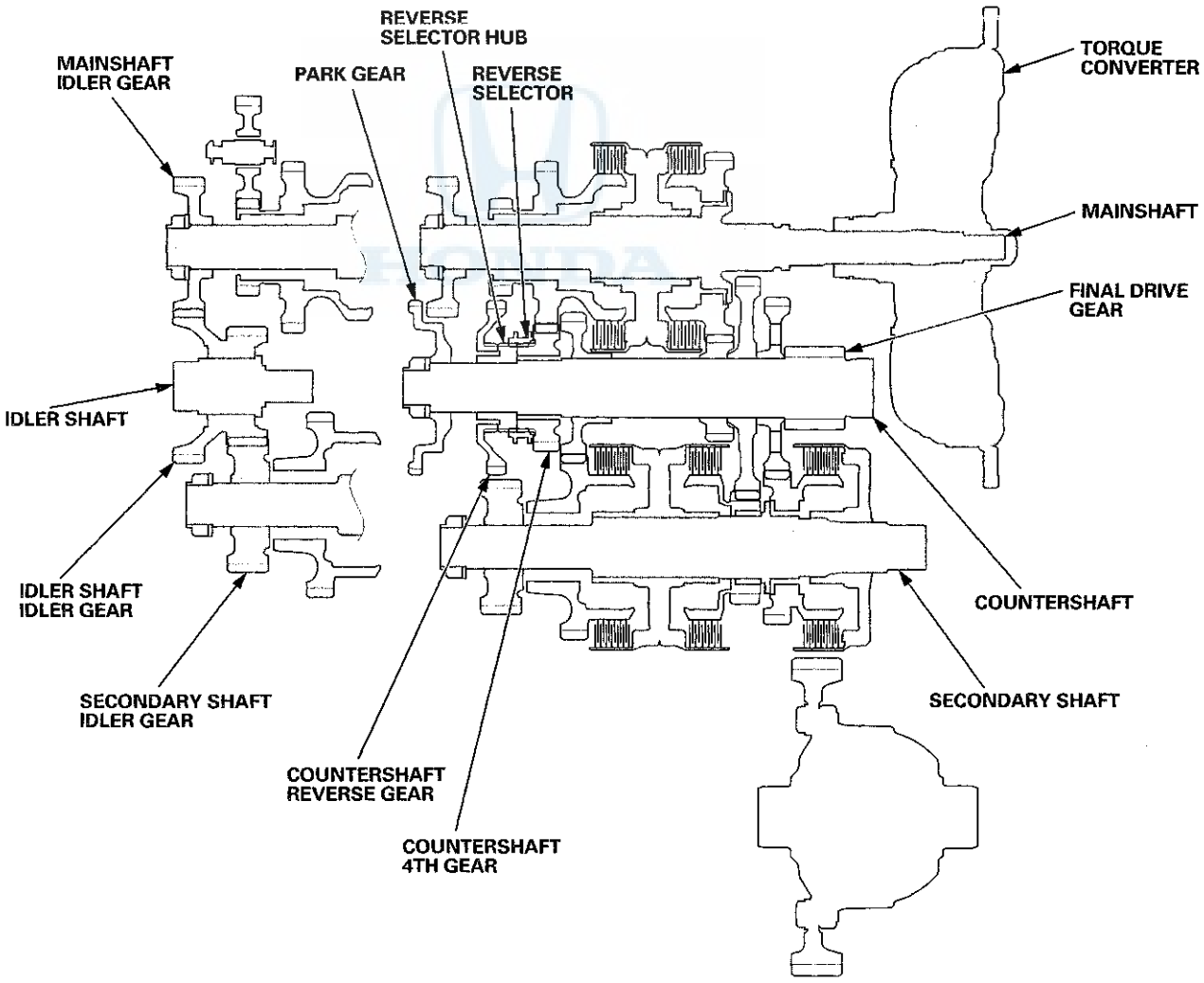
Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

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.

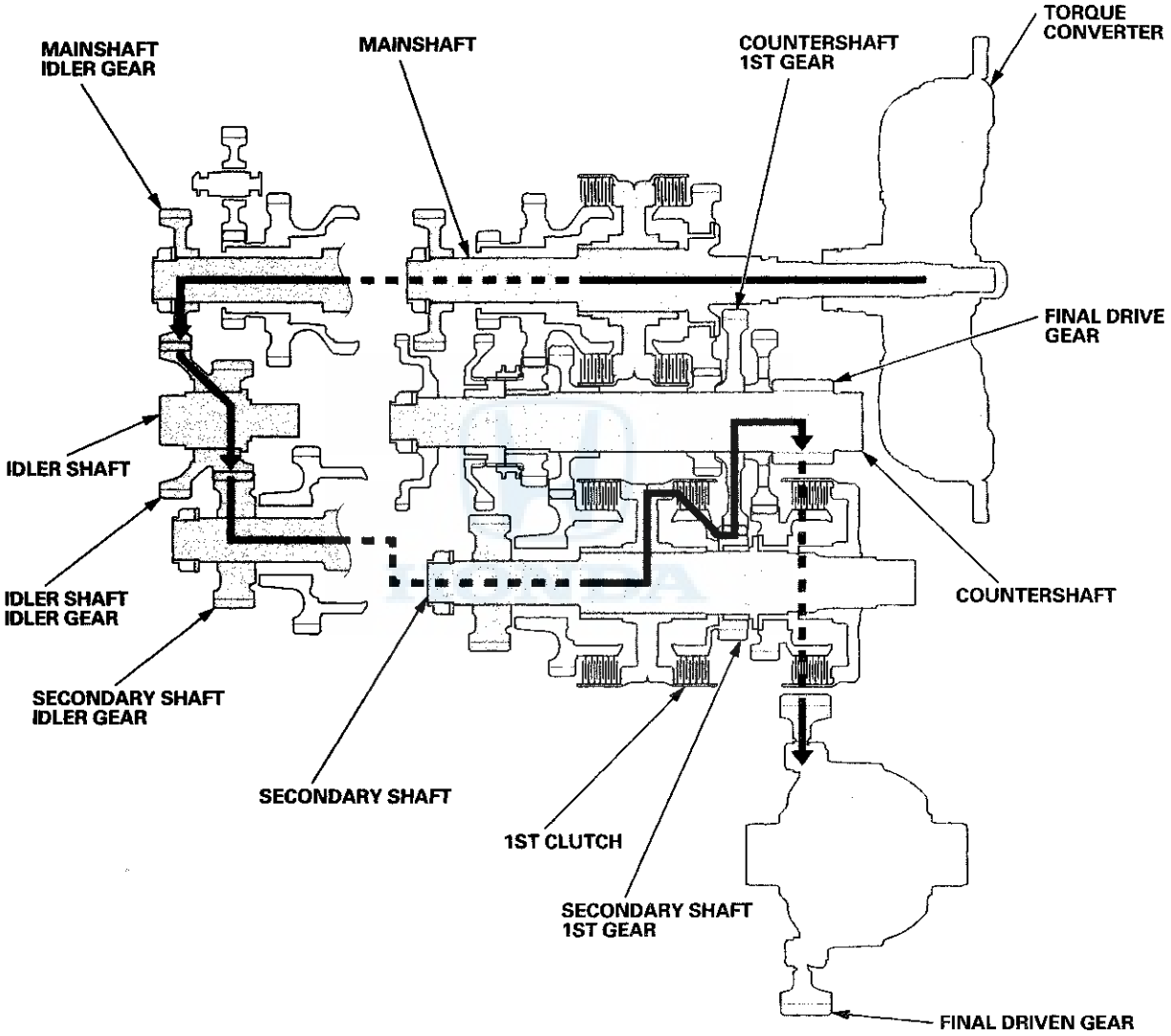
In this position, the position of the reverse selector differs according to whether the shift lever shifted from D or R:

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



In 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.



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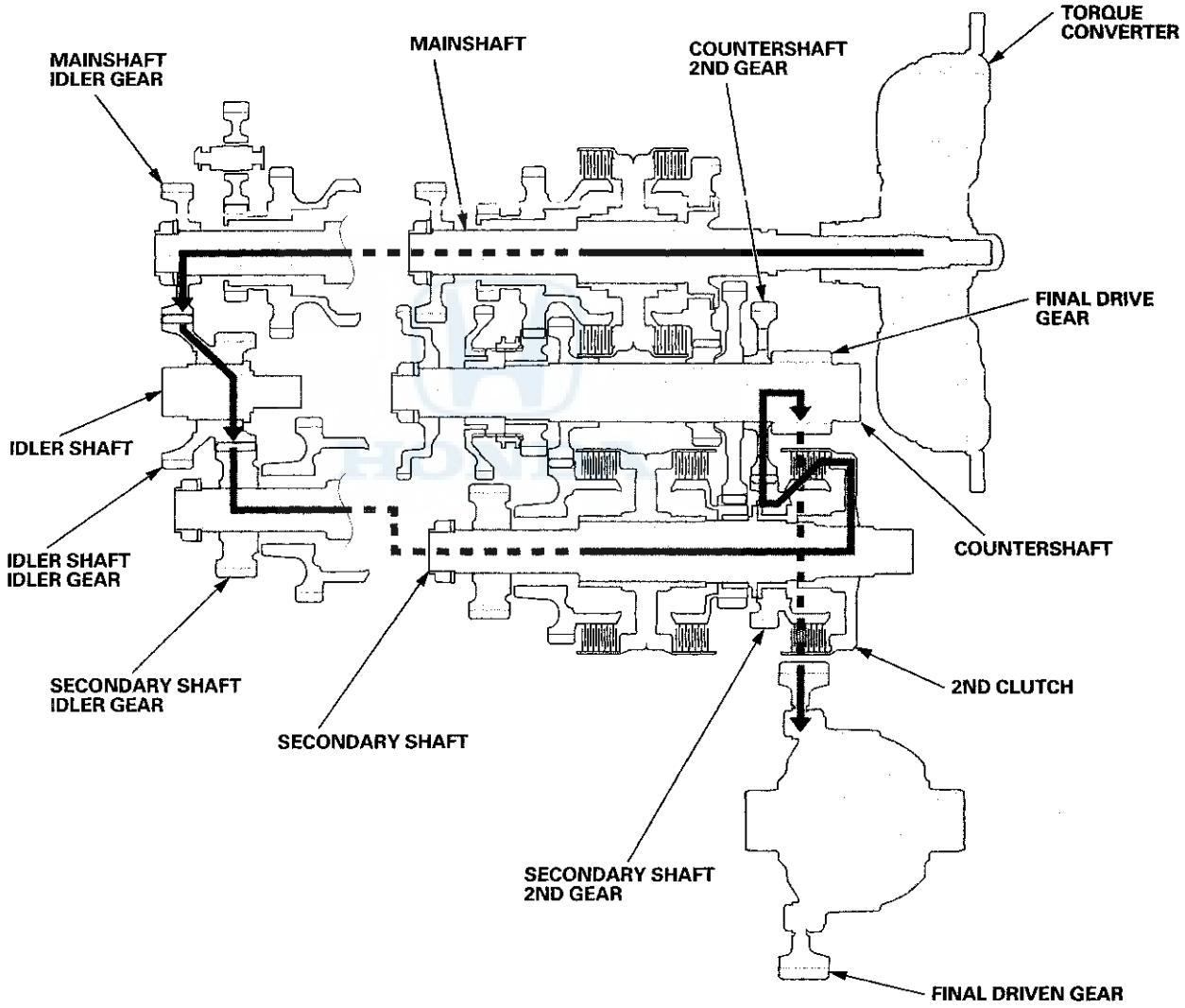
System Description (cont'd)

Power Flow (cont'd)

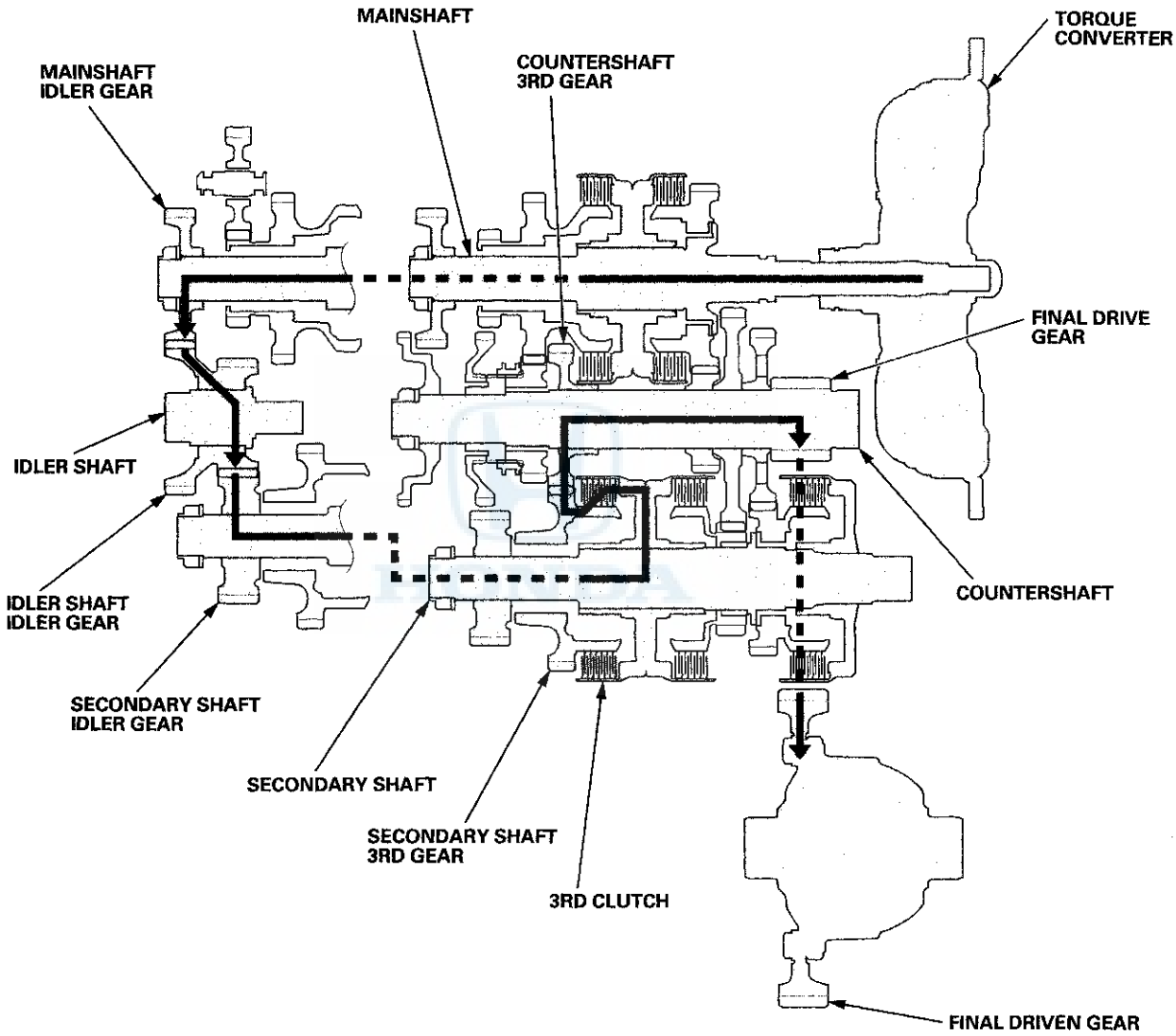
In 2nd Gear

- 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.



In 3rd Gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the secondary shaft 3rd 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 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.



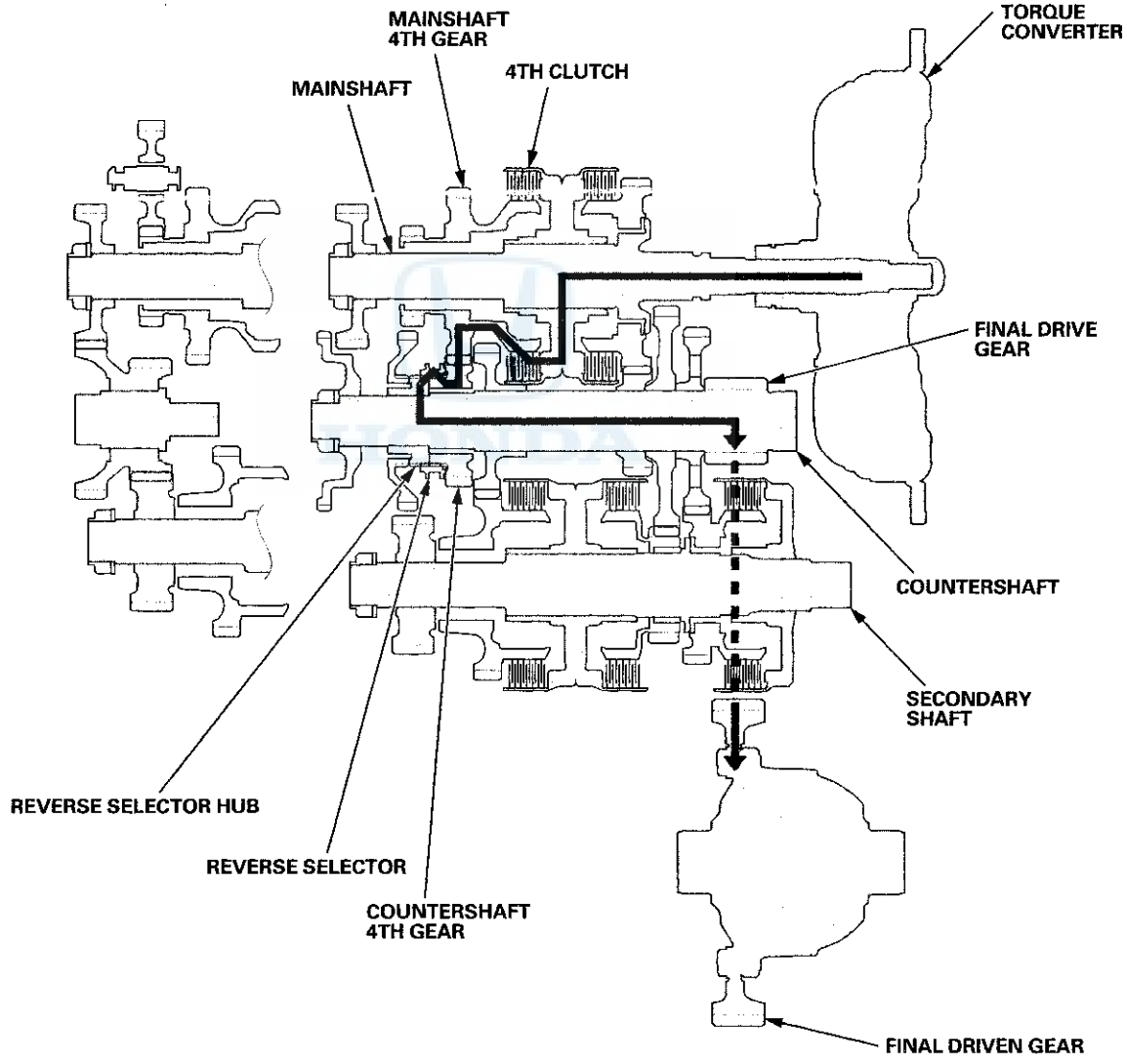
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

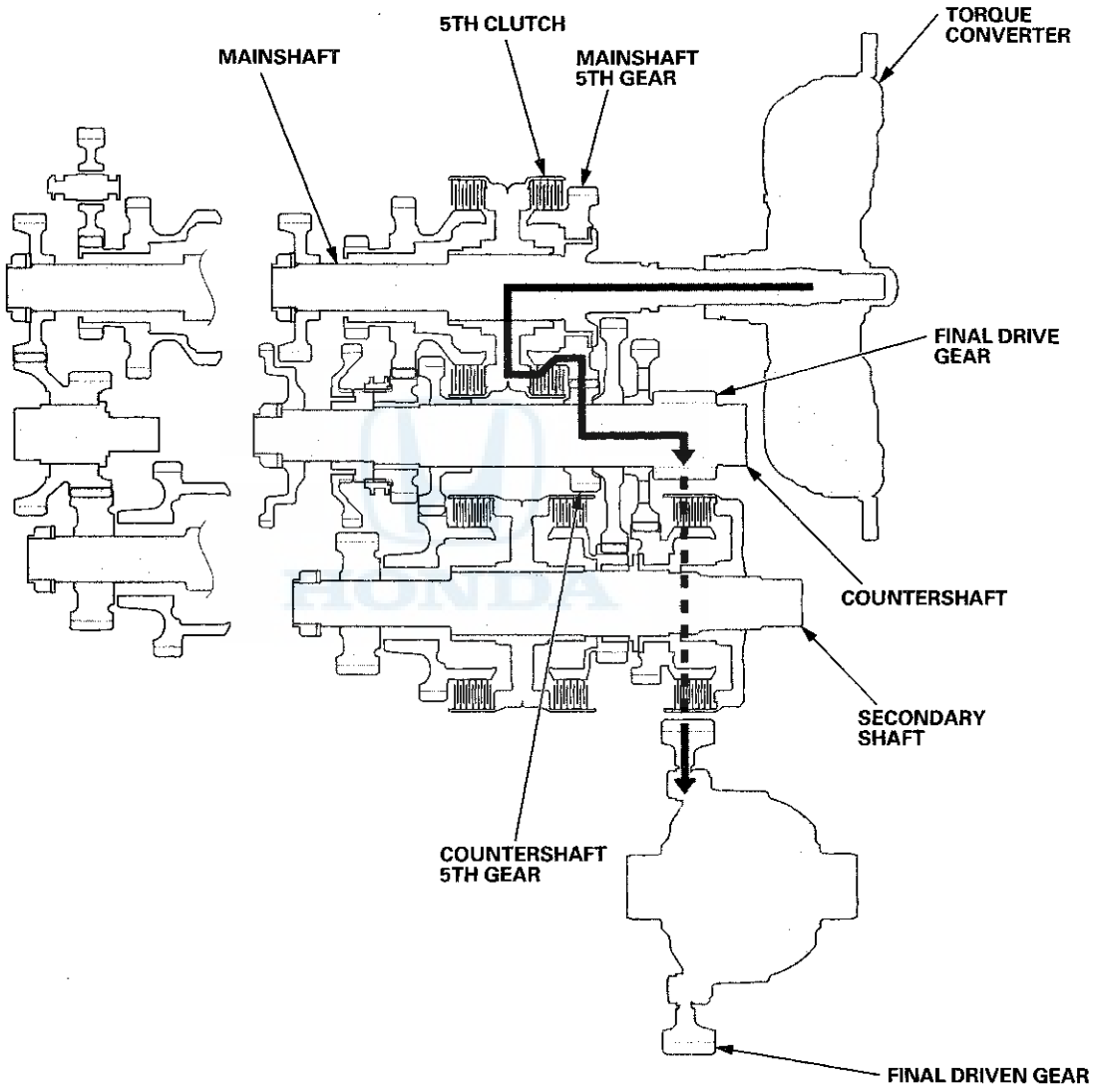
In 4th Gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 4th gear and the reverse selector hub while the shift lever is in forward range (D, D3, 2, and 1).
- 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.



In 5th Gear

- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 5th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



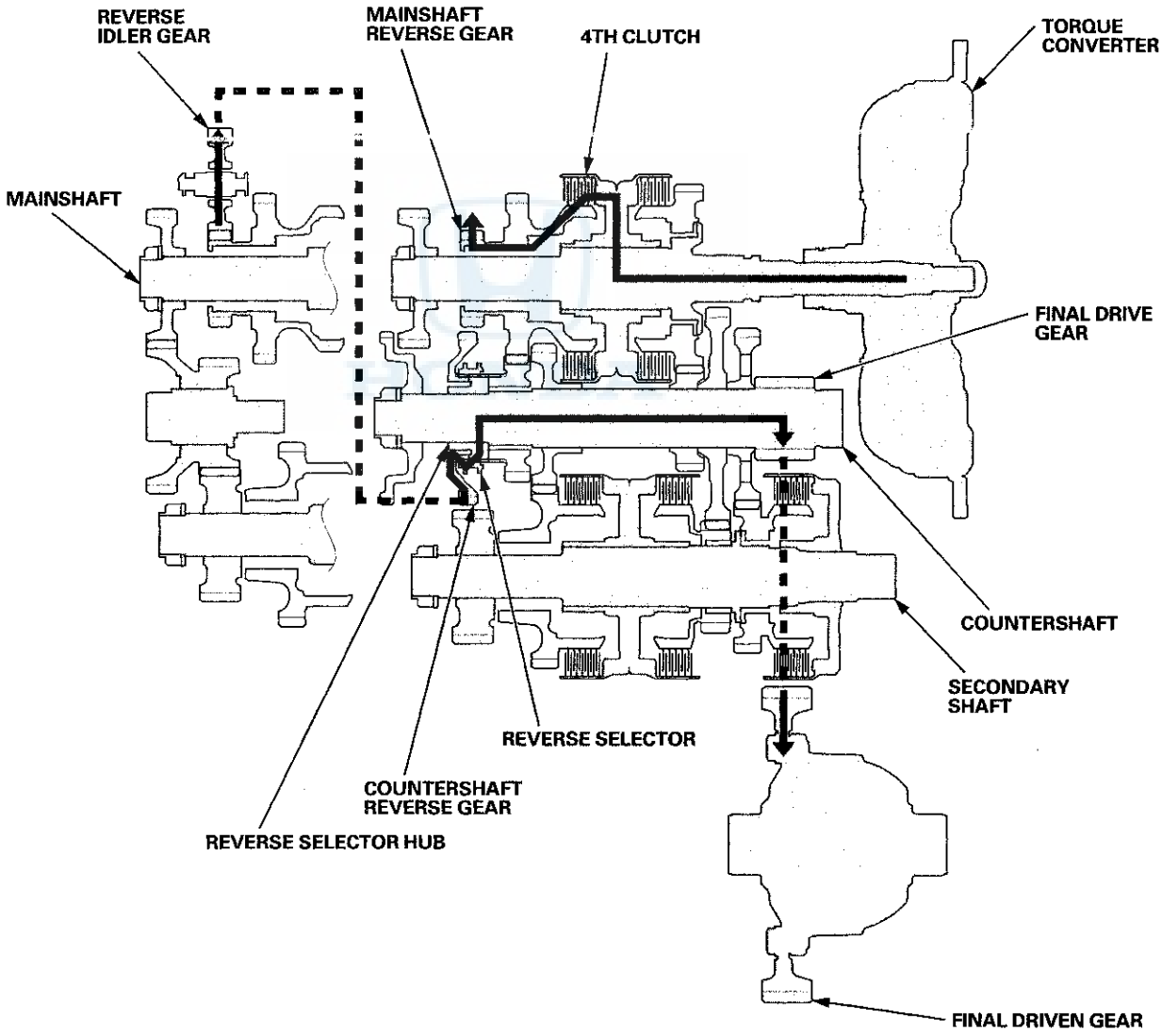
(cont'd)

System Description (cont'd)

Power Flow (cont'd)

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear and the reverse selector hub while the shift lever is in R.
- 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 rotation 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.



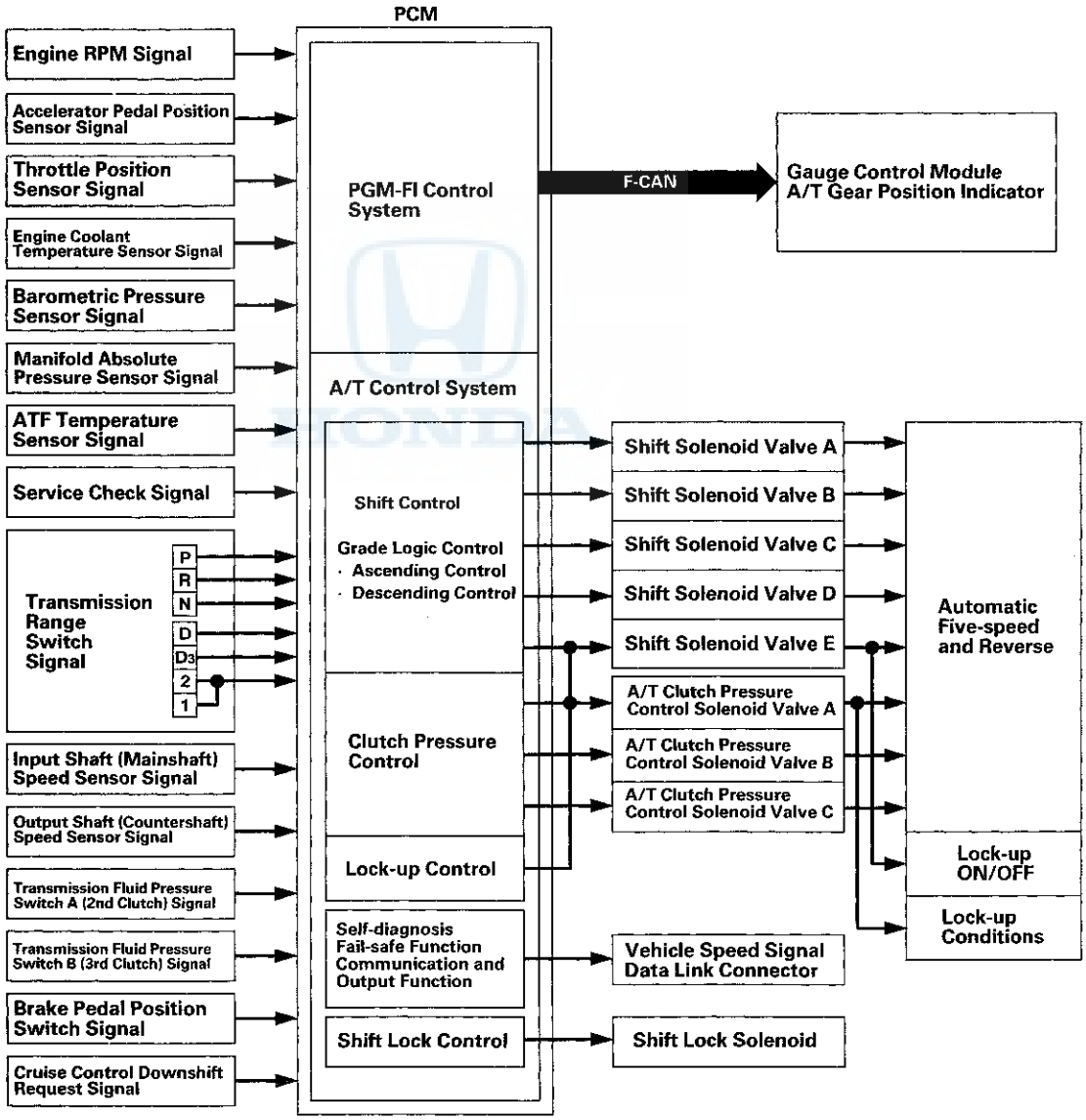
Electronic Control System

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and solenoid valves.

Functional Diagram

The PCM receives input signals from sensors, switches, and other control units, processes data, and outputs signals for the engine control system and the A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, and lock-up control. The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.



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System Description (cont'd)

Electronic Control System (cont'd)

Shift Control

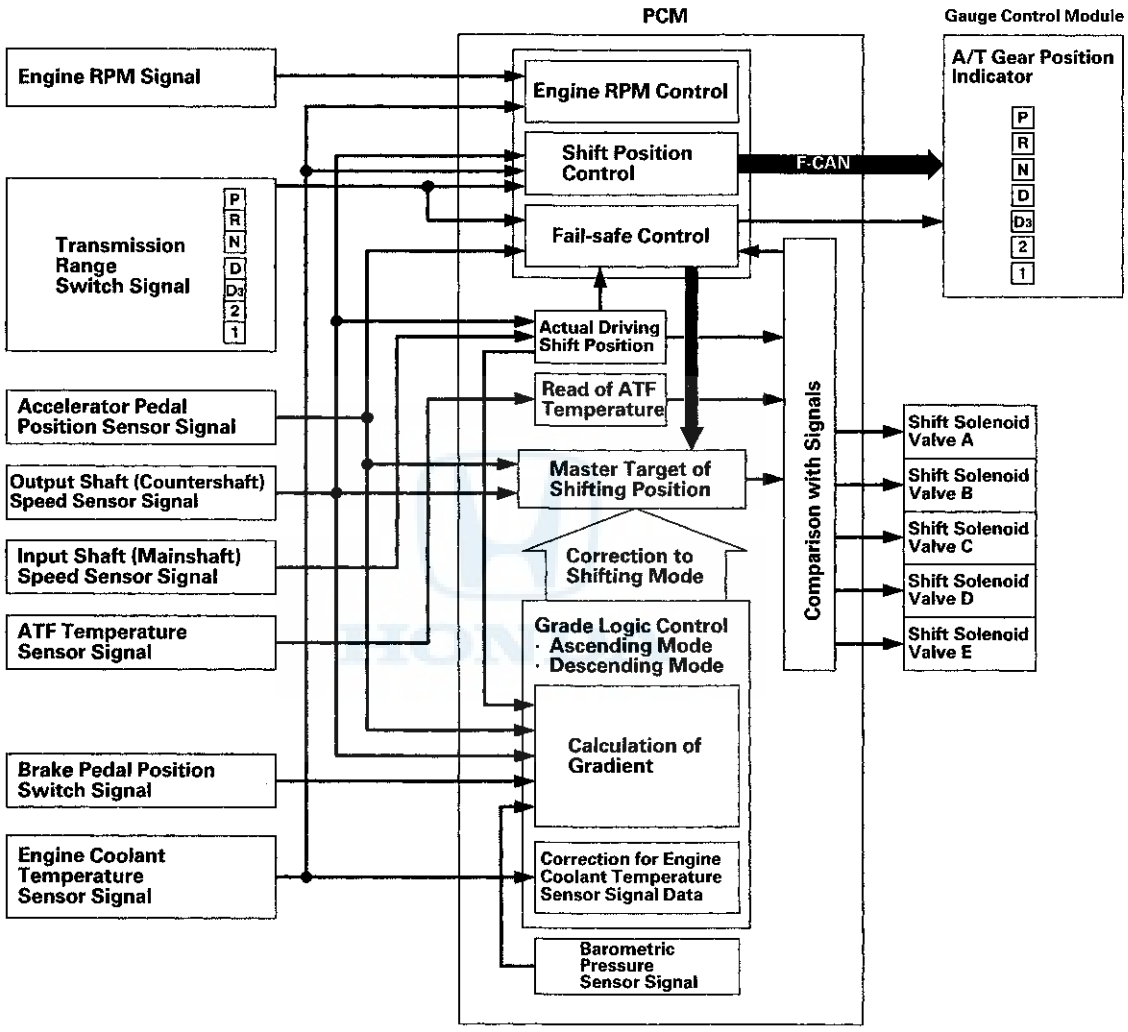
The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates shift solenoid valves A, B, C, D, and E to control gear selection.

The PCM turns shift solenoid valves A, B, C, D, and E ON and OFF to control gear selection. All shift solenoid valves are normally closed (ON-OPEN/OFF-CLOSED). The shift solenoid valve port opens to allow ATF to pass through when the PCM turns it ON, and the port closes, blocking fluid flow when turned ON. The combination of driving signals to shift solenoid valves A, B, C, D, and E for each year are in the following table.

Position	Gear Position	Shift Solenoid Valves				
		A	B	C	D	E
D, D3	Shifting from N	OFF	ON	ON	OFF	OFF
	Stays in 1st	ON	ON	ON	OFF	OFF
	Shifting gears between 1st and 2nd	OFF	ON	ON	OFF	OFF
	Stays in 2nd	OFF	ON	OFF	ON	OFF or ON
	Shifting gears between 2nd and 3rd	OFF	ON	ON	ON	OFF or ON
	Stays in 3rd	OFF	OFF	ON	OFF	OFF or ON
D	Shifting gears between 3rd and 4th	OFF	OFF	OFF	OFF	OFF or ON
	Stays in 4th	ON	OFF	OFF	OFF	OFF or ON
	Shifting gears between 4th and 5th	ON	OFF	OFF	ON	OFF or ON
	Stays in 5th	ON	OFF	ON	ON	OFF or ON
2	2nd gear	OFF	ON	OFF	ON	OFF
1	1st gear	ON	ON	ON	OFF	OFF
R	Shifting from P and N	OFF	ON	OFF	OFF	ON
	Stays in reverse	ON	ON	OFF	OFF	ON
	Reverse inhibit	OFF	OFF	ON	OFF	OFF
P	Park	OFF	ON	OFF	OFF	ON
N	Neutral	OFF	ON	ON	OFF	OFF

Shift Control-Grade Logic

A grade logic control system is used to control shifting in D and D3. The PCM compares actual driving conditions with programmed driving conditions, based on the input from the accelerator pedal position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal, to improve shifting control while the vehicle is ascending or descending a slope.



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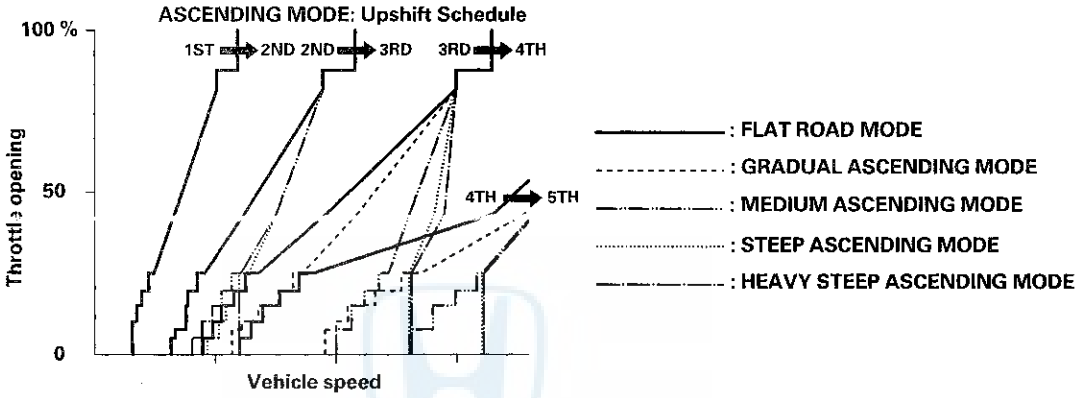
System Description (cont'd)

Electronic Control System (cont'd)

Grade Logic Control: Ascending Control

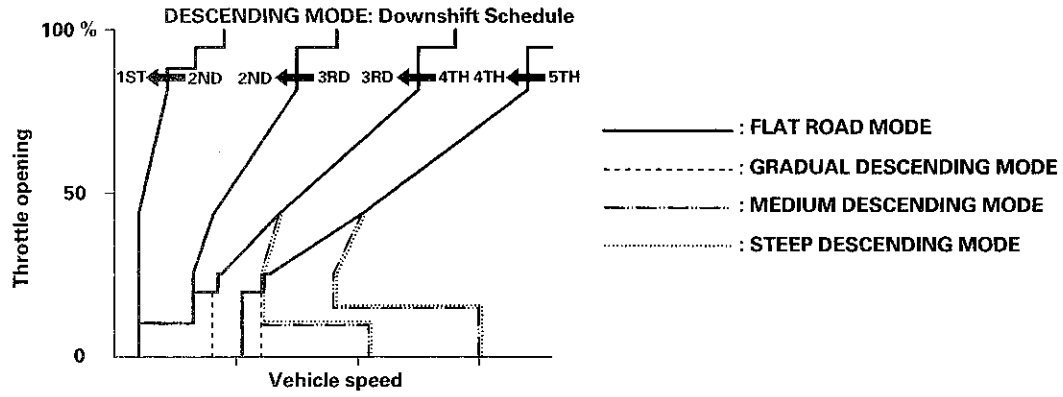
When the PCM determines that the vehicle is climbing a hill in D and D3, the system extends the engagement area of 2nd, 3rd, and 4th gears to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

Shift programs stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable the PCM to automatically select the most suitable gear based on the steepness of the grade.



Grade Logic Control: Descending Control

When the PCM determines that the vehicle is going down a hill in D and D3, the upshift speed from 4th to 5th gear, from 3rd to 4th gear, and from 2nd to 3rd gear (when the throttle is closed) becomes higher than the set speed for flat road driving to extend the 4th gear, 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 stored in the PCM with different 4th gear, 3rd gear, and 2nd gear driving areas based on the steepness of the grade. When the vehicle is in 5th gear or 4th gear, and the vehicle is decelerating while applying the brakes on a steep hill, the transmission will downshift to lower gear. When you accelerate, the transmission will then return to a higher gear.

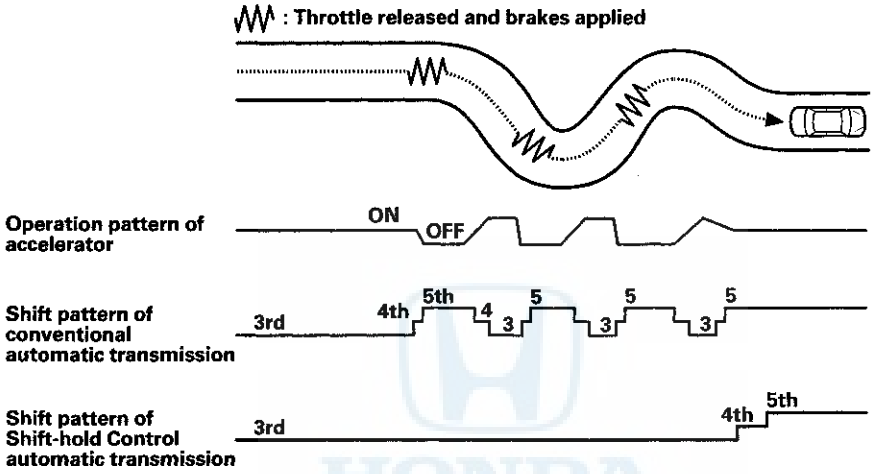


Shift-Hold Control

When driving on winding roads, the throttle is suddenly released and the brakes are applied, as is the case when decelerating at the entrance of a curve, shift-hold control keeps the transmission in its current (lower) ratio as it negotiates the corner and accelerates out.

When the vehicle is driven aggressively on a winding road, the PCM extends the engagement time of 3rd gear and 4th gear to prevent the transmission from frequently shifting between 3rd, 4th, and 5th gears.

The PCM monitors the average change in the vehicle speed and throttle over time. When these values exceed those for normal driving conditions, the upshift from 3rd to 4th gear and 4th to 5th gear is delayed. This gives more control over power, and the engine braking. The transmission resumes the normal upshift pattern after the PCM determines that normal driving has resumed.



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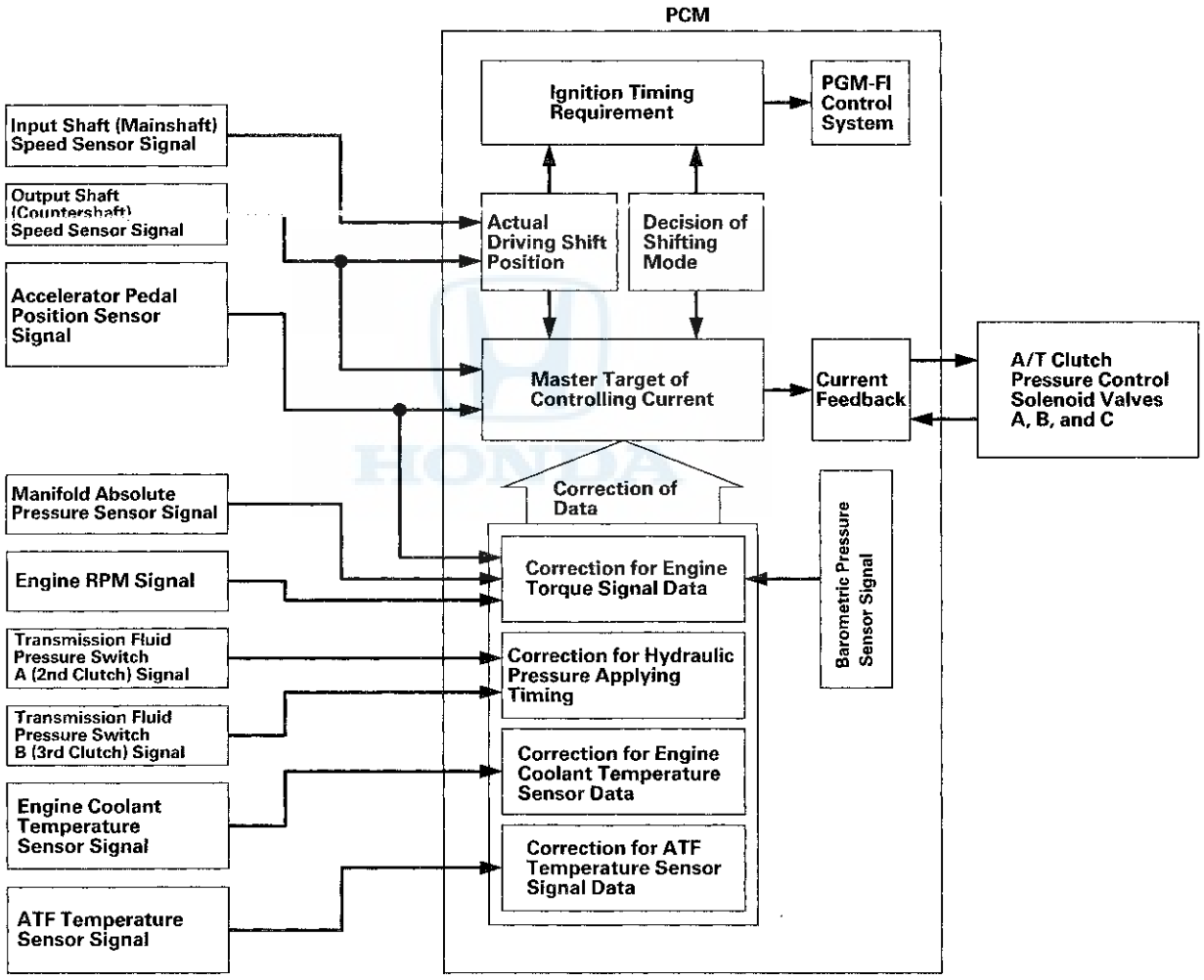
System Description (cont'd)

Electronic Control System (cont'd)

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 engages and disengages the clutch smoothly.

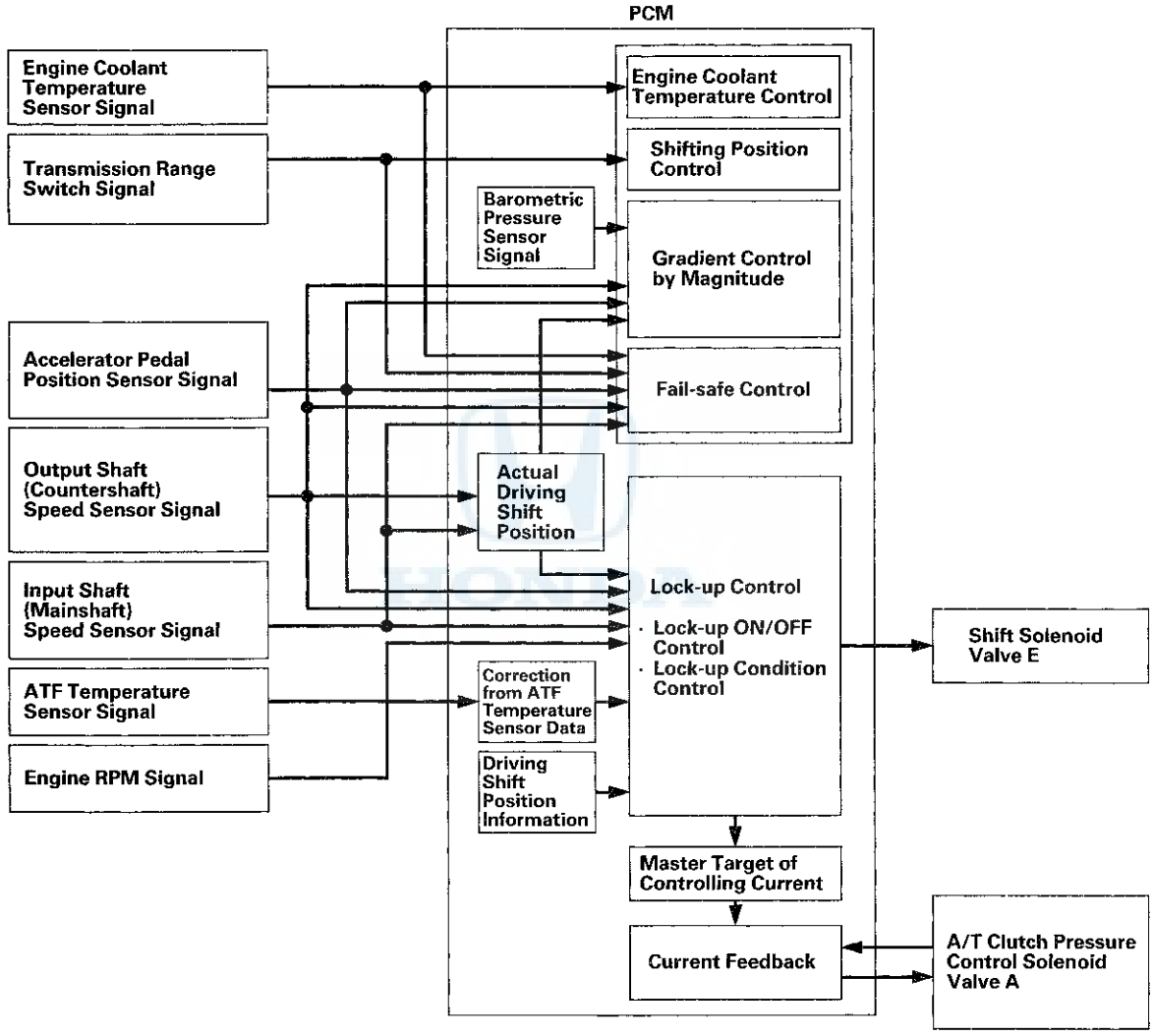
The PCM receives input signals from the various sensors and switches, processes data, and outputs current to A/T clutch pressure control solenoid valves A, B, and C.



Lock-up Control

Shift solenoid valve E controls the hydraulic pressure to switch the lock-up shift valve ON and OFF. The PCM actuates shift solenoid valve E and A/T clutch pressure control solenoid valve A, lock-up start. A/T clutch pressure control solenoid valve A applies and regulates hydraulic pressure to the lock-up control valve to control the volume of the lock-up.

The lock-up mechanism operates in D (2nd, 3rd, 4th, and 5th gears), and in D3 (2nd and 3rd gears).



(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

Self-diagnosis

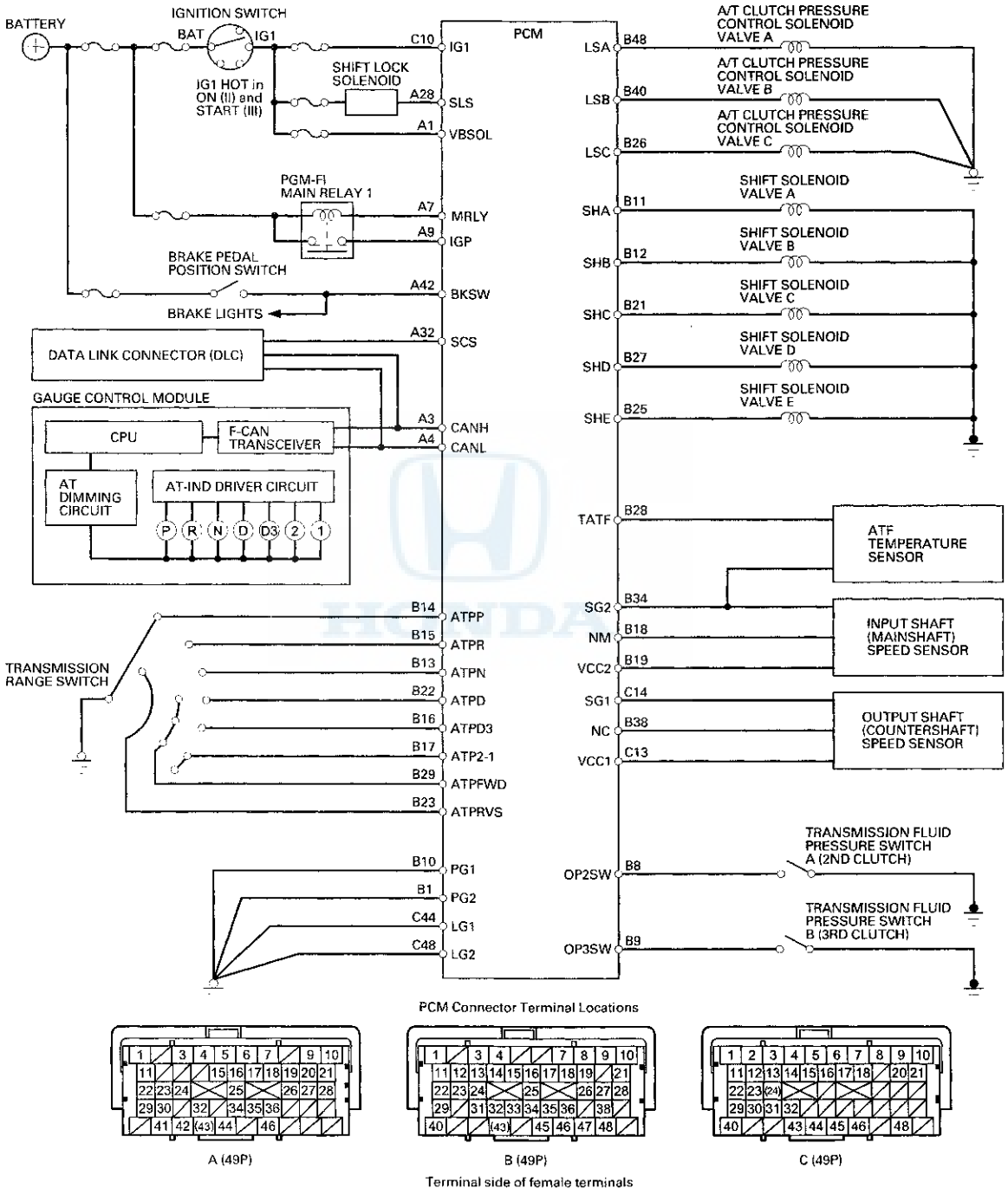
If the PCM detects the failure of a signal from a sensor, a switch, a solenoid valve, or from another control unit, it stores a Pending or Confirmed DTC. Depending on the failure, a Confirmed DTC is stored in either the first or the second drive cycle. When a DTC is stored, the PCM blinks the D indicator and/or turns on the malfunction indicator lamp (MIL) by a signal sent to the gauge control module via F-CAN.

- **One Drive Cycle Detection Method:**
  When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit, the PCM stores a Confirmed DTC for the failure and blinks the D indicator and/or turns on the MIL immediately.
- **Two Drive Cycle Detection Method:**
  When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit in the first drive cycle, the PCM stores a Pending DTC. The D indicator and the MIL do not turns on at this time. If the failure continues in the second drive cycle, the PCM stores a Confirmed DTC and blinks the D indicator and/or turns on the MIL.

Fail-safe Function

When an abnormality occurs in the signal from a sensor, a switch, a solenoid valve, or from another control unit, the PCM ignores it and substitutes a pre-programmed value for that signal to allow the automatic transmission to continue operating. This causes a DTC to be stored and the D indicator to blink and/or the MIL to come on. The transmission may not shift normally during fail-safe operation. Do not run the test driving diagnosis when the MIL is ON, or the D indicator is blinking.

PCMA/T Control System Electrical Connections



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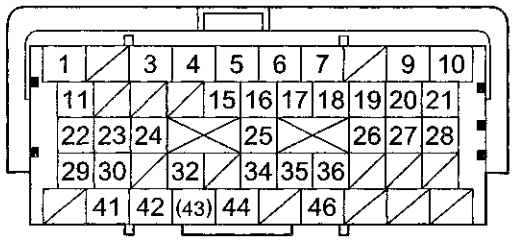
System Description (cont'd)

Electronic Control System (cont'd)

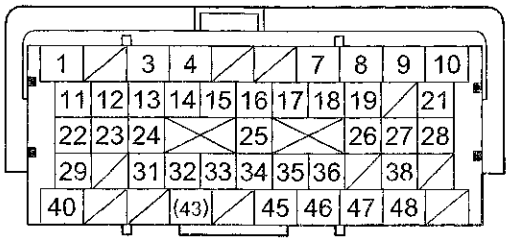
PCM A/T Control System Inputs and Outputs at PCM Connector A □ (49P)



Terminal side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Signal
A1	RED	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valves	With ignition switch ON (II): battery voltage
A3	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends and receives communication signal	With ignition switch ON (II): pulses (about 2.5 V)
A4	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends and receives communication signal	With ignition switch ON (II): pulses (about 2.5V)
A7	RED/BLK	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch LOCK (0): battery voltage
A9	YEL/BLK	IGP (POWER SOURCE)	Power source for PCM circuit	With ignition switch ON (II): battery voltage
A28	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P, brake pedal pressed, and accelerator pedal released: about 0 V
A32	ORN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted using HDS: about 0 V With the service check signal opened: about 5.0 V
A42	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage

PCMA/T Control System Inputs and Outputs at PCM Connector B △ (49P)



Terminal side of female terminals

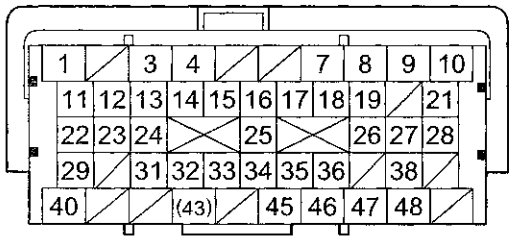
Terminal Number	Wire Color	Terminal Name	Description	Signal
B1	BLK	PG2 (PCM GROUND)	Ground circuit for PCM	Less than 0.2 V at all times
B8	BLU/RED	OP2SW (TRANSMISSION FLUID PRESSURE SWITCH A (2ND CLUTCH))	Detects transmission fluid pressure switch A (2nd clutch) signal	With ignition switch ON (II): • Without 2nd clutch pressure: about 5.0 V • With 2nd clutch pressure: about 0 V
B9	BLU/WHT	OP3SW (TRANSMISSION FLUID PRESSURE SWITCH B (3RD CLUTCH))	Detects transmission fluid pressure switch B (3rd clutch) signal	With ignition switch ON (II): • Without 3rd clutch pressure: about 5.0 V • With 3rd clutch pressure: about 0 V
B10	BLK	PG1 (PCM GROUND)	Ground circuit for PCM	Less than 0.2 V at all times
B11	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R, D (in 1st, 4th, and 5th gears), D3 (in 1st gear), and 1: battery voltage With engine running in P, N, D and D3 (in 2nd and 3rd gears), and 2: about 0 V
B12	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D and D3 (in 1st and 2nd gears), 2, and 1: battery voltage With engine running in D (3rd, 4th, and 5th gears) and D3 (3rd gear): about 0 V
B13	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH N POSITION)	Detects transmission range switch N position signal	In N: about 0 V In any position other than N: more than 5.0 V
B14	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH P POSITION)	Detects transmission range switch P position signal	In P: about 0 V In any position other than P: more than 5.0 V
B15	WHT	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: more than 5.0 V
B16	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3 POSITION)	Detects transmission range switch D3 position signal	In D3: about 0 V In any position other than D3: battery voltage
B17	GRN/RED	ATP2-1 (TRANSMISSION RANGE SWITCH 2-1 POSITION)	Detects transmission range switch 2 and 1 position signals	In 2 and 1: about 0 V In any position other than 2 and 1: battery voltage
B18	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V or about 5.0 V With engine running in N: about 2.5 V (pulses)
B19	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V With ignition switch LOCK (0): about 0 V

(cont'd)

System Description (cont'd)

Electronic Control System (cont'd)

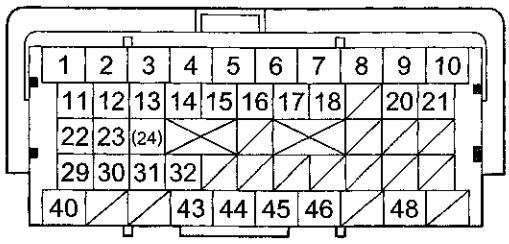
PCMA/T Control System Inputs and Outputs at PCM Connector B △ (49P)



Terminal side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Signal
B21	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in N, D (in 1st, 3rd, and 5th gears), D3 (in 1st and 3rd gears), and 1: battery voltage With engine running in P, R, D (in 2nd and 4th gears), D3 (in 2nd gear), and 2: about 0 V
B22	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D position signal	In D: about 0 V In any position other than D: battery voltage
B23	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch R position signal	In R: about 0 V In any position other than R: battery voltage
B25	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in P and R: battery voltage With engine running in N, D and D3 (in 1st gear), 2, and 1: about 0 V
B26	BLU/YEL	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): current controlled
B27	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in D (in 2nd and 5th gears), D3 (in 2nd gear), and 2: battery voltage With engine running in P, R, N, D (in 1st, 3rd, and 4th gears), and D3 (in 1st and 3rd gears): about 0 V
B28	RED/YEL	TATF (ATF TEMPERATURE SENSOR)	Detects ATF temperature sensor signal	With ignition switch ON (II): about 0.2—4.8 V depending on ATF temperature With ignition switch LOCK (0): about 0 V
B29	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch D, D3, and 2 position signals	In D, D3, and 2: about 0 V In any position other than D, D3, and 2: battery voltage
B34	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
B38	BLK/WHT	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II): about 0 V or about 5.0 V With driving: about 2.5 V (pulses)
B40	BRN	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): current controlled
B48	RED/BLK	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): current controlled

PCMA/T Control System Inputs and Outputs at PCM Connector C ○ (49P)



Terminal side of female terminals

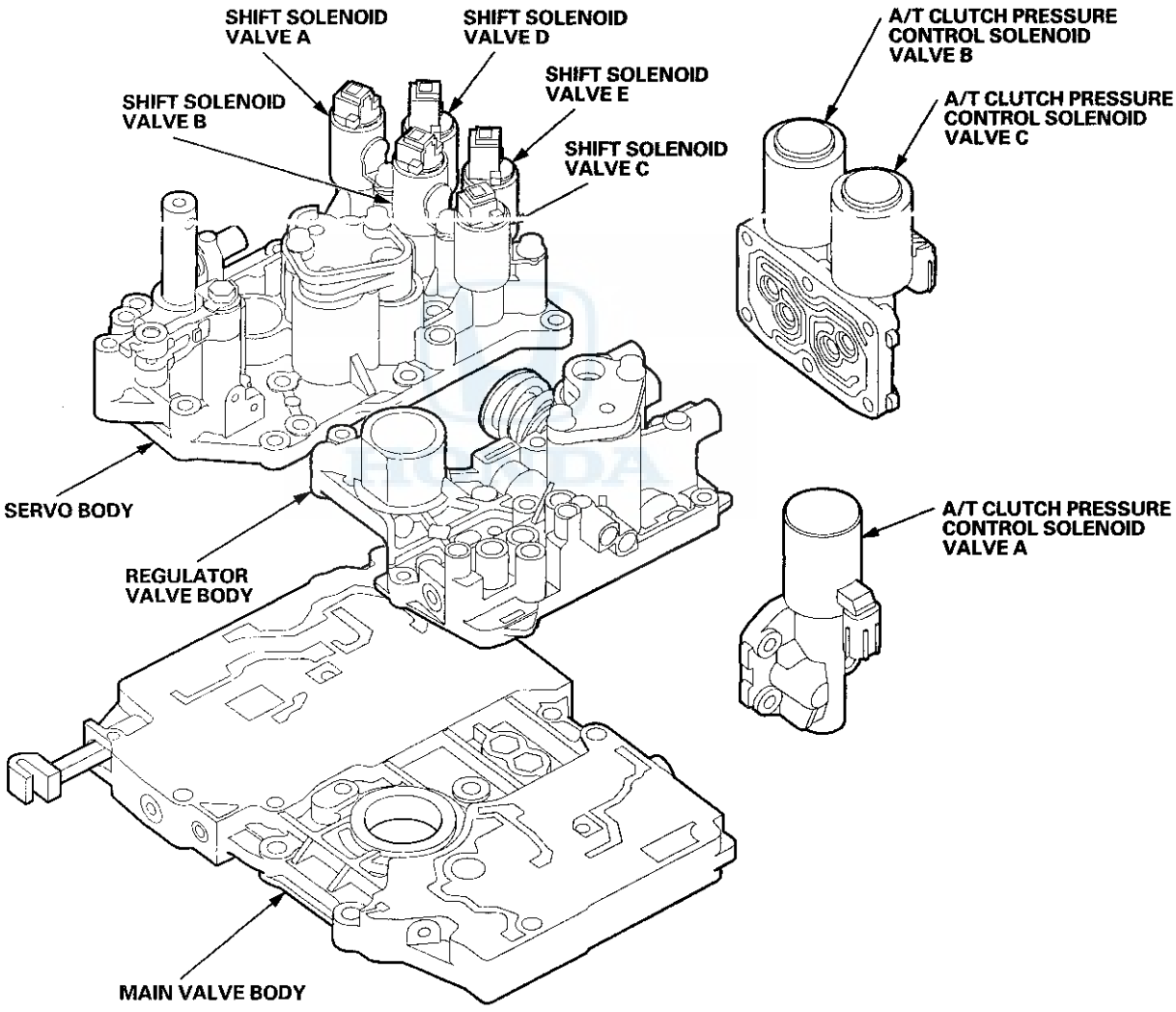
Terminal Number	Wire Color	Terminal Name	Description	Signal
C10	BLK/RED	IG1 (IGNITION SIGNAL)	Detects ignition switch signal	With ignition switch ON (II): battery voltage With ignition switch LOCK (0): about 0 V
C13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5.0 V With ignition switch LOCK (0): about 0 V
C14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 0.2 V at all times
C44	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM	Less than 0.2 V at all times
C48	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM	Less than 0.2 V at all times

System Description (cont'd)

Hydraulic Controls

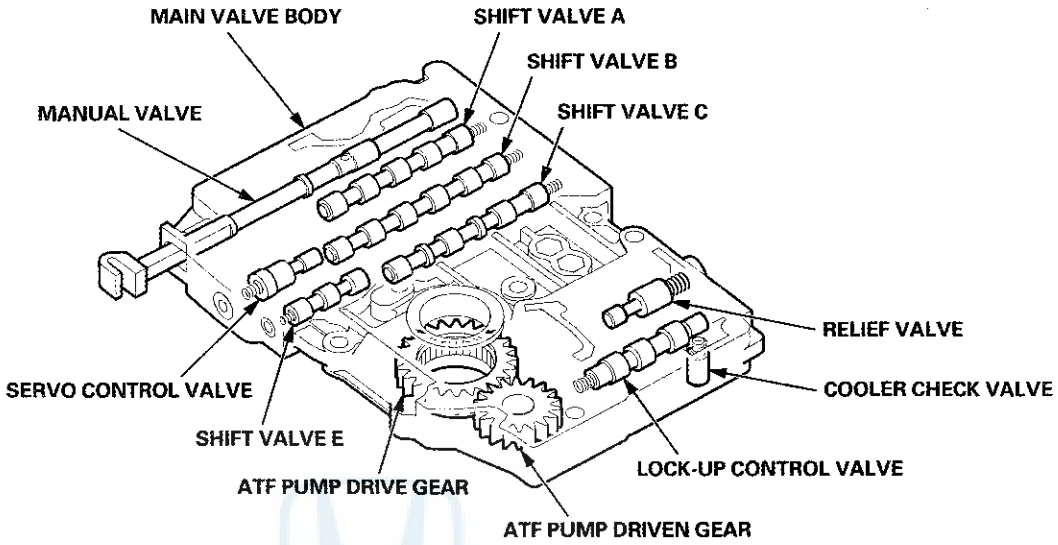
Valve Bodies

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



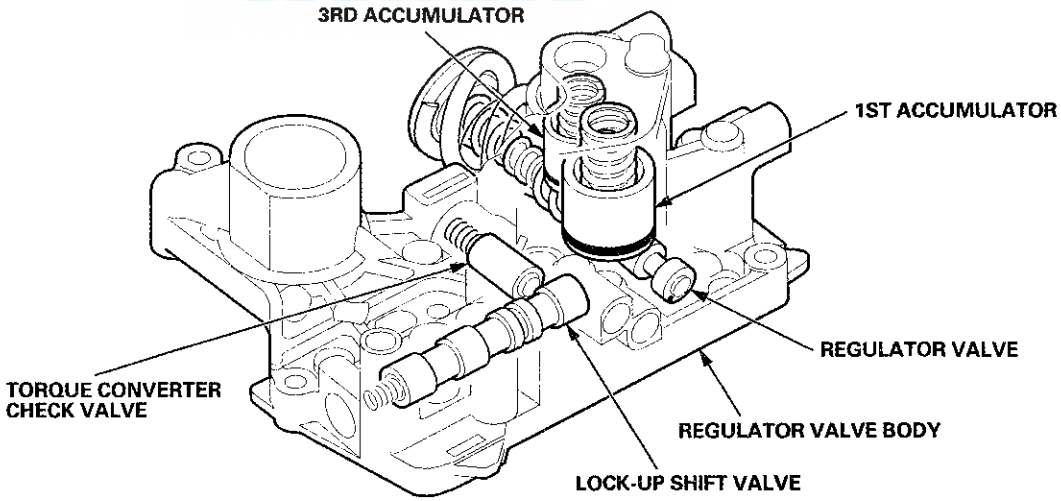
Main Valve Body

The main valve body contains the manual valve, 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.



Regulator Valve Body

The regulator valve body contains the regulator valve, the torque converter check valve, the lock-up shift valve, and the 1st and 3rd accumulators.



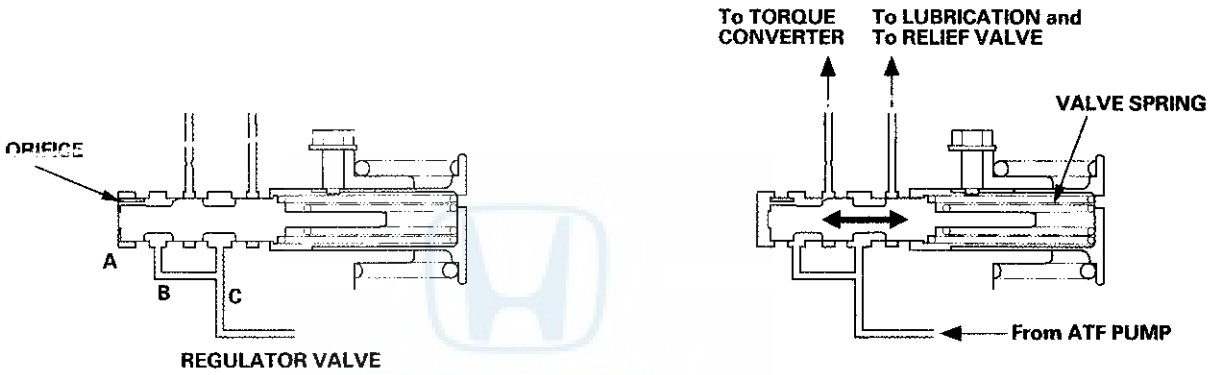
(cont'd)

System Description (cont'd)

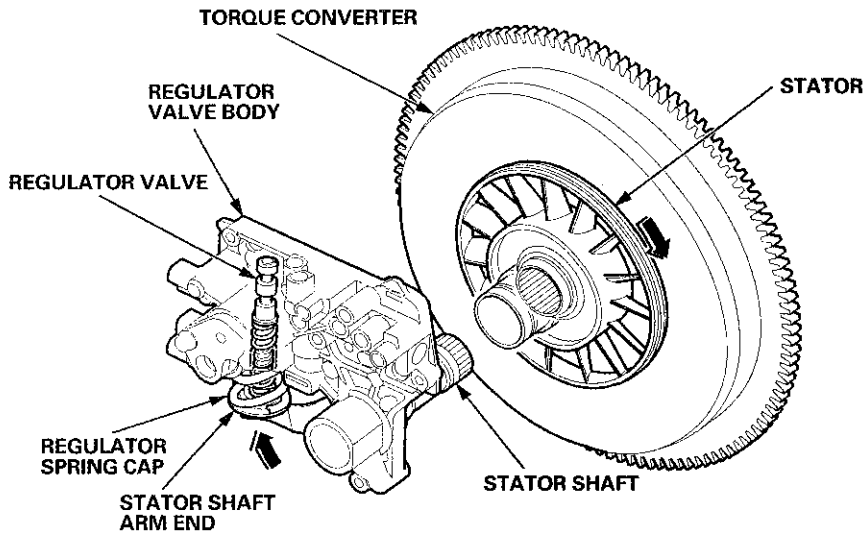
Hydraulic Controls (cont'd)

Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also providing fluid to the lubrication system and the torque converter. The fluid from the ATF pump flows through B and C. Fluid entering from B flows through the valve orifice to the A cavity. This pressure in the A cavity pushes the regulator valve toward the valve spring 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 returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from C through torque converter also changes. This operation is continuous, maintaining the line pressure.

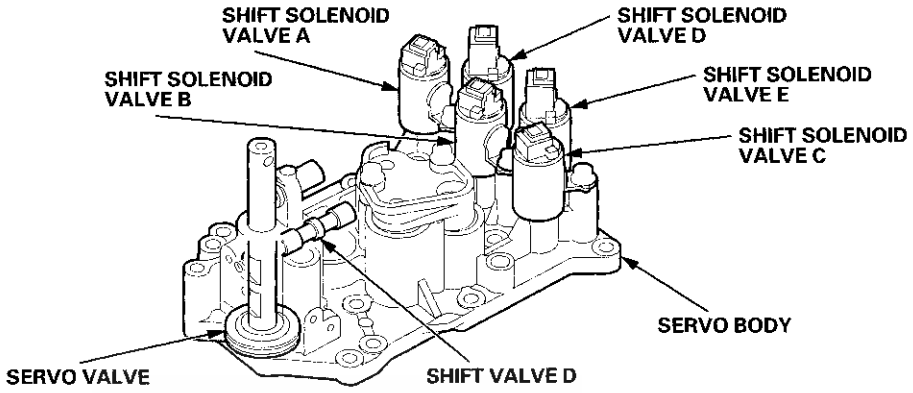


Increases in hydraulic pressure according to torque are regulated by the regulator valve using stator torque reaction. The stator shaft is splined with the stator in the torque converter, and the stator shaft arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (torque converter range), stator torque reaction acts on the stator shaft, and the stator shaft 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.



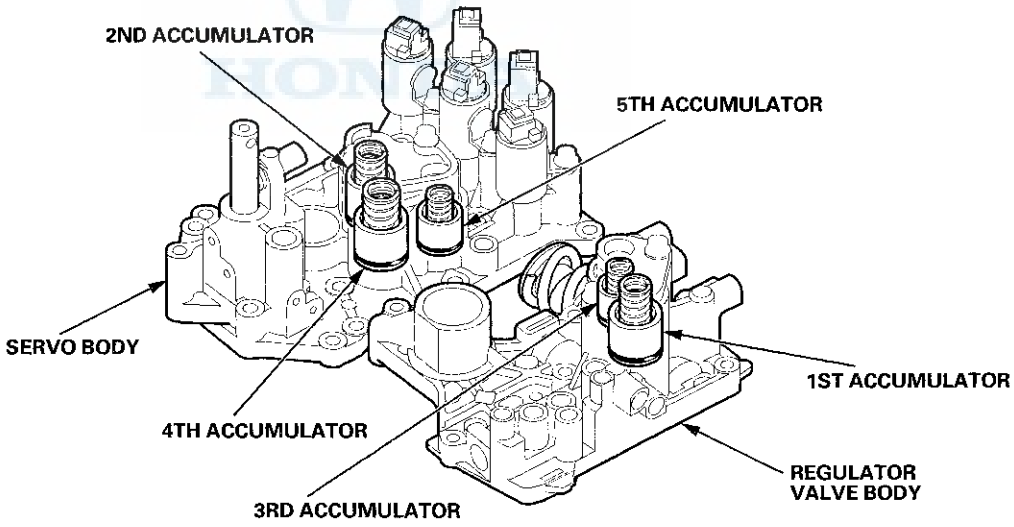
Servo Body

The servo body contains the servo valve, shift valve D, the accumulators for 2nd, 4th, and 5th, and shift solenoid valves A, B, C, D, and E.



Accumulator

The accumulators are located in the regulator valve body and the servo body. The regulator valve body contains the 1st and 3rd accumulators, and the servo body contains the 2nd, 4th, and 5th accumulators.



System Description (cont'd)

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 is 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 turns 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 by the PCM, line pressure changes to shift solenoid valve pressure at the shift solenoid valve, then the shift 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 applies the pressure to the clutches to engage smoothly. The clutches receive optimum clutch pressure which is regulated by the A/T clutch pressure control solenoid valves for comfortable driving and shifting under all conditions.

Hydraulic pressure at the port for use in the hydraulic circuit

Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure
1	Line	SB	Shift solenoid valve B
3	Line	SC	Shift solenoid valve C
3'	Line	SD	Shift solenoid valve D
4	Line	SE	Shift solenoid valve E
4'	Line	10	1st clutch
4''	Line	20	2nd clutch
7	Line	30	3rd clutch
1A	Line or A/T clutch pressure control solenoid valve A	40	4th clutch
1B	Line	50	5th clutch
3A	Line	55	A/T clutch pressure control solenoid valve A
3B	Line	55'	A/T clutch pressure control solenoid valve A
3C	Line	56	A/T clutch pressure control solenoid valve B
5A	Line	57	A/T clutch pressure control solenoid valve C
5B	Line	90	Torque converter
5C	Line	91	Torque converter
5D	Line	92	Torque converter
5E	Line or A/T clutch pressure control solenoid valve B	93	ATF cooler
5F	Line or A/T clutch pressure control solenoid valve A or B	94	Torque converter
5G	A/T clutch pressure control solenoid valve B	95	Lubrication
5H	A/T clutch pressure control solenoid valve C	96	Torque converter
5J	A/T clutch pressure control solenoid valve C	97	Torque converter
5K	A/T clutch pressure control solenoid valve C	99	Suction
5L	A/T clutch pressure control solenoid valve C	X	Drain
5N	A/T clutch pressure control solenoid valve C	HX	High position drain
SA	Shift solenoid valve A	AX	Air drain

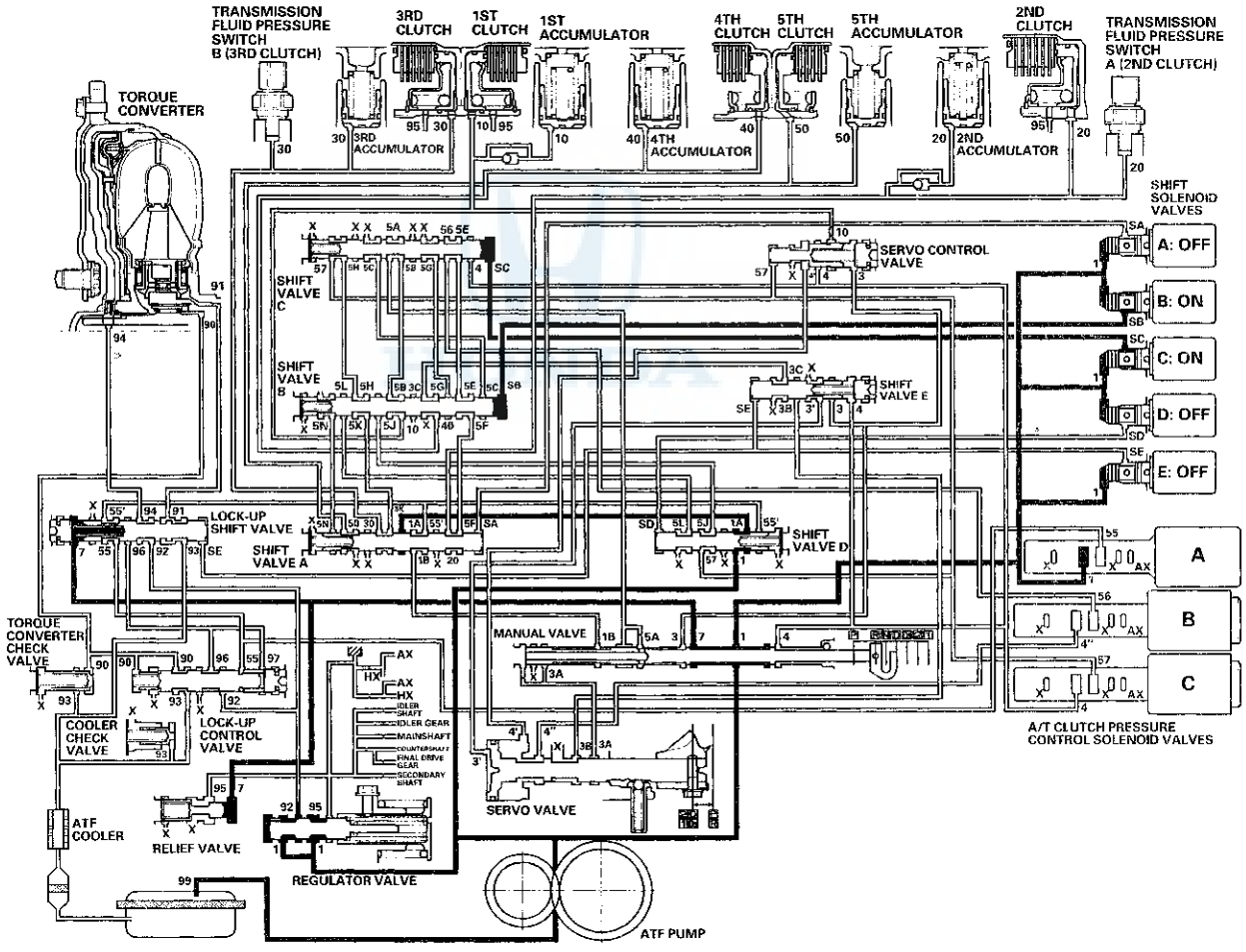
N Position

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

- Shift solenoid valve A: OFF, and shift valve A remains on the right side
- Shift solenoid valve B: ON, and shift valve B moves to the left side
- Shift solenoid valve C: ON, and shift valve C moves to the left side
- Shift solenoid valve D: OFF, and shift valve D remains on the left side
- Shift solenoid valve E: OFF, and shift valve E remains on the left side

Line pressure (1) flows to the shift solenoid valves and A/T clutch pressure control solenoid valve A. Under this condition, hydraulic pressure is not applied to the clutches.

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



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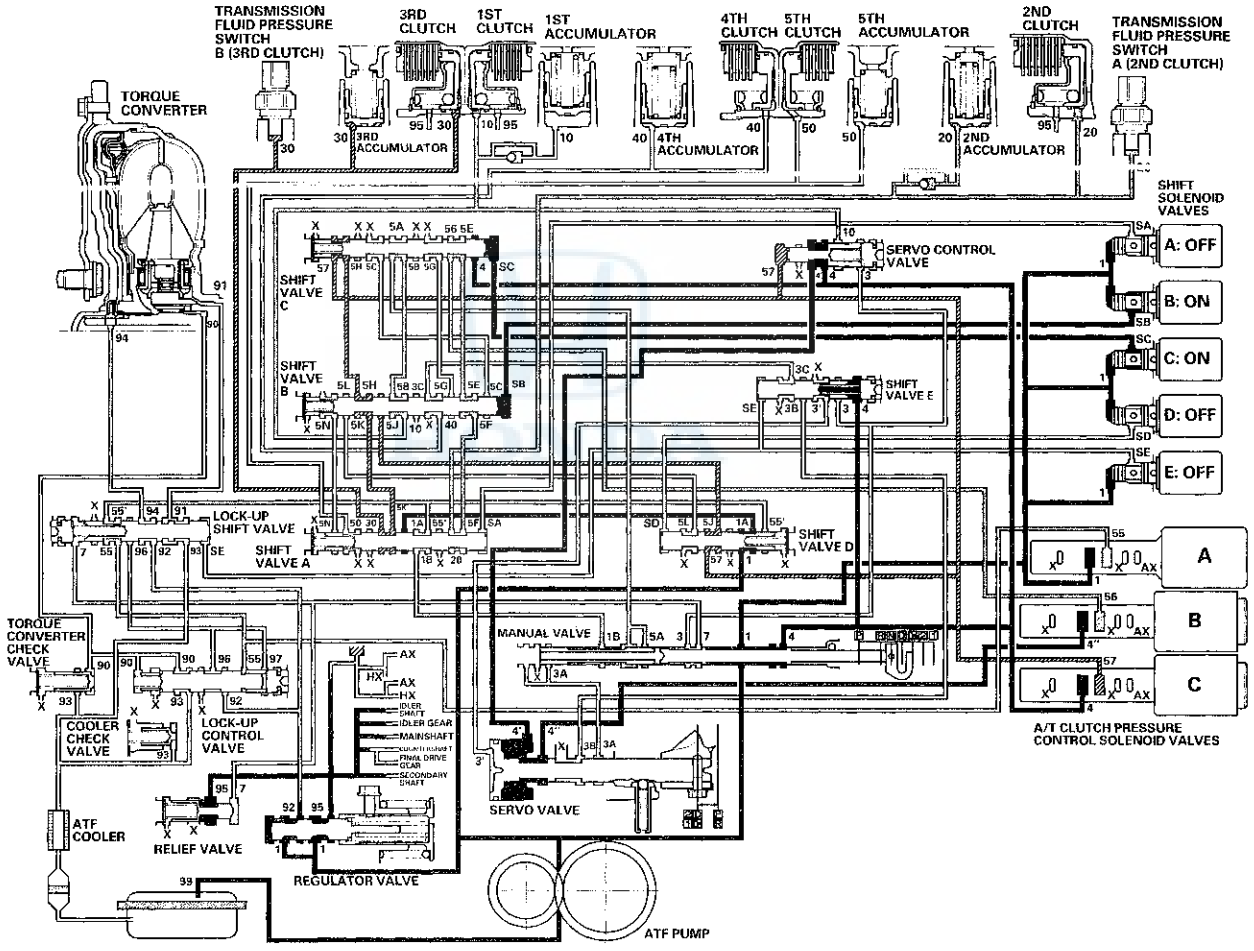
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: 1st gear shifting from N position

The shift solenoid valves remain the same as in N when shifting to D from N. The manual valve is moved to D, and uncovers the line pressure port (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 remain 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. The 1st clutch is engaged gently when shifting to D from N.

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



D Position: Driving in 1st gear

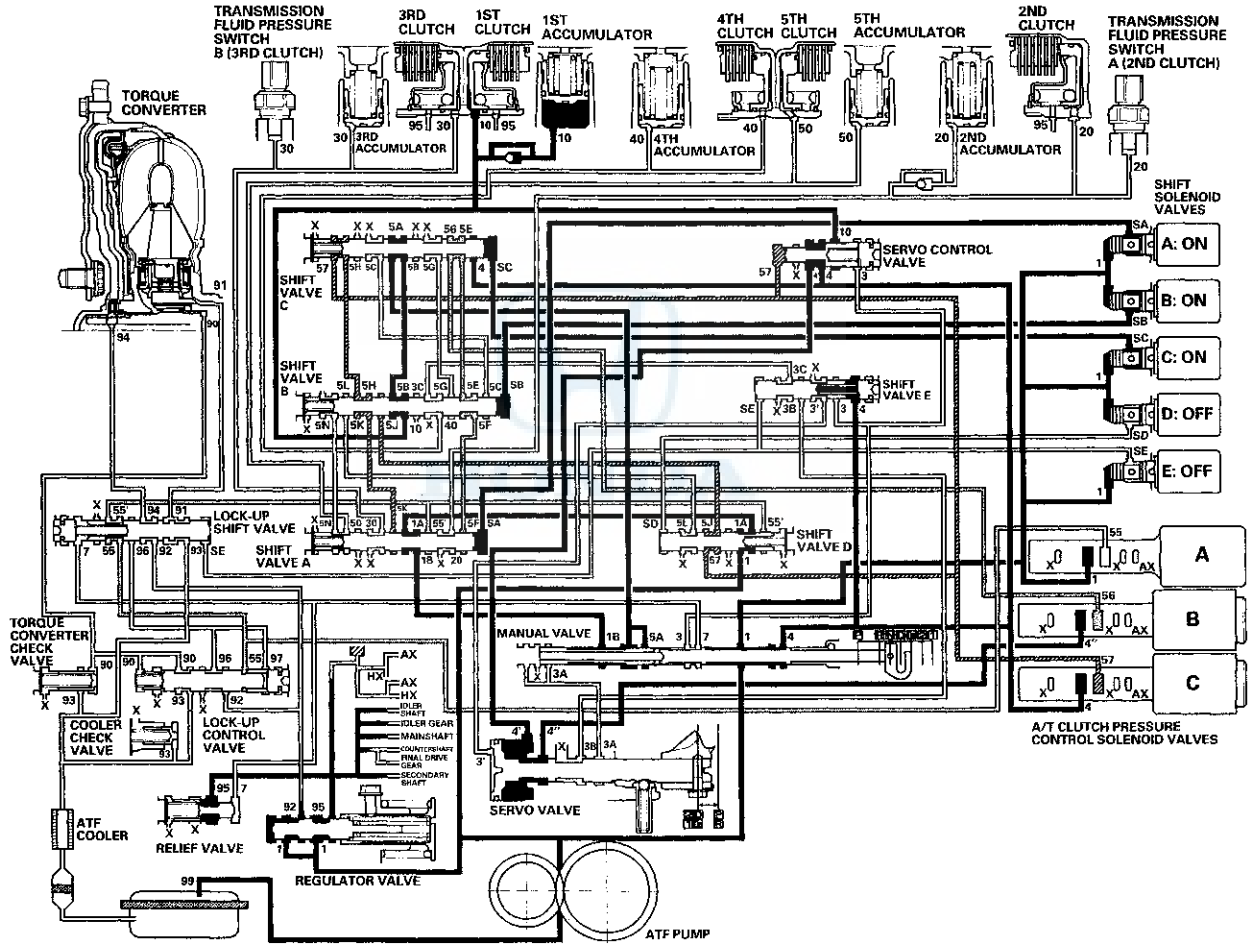
The PCM turns shift solenoid valve A ON, B and C remain ON, and D and E remain OFF. Shift solenoid valve A pressure (SA) is applied to the right side of shift valve A. Shift valve A is moved to the left side to uncover the line pressure port leading to the 1st clutch, and to cover the A/T clutch pressure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

Fluid flows to the 1st clutch by way of:

Line pressure (1) → Shift valve D→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

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.



(cont'd)

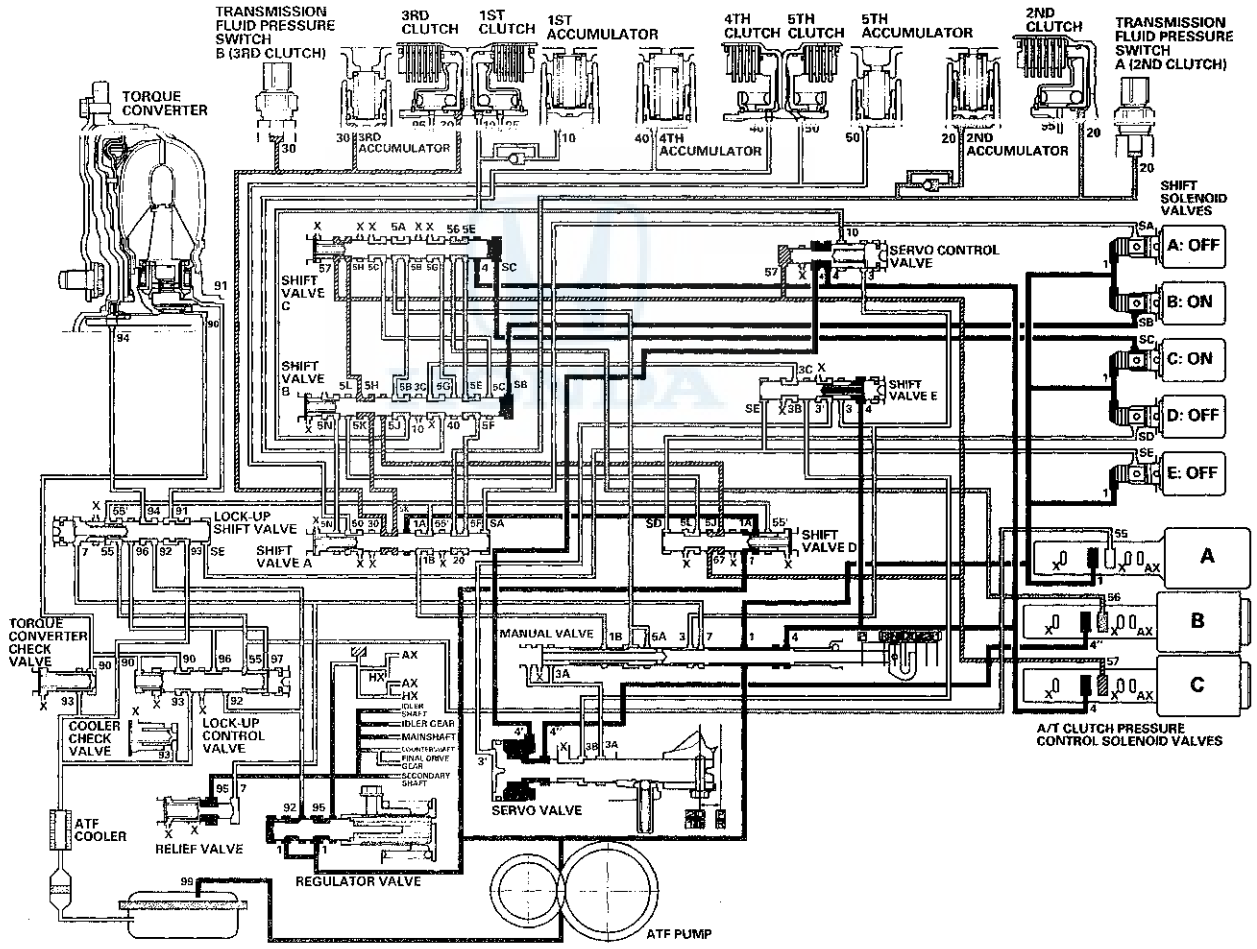
System Description (cont'd)

Hydraulic Flow (cont'd)

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

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A OFF, B and C remain ON, and D and E remain OFF. Shift solenoid valve A pressure (SA) in the right side of shift valve A is released. Shift valve A moves to the right side uncovering the A/T clutch pressure control solenoid valve pressure port leading to the 1st and 2nd clutches. The PCM controls the A/T clutch pressure control solenoid valves to regulate hydraulic pressure. A/T clutch pressure control solenoid valve A pressure (55) changes to 1st clutch pressure (10) at shift valve B, and A/T clutch pressure control solenoid valve B pressure (56) changes to 2nd clutch pressure (20) at shift valve A. The 1st and 2nd clutches are engaged gently.

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



D Position: Driving in 2nd gear

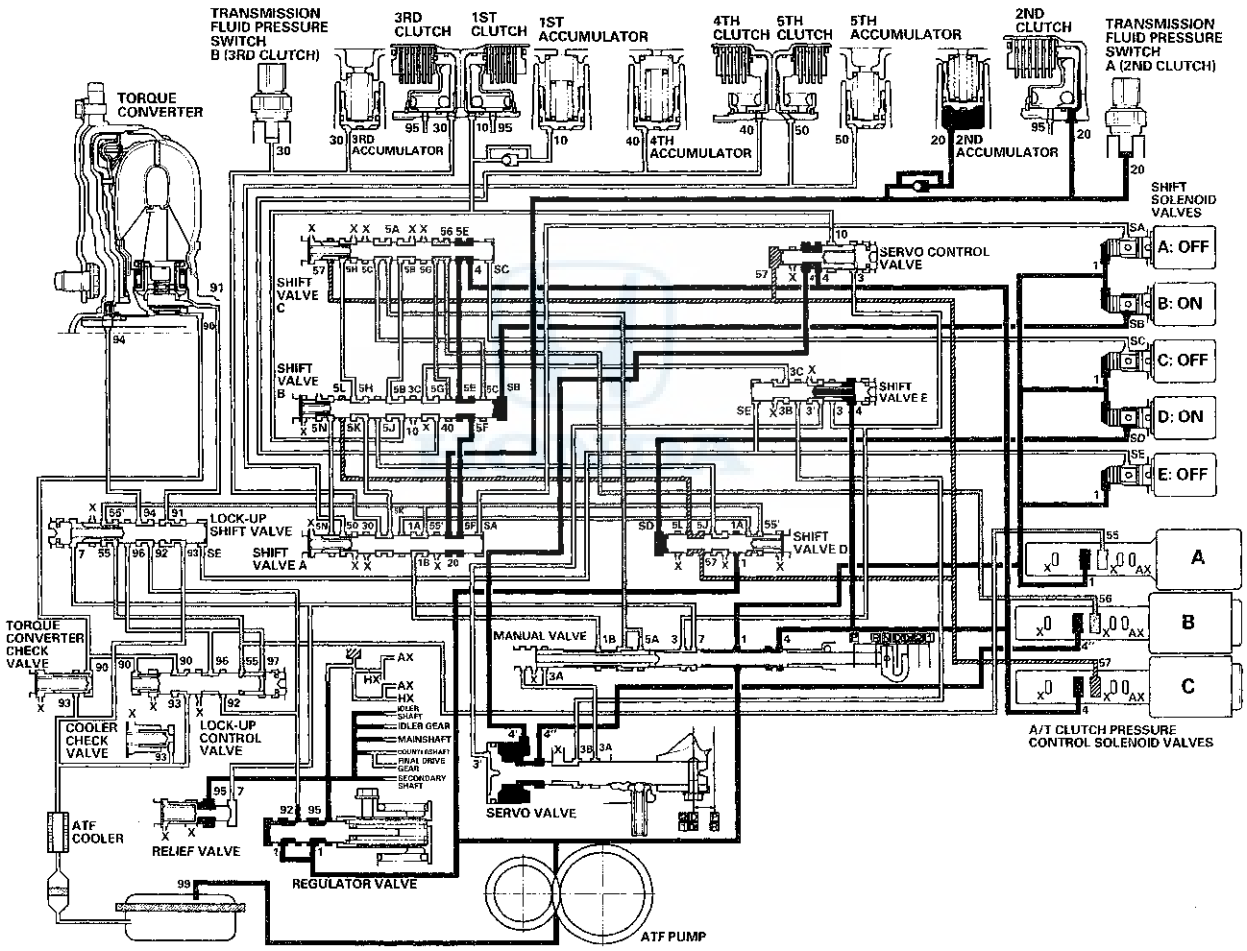
The PCM turns shift solenoid valves C OFF, D ON, A and E remain OFF, and B remains ON. Shift solenoid valve C pressure (SC) in the right side of shift valve C is released. Shift valve C moves to the right side to switch the ports. This movement covers the ports to block the A/T clutch pressure control solenoid valve pressure at shift valves C and A, and uncover 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

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.



(cont'd)

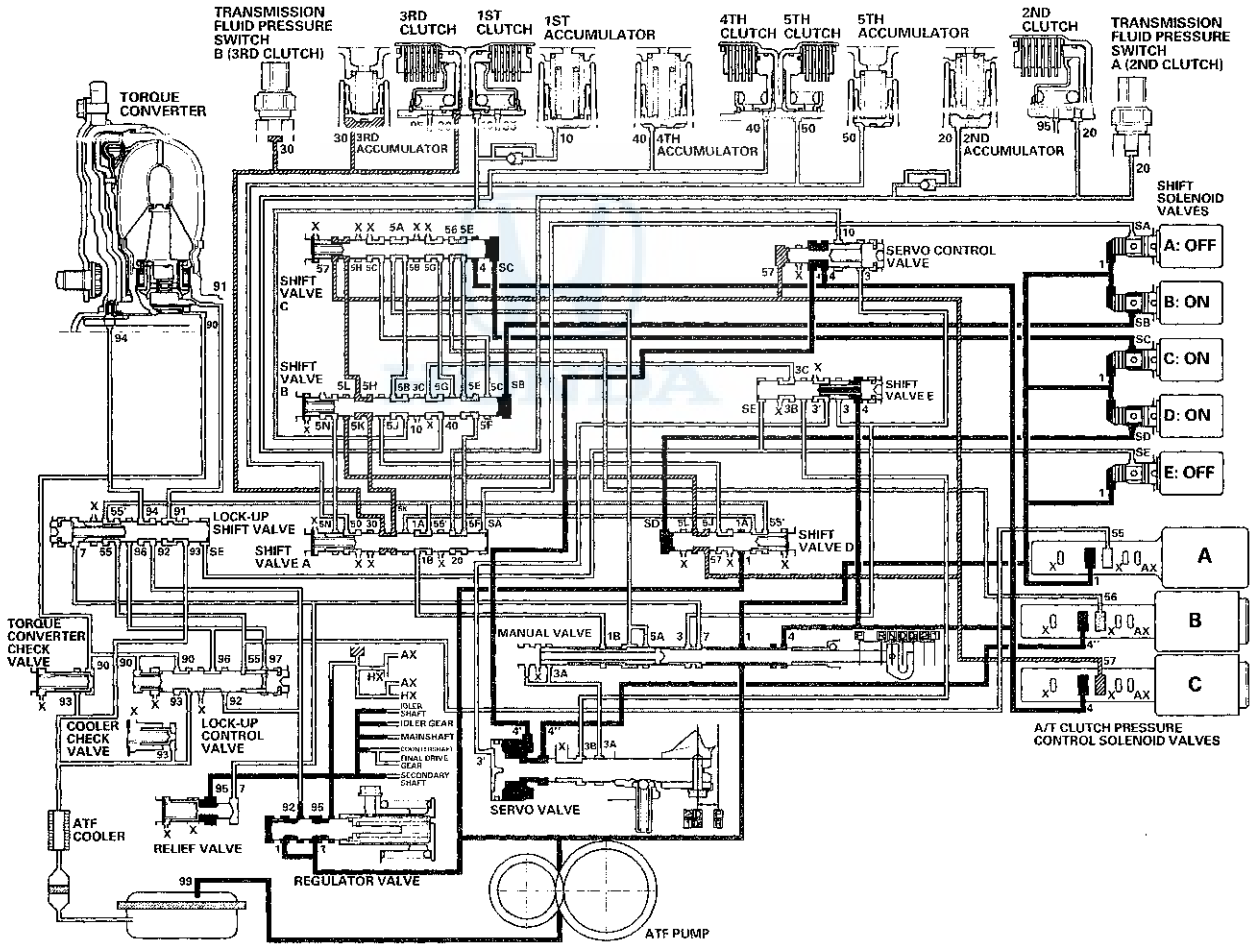
System Description (cont'd)

Hydraulic Flow (cont'd)

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

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C ON, A and E remain OFF, and B and D remain ON. Shift solenoid valve C pressure (SC) is applied to the right side of shift valve C. Shift valve C moves to the left side uncovering the A/T clutch pressure control solenoid valve pressure ports leading to the 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.

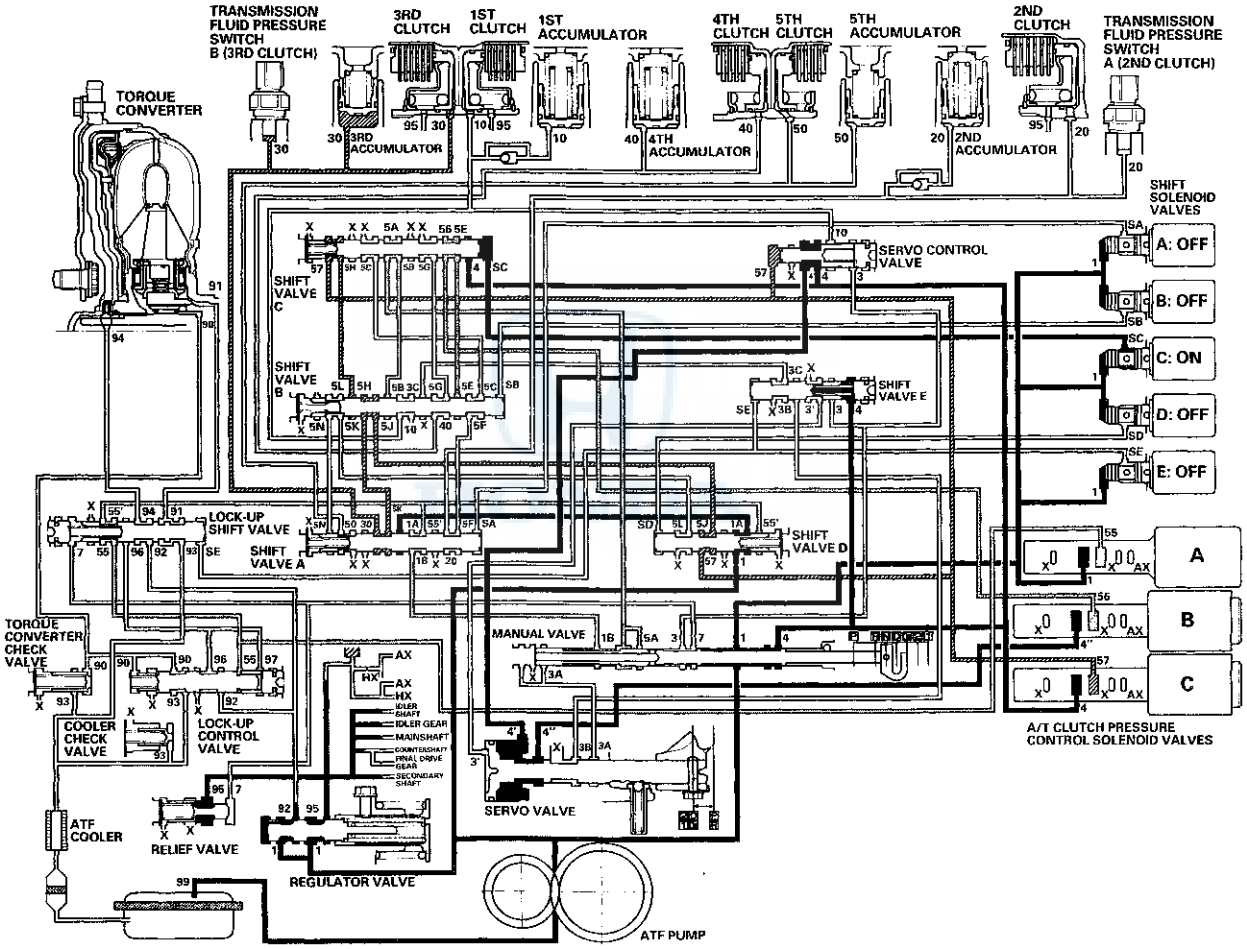


D Position: Driving in 3rd gear

The PCM turns shift solenoid valves B and D OFF, A and E remain OFF, and C remains ON. Shift solenoid valve B pressure (SB) in the right side of shift valve B is released, and shift valve B moves to the right side. Shift solenoid valve D pressure (SD) in the left side of shift valve D is released, and shift valve D is moved to the left side. This valve movement causes A/T clutch pressure control solenoid valve C pressure to be directed to the port leading to the 3rd clutch.

A/T clutch pressure control solenoid valve C pressure (57) changes to (5J) at shift solenoid valve D and 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.



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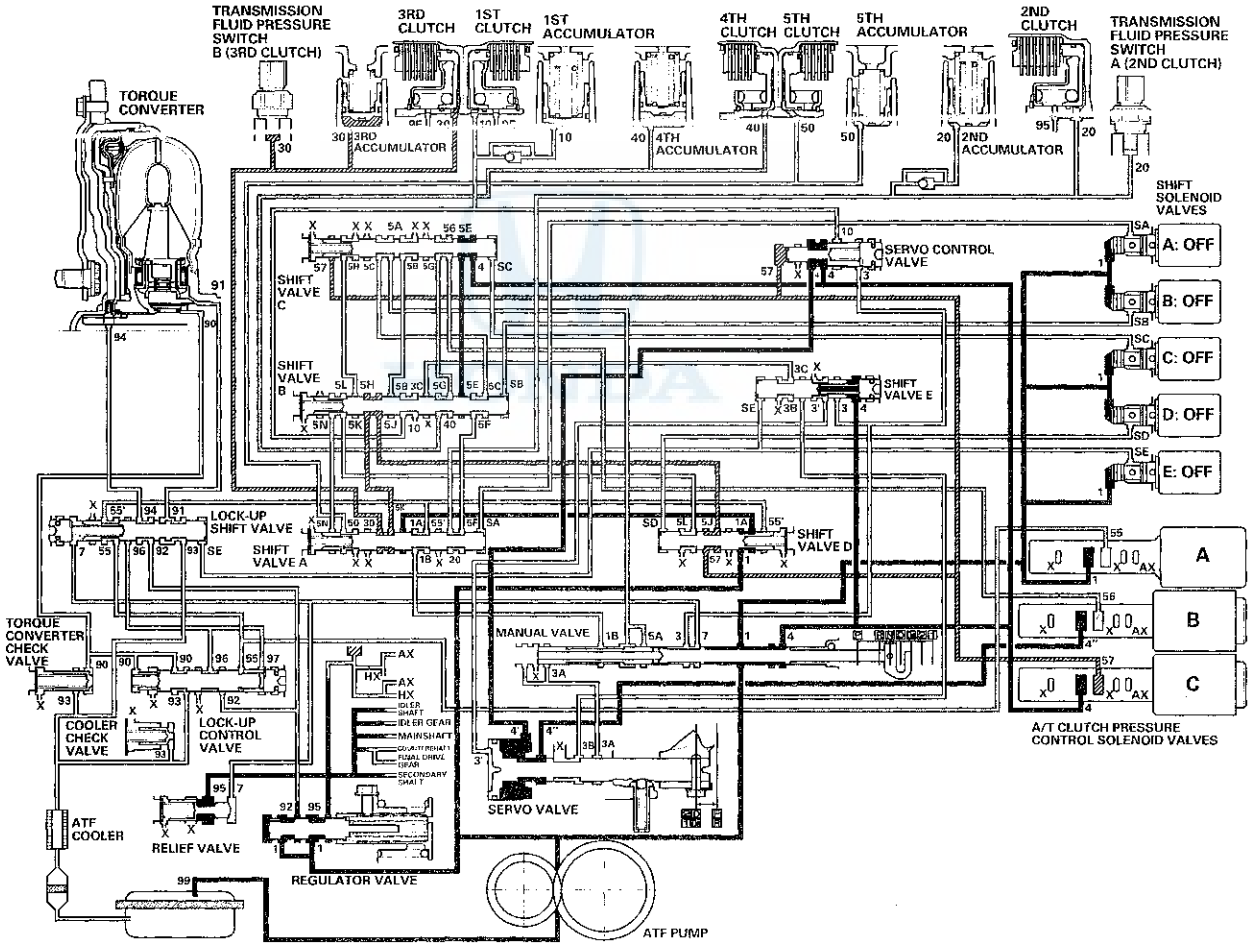
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C OFF, and A, B, D, and E remain 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 uncovering the A/T clutch pressure control solenoid valve B and C pressure ports leading to the 3rd 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 and 4th clutches are engaged gently.

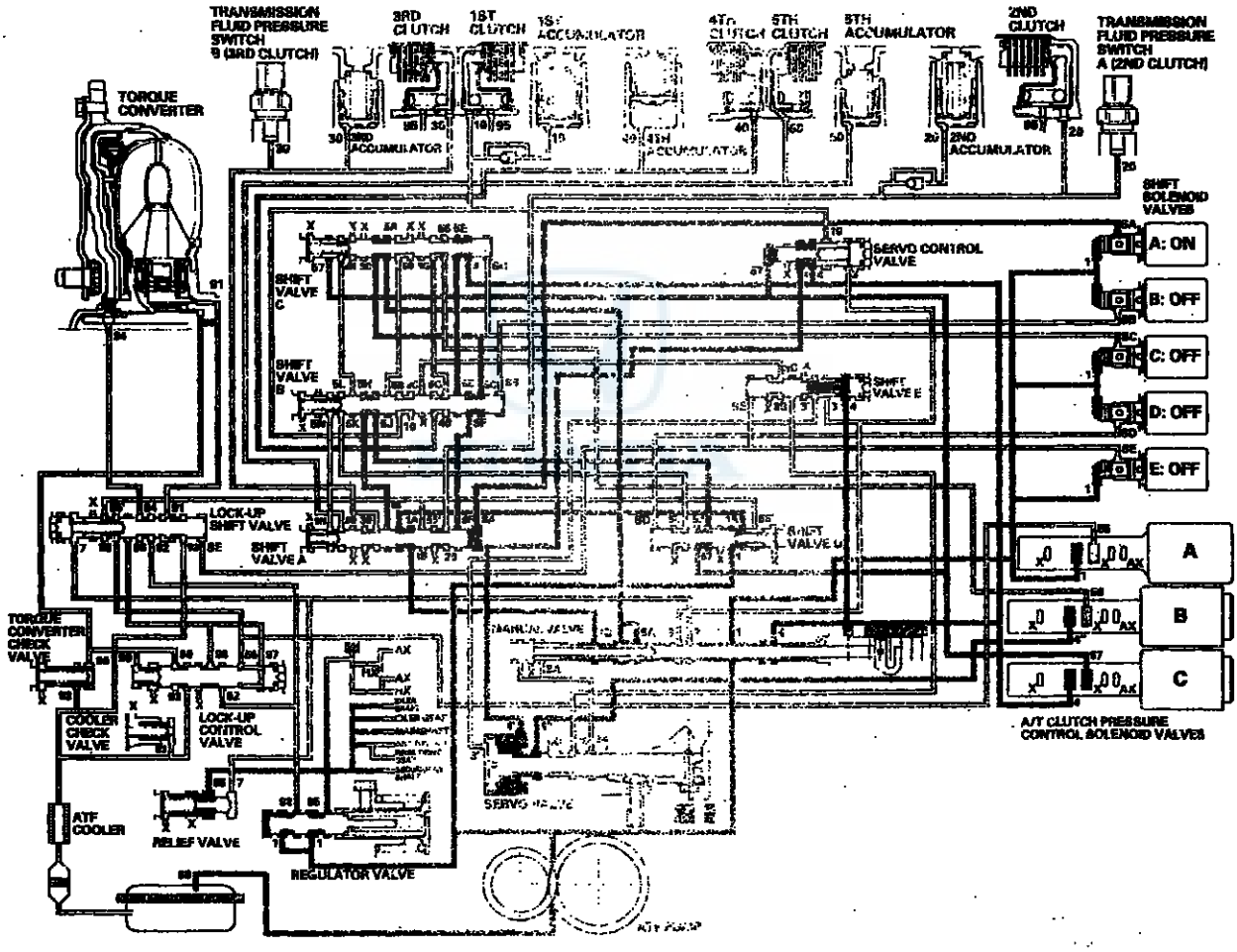
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



D Position: Driving in 4th gear

The PCM turns shift solenoid valve A ON, and B, C, D, and E remain 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 the 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. 4th clutch pressure (40) is held 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.



(cont'd)

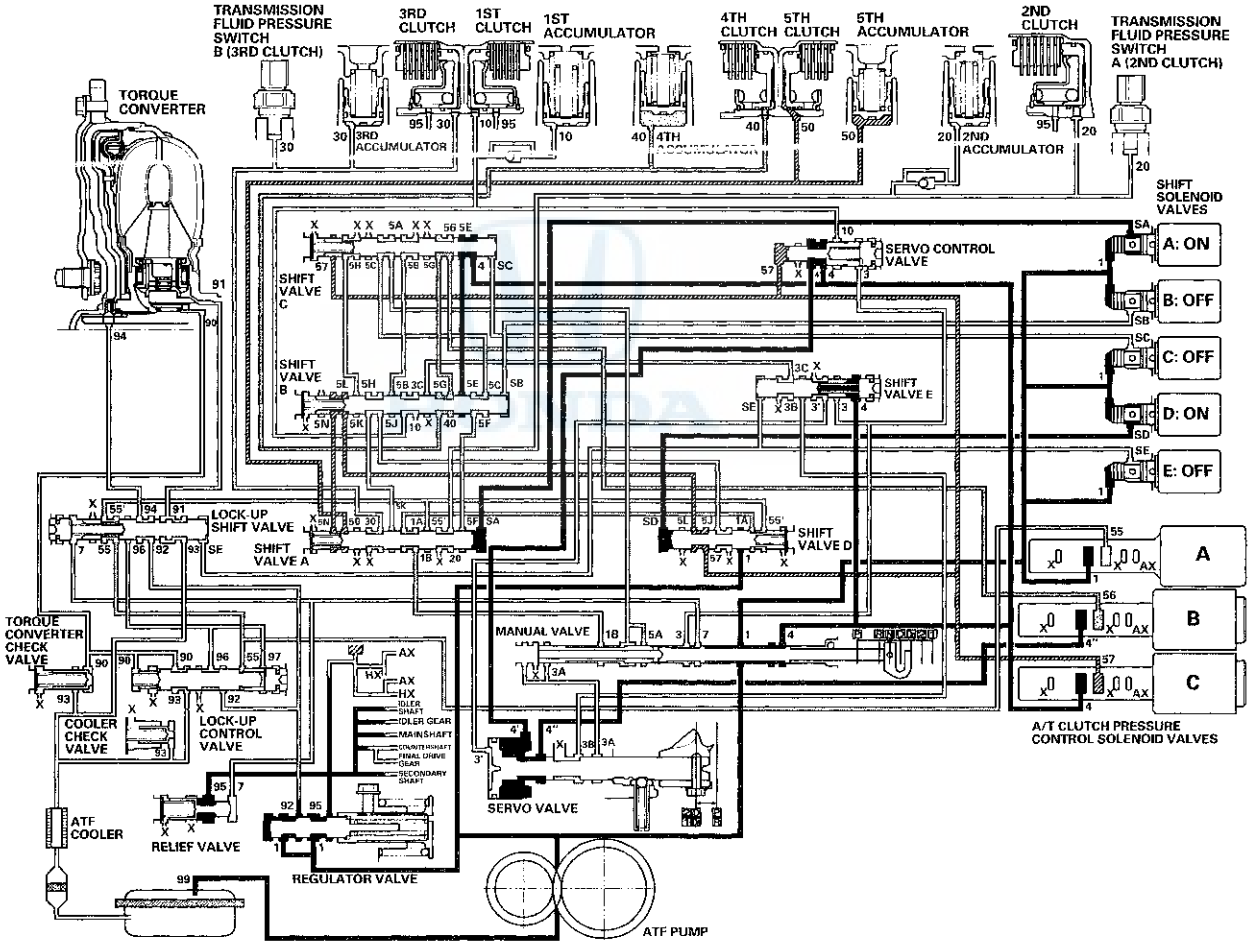
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve D ON, A remains ON, and B, C, and E remain OFF. Shift solenoid valve D pressure (SD) is applied to the left side of shift valve D. Shift valve D is moved to the right side uncovering the A/T clutch pressure control solenoid valve C pressure port leading to the 5th clutch. A/T clutch pressure control solenoid valve B pressure (56) changes to 4th clutch pressure (40) at shift valve B. A/T clutch pressure control solenoid valve C pressure (57) changes to (5L) at shift valve D and to (5N) at shift valve B, and becomes 5th clutch pressure (50) at shift valve A. The 4th and 5th clutches are engaged gently.

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

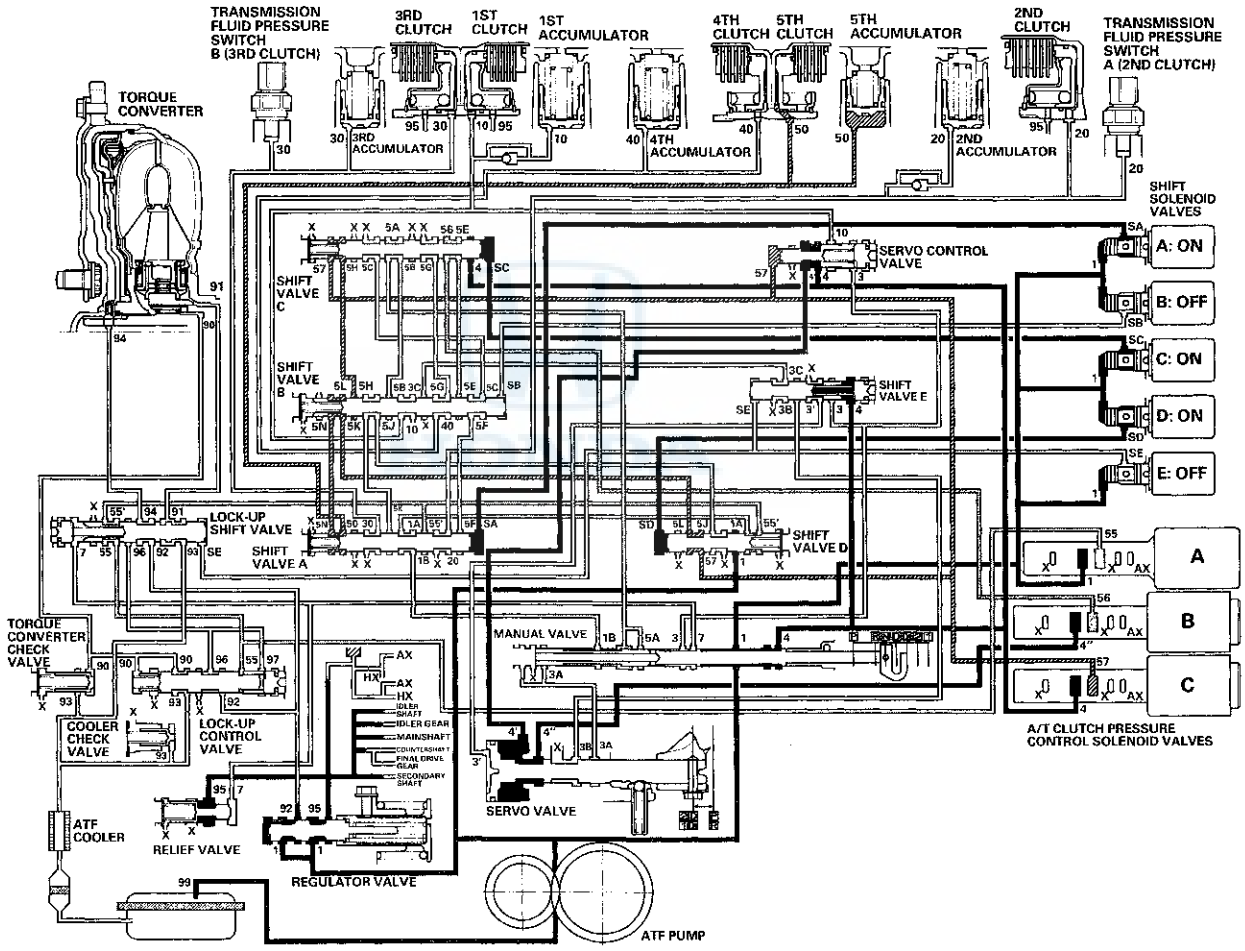


D Position: Driving in 5th gear

The PCM turns shift solenoid valve C ON, A and D remain ON, and B and E remain OFF. 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. This directs A/T clutch pressure control solenoid valve B pressure to shift valve B where it is blocked. The pressure in the 4th clutch is released through shift valve C.

5th clutch pressure (50) is held high by A/T clutch pressure control solenoid valve C, and the 5th clutch is engaged securely.

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



(cont'd)

System Description (cont'd)

Hydraulic Flow (cont'd)

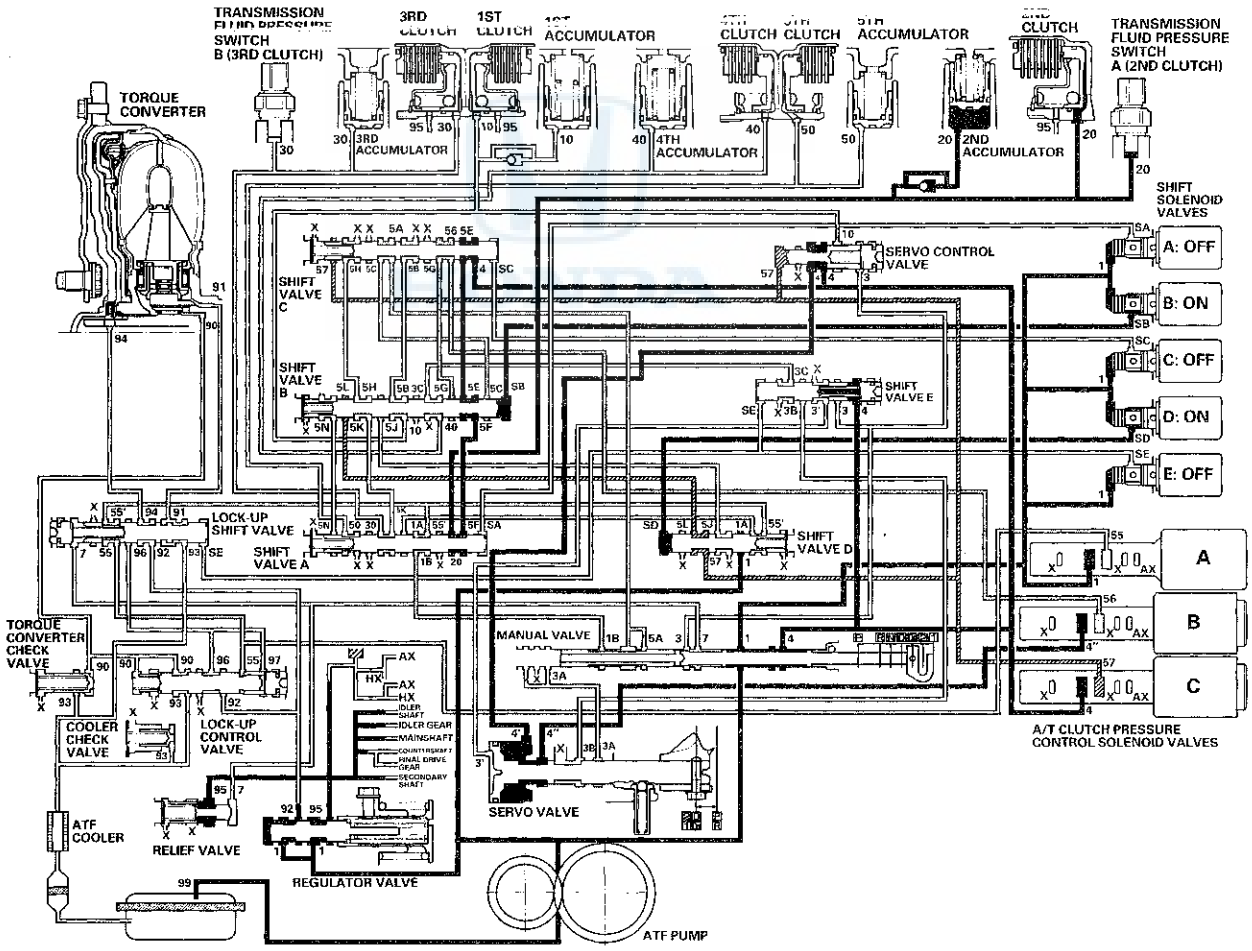
2 Position

The PCM turns the shift solenoid valves OFF and ON. The conditions of the shift solenoid valves and the positions of the shift valves are as follows:

- Shift solenoid valve A: OFF, and shift valve A remains on the in right side
- Shift solenoid valve B: ON, and shift valve B moves to the left side
- Shift solenoid valve C: OFF, and shift valve C remains on the in right side
- Shift solenoid valve D: ON, and shift valve D moves to the right side
- Shift solenoid valve E: OFF, and shift valve E remains on the in left side

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



1 Position

The PCM turns the shift solenoid valves OFF and ON. The conditions of the shift solenoid valves and the positions of the shift valves are as follows:

- Shift solenoid valve A: ON, and shift valve A moves to the left side
- Shift solenoid valve B: ON, and shift valve B moves to the left side
- Shift solenoid valve C: ON, and shift valve C moves to the left side
- Shift solenoid valve D: OFF, and shift valve D remains on the in left side
- Shift solenoid valve E: OFF, and shift valve E remains on the in left side

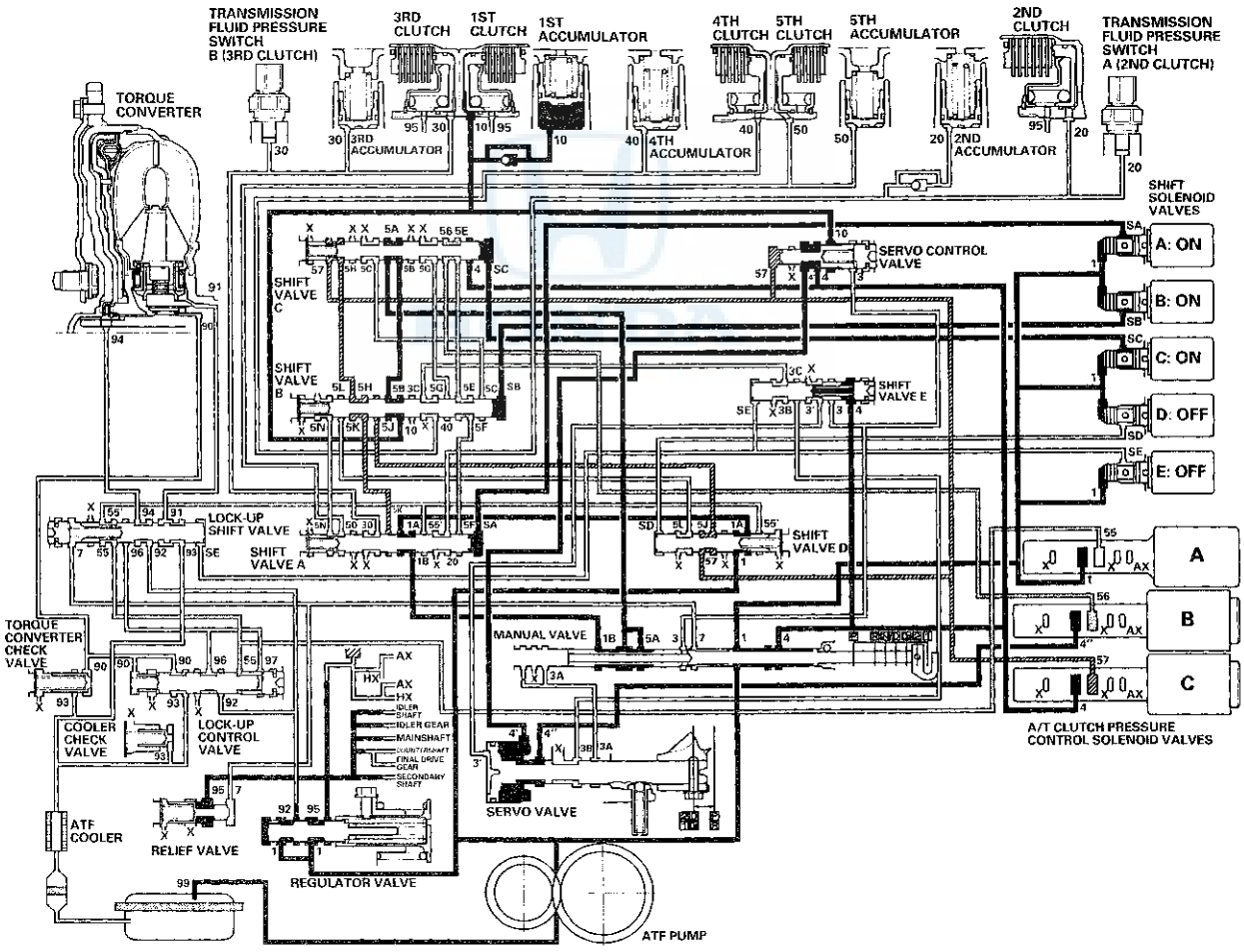
Line pressure (1) becomes 1st clutch pressure (10) at shift valve B.

Fluid flows to 1st clutch by way of:

Line Pressure (1) → Shift Valve D — 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

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.



(cont'd)

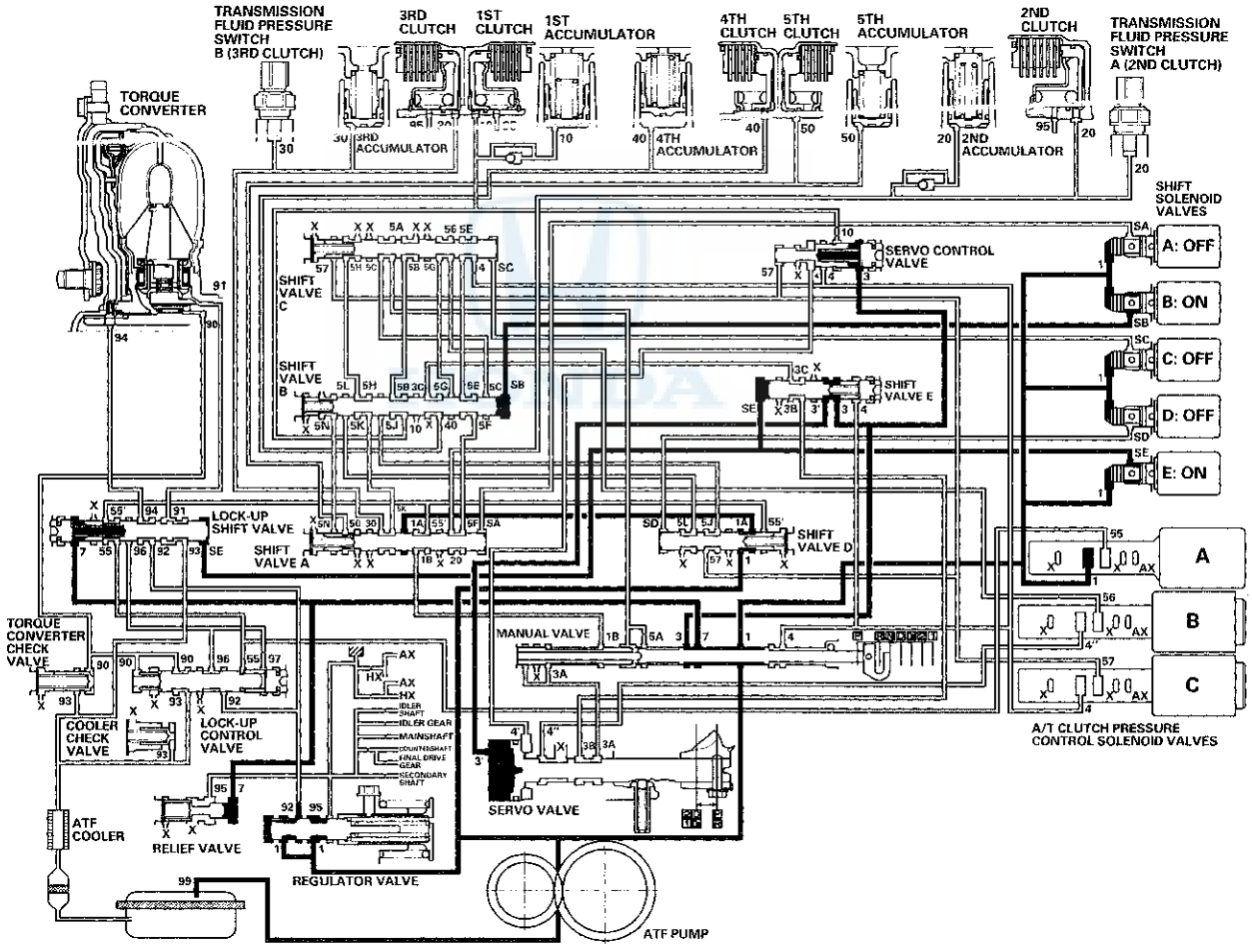
System Description (cont'd)

Hydraulic Flow (cont'd)

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

When shifting to R, the PCM turns shift solenoid valves B and E ON, and A, C, and D are turned OFF. Shift solenoid valve B pressure (SB) is applied to the right side of shift valve B, and shift valve B is moved to the 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 the reverse range position. Movement of shift valves B and E, and the servo valve creates 4th clutch line pressure between the 4th clutch and A/T clutch pressure control solenoid valve A. 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.



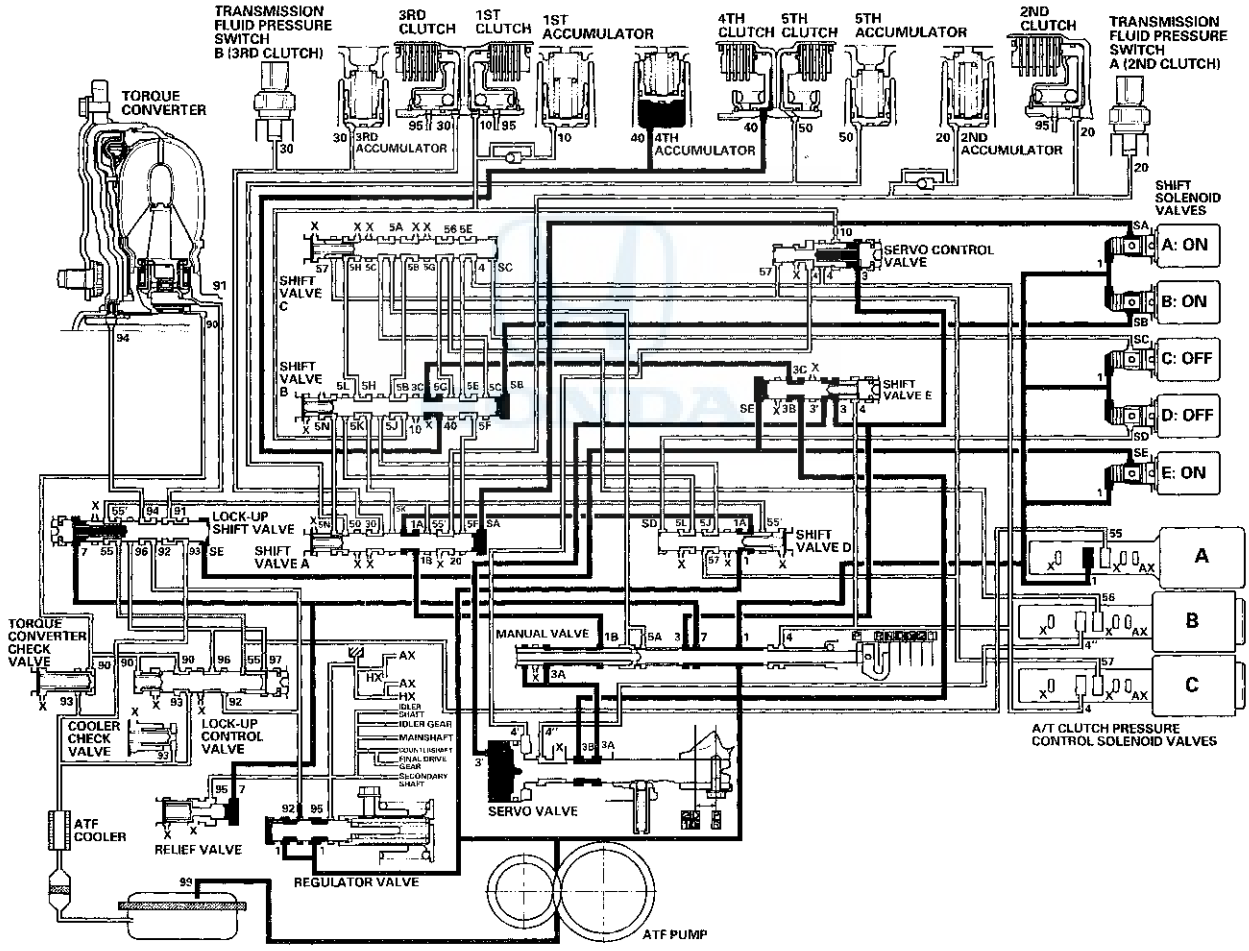
R Position: Driving in reverse gear

After starting off in reverse gear, the PCM turns shift solenoid valve A ON, B and E remain ON, and C and D remain 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 uncovers 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

When R is selected while the vehicle is moving forward, the PCM commands shift solenoid valve A to turn OFF, and E to remain OFF. Shift solenoid valve A pressure (SA) is not applied to shift valve A so that line pressure (3A) is not applied to the servo valve. Also shift solenoid valve E pressure (SE) is not applied to shift valve E so that line pressure (3') is not applied to the servo valve. The servo valve cannot be shifted to the reverse position, and hydraulic pressure is not applied to the 4th clutch from the servo valve for reverse; as a result, power is not transmitted to the reverse direction.

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



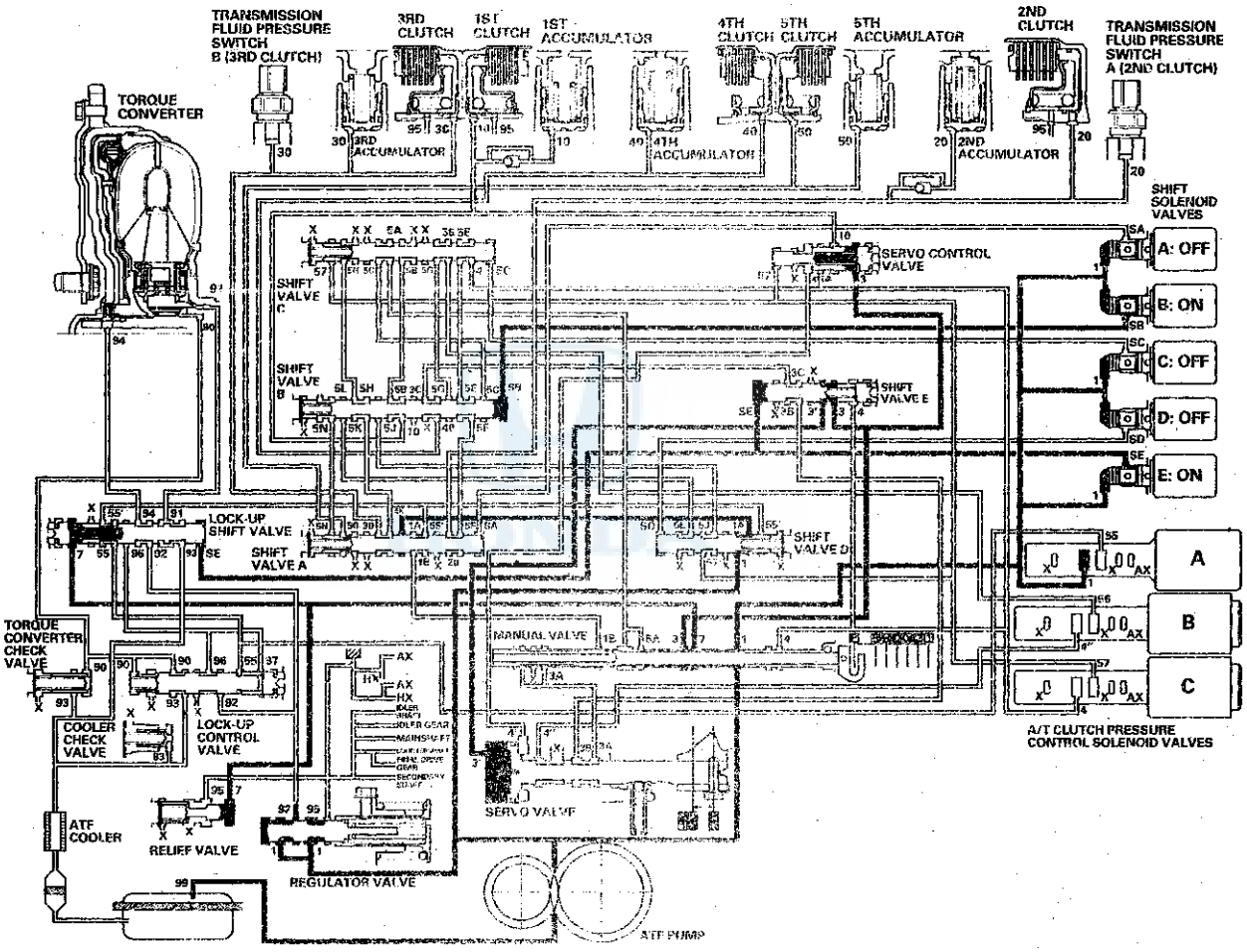
(cont'd)

System Description (cont'd)

Hydraulic Flow (cont'd)

P Position

The PCM turns shift solenoid valves B and E ON, and A, C, and D OFF. Line pressure (1) flows to the shift solenoid valves and 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 the reverse/park position. Hydraulic pressure is not applied to the clutches.



Lock-up System

The lock-up mechanism of the torque converter clutch operates in D (2nd, 3rd, 4th, and 5th gears), and in D3 (2nd and 3rd gears). 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 on. A/T clutch pressure control solenoid valve A and the lock-up control valve control the amount of the lock-up.

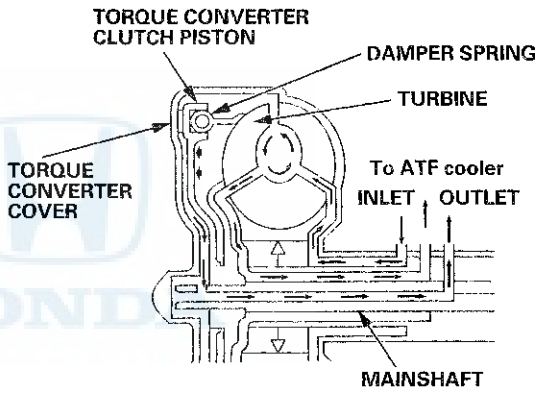
Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)

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 the 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; the torque converter clutch lock-up ON, and the mainshaft rotates at the same speed as the engine.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft



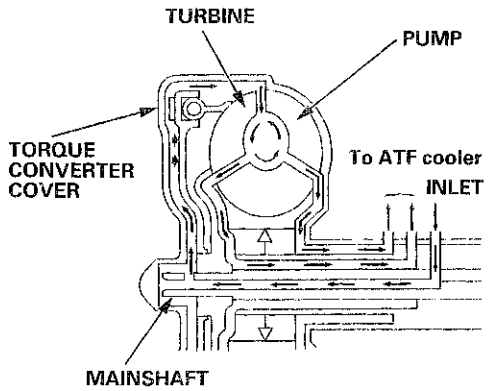
Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)

Fluid enters into the chamber between the torque converter cover and the torque converter clutch piston and 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; the torque converter clutch lock-up OFF.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft



(cont'd)

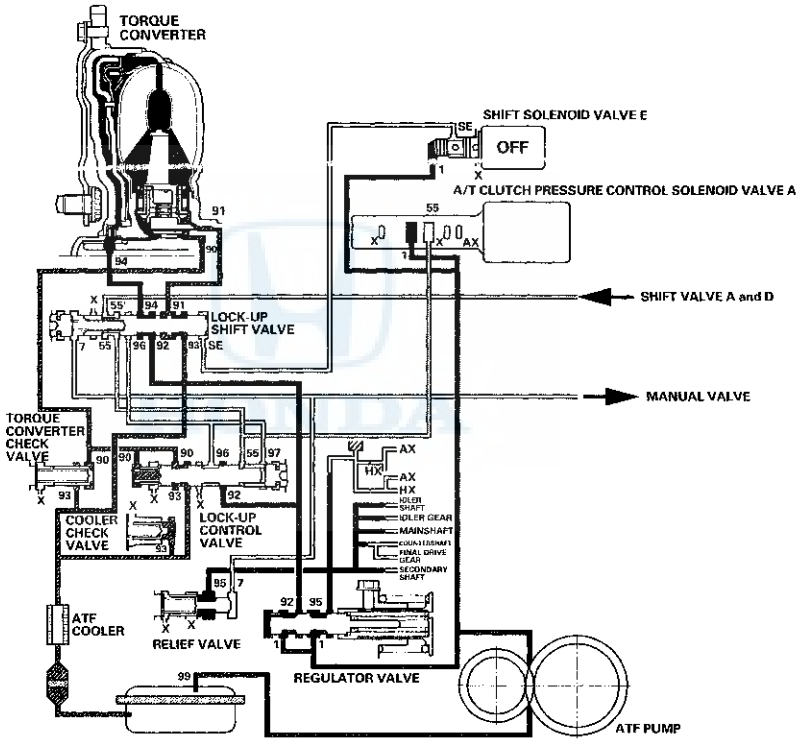
System Description (cont'd)

Lock-up System (cont'd)

No Lock-up

The PCM turns shift solenoid valve E OFF, and shift solenoid valve E pressure (SE) is not applied to the lock-up shift valve. The lock-up shift valve remains to the right uncovering 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 keeps away from the torque converter cover and the torque converter clutch lock-up is OFF.

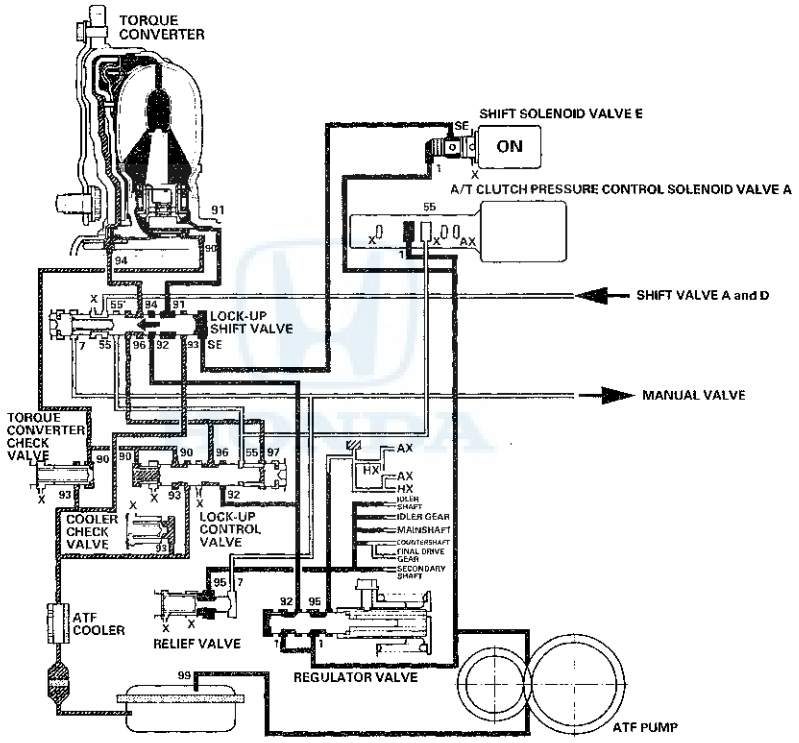
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Partial Lock-up

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve E ON, 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 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 A/T clutch pressure control solenoid valve A to regulate A/T clutch pressure control solenoid valve A pressure (55) which is applied to the lock-up shift valve and the 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 the 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.



(cont'd)

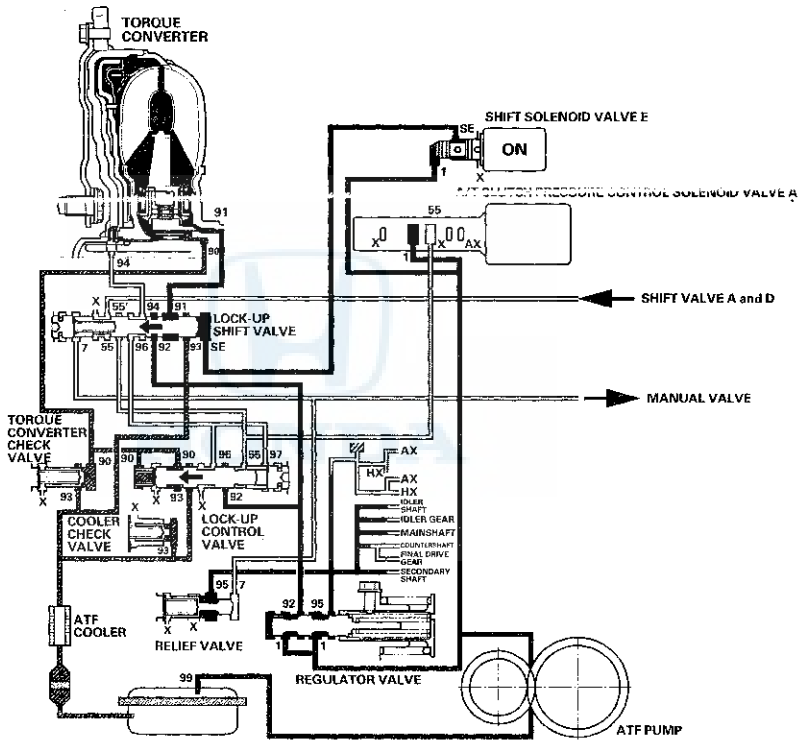
System Description (cont'd)

Lock-up System (cont'd)

Full Lock-up

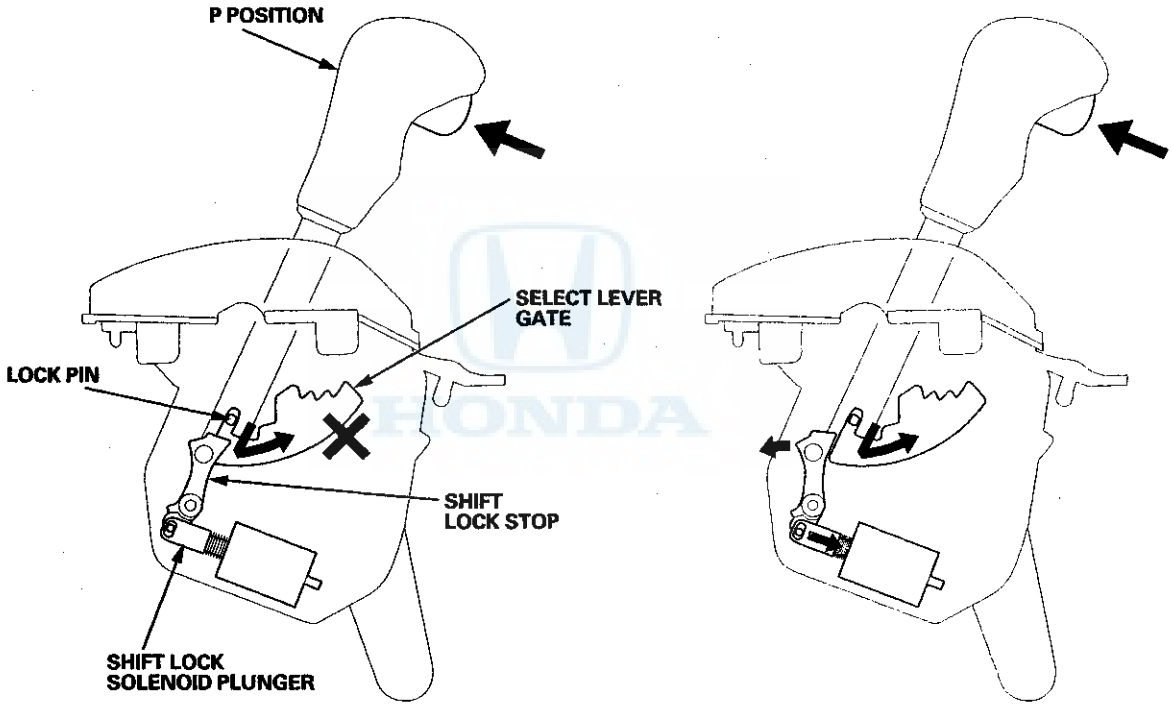
When the vehicle speed increases, the PCM commands A/T clutch pressure control solenoid valve A to increase A/T clutch pressure control solenoid valve A pressure (55), and the lock-up control valve is moved to the left by the increased pressure. Then torque converter pressure (94) from the left side of the torque converter is completely released 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.



Shift Lock System

The shift lock system prevents the shift lever from mis-shifting moving unless certain conditions aer met. The shift lock solenoid is normally OFF. After starting the engine in P, the shift lever cannot move to any other position from P because the shift lock stop stops the lock pin. When the brake pedal is pressed and the accelerator pedal is not pressed, the PCM commands the shift lock solenoid ON; the shift lock solenoid plunger in the shift lock solenoid pulls the shift lock stop to release the lock pin. Pressing the shift lever button, allows the shift lever to move to any other position. When the brake pedal and the accelerator pedal are pressed at the same time, the PCM commands the solenoid OFF and the shift lock system is locked.



SHIFT LOCK SOLENOID: OFF

SHIFT LOCK SOLENOID: ON

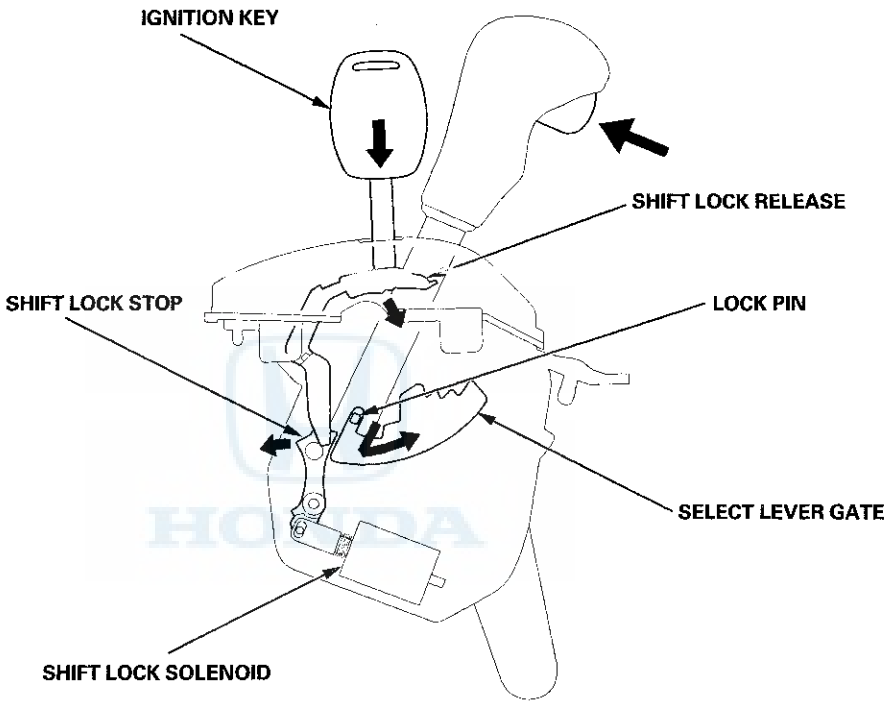
*: This illustration shows the Type B shift lever.

(cont'd)

System Description (cont'd)

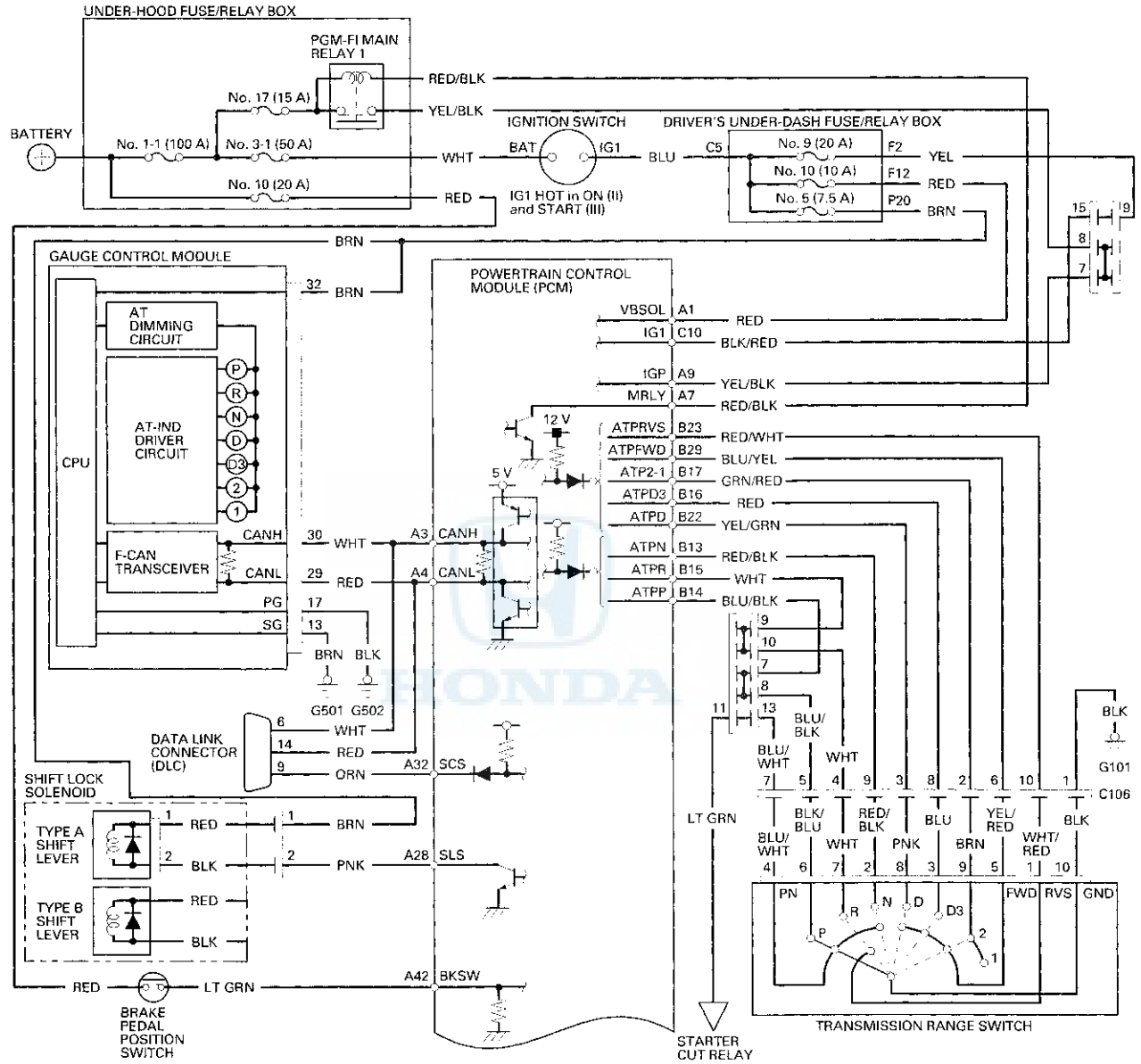
Shift Lock System (cont'd)

When the shift lock system does not operate due to a mechanical or electrical problem, you can unlock the shift lock temporarily by inserting the ignition key into the shift lock release hole and press the shift lock release. When the shift lock release is pressed, the shift lock stop releases the lock pin, and the shift lever can move to any other position.

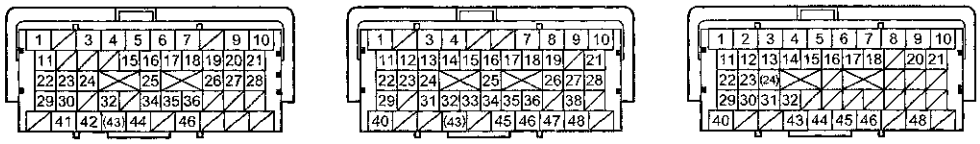


*: This illustration shows the Type B shift lever.

Circuit Diagram - PCM A/T Control System



PCM Connector Terminal Locations



A (49P)

B (49P)

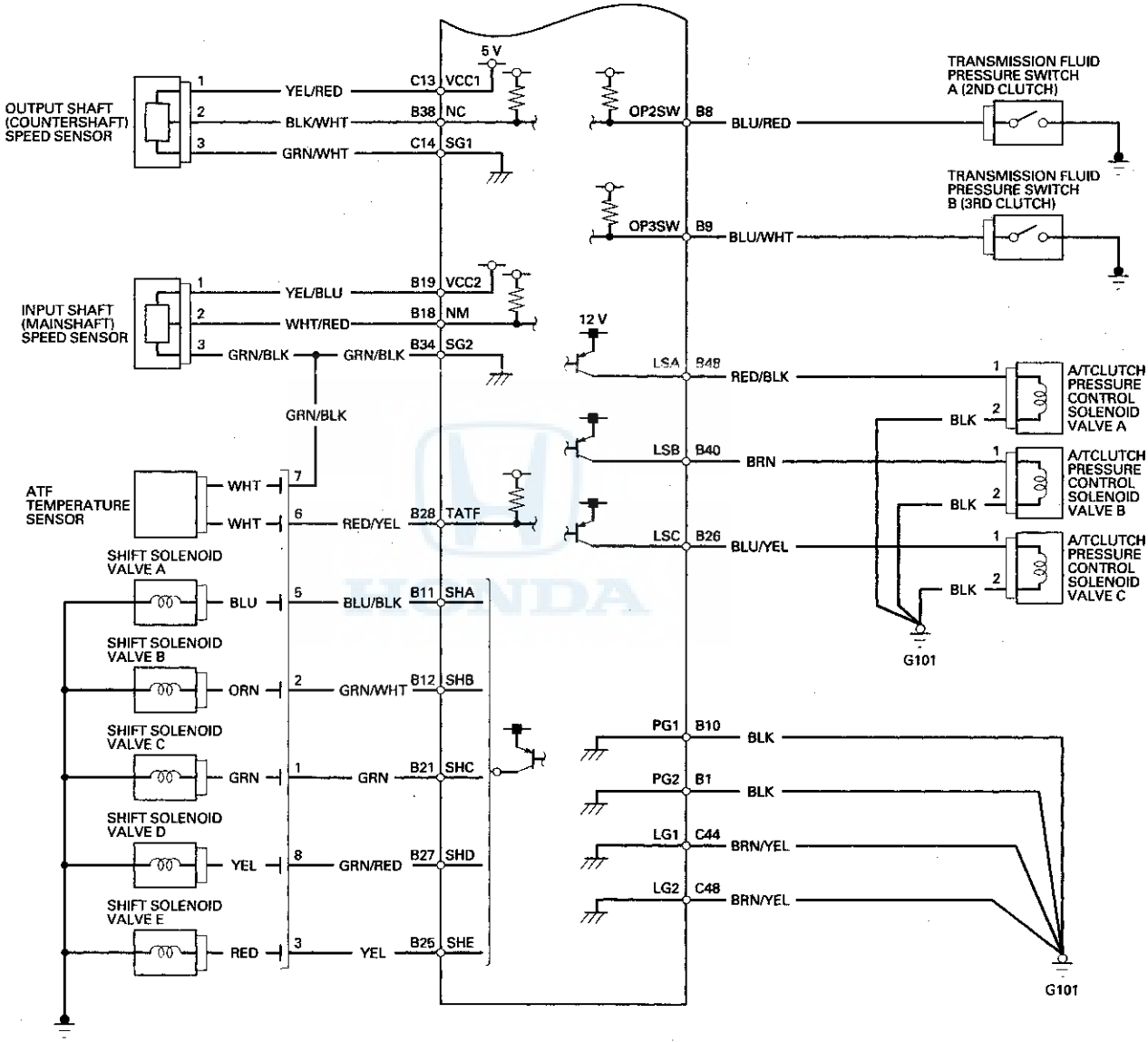
Terminal side of female terminals

C (49P)

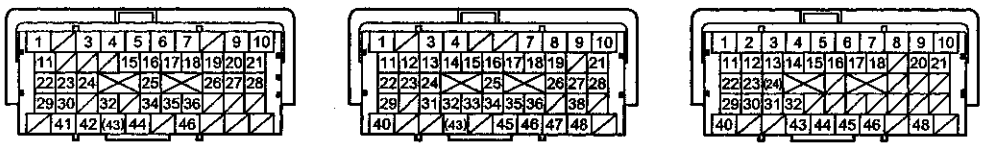
(cont'd)

System Description (cont'd)

Circuit Diagram - PCM A/T Control System (cont'd)



PCM Connector Terminal Locations



A □ (49P)

B △ (49P)

C ○ (49P)

Terminal side of female terminals

DTC P062F: Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P062F indicated in the PGM-FI SYSTEM?

   YES–Go to the DTC P062F troubleshooting in the PGM-FI System (see page 11-136).■

   NO–Go to step 4.
4. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

   Is DTC P062F indicated in the A/T SYSTEM?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. If any other Pending or Confirmed DTCs were indicated, go to the indicated DTC's troubleshooting.■
5. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

   Is DTC P062F indicated in the A/T SYSTEM?

   YES–Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO–Go to step 8.
8. Monitor the OBD STATUS for P062F in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 7, go to the indicated DTC's troubleshooting.■

   NO–If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

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

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Compare the ATPP, ATPR, ATPN, ATPD, ATPD3, ATP2-1, ATPFWD, and ATPRVS inputs with the HDS to the folloing table, in each shift lever position.

	ATP P	ATP R	ATP N	ATP D	ATP D3	ATP 2-1	ATP FWD	ATP RVS
P	○	×	×	×	×	×	×	×
R	×	○	×	×	×	×	×	○
N	×	×	○	×	×	×	×	×
D	×	×	×	○	×	×	○	×
D3	×	×	×	×	○	×	○	×
2	×	×	×	×	×	○	○	×
1	×	×	×	×	×	○	×	×

○: ON ×: OFF

Do the transmission range switch signals match?

YES–Intermittent failure, the system is OK at this time.■

NO–Go to step 3.

3. Compare the ATPP, ATPR, ATPN, ATPD, ATPD3, ATP2-1, ATPFWD, and ATPRVS inputs with the HDS to the table in step 2, in each shift lever position.

Are any transmission range switch signals ON in all shift lever position?

YES–Go to step 9.

NO–Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Disconnect the transmission range switch connector.
6. Connect the transmission range switch connector terminal that incorrectly indicates ON in step 3 to body ground with a jumper wire.
7. Turn the ignition switch to ON (II).
8. Compare the ATPP, ATPR, ATPN, ATPD, ATPD3, ATP2-1, ATPFWD, and ATPRVS inputs with the HDS to the table in step 2.

Do multiple transmission range switch signals indicate ON?

YES–Repair short in the wires between the transmission range switch and the PCM, refer to the following table.■

	ATP P	ATP R	ATP N	ATP D	ATP D3	ATP 2-1	ATP FWD	ATP RVS
PCM	B14	B15	B13	B22	B16	B17	B29	B23
Range switch	6	7	2	8	3	9	5	1

NO–Replace the transmission range switch (see page 14-240).■

9. Turn the ignition switch to LOCK (0).
10. Disconnect the transmission range switch connector.
11. Turn the ignition switch to ON (II).
12. Check the abnormal transmission range switch signal that remained on with the HDS.

Do any transmission range switch signals remain ON?

YES–Go to step 13.

NO–Replace the transmission range switch (see page 14-240).

13. Check for continuity to body ground in the circuit which remained ON, see table in step 2.

Does the circuit that indicated ON have continuity to ground?

YES–Repair short to body ground in the wire between the transmission range switch and the PCM.■

NO–Replace the PCM (see page 11-204).■

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Make sure the shift cable is adjusted properly (see page 14-232).
2. Turn the ignition switch to ON (II).
3. Compare the ATPP, ATPR, ATPN, ATPD, ATPD3, ATP2-1, ATPFWD, and ATPRVS inputs with the HDS to the following table.

	ATP P	ATP R	ATP N	ATP D	ATP D3	ATP 2-1	ATP FWD	ATP RVS
P	○	×	×	×	×	×	×	×
R	×	○	×	×	×	×	×	○
N	×	×	○	×	×	×	×	×
D	×	×	×	○	×	×	○	×
D3	×	×	×	×	○	×	○	×
2	×	×	×	×	×	○	○	×
1	×	×	×	×	×	○	×	×

○: ON ×: OFF

Do the transmission range switch signals match?

YES–Intermittent failure, the system is OK at this time.■

NO–Go to step 4.

4. Compare the ATPP, ATPR, ATPN, ATPD, ATPD3, ATP2-1, ATPFWD, and ATPRVS inputs with the HDS to the table in step 3, in each shift lever position

Do all shift positions remain OFF?

YES–Go to step 12.

NO–Go to step 5.

5. Turn the ignition switch to LOCK (0).
6. Disconnect the transmission range switch connector.
7. Connect the transmission range switch connector terminal which did not indicate ON in step 4 to body ground with a jumper wire.
8. Turn the ignition switch to ON (II).
9. Check the transmission range switch signals that did not indicate ON with the HDS.

Does the transmission range switch indicate ON?

YES–Replace the transmission range switch (see page 14-240).

NO–Go to step 10.

10. Turn the ignition switch to LOCK (0).
11. Check for continuity between the transmission range switch circuit terminal and the PCM terminal of the input which indicated OFF, refer to the following table.

	ATP P	ATP R	ATP N	ATP D	ATP D3	ATP 2-1	ATP FWD	ATP RVS
PCM	B14	B15	B13	B22	B16	B17	B29	B23
Range switch	6	7	2	8	3	9	5	1

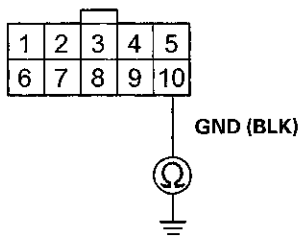
Is there continuity?

YES–Replace the PCM (see page 11-204).■

NO–Repair open in the wire between the transmission range switch and the PCM.■

12. Turn the ignition switch to LOCK (0).
13. Disconnect the transmission range switch connector.
14. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Replace the transmission range switch (see page 14-240).

NO–Repair open in the wire between the transmission range switch and body ground (G101) (see page 22-18), or repair poor body ground (G101).■

DTC Troubleshooting (cont'd)

DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II), and wait for 20 secounds.
2. Check the ATF temperature with the HDS in the A/T Data List.

   Does the ATF Temperature with indicate −4 °F (−20 °C) or below?

   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).
4. Check the ATF Temperature with the HDS in the A/T Date List.

   Does the ATF Temperature remain −4 °F (−20 °C) or below?

   YES–Replace the ATF temperature sensor (see page 14-189), then go to step 8.

   NO–Intermittent failure, the system is OK at this time. If there is an abnormal temperature rise in the ATF temperature sensor, go to step 16.
5. Check the ATF Temperature with the HDS in the A/T Data List.

   Does the ATF temperature exceed 230 °F (110 °C)?

   YES–Go to step 6.

   NO–Intermittent failure, the system is OK at this time.
6. Leave the engine off until the Engine Coolant Temperature reads 122 °F (50 °C) with the HDS in the A/T Date List.
7. Check the ATF Temperature with the HDS in the A/T Data List.

   Does the ATF temperature remain 230 °F (110 °C) or higher?

   YES–Replace the ATF temperature sensor (see page 14-189), then go to step 8.

   NO–Intermittent failure, the system is OK at this time. If there is an abnormal temperature rise in the ATF temperature sensor, go to step 16.
8. Turn the ignition switch to ON (II).
9. Clear the DTC with the HDS.
10. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
11. Turn the ignition switch to LOCK (0), and allow the engine to coolant cool to the outside air temperature (the Engine Coolant Temperature reads the same as the outside air temperature).
12. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.
13. Turn the ignition switch to ON (II), and wait for 20 seconds, then start the engine. Warm the engine up to normal operating temperature (the radiator fan comes on). Start off in D, accelerate with the throttle opened at least 4 degrees, and run the vehicle at speeds over 19 mph (30 km/h) for at least 5 minutes. Or test-drive the vehicle for at least 20 seconds while the ATF temperature reads −4 °F to 230 °F (−20 °C to 110 °C) by monitoring with the HDS. Slow down, and stop the wheels.
14. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0711 indicated?

    YES–Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

    NO–Go to step 15.

15. Monitor the OBD status for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections and loose terminals at the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 10.

16. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).

17. Turn the ignition switch to ON (II). Start the engine, and warm the engine up to normal operating temperature (the radiator fan comes on).

18. Turn the ignition switch to LOCK (0), and allow the engine to coolant cool to the ambient air temperature (the ECT SENSOR reads the same as the ambient air temperature).

19. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.

20. Turn the ignition switch to ON (II), and wait for 20 seconds, then start the engine. Warm the engine up to normal operating temperature (the radiator fan comes on). Start off in D, accelerate with the throttle opened at least 4 degrees, and run the vehicle at speeds over 19 mph (30 km/h) for at least 5 minutes. Or test-drive the vehicle for at least 20 seconds while the ATF temperature reads −4 °F to 230 °F (−20 °C to 110 °C) by monitoring with the HDS. Slow down, and stop the wheels.

21. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0711 indicated?

    YES–Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO–Go to step 22.

22. Monitor the OBD status for P0711 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 17. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 17.

DTC Troubleshooting (cont'd)

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Check the ATF Temp Sensor (V) in the Data List with the HDS.

   Is the ATF Temp Sensor (V) 0.07 V or less?

   YES–Go to step 3.

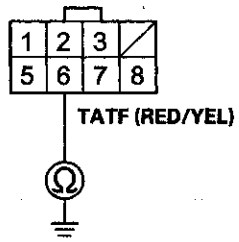
   NO–Intermittent failure, the system is OK at this time. Check for an intermittent short to body ground in the wire between the ATF temperature sensor and the PCM.■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the shift solenoid wire harness connector.
5. Turn the ignition switch to ON (II).
6. Check the ATF Temp Sensor (V) in the Data List with the HDS.

   Is the ATF Temp Sensor (V) 0.07 V or less?

   YES–Go to step 7.

   NO–Replace the ATF temperature sensor (see page 14-189), then go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector B (49P).
10. Check for continuity between shift solenoid wire harness connector terminal No. 6 and body ground.

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B28 and shift solenoid wire harness connector terminal No. 6, then go to step 11.

NO–Go to step 17.

11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Start the engine with the shift lever in P, and wait for at least 20 seconds.
15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0712 indicated?

    YES–Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1.

    NO–Go to step 16.
16. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 14.

17. Reconnect all connectors.
18. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
19. Start the engine with the shift lever in P, and wait for at least 20 seconds.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0712 indicated?

    YES–Check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 19. If the PCM was substituted, go to step 1.

    NO–Go to step 21.
21. Monitor the OBD STATUS for P0712 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 19. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:

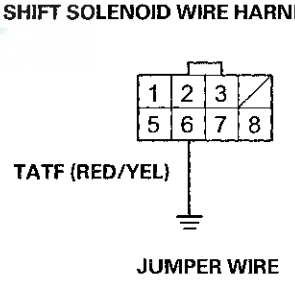
- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Turn the ignition switch to ON (II).
2. Check the ATF Temp Sensor (V) in the Data List with the HDS.

   Does the ATF Temp Sensor (V) exceed 4.93 V?

   YES–Go to step 3.

   NO–Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the ATF temperature sensor and the PCM.■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the shift solenoid wire harness connector.
5. Connect shift solenoid wire harness connector terminal No. 6 to body ground with a jumper wire.



Wire side of female terminals

6. Turn the ignition switch to ON (II).
7. Check the ATF Temp Sensor (V) in the Data List with the HDS.

   Does the ATF Temp Sensor (V) read 0.07 V or below?

   YES–Go to step 8.

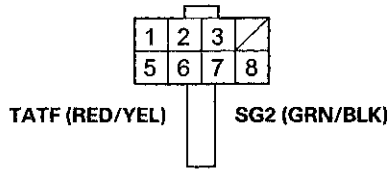
   NO–Go to step 13.

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from the shift solenoid wire harness connector.
10. Connect shift solenoid wire harness connector terminals No. 6 and No. 7 with a jumper wire

SHIFT SOLENOID WIRE HARNESS CONNECTOR



Wire side of female terminals

11. Turn the ignition switch to ON (II).
12. Check the ATF Temp Sensor (V) in the Data List with the HDS.

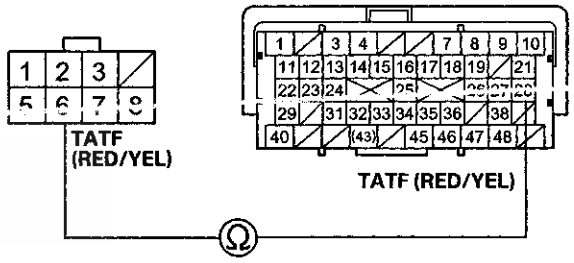
    Does the ATF Temp Sensor (V) read 0.07 V or below?

    YES–Replace the ATF temperature sensor (see page 14-189), then go to step 17.

    NO–Repair open in the wire between PCM connector terminal B34 and the shift solenoid wire harness connector terminal No.7, then go to step 17.

13. Turn the ignition switch to LOCK (0).
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector B (49P).
16. Check for continuity between PCM connector terminal B28 and shift solenoid wire harness connector terminal No. 6.

SHIFT SOLENOID WIRE HARNESS CONNECTOR **PCM CONNECTOR B (49P)**



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES–Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the connections are OK, go to step 23.

NO–Repair open in the wire between PCM connector terminal B28 and the shift solenoid wire harness connector terminal No.6, then go to step 17.

17. Reconnect all connectors.
18. Turn the ignition switch to ON (II).
19. Clear the DTC with the HDS.
20. Start the engine with the shift lever in P, and wait for at least 20 seconds.
21. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0713 indicated?

    YES–Check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1.

    NO–Go to step 22.

22. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
25. Start the engine with the shift lever in P, and wait for at least 20 seconds.
26. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0713 indicated?

    YES–Check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1.

    NO–Go to step 27.

27. Monitor the OBD STATUS for P0713 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 26, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the ATF temperature sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 25. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 25.

DTC Troubleshooting (cont'd)

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

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

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.
4. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle with the shift lever in D, and at speeds over 12 mph (20 km/h) for at least 10 seconds. Slow down, and stop the wheels.
5. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0718 or P0723 indicated?

   YES–Go to the DTC P0718 trobleshooting (see page 14-87) or the DTC P0723 trobleshooting (see page 14-89).■

   NO–Go to step 6.
6. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0716 or P0721 indicated?

   YES–Go to step 7.

   NO–Intermittent failure, the system is OK at this time.■
7. Check the input shaft (mainshaft) speed sensor or the output shaft (countershaft) speed sensor for poor connection and proper installation.

   Is the connection and installation OK?

   YES–Replace the input shaft (mainshaft) speed sensor (see page 14-187) or the output shaft (countershaft) speed sensor (see page 14-188), then go to step 8.

   NO–Connect the speed sensor connector and reinstall the speed sensor, then go to step 8.
8. Turn the ignition switch to ON (II).
9. Clear the DTC with the HDS.
10. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle with the shift lever in D, and at speeds over 12 mph (20 km/h) for at least 10 seconds. Slow down, and stop the wheels.
11. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0716 or P0721 indicated?

    YES–Go to step 1.

    NO–Trobleshooting is complete.■

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

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

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

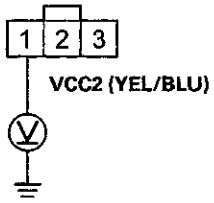
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.
4. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle with the shift lever in D, and at speeds over 12 mph (20 km/h) for at least 10 seconds. Compare the Input Shaft (Mainshaft) Speed and the Output Shaft (Countershaft) Speed in the Data List with the HDS. Slow down, and stop the wheels.

   Arethe speeds about the same?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the input shaft (mainshaft) speed sensor connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

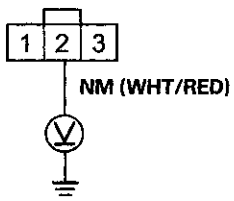
Is there about 5 V?

YES–Go to step 9.

NO–Repair open in the wire between PCM connector terminal B19 and the input shaft (mainshaft) speed sensor, then go to step 16.

9. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES–Go to step 10.

NO–Go to step 12.

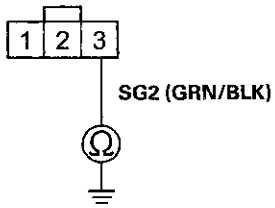
10. Turn the ignition switch to LOCK (0).

(cont'd)

DTC Troubleshooting (cont'd)

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

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

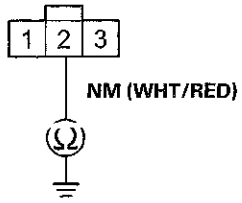
Is there continuity?

YES–Replace the input shaft (mainshaft) speed sensor (see page 14-187), then go to step 19.

NO–Repair open in the wire between the input shaft (mainshaft) speed sensor connector and the PCM connector terminal B34, then go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (49P).
15. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B18 and the input shaft (mainshaft) speed sensor connector, then go to step 16.

NO–Repair open in the wire between PCM connector terminal B37 and the input shaft (mainshaft) speed sensor, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle with the shift lever in D, and at speeds over 12 mph (20 km/h) for at least 10 seconds. Compare the Input Shaft (Mainshaft) Speed and the Output Shaft (Countershaft) Speed in the Data List with the HDS. Slow down, and stop the wheels.

Arethe speeds about the same?

YES–Trobleshooting is complete.■

NO–Go to step 1.

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

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

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

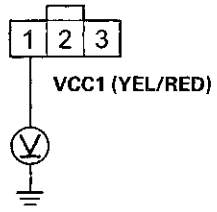
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Block the rear wheels and raise the front of the vehicle, make sure it is securely supported, and allow the front wheels to rotate freely, or raise the vehicle on a lift.
4. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle with the shift lever in D, with the engine speed above 2,000 rpm for at least 10 seconds. Compare the Output Shaft (Countershaft) Speed and the Input Shaft (Mainshaft) Speed in the Data List with the HDS. Slow down, and stop the wheels.

   Arethe speeds about the same?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Disconnect the output shaft (countershaft) speed sensor connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

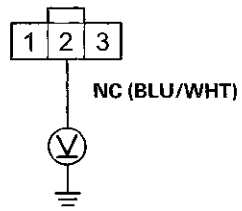
Is there about 5 V?

YES–Go to step 9.

NO–Repair open in the wire between PCM connector terminal C13 and the output shaft (countershaft) speed sensor, then go to step 16.

9. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES–Go to step 10.

NO–Go to step 12.

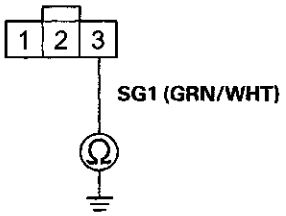
10. Turn the ignition switch to LOCK (0).

(cont'd)

DTC Troubleshooting (cont'd)

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

OUTPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

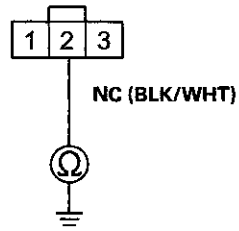
Is there continuity?

YES–Replace the output shaft (countershaft) speed sensor (see page 14-188), then go to step 19.

NO–Repair open in the wire between the PCM connector terminal C14 and the output shaft (countershaft) speed sensor, then go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (49P).
15. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B38 and the output shaft (countershaft) speed sensor connector, then go to step 16.

NO–Repair open in the wire between PCM connector terminal B38 and output shaft (countershaft) speed sensor, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, disable the VSA by pressing the VSA OFF button, run the vehicle with the shift lever in D, with the engine speed above 2,000 rpm for at least 10 seconds. Compare the Output Shaft (Countershaft) Speed and the Input Shaft (Mainshaft) Speed in the Data List with the HDS. Slow down, and stop the wheels.

Arethe speeds about the same?

YES–Trobleshooting is complete.■

NO–Go to step 1.

DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit (1st Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 12.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Test stall speed in D (see page 14-174).

   Is the stall speed within the service limits?

   YES–Go to step 5.

   NO–Shift valves A and D are stuck. Repair these valves and the related hydraulic circuit, or replace the transmission, then go to step 12.
5. Measure the line pressure (see page 14-175).

   Is the line pressure within the service limit?

   YES–Go to step 6.

   NO–Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.
6. Measure the 1st clutch pressure (see page 14-175).

   Is the 1st clutch pressure within the service limits?

   YES–Go to step 7.

   NO–Shift valves B and C are stuck. Repair these valves and the related hydraulic circuit, or replace the transmission, then go to step 12.
7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle in 1st gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
10. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0731 indicated?

    YES–Repair the 1st clutch, or replace the transmission, then go to step 12.

    NO–Go to step 11.
11. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 10, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, repair the 1st clutch, or replace the transmission, then go to step 12. If the HDS indicates NOT COMPLETED, go to step 9.
12. Test-drive the vehicle in 1st gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
13. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0731 indicated?

    YES–Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO–Go to step 14.
14. Monitor the OBD STATUS for P0731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC Troubleshooting (cont'd)

DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit (2nd Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 12.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Test stall speed in D (see page 14-174).

   Is the stall speed within the service limits?

   YES–Go to step 5.

   NO–Shift valve C is stuck. Repair shift valve C and the hydraulic circuit, or replace the transmission, then go to step 12.
5. Measure the line pressure (see page 14-175).

   Is the line pressure within the service limit?

   YES–Go to step 6.

   NO–Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 12.
6. Measure the 2nd clutch pressure (see page 14-175).

   Is the 2nd clutch pressure within the service limits?

   YES–Go to step 7.

   NO–Shift valves A and B are stuck. Repair these valves and the related hydraulic circuit, or replace the transmission, then go to step 12.
7. Turn the ignition switch to ON (II).
8. Clear the DTC with the HDS.
9. Test-drive the vehicle in 2nd gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
10. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0732 indicated?

    YES–Repair the 2nd clutch, or replace the transmission, then go to step 12.

    NO–Go to step 11.
11. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 10, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, repair the 2nd clutch, or replace the transmission, then go to step 12. If the HDS indicates NOT COMPLETED, go to step 9.
12. Test-drive the vehicle in 2nd gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
13. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0732 indicated?

    YES–Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO–Go to step 14.
14. Monitor the OBD STATUS for P0732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 12.

DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit (3rd Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 11.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Measure the line pressure (see page 14-175).

   Is the line pressure within the service limits?

   YES–Go to step 5.

   NO–Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.
5. Measure the 3rd clutch pressure (see page 14-175).

   Is the 3rd clutch pressure within the service limits?

   YES–Go to step 6.

   NO–Shift valves A and D are stuck. Repair these valves and the related hydraulic circuit, or replace the transmission, then go to step 11.
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 3rd gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
9. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0733 indicated?

   YES–Repair the 3rd clutch, or replace the transmission, then go to step 11.

   NO–Go to step 10.
10. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 9, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, repair the 3rd clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.
11. Test-drive the vehicle in 3rd gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
12. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0733 indicated?

    YES–Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO–Go to step 13.
13. Monitor the OBD STATUS for P0733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 12, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DTC Troubleshooting (cont'd)

DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit (4th Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 11.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Measure the line pressure (see page 14-175).

   Is the line pressure within the service limits?

   YES–Go to step 5.

   NO–Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.
5. Measure the 4th clutch pressure (see page 14-175).

   Is the 4th clutch pressure within the service limits?

   YES–Go to step 6.

   NO–Shift valves B and C, and the servo control valve are stuck. Repair these valves and the related hydraulic circuit, or replace the transmission, then go to step 11.
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 4th gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
9. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0734 indicated?

   YES–Repair the 4th clutch, or replace the transmission, then go to step 11.

   NO–Go to step 10.
10. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 9, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, repair the 4th clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.
11. Test-drive the vehicle in 4th gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
12. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0734 indicated?

    YES–Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO–Go to step 13.
13. Monitor the OBD STATUS for P0734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 12, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit (5th Gear Incorrect Ratio)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 11.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Measure the line pressure (see page 14-175).

   Is the line pressure within the service limits?

   YES–Go to step 5.

   NO–Repair the ATF pump and the regulator valve, or replace the transmission, then go to step 11.
5. Measure the 5th clutch pressure (see page 14-175).

   Is the 5th clutch pressure within the service limits?

   YES–Go to step 6.

   NO–Shift valves A, B, and/or D are stuck. Repair these valves and the related hydraulic circuit, or replace the transmission, then go to step 11.
6. Turn the ignition switch to ON (II).
7. Clear the DTC with the HDS.
8. Test-drive the vehicle in 5th gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
9. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0735 indicated?

   YES–Repair the 5th clutch, or replace the transmission, then go to step 11.

   NO–Go to step 10.
10. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 9, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, repair the 5th clutch, or replace the transmission, then go to step 11. If the HDS indicates NOT COMPLETED, go to step 8.
11. Test-drive the vehicle in 5th gear, with the shift lever in D, at speeds over 7 mph (12 km/h), and with the engine speed above 1,000 rpm for at least 12 seconds.
12. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0735 indicated?

    YES–Check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4.

    NO–Go to step 13.
13. Monitor the OBD STATUS for P0735 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 12, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the input shaft (mainshaft) speed sensor and the output shaft (countershaft) speed sensor and the PCM, then go to step 4. If the HDS indicates NOT COMPLETED, go to step 11.

DTC Troubleshooting (cont'd)

DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 13.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and check that shift solenoid valve E operates with the HDS.

   Is a clicking sound heard?

   YES–Go to step 7.

   NO–Replace shift solenoid valve E (see page 14-179), then go to step 11.
7. Run the engine until the ECT Sensor temperature reaches 176 °F (80 °C).
8. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES–Go to step 9.

   NO–Follow the instructions indicated on the HDS according to the test result. Go to step 11 if any part is replaced.
9. Test-drive the vehicle on a level road with a steady speed at 60 km/h (96 mph) for at least 20 seconds.
10. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair the faulty torque converter clutch mechanism, the torque converter clutch hydraulic circuit, the lock-up shift valve, or the lock-up control valve, or replace the transmission, then go to step 13.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 9.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle on a level road with a steady speed at 60 mph (96 km/h) for at least 20 seconds, or test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.
14. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0741 indicated?

    YES–Go to step 5.

    NO–Go to step 15.
15. Monitor the OBD STATUS for P0741 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 5. If the HDS indicates NOT COMPLETED, go to step 13.

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

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 13.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve A with the HDS.

   Does the HDS indicate NORMAL?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Follow the instructions indicated on the HDS according to the test result, if the HDS has not determined the cause of the failure, go to step 10. If any part is replaced, go to step 11.
10. Inspect A/T clutch pressure control solenoid valve A (see page 14-182).

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

    YES–Repair the hydraulic system related to shift valves B and E, or replace the transmission, then go to step 13.

    NO–Replace A/T clutch pressure control solenoid valve A (see page 14-184), then go to step 11.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
14. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0747 indicated?

    YES–Go to step 8.

    NO–Go to step 15.
15. Monitor the OBD STATUS for P0747 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC Troubleshooting (cont'd)

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 14.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Shift Solenoid Valve A in the 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 page 14-179), then go to step 12.
10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
11. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair shift valve A, or replace the transmission, then go to step 14.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0752 indicated?

    YES–Go to step 8.

    NO–Go to step 16.
16. Monitor the OBD STATUS for P0752 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P0756: Shift Solenoid Valve B Stuck OFF

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 14.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Shift Solenoid Valve B in the 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 page 14-179), then go to step 12.
10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
11. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair shift valve B, or replace the transmission, then go to step 14.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0756 or P0757 indicated?

    YES–Go to step 8.

    NO–Go to step 16.
16. Monitor the OBD STATUS for P0756 or P0757 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0761: Shift Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 14.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Shift Solenoid Valve C in the 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 page 14-179), then go to step 12.
10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
11. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair shift valve C, or replace the transmission, then go to step 14.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0761 indicated?

    YES–Go to step 8.

    NO–Go to step 16.
16. Monitor the OBD STATUS for P0761 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P0771: Shift Solenoid Valve E Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 14.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Shift Solenoid Valve E in the 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 page 14-179), then go to step 12.
10. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
11. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair shift valve E, or replace the transmission, then go to step 14.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 10.
12. Turn the ignition switch to ON (II).
13. Clear the DTC with the HDS.
14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through 1st to 3rd gears, then drive the vehicle at speeds over 19 mph (30 km/h) for at least 20 seconds.
15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0771 indicated?

    YES–Go to step 8.

    NO–Go to step 16.
16. Monitor the OBD STATUS for P0771 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC Troubleshooting (cont'd)

DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 13.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Follow the instructions indicated on the HDS according to the test result, if the HDS 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 page 14-184).

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

    YES–Repair the hydraulic system related to shift valve B, or replace the transmission, then go to step 13.

    NO–Replace A/T clutch pressure control solenoid valve B (see page 14-186), then go to step 11.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
14. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0776 or P0777 indicated?

    YES–Go to step 8.

    NO–Go to step 15.
15. Monitor the OBD STATUS for P0776 or P0777 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0780: Shift Control System

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- This code is stored whenever DTCs P1730, P1731, P1732, P1733, and P1734 are detected.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
4. Check for other Pending or Confirmed DTCs indicated along with DTC P0780.

   NOTE: DTC P0780 means there is one or more A/T DTCs regarding the shift control system.

   Are there other DTCs?

   YES–Go to the indicated DTC's troubleshooting.■
   - P1730 (see page 14-162)
   - P1731 (see page 14-163)
   - P1732 (see page 14-164)
   - P1733 (see page 14-165)
   - P1734 (see page 14-166)

   NO–Go to step 5.
5. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0780 indicated?

   YES–If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO–Go to step 8.
8. Monitor the OBD STATUS for P0780 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 7, go to the indicated DTC's troubleshooting.■

   NO–If the PCM was updated and the HDS indicates FAILED, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

DTC P0796: A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

DTC P0797: A/T Clutch Pressure Control Solenoid Valve C Stuck ON

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 13.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES–Intermittent failure, the system is OK at this time.■

   NO–Follow the instructions indicated on the HDS according to the test result, if the HDS 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 page 14-184).

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

    YES–Repair the hydraulic system related to shift valves B and C, or replace the transmission, then go to step 13.

    NO–Replace A/T clutch pressure control solenoid valve C (see page 14-186), then go to step 11.
11. Turn the ignition switch to ON (II).
12. Clear the DTC with the HDS.
13. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
14. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0796 or P0797 indicated?

    YES–Go to step 8.

    NO–Go to step 15.
15. Monitor the OBD STATUS for P0796 or P0797 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 13.

DTC P0842: Short in Transmission Fluid Pressure Switch A (2nd Clutch) Circuit, or Transmission Fluid Pressure Switch A (2nd Clutch) Stuck ON

NOTE:

- Before you troubleshoot,record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Check the 2nd Pressure Switch in the Data List with the HDS when not in 2nd gear.

   Is the 2nd Pressure Switch OFF?

   YES–Go to step 4.

   NO–Go to step 7.
4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Test-drive the vehicle in 4th gear with the shift lever in D for at least 2 seconds.
6. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

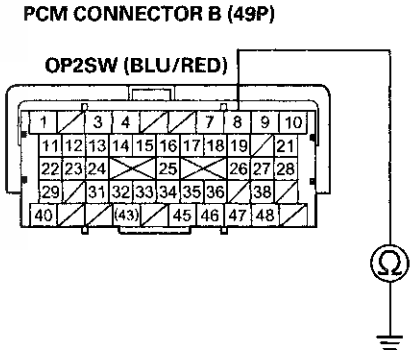
   YES–Go to step 7.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the transmission fluid pressure switch A (2nd Clutch) and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the transmission fluid pressure switch A (2nd clutch) connector.
9. Turn the ignition switch to ON (II).
10. Check the 2nd Pressure Switch in the Data List with the HDS.

    Is the 2nd Pressure Switch OFF?

    YES–Replace the transmission fluid pressure switch A (2nd clutch) (see page 14-188), then go to step 15.

    NO–Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Check for continuity between PCM connector terminal B8 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B8 and the transmission fluid pressure switch A (2nd clutch), then go to step 15.

NO–Go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
19. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0842 indicated?

    YES–Check for intermittent short to body ground in the wire between the transmission fluid pressure switch A (2nd clutch) and the PCM, then go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the transmission fluid pressure switch A (2nd clutch) and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
26. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0842 indicated?

    YES–Check for intermittent short to body ground in the wire between the transmission fluid pressure switch A (2nd clutch)and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 27.

27. Monitor the OBD STATUS for P0842 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 26, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the transmission fluid pressure switch A (2nd clutch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0843: Open in Transmission Fluid Pressure Switch A (2nd Clutch) Circuit, or Transmission Fluid Pressure Switch A (2nd Clutch) Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Shift to 2 while pressing the brake pedal, and check if the Shift Control indicates 2 in the Data List with the HDS.
5. Check the 2nd Pressure Switch in the Data List with the HDS .

   Is the 2nd Pressure Switch ON?

   YES–Go to step 6.

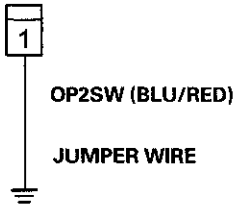
   NO–Go to step 8.
6. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds.
7. Monitor the OBD STATUS for P0843 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission fluid pressure switch A (2nd Clutch) and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the transmission fluid pressure switch A (2nd Clutch) connector.
10. Connect a jumper wire between the transmission fluid pressure switch A (2nd clutch) connector terminal and body ground.

TRANSMISSION FLUID PRESSURE SWITCH A (2ND CLUTCH) CONNECTOR



Wire side of female terminals

11. Turn the ignition switch to ON (II).
12. Check the 2nd pressure switch signal with the HDS in the A/T Data List.

    Is the 2nd Pressure Switch ON?

    YES–Go to step 13.

    NO–Go to step 16.

(cont'd)

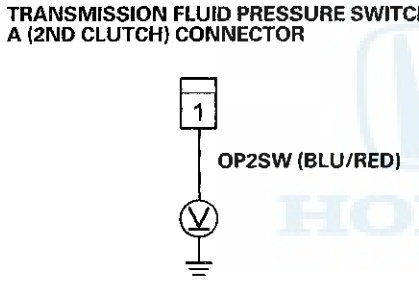
DTC Troubleshooting (cont'd)

13. Reconnect the transmission fluid pressure switch A (2nd clutch) connector.
14. Clear the DTC with the HDS.
15. Measure the 2nd clutch pressure (see page 14-175).

    Is the 2nd clutch pressure within the service limits?

    YES–Replace the transmission fluid pressure switch A (2nd clutch) (see page 14-188), then go to step 21.

    NO–Repair shift valves A, B, and C, and the related hydraulic circuit, or replace the transmission, then go to step 24.
16. Remove the jumper wire, then measure the voltage between the transmission fluid pressure switch A (2nd clutch) connector terminal and body ground.



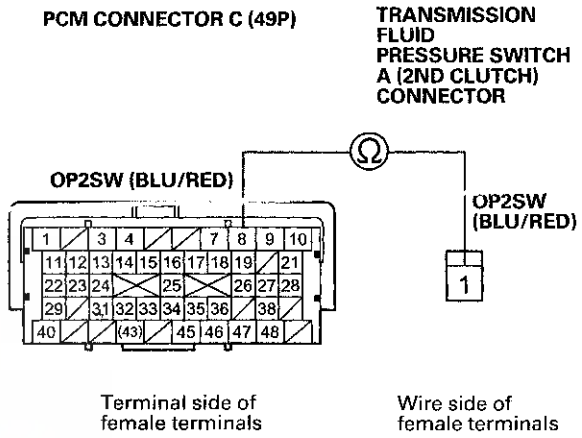
Wire side of female terminals

Is there about 5V?

YES–Go to step 28.

NO–Go to step 17.

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector C (49P).
20. Check for continuity between PCM connector terminal B8 and the transmission fluid pressure switch A (2nd clutch) connector terminal.



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES–Go to step 28.

NO–Repair open in the wire between PCM connector terminal B8 and the transmission fluid pressure switch A (2nd clutch), then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
26. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0843 indicated?

    YES–Check for poor connections or loose terminals between the transmission fluid pressure switch A (2nd clutch) and the PCM, then go to step 1.

    NO–Go to step 27.
27. Monitor the OBD status for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 26, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission fluid pressure switch A (2nd clutch) and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.
28. Reconnect all connectors.
29. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
30. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
31. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
32. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0843 indicated?

    YES–Check for poor connections or loose terminals between the transmission fluid pressure switch A (2nd clutch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 30. If the PCM was substituted, go to step 1.

    NO–Go to step 33.
33. Monitor the OBD status for P0843 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 32, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission fluid pressure switch A (2nd clutch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 30. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 30.

DTC Troubleshooting (cont'd)

DTC P0847: Short in Transmission Fluid Pressure Switch B (3rd Clutch) Circuit, or Transmission Fluid Pressure Switch B (3rd Clutch) Stuck ON

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Check the 3rd Pressure Switch in the Data List with the HDS when the transmission is not in 3rd gear.

   Is the 3rd Pressure Switch OFF?

   YES–Go to step 4.

   NO–Go to step 7.
4. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
5. Test-drive the vehicle in 4th gear with the shift lever in D for at least 2 seconds.
6. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 7.

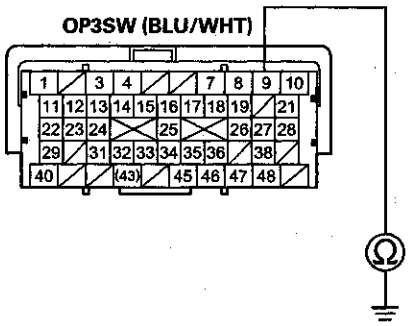
   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between the transmission fluid pressure switch B (3rd Clutch)and the PCM. If the HDS indicates NOT COMPLETED, go to step 4.
7. Turn the ignition switch to LOCK (0).
8. Disconnect the transmission fluid pressure switch B (3rd Clutch) connector.
9. Turn the ignition switch to ON (II).
10. Check the 3rd Pressure Switch in the Data List with the HDS.

    Is the 3rd Pressure Switch OFF?

    YES–Replace the transmission fluid pressure switch B (3rd Clutch) (see page 14-189), then go to step 15.

    NO–Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Check for continuity between PCM connector terminal B9 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B9 and the transmission fluid pressure switch B (3rd clutch), then go to step 15.

NO–Go to step 22.

15. Reconnect all connectors.
16. Turn the ignition switch to ON (II).
17. Clear the DTC with the HDS.
18. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
19. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0847 indicated?

    YES–Check for intermittent short to body ground in the wire between the transmission fluid pressure switch B (3rd clutch)and the PCM, then go to step 1.

    NO–Go to step 21.
21. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the transmission fluid pressure switch B (3rd clutch) and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 18.
22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
26. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0847 indicated?

    YES–Check for intermittent short to body ground in the wire between the transmission fluid pressure switch B (3rd clutch)and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 27.
27. Monitor the OBD STATUS for P0847 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 26, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between the transmission fluid pressure switch B (3rd clutch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0848: Open in Transmission Fluid Pressure Switch B (3rd clutch) Circuit, or Transmission Fluid Pressure Switch B (3rd clutch) Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Test-drive the vehicle in 3rd gear with the shift lever in D, and check if the Shift Control indicates 3 in the Data List with the HDS.
5. Check the 3rd Pressure Switch in the Data List with the HDS.

   Is the 3rd Pressure Switch ON?

   YES–Go to step 6.

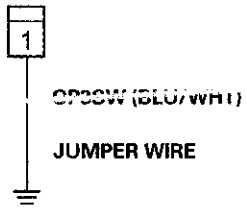
   NO–Go to step 8.
6. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds.
7. Monitor the OBD STATUS for P0848 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between the transmission fluid pressure switch B (3rd clutch) and the PCM. If the HDS indicates NOT COMPLETED, go to step 6.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the transmission fluid pressure switch B (3rd clutch) connector.
10. Connect a jumper wire between the transmission fluid pressure switch B (3rd clutch) connector terminal and body ground.

TRANSMISSION FLUID PRESSURE SWITCH B (3RD CLUTCH) CONNECTOR



Wire side of female terminals

11. Turn the ignition switch to ON (II).
12. Check the 3rd pressure switch signal with the HDS in the A/T Data List.

    Is the 3rd Pressure Switch ON?

    YES–Go to step 13.

    NO–Go to step 16.

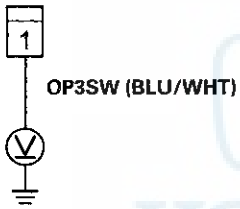
13. Reconnect the transmission fluid pressure switch B (3rd clutch) connector.
14. Clear the DTC with the HDS.
15. Measure the 3rd clutch pressure (see page 14-175).

    Is the 3rd clutch pressure within the service limits?

    YES–Replace the transmission fluid pressure switch B (3rd clutch) (see page 14-189), then go to step 21.

    NO–Repair shift valves A, B, and C, and the related hydraulic circuit, or replace the transmission, then go to step 24.
16. Remove the jumper wire, then measure the voltage between the transmission fluid pressure switch B (3rd clutch) connector terminal and body ground.

TRANSMISSION FLUID PRESSURE SWITCH B (3RD CLUTCH) CONNECTOR



Wire side of female terminals

Is there about 5 V?

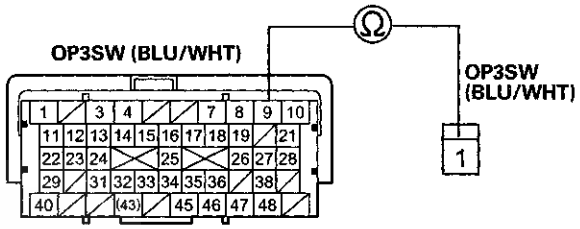
YES–Replace the transmission fluid pressure switch B (3rd clutch) (see page 14-189), then go to step 28.

NO–Go to step 17.

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector B (49P).
20. Check for continuity between PCM connector terminal B9 and the transmission fluid pressure switch B (3rd clutch) connector terminal.

PCM CONNECTOR B (49P)

TRANSMISSION FLUID PRESSURE SWITCH B (3RD CLUTCH) CONNECTOR



Terminal side of female terminals

Wire side of female terminals

Is there continuity?

YES–Go to step 28.

NO–Repair open in the wire between PCM connector terminal B9 and the transmission fluid pressure switch B (3rd clutch), then go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
25. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
26. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0848 indicated?

    YES–Check for poor connections or loose terminals between the transmission fluid pressure switch B (3rd clutch) and the PCM, then go to step 1.

    NO–Go to step 27.

27. Monitor the OBD status for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 26, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission fluid pressure switch B (3rd clutch) and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

28. Reconnect all connectors.
29. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
30. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
31. Test-drive the vehicle in 3rd gear with the shift lever in D for at least 2 seconds, then drive in 4th gear for at least 2 seconds.
32. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0848 indicated?

    YES–Check for poor connections or loose terminals between the transmission fluid pressure switch B (3rd clutch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 30. If the PCM was substituted, go to step 1.

    NO–Go to step 33.

33. Monitor the OBD status for P0848 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 32, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission fluid pressure switch B (3rd clutch) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 30. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 30.

DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0962 indicated?

   YES–Go to step 8.

   NO–Go to step 5.

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

   Does the HDS indicate NORMAL?

   YES–Go to step 6.

   NO–Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve A at 1.0 A.
7. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

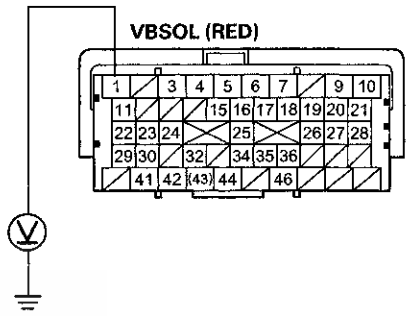
   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).
11. Turn the ignition switch to ON (II).
12. Measure the voltage between PCM connector terminal A1 body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage?

YES–Go to step 13.

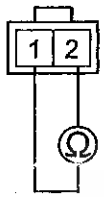
NO–Check for a blown No. 10 fuse (10 A) in the driver's under-dash fuse/relay box. If the fuse is OK, repair open in the wire between PCM connector terminal A1 and the driver's under-dash fuse/relay box, then go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

13. Turn the ignition switch to LOCK (0).
14. Disconnect the A/T clutch pressure control solenoid valve A connector.
15. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

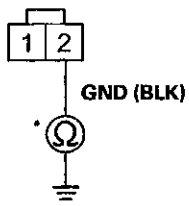
Is there 3—10 Ω?

YES–Go to step 16.

NO–Replace A/T clutch pressure control solenoid valve A (see page 14-184), then go to step 21.

16. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

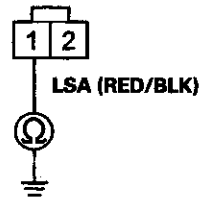
Is there continuity?

YES–Go to step 17.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve A and body ground (G101) (see page 22-20), or repair poor ground (G101), then go to step 21.

17. Jump the SCS line with the HDS.
18. Disconnect PCM connector B (49P).
19. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



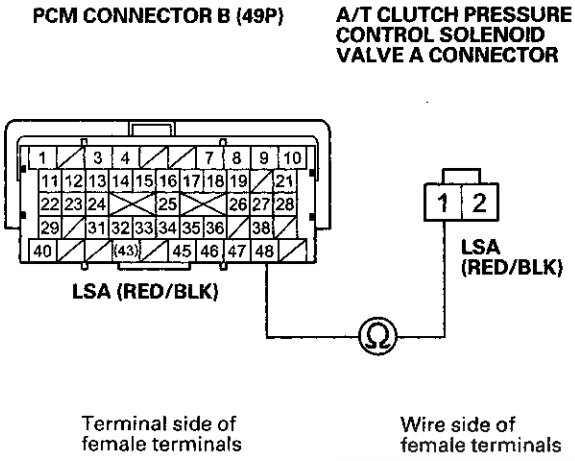
Wire side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and body ground, then go to step 21.

NO–Go to step 20.

20. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminal B48.



Is there continuity?

YES–Go to step 27.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve A connector terminal No. 1 and PCM connector terminal B48, then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine, and wait for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0962 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO–Go to step 26.

26. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
29. Start the engine, and wait for at least 1 second.
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0962 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1.

    NO–Go to step 31.

31. Monitor the OBD STATUS for P0962 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0963 indicated?

   YES–Go to step 8.

   NO–Go to step 5.

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

   Does the HDS indicate NORMAL?

   YES–Go to step 6.

   NO–Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve A at 0.2 A.
7. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

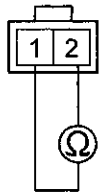
   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve A connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

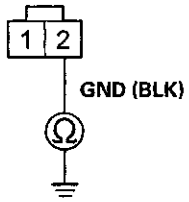
Is there 3—10 Ω?

YES–Go to step 11.

NO–Replace A/T clutch pressure control solenoid valve A (see page 14-184), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 18.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve A and body ground (G101) (see page 22-20), or repair poor ground (G101), then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0963 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1.

    NO–Go to step 17.

17. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
20. Start the engine, and wait for at least 1 second.
21. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0963 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO–Go to step 22.

22. Monitor the OBD STATUS for P0963 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0966 indicated?

   YES–Go to step 8.

   NO–Go to step 5.

5. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

   Does the HDS indicate NORMAL?

   YES–Go to step 6.

   NO–Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve B at 1.0 A.
7. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

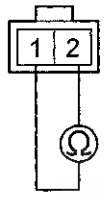
   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

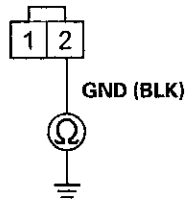
Is there 3—10 Ω?

YES–Go to step 11.

NO–Replace A/T clutch pressure control solenoid valve B (see page 14-186), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

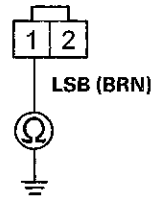
Is there continuity?

YES–Go to step 12.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve B and body ground (G101) (see page 22-20), or repair poor ground (G101), then go to step 16.

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

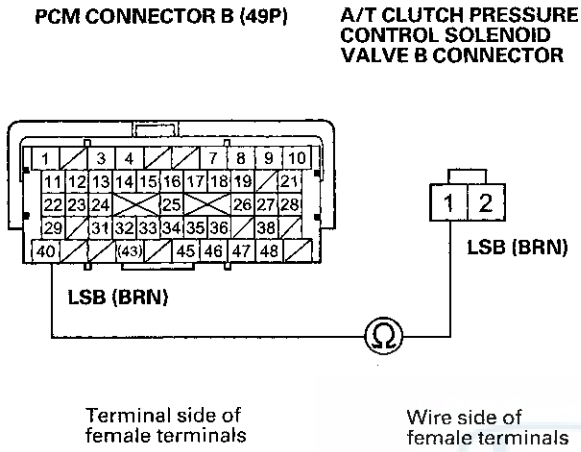
YES–Repair short to body ground in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and body ground, then go to step 16.

NO–Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminal B40.



Is there continuity?

YES–Go to step 22.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve B connector terminal No. 1 and PCM connector terminal B40, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0966 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and wait for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0966 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0966 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0967 indicated?

    YES–Go to step 8.

    NO–Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve B in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve B with the HDS.

    Does the HDS indicate NORMAL?

    YES–Go to step 6.

    NO–Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve B at 0.2 A.
7. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Go to step 8.

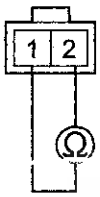
    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve B connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

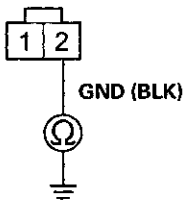
Is there 3—10 Ω?

YES–Go to step 11.

NO–Replace A/T clutch pressure control solenoid valve B (see page 14-186), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 18.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve B and body ground (G101) (see page 22-20), or repair poor ground (G101), then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0967 indicated?

YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1.

NO–Go to step 17.

17. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting.■

NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
20. Start the engine, and wait for at least 1 second.
21. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0967 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO–Go to step 22.
22. Monitor the OBD STATUS for P0967 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0970 indicated?

    YES–Go to step 8.

    NO–Go to step 5.
5. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

    Does the HDS indicate NORMAL?

    YES–Go to step 6.

    NO–Go to step 8.
6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve C at 1.0 A.
7. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Go to step 8.

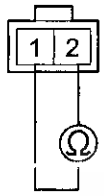
    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

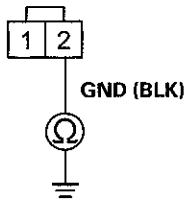
Is there 3—10 Ω?

YES–Go to step 11.

NO–Replace A/T clutch pressure control solenoid valve C (see page 14-186), then go to step 16.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

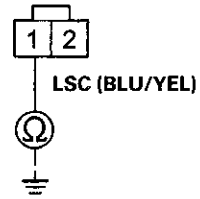
Is there continuity?

YES–Go to step 12.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve C and body ground (G101) (see page 22-20), or repair poor ground (G101), then go to step 16.

12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



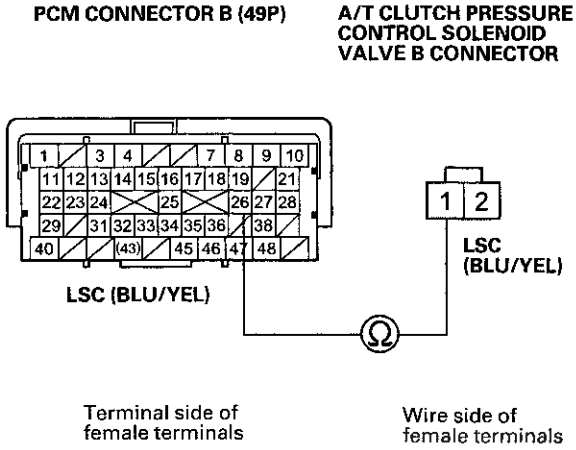
Wire side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and body ground, then go to step 16.

NO–Go to step 15.

15. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B26.



Is there continuity?

YES–Go to step 22.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve C connector terminal No. 1 and PCM connector terminal B26, then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, and wait for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0970 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine, and wait for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0970 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.

26. Monitor the OBD STATUS for P0970 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0971: Problem in A/T Clutch Pressure Control Solenoid Valve C

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0971 indicated?

   YES–Go to step 8.

   NO–Go to step 5.

5. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

   Does the HDS indicate NORMAL?

   YES–Go to step 6.

   NO–Go to step 8.

6. In the Clutch Pressure Control Solenoid Valve Control menu, select A/T clutch pressure control solenoid valve C at 0.2 A.
7. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

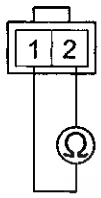
   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Disconnect the A/T clutch pressure control solenoid valve C connector.
10. Measure the resistance between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

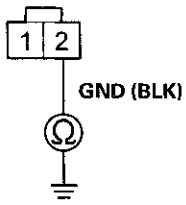
Is there 3—10 Ω?

YES–Go to step 11.

NO–Replace A/T clutch pressure control solenoid valve C (see page 14-186), then go to step 12.

11. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Go to step 18.

NO–Repair open in the wire between A/T clutch pressure control solenoid valve C and body ground (G101) (see page 22-20), or repair poor ground (G101), then go to step 12.

12. Reconnect all connectors.
13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Start the engine, and wait for at least 1 second.
16. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0971 indicated?

YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1.

NO–Go to step 17.

17. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

Does the HDS indicate PASSED?

YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting.■

NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.
19. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
20. Start the engine, and wait for at least 1 second.
21. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0971 indicated?

    YES–Check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1.

    NO–Go to step 22.

22. Monitor the OBD STATUS for P0971 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between A/T clutch pressure control solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 20. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 20.

DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0973 indicated?

   YES–Go to step 8.

   NO–Go to step 5.

5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

   NO–Go to step 8.

6. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

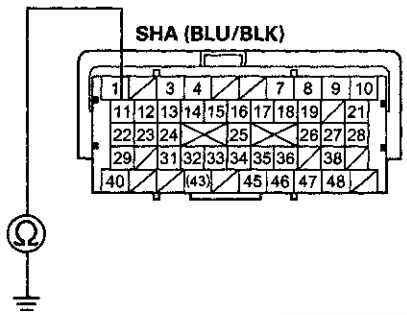
   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).
11. Measure the resistance between PCM connector terminal B11 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

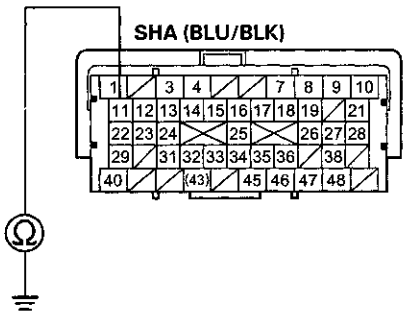
Is there less than 12 Ω?

YES–Go to step 12.

NO–Go to step 22.

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminal B11 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B11 and the shift solenoid wire harness connector, then go to step 16.

NO–Go to step 14.

14. Inspect shift solenoid valve A and the shift solenoid wire harness (see page 14-179).
15. Replace either shift solenoid valve A or the shift solenoid wire harness (see page 14-179), whichever failed the test, then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0973 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0973 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.

26. Monitor the OBD STATUS for P0973 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0974 indicated?

   YES–Go to step 8.

   NO–Go to step 5.
5. Select Shift Solenoid Valve A in the Miscellaneous Test Menu, and test shift solenoid valve A with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

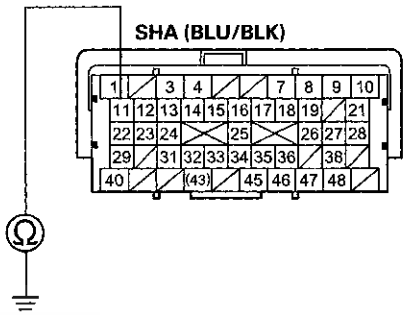
   NO–Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).
11. Measure the resistance between PCM connector terminals B11 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there 12—25 Ω?

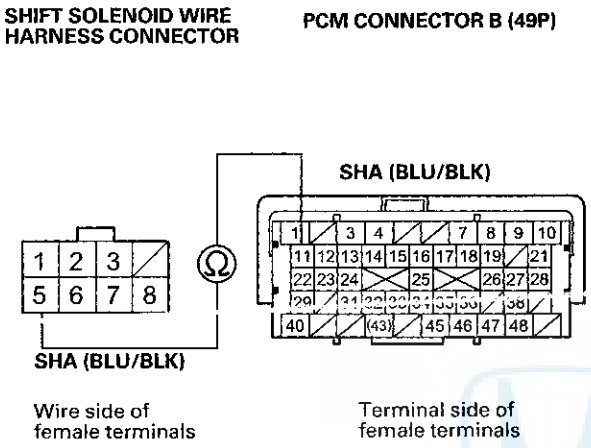
YES–Go to step 22.

NO–Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminal B11 and shift solenoid wire harness connector terminal No. 5.

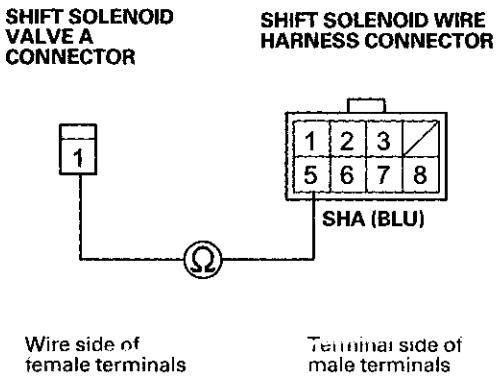


Is there continuity?

YES–Go to step 14.

NO–Repair open in the wire between PCM connector terminal B11 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-179).
15. Check for continuity between shift solenoid wire harness connector terminal No. 5 and the shift solenoid valve A connector terminal.



Is there continuity?

YES–Replace shift solenoid valve A (see page 14-179), then go to step 16.

NO–Replace the shift solenoid wire harness (see page 14-179), then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0974 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1.

    NO–Go to step 21.
21. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.
22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0974 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0974 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0976 indicated?

   YES–Go to step 8.

   NO–Go to step 5.
5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

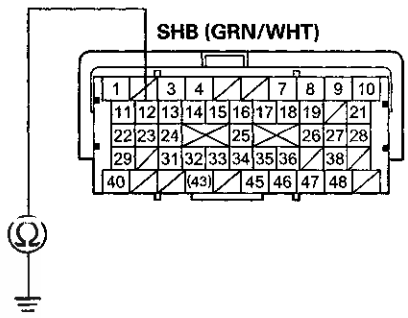
   NO–Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).
11. Measure the resistance between PCM connector terminal B12 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

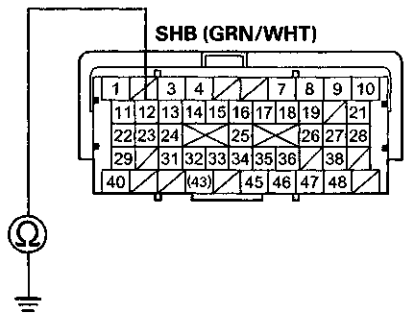
Is there less than 12 Ω?

YES–Go to step 12.

NO–Go to step 22.

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminal B12 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B12 and the shift solenoid wire harness connector, then go to step 16.

NO–Go to step 14.

14. Inspect shift solenoid valve B and the shift solenoid wire harness (see page 14-179).
15. Replace either shift solenoid valve B or the shift solenoid wire harness (see page 14-179), whichever failed the test, then go to step 16.
16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle with the shift lever in D through 1st to 3rd gears, then drive in 3rd gear for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0976 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle with the shift lever in D through 1st to 3rd gears, then drive in 3rd gear for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0976 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0976 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle with the shift lever in D through 1st to 3rd gears, then drive in 3rd gear for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0977 indicated?

   YES–Go to step 8.

   NO–Go to step 5.
5. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and test shift solenoid valve B with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

   NO–Go to step 8.
6. Test-drive the vehicle with the shift lever in D through 1st to 3rd gears, then drive in 3rd gear for at least 1 second.
7. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

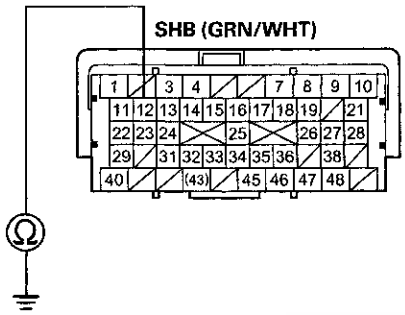
   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).
11. Measure the resistance between PCM connector terminal B12 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

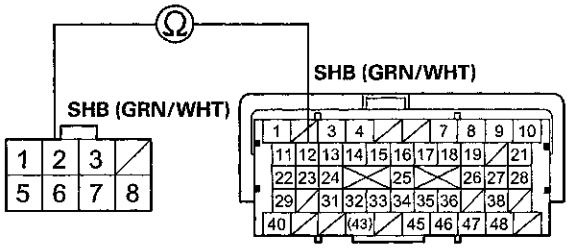
Is there 12 – 25 Ω?

YES–Go to step 22.

NO–Go to step 12.

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminal B12 and shift solenoid wire harness connector terminal No. 2.

SHIFT SOLENOID WIRE HARNESS CONNECTOR **PCM CONNECTOR B (49P)**



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES–Go to step 14.

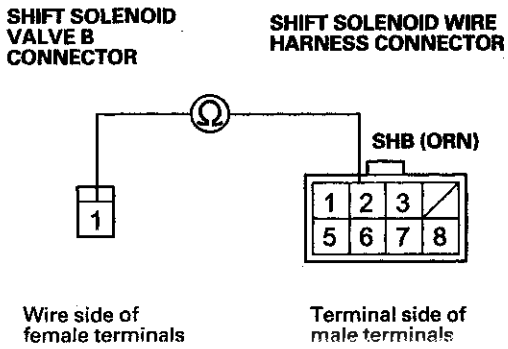
NO–Repair open in the wire between PCM connector terminal B12 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-179).

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between shift solenoid wire harness connector terminal No. 2 and the shift solenoid valve B connector terminal.



Is there continuity?

YES–Replace shift solenoid valve B (see page 14-179), then go to step 16.

NO–Replace the shift solenoid wire harness (see page 14-179), then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle with the shift lever in D through 1st to 3rd gears, then drive in 3rd gear for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0977 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1.

    NO–Go to step 21.

21. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.

22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine with the shift lever in P, and wait for at least 1 second. Test-drive the vehicle with the shift lever in D through 1st to 3rd gears, then drive in 3rd gear for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0977 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0977 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0979 indicated?

   YES–Go to step 8.

   NO–Go to step 5.
5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

   NO–Go to step 8.
6. Test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0979 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

(cont'd)

DTC Troubleshooting (cont'd)

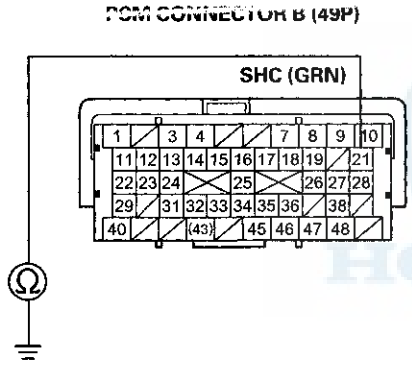
8. Check for a blown No. 10 (10 A) fuse in the driver's under-dash fuse/relay box.

   Is the No.10 (10 A) fuse OK?

   YES–Go to step 9.

   NO–Replace the fuse, then go to step 22. If the fuse blows again, repair short the No.10 (10A) fuse circuit, Then go to step 19.

9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (49P).
12. Measure the resistance between PCM connector terminal B21 and body ground.



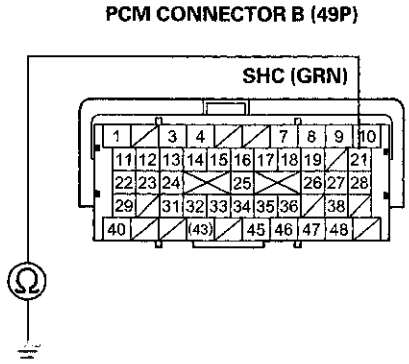
Terminal side of female terminals

Is there less than 12 Ω?

YES–Go to step 13.

NO–Go to step 27.

13. Disconnect the shift solenoid wire harness connector.
14. Check for continuity between PCM connector terminal B21 and body ground.



Terminal side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B21 and the shift solenoid wire harness connector, then go to step 21.

NO–Go to step 15.

15. Inspect shift solenoid valve C (see page 14-179).

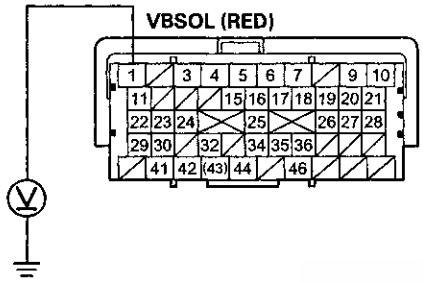
    Is shift solenoid valve C OK?

    YES–Go to step 16.

    NO–Replace shift solenoid valve C or the shift solenoid wire harness (see page 14-179), then go to step 21.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (49P).
19. Turn the ignition switch to ON (II).
20. Measure the voltage between PCM connector terminal A1 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage?

YES–Go to step 27.

NO–Repair open in the wires between PCM connector terminal A1 and the sriver's under-dash fuse/relay box, then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0979 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1.

    NO–Go to step 26.

26. Monitor the OBD status for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
29. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0979 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1.

    NO–Go to step 31.
31. Monitor the OBD status for P0979 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0980 indicated?

    YES–Go to step 8.

    NO–Go to step 5.
5. Select Shift Solenoid Valve C in the Miscellaneous Test Menu, and test shift solenoid valve C with the HDS.

    Is a clicking sound heard?

    YES–Go to step 6.

    NO–Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

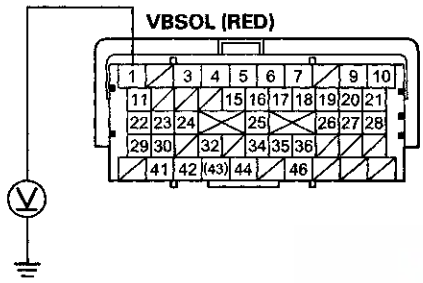
    Does the HDS indicate FAILED?

    YES–Go to step 8.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).
11. Turn the ignition switch to ON (II).
12. Measure the voltage between PCM connector terminal A1 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

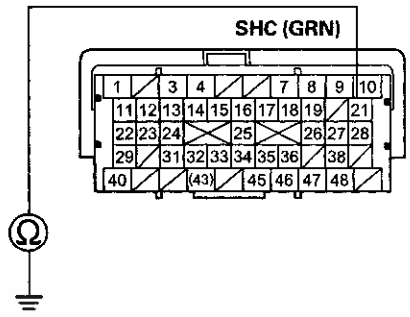
Is there battery voltage?

YES–Go to step 13.

NO–Check for a blown No. 10 fuse (10 A) in the driver's under-dash fuse/relay box. If the fuse is blown, replace it. If it blows again, repair short in the No.10 (10 A) driver's under-dash fuse circuit. If the fuse is OK, repair open in the wire between PCM connector terminal A1 and the driver's under-dash fuse/relay box, then go to step 21.

13. Turn the ignition switch to LOCK (0).
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector B (49P).
16. Measure the resistance between PCM connector terminal B21 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there 12—25 Ω?

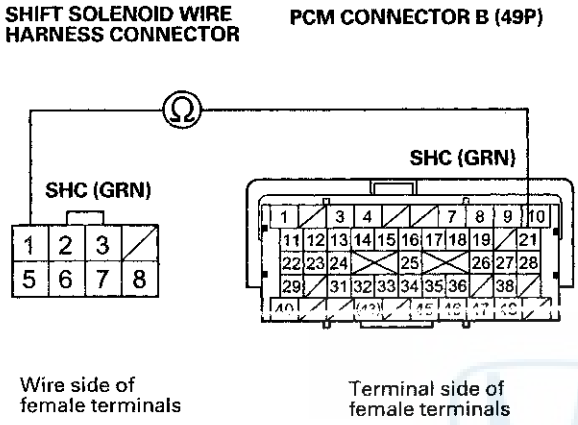
YES–Go to step 27.

NO–Go to step 17.

(cont'd)

DTC Troubleshooting (cont'd)

17. Disconnect the shift solenoid wire harness connector.
18. Check for continuity between PCM connector terminal B21 and shift solenoid wire harness connector terminal No. 1.

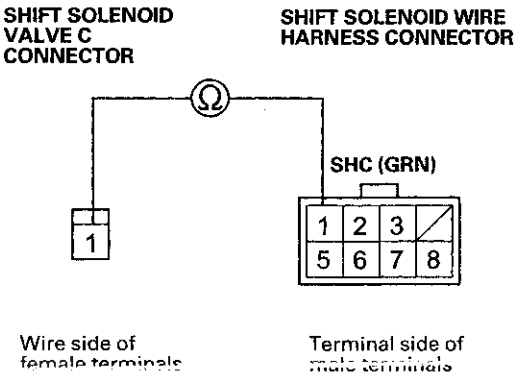


Is there continuity?

YES–Go to step 19.

NO–Repair open in the wire between PCM connector terminal B21 and the shift solenoid wire harness connector, then go to step 21.

19. Remove the shift solenoid wire harness (see page 14-179).
20. Check for continuity between shift solenoid wire harness connector terminal No. 1 and the shift solenoid valve C connector terminal.



Is there continuity?

YES–Replace shift solenoid valve C (see page 14-179), then go to step 21.

NO–Replace the shift solenoid wire harness (see page 14-179), then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0980 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.
27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
29. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 1st gear with the shift lever in D for at least 1 second.
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0980 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1.

    NO–Go to step 31.
31. Monitor the OBD STATUS for P0980 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve C and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

DTC Troubleshooting (cont'd)

DTC P0982: Short in Shift Solenoid Valve D Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0982 indicated?

   YES–Go to step 8.

   NO–Go to step 5.
5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

   NO–Go to step 8.
6. Test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
7. Monitor the OBD STATUS for P0982 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

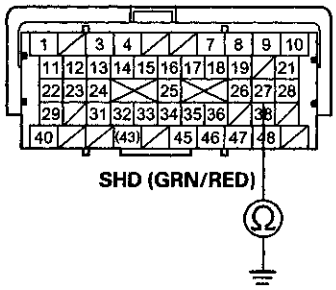
   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Check for a blown No. 10 (10 A) fuse in the driver's under-dash fuse/relay box.

   Is the No.7 (15 A) fuse OK?

   YES–Go to step 9.

   NO–Replace the fuse, then go to step 22. If the fuse blows again, repair short the No.10 (10A) fuse circuit, Then go to step 19.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (49P).
12. Measure the resistance between PCM connector terminal B27 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

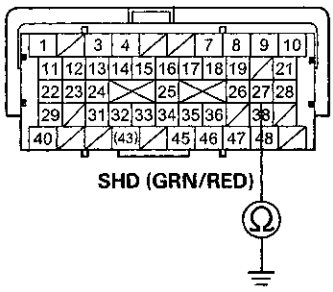
Is there less than 12 Ω?

YES–Go to step 13.

NO–Go to step 27.

13. Disconnect the shift solenoid wire harness connector.
14. Check for continuity between PCM connector terminal B27 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B27 and the shift solenoid wire harness connector, then go to step 16.

NO–Go to step 15.

15. Inspect shift solenoid valve D (see page 14-179).

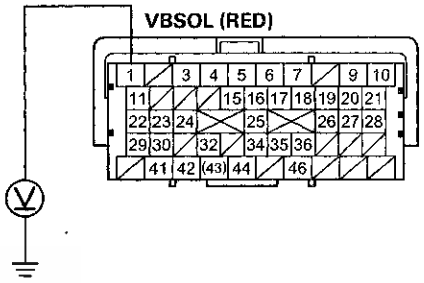
Is shift solenoid valve D OK?

YES–Go to step 16.

NO–Replace shift solenoid valve D or the shift solenoid wire harness (see page 14-179), then go to step 21.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (49P).
19. Turn the ignition switch to ON (II).
20. Measure the voltage between PCM connector terminal A1 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage?

YES–Go to step 27.

NO–Repair open in the wires between PCM connector terminal A1 and the driver's under-dash fuse/relay box, then go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0982 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1.

    NO–Go to step 26.

26. Monitor the OBD status for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
29. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0982 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1.

    NO–Go to step 31.

31. Monitor the OBD status for P0982 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

DTC P0983: Open in Shift Solenoid Valve D Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0983 indicated?

   YES–Go to step 8.

   NO–Go to step 5.
5. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and test shift solenoid valve D with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

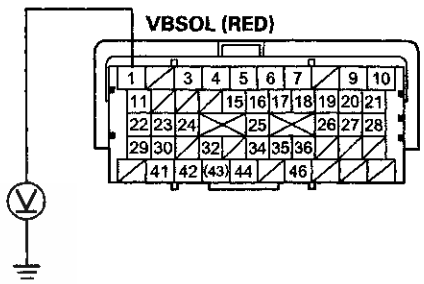
   NO–Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (49P).
11. Turn the ignition switch to ON (II).
12. Measure the voltage between PCM connector terminal A1 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage?

YES–Go to step 13.

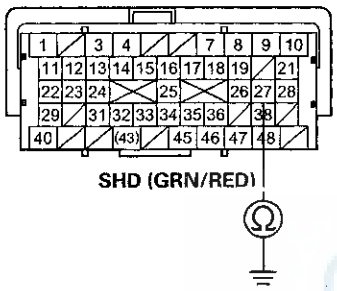
NO–Check for a blown No. 10 fuse (10 A) in the driver's under-dash fuse/relay box. If the fuse is blown, replace it. If it blows again, repair short in the No.10 (10 A) driver's under-dash fuse circuit. If the fuse is OK, repair open in the wire between PCM connector terminal A1 and the driver's under-dash fuse/relay box, then go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

13. Turn the ignition switch to LOCK (0).
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector B (49P).
16. Measure the resistance between PCM connector terminal B27 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

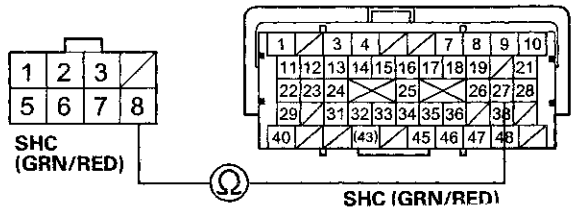
Is there 12 – 25 Ω?

YES–Go to step 27.

NO–Go to step 17.

17. Disconnect the shift solenoid wire harness connector.
18. Check for continuity between PCM connector terminal B27 and shift solenoid wire harness connector terminal No. 8.

SHIFT SOLENOID WIRE HARNESS CONNECTOR **PCM CONNECTOR B (49P)**



Wire side of female terminals

Terminal side of female terminals

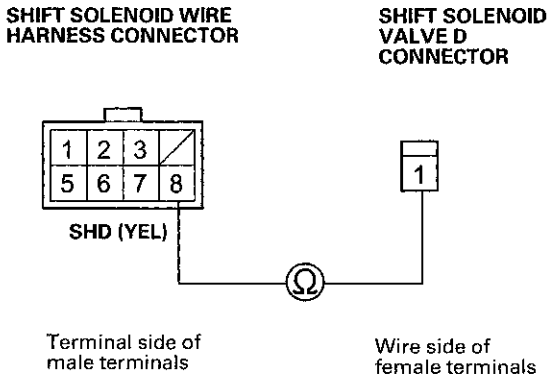
Is there continuity?

YES–Go to step 19.

NO–Repair open in the wire between PCM connector terminal B27 and the shift solenoid wire harness connector, then go to step 21.

19. Remove the shift solenoid wire harness (see page 14-179).

20. Check for continuity between shift solenoid wire harness connector terminal No. 8 and the shift solenoid valve D connector terminal.



Is there continuity?

YES–Replace shift solenoid valve D (see page 14-179), then go to step 21.

NO–Replace the shift solenoid wire harness (see page 14-179), then go to step 21.

21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Clear the DTC with the HDS.
24. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0983 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
29. Start the engine with the shift lever in P, and wait for at least 1 second. Then test-drive the vehicle in 2nd gear with the shift lever in D for at least 1 second.
30. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0983 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM, then go to step 29. If the PCM was substituted, go to step 1. (see page 11-7)

    NO–Go to step 31.
31. Monitor the OBD STATUS for P0983 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve D and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 29. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 29.

DTC P0985: Short in Shift Solenoid Valve E Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in P, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0985 indicated?

    YES–Go to step 8.

    NO–Go to step 5.
5. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.

    Is a clicking sound heard?

    YES–Go to step 6.

    NO–Go to step 8.
6. Start the engine with the shift lever in P, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

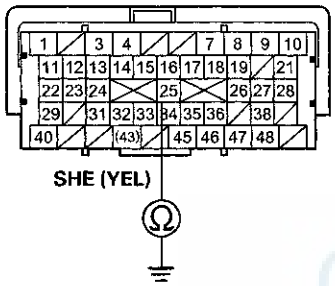
    Does the HDS indicate FAILED?

    YES–Go to step 8.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).
11. Measure the resistance between PCM connector terminal B25 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

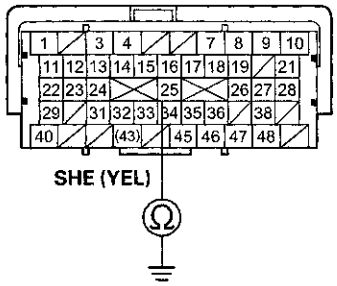
Is there less than 12 Ω?

YES–Go to step 12.

NO–Go to step 22.

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminal B25 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B25 and the shift solenoid wire harness connector, then go to step 16.

NO–Go to step 14.

14. Inspect shift solenoid valve E and the shift solenoid wire harness (see page 14-179).
15. Replace either shift solenoid valve E or the shift solenoid wire harness (see page 14-179), whichever failed the test, then go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0985 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1.

    NO–Go to step 21.
21. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.
22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0985 indicated?

    YES–Check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0985 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for intermittent short to body ground in the wire between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC P0986: Open in Shift Solenoid Valve E Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine with the shift lever in N, and wait for at least 1 second.
4. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P0986 indicated?

   YES–Go to step 8.

   NO–Go to step 5.
5. Select Shift Solenoid Valve E in the Miscellaneous Test Menu, and test shift solenoid valve E with the HDS.

   Is a clicking sound heard?

   YES–Go to step 6.

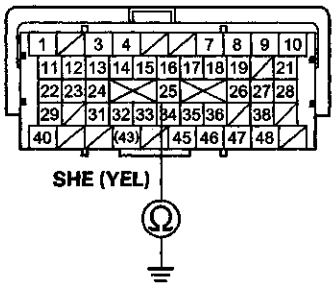
   NO–Go to step 8.
6. Start the engine with the shift lever in N, and wait for at least 1 second.
7. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the HDS indicates NOT COMPLETED, go to step 5.
8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).
11. Measure the resistance between PCM connector terminal B25 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there 12 – 25 Ω?

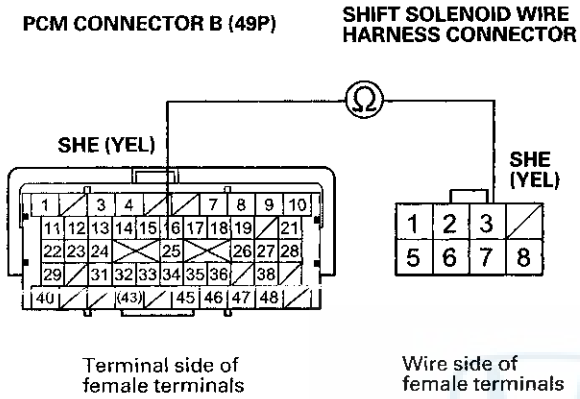
YES–Go to step 22.

NO–Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Disconnect the shift solenoid wire harness connector.
13. Check for continuity between PCM connector terminal B25 and shift solenoid wire harness connector terminal No. 3.

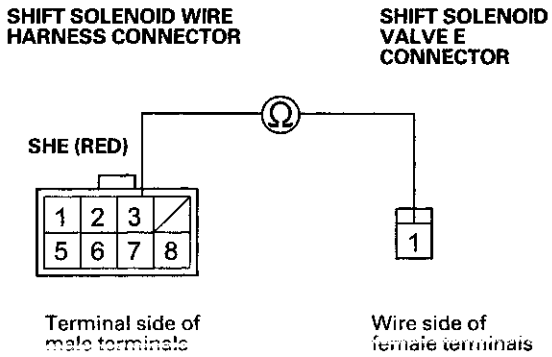


Is there continuity?

YES–Go to step 14.

NO–Repair open in the wire between PCM connector terminal B25 and the shift solenoid wire harness connector, then go to step 16.

14. Remove the shift solenoid wire harness (see page 14-179).
15. Check for continuity between shift solenoid wire harness connector terminal No. 3 and the shift solenoid valve E connector terminal.



Is there continuity?

YES–Replace shift solenoid valve E (see page 14-179), then go to step 16.

NO–Replace the shift solenoid wire harness (see page 14-179), then go to step 16.

16. Reconnect all connectors.
17. Turn the ignition switch to ON (II).
18. Clear the DTC with the HDS.
19. Start the engine, with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.
20. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0986 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve E and the PCM, then go to step 1.

    NO–Go to step 21.
21. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 20, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve E and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 19.
22. Reconnect all connectors.
23. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
24. Start the engine, with the shift lever in P, and wait for at least 1 second. Then shift to N, and wait for at least 1 second.
25. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P0986 indicated?

    YES–Check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1.

    NO–Go to step 26.
26. Monitor the OBD STATUS for P0986 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 25, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between shift solenoid valve E and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 24. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 24.

DTC Troubleshooting (cont'd)

DTC P16C0: PCM A/T Control System Incomplete Update

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- This code is indicated when PCM updating is incomplete.
- Do not turn the ignition switch to LOCK (0) or ACCESSORY (I) while updating the PCM. If you turn the ignition switch to LOCK (0) or ACCESSORY (I) before completion, the PCM can be damaged.

1. Update the PCM (see page 11-203).
2. Check for Pending or Confirmed DTCs with the HDS.

   Is DTC P16C0 indicated?

   YES–Replace the PCM (see page 11-204).■

   NO–PCM updating is complete.■

DTC P1717: Open in Transmission Range Switch ATPRVS Switch Circuit

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).
- 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 to ON (II).
2. Shift to R, and check the A/T R Switch in the Data List with the HDS.

   Is the A/T R Switch ON?

   YES–Go to step 3.

   NO–Check for proper transmission range switch installation (see page 14-240), adjust the shift cable (see page 14-232), then recheck.■

3. Check the Reverse Switch (ATPRVS) in the Data List with the HDS.

   Is the Reverse Switch (ATPRVS) ON?

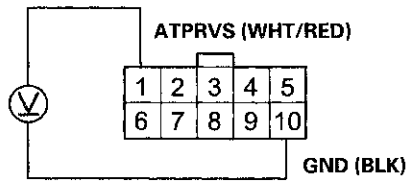
   YES–Intermittent failure, the system is OK at this time.■

   NO–Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Disconnect the transmission range switch connector.

6. Turn the ignition switch to ON (II).
7. Measure the voltage between transmission range switch connector terminals No. 1 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

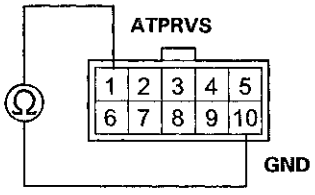
Is there battery voltage?

YES–Go to step 8.

NO–Repair open in the wire between PCM connector terminal B23 and the transmission range switch, then go to step 9.

8. Check for continuity between transmission range switch connector terminals No. 1 and No. 10 when the shift lever is in R, and when the shift lever is shifted to any position other than R.

TRANSMISSION RANGE SWITCH CONNECTOR



Terminal side of male terminals

Is there continuity when the shift lever is in R, and no continuity when the shift lever is shifted to any position other than R?

YES–Go to step 15.

NO–Replace the transmission range switch (see page 14-240), then go to step 9.

9. Reconnect all connectors.
10. Turn the ignition switch to ON (II).
11. Clear the DTC with the HDS.
12. Start the engine with the shift lever in P. Shift to N from P, then shift to R, and wait for at least 2 seconds.
13. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1717 indicated?

    YES–Check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1.

    NO–Go to step 14.
14. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 13, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM, then go to step 1. If the HDS indicates NOT COMPLETED, go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

15. Reconnect all connectors.
16. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
17. Start the engine with the shift lever in P. Shift to N from P, then shift to R, and wait for at least 2 seconds.
18. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1717 indicated?

    YES–Check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 17. If the PCM was substituted, go to step 1.

    NO–Go to step 19.
19. Monitor the OBD STATUS for P1717 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 18, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the transmission range switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 17. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 17.

DTC P1730: Problem in Shift Control System:

- Shift Solenoid Valves A or D Stuck OFF
- Shift Solenoid Valve B Stuck ON
- Shift Valves A, B, or D Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review the General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 16.

   NO–Replace the ATF (see page 14-192), then go to step 4.
4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.
8. Clear the DTC with the HDS.
9. Select Shift Solenoid Valve A in the 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 page 14-179), then go to step 14.

10. Select Shift Solenoid Valve B in the Miscellaneous Test Menu, and check that shift solenoid valve B operates with the HDS.

    Is a clicking sound heard?

    YES–Go to step 11.

    NO–Replace shift solenoid valve B (see page 14-179), then go to step 14.

11. Select Shift Solenoid Valve D in the Miscellaneous Test Menu, and check that shift solenoid valve D operates with the HDS.

    Is a clicking sound heard?

    YES–Go to step 12.

    NO–Replace shift solenoid valve D (see page 14-179), then go to step 14.

12. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

13. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair the hydraulic system related to shift valves A, B, and D, or replace the transmission, then go to step 16.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 12.

14. Turn the ignition switch to ON (II).

15. Clear the DTC with the HDS.

16. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

17. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1730 indicated?

    YES–Go to step 8.

    NO–Go to step 18.

18. Monitor the OBD STATUS for P1730 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 17, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 16.

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: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

    Does the strainer have metal debris or excessive clutch material?

    YES–Replace the transmission, then go to step 14.

    NO–Replace the ATF (see page 14-192), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1731 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Go to step 8.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve E in the 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 page 14-179), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

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

    Does the HDS indicate NORMAL?

    YES–Intermittent failure, the system is OK at this time.■

    NO–Follow the instructions indicated on the HDS according to the test result, if the HDS 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 page 14-182).

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

    YES–Repair the hydraulic system related to shift valve E, or replace the transmission, then go to step 14.

    NO–Replace A/T clutch pressure control solenoid valve A (see page 14-184), then go to step 12.

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1731 indicated?

    YES–Go to step 8.

    NO–Go to step 16.

16. Monitor the OBD STATUS for P1731 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P1732: Problem in Shift Control System:

- Shift Solenoid Valves B or C Stuck ON
- Shift Valves B or C Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

    Does the strainer have metal debris or excessive clutch material?

    YES–Replace the transmission, then go to step 15.

    NO–Replace the ATF (see page 14-192), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Go to step 8.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve B in the 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 page 14-179), then go to step 13.

10. Select Shift Solenoid Valve C in the 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 page 14-179), then go to step 13.

11. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
12. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair the hydraulic system related to shift valves B and C, or replace the transmission, then go to step 15.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 11.

13. Turn the ignition switch to ON (II).
14. Clear the DTC with the HDS.
15. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
16. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1732 indicated?

    YES–Go to step 8.

    NO–Go to step 17.

17. Monitor the OBD STATUS for P1732 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 15.

DTC P1733: Problem in Shift Control System:

- Shift Solenoid Valve D Stuck ON
- Shift Valve D Stuck
- A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

    Does the strainer have metal debris or excessive clutch material?

    YES–Replace the transmission, then go to step 14.

    NO–Replace the ATF (see page 14-192), then go to step 4.

4. Turn the ignition switch to ON (II).
5. Clear the DTC with the HDS.
6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.
7. Monitor the OBD STATUS for P1733 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Go to step 8.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

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

    Is a clicking sound heard?

    YES–Go to step 10.

    NO–Replace shift solenoid valve D (see page 14-179), then go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

10. Select Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu, and test A/T clutch pressure control solenoid valve C with the HDS.

    Does the HDS indicate NORMAL?

    YES–Go to step 11.

    NO–Follow the instructions indicated on the HDS according to the test result, if the HDS 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 C (see page 14-184).

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

    YES–Repair the hydraulic system related to shift valve D, or replace the transmission, then go to step 14.

    NO–Replace A/T clutch pressure control solenoid C (see page 14-186), then go to step 12.

12. Turn the ignition switch to ON (II).

13. Clear the DTC with the HDS.

14. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

15. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1733 indicated?

    YES–Go to step 8.

    NO–Go to step 16.

16. Monitor the OBD STATUS for P1733 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 14.

DTC P1734: Problem in Shift Control System:

- Shift Solenoid Valves B or C Stuck OFF
- Shift Valves B or C Stuck

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

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 on page 14-192) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

   Does the strainer have metal debris or excessive clutch material?

   YES–Replace the transmission, then go to step 15.

   NO–Replace the ATF (see page 14-192), then go to step 4.

4. Turn the ignition switch to ON (II).

5. Clear the DTC with the HDS.

6. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

7. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

   Does the HDS indicate FAILED?

   YES–Go to step 8.

   NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 6.

8. Clear the DTC with the HDS.

9. Select Shift Solenoid Valve B in the 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 page 14-179), then go to step 13.

10. Select Shift Solenoid Valve C in the 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 page 14-179), then go to step 13.

11. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

12. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

    Does the HDS indicate FAILED?

    YES–Repair the hydraulic system related to shift valves B and C, or replace the transmission, then go to step 15.

    NO–If the HDS indicates PASSED, intermittent failure, the system is OK at this time. If the HDS indicates NOT COMPLETED, go to step 11.

13. Turn the ignition switch to ON (II).

14. Clear the DTC with the HDS.

15. Test-drive the vehicle with the shift lever in D, and let the transmission shift through all five gears.

16. Check for Pending or Confirmed DTCs with the HDS.

    Is DTC P1734 indicated?

    YES–Go to step 8.

    NO–Go to step 17.

17. Monitor the OBD STATUS for P1734 in the DTCs MENU with the HDS.

    Does the HDS indicate PASSED?

    YES–Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 16, go to the indicated DTC's troubleshooting.■

    NO–If the HDS indicates FAILED, go to step 8. If the HDS indicates NOT COMPLETED, go to step 15.

DTC U0029: F-CAN Malfunction (F-CAN BUS-OFF (PCM))

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Check for Pending or Confirmed DTCs in the PGM-FI System with the HDS.

    Is DTC U0029 indicated in the PGM-FI SYSTEM?

    YES–Go to the DTC U0029 troubleshooting in the PGM-FI SYSTEM (see page 11-167).■

    NO–Go to step 4.

4. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

    Is DTC U0029 indicated in the A/T SYSTEM?

    YES–Go to step 5.

    NO–Intermittent failure, the system is OK at this time. If any other Pending or Confirmed DTCs were indicated, go to the indicated DTC's troubleshooting.■

5. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).

6. Start the engine, and wait for at least 2 minutes.

7. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

    Is DTC U0029 indicated in the A/T SYSTEM?

    YES–Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

    NO–Go to step 8.

(cont'd)

DTC Troubleshooting (cont'd)

8. Monitor the OBD STATUS for U0029 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 7, go to the indicated DTC's troubleshooting.■

   NO–If the HDS indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC U0122: F-CAN Malfunction (PCM-VSA Modulator-Control Unit)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs in the PGM-FI System with the HDS.

   Is DTC U0122 indicated in the PGM-FI SYSTEM?

   YES–Go to the DTC U0122 troubleshooting in the PGM-FI SYSTEM (see page 11-168).■

   NO–Go to step 4.

4. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0122 indicated in the A/T SYSTEM?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. If any other Pending or Confirmed DTCs were indicated, go to the indicated DTC's troubleshooting.■

5. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0122 indicated in the A/T SYSTEM?

   YES–Check for poor connections or loose terminals between the VSA modulator-control unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO–Go to step 8.

8. Monitor the OBD STATUS for U0122 in the DTCs MENU with the HDS.

   Does the HDS indicate PASSED?

   YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 7, go to the indicated DTC's troubleshooting.■

   NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the VSA modulator-control unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

DTC U0155: F-CAN Malfunction (PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot with the HDS, and review General Troubleshooting Information (see page 14-4).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Pending or Confirmed DTCs in the PGM-FI System with the HDS.

   Is DTC U0155 indicated in the PGM-FI SYSTEM?

   YES–Go to the DTC U0155 troubleshooting in the PGM-FI SYSTEM (see page 11-169).■

   NO–Go to step 4.

4. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES–Go to step 5.

   NO–Intermittent failure, the system is OK at this time. If any other Pending or Confirmed DTCs were indicated, go to the indicated DTC's troubleshooting.■

5. Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7).
6. Start the engine, and wait for at least 2 minutes.
7. Check for Pending or Confirmed DTCs in the A/T SYSTEM with the HDS.

   Is DTC U0155 indicated in the A/T SYSTEM?

   YES–Check for poor connections or loose terminals between the gauge control module and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

   NO–Go to step 8.

(cont'd)

DTC Troubleshooting (cont'd)

8. Monitor the OBD STATUS for U0155 in the DTCs MENU with the HDS.

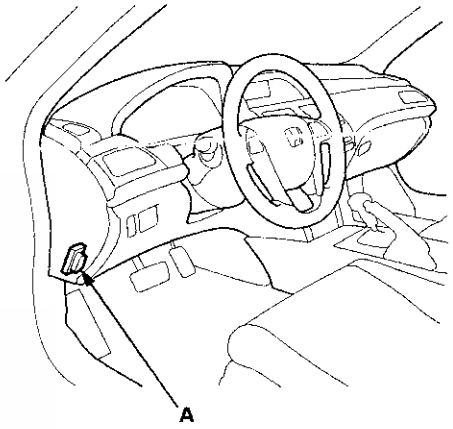
   Does the HDS indicate PASSED?

   YES–If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-204). If any other Pending or Confirmed DTCs were indicated in step 7, go to the indicated DTC's troubleshooting.■

   NO–If the HDS indicates FAILED, check for poor connections or loose terminals between the gauge control module and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the HDS indicates NOT COMPLETED, go to step 6.

Road Test

1. Apply the parking brake, and block both rear wheels. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
2. Shift to D while pressing the brake pedal. Press the accelerator pedal, and release it suddenly; the engine should not stall.
3. Repeat step 2 in all shift lever positions.
4. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



5. Turn the ignition switch to ON (II), and go to the A/T Data List. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).

6. Prepare the HDS to take a HIGH SPEED SNAPSHOT (refer to the HDS user's guide for more details if needed):
   - Select the High Speed icon.
   - Select these parameters:
     - Vehicle Speed
     - Output Shaft (Countershaft) Speed (rpm)
     - Input Shaft (Mainshaft) Speed (rpm)
     - Engine Speed
     - TP Sensor
     - APP Sensor A (V)
     - ETR
     - Battery Voltage
     - Shift Control
     - Brake Switch
   - Set the Trigger Type to Parameter.
   - Adjust the Parameter setting to APP Sensor A above 1.2 V.
   - Set the recording time to 60 seconds.
   - Set the trigger point to −30 seconds.
7. Find a suitable level road. When you are ready to begin the test, press OK on the HDS.
8. Monitor the HDS and accelerate quickly until the APP Sensor A reads 1.3 V. Maintain a steady throttle until the transmission shifts to 5th gear, then slow the vehicle and come to a stop.
9. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 8.
10. Adjust the parameter setting to 2.4 V. Test-drive the vehicle again. While monitoring the HDS, accelerate quickly until the APP Sensor A reads 2.5 V. Maintain a steady throttle until the transmission shifts to 5th gear (or reasonable speed), then slow the vehicle and come to a stop.
11. Save the snapshot if the entire event was recorded or increase the recording time setting as necessary and repeat step 10.
12. Accelerate quickly until the accelerator pedal is to the floor. Maintain a steady pedal until the transmission shifts to 3rd gear, then slow to a stop, and save the snapshot.
13. Review each snapshot individually, and compare the Shift Control, the APP Sensor A voltage, and the Vehicle Speed to the following table:

'08-09 models with the K24Z2 engine
Upshift: D position

APP Sensor A voltage: 1.3 V	
1st → 2nd	9−11 mph (14−18 km/h)
2nd → 3rd	17−21 mph (27−33 km/h)
3rd → 4th	25−30 mph (41−49 km/h)
4th → 5th	39−45 mph (62−72 km/h)
Lock-up ON	30−35 mph (48−56 km/h)
APP Sensor A voltage: 2.5 V	
1st → 2nd	19−23 mph (31−37 km/h)
2nd → 3rd	38−44 mph (61−71 km/h)
3rd → 4th	55−63 mph (89−101 km/h)
4th → 5th	109−119 mph (176−192 km/h)
Lock-up ON	116−126 mph (186−202 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
1st → 2nd	37−43 mph (59−69 km/h)
2nd → 3rd	67−73 mph (106−118 km/h)
3rd → 4th	102−112 mph (164−180 km/h)

Downshift: D position

APP Sensor A voltage: 1.3 V	
Lock-up OFF	29−34 mph (47−55 km/h)
5th → 4th	29−35 mph (47−57 km/h)
4th → 3rd	18−22 mph (29−35 km/h)
3rd → 1st	4−8 mph (7−13 km/h)
APP Sensor A voltage: 2.5 V	
Lock-up OFF	71−80 mph (115−129 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
5th → 4th	113−123 mph (182−198 km/h)
4th → 3rd	86−94 mph (138−152 km/h)
3rd → 2nd	51−58 mph (82−94 km/h)
2nd → 1st	25−31 mph (40−50 km/h)

(cont'd)

Road Test (cont'd)

'08-09 models with the K24Z3 engine

Upshift: D position

APP Sensor A voltage: 1.3 V	
1st → 2nd	9—11 mph (14—18 km/h)
2nd → 3rd	17—21 mph (27—33 km/h)
3rd → 4th	25—30 mph (41—49 km/h)
4th → 5th	39—45 mph (62—72 km/h)
Lock-up ON	30—35 mph (48—56 km/h)
APP Sensor A voltage: 2.5 V	
1st → 2nd	21—25 mph (34—40 km/h)
2nd → 3rd	40—45 mph (64—72 km/h)
3rd → 4th	65—72 mph (104—116 km/h)
4th → 5th	114—124 mph (184—200 km/h)
Lock-up ON	119—130 mph (192—210 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
1st → 2nd	39—45 mph (62—72 km/h)
2nd → 3rd	65—72 mph (104—116 km/h)
3rd → 4th	102—112 mph (164—180 km/h)

Downshift: D position

APP Sensor A voltage: 1.3 V	
Lock-up OFF	29—34 mph (47—55 km/h)
5th → 4th	29—35 mph (47—57 km/h)
4th → 3rd	18—22 mph (29—35 km/h)
3rd → 1st	4—8 mph (7—13 km/h)
APP Sensor A voltage: 2.5 V	
Lock-up OFF	84—93 mph (135—149 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
5th → 4th	113—123 mph (182—198 km/h)
4th → 3rd	83—91 mph (133—147 km/h)
3rd → 2nd	51—58 mph (82—94 km/h)
2nd → 1st	25—31 mph (40—50 km/h)

'10 model with the K24Z2 engine

Upshift: D position

APP Sensor A voltage: 1.3 V	
1st → 2nd	9—11 mph (14—18 km/h)
2nd → 3rd	17—21 mph (27—33 km/h)
3rd → 4th	25—30 mph (41—49 km/h)
4th → 5th	39—45 mph (62—72 km/h)
Lock-up ON	30—35 mph (48—56 km/h)
APP Sensor A voltage: 2.5 V	
1st → 2nd	19—23 mph (31—37 km/h)
2nd → 3rd	38—44 mph (61—71 km/h)
3rd → 4th	55—63 mph (89—101 km/h)
4th → 5th	109—119 mph (176—192 km/h)
Lock-up ON	116—126 mph (186—202 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
1st → 2nd	37—43 mph (60—70 km/h)
2nd → 3rd	66—74 mph (107—119 km/h)
3rd → 4th	103—113 mph (166—182 km/h)

Downshift: D position

APP Sensor A voltage: 1.3 V	
Lock-up OFF	29—34 mph (47—55 km/h)
5th → 4th	29—35 mph (47—57 km/h)
4th → 3rd	20—24 mph (32—38 km/h)
3rd → 1st	4—8 mph (7—13 km/h)
APP Sensor A voltage: 2.5 V	
Lock-up OFF	67—75 mph (108—120 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
5th → 4th	113—123 mph (182—198 km/h)
4th → 3rd	86—94 mph (138—152 km/h)
3rd → 2nd	51—58 mph (82—94 km/h)
2nd → 1st	25—31 mph (40—50 km/h)

'10 model with the K24Z3 engine
Upshift: D position

APP Sensor A voltage: 1.3 V	
1st → 2nd	9—11 mph (14—18 km/h)
2nd → 3rd	17—21 mph (27—33 km/h)
3rd → 4th	25—30 mph (41—49 km/h)
4th → 5th	39—45 mph (62—72 km/h)
Lock-up ON	30—35 mph (48—56 km/h)
APP Sensor A voltage: 2.5 V	
1st → 2nd	19—23 mph (31—37 km/h)
2nd → 3rd	38—44 mph (61—71 km/h)
3rd → 4th	55—63 mph (89—101 km/h)
4th → 5th	109—119 mph (176—192 km/h)
Lock-up ON	116—126 mph (186—202 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
1st → 2nd	39—45 mph (62—72 km/h)
2nd → 3rd	70—78 mph (113—125 km/h)
3rd → 4th	103—113 mph (166—182 km/h)

Downshift: D position

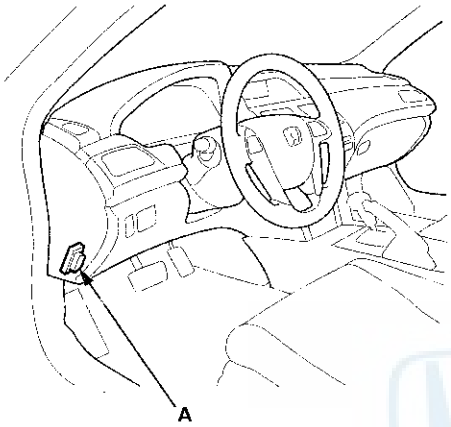
APP Sensor A voltage: 1.3 V	
Lock-up OFF	29—34 mph (47—55 km/h)
5th → 4th	29—35 mph (47—57 km/h)
4th → 3rd	20—24 mph (32—38 km/h)
3rd → 1st	4—8 mph (7—13 km/h)
APP Sensor A voltage: 2.5 V	
Lock-up OFF	67—75 mph (108—120 km/h)
Fully-opened throttle APP Sensor A voltage: 4.5 V	
5th → 4th	113—123 mph (182—198 km/h)
4th → 3rd	86—94 mph (138—152 km/h)
3rd → 2nd	51—58 mph (82—94 km/h)
2nd → 1st	25—31 mph (40—50 km/h)

14. Drive the vehicle in 4th or 5th gear with the shift lever in D, then shift to 2. The vehicle should immediately begin to slow down from the engine braking.
15. Shift to 1, accelerate from a stop to full throttle, and check for abnormal noise and clutch slippage. Upshifts should not occur in this position.
16. Shift to 2, accelerate from a stop to full throttle, and check for abnormal noise and clutch slippage. Upshifts and downshifts should not occur in this position.
17. Shift to R, accelerate from a stop at full throttle momentarily, and check for abnormal noise and clutch slippage.
18. Park the vehicle on an upward slope (about 16-degrees), apply the brake, and shift into P. Release the brake; the vehicle should not move.

    NOTE: Always use the parking 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.

Stall Speed Test

1. Make sure the transmission fluid is filled to the proper level (see page 14-191).
2. Apply the parking brake, and block all four wheels.
3. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



4. Turn the ignition switch to ON (II), and go to the A/T Data List. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
5. Make sure the A/C switch is OFF.
6. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
7. Shift to 2 while pressing the brake pedal firmly, then press the accelerator pedal for 6 to 8 seconds, and note the engine speed. Do not move the shift lever or take your foot off of the brake pedal, while raising the engine speed.
8. Allow 2 minutes for cooling, then repeat the test with the shift lever in D, 1, and R.

   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 test results should be the same in D, 2, 1, and R.
   - Do not test stall speed with the A/T oil pressure gauges installed.

   Stall Speed rpm
   Specification: 2,100 rpm
   Service Limit: 1,950–2,250 rpm
9. If the stall speeds are out of the service limit, refer to the problems and probable causes listed in the table.

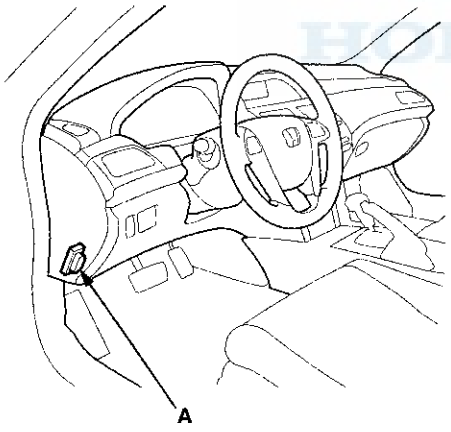
Problem	Probable Causes
Stall speed rpm high in D, 2, 1, and R	• ATF pump output low • Clogged ATF strainer • Regulator valve stuck • Slipping clutch
Stall speed rpm high in 1	Slippage of 1st clutch
Stall speed rpm high in 2	Slippage of 2nd clutch
Stall speed rpm high in R	Slippage 4th clutch
Stall speed rpm low in D, 2, 1, and R	• Engine output low • Engine throttle valve closed • Torque converter one-way clutch slipping

Pressure Test

Special Tools Required
- A/T Oil Pressure Gauge Set 07406-0020400 or 07406-0020401
- A/T Pressure Hose, 2,210 mm 07MAJ-PY4011A
- A/T Pressure Adapter 07MAJ-PY40120

NOTE:
- Disable the VSA (if equipped) by pressing the VSA OFF button.
- ABS or VSA DTC(s) may come on during the test-drive. If the ABS or VSA DTC(s) come on, clear the DTC(s) with the HDS.

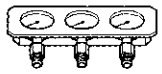
1. Make sure the transmission fluid is filled to the proper level (see page 14-191).
2. Raise the vehicle on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
3. Allow the front wheels to rotate freely.
4. Remove the splash shield.
5. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



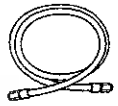
6. Turn the ignition switch to ON (II), and go to the A/T Data List. Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).

7. Connect the A/T oil pressure gauge to the line pressure inspection port (A). Do not allow dust or other foreign particles to enter the port while connecting the gauge.

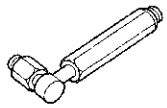
A/T OIL PRESSURE GAUGE SET 07406-0020400 or 07406-0020401

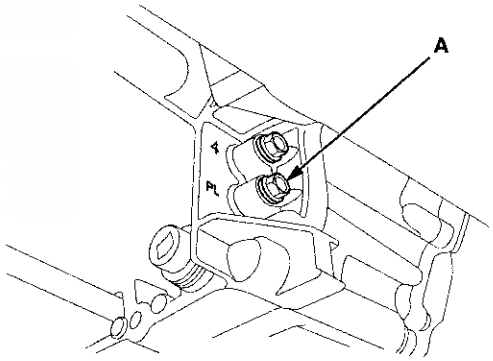


A/T PRESSURE HOSE, 2,210 mm 07MAJ-PY4011A (3 required)



A/T PRESSURE ADAPTER 07MAJ-PY40120 (3 required)





(cont'd)

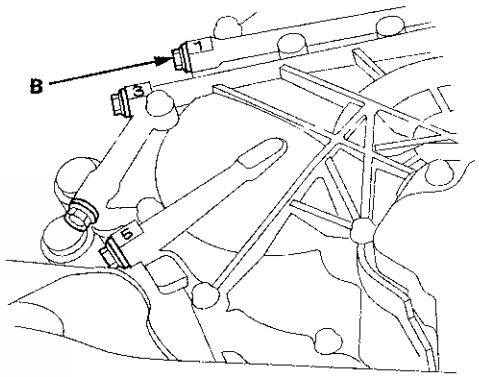
Pressure Test (cont'd)

8. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
9. Hold the engine speed at 2,000 rpm with the shift lever in P or N.
10. Measure the line pressure at the line pressure inspection port (A).

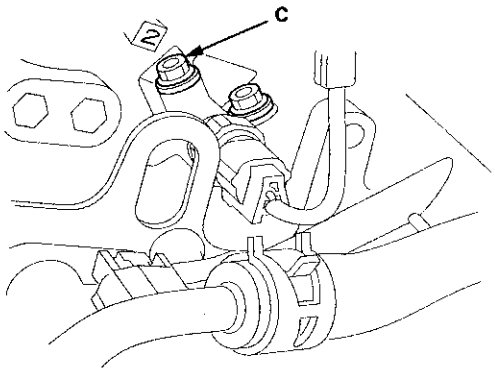
    NOTE: Higher pressure may be noticed if measurements are taken with the shift lever in any position other than P or N.

Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	927—985 kPa (9.45—10.05 kgf/cm², 134—143 psi)	877 kPa (8.95 kgf/cm², 127 psi)

11. Turn the engine off, then disconnect the A/T oil pressure gauge from the line pressure inspection port.
12. Install the sealing bolt in the line pressure inspection port with a new sealing washer, and tighten the sealing bolt to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washer.
13. Connect the A/T oil pressure gauge to the 1st clutch pressure inspection port (B).



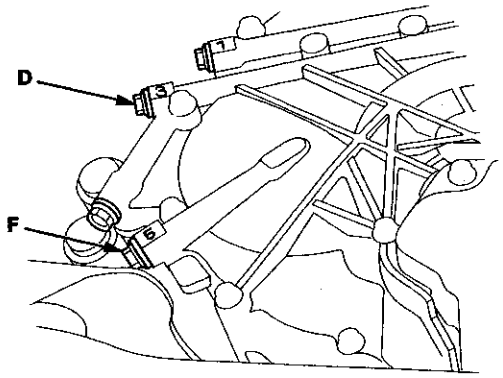
14. Remove the intake air duct and the air cleaner housing, and connect the A/T oil pressure gauge to the 2nd clutch pressure inspection port (C). Then temporarily install the air cleaner housing and the intake air duct.



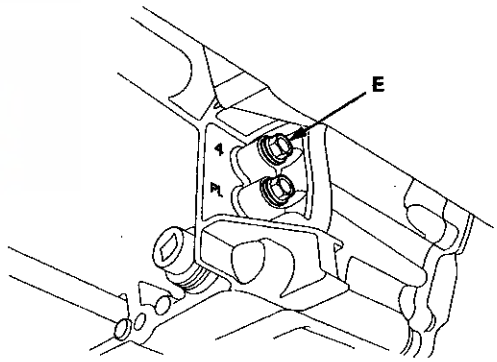
15. Start the engine, and shift to D.
16. Shift to 1st gear, and measure the 1st clutch pressure at the 1st clutch pressure inspection port (B) while holding the engine speed at 2,000 rpm.
17. Shift up to 2nd gear, and measure the 2nd clutch pressure at the 2nd clutch pressure inspection port (C) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (B) 2nd clutch (C)	927—985 kPa (9.45—10.05 kgf/cm², 134—143 psi)	867 kPa (8.85 kgf/cm², 126 psi)

18. Turn the engine off, then disconnect the A/T oil pressure gauges from the 1st clutch pressure and the 2nd clutch pressure inspection ports.
19. Install the sealing bolts in the 1st clutch pressure and the 2nd clutch pressure inspection ports with new sealing washers, and tighten the sealing bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.
20. Install the air cleaner housing and the intake air duct.
21. Connect the A/T oil pressure gauge to the 3rd clutch pressure inspection port (D) and the 5th clutch pressure inspection port (F).



22. Connect the A/T oil pressure gauge to the 4th clutch pressure inspection port (E).



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Pressure Test (cont'd)

23. Start the engine with the shift lever in P, while pressing the brake pedal.
24. Shift to D, and release the brake pedal; the transmission is in 1st gear.
25. Press the accelerator pedal to increase the engine speed to 2,500 rpm, then shift to 2nd gear.
26. Release the accelerator pedal slowly to close the throttle over 5 seconds; the engine speed decreases to 1,000 rpm with the transmission in 2nd gear.
27. Press the accelerator pedal very slowly to increase the engine speed to 2,000 rpm over 5 seconds, and hold the accelerator. Shift to 3rd gear, and measure the 3rd clutch pressure at the 3rd clutch pressure inspection port (D) while holding the engine speed at 2,000 rpm.
28. Shift to 4th gear, and measure the 4th clutch pressure at the 4th clutch pressure inspection port (E).
29. Shift to 5th gear, and measure 5th clutch pressure at the 5th clutch pressure inspection port (F) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (D) 4th clutch (E) 5th clutch (F)	917—995 kPa (9.35—10.15 kgf/cm², 133—144 psi)	867 kPa (8.85 kgf/cm², 126 psi)

30. Bring the engine back to an idle, then apply the brake pedal to stop the wheels from rotating.
31. Shift to R, then release the brake pedal. Raise the engine speed to 2,000 rpm, and measure 4th clutch pressure at the 4th clutch pressure inspection port (E).

Pressure	Fluid Pressure	
	Standard	Service Limit
4th clutch (E) in R	917—995 kPa (9.35—10.15 kgf/cm², 133—144 psi)	867 kPa (8.85 kgf/cm², 126 psi)

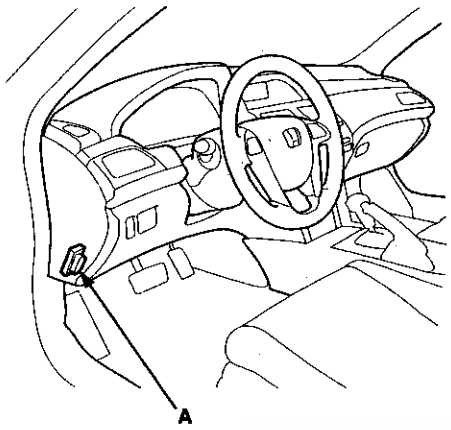
32. Turn the engine off, then disconnect the A/T oil pressure gauges from the 3rd, 4th, and 5th clutch pressure inspection ports.
33. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection ports with new sealing washers, and tighten the sealing bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washers.
34. If any of the pressures are out of the service limit, refer to the problems and probable causes listed in the table.

Problem	Probable causes
No or low line pressure	• Torque converter • ATF pump • Regulator valve • Torque converter check valve • Clogged ATF strainer
No or low 1st clutch pressure	• 1st clutch • O-rings
No or low 2nd clutch pressure	• 2nd clutch • O-rings
No or low 3rd clutch pressure	• 3rd clutch • O-rings
No or low 4th clutch pressure	• 4th clutch • O-rings
No or low 5th clutch pressure	• 5th clutch • O-rings
No or low 4th clutch pressure in R	• Servo valve • 4th clutch • O-rings

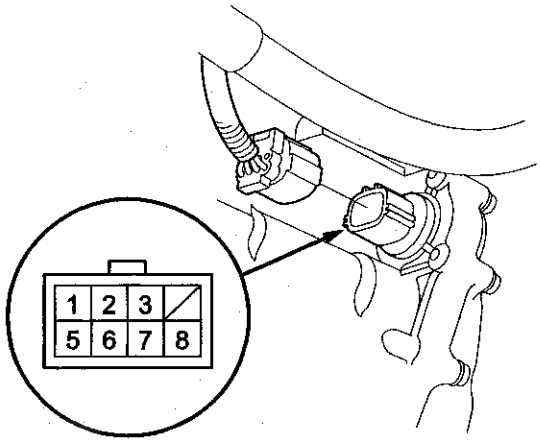
35. Install the splash shield.
36. Check the ATF level (see page 14-191).

Shift Solenoid Valve Test, Replacement, and Shift Solenoid Wire Harness Replacement

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
3. Select Shift Solenoid Valves A, B, C, D, or E in the Miscellaneous Test Menu on the HDS.
4. Check that shift solenoid valves A, B, C, D, or E operate with the HDS. A clicking sound should be heard.
   - If a clicking sound is heard, the valves are OK. The test is complete, disconnect the HDS.
   - If no clicking sound is heard, go to step 5.
5. Raise the vehicle on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
6. Remove the splash shield.
7. Disconnect the shift solenoid wire harness connector.



Terminal side of male terminals

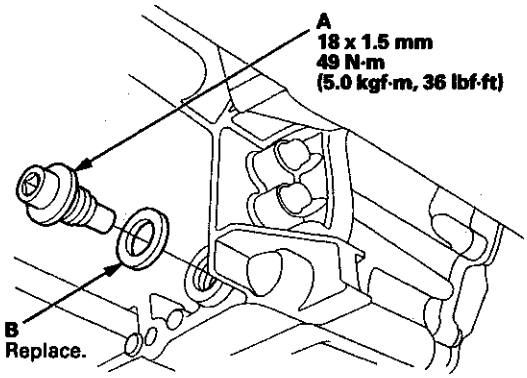
8. Measure the resistance between each of the following terminals and body ground:
   - No. 1 terminal: Shift solenoid valve C
   - No. 2 terminal: Shift solenoid valve B
   - No. 3 terminal: Shift solenoid valve E
   - No. 5 terminal: Shift solenoid valve A
   - No. 8 terminal: Shift solenoid valve D

   Standard: 12—25 Ω
   - If the resistance is within the standard, go to step 9.
   - If the resistance is out of standard, go to step 10.
9. Connect a jumper wire from the battery positive terminal to each shift solenoid wire harness connector terminal individually. A clicking sound should be heard.
   - If a clicking sound is heard, the valves are OK. The test is complete, reconnect the connector, then install the splash shield.
   - If no clicking sound is heard, go to step 10.

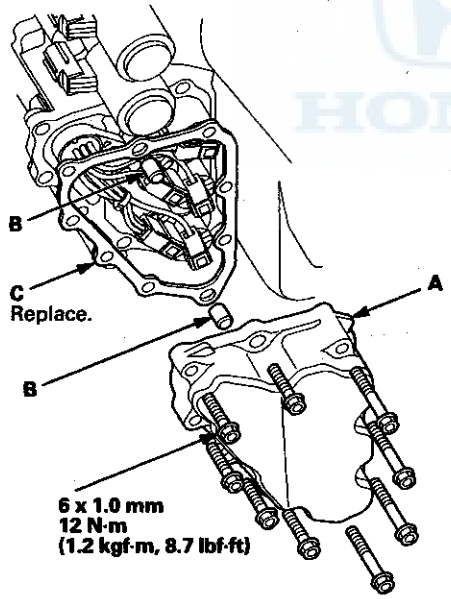
(cont'd)

Shift Solenoid Valve Test, Replacement, and Shift Solenoid Wire Harness Replacement (cont'd)

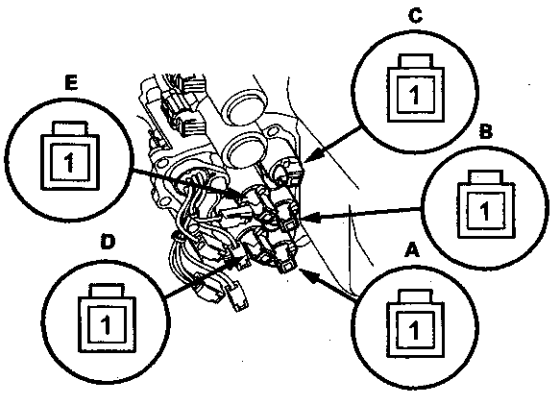
10. Remove the drain plug (A), and drain the ATF.



11. Reinstall the drain plug with a new sealing washer (B).
12. Remove the left front wheel.
13. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).



14. Disconnect the shift solenoid valve connectors from the shift solenoid valve(s) that did not click.



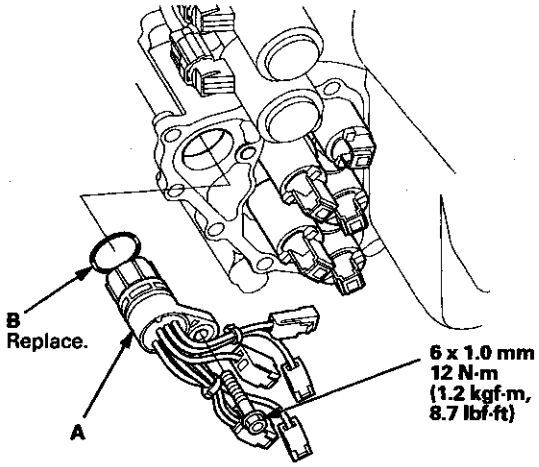
15. Measure the resistance of each shift solenoid valve between the connector terminals and body ground:

    Standard: 12—25 Ω

    - If the resistance is within the standard, go to step 16.
    - If the resistance is out of standard, go to step 18.

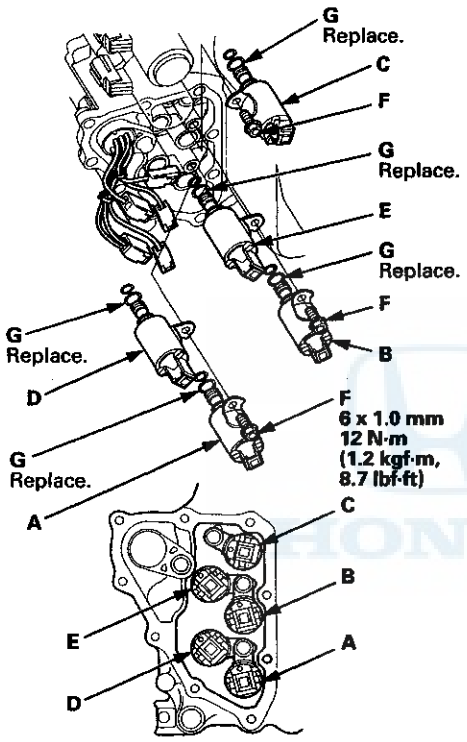
16. Connect a jumper wire from the battery positive terminal to each shift solenoid valve connector terminal individually. A clicking sound should be heard.
    - If a clicking sound is heard, go to step 17.
    - If no clicking sound is heard, go to step 18.

17. Remove the bolt securing the shift solenoid wire harness (A), replace the shift solenoid wire harness and the O-ring (B), then go to step 23.



18. Remove the shift solenoid valve mounting bolts (F), then hold the shift solenoid valve body, and remove the affected shift solenoid valves.

    NOTE: Do not hold the shift solenoid valve connector to remove the shift solenoid valves. Be sure to hold the shift solenoid valve body.



19. Install new O-rings (two O-rings per shift solenoid valve) (G) on the shift solenoid valves.

    NOTE: A new shift solenoid valve comes with new O-rings. If you install a new shift solenoid valve, use the O-rings provided with it.

20. If shift solenoid valve C, D, or E was replaced, install shift solenoid valve C (brown connector), shift solenoid valve D (black connector), or shift solenoid valve E (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the servo body.

    NOTE: Do not hold the shift solenoid valve connector to install the shift solenoid valve. Be sure to hold the shift solenoid valve body.

21. If shift solenoid valve A was replaced, install shift solenoid valve A (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve D.

    NOTE: Do not install shift solenoid valve A before installing shift solenoid valve D. If shift solenoid valve A is installed before installing shift solenoid valve D, it may damage the hydraulic control system.

22. If shift solenoid valve B was replaced, install shift solenoid valve B (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve E.

    NOTE: Do not install shift solenoid valve B before installing shift solenoid valve E. If shift solenoid valve B is installed before installing shift solenoid valve E, it may damage the hydraulic control system.

23. Connect the shift solenoid valve connectors:
    - RED wire connector to shift solenoid valve E.
    - GRN wire connector to shift solenoid valve C.
    - ORN wire connector to shift solenoid valve B.
    - BLU wire connector to shift solenoid valve A.
    - YEL, WHT, and WHT wire connector to shift solenoid valve D.

24. Install a new gasket, the dowel pins, and the shift solenoid valve cover.

25. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connector the connector securely.

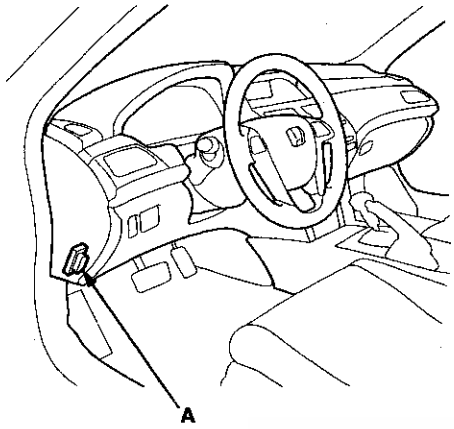
26. Refill the transmission with ATF (see step 4 on page 14-192).

27. Install the splash shield.

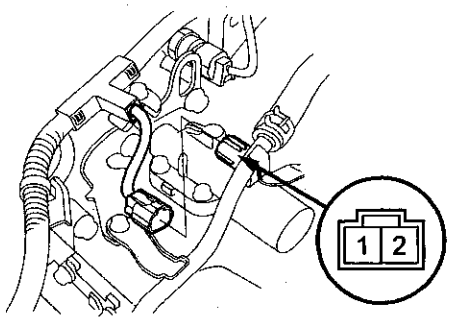
28. Install the left front wheel.

A/T Clutch Pressure Control Solenoid Valve A Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
3. Select Clutch Pressure Control (Linear) Solenoid Valve A in the Miscellaneous Test Menu on the HDS.
4. Test A/T clutch pressure control solenoid valve A with the HDS.
   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.
5. Remove the intake air duct.
6. Disconnect the A/T clutch pressure control solenoid valve A connector.

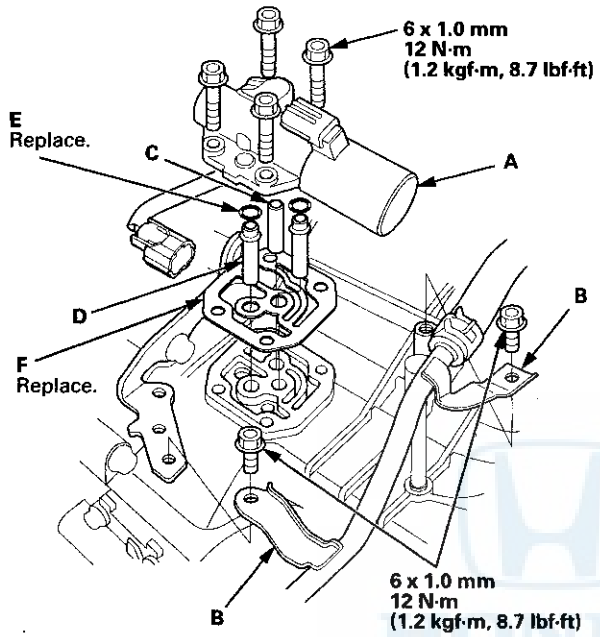


7. Measure the resistance between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

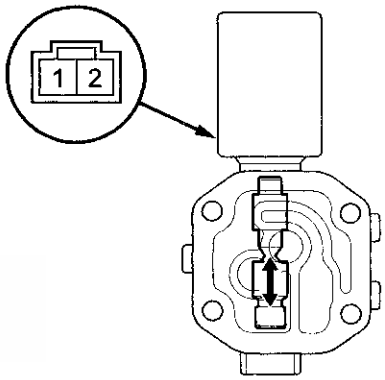
   Standard: 3—10 Ω

   - If the resistance is within the standard, go to step 8.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve A (see page 14-184).
8. Connect a jumper wire from the battery negative terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect another jumper wire from the battery positive terminal to A/T clutch pressure control solenoid valve A connector terminal No. 1.
   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 9.

9. Remove the bolts securing the ATF cooler line brackets (B), then remove A/T clutch pressure control solenoid valve A.



10. Remove the ATF pipe (C), the ATF joint pipes (D), the O-rings (E), and the gasket (F).
11. Check the fluid passage of A/T clutch pressure control solenoid valve A for contamination.
12. Connect a jumper wire from the battery negative terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect another jumper wire from the battery positive terminal to A/T clutch pressure control solenoid valve A connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve A moves.



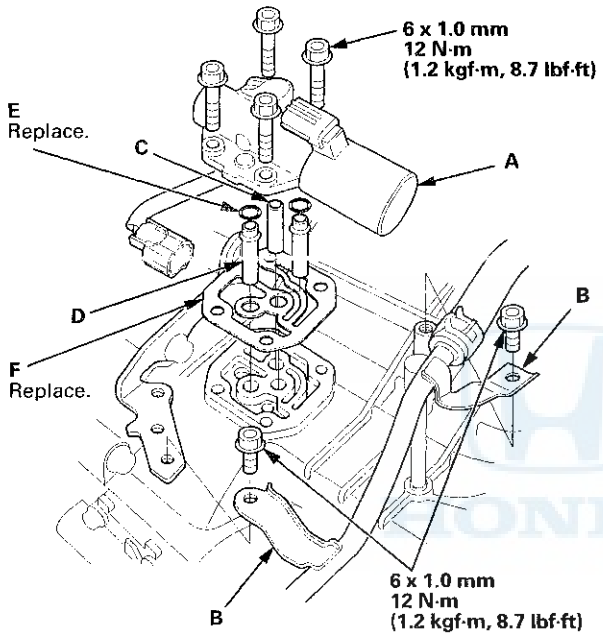
13. Disconnect one of the jumper wires, and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valve A.
14. Clean the mounting surface and the fluid passage of the A/T clutch pressure control solenoid valve body and the transmission housing.
15. Install a new gasket on the transmission housing, and install the ATF pipe and the ATF joint pipes. Install new O-rings over the ATF joint pipes.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

16. Install A/T clutch pressure control solenoid valve A.
17. Secure the ATF cooler line brackets with the bolts.
18. Check the connector for rust, dirt, or oil, and clean or repair if necessary. Then connect the connector securely.
19. Install the intake air duct.

A/T Clutch Pressure Control Solenoid Valve A Replacement

1. Remove the intake air duct.
2. Disconnect the A/T clutch pressure control solenoid valve A connector.
3. Remove the bolts securing the ATF cooler line brackets (B), then remove A/T clutch pressure control solenoid valve A.



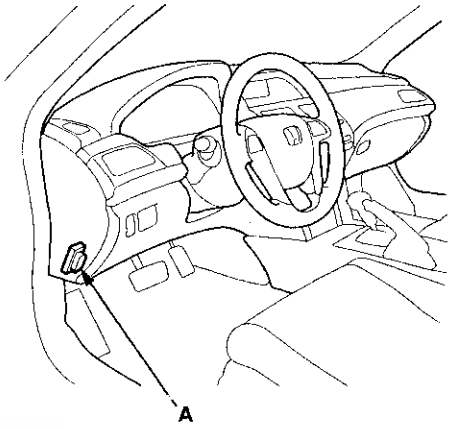
4. Remove the ATF pipe (C), the ATF joint pipes (D), the O-rings (E), and the gasket (F).
5. Clean the mounting surface and the fluid passages of the transmission housing.
6. Install a new gasket on the transmission housing, and install the ATF pipe and the ATF joint pipes. Install new O-rings over the ATF joint pipes.

   NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

7. Install a new A/T clutch pressure control solenoid valve A.
8. Secure the ATF cooler inlet brackets with the bolts.
9. Check the connector for rust, dirt, or oil, and clean or repair if necessary. Then connect the connector securely.
10. Install the intake air duct.

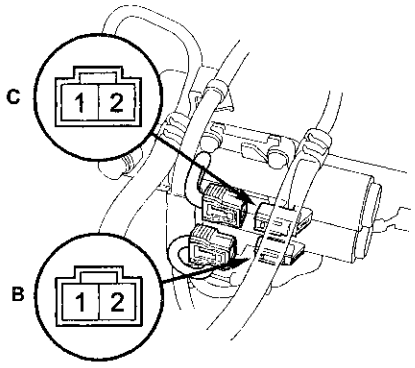
A/T Clutch Pressure Control Solenoid Valve B and C Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
3. Select Clutch Pressure Control (Linear) Solenoid Valve B or Clutch Pressure Control (Linear) Solenoid Valve C in the Miscellaneous Test Menu on the HDS.
4. Test A/T clutch pressure control solenoid valve B or C with the HDS.
   - If the valve tests OK, the test is complete. Disconnect the HDS.
   - If the valve does not test OK, follow the instructions on the HDS.
   - If the valve does not test OK, and the HDS does not determine the cause, go to step 5.
5. Do the battery removal procedure (see page 22-92).
6. Remove the battery base (see step 8 on page 5-3).

7. Disconnect the A/T clutch pressure control solenoid valve B and C connectors.



8. Measure the resistance between A/T clutch pressure control solenoid valve B or C connector terminals No. 1 and No. 2.

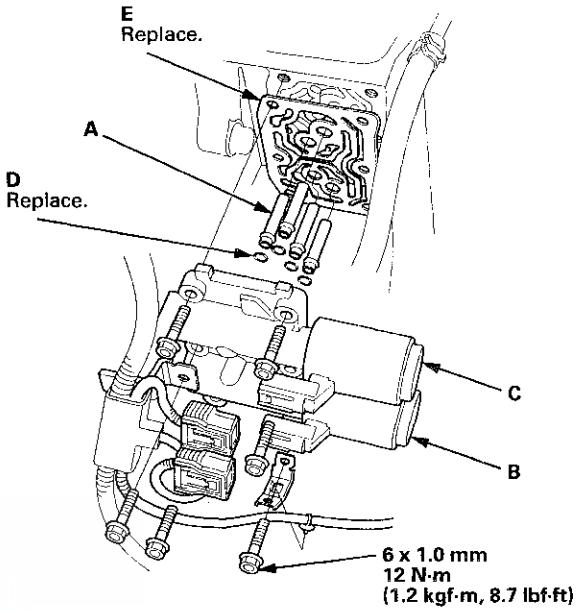
   Standard: 3—10 Ω

   - If the resistance is within the standard, go to step 9.
   - If the resistance is out of standard, replace A/T clutch pressure control solenoid valve B and C (see page 14-186).

9. Connect a jumper wire from the battery negative terminal to A/T clutch pressure control solenoid valve B or C connector terminal No. 2, and connect another jumper wire from the battery positive terminal to A/T clutch pressure control solenoid valve B or C connector terminal No. 1.

   - If a clicking sound is heard, the valve is OK, and the test is complete, go to step 18.
   - If no clicking sound is heard, go to step 10.

10. Remove A/T clutch pressure control solenoid valves B and C.



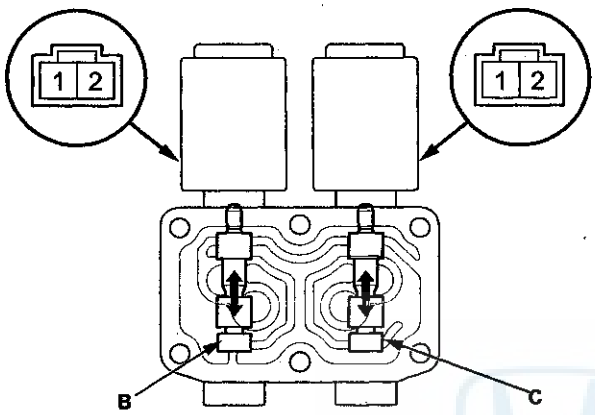
11. Remove the ATF joint pipes (A), the O-rings (D), and the gasket (E).

12. Check the fluid passage of A/T clutch pressure control solenoid valves B and C for contamination.

(cont'd)

A/T Clutch Pressure Control Solenoid Valve B and C Test (cont'd)

13. Connect a jumper wire from the battery negative terminal to A/T clutch pressure control solenoid valve B or C connector terminal No. 2, and connect another jumper wire from the battery positive terminal to connector terminal No. 1. Make sure A/T clutch pressure control solenoid valve B or C moves.



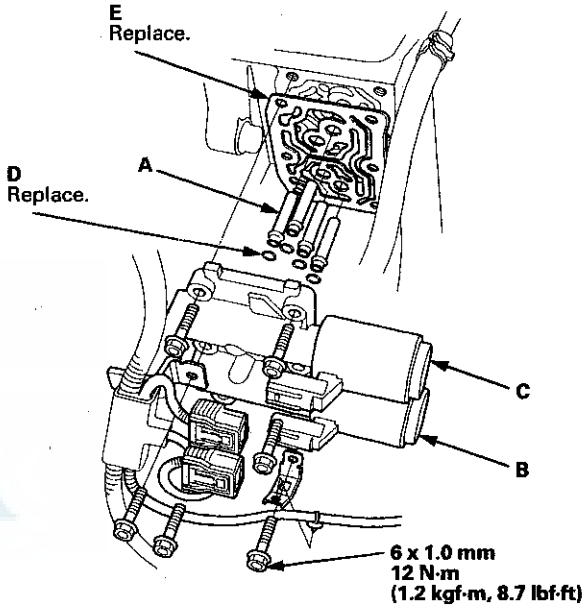
14. Disconnect one of the jumper wires, and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace A/T clutch pressure control solenoid valves B and C.
15. Clean the mounting surface and the fluid passage of the A/T clutch pressure control solenoid valve body and the transmission housing.
16. Install a new gasket on the transmission housing, and install the ATF joint pipes. Install new O-rings over the ATF joint pipes.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

17. Install A/T clutch pressure control solenoid valves B and C.
18. Check the connectors for rust, dirt, or oil, and clean or repair if necessary. Then connect the connectors securely.
19. Install the battery base (see step 63 on page 5-22).
20. Do the battery installation procedure (see page 22-92).

A/T Clutch Pressure Control Solenoid Valve B and C Replacement

1. Do the battery removal procedure (see page 22-92).
2. Remove the battery base (see step 8 on page 5-3).
3. Disconnect the A/T clutch pressure control solenoid valves B and C connectors.
4. Remove A/T clutch pressure control solenoid valves B and C.



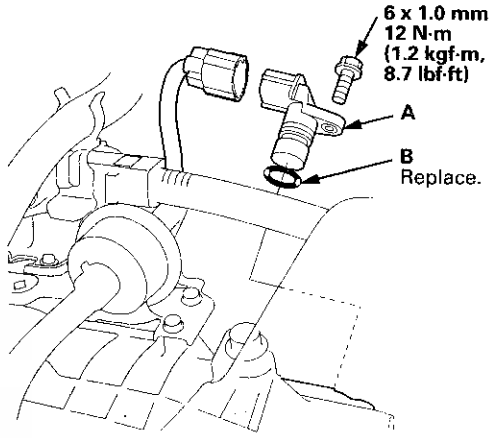
5. Remove the ATF joint pipes (A), the O-rings (D), and the gasket (E).

6. Clean the mounting surface and the fluid passages of the transmission housing.
7. Install a new gasket on the transmission housing, and install the ATF joint pipes. Install new O-rings over the ATF joint pipes.

   NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.
8. Install new A/T clutch pressure control solenoid valves B and C.
9. Check the connectors for rust, dirt, or oil, and clean or repair if necessary. Then connect the connectors securely.
10. Install the battery base (see step 63 on page 5-22).
11. Do the battery installation procedure (see page 22-92).

Input Shaft (Mainshaft) Speed Sensor Replacement

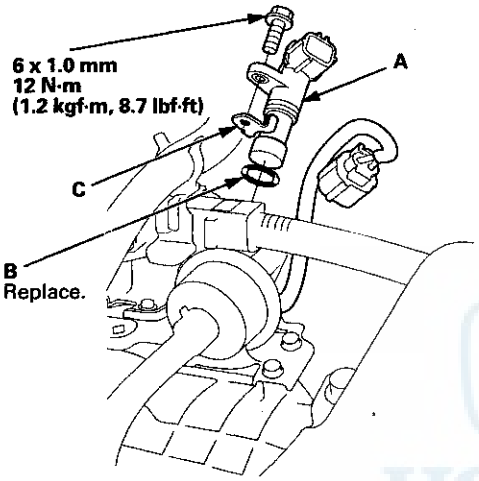
1. Remove the nut securing the under-hood fuse/relay box, and swing it out of the way.
2. Remove the intake air duct and the air cleaner housing.
3. Disconnect the input shaft (mainshaft) speed sensor connector, and remove the input shaft (mainshaft) speed sensor (A).



4. Install a new O-ring (B) on a new input shaft (mainshaft) speed sensor, then install the input shaft (mainshaft) speed sensor in the transmission housing.
5. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connect the connector securely.
6. Install the intake air duct and the air cleaner housing.
7. Install the under-hood fuse/relay box.

Output Shaft (Countershaft) Speed Sensor Replacement

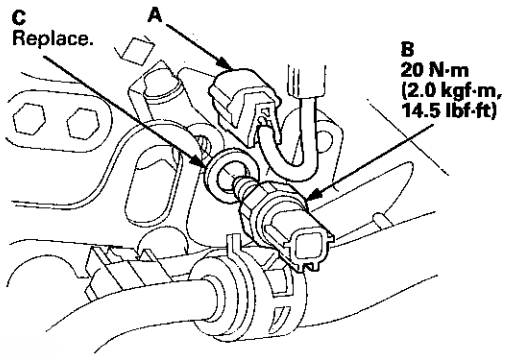
1. Remove the nut securing the under-hood fuse/relay box, and swing it out of the way.
2. Remove the intake air duct and the air cleaner housing.
3. Disconnect the output shaft (countershaft) speed sensor connector, and remove the output shaft (countershaft) speed sensor (A).



4. Install a new O-ring (B) on a new output shaft (countershaft) speed sensor with the speed sensor washer (C), then install the output shaft (countershaft) speed sensor in the transmission housing.
5. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connect the connector securely.
6. Install the intake air duct and the air cleaner housing.
7. Install the under-hood fuse/relay box.

Transmission Fluid Pressure Switch A (2nd Clutch) Replacement

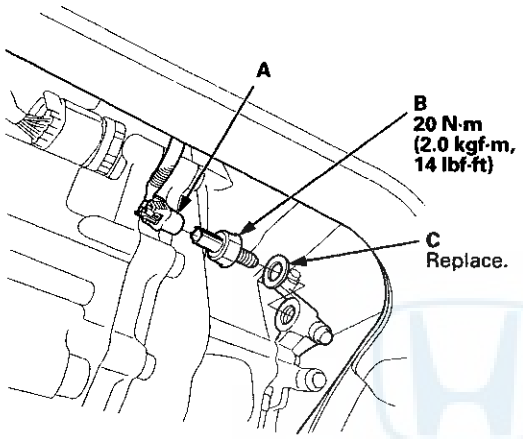
1. Remove the intake air duct.
2. Disconnect the connector (A) from the transmission fluid pressure switch A (2nd clutch) (B), and remove the transmission fluid pressure switch A (2nd clutch).



3. Install a new transmission fluid pressure switch A (2nd clutch) with a new sealing washer (C), and tighten the transmission fluid pressure switch A (2nd clutch) to the specified torque by turning the metal part, not the plastic part.
4. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connect the connector securely.
5. Install the intake air duct.

Transmission Fluid Pressure Switch B (3rd Clutch) Replacement

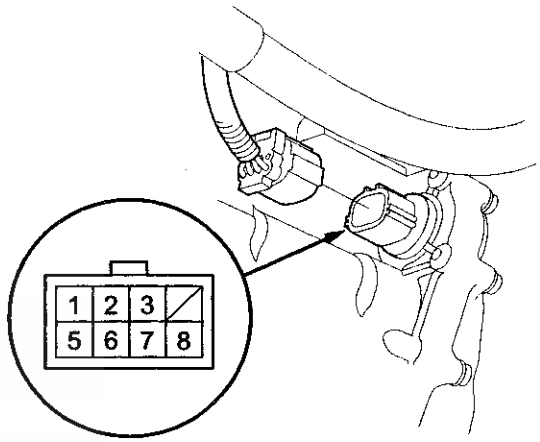
1. Raise the vehicle on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the splash shield.
3. Disconnect the connector (A) from the transmission fluid pressure switch B (3rd clutch) (B), then remove the transmission fluid pressure switch B (3rd clutch).



4. Install a new transmission fluid pressure switch B (3rd clutch) with a new sealing washer (C), and tighten the transmission fluid pressure switch B (3rd clutch) to the specified torque by turning the metal part, not the plastic part.
5. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connect the connector securely.
6. Install the splash shield.

ATF Temperature Sensor Test/Replacement

1. Raise the vehicle on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the splash shield.
3. Disconnect the shift solenoid wire harness connector.



Terminal side of female terminals

4. Measure the ATF temperature sensor resistance between shift solenoid wire harness connector terminals No. 6 and No. 7.

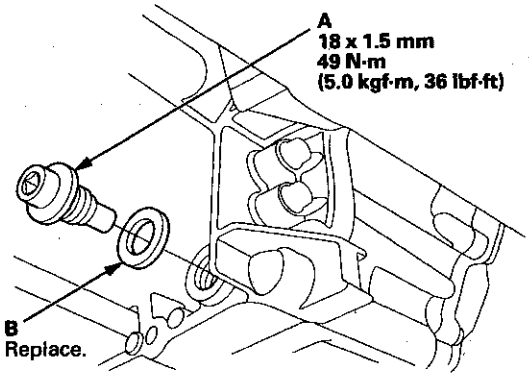
Standard: 50 Ω—25 kΩ

- If the resistance is within the standard. The test is complete, reconnect the connector, then install the splash shield.
- If the resistance is out of the standard, go to step 5.

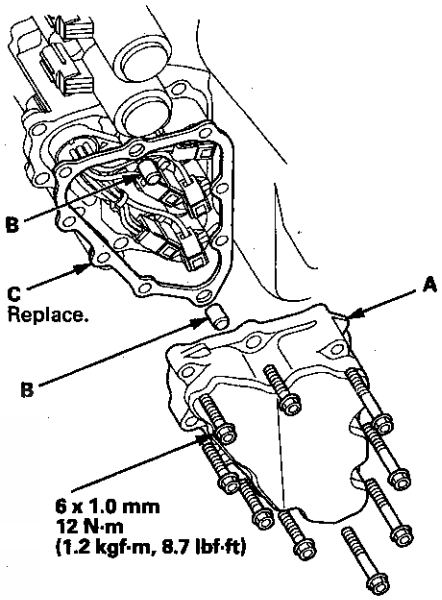
(cont'd)

ATF Temperature Sensor Test/Replacement (cont'd)

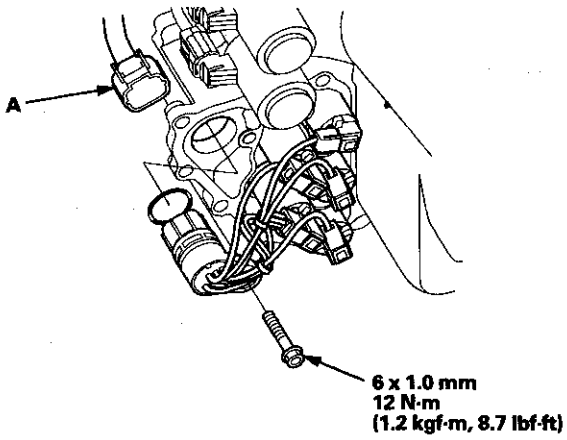
5. Remove the drain plug (A), and drain the ATF.



6. Reinstall the drain plug with a new sealing washer (B).
7. Remove the left front wheel.
8. Remove the shift solenoid valve cover (A), the dowel pins (B), and the gasket (C).

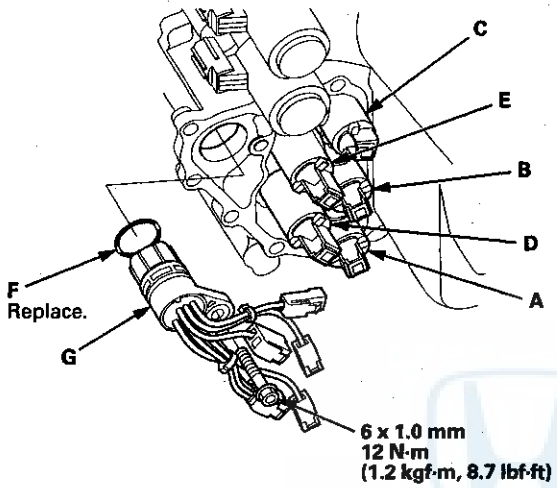


9. Remove the bolt securing the shift solenoid wire harness (A), then remove the shift solenoid wire harness (B) from the transmission housing.



10. Disconnect the connectors from the shift solenoid valves. Then replace the ATF temperature sensor and the O-ring (F) with new ones.

    NOTE: The ATF temperature sensor is not available separately from the shift solenoid wire harness (G).

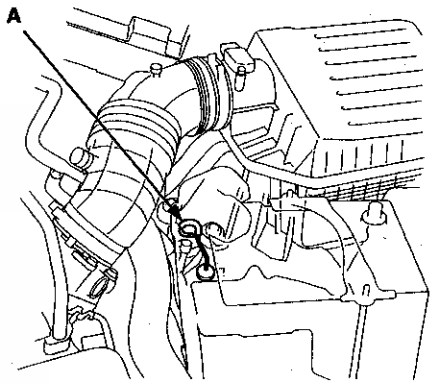


11. Connect the shift solenoid valve connectors:
    - BLU wire connector to shift solenoid valve A.
    - ORN wire connector to shift solenoid valve B.
    - GRN wire connector to shift solenoid valve C.
    - YEL, WHT, and WHT wire connector to shift solenoid valve D.
    - RED wire connector to shift solenoid valve E.
12. Install a new gasket, the dowel pins, and the shift solenoid valve cover.
13. Check the connector for rust, dirt, or oil, and clean or repair if necessary, then connect the connector securely.
14. Refill the transmission with ATF (see step 4 on page 14-192).
15. Install the splash shield.
16. Install the left front wheel.

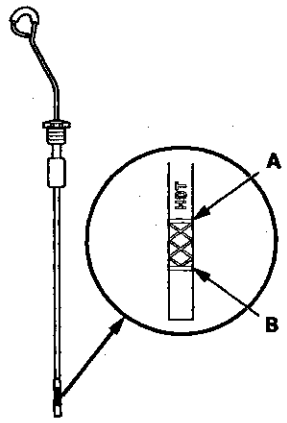
ATF Level Check

NOTE:
- Keep all foreign particles out of the transmission.
- Check the ATF level within 60—90 seconds after turning the engine off.
- Higher ATF level may be indicated if the radiator fan comes on twice or more.

1. Park the vehicle on level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off.
3. Remove the ATF dipstick (yellow loop) (A) from the transmission, and wipe it with a clean cloth.



4. Insert the dipstick into the transmission.
5. Remove the dipstick, and check the ATF level. It should be between the upper mark (A) and the lower mark (B).



(cont'd)

ATF Level Check (cont'd)

6. If the ATF level is below the lower mark, check for fluid leaks at the transmission, the ATF cooler hoses, the line joints, and the cooler lines. If a problem is found, fix it before filling the transmission with ATF.

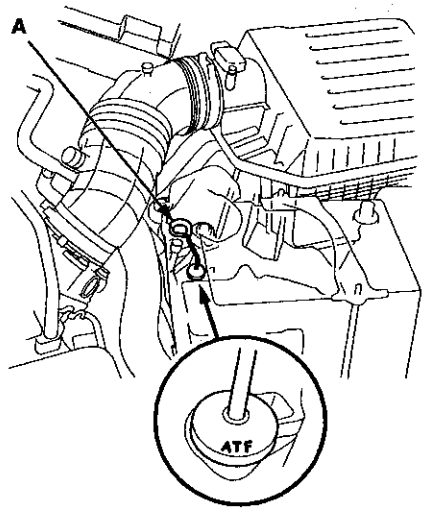
   NOTE: If the vehicle is driven when the ATF level is below the lower mark, one or more of these symptoms may occur:
   - Transmission damage.
   - Vehicle does not move in any gear.
   - Vehicle accelerates poorly, and flares when starting off in D and R.
   - The engine vibrates at idle.

7. If the level is above the upper mark, drain the ATF to proper level (see step 3 on page 14-192).

   NOTE: If the vehicle is driven when the ATF level is above the upper mark, the vehicle may creep forward in N, or have problems shifting.

8. If necessary, fill the transmission with ATF through the dipstick hole to bring the fluid level between the upper mark and the lower mark of the dipstick. Do not fill the fluid above the upper mark. Always use Honda ATF-Z1 automatic transmission fluid (ATF). Using a non-Honda ATF can affect shift quality.

9. Insert the dipstick (A) back into the transmission with the letters "ATF" pointing toward the front of the vehicle.

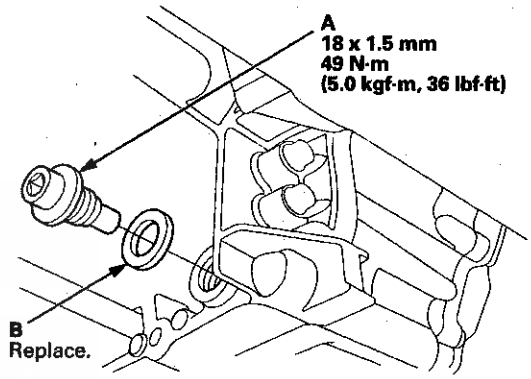


ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

1. Park the vehicle on level ground.
2. Warm up the engine to normal operating temperature (the radiator fan comes on), and turn the engine off.
3. Remove the drain plug (A), and drain the ATF. Then reinstall the drain plug with a new sealing washer (B).

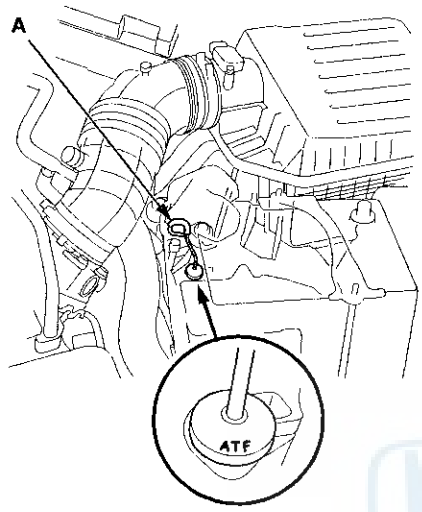
   NOTE: If ATF cooler cleaning is necessary, refer to ATF cooler cleaning (see page 14-217).



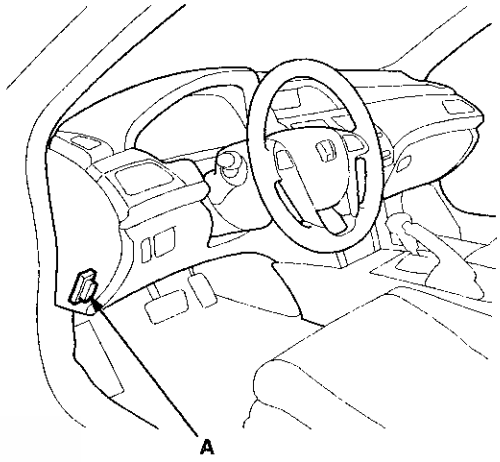
4. Remove the ATF dipstick, and refill the transmission with the recommended fluid amount through the dipstick hole to bring the fluid level between the upper mark and the lower mark of the dipstick. Always use Honda ATF-Z1 automatic transmission fluid (ATF). Using a non-Honda ATF can affect shift quality.

   Automatic Transmission Fluid Capacity:
   2.5 L (2.6 US qt) at change
   6.5 L (6.9 qt) at overhaul

5. Insert the dipstick (A) back into the transmission with the letters "ATF" pointing toward the front of the vehicle.



6. Check the ATF level (see page 14-191).
7. If the maintenance minder recommends replacing the ATF, reset the maintenance minder (see page 3-7), and this procedure is complete. If the maintenance minder did not require you to recommends replace the ATF, go to step 8.
8. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



9. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
10. Select BODY ELECTRICAL with the HDS.
11. Select ADJUSTMENT in the GAUGE MENU with the HDS.
12. Select RESET in the MAINTENANCE MINDER with the HDS.
13. Select MAINTENANCE SUB ITEM 3 RESET, and reset the ATF life with the HDS.

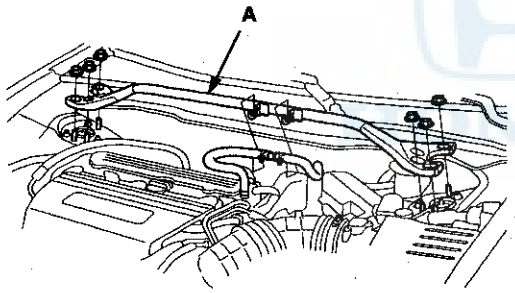
Transmission Removal

Special Tools Required
- Engine Hanger Adapter VSB02C000015*
- Engine Support Hanger, A and Reds AAR-T1256*
- Subframe Adapter VSB02C000016*

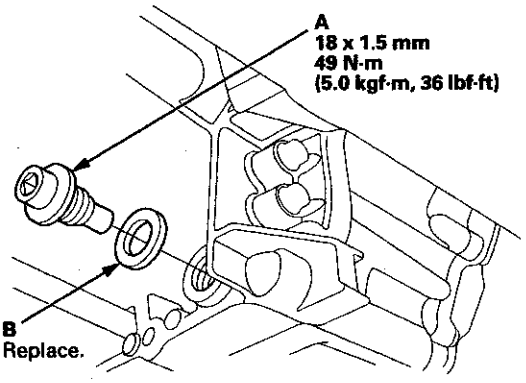
*: Available through the Honda Tool and Equipment Program 888-424-6857.

NOTE:
- Use fender covers to avoid damaging painted surfaces.
- Special tool Reds engine support hanger AAR-T1256 must be used with the side engine mount installed.

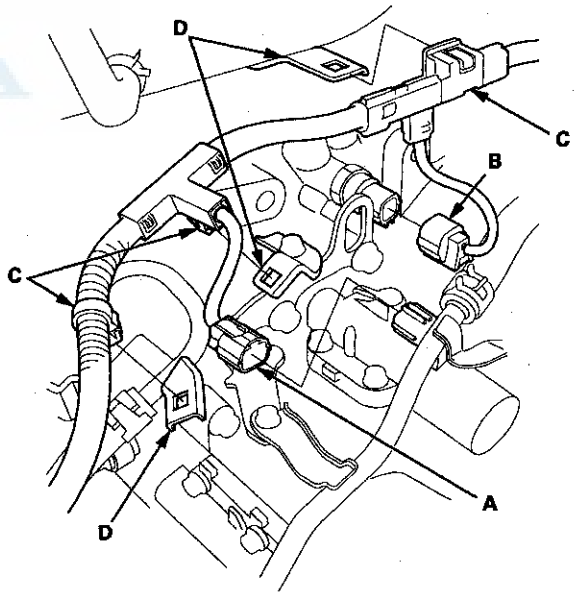
1. Secure the hood in the wide open position with the support rod.
2. Do the battery removal procedure (see page 22-92).
3. Remove the front grille cover.
4. Remove the strut brace (A).



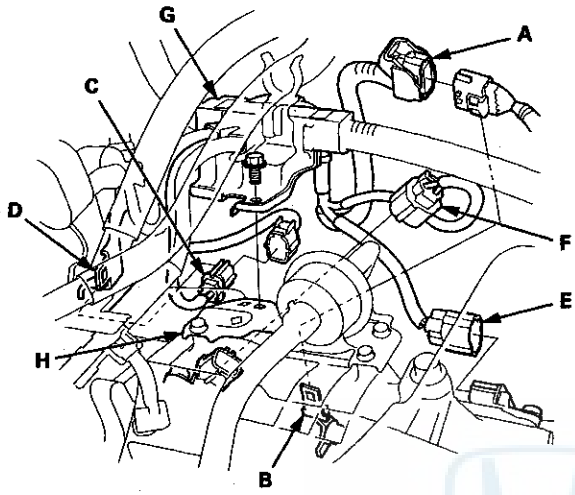
5. Remove the air cleaner housing (see page 11-332) and the intake air duct.
6. Remove the nut securing the under-hood fuse/relay box, and swing it out of the way.
7. Remove the battery base (see step 8 on page 5-3).
8. Raise the vehicle on a lift, and make sure it is securely supported.
9. Remove the front wheels.
10. Remove the splash shield.
11. Remove the drain plug (A), and drain the ATF.



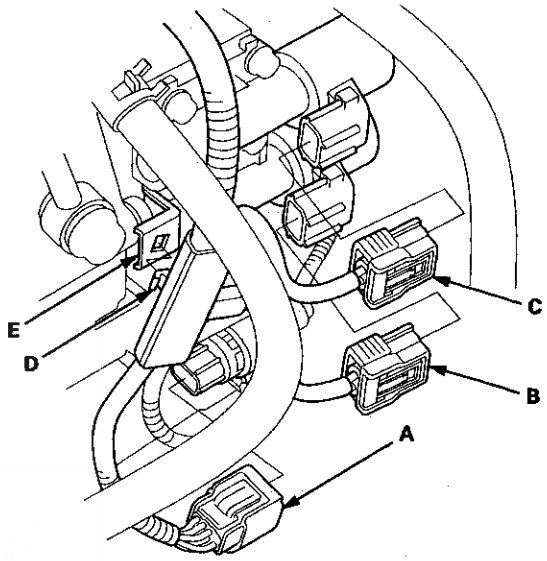
12. Reinstall the drain plug with a new sealing washer (B).
13. Disconnect the A/T clutch pressure control solenoid valve A connector (A) and the transmission fluid pressure switch A (2nd clutch) connector (B), and remove the harness clamps (C) from the clamp brackets (D).



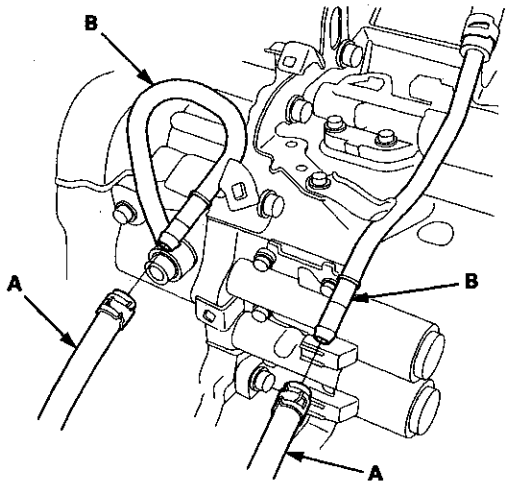
14. Remove the transmission range switch subharness connector (A) from the connector bracket (B), then disconnect it.



15. Remove the A/F sensor connector (C) from the connector bracket (D), then disconnect it.
16. Disconnect the input shaft (mainshaft) speed sensor connector (E) and the output shaft (countershaft) speed sensor connector (F).
17. Remove the harness cover bracket bolt, and remove the engine wire harness cover bracket (G) from the ATF filter bracket (H).
18. Disconnect the shift solenoid wire harness connector (A), the A/T clutch pressure control solenoid valve B connector (B), the A/T clutch pressure control solenoid valve C connector (C), and remove the harness clamp (D) from the clamp bracket (E).



19. Disconnect 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 the lines.

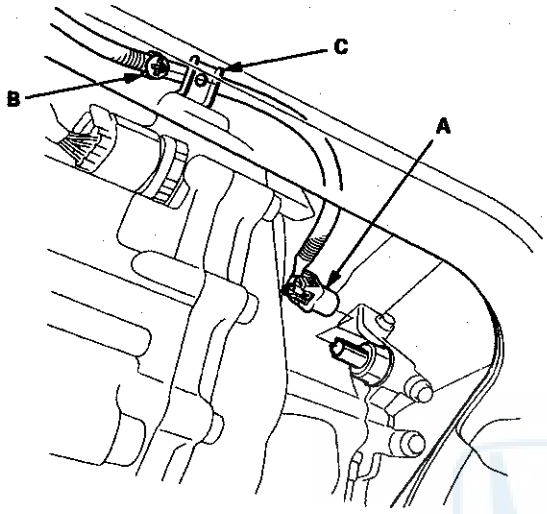


20. Check for any signs of leakage at the hose joints.

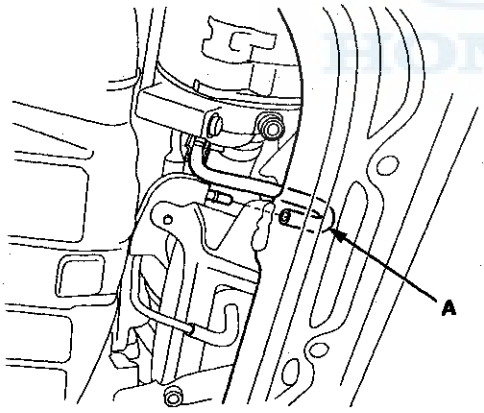
(cont'd)

Transmission Removal (cont'd)

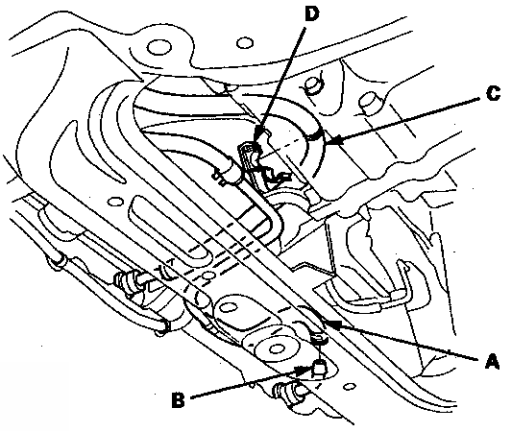
21. Disconnect the transmission fluid pressure switch B (3rd clutch) connector (A), and remove the harness clamp (B) from the clamp bracket (C).



22. Disconnect the vacuum hose (A).



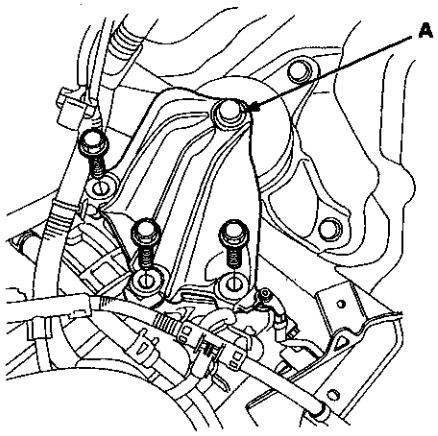
23. Disconnect the ATF cooler hose (A) from the ATF cooler line (B). Turn the end of the ATF cooler hose up to prevent ATF from flowing out, then plug the hose and line.



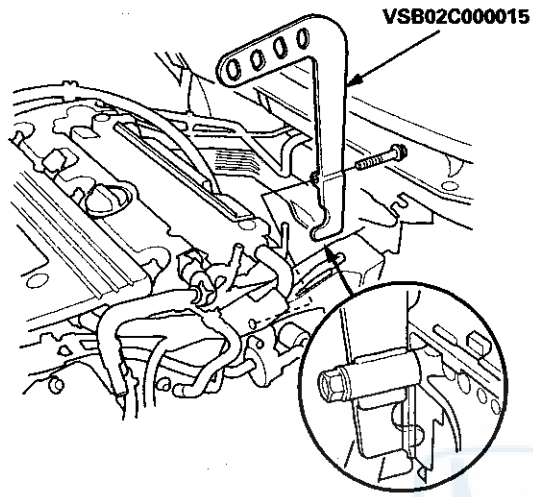
24. Remove the ATF cooler hose (C) from the hose clamp (D).

25. Remove the upper transmission mount bracket bolts.

NOTE: Do not remove the TORX bolt (A) from the upper transmission mount. If the TORX bolt is removed, the upper transmission mount must be replaced as an assembly.



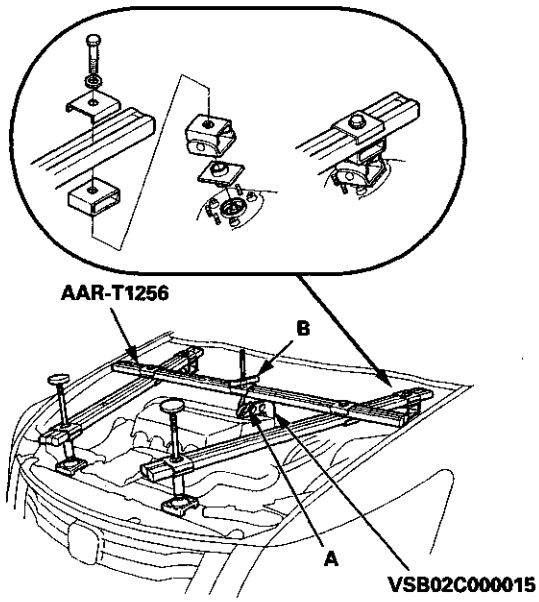
26. Attach the engine hanger adapter (VSB02C000015) to the threaded hole located on the rear side of the cylinder head.



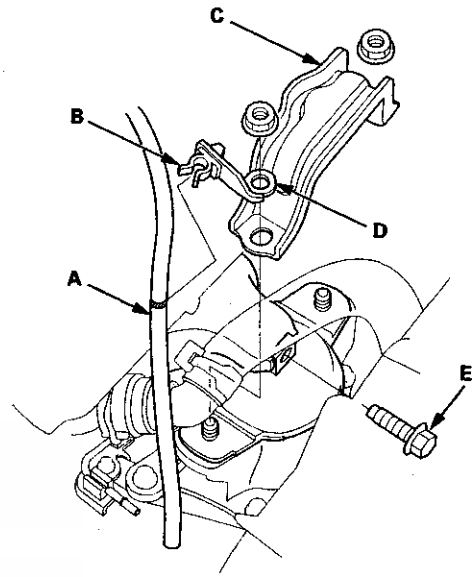
27. Install the engine support hanger (AAR-T1256) to the vehicle, and attach the hook (A) to the slotted hole in the engine hanger adapter (VSB02C000015). Tighten the wing nut (B) by hand to lift and support the engine.

NOTE:

- Be careful when working around the windshield.
- Be careful not to damage the hood opener cable when installing the engine support hanger (AAR-T1256) at the front bulkhead.

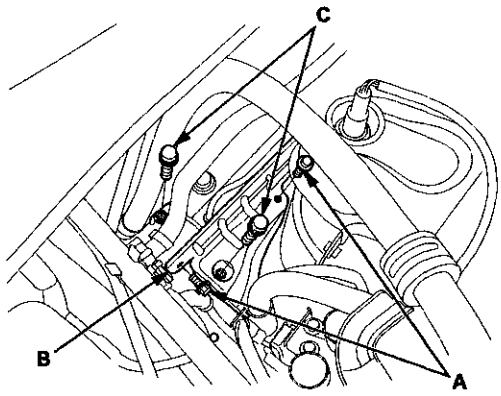


28. Remove the vacuum hose (A) from the hose clamp (B).



29. Remove the front engine mount stop (C) and the clamp bracket (D), and remove the front engine mount bolt (E).

30. Remove the heat shield mounting bolts (A), then remove the heat shield (B).

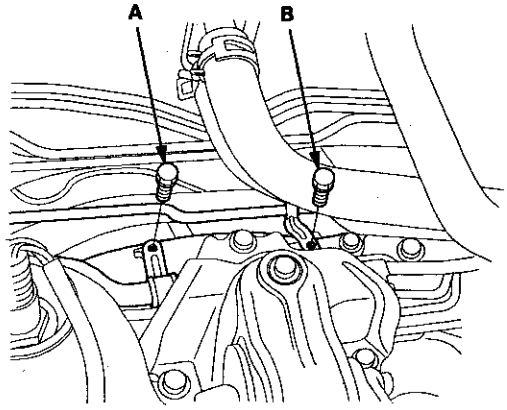


31. Remove the steering gearbox mounting bracket bolts (C).

(cont'd)

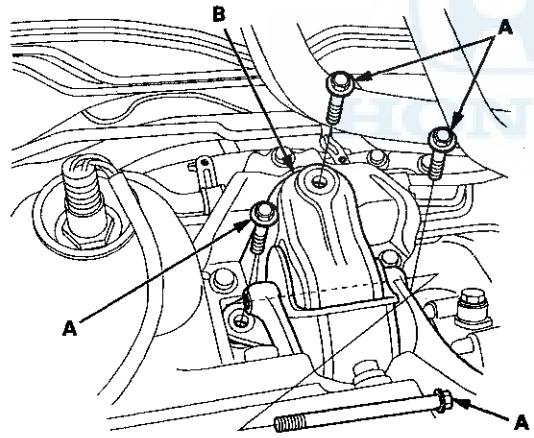
Transmission Removal (cont'd)

32. Remove the power steering (P/S) fluid return hose clamp bolt (A).

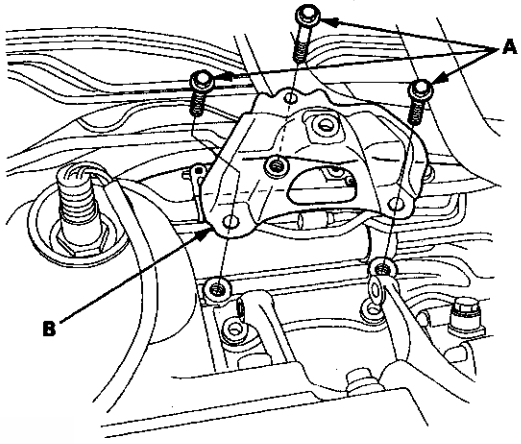


33. Remove the P/S fluid inlet line clamp bolt (B).

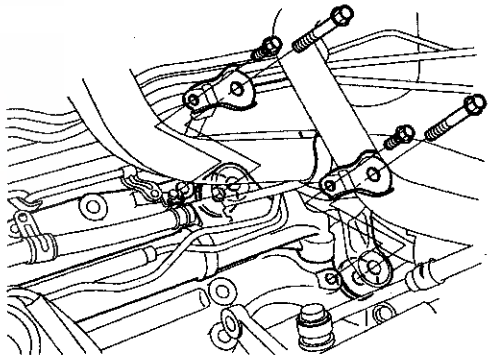
34. Remove the rear engine mount bolts (A), then remove the rear engine mount (B).



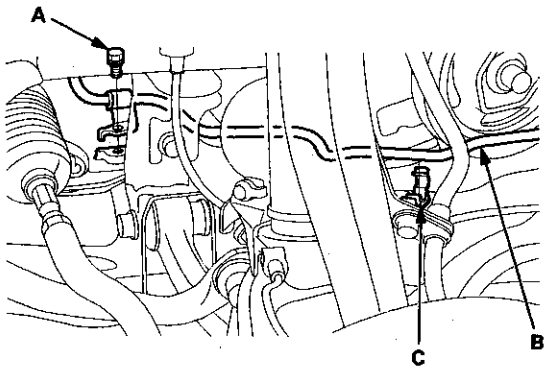
35. Remove the bolts (A), then remove the rear engine mount upper bracket (B).



36. Remove the steering gearbox stiffeners.

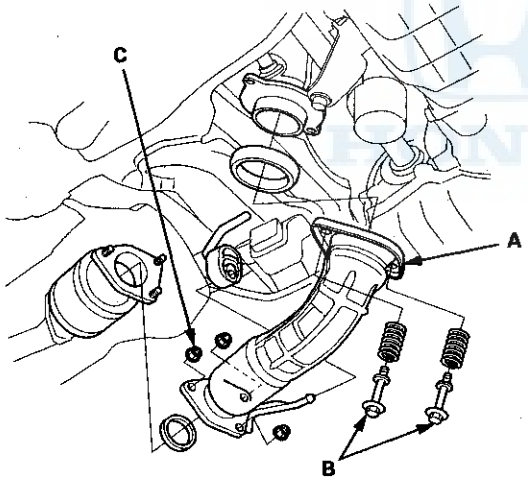


37. Remove the P/S fluid return line clamp bolt (A).



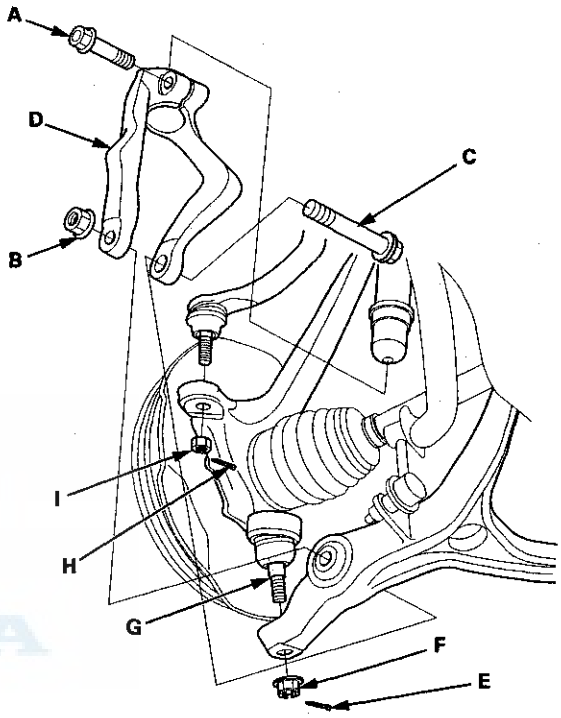
38. Release the P/S fluid return line (B) from the return line clamp (C).

39. Remove the bolts (B), and the self-locking nuts (C).



40. Remove exhaust pipe A.

41. Remove the damper pinch bolts (A), the damper fork mounting nuts (B), the bolts (C), and the damper forks (D) (see step 3 on page 18-21).



42. Remove the cotter pins (H) and the nuts (I), then separate the tie-rod end ball joints from the knuckles (see step 26 on page 17-41).

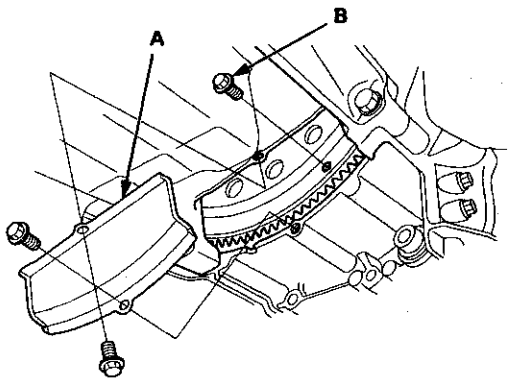
43. Remove the cotter pins (E) and the castle nuts (F) (see step 5 on page 18-21).

44. Separate the knuckle ball joints (G) from the lower arms (see step 6 on page 18-21).

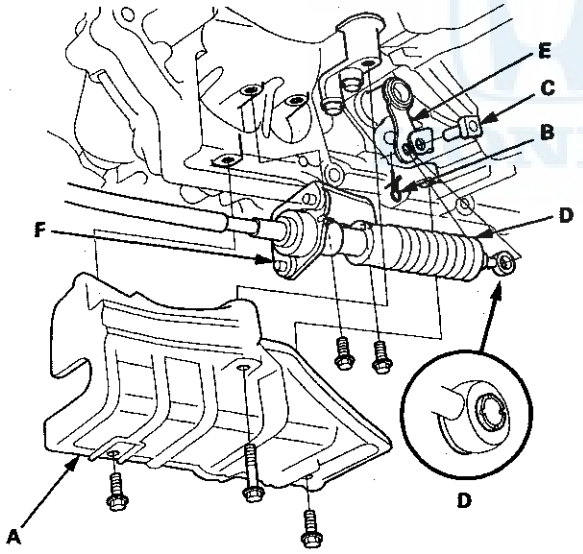
(cont'd)

Transmission Removal (cont'd)

45. Remove the torque converter cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.

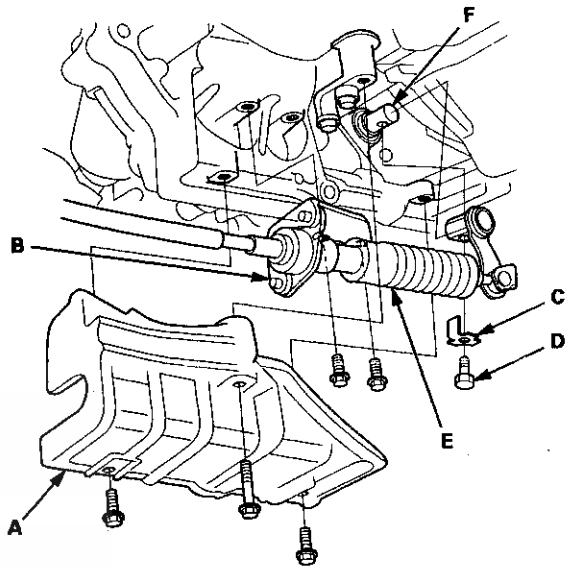


46. Vehicles with JHM VINs: Remove the shift cable cover (A).



47. Vehicles with JHM VINs: Remove the spring clip (B) and the control pin (C), and separate the shift cable end (D) from the selector control lever (E). Remove the two bolts securing the shift cable bracket (F).

48. Vehicles with 1HG VINs: Remove the shift cable cover (A), and remove the two bolts securing the shift cable bracket (B).

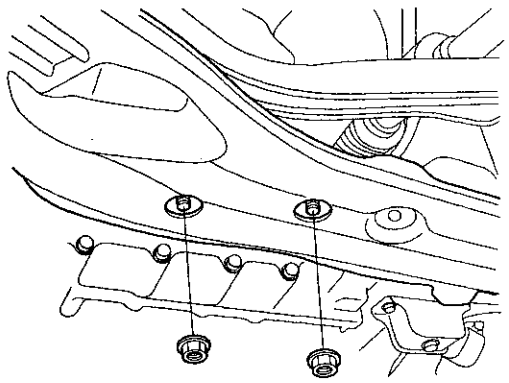


49. Vehicles with 1HG VINs: Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the shift cable (E) from the selector control shaft (F).

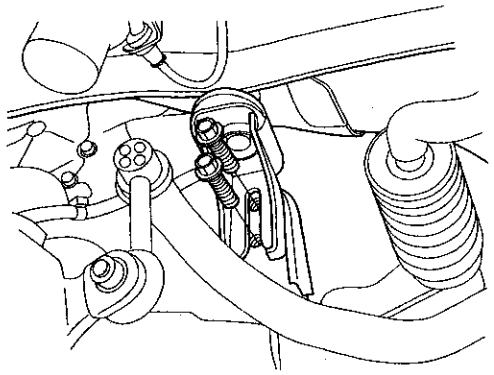
50. Hang the shift cable to the body with a strap.

    NOTE: Do not bend the shift cable excessively.

51. Remove the transmission lower mount nuts.

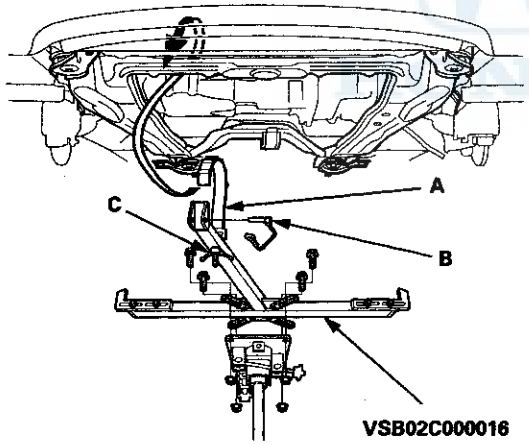


52. Remove both sides front subframe mid-mount bolts.



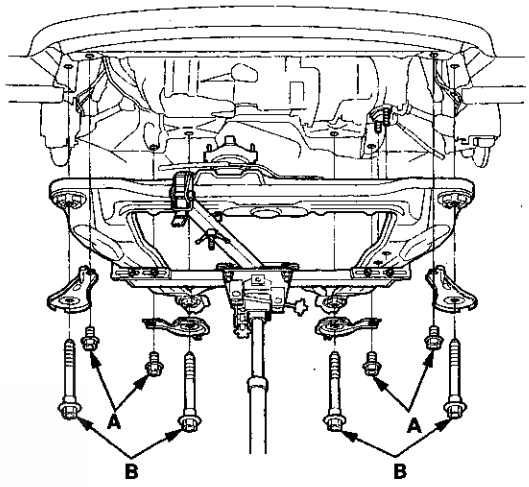
53. Support the steering gearbox on both sides with nylon straps.

54. Attach the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the front subframe, then secure the strap with the stop (B), then tighten the wing nut (C).



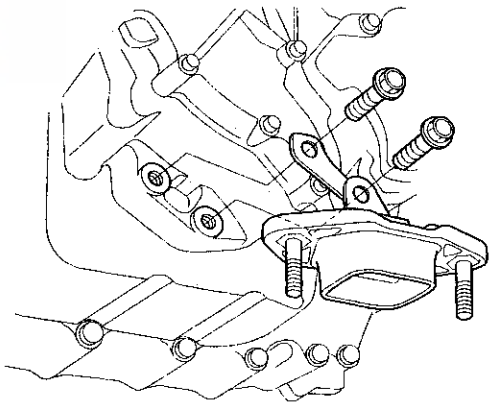
55. Raise a jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then tighten the bolts.

56. Remove the four bolts (A) securing the stiffeners, and remove the four bolts (B) securing the front subframe, then lower the front subframe.



57. Place a jack under the transmission.

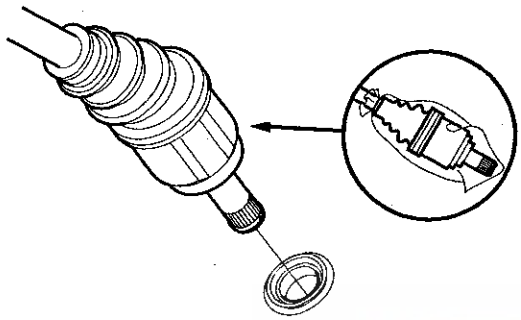
58. Remove the transmission lower mount.



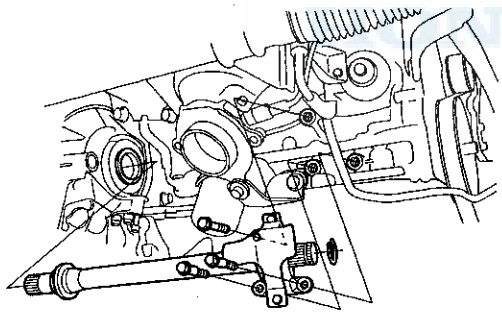
(cont'd)

Transmission Removal (cont'd)

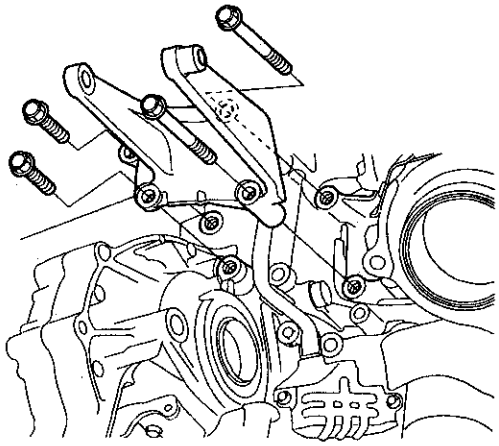
59. Remove the left side driveshaft from the differential and the right side driveshaft from the intermediate shaft. Coat all precision machined surfaces with clean engine oil, then put plastic bags over the driveshaft ends. Support the driveshafts on both sides with nylon straps.



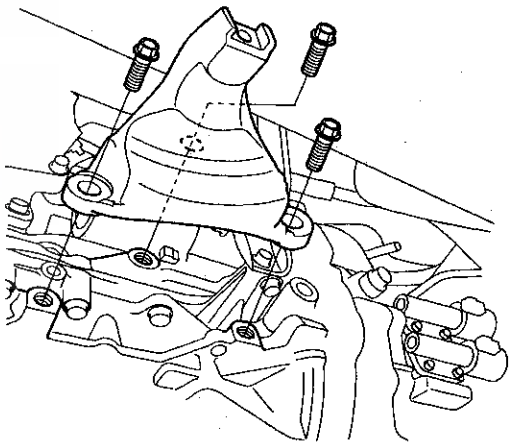
60. Remove the intermediate shaft. Coat all precision machined surfaces with clean engine oil, then put plastic bags over the intermediate shaft ends.



61. Remove the rear engine mount bracket.

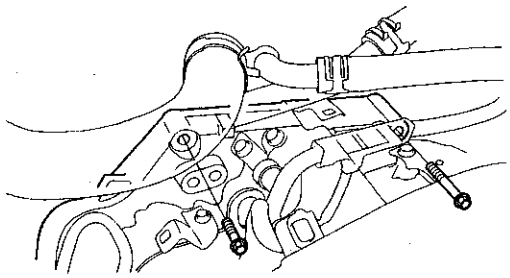


62. Remove the front engine mount bracket.

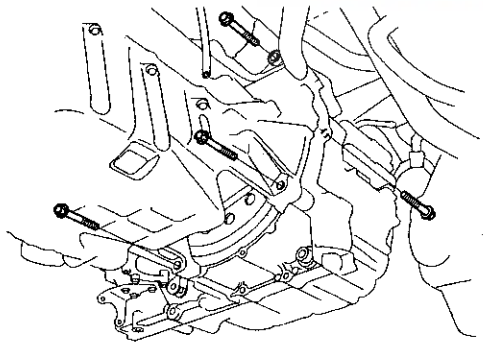


63. Remove the jack.

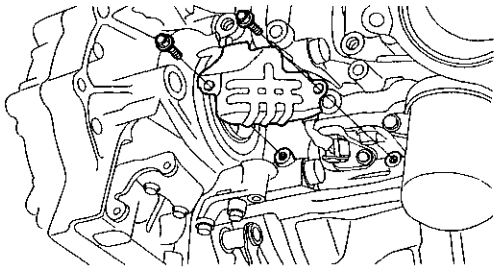
64. Remove the upper transmission housing mounting bolts.



65. Lower the transmission by loosening the wing nut on the engine support hanger, and tilt the engine just enough for the transmission to clear the side frame. Check that the transmission is completery free of the ATF cooler hoses, the vacuum hoses, and the electrical wiring.
66. Place the jack under the transmission.
67. Remove the front and lower transmission housing mounting bolts.

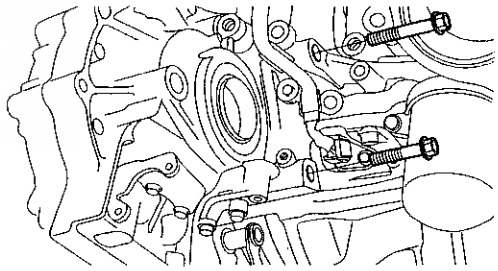


68. Remove the crankshaft position (CKP) sensor cover.



69. Remove the rear transmission housing mounting bolts.

    NOTE: Be careful not to damage the CKP sensor and the sensor harness.

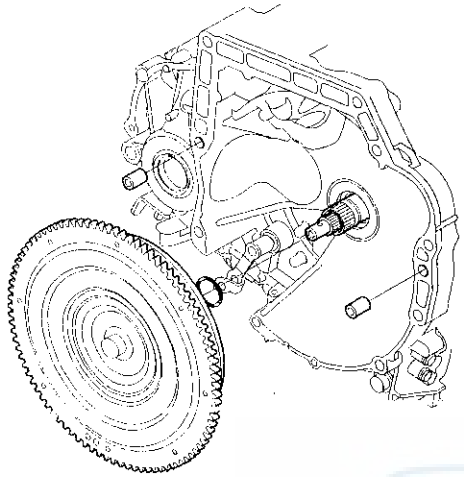


70. Check once again that the transmission is free of the vacuum hoses, the ATF cooler hoses, and the electrical wiring.
71. Slide the transmission away from the engine to remove it from the vehicle.

(cont'd)

Transmission Removal (cont'd)

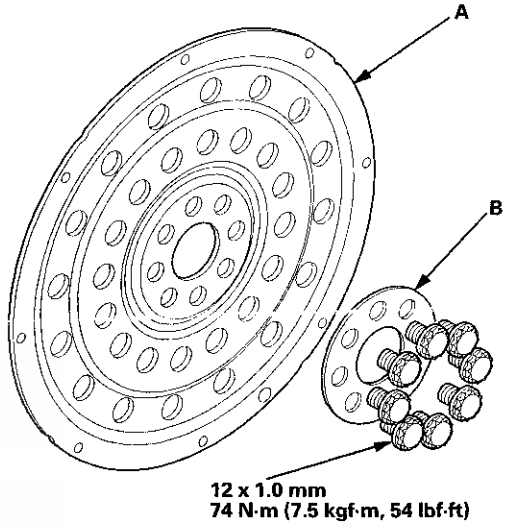
72. Remove the torque converter, the O-ring, and the dowel pins.



73. Inspect the drive plate, and replace it if it is damaged.

Drive Plate Removal and Installation

1. Remove the transmission assembly (see page 14-194).
2. Remove the drive plate (A) and the washer (B) from the engine.



3. Install the drive plate and the washer on the engine, and tighten the eight bolts in a crisscross pattern in at least two steps.
4. Install the transmission assembly (see page 14-205).

Transmission Installation

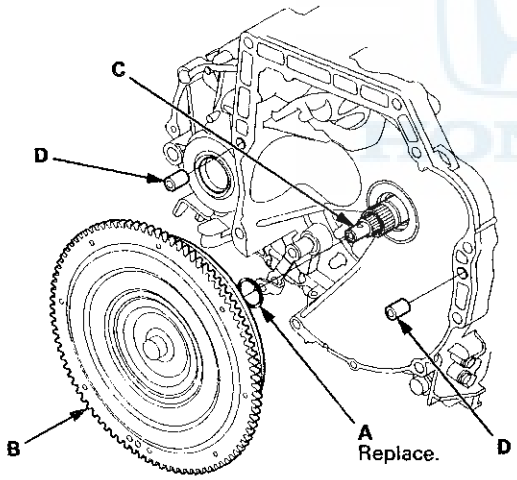
Special Tools Required
- Engine Hanger Adapter VSB02C000015*
- Engine Support Hanger, A and Reds AAR-T1256*
- Subframe Adapter VSB02C000016*
- Subframe Alignment Pin 070AG-SJAA10S

*: Available through the Honda Tool and Equipment Program 888-424-6857.

NOTE: Use fender covers to avoid damaging painted surfaces.

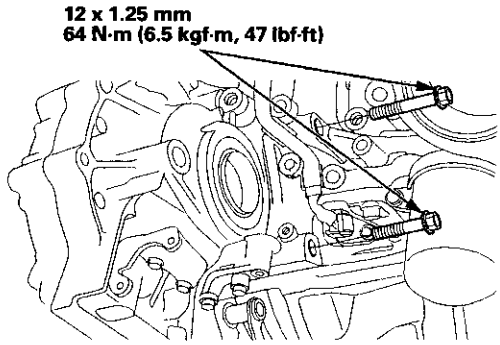
1. If you did not clean the ATF cooler when you removed the transmission, and you are installing an overhauled or remanufactured transmission, clean the ATF cooler (see page 14-217).
2. Install a new O-ring (A) on the torque converter (B), then install the torque converter on the mainshaft (C).

   NOTE: Make sure the torque converter is fully engaged on the mainshaft, starter shaft and the ATF pump gear. Failure to do so will result in severe transmission or engine damage.

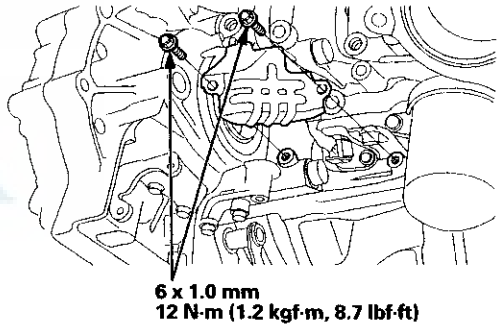


3. Install the 14 x 20 mm dowel pins (D) in the torque converter housing.
4. Place the transmission on a jack, and raise the transmission to the engine level, then fit the transmission to the engine.
5. Install the rear transmission housing mounting bolts.

   NOTE: Be careful not to damage the crankshaft position (CKP) sensor and the sensor harness.



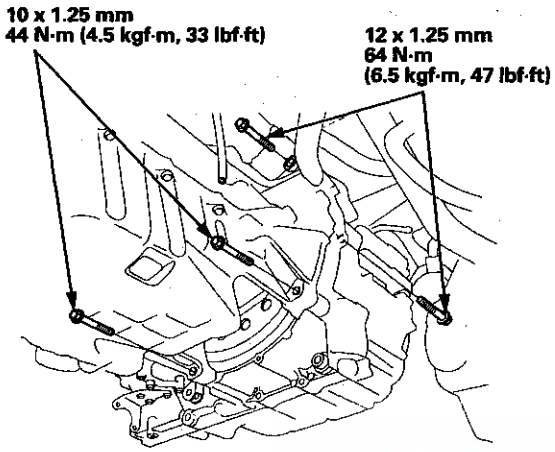
6. Install the CKP sensor cover.



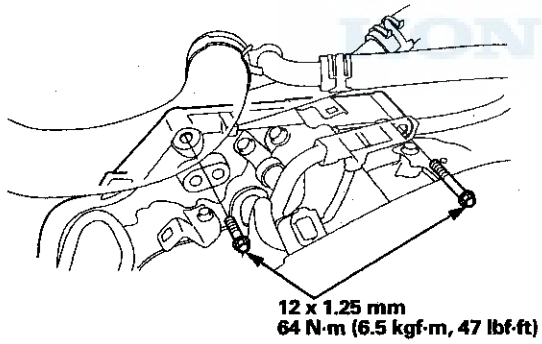
(cont'd)

Transmission Installation (cont'd)

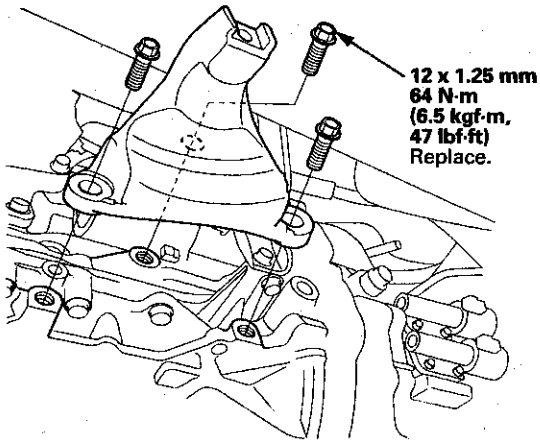
7. Install the front and lower transmission housing mounting bolts.



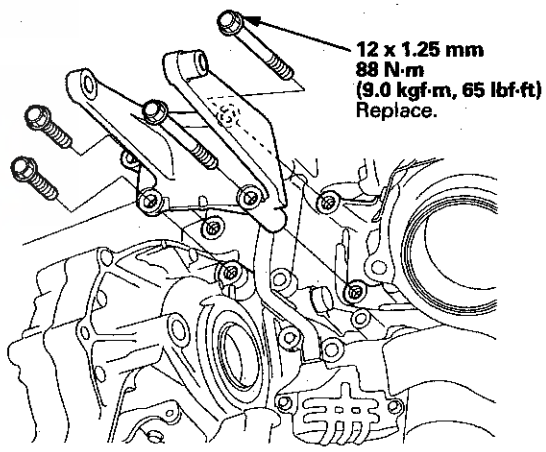
8. Remove the jack.
9. Install the upper transmission housing mounting bolts.



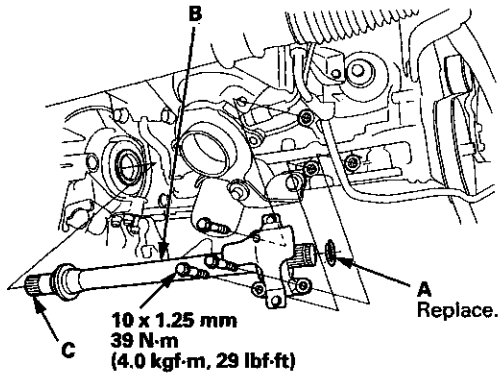
10. Place the jack under the transmission.
11. Install the front engine mount bracket with new bolts.



12. Install the rear engine mount bracket with new bolts.

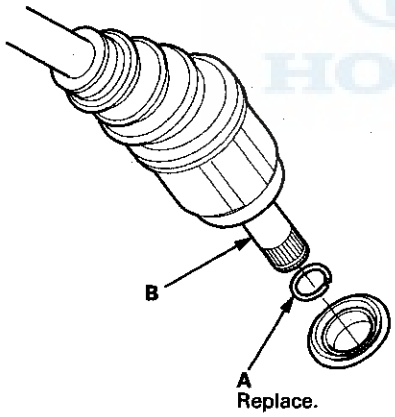


13. Install a new set ring (A) on the intermediate shaft (B).



14. Clean the areas where the intermediate shaft contacts the transmission (differential) with solvent, and dry with compressed air. Apply ATF to the intermediate shaft splines (C), then install the intermediate shaft. Be sure not to allow dust or other foreign particles to enter the transmission.

15. Install a new set ring (A) on the left driveshaft (B).

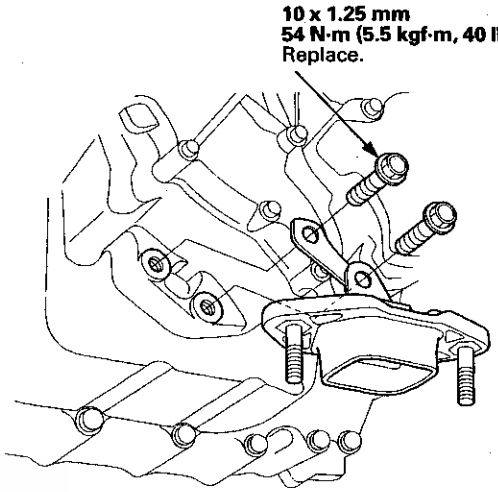


16. Clean the areas where the left driveshaft contacts the transmission (differential) with solvent, and dry with compressed air. Then install the left driveshaft. Be sure not to allow dust or other foreign particles to enter the transmission. Turn the steering knuckle fully outward, and slide the driveshaft into the differential until you feel the set ring fully engage the side gear.

17. Apply the recommended grease to the right driveshaft inboard joint splines (see step 4 on page 16-20).

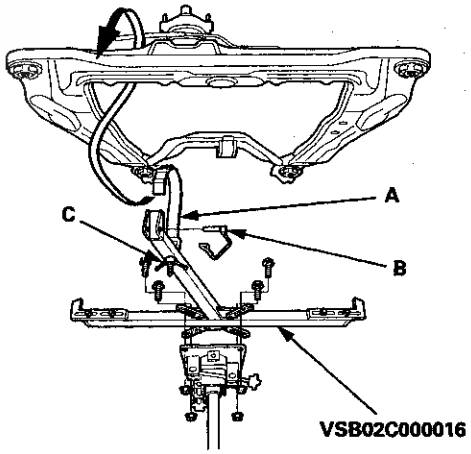
18. Slide the right driveshaft over the intermediate shaft splines until you feel the driveshaft fully engage the intermediate shaft set ring.

19. Install the transmission lower mounts with new bolts.



20. Remove the jack.

21. Attach the front subframe adapter (VSB02C000016) to the front subframe by looping the strap (A) over the front of the front subframe, then secure the strap with the stop (B), then tighten the wing nut (C).

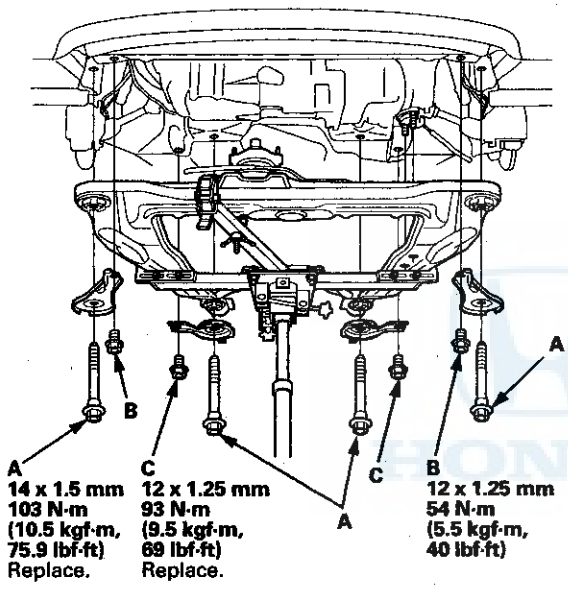


(cont'd)

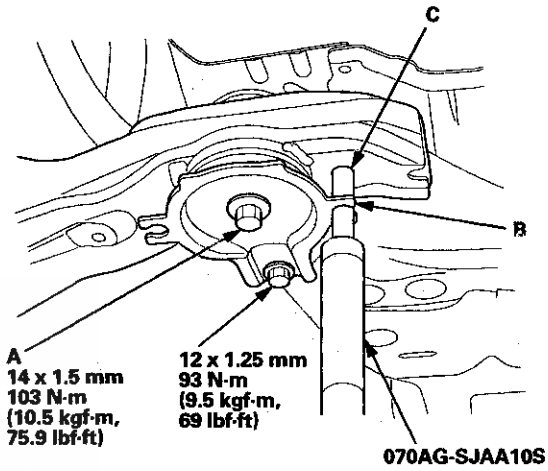
Transmission Installation (cont'd)

22. Raise the front subframe up to the body, then loosely install new front subframe mounting bolts (A), the stiffener mounting bolts (B), and new stiffener mounting bolts (C).

    NOTE: Be careful when connecting these items:
    - Front engine mount and its bracket
    - Transmission lower mount and front subframe
    - Knucle ball joints and lower arms

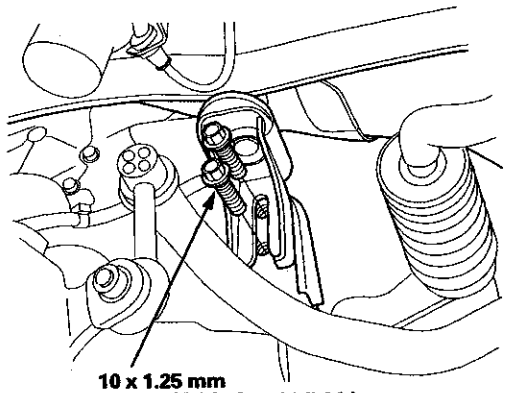


23. Loosely tighten the front subframe mounting bolt (A) in the right rear stiffener until the front subframe insulator contacts the body; insert the subframe alignment pin (070AG-SJAA10S) through the positioning slot (B) on the right rear stiffener, through the positioning hole (C) on the front subframe, and into the positioning hole on the body.

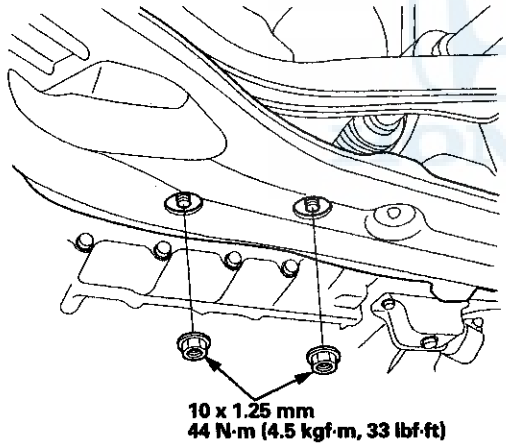


24. Loosely tighten the front subframe mounting bolt in the left rear stiffener in the same manner in step 23.
25. Reinsert the subframe alignment pin through the positioning slot on the right rear stiffener, through the positioning hole on the front subframe, and into the positioning hole on the body, then tighten the front subframe mounting bolt to the specified torque.
26. Tighten the front subframe mounting bolt in the left rear stiffener in the same manner in step 25.
27. Tighten the front subframe mounting bolts in the right front stiffener and the left front stiffener to the specified torque.
28. Check that the positioning holes and slots are aligned using the subframe alignment pin.
29. Tighten the rear and front stiffener mounting bolts to the specified torque.
30. Remove the jack and the front subframe adapter.

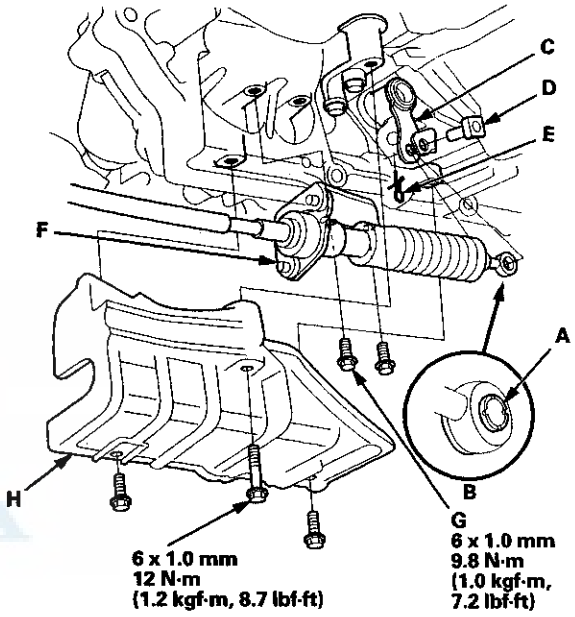
31. Replace both sides front subframe mid-mount mounting bolts.



32. Install the transmission lower mount nuts.



33. Vehicles with JHM VINs: Apply molybdenum grease to the hole in the bushing (A) in the shift cable end (B). Attach the shift cable end to the selector control lever (C), then insert the control pin (D) into the control lever hole through the shift cable end, and secure the control pin with the spring clip (E). Do not bend the shift cable excessively.



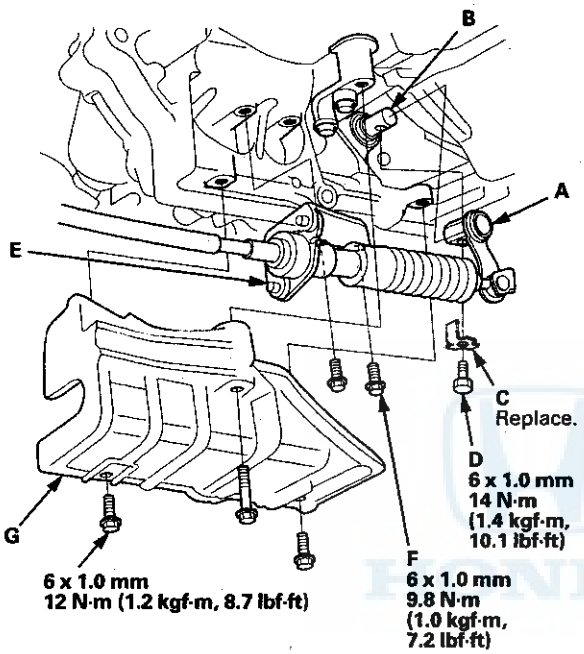
34. Vehicles with JHM VINs: Install the shift cable bracket (F) with the two bolts (G).

35. Vehicles with JHM VINs: Install the shift cable cover (H).

(cont'd)

Transmission Installation (cont'd)

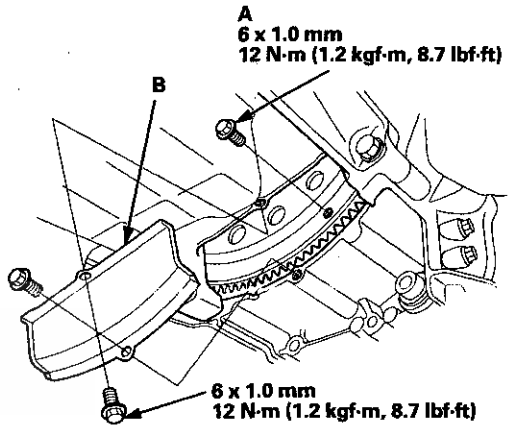
36. Vehicles with 1HG VINs: Install the selector control lever (A) over the selector control shaft (B). Secure the control lever with a new lock washer (C) and the lock bolt (D), then bend the lock tab of the lock washer against the bolt head.



37. Vehicles with 1HG VINs: Install the shift cable bracket (E) with the two bolts (F).

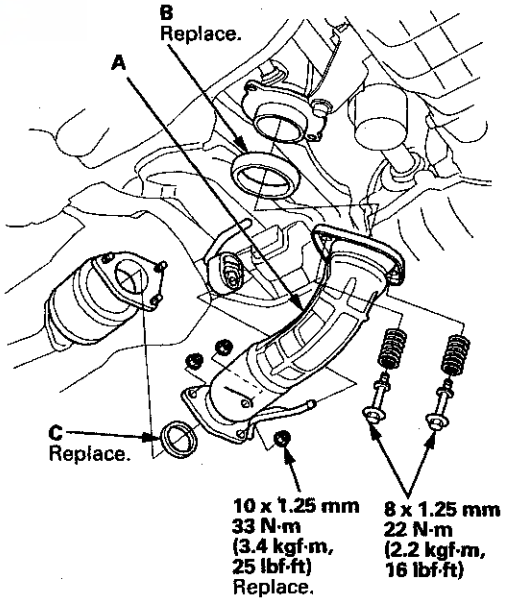
38. Vehicles with 1HG VINs: Install the shift cable cover (G).

39. Attach the torque converter to the drive plate with the eight bolts (A). Rotate the crankshaft pulley as necessary to tighten the bolts to half of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.

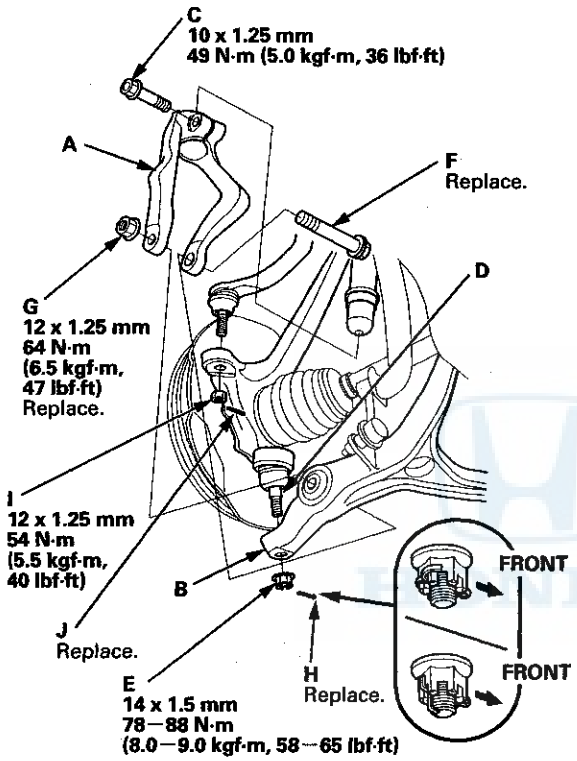


40. Install the torque converter cover (B).

41. Install exhaust pipe A with the bolts, new self-locking nuts, and new gaskets (B) (C).



42. Install the damper forks (A) over the driveshaft and onto the lower arms (B) (see step 4 on page 18-33). Loosely install the damper pinch bolts (C) into the damper forks.



43. Install the knuckle ball joints (D) on the lower arms with the castle nuts (E) (see page 18-21).

44. Connect the damper forks and the lower arms with new damper fork mounting bolts (F), then loosely tighten a new mounting nuts (G).

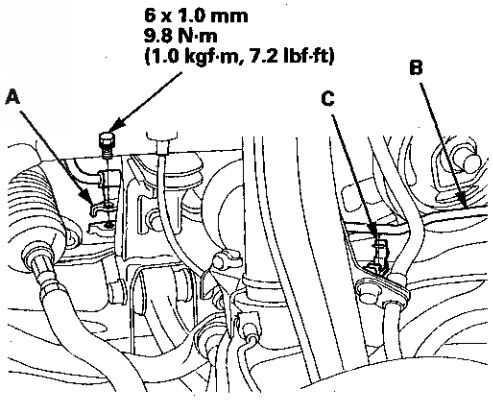
45. Tighten the castle nuts to the lower torque specification, then tighten it only far enough to align the slot with the knuckle ball joint pin hole. Do not align the castle nuts by loosening it.

    NOTE: Insert new cotter pins (H) into the ball joint pin holes from the front to the rear of the vehicle, and bend its end as shown. Check the ball joint pin hole direction before connecting the ball joint.

46. Install the tie-rod end ball joints to each knuckle with the nuts (I) and new cotter pins (J) (see step 32 on page 17-64).

47. Position the steering gearbox on the rear engine mount base bracket.

48. Install the P/S fluid return line clamp (A) with the bolt.

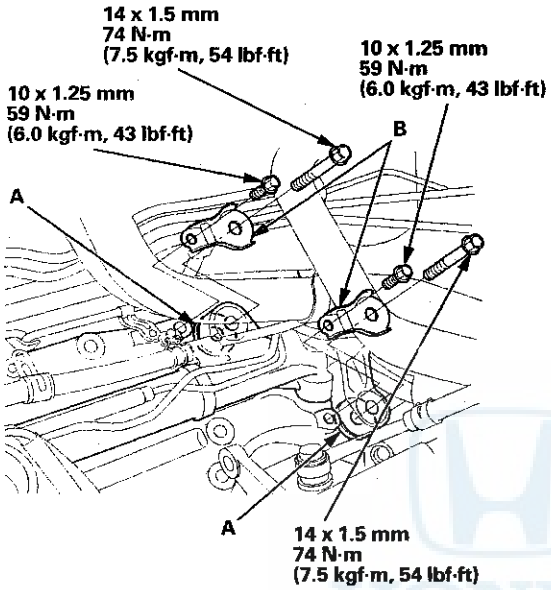


49. Secure the P/S fluid return line (B) with the clamp (C).

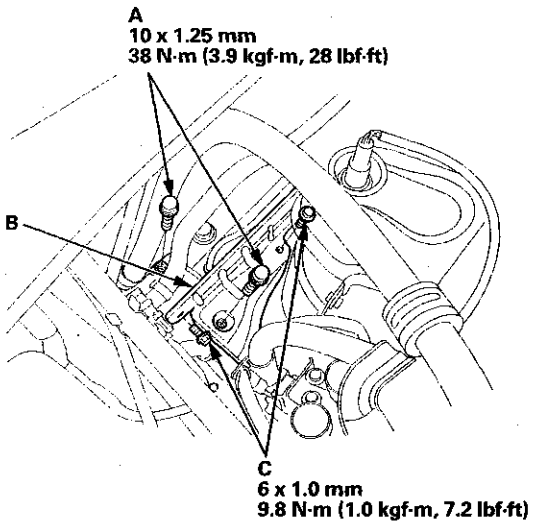
(cont'd)

Transmission Installation (cont'd)

50. Install the washers (A) between the steering gearbox and the rear engine mount base bracket, then install the gearbox stiffeners (B) and the bolts on the left side of the steering gearbox, and loosely tighten the bolts.

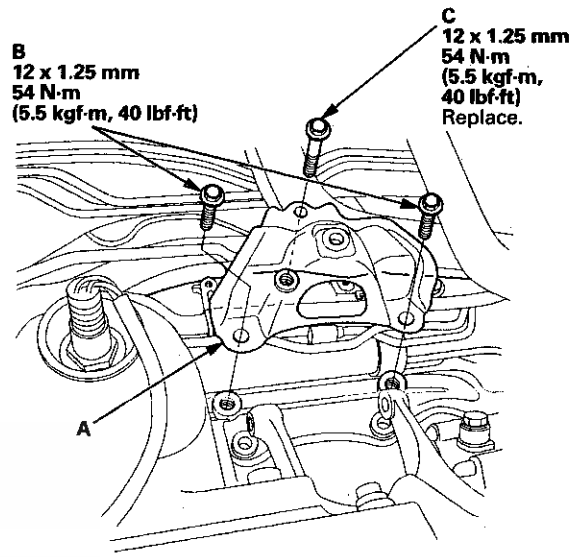


51. Install the steering gearbox mounting bracket bolts (A), then tighten the bolts on the left side of the steering gearbox to the specified torque.

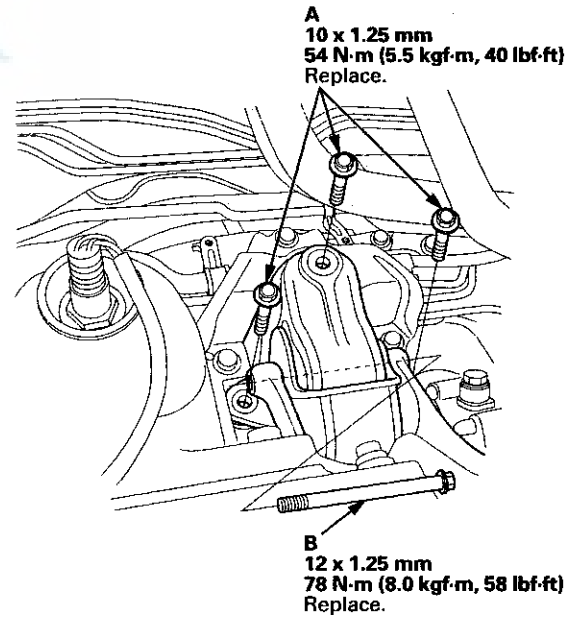


52. Install the heat shield (B) with the bolts (C).

53. Install the rear engine mount upper bracket (A), the bolts (B), and a new bolt (C), and tighten the bolts.

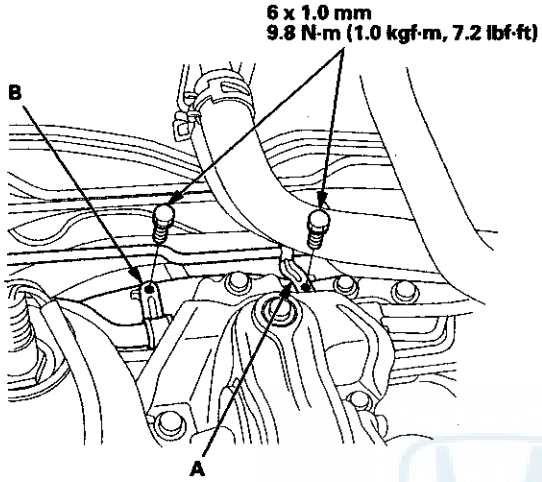


54. Install the rear engine mount with new bolts (A).

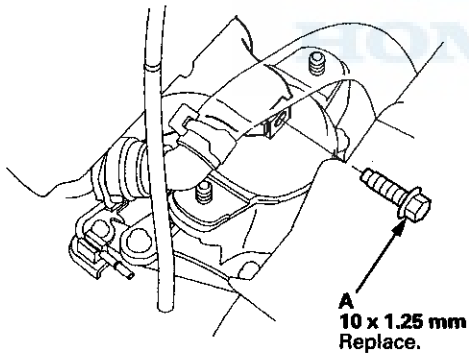


55. Loosely install a new rear engine mount bolt (B).

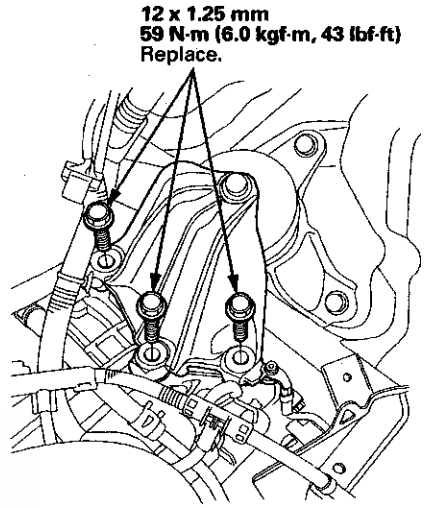
56. Secure the P/S fluid inlet line clamp bracket (A) and the P/S fluid return hose clamp bracket (B) with the bolts.



57. Loosely install a new front engine mount bolt (A).

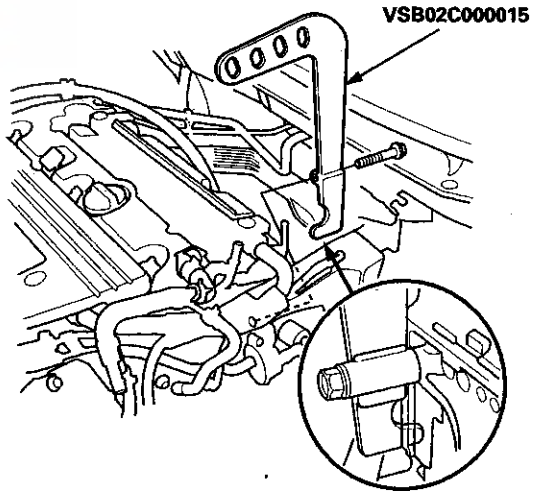


58. Loosely install new transmission upper mount bracket bolts.



59. Remove the engine support hanger.

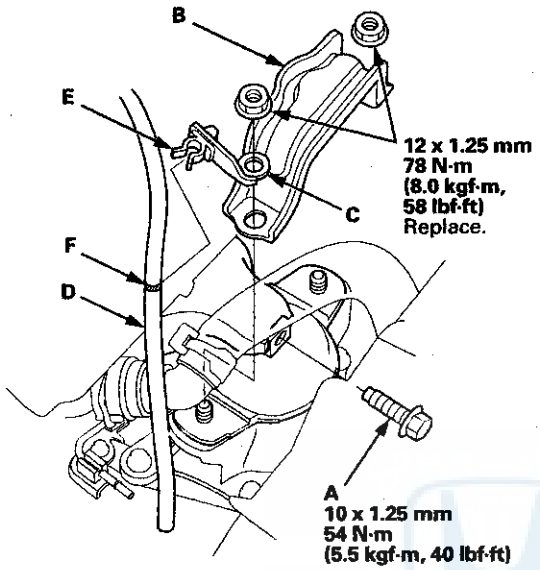
60. Remove the engine hanger adapter (VSB02C000015) from the cylinder head.



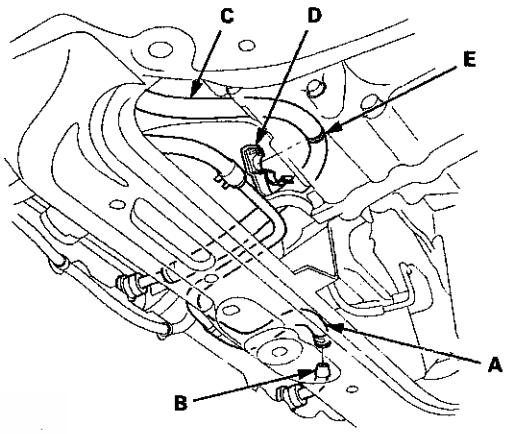
(cont'd)

Transmission Installation (cont'd)

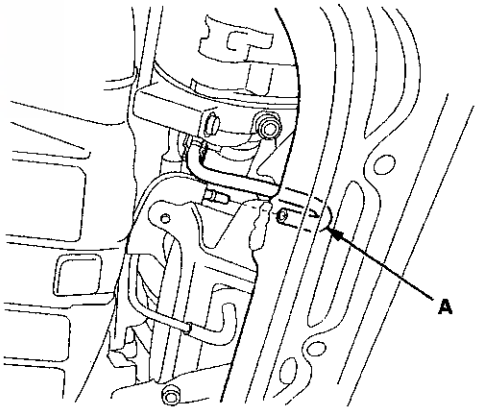
61. Tighten the front engine mount bolt (A).



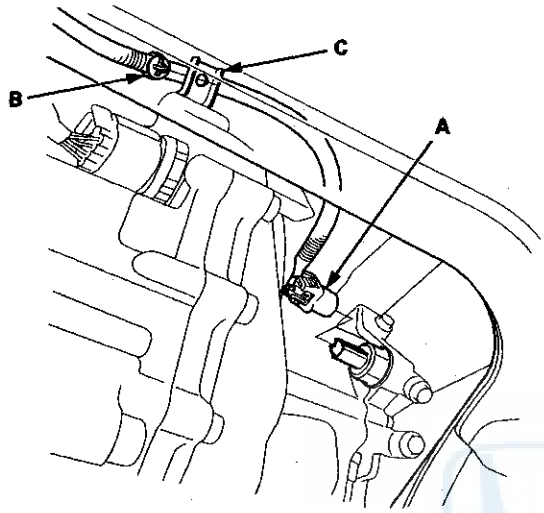
62. Install the front engine mount stop (B) and the clamp bracket (C).
63. Install the vacuum hose (D) on the hose clamp (E) at the mark (F).
64. Tighten the rear engine mount bolt to 78 N·m (8.0 kgf·m, 58 lbf·ft).
65. Tighten the transmission upper mount bolts to 59 N·m (6.0 kgf·m, 43 lbf·ft).
66. Connect the ATF cooler hose (A) to the ATF cooler line (B), and secure the hose with the clip (see page 14-220).



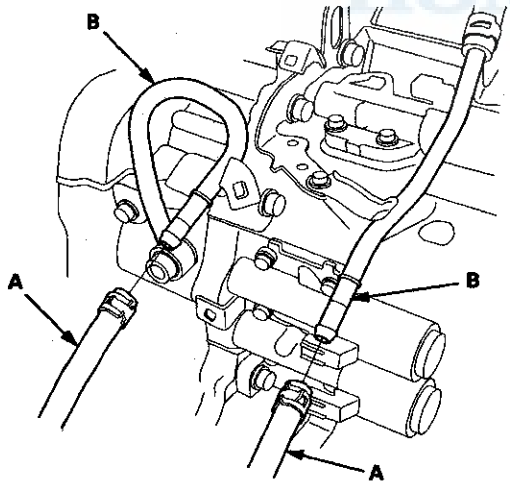
67. Install the ATF cooler hose (C) on the hose clamp (D) at the mark (E).
68. Connect the vacuum hose (A).



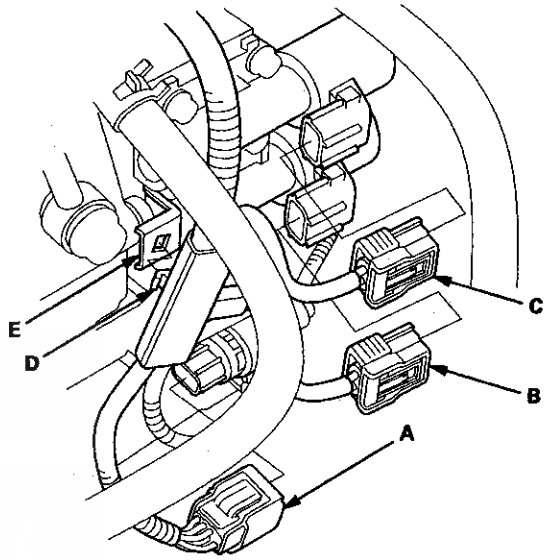
69. Connect the transmission fluid pressure switch B (3rd clutch) connector (A), and install the harness clamp (B) on the clamp bracket (C).



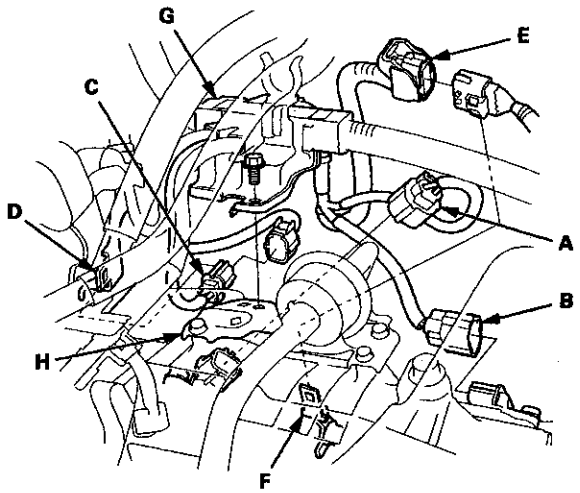
70. Connect the ATF cooler hoses (A) to the ATF cooler lines (B), and secure the hoses with the clips (see page 14-220).



71. Connect the shift solenoid wire harness connector (A), the A/T clutch pressure control solenoid valve B connector (B), and the A/T clutch pressure control solenoid valve C connector (C), and install the harness clamp (D) on the clamp bracket (E).



72. Connect the output shaft (countershaft) speed sensor connector (A) and the input shaft (mainshaft) speed sensor connector (B).



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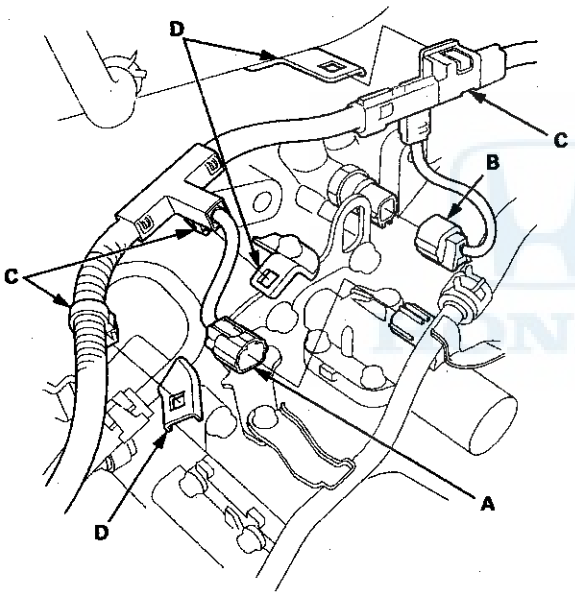
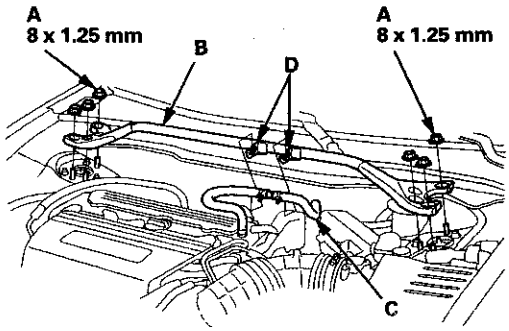
Transmission Installation (cont'd)

73. Connect the A/F sensor connector (C), then install it on the connector bracket (D).
74. Connect the transmission range switch subharness connector (E), then install it on the connector bracket (F).
75. Install the engine wire harness cover bracket (G) on the ATF filter bracket (H).
76. Connect the A/T clutch pressure control solenoid valve A connector (A) and the transmission fluid pressure switch A (2nd clutch) connector (B), and install the harness clamps (C) on the clamp brackets (D).



77. Install the under-hood fuse/relay box.
78. Refill the transmission with ATF (see step 4 on page 14-192).
79. Install the battery base (see step 63 on page 5-22).
80. Install the air cleaner housing (see page 11-332) and the intake air duct.
81. Do the battery installation procedure (see page 22-92).
82. Loosely install the strut brace mounting nuts (A) on the strut brace (B), and install the hose (C) on its clamps (D).



83. Set the parking brake. Start the engine, and shift the transmission through all gears three times.
84. Check the shift lever operation, the A/T gear position indicator operation, and the shift cable adjustment.
85. Place a floor jack under the lower arm, and raise the front suspension to load it with the vehicle's weight. Do not place the jack against the ball joint pin of the knuckle.

    Tighten the damper pinch bolt and the damper fork mounting nut while holding the mounting bolt to the specified torque.
86. Tighten the lower arm mounting castle nuts to the specified torque, then install the new cotter pins onto the castle nuts (see step 5 on page 18-21).
87. Tighten the strut brace mounting nuts to 22 N·m (2.2 kgf·m, 16 lbf·ft).
88. Install the front wheels.
89. Install the splash shield.
90. Install the front grille cover.
91. Check and adjust the front wheel alignment (see page 18-5).
92. Start the engine with the shift lever in P or N, and warm it up to normal operating temperature (the radiator fan comes on).
93. Turn the engine off, and check the ATF level (see page 14-191).
94. Do the road test (see page 14-170).

ATF Cooler Cleaning

Special Tools Required
- ATF Cooler Cleaner GHTTTCF6H*
- Magnetic Nonbypass Spin-On Filter GTHGNBP2*

*: Available through the Honda Tool and Equipment Program 888-424-6857.

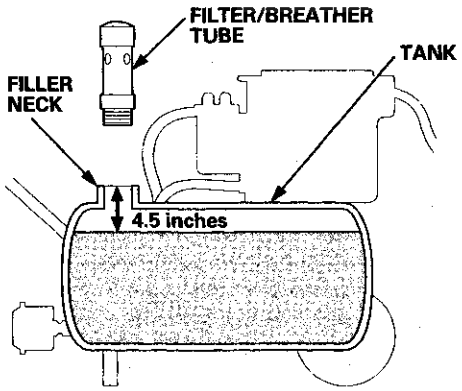
Before installing an overhauled or remanufactured automatic transmission, you must thoroughly clean the ATF cooler to prevent system contamination. Failure to do so could cause a repeat automatic transmission failure.

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.

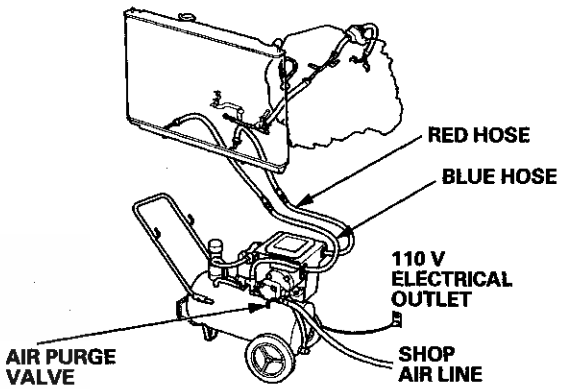
1. Check the fluid in the cooler cleaner tank. (The fluid level should be 4.5 inches from the top of the filler neck.) Adjust the level if needed; do not overfill. Use only Honda ATF-Z1; do not use any additives.



2. Plug the cooler cleaner into a 110 V grounded electrical outlet.

NOTICE

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 could damage the unit.



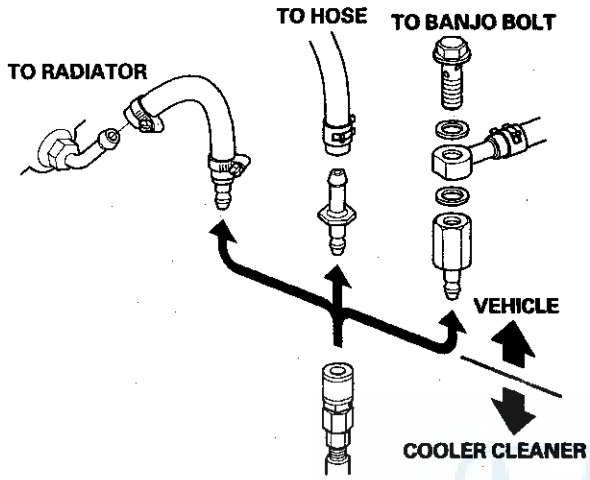
3. Flip the HEAT toggle switch to ON; the green indicator above the toggle switch comes on. Wait 1 hour for the cooler cleaner to reach its operating temperature. (The cooler cleaner is ready to use when the temperature gauge reads 140 °F to 150 °F.)

   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).

(cont'd)

ATF Cooler Cleaning (cont'd)

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.



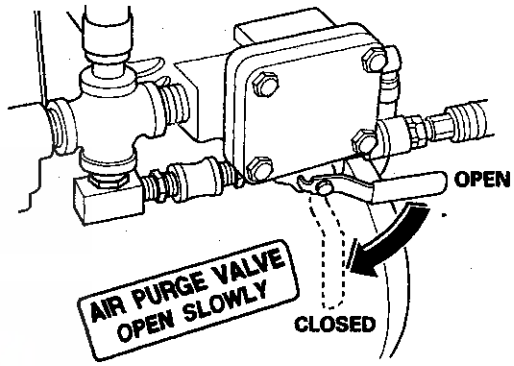
5. Connect the red hose to the cooler outlet line (the line that normally goes to the external filter on the transmission).
6. Connect the blue hose to the cooler inlet line.
7. Connect a shop air hose (regulated to 100 to 125 psi) to the air purge valve.

NOTICE

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-minute 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.



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-minute cleaning period, leave the air purge valve open.

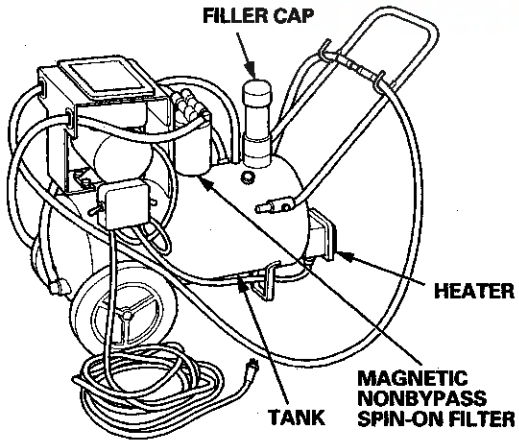
    NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.

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

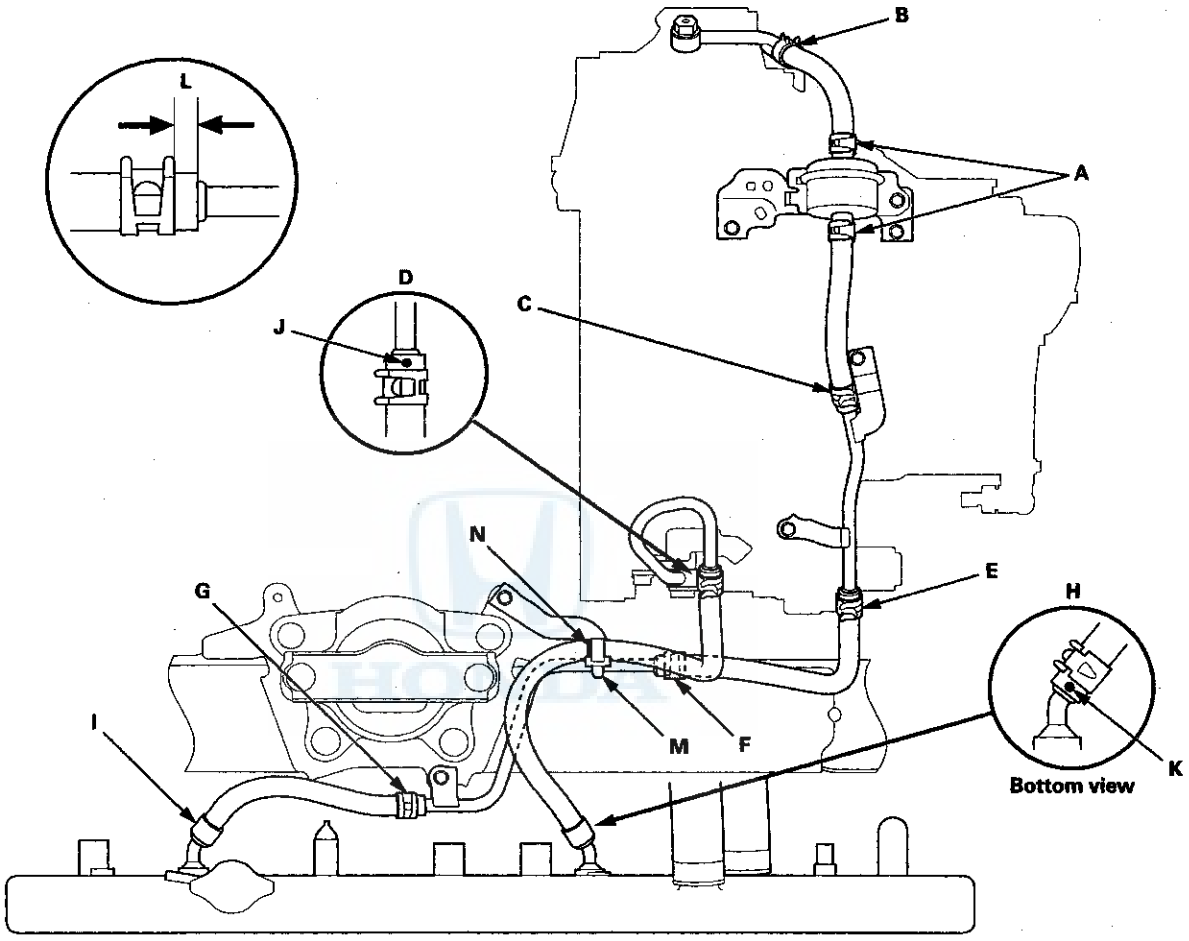
Follow these instructions to keep the ATF cooler cleaner working properly:

- Replace the two magnetic nonbypass spin-on filters after every 20 hours or of use, based on the hour meter, or when you notice a restriction in the ATF flow.
- Check the level and the condition of the fluid in the tank before each use.
- Replace the ATF in the tank when it looks dark or dirty.



ATF Cooler Hose Replacement

Exploded View



NOTE: When installing the hose clamps, make sure they do not interfere with the surrounding parts.

1. Install the ATF cooler hoses over the ATF cooler lines with the clips at appropriate points in reference to the following list. Align the pink paint mark (J) pointing up, and the white paint mark (K) pointing down.

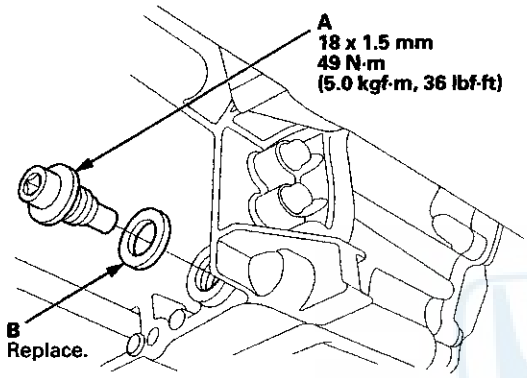
Point	Distance from Hose End to Clip (L)	Hose End Contact Point
A	6–8 mm (0.24–0.31 in)	ATF Filter
B	6–8 mm (0.24–0.31 in)	Bulge
C		
D		
E		
F		
G		
H	2–4 mm (0.08–0.16 in)	Bulge
I		

2. Secure the ATF cooler hose with the clamp (M) at the pink paint line (N).
3. Refill the transmission with ATF to the proper level (see page 14-191).

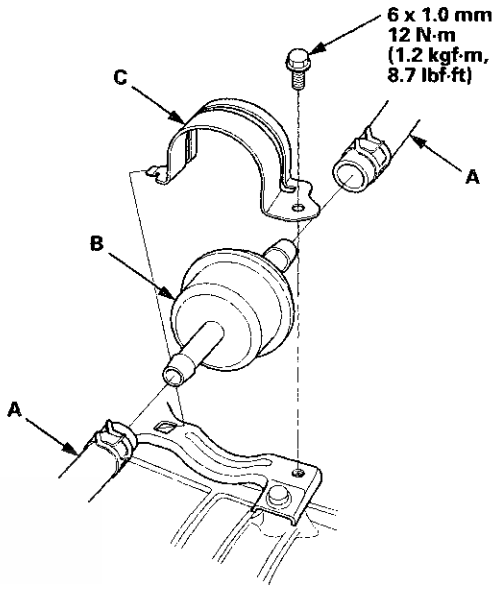
ATF Filter Replacement

NOTE: The ATF filter is not a scheduled maintenance item. Replace the filter only if it is leaking, or contaminated, or when the transmission is being overhauled or replaced with a remanufactured unit.

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the splash shield.
3. Remove the drain plug (A), and drain the ATF.



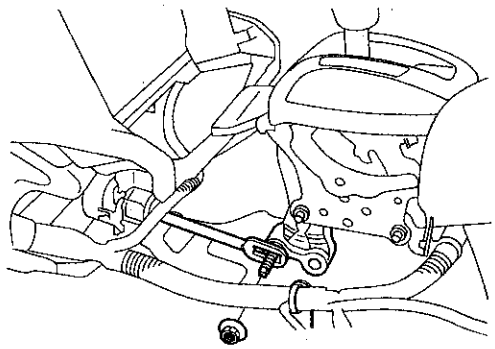
4. Reinstall the drain plug with a new sealing washer (B).
5. Disconnect the ATF cooler hoses (A) from the ATF filter (B).



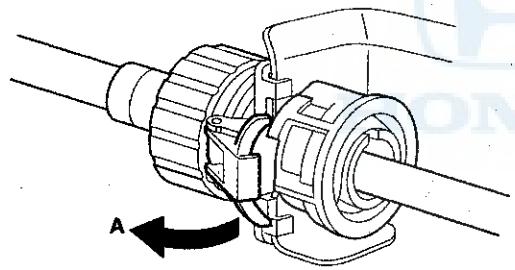
6. Remove the ATF filter holder (C).
7. Replace the ATF filter, then secure it with the ATF filter holder and the bolt.
8. Connect the ATF cooler hoses to the ATF filter, and secure the hoses with the clips (see page 14-220).
9. Install the splash shield.
10. Refill the transmission with ATF (see step 4 on page 14-192).

Shift Lever Removal

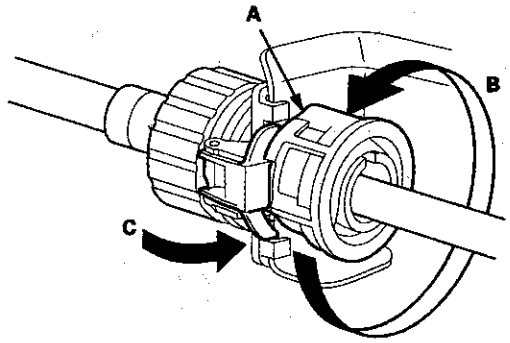
1. Remove the center console (see page 20-158).
2. Move the shift lever to R.
3. Remove the nut securing the shift cable end.



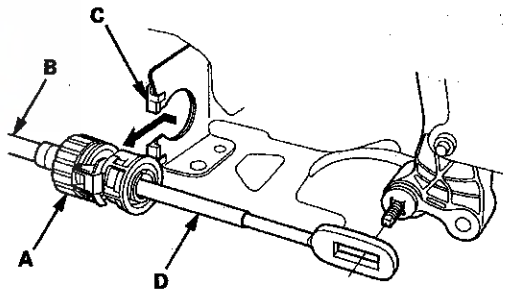
4. Unlock the retainer (A).



5. Rotate the socket holder retainer (A) counterclockwise (B) until it stops, and push the retainer lock (C) into the socket holder retainer to lock the retainer.

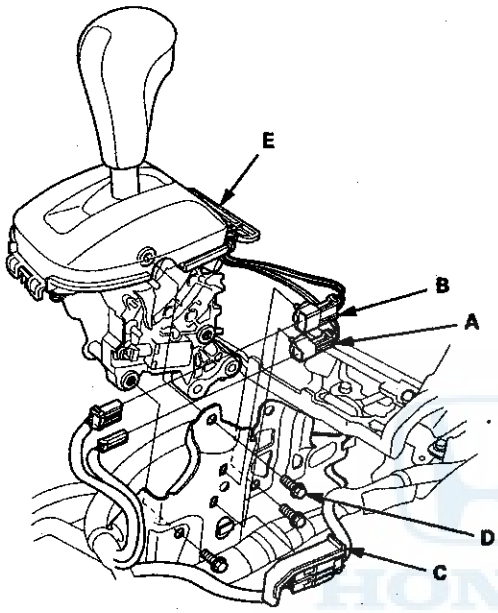


6. Slide the socket holder (A) away from the bracket as shown to remove the shift cable (B) from the shift cable bracket (C). Do not remove the shift cable by pulling the shift cable guide (D).

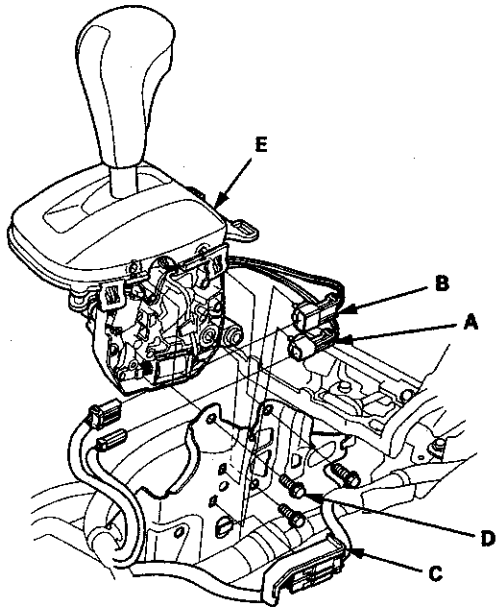


7. Disconnect the shift lock solenoid connector (A) and the park pin switch/A/T gear position indicator panel light connector (B).

Type A Shift Lever



Type B Shift Lever

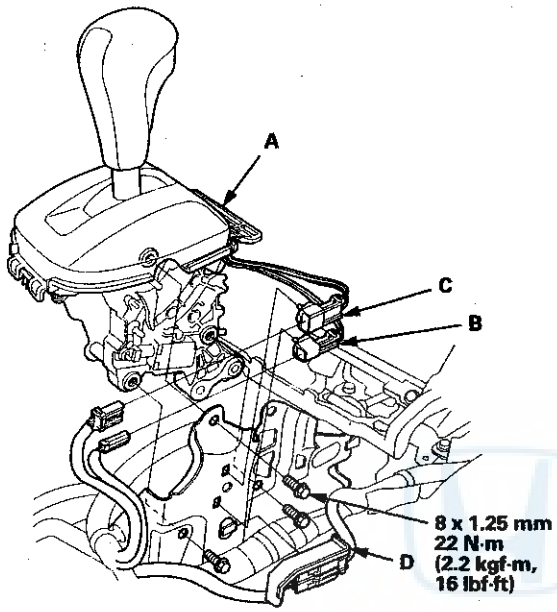


8. Remove the shift lock solenoid connector, the park pin switch/A/T gear position indicator panel light connector, and the harness cover (C) from the shift lever bracket base.
9. Remove the shift lever mounting bolts (D), then remove the shift lever assembly (E).

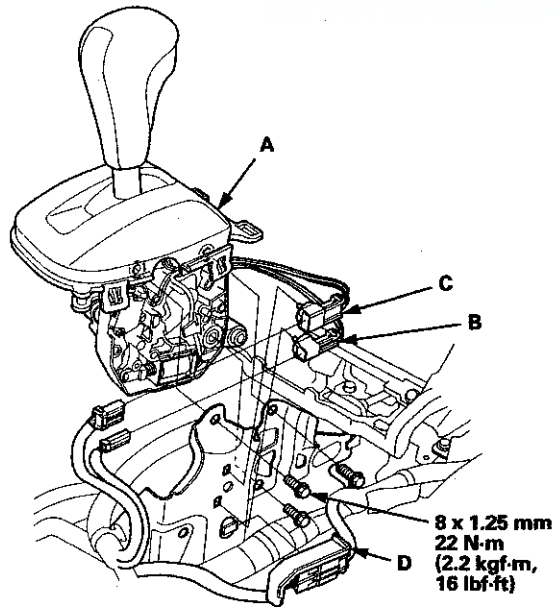
Shift Lever Installation

1. Install the shift lever assembly (A).

Type A Shift Lever

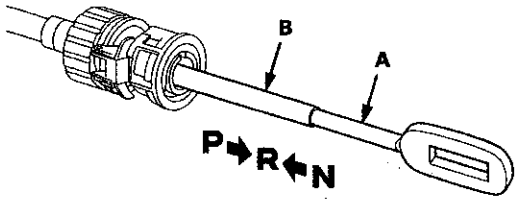


Type B Shift Lever

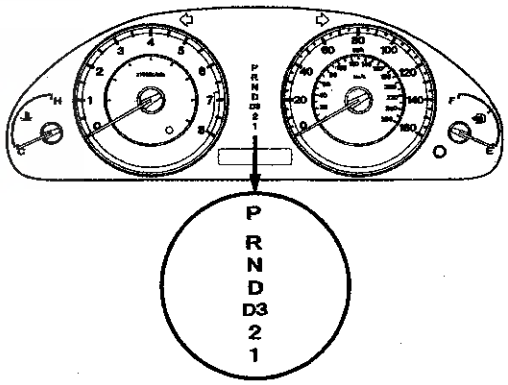


2. Connect the shift lock solenoid connector (B) and the park pin switch/A/T gear position indicator panel light connector (C), and install the harness cover (D) on the shift lever bracket base.

3. Push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) to adjust the shift cable.



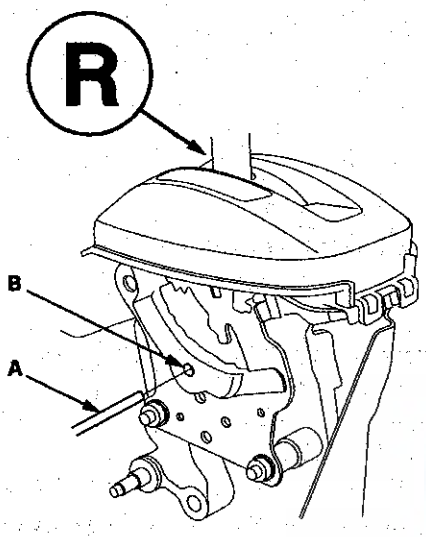
4. Turn the ignition switch to ON (II), and check that the R position indicator comes on.



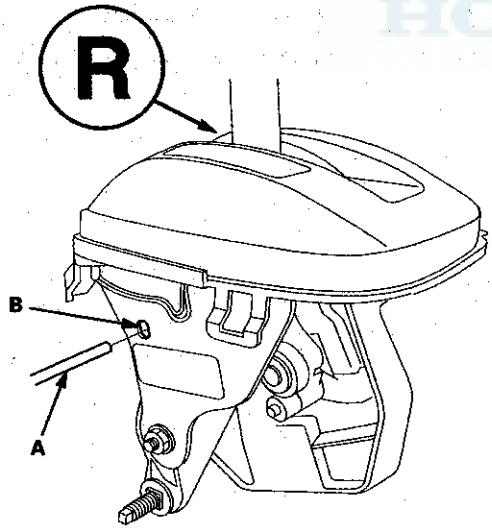
5. Turn the ignition switch to LOCK (0).

6. Place the shift lever in R, then insert a 6.0 mm (0.24 in) pin (A) into the positioning hole (B) on the shift lever, through the positioning hole on the shift lever, and into the positioning hole on the bracket. Use only a 6.0 mm (0.24 in) pin with no burrs.

Type A Shift Lever

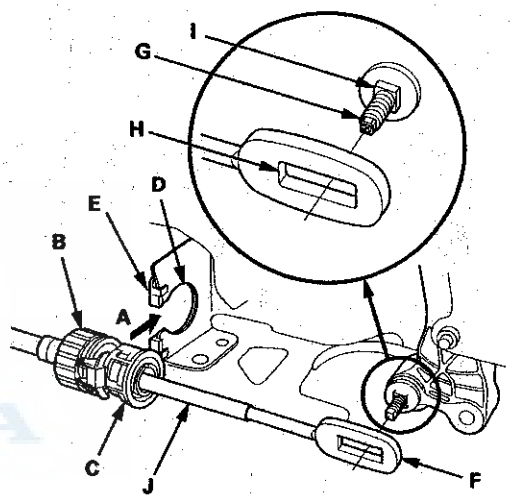


Type B Shift Lever

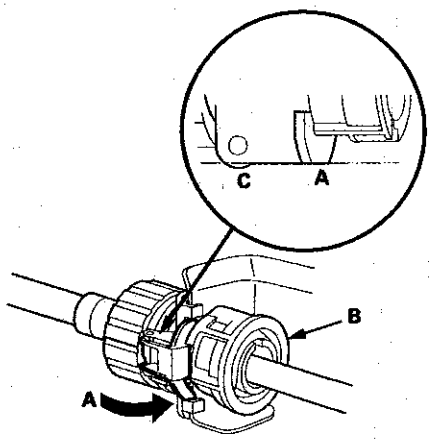


7. Align the shift cable slot (A) between the socket holder (B) and the socket holder retainer (C) with the opening (D) in the shift cable bracket (E), then slide the holder into the bracket while installing the shift cable end (F) over the mounting stud (G) by aligning its square hole (H) with the square fitting (I) at the bottom of the stud. Do not install the shift cable by holding the shift cable guide (J).

NOTE: When the socket holder is installed in the shift cable bracket, the retainer lock is unhinged and releases the holder retainer lock, then the holder retainer returns under spring force to secure the shift cable.



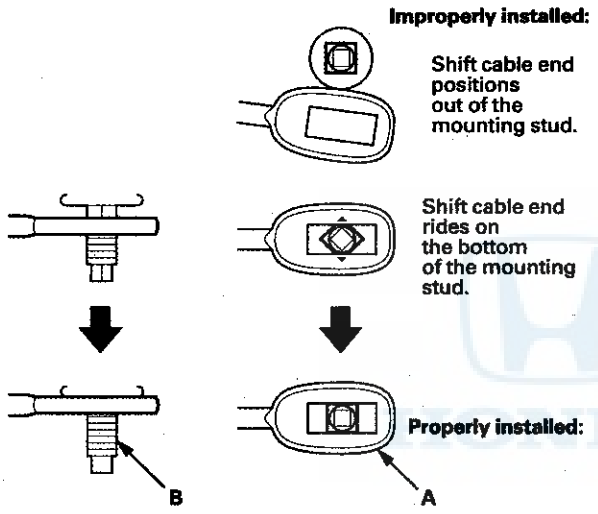
8. Push the retainer lock (A) fully to lock the socket holder retainer (B), and make sure that the retainer lock fits into the hinged-joint (C). If the retainer lock does not fit with the edge of the hinged-joint, rotate the holder retainer counterclockwise while pushing the retainer lock until it locks.



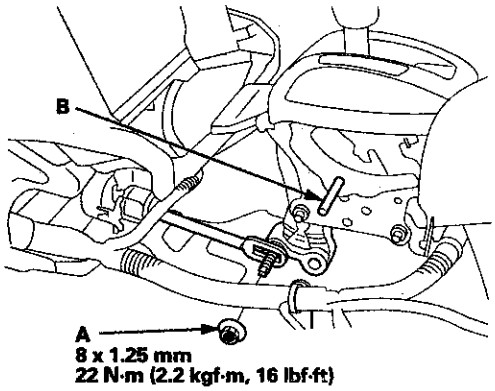
(cont'd)

Shift Lever Installation (cont'd)

9. Make sure the shift cable end (A) is properly installed on the mounting stud (B).
   - If the cable end is out of position on the mounting stud, remove the shift cable from the shift cable braket, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable braket.
   - If the cable end rides on the bottom of the mounting stud, rotate the stud and align the square fitting with the hole.



10. Install and tighten the nut (A) on the shift cable end.

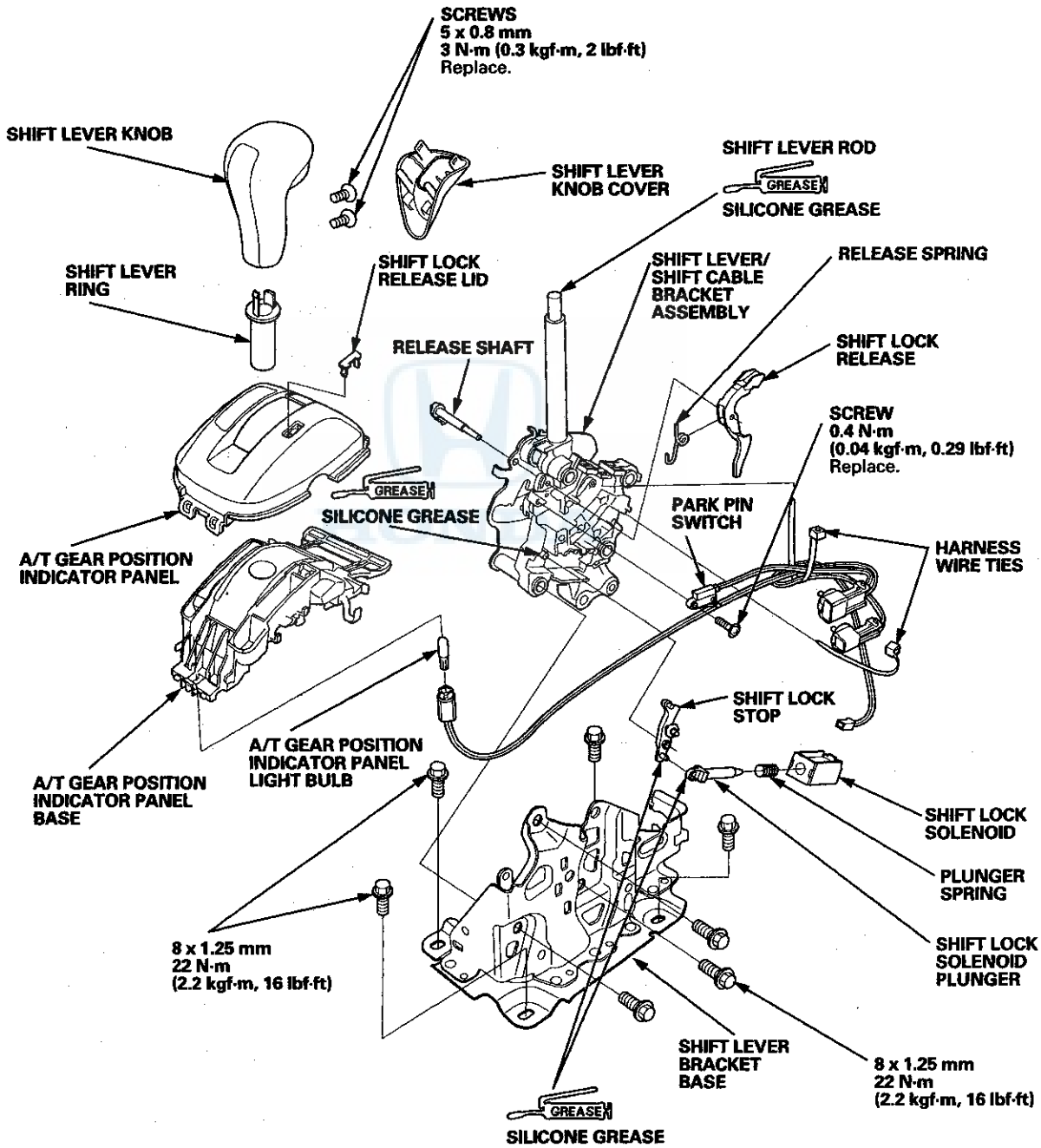


11. Remove the 6.0 mm (0.24 in) pin (B) that was installed to hold the shift lever.
12. Turn the ignition switch to ON (II). Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.
13. Shift the shift lever to P, and check that the shift lock works properly. Push the shift lock release, and check that the shift lever releases, and also check that the shift lever locks when it is shifted back to P.
14. Reinstall the center console (see page 20-158).

Shift Lever Disassembly/Reassembly

Type A Shift Lever

NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands of gloves.

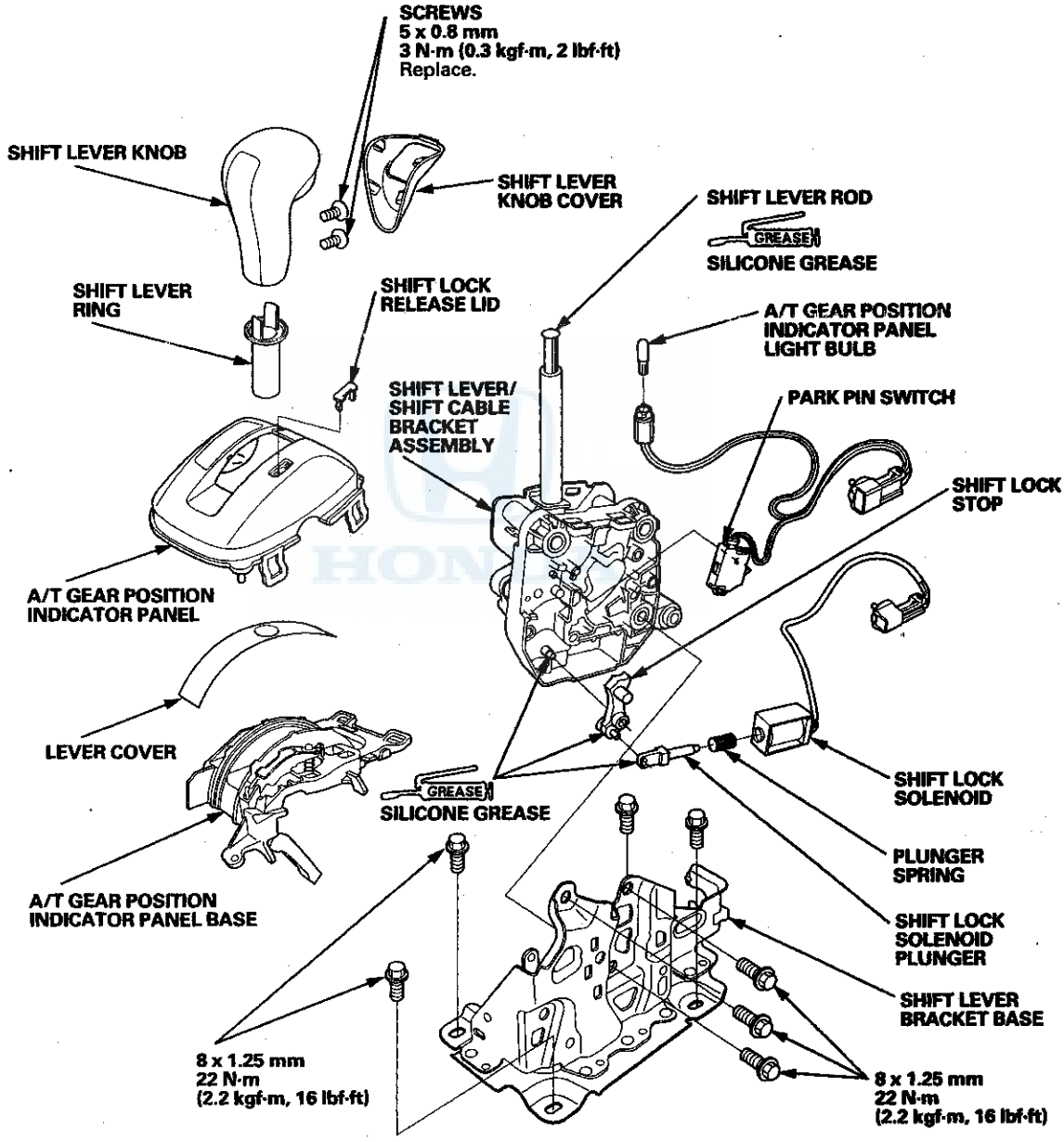


(cont'd)

Shift Lever Disassembly/Reassembly (cont'd)

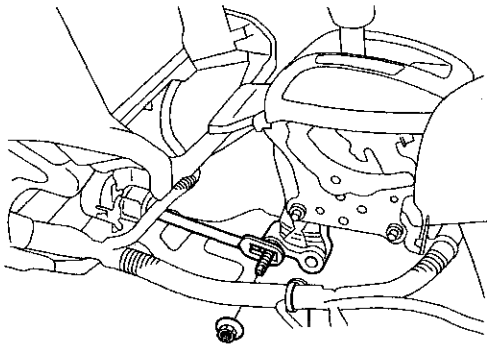
Type B Shift Lever

NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands of gloves.

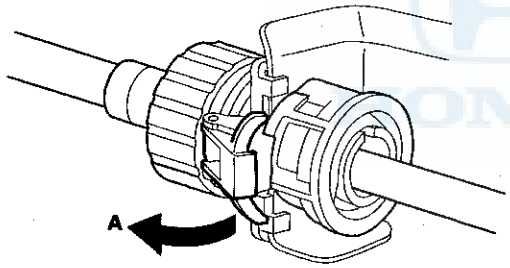


Shift Cable Replacement

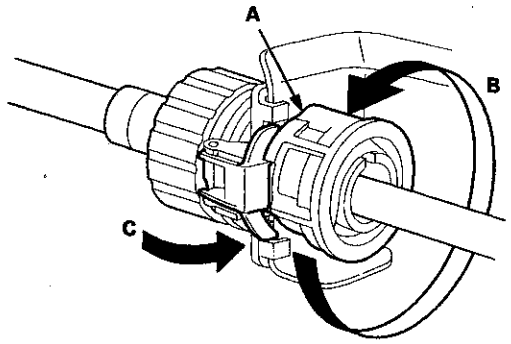
1. Remove the center console (see page 20-158).
2. Move the shift lever to R.
3. Remove the nut securing the shift cable end.



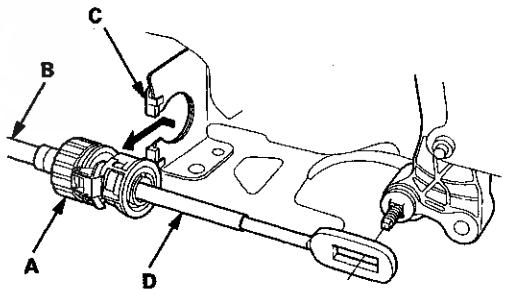
4. Unlock the retainer (A).



5. Rotate the socket holder retainer (A) counterclockwise (B) until it stops, and push the retainer lock (C) into the socket holder retainer to lock the retainer.



6. Slide the socket holder (A) away from the bracket as shown to remove the shift cable (B) from the shift cable bracket (C). Do not remove the shift cable by pulling the shift cable guide (D).

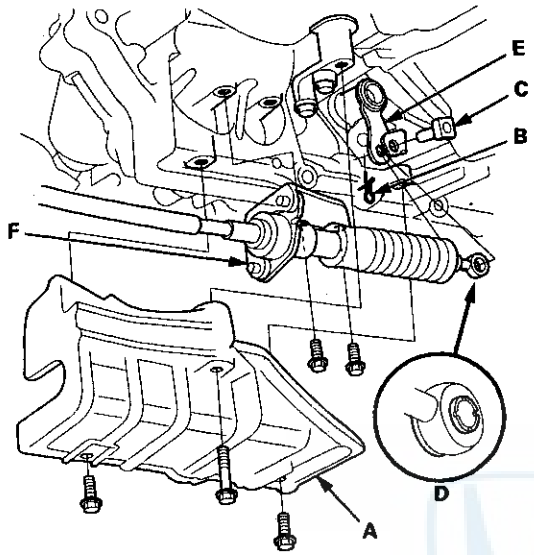


7. Raise the vehicle on a lift, or apply the parking brake, block both rear wheels, and raise the front of the vehicle. Make sure it is securely supported.

(cont'd)

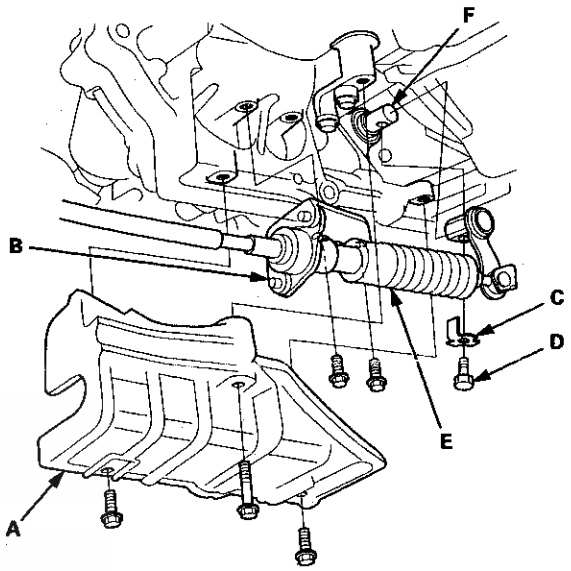
Shift Cable Replacement (cont'd)

8. Vehicles with JHM VINs: Remove the shift cable cover (A).



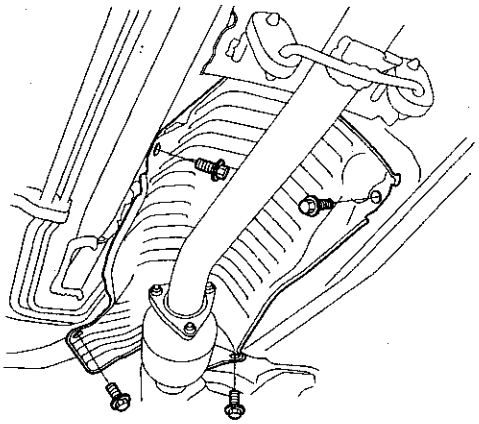
9. Vehicles with JHM VINs: Remove the spring clip (B) and the control pin (C), and separate the shift cable end (D) from the selector control lever (E). Remove the two bolts securing the shift cable bracket (F).

10. Vehicles with 1HG VINs: Remove the shift cable cover (A), and remove the two bolts securing the shift cable bracket (B).

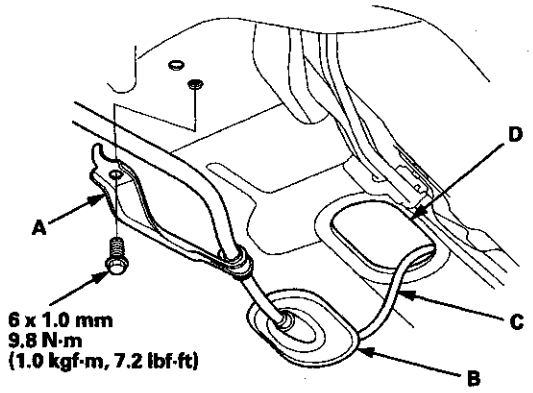


11. Vehicles with 1HG VINs: Pry up the lock tab of the lock washer (C), and remove the lock bolt (D) and the lock washer, then separate the shift cable (E) from the control shaft (F).

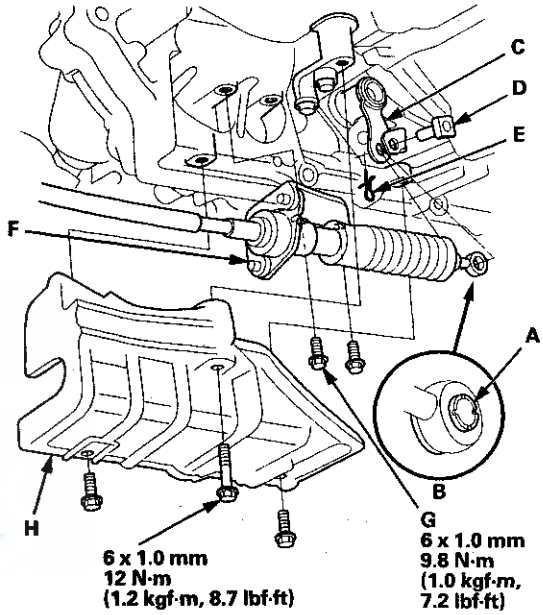
12. Remove the heat shield.



13. Remove the bolts securing the shift cable bracket (A).



14. Remove the shift cable grommet (B), and pull out the shift cable (C).
15. Insert a new shift cable through the grommet hole (D), and install the grommet in its hole. Do not bend the shift cable excessively.
16. Install the shift cable bracket.
17. Install the heat shield.
18. Vehicles with JHM VINs: Apply molybdenum grease to the hole in the bushing (A) in the shift cable end (B). Attach the shift cable end to the selector control lever (C), then insert the control pin (D) into the control lever hole through the shift cable end, and secure the control pin with the spring clip (E). Do not bend the shift cable excessively.

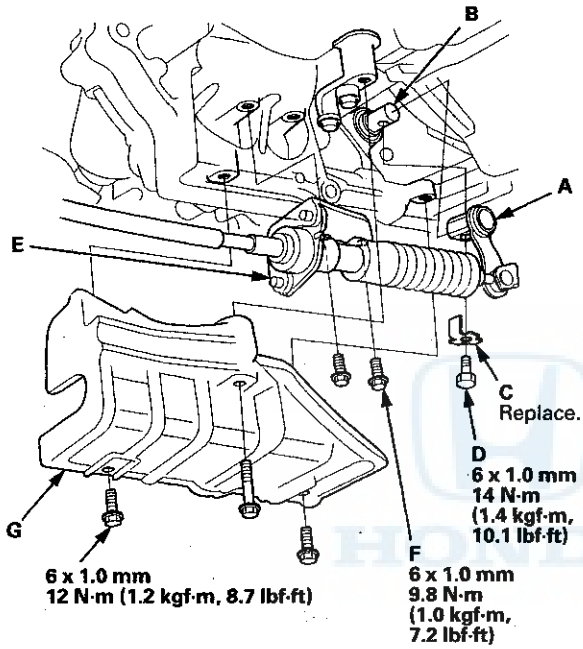


19. Vehicles with JHM VINs: Install the shift cable bracket (F) with the two bolts (G).
20. Vehicles with JHM VINs: Install the shift cable cover (H).

(cont'd)

Shift Cable Replacement (cont'd)

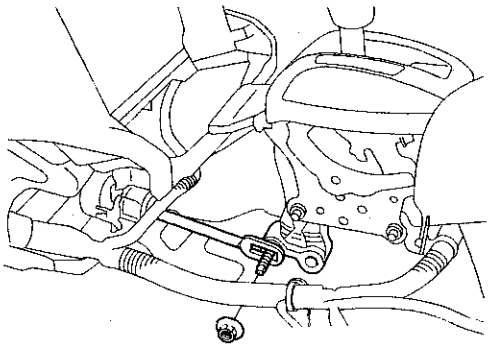
21. Vehicles with 1HG VINs: Install the selector control lever (A) over the selector control shaft (B). Secure the control lever with a new lock washer (C) and the lock bolt (D), then bend the lock tab of the lock washer against the bolt head. Do not bend the shift cable excessively.



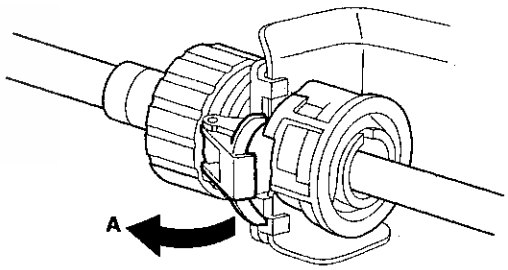
22. Vehicles with 1HG VINs: Install the shift cable bracket (E) with the two bolts (F).
23. Vehicles with 1HG VINs: Install the shift cable cover (G).
24. Install the shift cable on the shift lever, and adjust the shift cable (see page 14-232).
25. Install the center console (see page 20-158).

Shift Cable Adjustment

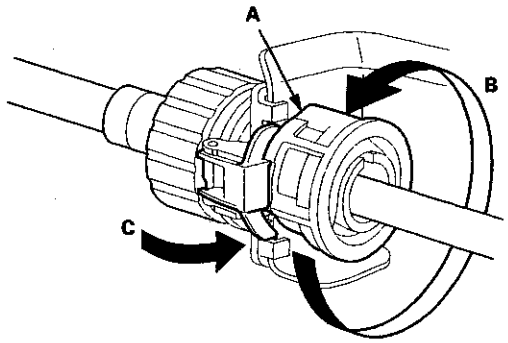
1. Remove the center console (see page 20-158).
2. Move the shift lever to R.
3. Remove the nut securing the shift cable end.



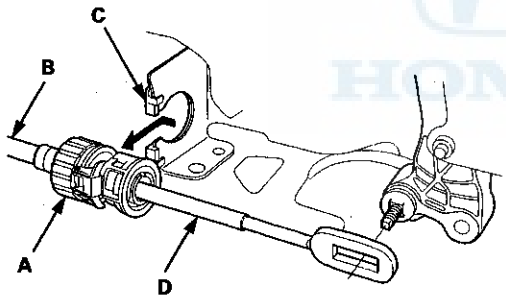
4. Unlock the retainer (A).



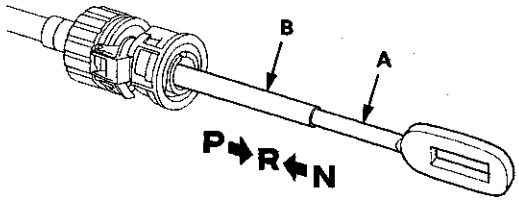
5. Rotate the socket holder retainer (A) counterclockwise (B) until it stops, and push the retainer lock (C) into the socket holder retainer to lock the retainer.



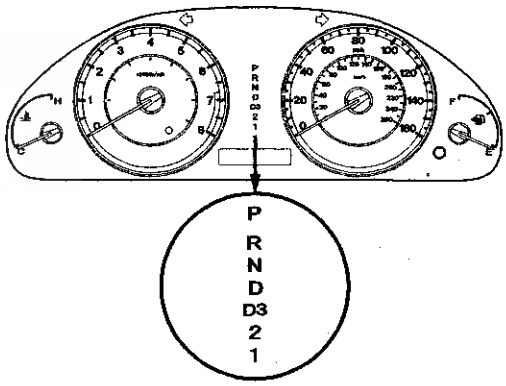
6. Slide the socket holder (A) away from the bracket as shown to remove the shift cable (B) from the shift cable bracket (C). Do not remove the shift cable by pulling the shift cable guide (D).



7. Push the shift cable (A) until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (B) to adjust the shift cable.



8. Turn the ignition switch to ON (II), and check that the R position indicator comes on.



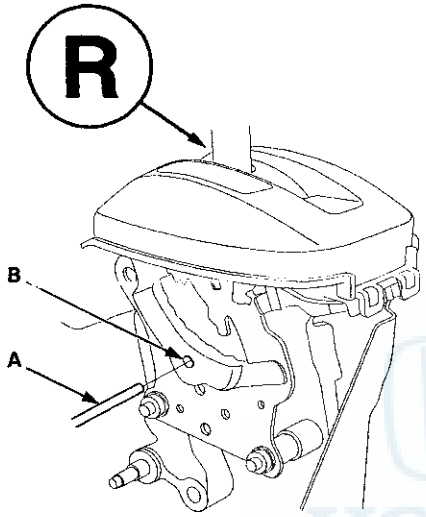
9. Turn the ignition switch to LOCK (0).

(cont'd)

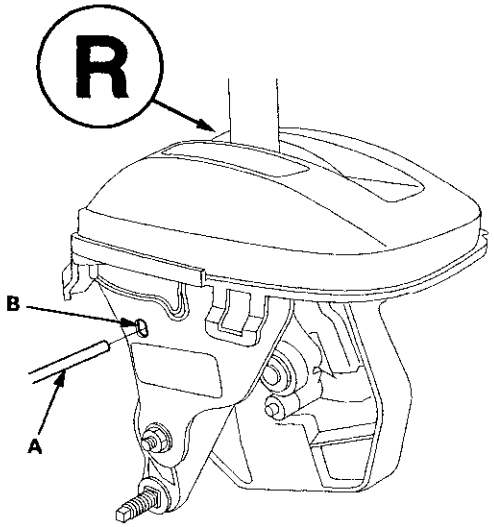
Shift Cable Adjustment (cont'd)

10. Place the shift lever in R, then insert a 6.0 mm (0.24 in) pin (A) into the positioning hole (B) on the shift lever, through the positioning hole on the shift lever, and into the positioning hole on the bracket. Use only a 6.0 mm (0.24 in) pin with no burrs.

Type A Shift Lever

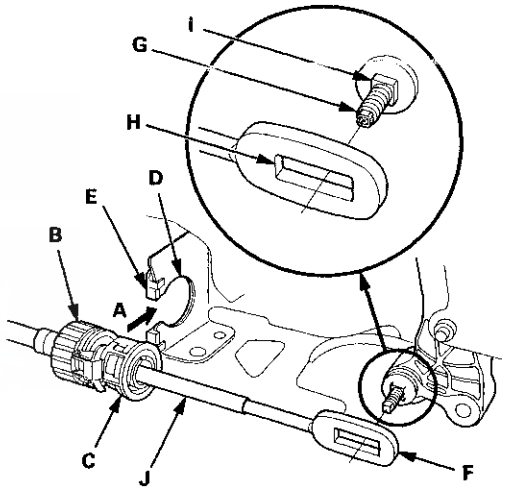


Type B Shift Lever

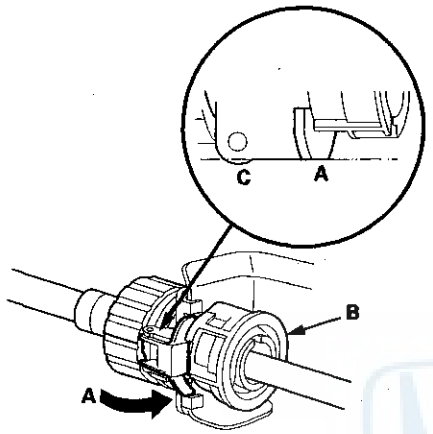


11. Align the shift cable slot (A) between the socket holder (B) and the socket holder retainer (C) with the opening (D) in the shift cable bracket (E), then slide the holder into the bracket while installing the shift cable end (F) over the mounting stud (G) by aligning its square hole (H) with the square fitting (I) at the bottom of the stud. Do not install the shift cable by holding the shift cable guide (J).

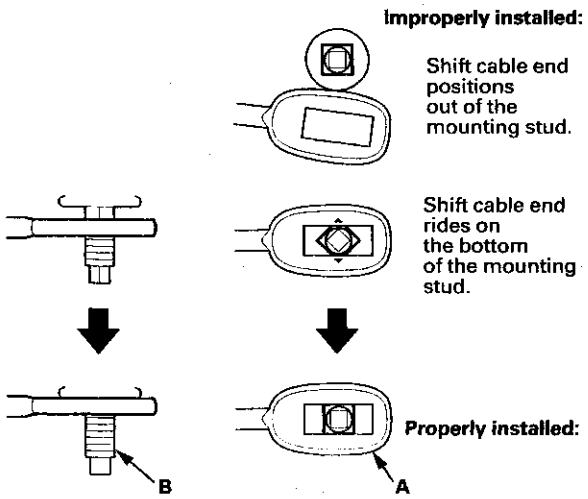
NOTE: When the socket holder is installed in the shift cable bracket, the retainer lock is unhinged and releases the holder retainer lock, then the holder retainer returns under spring force to secure the shift cable.



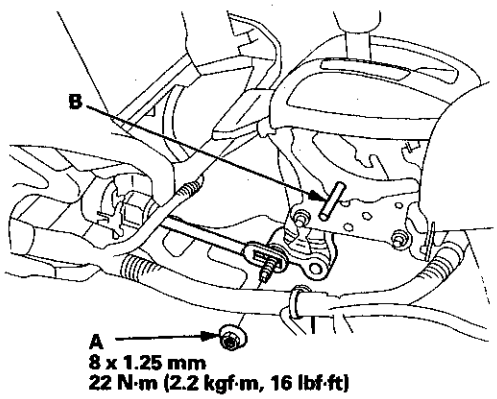
12. Push the retainer lock (A) fully to lock the socket holder retainer (B), and make sure that the retainer lock fits into the hinged-joint (C). If the retainer lock does not fit with the edge of the hinged-joint, rotate the holder retainer counterclockwise while pushing the retainer lock until it locks.



13. Make sure the shift cable end (A) is properly installed on the mounting stud (B).
    - If the cable end is out of position on the mounting stud, remove the shift cable from the shift cable bracket, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the shift cable bracket.
    - If the cable end rides on the bottom of the mounting stud, rotate the stud and align the square fitting with the hole.



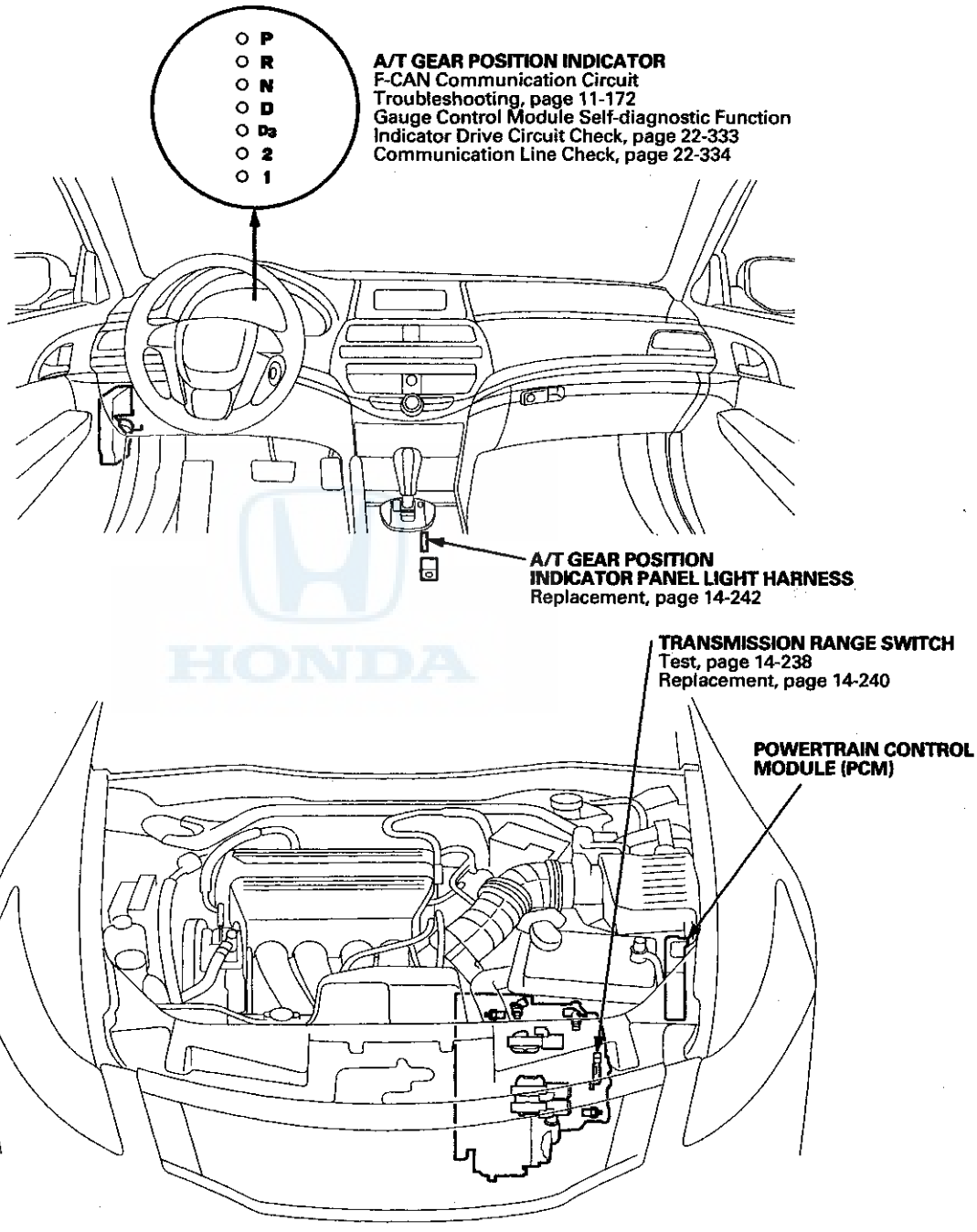
14. Install and tighten the nut (A) on the shift cable end.



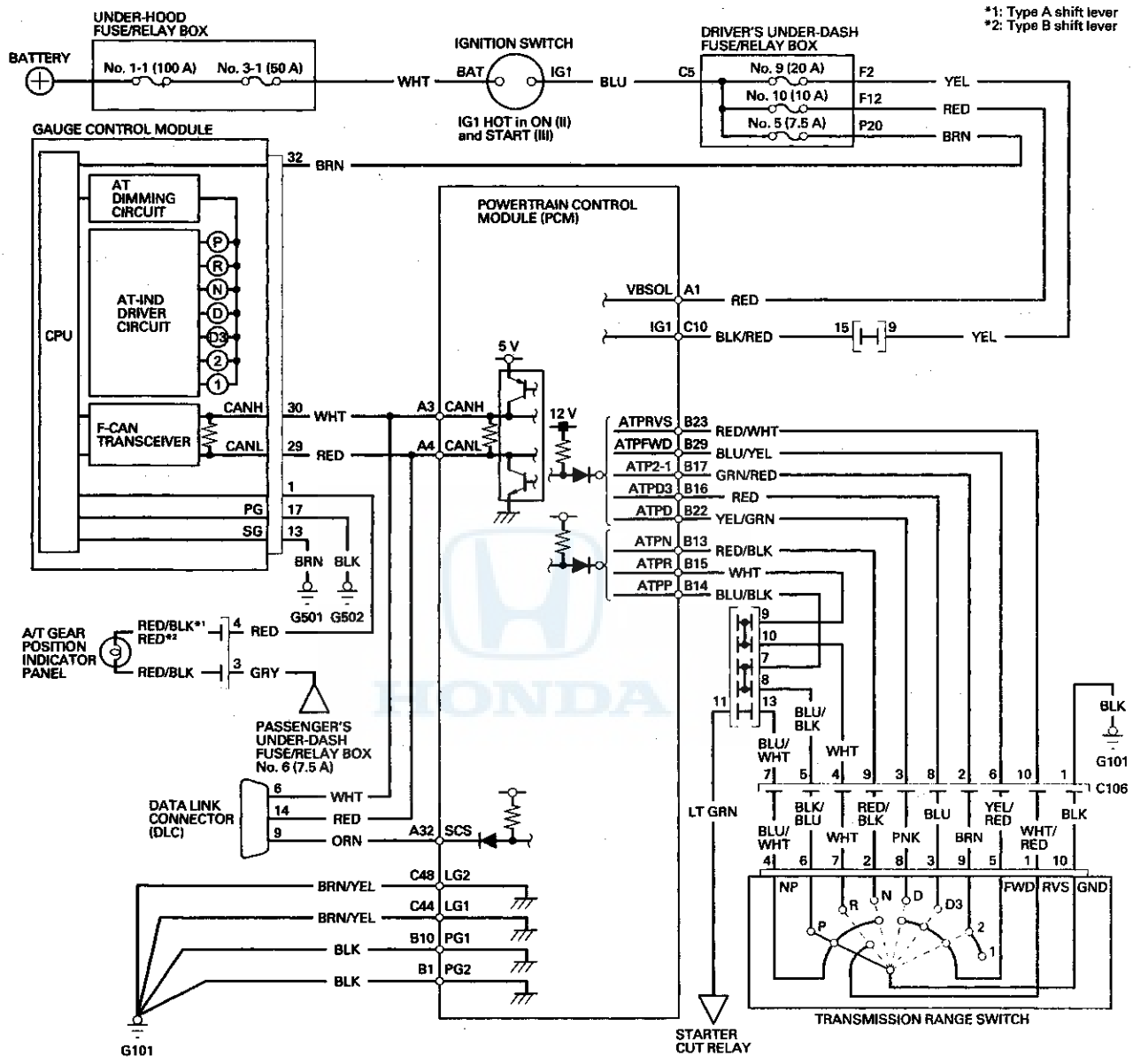
15. Remove the 6.0 mm (0.24 in) pin (B) that was installed to hold the shift lever.
16. Turn the ignition switch to ON (II). Move the shift lever to each position, and check that the A/T gear position indicator follows the transmission range switch.
17. Shift the shift lever to P, and check that the shift lock works properly. Push the shift lock release, and check that the shift lever releases, and also check that the shift lever locks when it is shifted back to P.
18. Install the center console (see page 20-158).

A/T Gear Position Indicator

Component Location Index

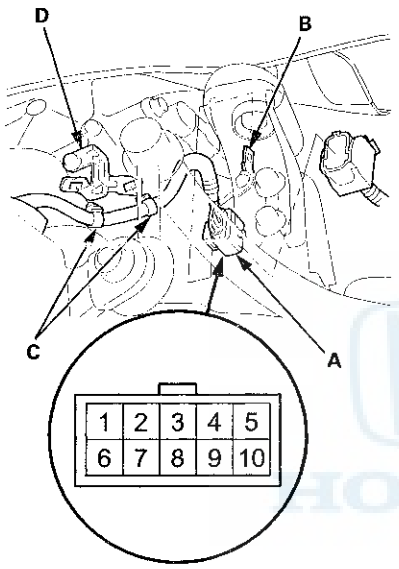


Circuit Diagram



Transmission Range Switch Test

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the left front wheel.
3. Disconnect the transmission range switch subharness connector (A), then remove the connector from the connector bracket (B).



Wire side of male terminals

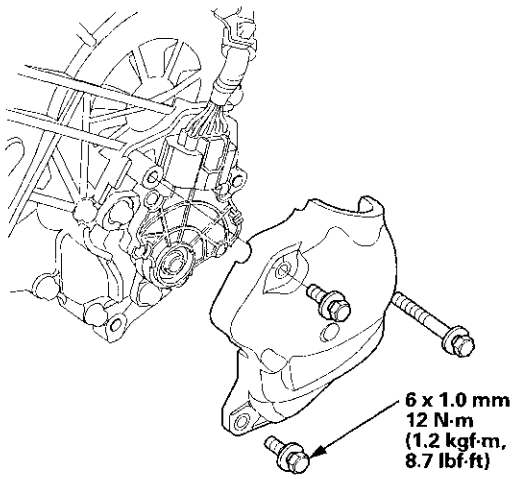
4. Remove the harness clamps (C) from the clamp bracket (D).
5. Check for continuity between the terminals at the subharness connector. There should be continuity between the terminals in the following table for each switch position.

Transmission Range Switch Subharness Connector

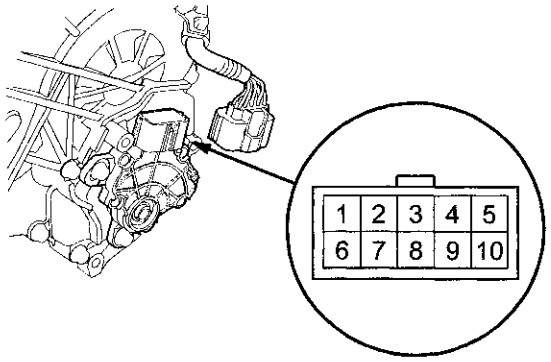
Position/Connector Terminal/Signal Connections										
	1	2	3	4	5	6	7	8	9	10
	GND	ATP 2-1	D	R	P	ATP FWD	ATP NP	D3	N	ATP RVS
P	○				○		○			
R	○			○						○
N	○						○		○	
D	○		○			○				
D3	○					○		○		
2	○	○				○				
1	○	○								

6. Transmission range switch test is completed if the test results are OK, go to step 13.

   If there is no continuity between any terminals, go to step 7.
7. Remove the transmission range switch cover.



8. Disconnect the transmission range switch connector.



9. Check for continuity between the terminals at the transmission range switch connector. There should be continuity between the terminals in the following table for each transmission range switch position.

Transmission Range Switch Connector

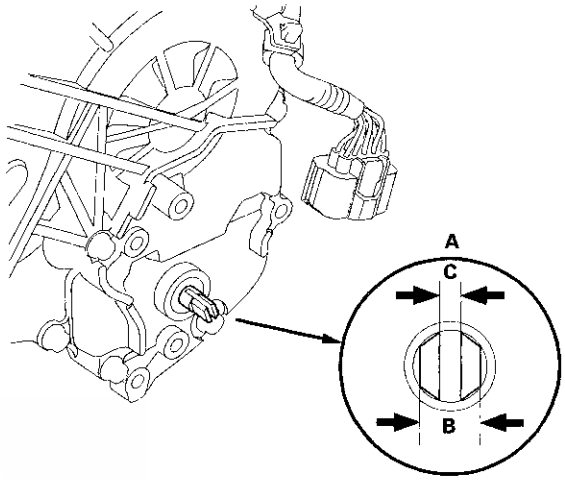
Position/Connector Terminal/Signal Connections										
	1	2	3	4	5	6	7	8	9	10
	ATP RVS	N	D3	ATP NP	ATP FWD	P	R	D	ATP 2-1	GND
P				○		○				○
R	○						○			○
N		○		○						○
D					○			○		○
D3			○		○					○
2					○				○	○
1									○	○

10. If the transmission range switch continuity check is OK, replace the faulty transmission range switch subharness.

    If there is no continuity between any terminals, go to step 11.

11. Remove the transmission range switch, and check the end of the selector control shaft (A).

    Selector Control Shaft Specifications:
    Width (B): 6.1—6.2 mm (0.240—0.244 in)
    End Gap (C): 1.8—2.0 mm (0.07—0.08 in)



12. If the measurements of the selector control shaft end are within the standard, replace the transmission range switch (see page 14-240). If the measurements are out of the standard, repair the selector control shaft end, and recheck the transmission range switch continuity.

13. Check the connectors for rust, dirt, or oil, and clean or repair if necessary. Then connect the connector securely.

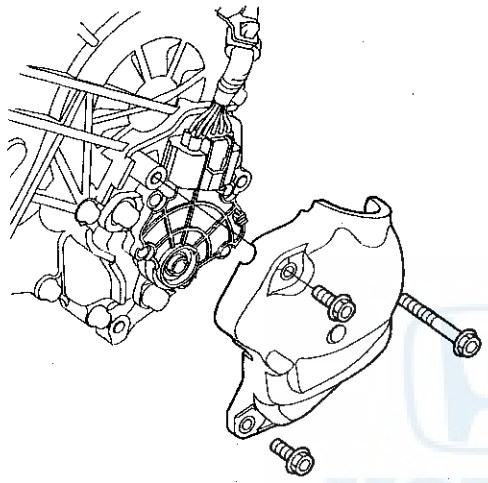
14. Install the harness clamps to the clamp bracket.

15. Install the transmission range switch cover.

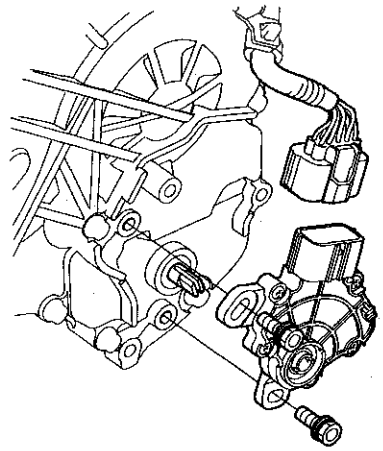
16. Install the left front wheel.

Transmission Range Switch Replacement

1. Raise the vehicle on a lift, or apply the parking brake, block the rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
2. Remove the left front wheel.
3. Move the shift lever to N.
4. Remove the transmission range switch cover.

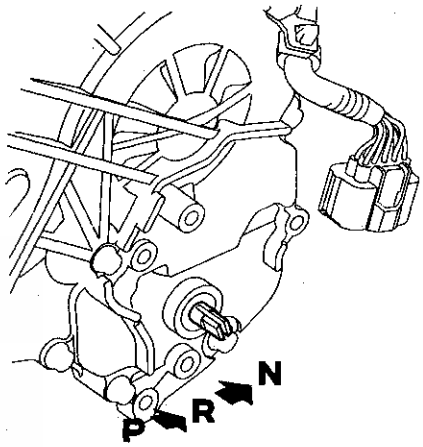


5. Disconnect the transmission range switch connector.



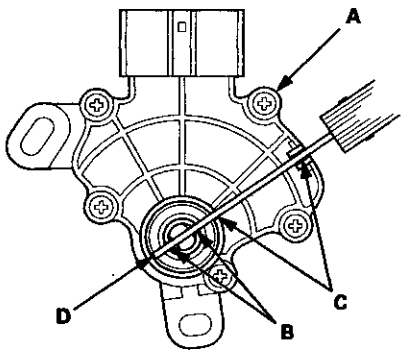
6. Remove the transmission range switch.
7. Make sure the selector control shaft is in the N position. If necessary, move the shift lever from P to N.

   NOTE: Do not use the selector control shaft to adjust the shift position. If the selector control shaft tips are squeezed together it will cause a faulty signal or position due to play between the selector control shaft and the transmission range switch.

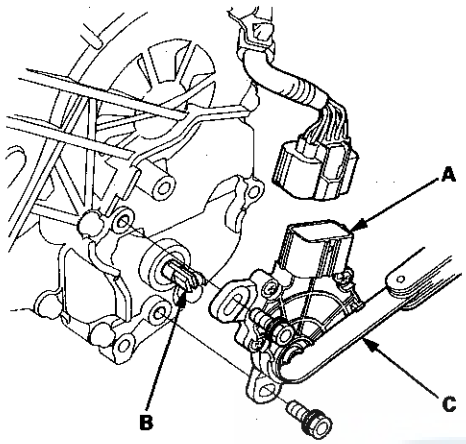


8. Set a new transmission range switch (A) to the N position. Align the cutouts (B) on the rotary-frame with the neutral positioning cutouts (C) on the transmission range switch. Then put a 2.0 mm (0.08 in) feeler gauge blade (D) in the cutouts to hold the transmission range switch in the N position.

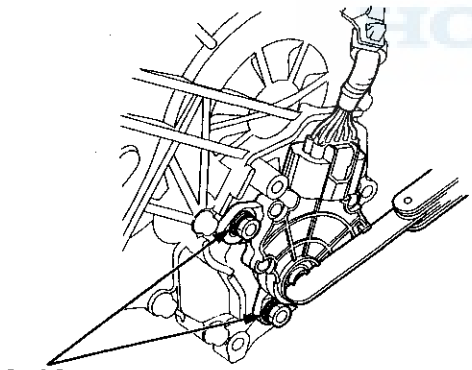
   NOTE: Be sure to use a 2.0 mm (0.08 in) blade or equivalent to hold the transmission range switch in the N position.



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

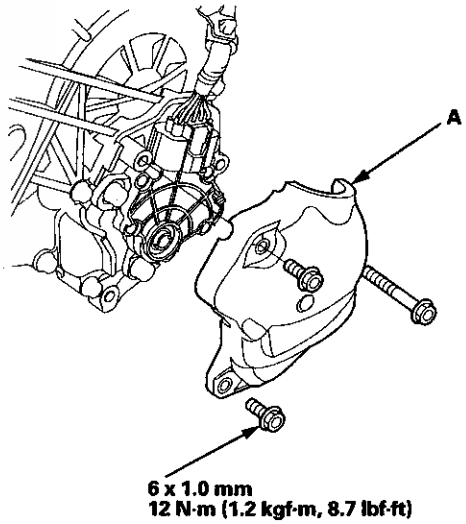


10. Tighten the bolts on the transmission range switch while you continue to hold the N position. Do not move the transmission range switch when tightening the bolts. Then remove the blade.



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

11. Check the connector for rust, dirt, or oil, and clean or repair if necessary. Then connect the transmission range switch connector securely.
12. Turn the ignition switch to ON (II). Move the shift lever through all positions, and verify the transmission range switch match with the A/T gear position indicator.
13. Check that the engine will start with the shift lever in P and N, and will not start in any other shift lever position.
14. Check that the back-up lights come on when the shift lever is in R.
15. Allow the front wheels to rotate freely, then start the engine, and check the shift lever operation.
16. Install the transmission range switch cover (A).



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

17. Install the left front wheel.

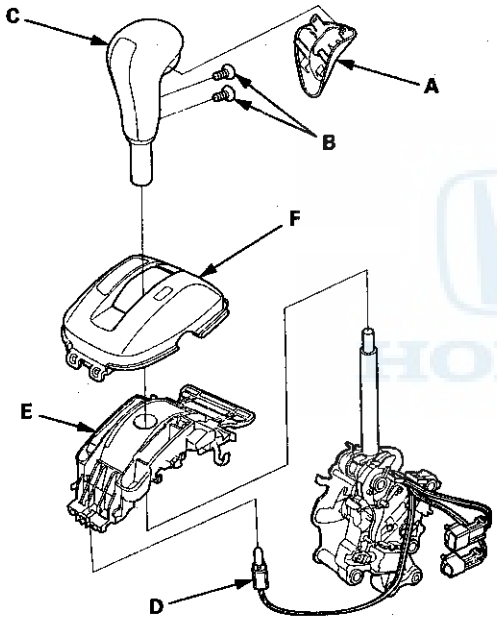
A/T Gear Position Indicator

A/T Gear Position Indicator Panel Light Harness Replacement

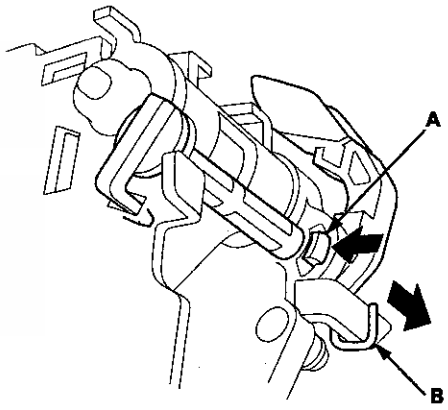
Type A Shift Lever

NOTE: The A/T gear position indicator panel light harness and the park pin switch are not available separately. Replace the A/T gear position indicator panel light harness and the park pin switch as a set.

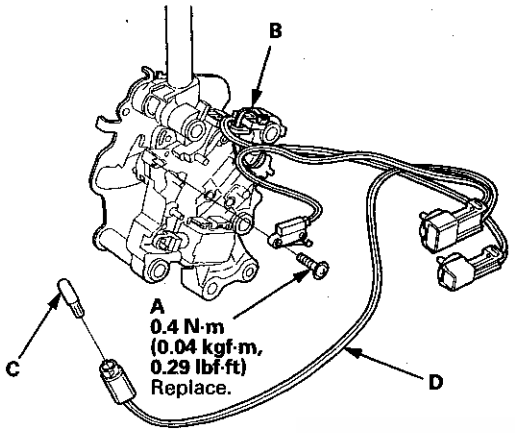
1. Remove the center console (see page 20-158).
2. Remove the shift lever assembly (see page 14-222).
3. Wrap the end of a flat-tip screwdriver with tape, pry the shift lever knob cover locks, then remove the shift lever knob cover (A).



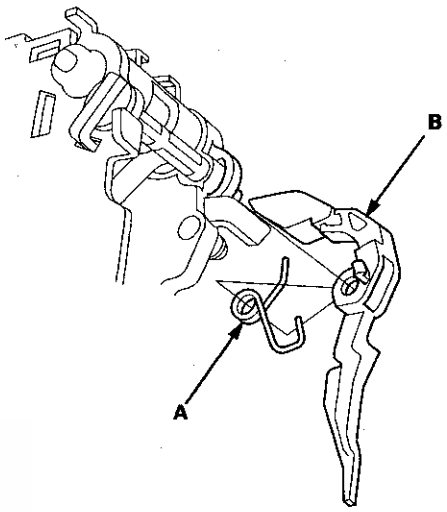
4. Remove the screws (B), and remove the shift lever knob (C) from the shift lever.
5. Remove the A/T gear position indicator panel light socket (D) from the indicator panel base (E).
6. Remove the A/T gear position indicator panel light harness from the harness guides of the indicator panel base.
7. Remove the A/T gear position indicator panel base, then disassemble the indicator panel (F) and the indicator panel base.
8. Release the lock (A) of the shift lock release, and remove the shift lock release and the release spring (B).



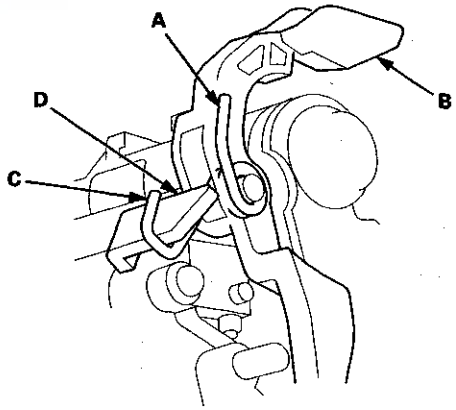
9. Remove the screw (A), and cut the harness wire tie (B), and remove the light bulb (C) from the socket.



10. Remove the park pin switch/A/T gear position indicator panel light harness (D).
11. Install a new park pin switch/A/T gear position indicator panel light harness, and secure the park pin switch with a new screw.
12. Tie the park pin switch/A/T gear position indicator panel light harness and the shift lock solenoid harness at the guide with a new harness wire tie.
13. Install the A/T gear position indicator panel light bulb in the socket.
14. Install the release spring (A) in the shift lock release (B).



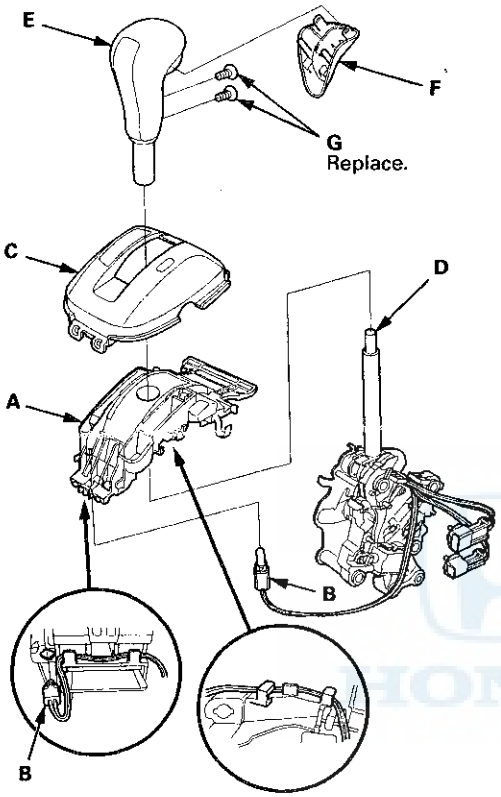
15. Install the shift lock release and the release spring on the release shaft end.
16. Make sure that the release spring end (A) is installed in the shift lock release (B), and the hooked end (C) is on the stop (D).



(cont'd)

A/T Gear Position Indicator Panel Light Harness Replacement (cont'd)

17. Install the A/T gear position indicator panel base (A).



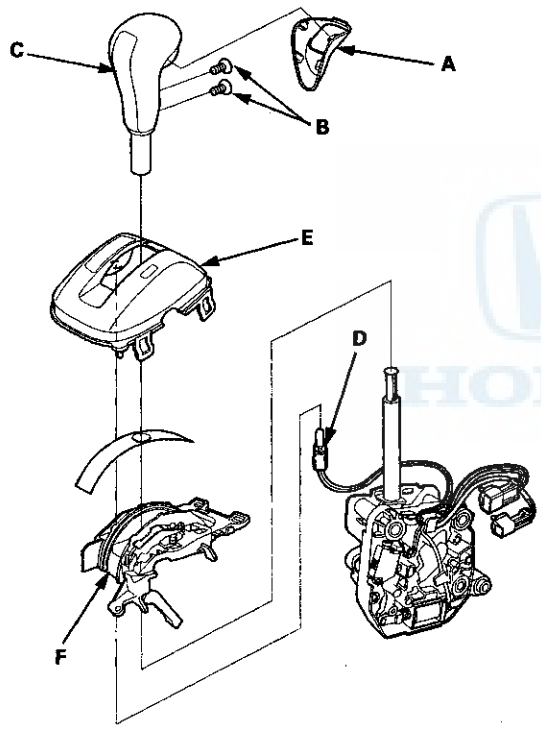
18. Route the park pin switch/A/T gear position indicator panel light harnesses. Take the slack out of the harnesses, and secure the harnesses with the harness wire tie at the harness guides.
19. Install the A/T gear position indicator panel light socket (B) in the indicator panel base.
20. Install the A/T gear position indicator panel (C).
21. Apply silicone grease to the top (D) of the shift lever rod.

    NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands of gloves.
22. Install the shift lever knob (E) over the shift lever.
23. Install the shift lever knob cover (F) on the shift lever knob with new screws (G).
24. Install the shift lever (see page 14-224).
25. Install the center console (see page 20-158).

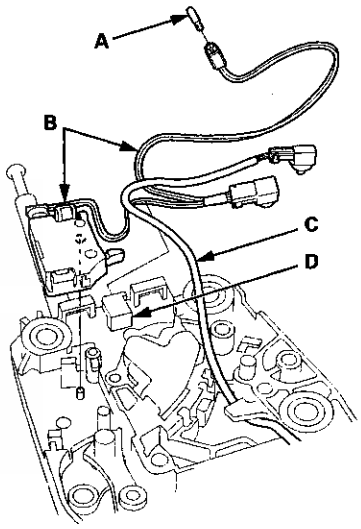
Type B Shift Lever

NOTE: The A/T gear position indicator panel light harness and the park pin switch are not available separately. Replace the A/T gear position indicator panel light harness and the park pin switch as a set.

1. Remove the center console (see page 20-158).
2. Remove the shift lever assembly (see page 14-222).
3. Wrap the end of a flat-tip screwdriver with tape, pry the shift lever knob cover locks, then remove the shift lever knob cover (A).



4. Remove the screws (B), and remove the shift lever knob (C) from the shift lever.
5. Remove the A/T gear position indicator panel light socket (D) from the indicator panel (E).
6. Remove the A/T gear position indicator panel light harness from the harness guides of the indicator panel base.
7. Remove the A/T gear position indicator panel base (F), then disassemble the indicator panel and the indicator panel base.
8. Remove the light bulb (A) from the socket.

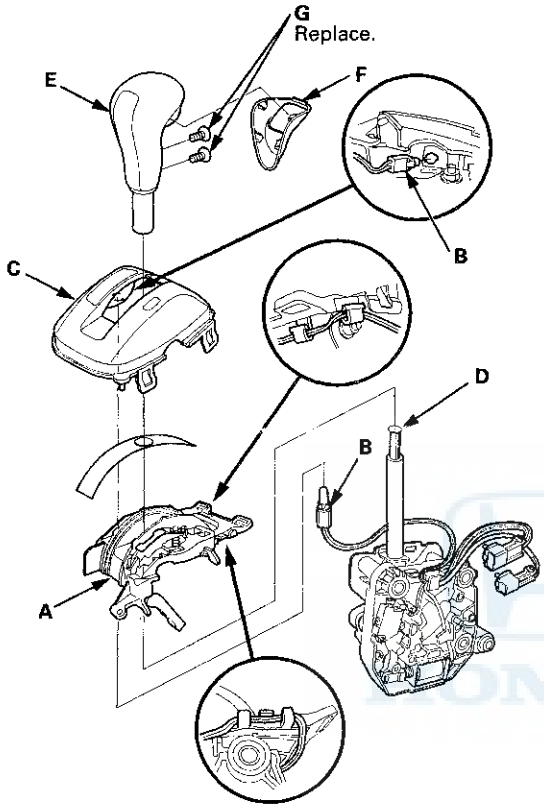


9. Remove the park pin switch/A/T gear position indicator panel light harness (B) and the shift lock solenoid harness (C) from the harness guide (D).
10. Install a new park pin switch/A/T gear position indicator panel light harness.
11. Route the park pin switch/A/T gear position indicator panel light harness and the shift lock solenoid harness in the harness guide.
12. Install the A/T gear position indicator panel light bulb in the socket.

(cont'd)

A/T Gear Position Indicator Panel Light Harness Replacement (cont'd)

13. Install the A/T gear position indicator panel base (A).

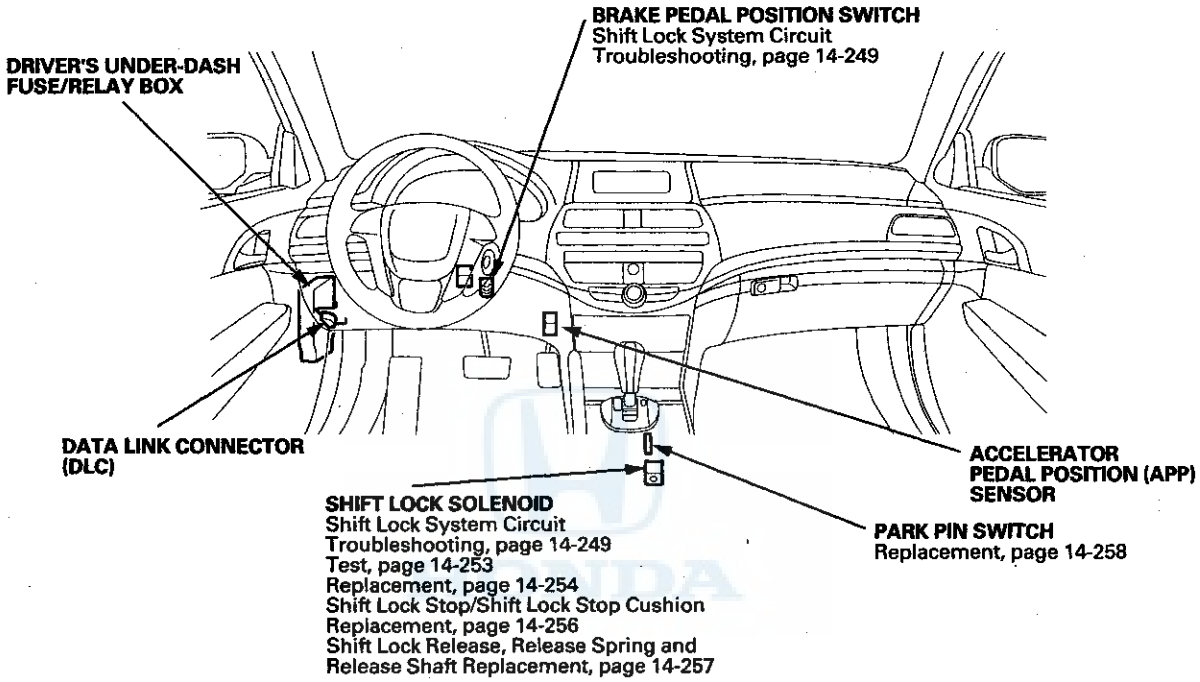


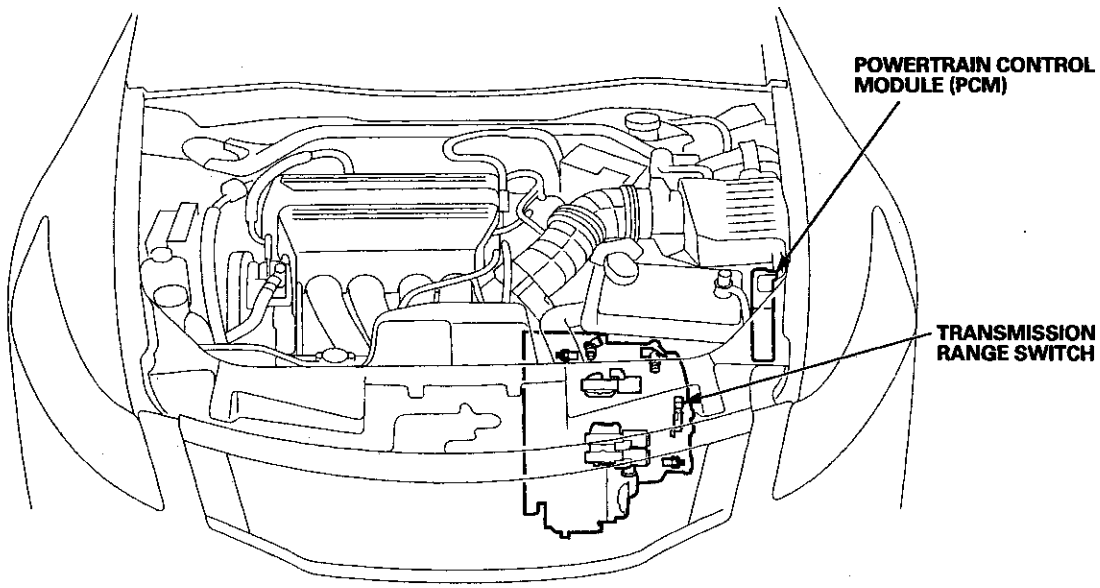
14. Insert the A/T gear position indicator panel light socket (B) through the indicator panel base hole, then install the socket in the indicator panel (C).
15. Route the park pin switch/A/T gear position indicator panel light harnesses. Take the slack out of the harnesses, and secure the harnesses in the harness guides.
16. Install the A/T gear position indicator panel.
17. Apply silicone grease to the top (D) of the shift lever rod.

    NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands of gloves.

18. Install the shift lever knob (E) over the shift lever.
19. Install the shift lever knob cover (F) on the shift lever knob with new screws (G).
20. Install the shift lever assembly (see page 14-224).
21. Install the center console (see page 20-158).

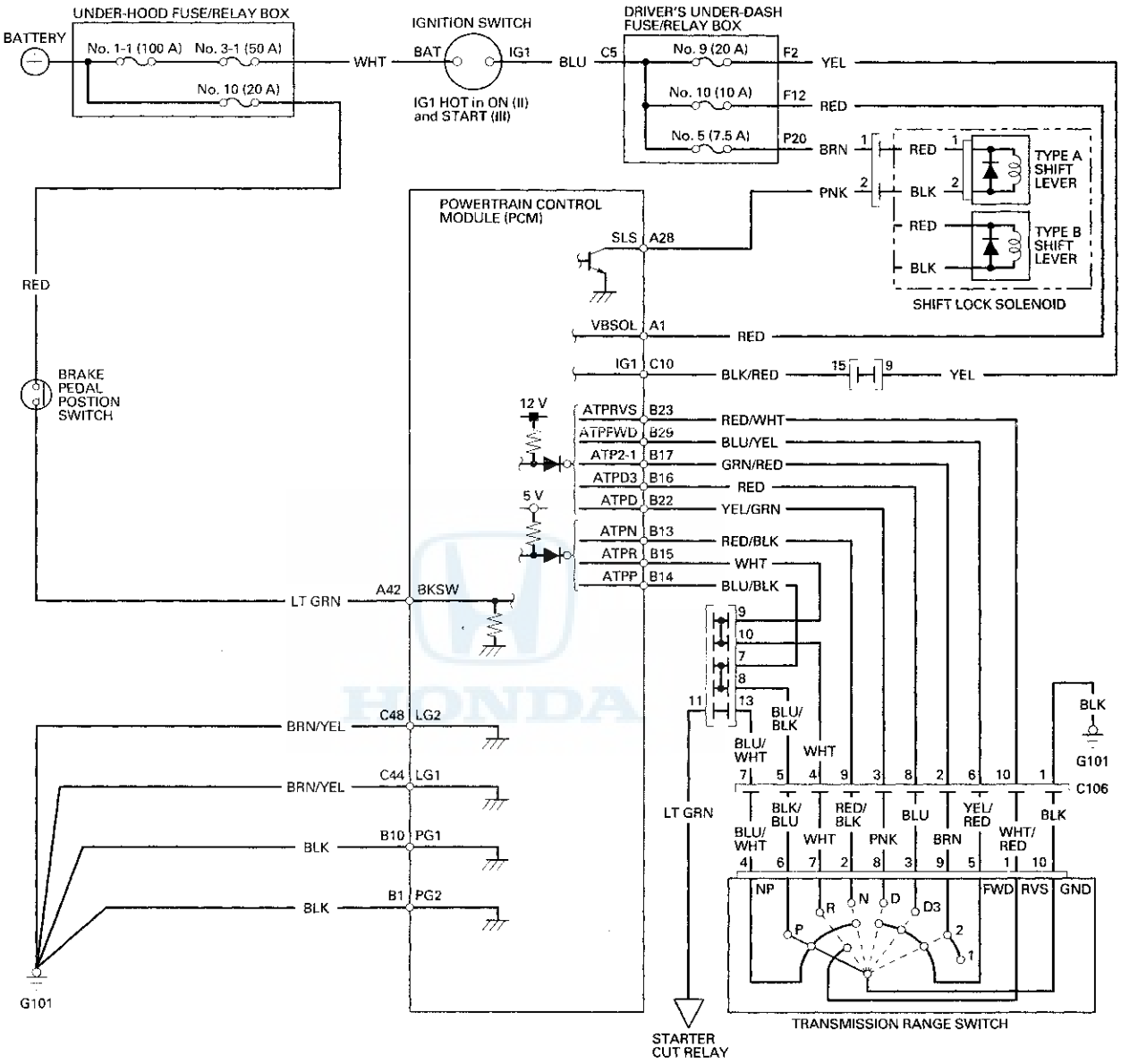
Component Location Index



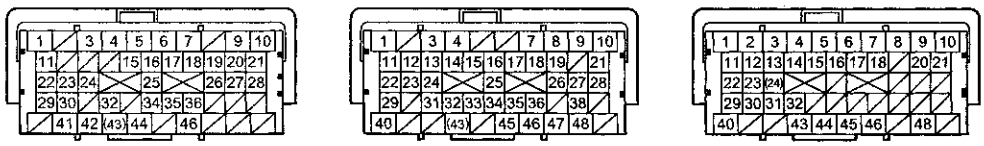


A/T Interlock System

Circuit Diagram



PCM Connector Terminal Locations

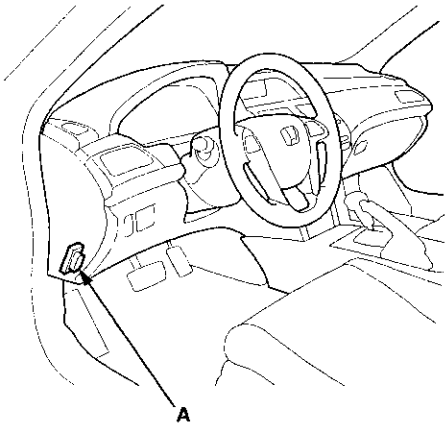


A □ (49P) B △ (49P) C ○ (49P)

Terminal side of female terminals

Shift Lock System Circuit Troubleshooting

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.



2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

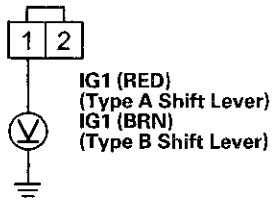
   Does the shift lock solenoid work properly?

   YES–Go to step 16.

   NO–Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Remove the shift lever assembly (see page 14-222).
6. Disconnect the shift lock solenoid connector (see page 14-254).
7. Turn the ignition switch to ON (II).
8. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 9.

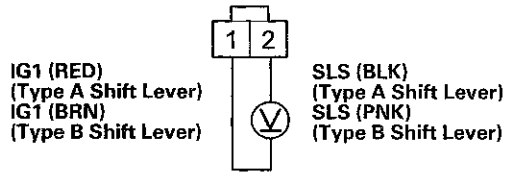
NO–Check for a blown No. 5 (7.5 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the shift lock solenoid connector and the driver's under-dash fuse/relay box.■

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

9. Shift the shift lever to P, and press the brake pedal. Do not press the accelerator.
10. Measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2 while pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

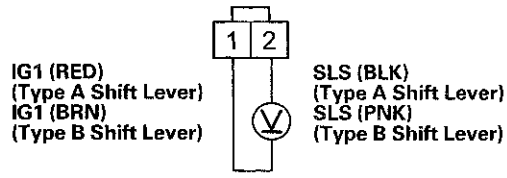
Is there battery voltage?

YES–Go to step 11.

NO–Go to step 12.

11. Release the brake pedal, and measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2. The shift lever must be in P.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

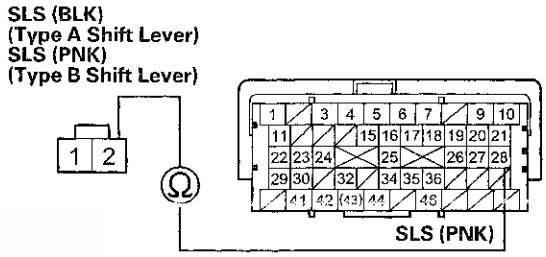
Is there battery voltage?

YES–Repair short to body ground in the wire between PCM connector terminal A28 and the shift lock solenoid.■

NO–Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see page 14-254).■

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (49P).
15. Check for continuity between PCM connector terminal A28 and shift lock solenoid connector terminal No. 2.

SHIFT LOCK SOLENOID CONNECTOR **PCM CONNECTOR A (49P)**



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES–Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-204).■

NO–Repair open in the wire between PCM connector terminal A28 and the shift lock solenoid connector.■

16. Monitor the Brake Switch in the Data List with the HDS, and press the brake pedal.

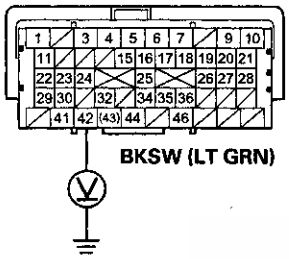
Is the Brake Switch ON?

YES–Go to step 22.

NO–If the brake lights come on, go to step 17. If the brake lights do not work, repair the faulty brake light circuit.

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect PCM connector A (49P).
20. Turn the ignition switch to ON (II).
21. Measure the voltage between PCM connector terminal A42 and body ground when pressing the brake pedal and when the brake pedal is released.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage when pressing the brake pedal, and about 0 V when the pedal is released?

YES–Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-204).■

NO–Repair open in the wire between PCM connector terminal A42 and the brake pedal position switch.■

22. Monitor the A/T P Switch in the Data List with the HDS with the shift lever in P.

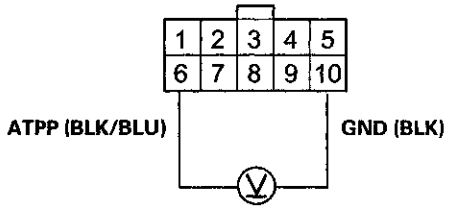
Is the A/T P Switch ON?

YES–Go to step 34.

NO–Go to step 23.

23. Turn the ignition switch to LOCK (0).
24. Disconnect the transmission range switch connector.
25. Turn the ignition switch to ON (II).
26. Measure the voltage between transmission range switch connector terminals No. 6 and No. 10.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES–Go to step 27.

NO–Go to step 28.

27. Inspect the transmission range switch (see page 14-238).

Is the transmission range switch OK?

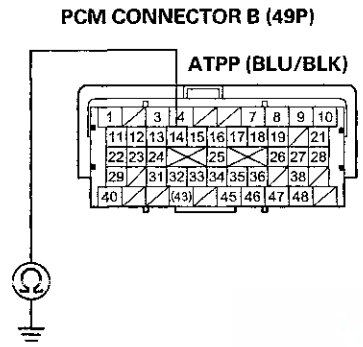
YES–Check for poor connections or loose terminals at the transmission range switch.■

NO–Replace the transmission range switch (see page 14-240).■

(cont'd)

Shift Lock System Circuit Troubleshooting (cont'd)

28. Turn the ignition switch to LOCK (0).
29. Jump the SCS line with the HDS.
30. Disconnect PCM connector B (49P).
31. Check for continuity between PCM connector terminal B14 and body ground.

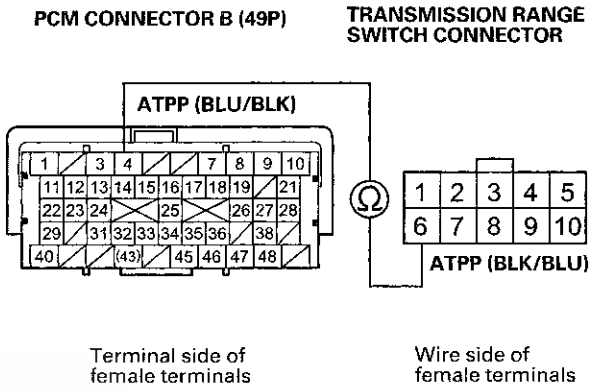


Is there continuity?

YES–Repair short to body ground in the wire between PCM connector terminal B14 and the transmission range switch connector.■

NO–Go to step 32.

32. Check for continuity between PCM connector terminal B14 and transmission range switch connector terminal No. 6.



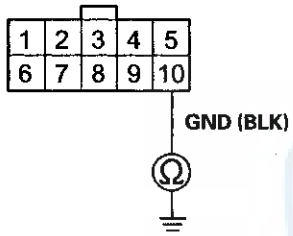
Is there continuity?

YES–Go to step 33.

NO–Repair open in the wire between PCM connector terminal B14 and the transmission range switch connector.■

33. Check for continuity between transmission range switch connector terminal No. 10 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

YES–Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-204).■

NO–Repair open in the wire between transmission range switch connector terminal No. 10 and body ground (G101), or repair poor ground (G101).■

34. Check the APP Sensor A (Y) in the Data List with the HDS. Do not press the accelerator.

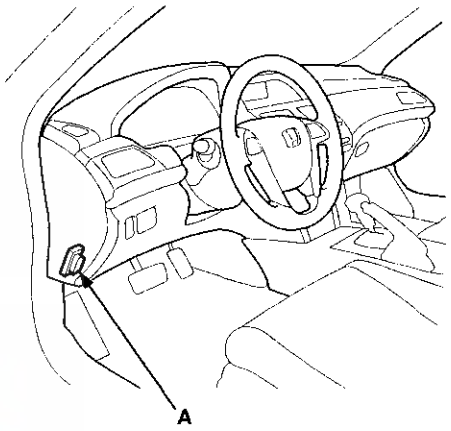
Is the APP sensor A opening 5 % and more, or 1.16 V or higher?

YES–Check the APP Sensor (see page 11-239).■

NO–Update the PCM if it does not have the latest software (see page 11-203), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom goes away with a known-good PCM, replace the original PCM (see page 11-204).■

Shift Lock Solenoid Test

1. Connect the HDS to the DLC (A) located under the driver's side of the dashboard.

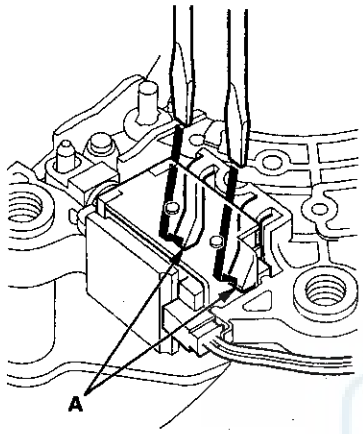


2. Turn the ignition switch to ON (II). Make sure the HDS communicates with the PCM. If it does not, go to the DLC circuit troubleshooting (see page 11-181).
3. Select Shift Lock Solenoid Test in the Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.
4. Check that the shift lever can be moved out of P when the Shift Lock Solenoid is ON. Move the shift lever back to P, and check that it locks with the Shift Lock Solenoid is OFF.
5. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.
6. If the shift lock solenoid does not work properly, go to the shift lock system troubleshooting (see page 14-249).

Shift Lock Solenoid Replacement

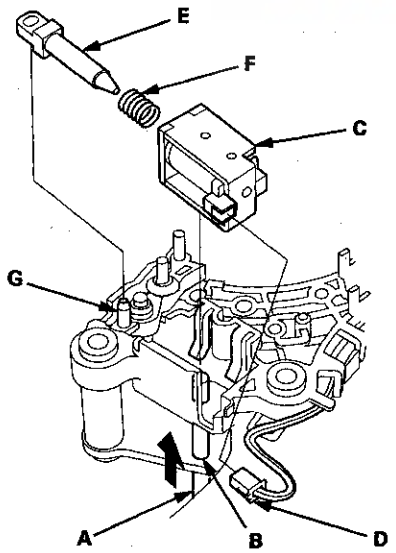
Type A Shift Lever

1. Remove the shift lever assembly (see page 14-222).
2. Release the lock tabs (A) retaining the shift lock solenoid using thin-bladed screwdrivers.

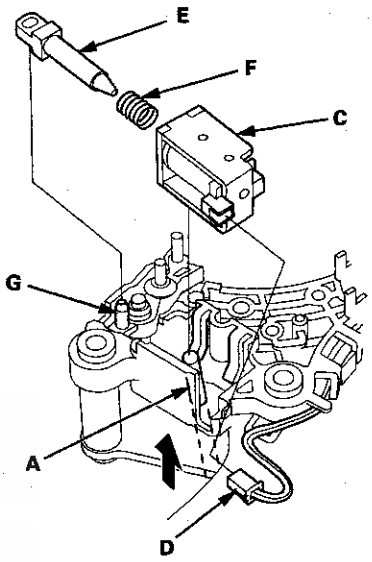


3. Insert a 6.0 mm (0.24 in) pin (A) into the guide hole (B) ('08-09 models), and push the shift lock solenoid (C) out.

'08-09 models



'10 model



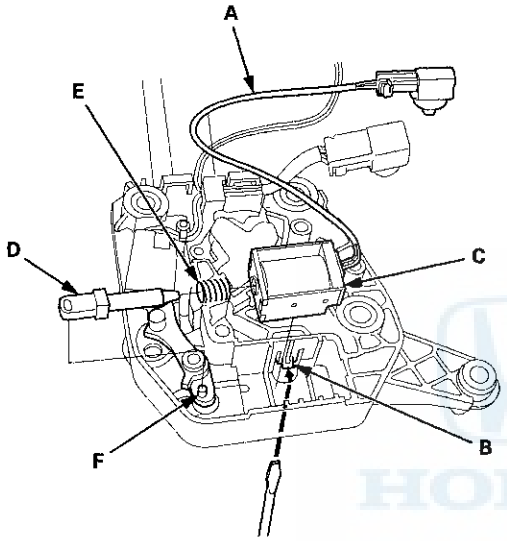
4. Disconnect the shift lock solenoid connector (D).
5. Replace the shift lock solenoid, the solenoid plunger (E), and the plunger spring (F) assembly.
6. Apply silicone grease to the tip (G) of the shift lock stop and the solenoid plunger.

   NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

7. Connect the shift lock solenoid connector.
8. Install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop, then push the shift lock solenoid into the shift lever securely.
9. Install the shift lever assembly (see page 14-224).

Type B Shift Lever

1. Remove the shift lever assembly (see page 14-222).
2. Remove the A/T gear position indicator panel from the shift lever (see page 14-228).
3. Remove the shift lock solenoid harness (A) from the harness guides.



4. Release the lock tab (B) retaining the shift lock solenoid using a thin-bladed screwdriver.
5. Replace the shift lock solenoid (C), the solenoid plunger (D), and the plunger spring (E) assembly.
6. Apply silicone grease to the tip (F) of the shift lock stop and the solenoid plunger.

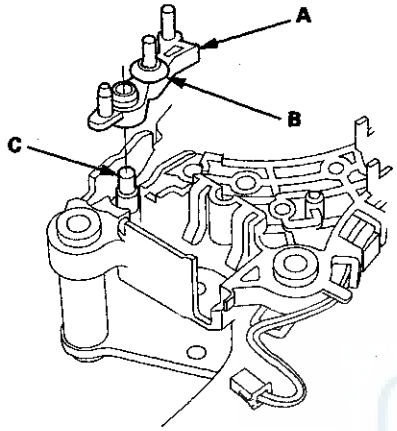
   NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

7. Install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop, then push the shift lock solenoid into the shift lever securely.
8. Install the shift lock solenoid harness in the harness guides.
9. Install the A/T gear position indicator panel on the shift lever (see page 14-228).
10. Install the shift lever assembly (see page 14-228).

Shift Lock Stop/Shift Lock Stop Cushion Replacement

Type A Shift Lever

1. Remove the shift lock solenoid (see page 14-254).
2. Remove the shift lock stop (A) and the stop cushion (B) as a set.



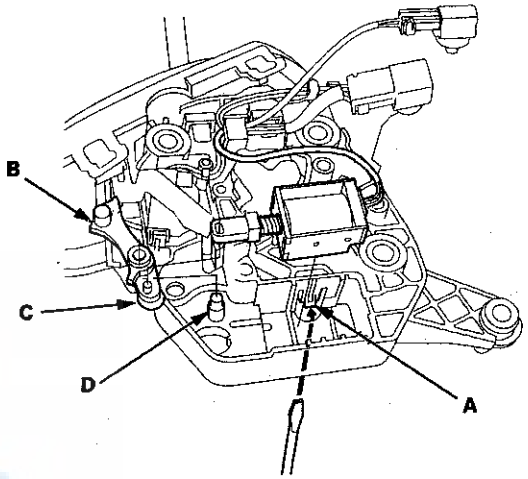
3. Apply silicone grease to the pin (C) of the shift lever bracket, then install the shift lock stop over the pin.

   NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

4. Install a new shift lock stop.
5. Install the shift lock solenoid (see page 14-253).

Type B Shift Lever

1. Remove the shift lever assembly (see page 14-222).
2. Remove the A/T gear position indicator panel from the shift lever (see page 14-228).
3. Release the lock tab (A) retaining the shift lock solenoid using a thin-bladed screwdriver.



4. Remove the shift lock stop (B) and the stop cushion (C) as a set.
5. Apply silicone grease to the pin (D) of the shift lever bracket, then install the shift lock stop over the pin.

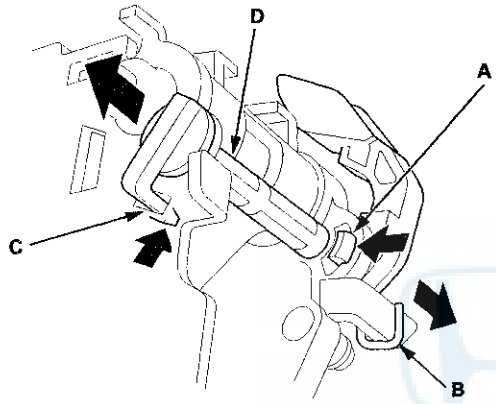
   NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

6. Install a new shift lock stop.
7. Install the shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop, then push the shift lock solenoid into the shift lever securely.
8. Install the A/T gear position indicator panel on the shift lever (see page 14-228).
9. Install the shift lever assembly (see page 14-224).

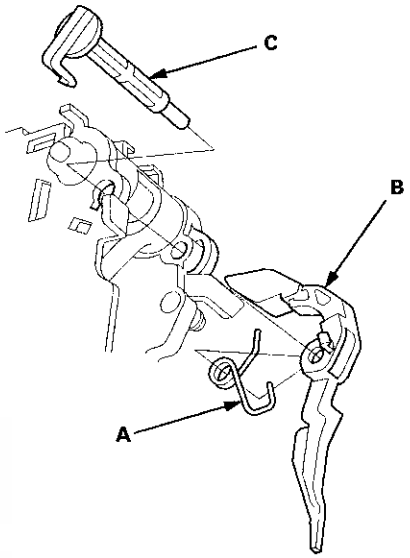
Shift Lock Release, Release Spring, and Release Shaft Replacement

Type A Shift Lever

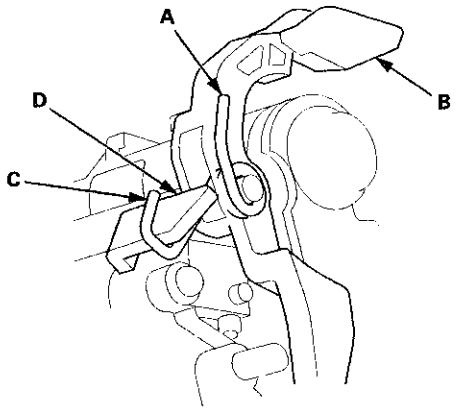
1. Remove the shift lever assembly (see page 14-222).
2. Remove the A/T gear position indicator panel from the shift lever (see page 14-227).
3. Release the lock (A) of the shift lock release, and remove the shift lock release and the release spring (B).



4. Release the lock (C) of the release shaft, and remove the shaft (D).
5. Replace the shift lock release, the release spring, or the release shaft.
6. Install the release spring (A) in the shift lock release (B).



7. Install the release shaft (C) in the shift lever, and install the shift lock release and the release spring on the release shaft end.
8. Make sure that the release spring end (A) is installed in the shift lock release (B), and the hooked end (C) is on the stop (D).



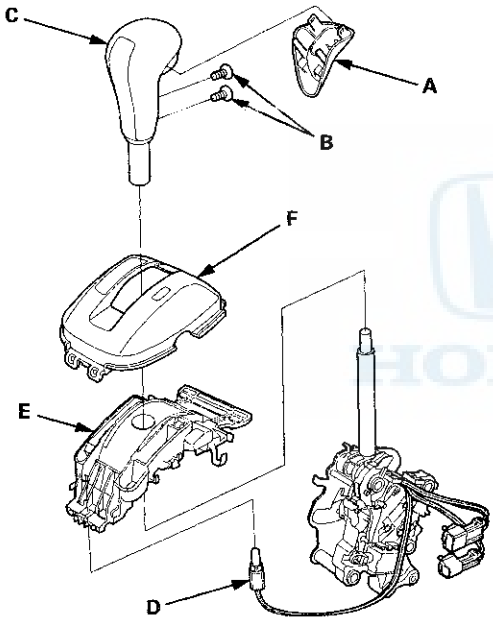
9. Install the A/T gear position indicator panel on the shift lever (see page 14-227).
10. Install the shift lever assembly (see page 14-224).

Park Pin Switch Replacement

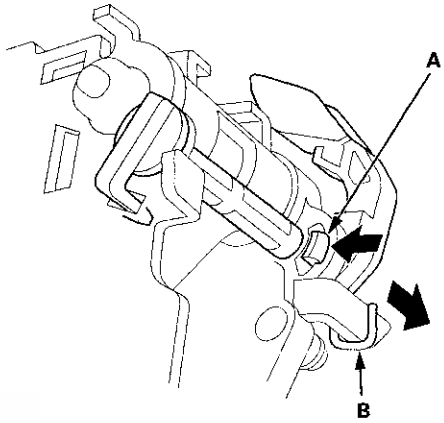
Type A Shift Lever

NOTE: The A/T gear position indicator panel light harness and the park pin switch are not available separately. Replace the A/T gear position indicator panel light harness and the park pin switch as a set.

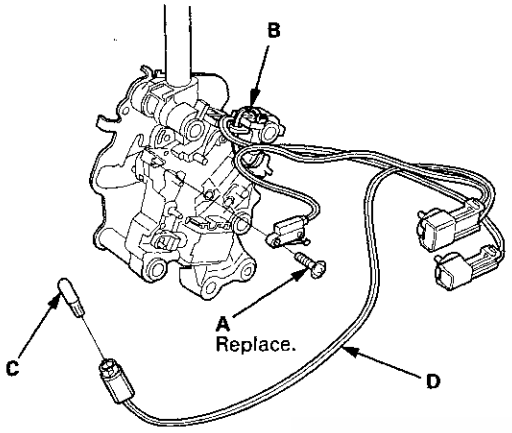
1. Remove the center console (see page 20-158).
2. Remove the shift lever assembly (see page 14-222).
3. Wrap the end of a flat-tip screwdriver with tape, pry the shift lever knob cover locks, then remove the shift lever knob cover (A).



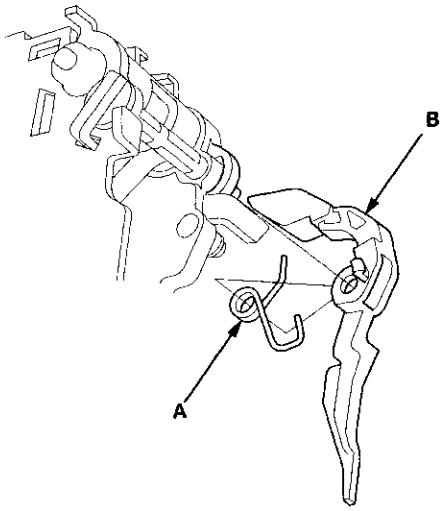
4. Remove the screws (B), and remove the shift lever knob (C) from the shift lever.
5. Remove the A/T gear position indicator panel light socket (D) from the indicator panel base (E).
6. Remove the A/T gear position indicator panel light harness from the harness guides of the indicator panel base.
7. Remove the A/T gear position indicator panel base, then disassemble the indicator panel (F) and the indicator panel base.
8. Release the lock (A) of the shift lock release, and remove the shift lock release and the release spring (B).



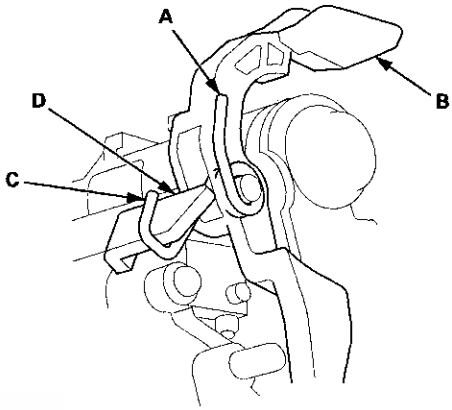
9. Remove the screw (A), and cut the harness wire tie (B), and remove the light bulb (C) from the socket.



10. Remove the park pin switch/A/T gear position indicator panel light harness (D).
11. Install a new park pin switch/A/T gear position indicator panel light harness, and secure the park pin switch with a new screw.
12. Tie the park pin switch/A/T gear position indicator panel light harness and the shift lock solenoid harness at the guide with the a new harness wire tie.
13. Install the A/T gear position indicator panel light bulb in the socket.
14. Install the release spring (A) in the shift lock release (B).



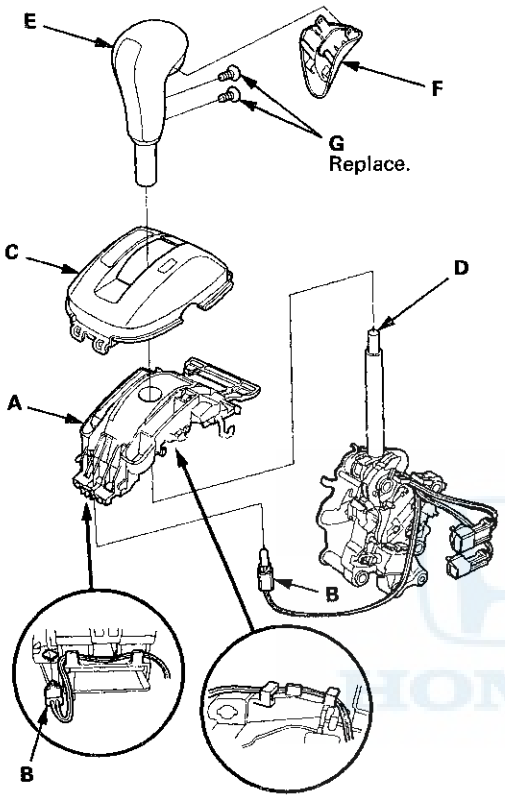
15. Install the shift lock release and the release spring on the release shaft end.
16. Make sure that the release spring end (A) is installed in the shift lock release (B), and the hooked end (C) is on the stop (D).



(cont'd)

Park Pin Switch Replacement (cont'd)

17. Install the A/T gear position indicator panel base (A).



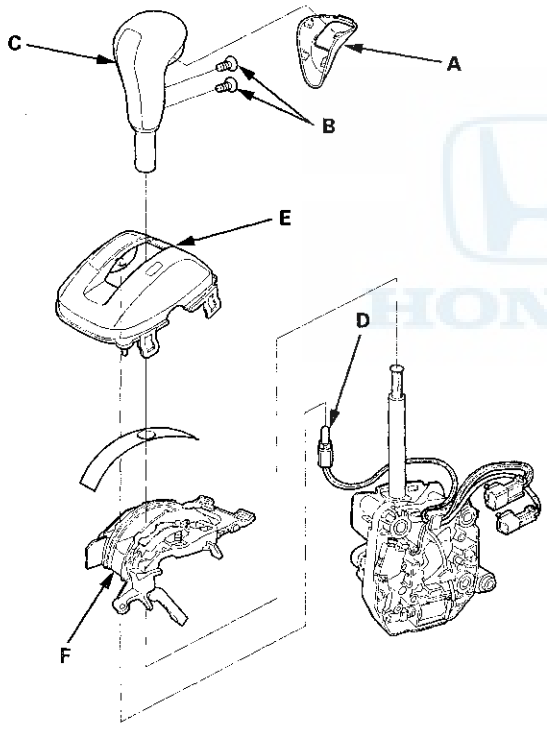
18. Route the park pin switch/A/T gear position indicator panel light harnesses. Take the slack out of the harnesses, and secure the harnesses with the harness wire tie at the harness guides
19. Install the A/T gear position indicator panel light socket (B) in the indicator panel base.
20. Install the A/T gear position indicator panel (C).
21. Apply silicone grease to the top (D) of the shift lever rod.

    NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.
22. Install the shift lever knob (E) over the shift lever.
23. Install the shift lever knob cover (F) on the shift lever knob with new screws (G).
24. Install the shift lever assembly (see page 14-224).
25. Install the center console (see page 20-158).

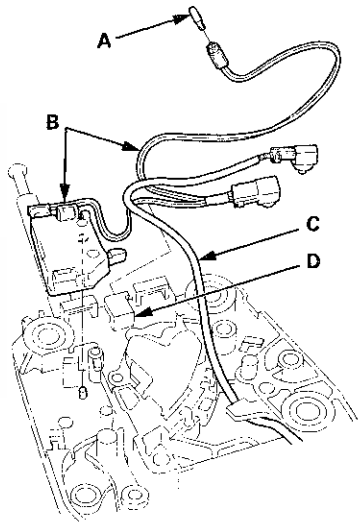
Type B Shift Lever

NOTE: The A/T gear position indicator panel light harness and the park pin switch are not available separately. Replace the A/T gear position indicator panel light harness and the park pin switch as a set.

1. Remove the center console (see page 20-158).
2. Remove the shift lever assembly (see page 14-222).
3. Wrap the end of a flat-tip screwdriver with tape, pry the shift lever knob cover locks, then remove the shift lever knob cover (A).



4. Remove the screws (B), and remove the shift lever knob (C) from the shift lever.
5. Remove the A/T gear position indicator panel light socket (D) from the indicator panel (E).
6. Remove the A/T gear position indicator panel light harness from the harness guides of the indicator panel base.
7. Remove the A/T gear position indicator panel base (F), then disassemble the indicator panel and the indicator panel base.
8. Remove the light bulb (A) from the socket.

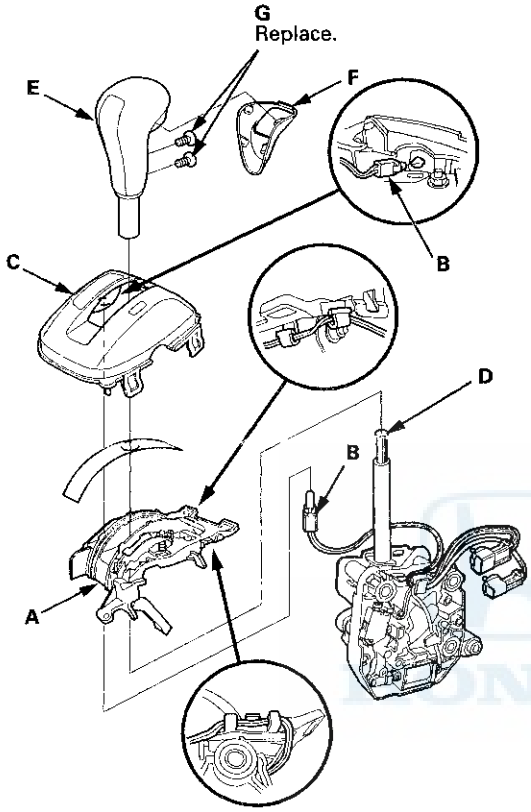


9. Remove the park pin switch/A/T gear position indicator panel light harness (B) and the shift lock solenoid harness (C) from the harness guide (D).
10. Install a new park pin switch/A/T gear position indicator panel light harness.
11. Route the park pin switch/A/T gear position indicator panel light harness and the shift lock solenoid harness in the harness guide.
12. Install the A/T gear position indicator panel light bulb in the socket.

(cont'd)

Park Pin Switch Replacement (cont'd)

13. Install the A/T gear position indicator panel base (A).



14. Install the A/T gear position indicator panel light socket (B) through the indicator panel base hole, then install the socket in the indicator panel (C).
15. Route the park pin switch/A/T gear position indicator panel light harnesses. Take the slack out of the harnesses, and secure the harnesses in the harness guides.
16. Install the A/T gear position indicator panel.
17. Apply silicone grease to the top (D) of the shift lever rod.

    NOTE: Make sure not to get any silicone grease on the terminal part of the connectors and switches, especially if you have silicone grease on your hands or gloves.

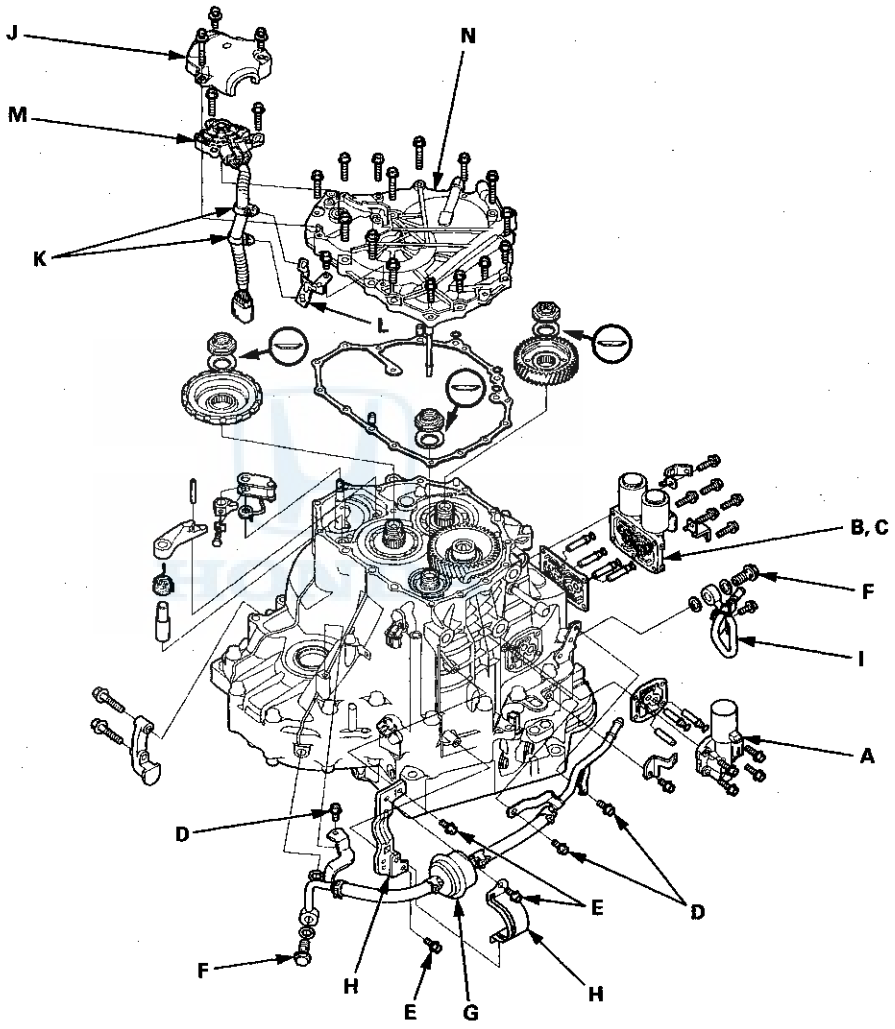
18. Install the shift lever knob (E) over the shift lever.
19. Install the shift lever knob cover (F) on the shift lever knob with new screws (G).
20. Install the shift lever assembly (see page 14-224).
21. Install the center console (see page 20-158).

Transmission End Cover

End Cover Removal

Special Tools Required
Mainshaft Holder 07GAB-PF50101

1. Remove the three bolts (D) securing the ATF cooler inlet line brackets, the ATF filter bracket bolts (E), the ATF cooler line banjo bolts (F), and remove the ATF cooler line/ATF filter (G) and the filter brackets (H).

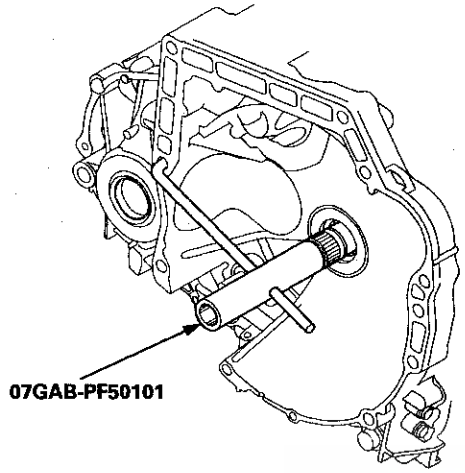


2. Remove the ATF cooler outlet line (I).
3. Remove A/T clutch pressure control solenoid valve A, the ATF joint pipes, the O-rings, the ATF pipe, and the gasket.
4. Remove A/T clutch pressure control solenoid valves B and C with the harness brackets, the ATF joint pipes, the O-rings, and the gasket.
5. Remove the transmission range switch cover (J).
6. Remove the transmission range switch harness clamps (K) from the clamp bracket (L), then remove the transmission range switch (M).
7. Remove the end cover (N), the dowel pins, the O-rings, and the end cover gasket.

(cont'd)

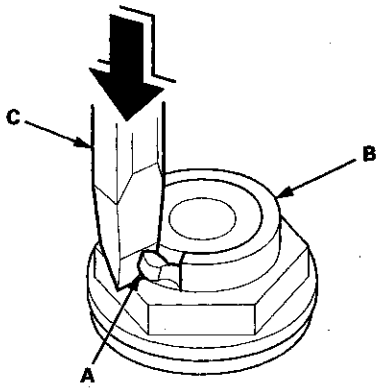
End Cover Removal (cont'd)

8. Install the mainshaft holder onto the mainshaft.

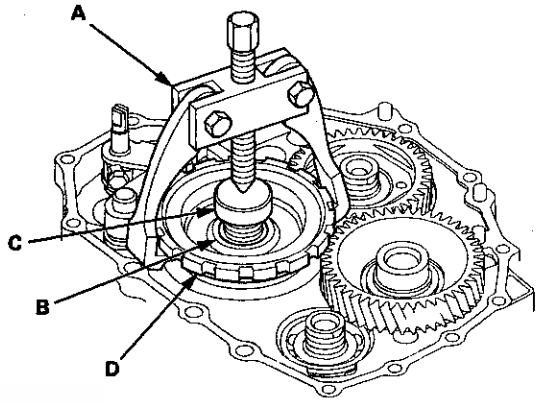


9. Engage the park pawl with the park gear.
10. Cut the lock tab (A) of the each shaft locknut (B) using a chisel (C). Then remove the locknuts and the conical spring washers from each shaft.

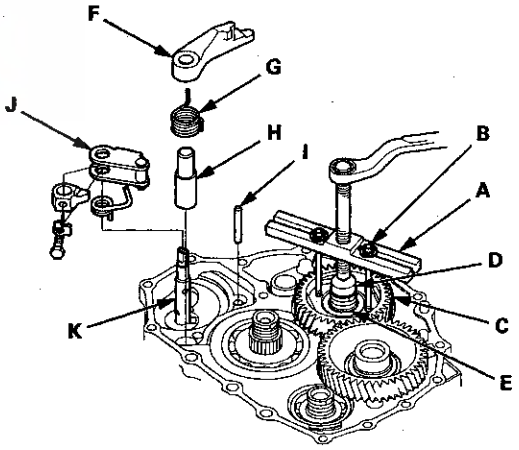
    NOTE:
    - Countershaft and secondary shaft locknuts have left-hand threads.
    - Keep all of the chiseled particles out of the transmission.
    - Clean the old mainshaft and the old countershaft locknuts; they are used to install the press fit idler gear on the mainshaft, and the park gear on the countershaft.



11. Remove the mainshaft holder from the mainshaft.
12. Set a two-jaw (or three-jaw) puller (A) on the countershaft (B) with a spacer (C) between the puller and the countershaft, then remove the park gear (D).



13. Install a puller (A) with two 6 x 1.0 mm bolts (B) on the mainshaft idler gear (C). Set a spacer (D) between the puller and the mainshaft (E), then remove the mainshaft idler gear.

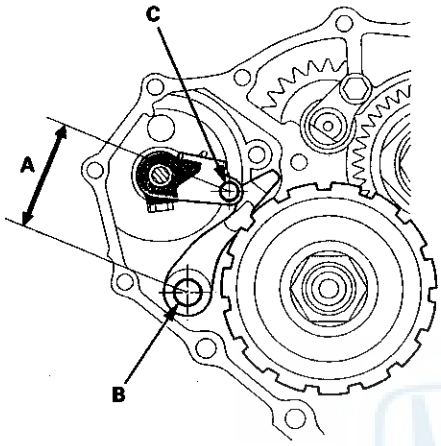


14. Remove the park pawl (F), the park pawl spring (G), the park pawl shaft (H), and the stop shaft (I).
15. Remove the park lever (J) from the selector control shaft (K).

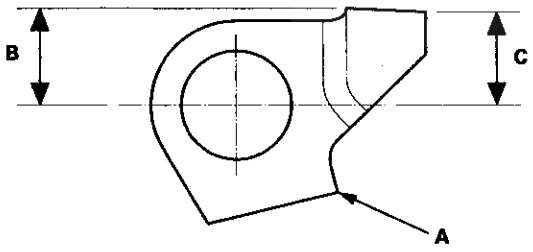
Park Lever Stop Inspection and Adjustment

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)



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



PARK LEVER STOP

Mark	B	C
1	11.00 mm (0.433 in)	11.00 mm (0.433 in)
2	10.80 mm (0.425 in)	10.65 mm (0.419 in)
3	10.60 mm (0.417 in)	10.30 mm (0.406 in)

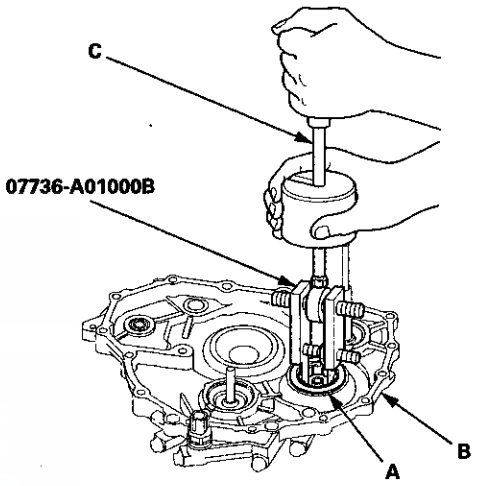
4. After replacing the park lever stop, make sure the distance is within tolerance.

Idler Gear Shaft Bearing Replacement

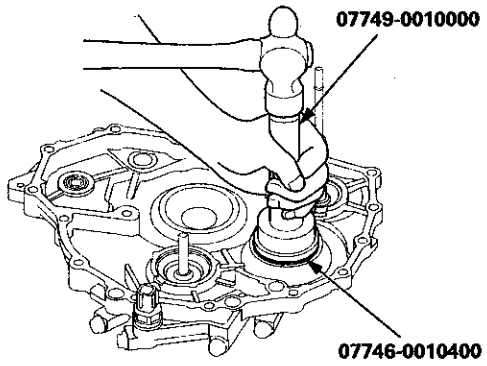
Special Tools Required

- Adjustable Bearing Puller, 25—40 mm 07736-A01000B
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

1. Remove the idler gear shaft bearing (A) from the end cover (B) using the 25—40 mm adjustable bearing puller and a commercially available 3/8 "-16 slide hammer (C).



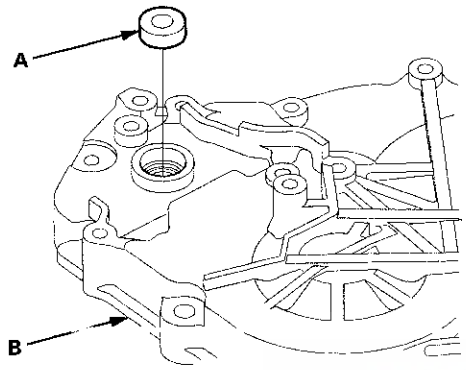
2. Install a new bearing in the end cover using the driver handle and the 52 x 55 mm attachment.



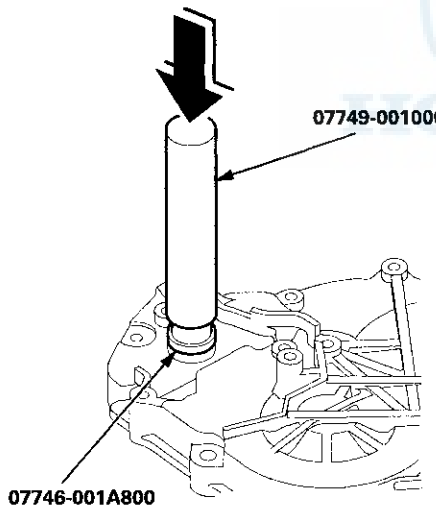
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 22 x 24 mm 07746-001A800

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



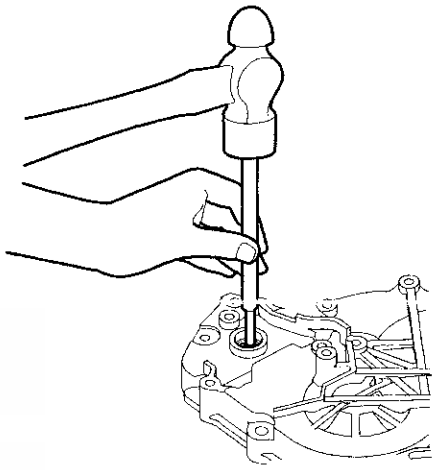
2. Install a new oil seal flush to the end cover using the driver handle and the 22 x 24 mm attachment.



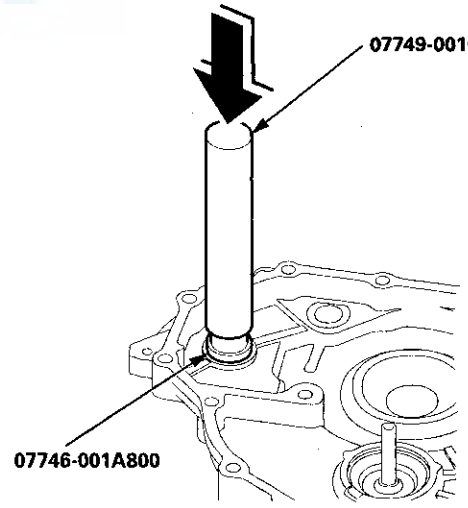
Selector Control Shaft Bearing Replacement

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 22 x 24 mm 07746-001A800

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



2. Install a new bearing flush to the end cover using the driver handle and the 22 x 24 mm attachment.

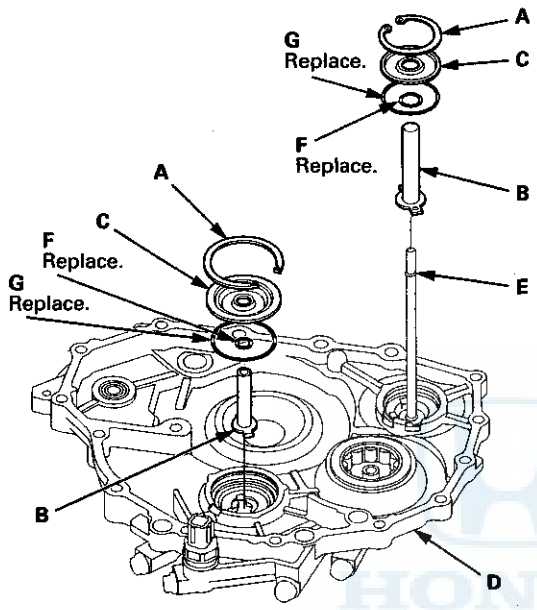


3. Install a new oil seal.

ATF Feed Pipe Replacement

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

   NOTE: Replace the end cover, if the 1st clutch ATF feed pipe (E) replacement is required.



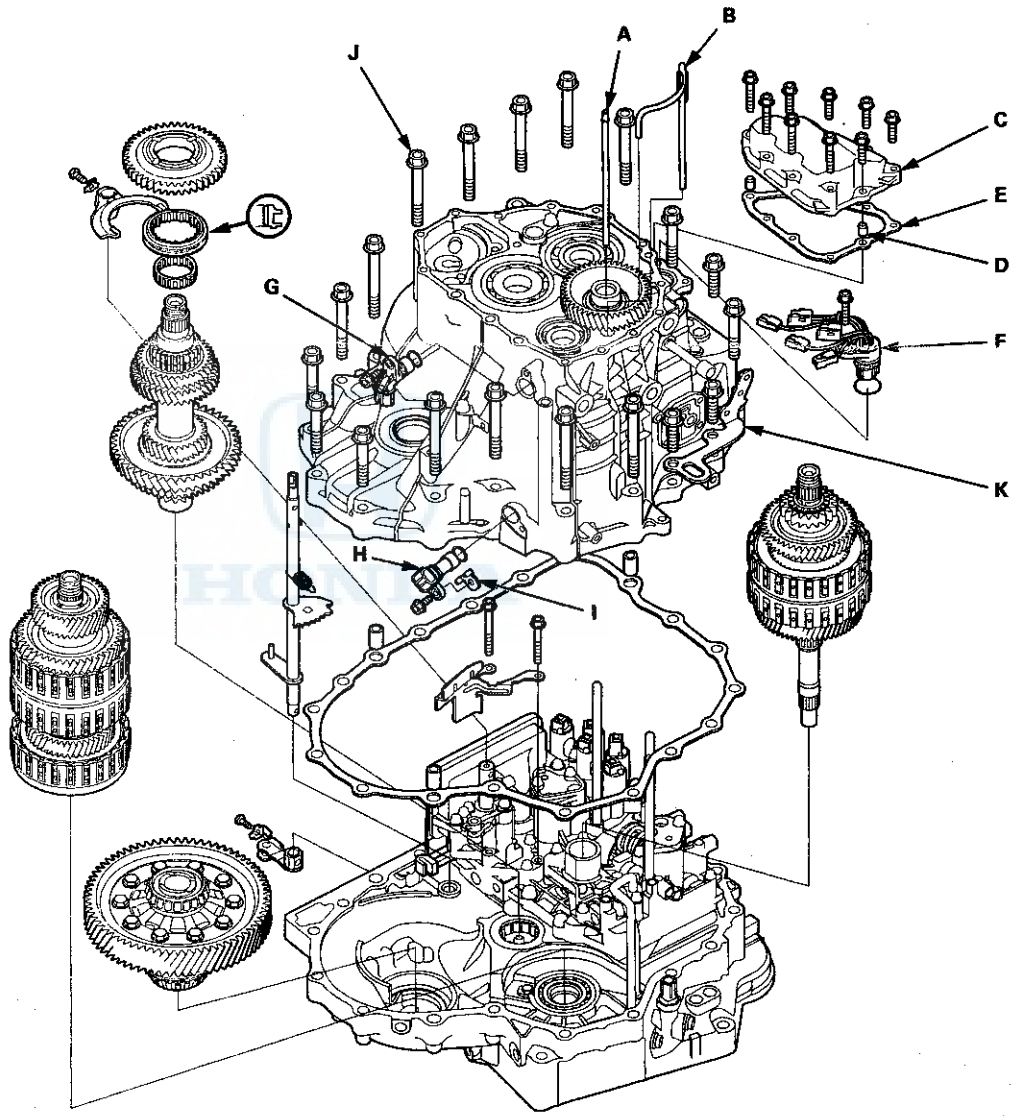
2. Install new O-rings (F) over the ATF feed pipes.
3. Install the ATF feed pipes in the end cover by aligning the feed pipe tabs with the indentations in the end cover.
4. Install new O-rings (G) in the end cover, then install the feed pipe flanges over the ATF feed pipes.
5. Secure the ATF feed pipes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

Transmission Housing

Housing and Shaft Assembly Removal

Special Tools Required
Housing Puller 07HAC-PK40102

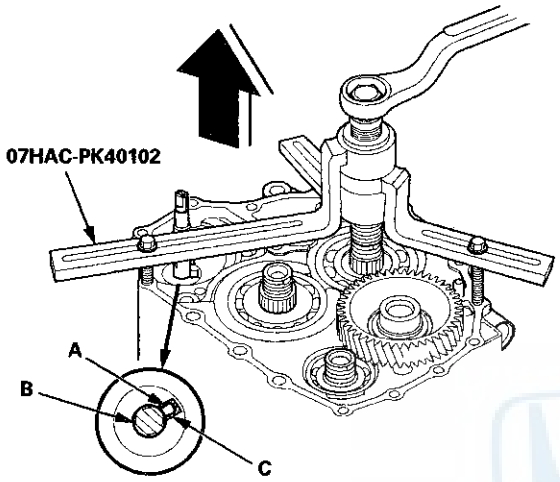
1. Remove the ATF feed pipe (A) from the idler gear shaft, and remove the ATF lubrication pipe (B) from the transmission housing.



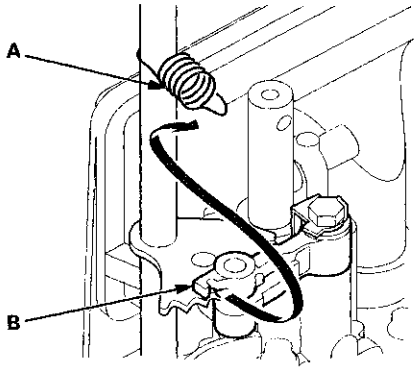
2. Remove the shift solenoid valve cover (C), the dowel pins (D), and the gasket (E).
3. Disconnect the connectors from the shift solenoid valves, and remove the shift solenoid wire harness (F) with the O-ring.
4. Remove the input shaft (mainshaft) speed sensor (G) with the O-ring, and remove the output shaft (countershaft) speed sensor (H) with the O-ring and the washer (I).
5. Remove the transmission housing mounting bolts (19 bolts) (J) and the transmission hanger (K).

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

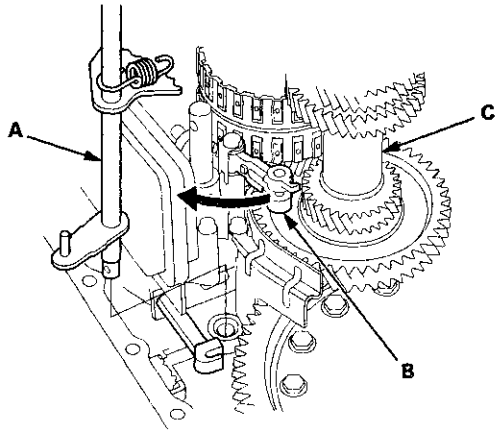
   NOTE: Do not squeeze the end of the selector control shaft tips together when turning the selector control shaft.



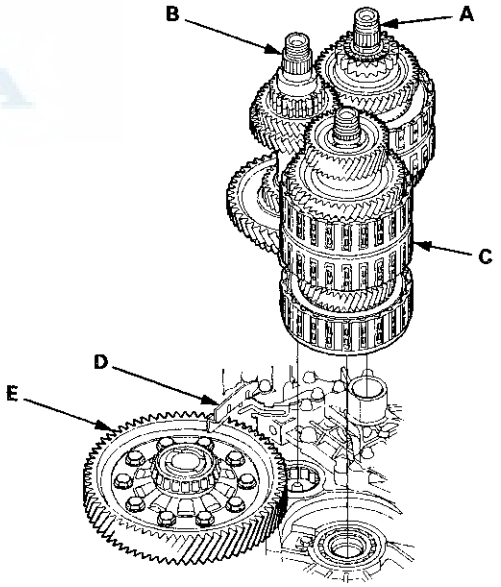
7. Install the housing puller over the mainshaft, then remove the transmission housing.
8. Remove the countershaft reverse gear and the needle bearing.
9. Remove the lock bolt securing the reverse shift fork, then remove the reverse shift fork with the reverse selector together.
10. Remove the selector control lever from the selector control shaft.
11. Unlock the detent spring (A) from the detent arm (B).



12. Remove the selector control shaft (A) from the torque converter housing.



13. Turn the detent arm (B) away from the countershaft (C).
14. Remove the mainshaft subassembly (A), the countershaft subassembly (B), and the secondary shaft subassembly (C) together. Do not bump the countershaft on the baffle plate (D).



15. Remove the baffle plate.
16. Remove the differential assembly (E).

Bearing Removal

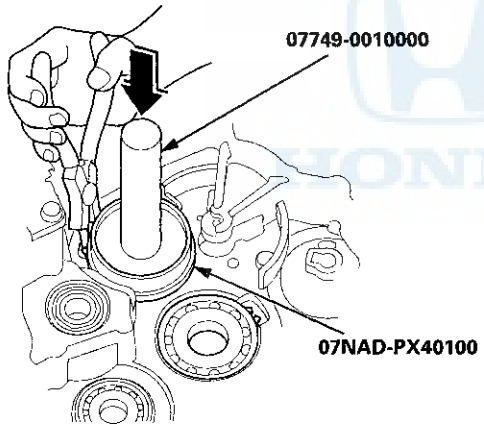
Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver Handle, 15 x 135L 07749-0010000
- Bearing Driver Attachment, 42 x 47 07746-0010300

1. Remove the idler gear shaft (see page 14-297) when removing the mainshaft bearing and the idler gear shaft bearing.

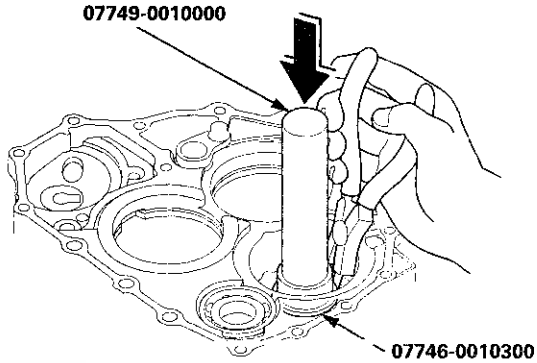
   NOTE: If you are only removing the countershaft bearing, the idler gear shaft removal is not needed.

2. To remove the mainshaft bearing and the countershaft bearing from the transmission housing, expand each snap ring using snap ring pliers, then drive the bearing out using the driver handle and the 78 x 80 mm attachment.

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



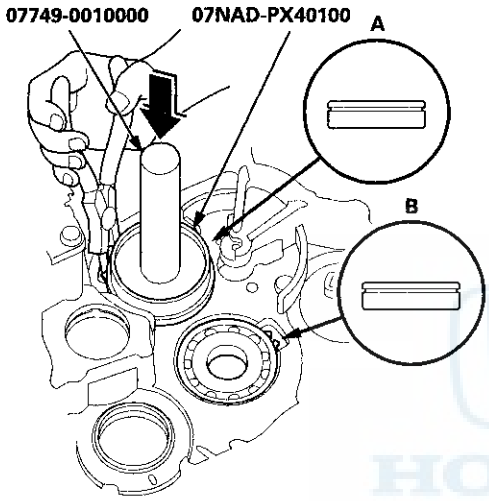
3. To remove the secondary shaft bearing and the idler gear shaft bearing, expand each snap ring using snap ring pliers, then drive the bearing out using the driver handle and the 42 x 47 mm bearing driver attachment.



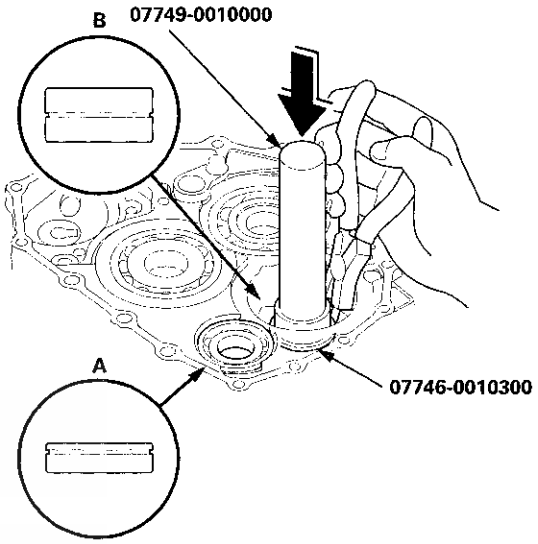
Bearing Installation

Special Tools Required
- Attachment, 78 x 80 mm 07NAD-PX40100
- Driver Handle, 15 x 135L 07749-0010000
- Bearing Driver Attachment, 42 x 47 07746-0010300

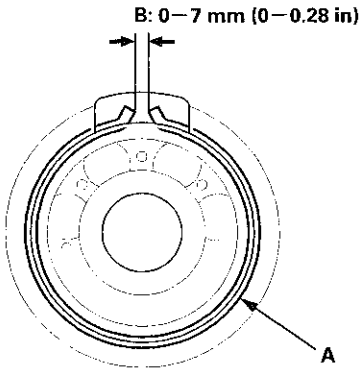
1. Install the bearings in the direction shown.
2. Expand each snap ring using snap ring pliers, and install the mainshaft bearing (A) and the countershaft bearing (B) part-way into the housing using the driver handle and the 78 x 80 mm attachment.



3. Release the snap ring pliers, then push the bearing down into the transmission housing until the snap ring snaps in place around it.
4. Expand the snap ring of the secondary shaft bearing (A) and handle the idler gear shaft bearing (B) using the snap ring pliers, and install the bearing part-way into the housing using the driver handle and the 42 x 47 mm bearing driver attachment.



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

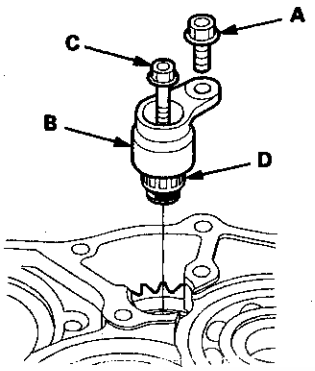


7. Install the idler gear shaft (see page 14-297).

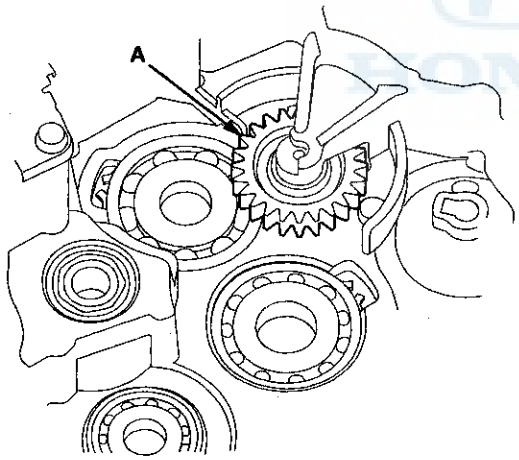
Reverse Idler Gear Removal and Installation

Removal

1. Remove the bolt (A) securing the reverse idler gear shaft holder (B).

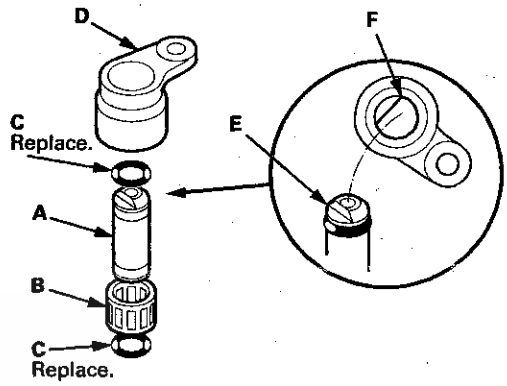


2. Install a 5 x 0.8 mm bolt (C) in the reverse idler gear shaft (D), and pull it to remove the reverse idler gear shaft and the reverse idler gear shaft holder together.
3. Remove the reverse idler gear (A).

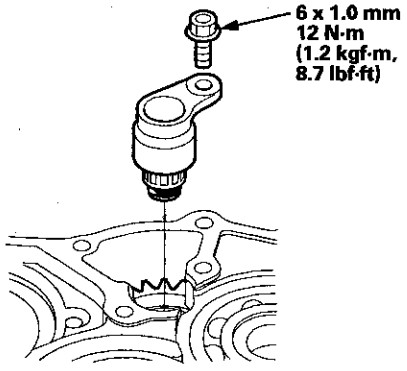


Installation

1. Install the reverse idler gear in the transmission housing.
2. Lightly coat the reverse idler gear shaft (A), the needle bearing (B), and new O-rings (C) with lithium grease.

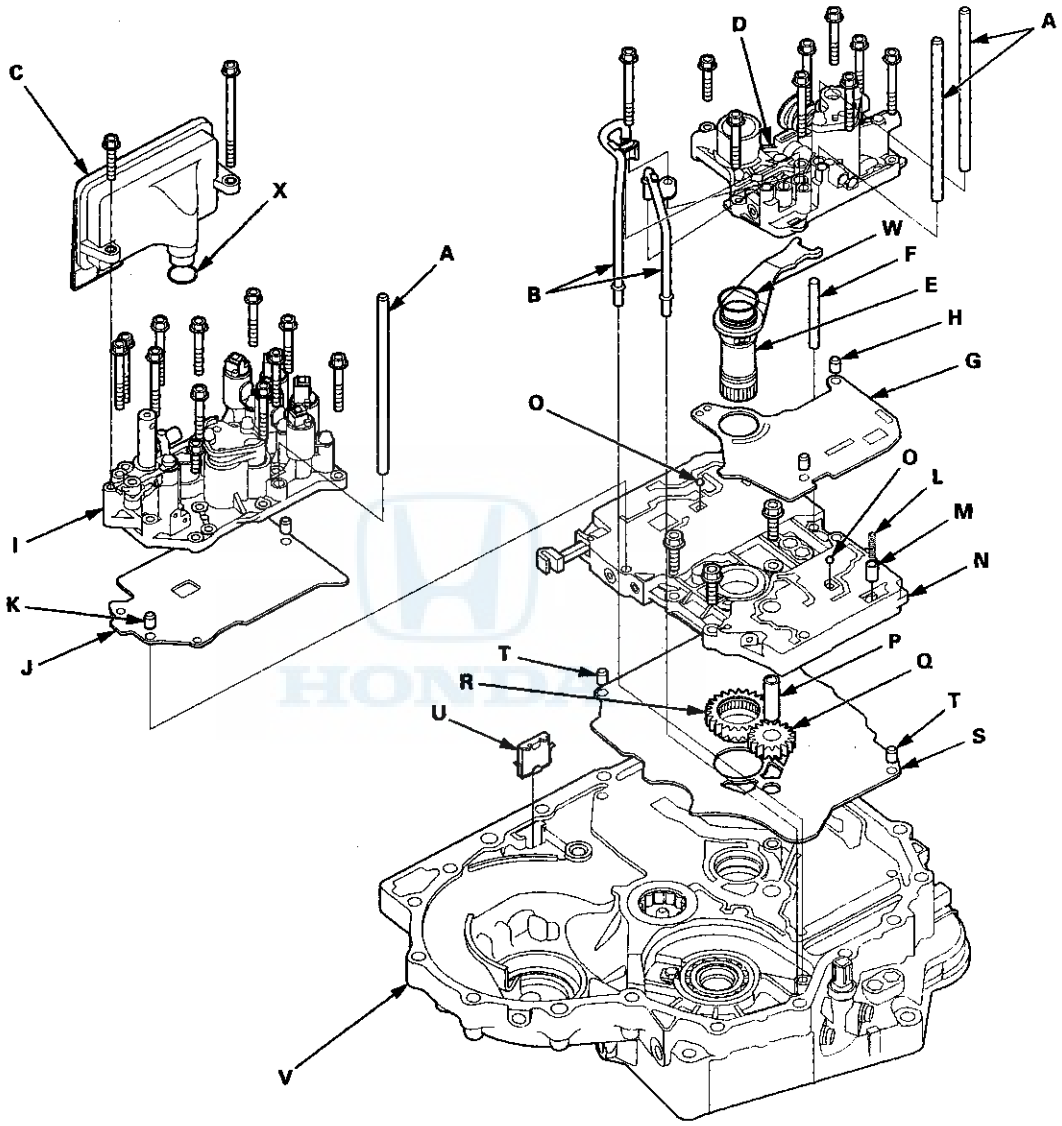


3. Assemble O-rings and the needle bearing on the reverse idler gear shaft, then install the reverse idler gear shaft in the reverse idler gear shaft holder (D). Align the D-shaped cut out (E) of the reverse idler gear shaft with the D-shaped area (F) of the reverse idler gear shaft holder.
4. Install the reverse idler gear shaft/holder assembly on the transmission housing.



Valve Body and ATF Strainer Removal

1. Remove the ATF feed pipes (A) and the ATF joint pipes (B).

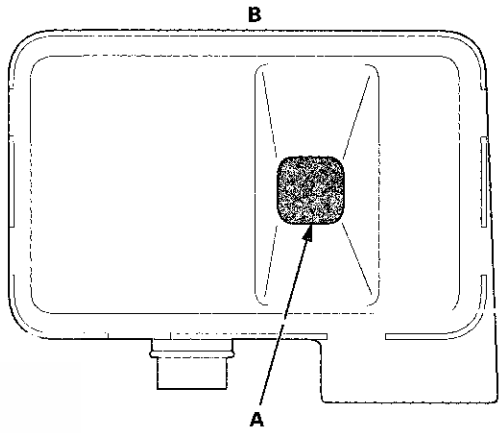


2. Remove the ATF strainer (C) (two bolts).
3. Remove the regulator valve body (D) (eight bolts).

(cont'd)

Valve Body and ATF Strainer Removal (cont'd)

4. Remove the stator shaft (E) and the stator shaft stop (F), then remove the regulator separator plate (G) and the two dowel pins (H).
5. Remove the servo body (I) (12 bolts), then remove the servo separator plate (J) and the two dowel pins (K).
6. Remove the cooler check valve spring (L) and the cooler check valve (M), then remove the main valve body (N) (three bolts). Do not let the two check balls (O) fall out, and do not use a magnet to remove the check balls, it may magnetize them.
7. Remove the ATF pump driven gear shaft (P), then remove the ATF pump driven gear (Q) and the ATF pump drive gear (R).
8. Remove the main separator plate (S) and the two dowel pins (T).
9. Remove the ATF magnet (U), clean and reinstall it in the torque converter housing (V).
10. 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.



11. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace it if it is clogged or damaged.
12. Remove the O-rings (W) (X) from the stator shaft and the ATF strainer. Install new ones when installing the valve bodies.

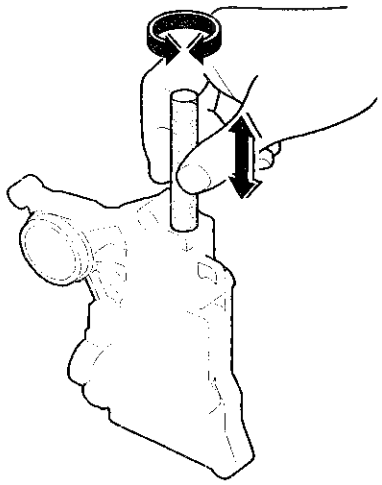
Valve Body Repair

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.

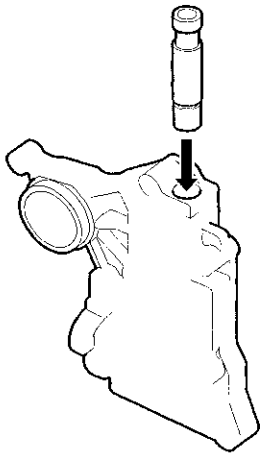
1. Soak a sheet of #600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore.
3. Inspect the valve for any scuff marks. Use the ATF-soaked #600 abrasive 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 abrasive 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 does not require much polishing to remove any burrs.



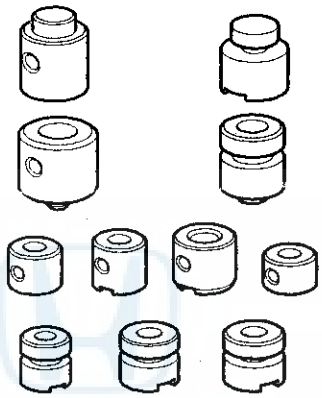
5. Remove the #600 abrasive paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.
6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat step 4, then retest. If the valve still sticks, replace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



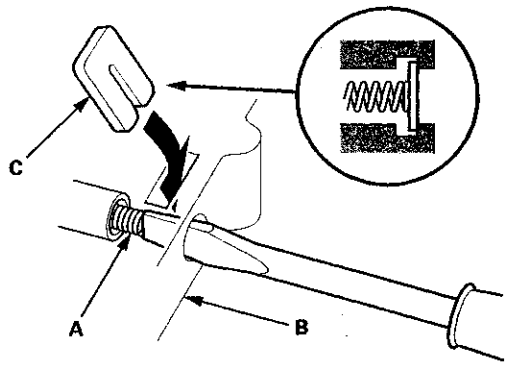
7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

Valve Body Valve Installation

1. Coat all parts with ATF before assembly.
2. Install the valves and the springs in the sequence shown for the main valve body (see page 14-277), the regulator valve body (see page 14-279), and the servo body (see page 14-280). 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.

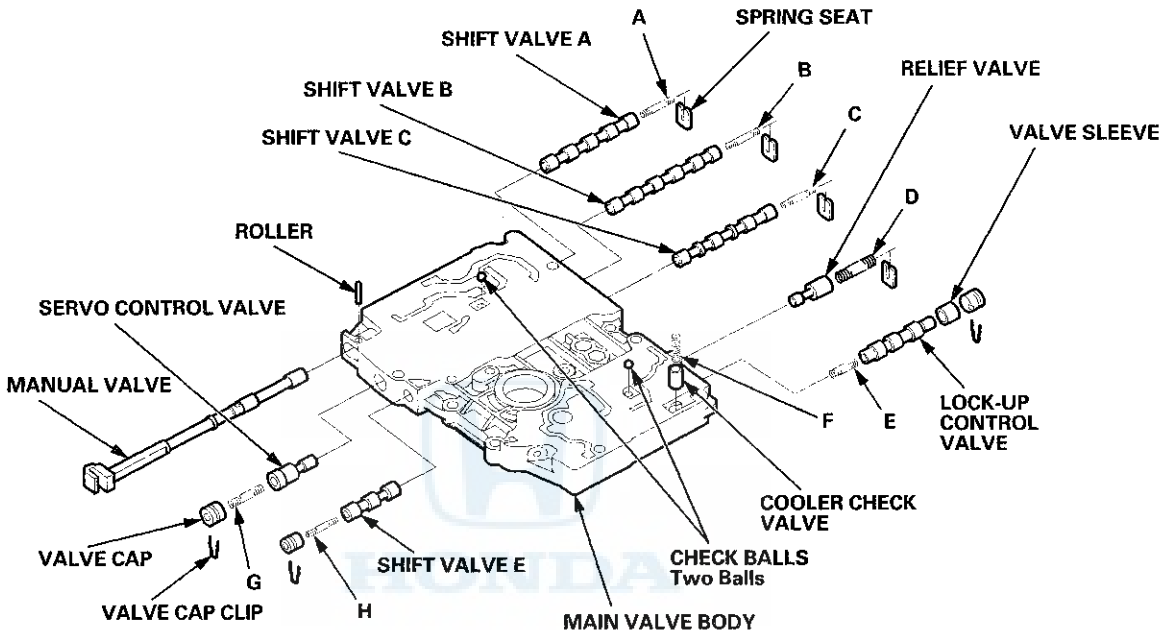


3. Install all the springs and the seats. Insert the spring (A) in the valve, then install the valve in the valve body (B). Push the spring in using a screwdriver, then install the spring seat (C).



Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, 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, do the valve body repair procedure (see page 14-275).
5. Coat all parts with ATF during assembly.

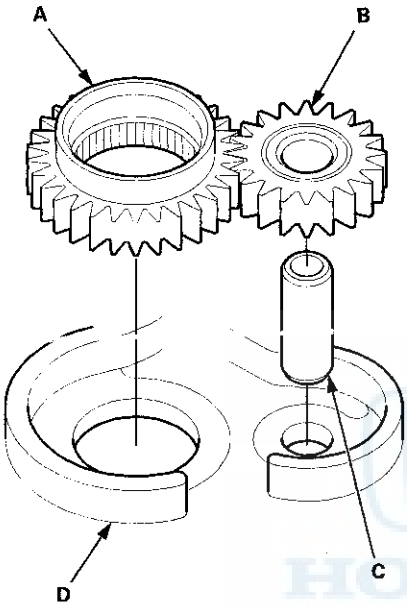


SPRING SPECIFICATIONS

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

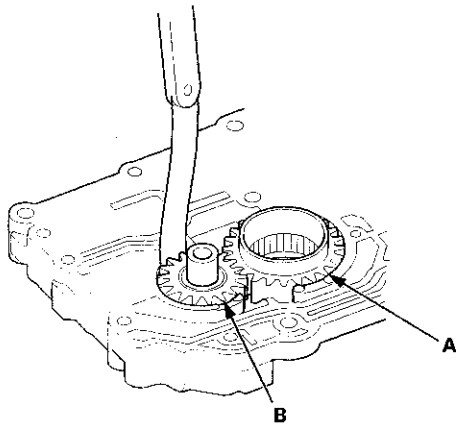
ATF Pump Inspection

1. Install the ATF pump drive gear (A), the driven gear (B), and the 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.



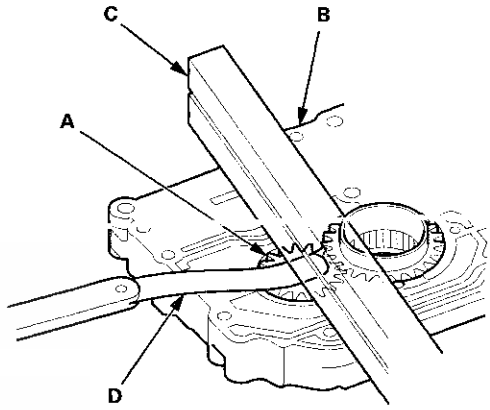
2. Measure the side clearance of the ATF pump drive gear (A) and the driven gear (B).

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)



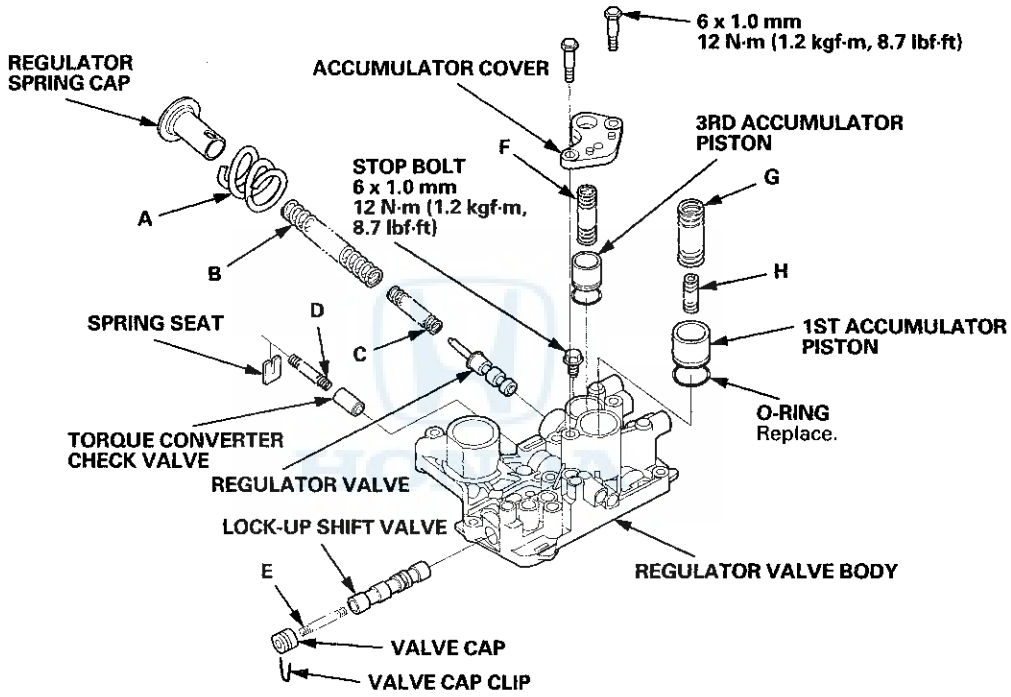
3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the main valve body (B) using a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial) Clearance
Standard (New): 0.03—0.06 mm (0.001—0.002 in)
Service Limit: 0.07 mm (0.0003 in)



Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent, 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, do the valve body repair procedure (see page 14-275).
4. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded.
5. Coat all parts with ATF during assembly.
6. Replace the O-rings with new ones.
7. 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.

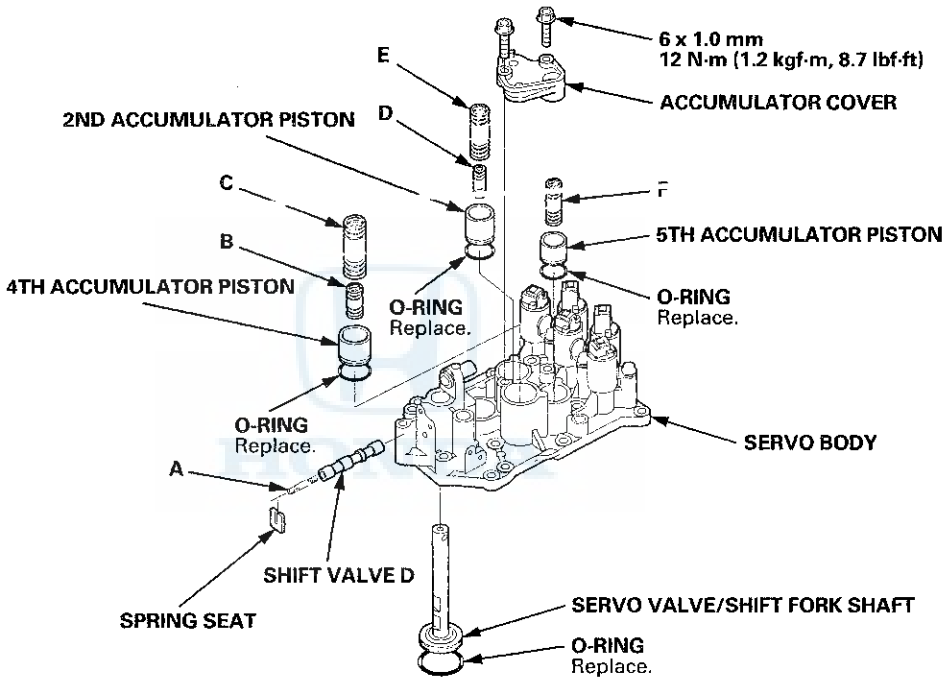


SPRING SPECIFICATIONS

Springs		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	1.85 (0.073)	14.7 (0.579)	83.0 (3.268)	14.9
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	3rd accumulator spring	2.5 (0.098)	14.6 (0.575)	29.4 (1.157)	4.9
G	1st accumulator spring A	2.4 (0.0.94)	18.6 (0.732)	49.0 (1.929)	7.1
H	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, and dry them with compressed air. Blow out all passages.
2. Inspect the valve body for scoring and damage.
3. Check shift valve D for free movement. If it fails to slide freely, do the valve body repair procedure (see page 14-275).
4. When removing and installing the shift solenoid valves, refer to the shift solenoid valves removal and installation (see page 14-281).
5. Coat all parts with ATF during assembly.
6. Replace the O-rings with new ones.



SPRING SPECIFICATIONS

Springs		Standard (New)-Unit: mm (in)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Shift valve D spring	0.8 (0.031)	5.6 (0.220)	28.1 (1.106)	15.9
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	2.1 (0.083)	10.8 (0.425)	34.0 (1.339)	8.2
E	2nd accumulator spring A	2.1 (0.083)	16.6 (0.654)	48.7 (1.917)	8.4
F	5th accumulator spring	2.5 (0.098)	14.6 (0.575)	29.9 (1.177)	4.9

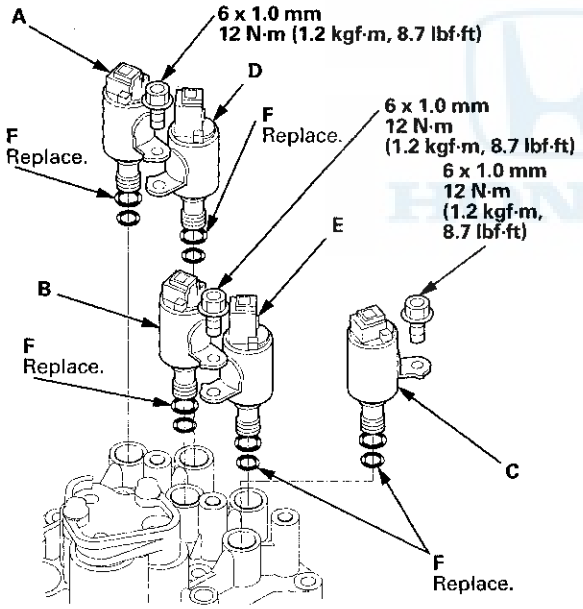
Shift Solenoid Valve Removal and Installation

NOTE:

- Do not hold the shift solenoid valve connector to remove and to install the shift solenoid valves. Hold the shift solenoid valve body.
- Do not install the shift solenoid valve A before installing the shift solenoid valve D, and do not install shift solenoid valve B before shift solenoid valve E. If shift solenoid valves A and B are installed before shift solenoid valves D and E, it may damage the hydraulic control system.

1. Remove the shift solenoid valve mounting bolt, then remove the shift solenoid valves by holding the solenoid valve body.
2. Install new O-rings (two O-rings per shift solenoid valve) (F) on the shift solenoid valves.

   NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided with it.



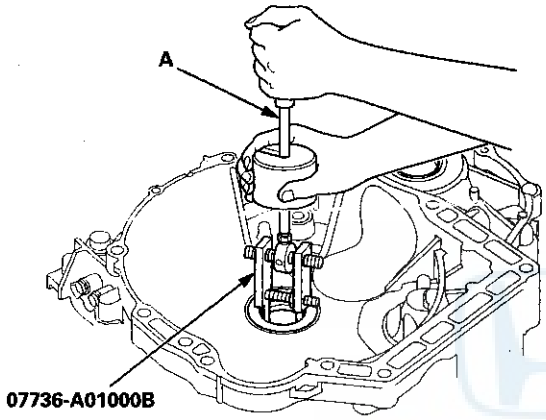
3. Install shift solenoid valve D by holding the shift solenoid valve body; be sure that the mounting bracket contacts the servo body.
4. Install shift solenoid valve A by holding the shift solenoid valve body; be sure that the mounting bracket contacts the bracket on shift solenoid valve D.
5. Install shift solenoid valve E by holding the shift solenoid valve body; be sure that the mounting bracket contacts the servo body.
6. Install shift solenoid valve B by holding the shift solenoid valve body; be sure that the mounting bracket contacts the bracket on shift solenoid valve E.
7. Install shift solenoid valve C by holding the shift solenoid valve body; be sure that the mounting bracket contacts the servo body.
8. Install the shift solenoid valve mounting bolts.

Torque Converter Housing

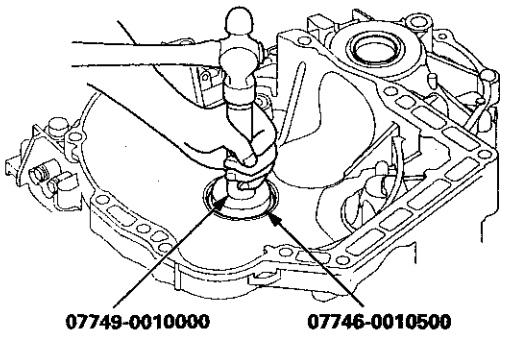
Mainshaft Bearing and Oil Seal Replacement

Special Tools Required
- Adjustable Bearing Puller, 25—40 mm 07736-A01000B
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

1. Remove the mainshaft bearing and the oil seal using the 25—40 mm adjustable bearing puller and a commercially available 3/8 "-16 slide hammer (A).

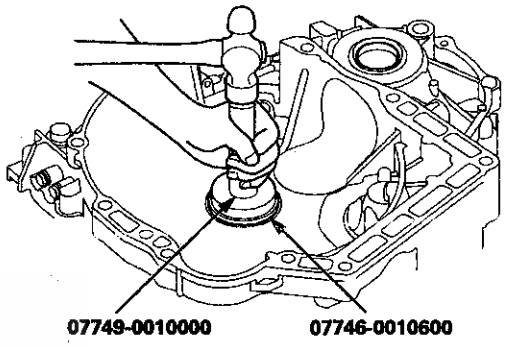


2. Install a new mainshaft bearing until it bottoms in the torque converter housing using the driver handle and the 62 x 68 mm attachment.



3. Install a new oil seal flush with the torque converter housing using the driver handle and the 72 x 75 mm attachment.

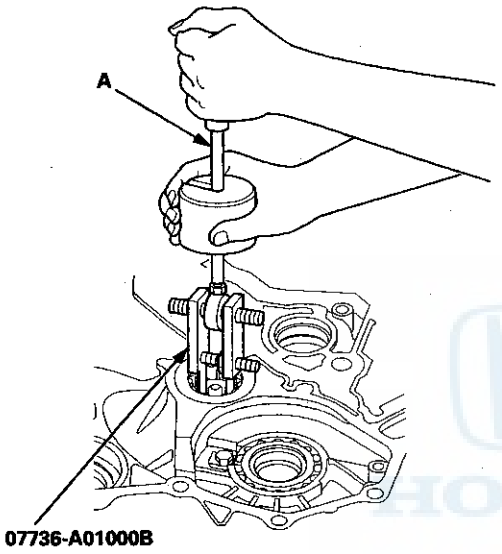
   NOTE: Do not drive the oil seal into the torque converter housing until it bottoms out; it will block the fluid return passage and cause transmission damage.



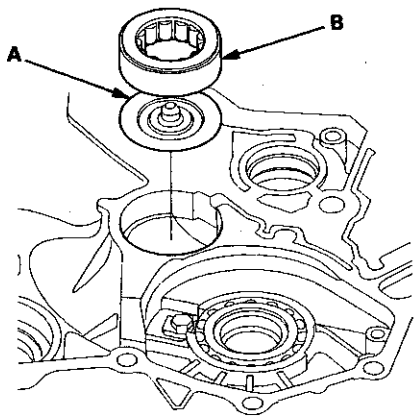
Countershaft Bearing Replacement

Special Tools Required
- Adjustable Bearing Puller, 25—40 mm 07736-A01000B
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the countershaft bearing using the 25—40 mm adjustable bearing puller and a commercially available 3/8 "-16 slide hammer (A).

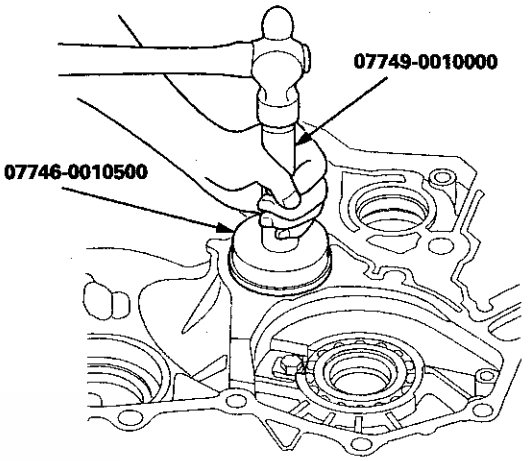


2. Remove the ATF guide plate (A), and check it for wear and damage. If the guide plate is worn or damaged, replace it.

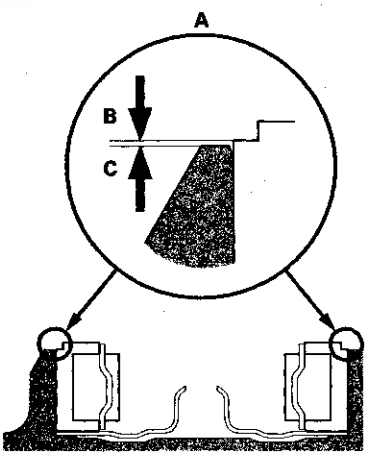


3. Install the ATF guide plate in the torque converter housing, and install a new countershaft bearing (B).

4. Install the countershaft bearing securely in the torque converter housing using the driver handle and the 62 x 68 mm attachment.



5. Make sure that the bearing outer race notch-cut (A) is installed at a height of 0—0.05 mm (0—0.002 in) (B) above the torque converter housing surface (C). Do not install the countershaft bearing higher than 0.05 mm (0.002 in) above the torque converter housing surface.

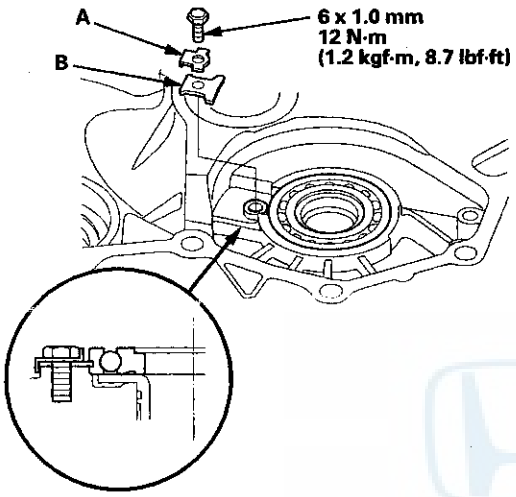


Torque Converter Housing

Secondary Shaft Bearing Replacement

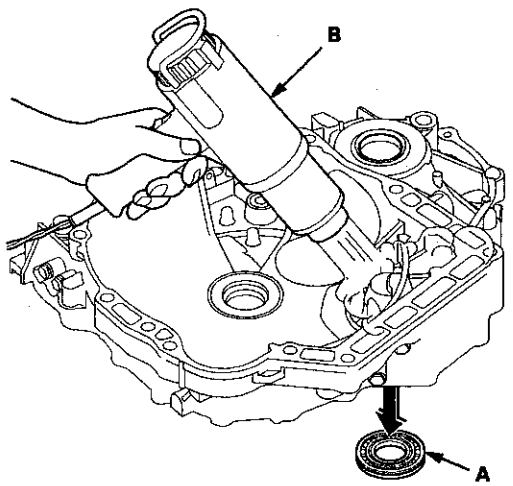
Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500

1. Remove the set plate bolt, then remove the lock washer (A) and the bearing set plate (B).



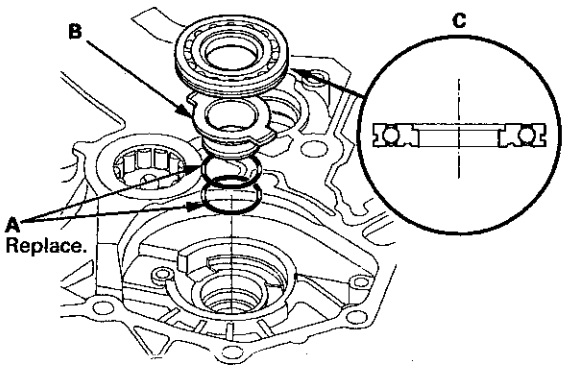
2. Remove the secondary shaft bearing (A) by heating the torque converter housing to about 212 °F (100 °C) using a heat gun (B). Do not heat the torque converter housing more than 212 °F (100 °C).

   NOTE: Let the torque converter housing cool to normal temperature before installing the secondary shaft bearing.



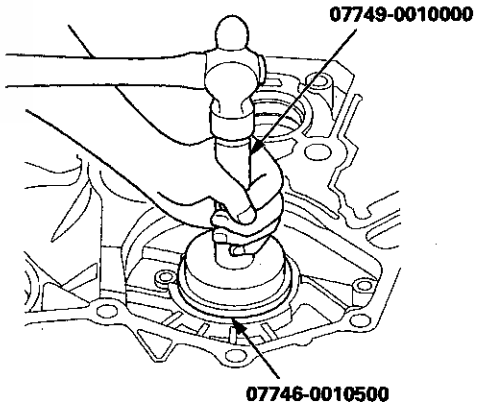
3. Remove the ATF guide collar with the O-rings. Clean and dry the ATF guide collar surfaces and the torque converter housing if necessary.

4. Install new O-rings (A) on the ATF guide collar (B), then install the ATF guide collar in the torque converter housing.



5. Install a new secondary shaft bearing (C) in the direction shown.

6. Install the secondary shaft bearing using the driver handle and the 62 x 68 mm attachment, and install it securely in the torque converter housing.



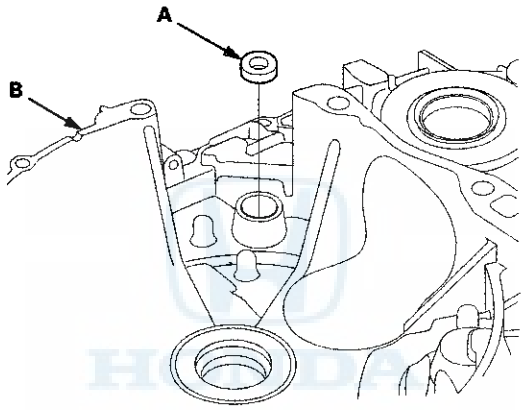
7. Check that the bearing groove aligns with the torque converter housing surface, then install the bearing set plate with aligning the bearing groove.

8. Install a new lock washer and the set plate bolt, then bend the lock tab of the lock washer against the bolt head.

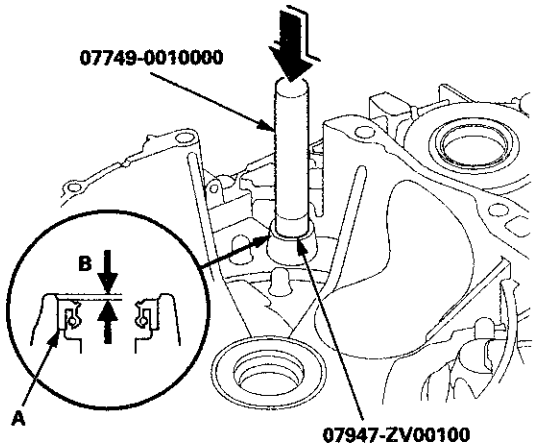
Selector Control Shaft Oil Seal Replacement

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Oil Seal Driver Attachment 07947-ZV00100

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

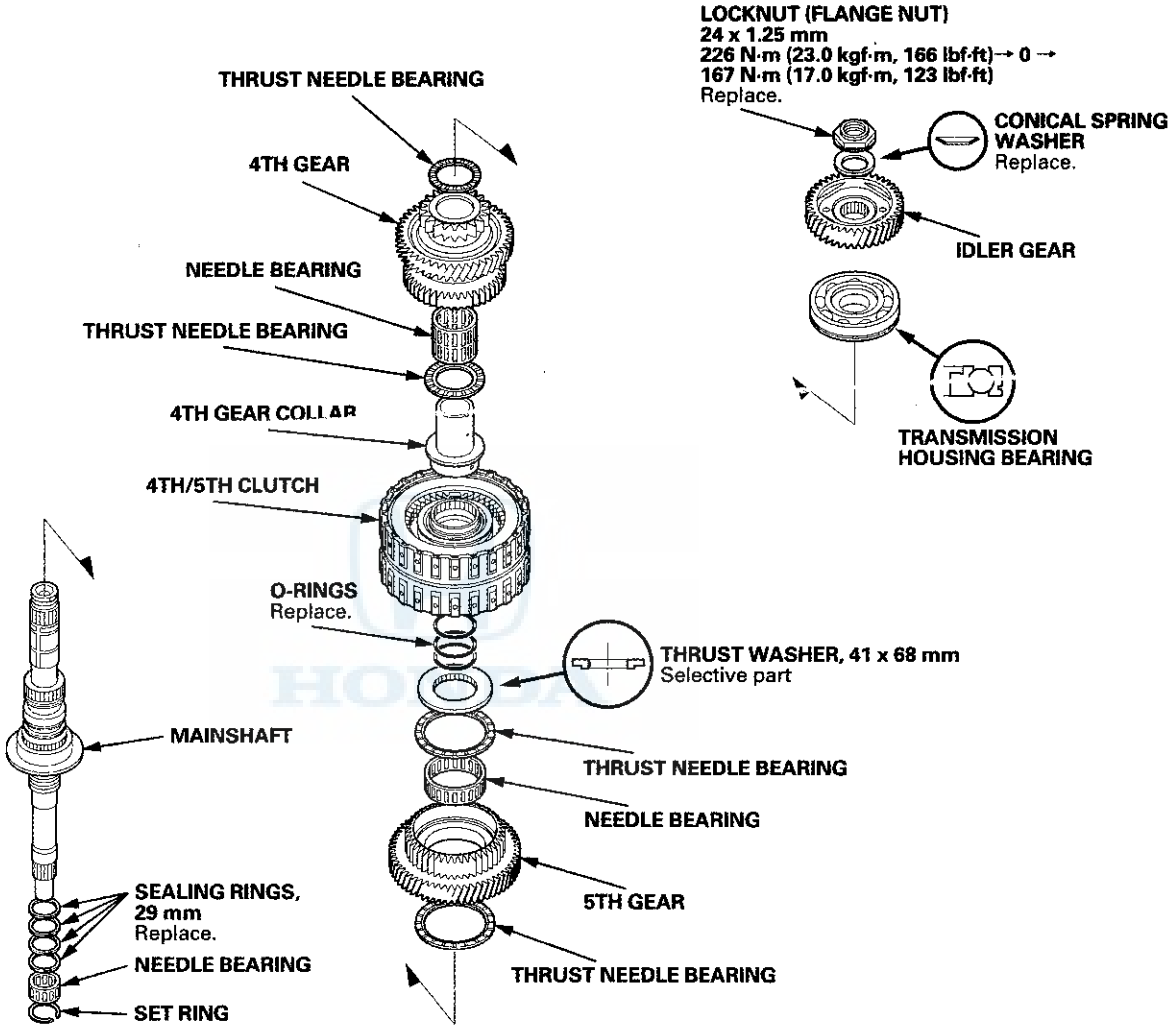


2. Install a new oil seal (A) in the torque converter housing to a depth (B) of 0.5—1.5 mm (0.02—0.06 in) below the torque converter housing surface using the driver handle and the oil seal driver attachment.



Mainshaft Disassembly, Inspection, and Reassembly

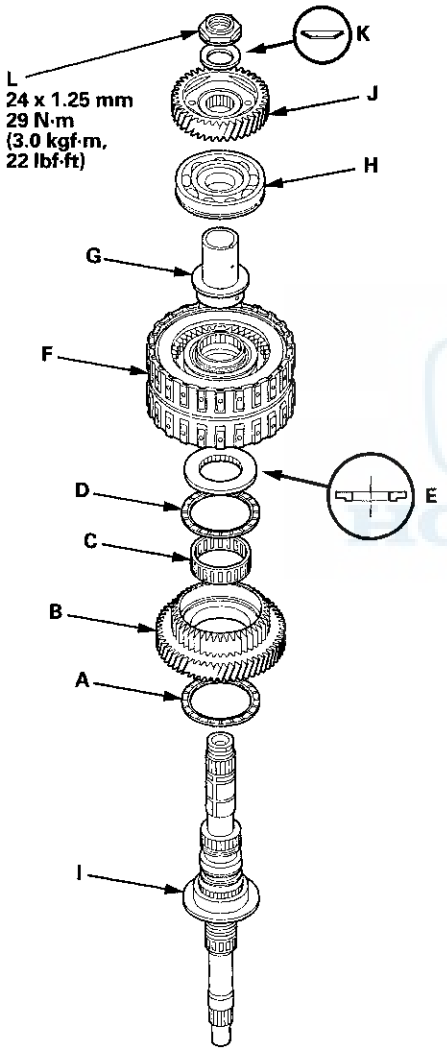
1. Inspect the thrust needle bearings and the needle bearings for galling and rough movement.



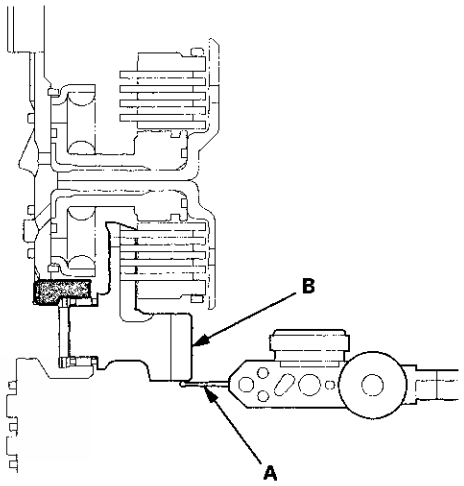
2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing new O-rings, wrap the shaft splines with tape to prevent the O-ring damage.
5. Lubricate all parts with ATF during assembly.
6. Install the conical spring washer and the 41 x 68 mm thrust washer in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission.
8. Check the clearance of 5th gear (see page 14-287).

Mainshaft 5th Gear Axial Clearance Inspection

1. Remove the mainshaft transmission housing bearing (see page 14-270).
2. Install the thrust needle bearing (A), 5th gear (B), the needle bearing (C), the thrust needle bearing (D), the 41 x 68 mm thrust washer (E), the 4th/5th clutch (F), the 4th gear collar (G), and the transmission housing bearing (H) on the mainshaft (I). Do not install the O-rings during inspection.



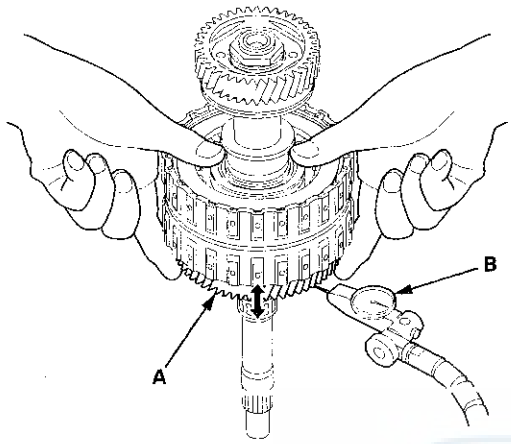
3. Install the idler gear (J) on the mainshaft with a press, then install the conical spring washer (K) and the locknut (L).
4. Tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).
5. Set a dial indicator (A) on 5th gear (B).



(cont'd)

Mainshaft 5th Gear Axial Clearance Inspection (cont'd)

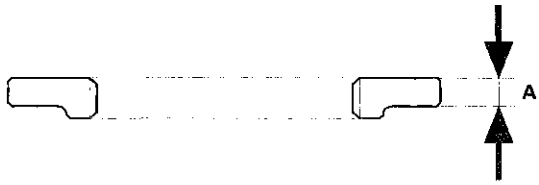
6. Lift 5th gear (A) up while holding the mainshaft, and use the dial indicator (B) to read the 5th gear axial clearance.



7. Measure the 5th gear axial clearance in at least three places while moving 5th gear. Use the average as the actual clearance.

Standard: 0.04—0.10 mm (0.002—0.004 in)

8. If the clearance is out of standard, remove the 41 x 68 mm thrust washer and measure its thickness (A).



9. Select and install a new thrust washer, then recheck.

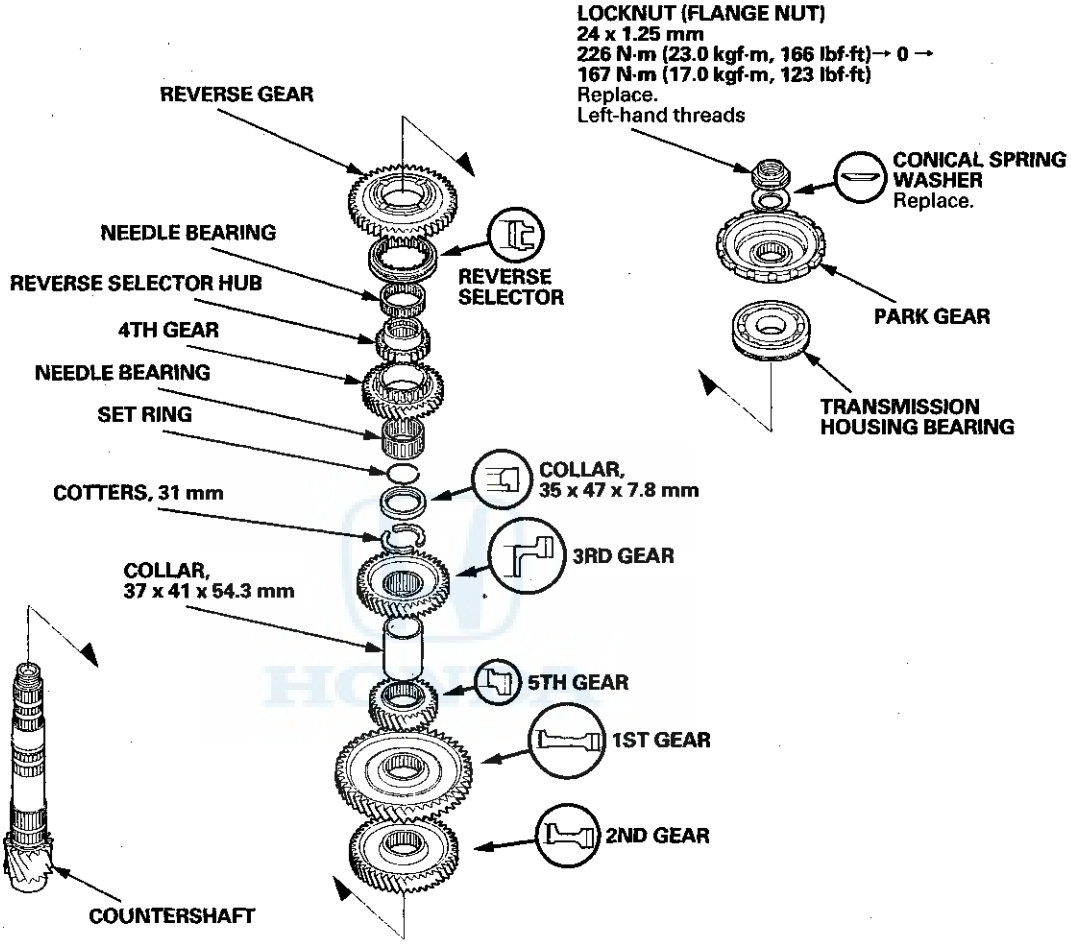
THRUST WASHER, 41 x 68 mm

No.	Thickness
1	4.450 mm (0.1752 in)
2	4.475 mm (0.1762 in)
3	4.500 mm (0.1772 in)
4	4.525 mm (0.1781 in)
5	4.550 mm (0.1791 in)
6	4.575 mm (0.1801 in)
7	4.600 mm (0.1811 in)
8	4.625 mm (0.1821 in)
9	4.650 mm (0.1831 in)
10	4.675 mm (0.1841 in)
11	4.700 mm (0.1850 in)
12	4.725 mm (0.1860 in)
13	4.750 mm (0.1870 in)
14	4.775 mm (0.1880 in)
15	4.800 mm (0.1890 in)

10. After replacing the thrust washer, make sure the clearance is within the standard.
11. Disassemble the installed parts from the mainshaft.
12. Reinstall the transmission housing bearing in the transmission housing (see page 14-271).

Countershaft Disassembly, Inspection, and Reassembly

1. Inspect the needle bearings for galling and rough movement.

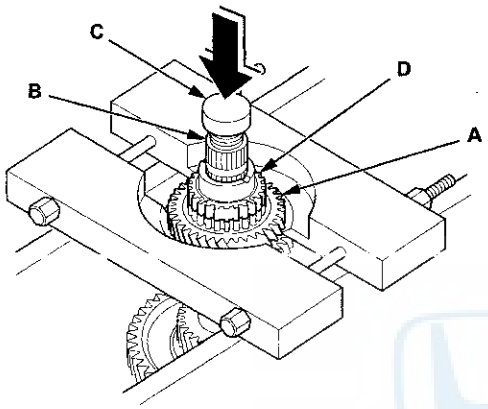


2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Lubricate all parts with ATF during assembly.
5. Install the conical spring washer, the reverse selector, the 35 x 47 x 7.8 mm collar, and all gears in the direction shown.
6. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The countershaft locknut has left-hand threads.
7. Some reverse selector hubs and 3rd gears are press-fitted to the countershaft; special tools are needed to remove them (see page 14-290) and to install them (see page 14-290).

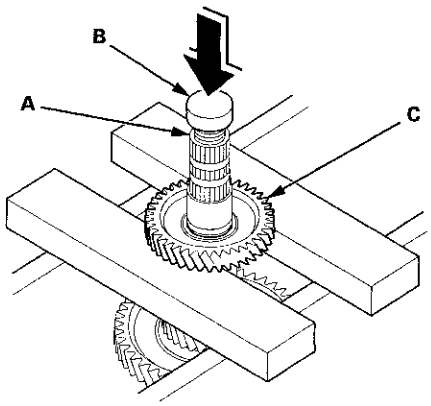
Countershaft Reverse Selector Hub and 3rd Gear Removal

1. Install a commercially available bearing separator on 4th gear (A). Set the countershaft (B) on a press with a spacer (C) between the press and the countershaft, and remove the reverse selector hub (D).

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



2. Remove the needle bearing, the set ring, the 35 x 47 x 7.8 mm collar, and the 31 mm cotters.
3. Set the countershaft (A) on the press with the spacer (B) between the press and the countershaft, and remove 3rd gear (C).



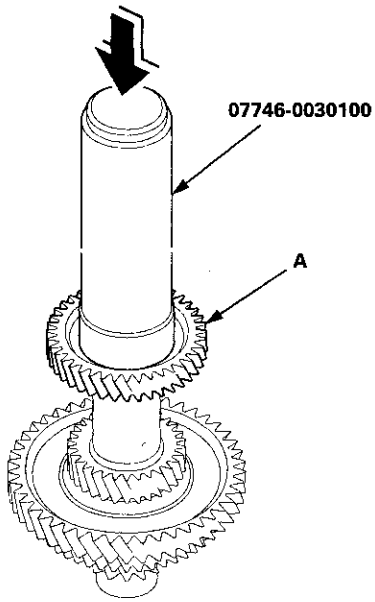
4. Remove the 37 x 41 x 54.3 mm collar, 5th gear, 1st gear, and 2nd gear.

Countershaft Reverse Selector Hub and 3rd Gear Installation

Special Tools Required

Driver Handle, 40 mm I.D. 07746-0030100

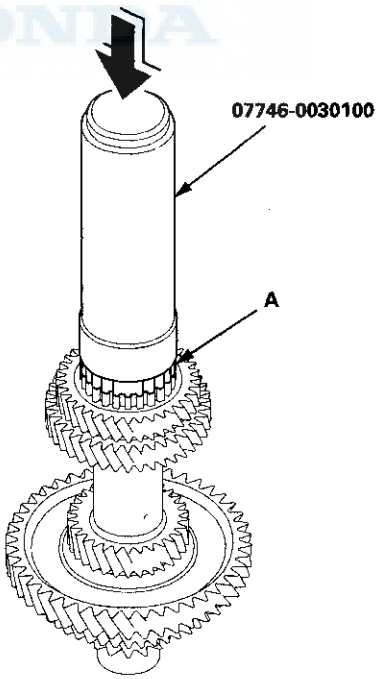
1. Install 2nd gear, 1st gear, 5th gear, and the 37 x 41 x 54.3 mm collar on the countershaft.
2. Slide 3rd gear (A) over the countershaft, and press it in place using the 40 mm driver and a press.



3. Install the 31 mm cotters, the 35 x 47 x 7.8 mm collar, the set ring, the needle bearing, and 4th gear.

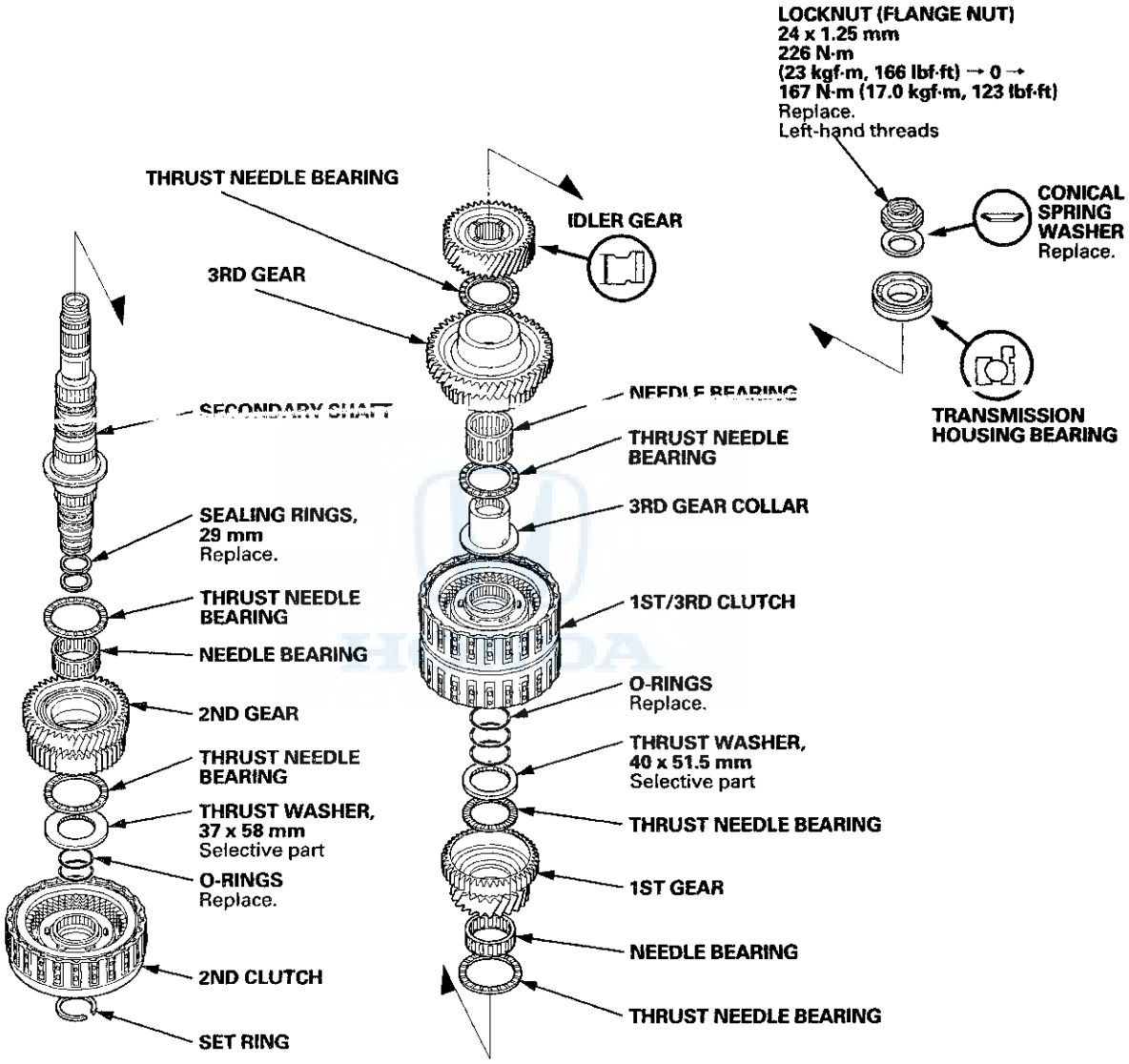
4. Slide the reverse selector hub (A) over the countershaft, then press it in place using the 40 mm driver and the press.

   NOTE: Some reverse selector hubs are not press-fitted, and can be installed without using the 40 mm driver and a press.



Secondary Shaft Disassembly, Inspection, and Reassembly

1. Inspect the thrust needle bearings and the needle bearings for galling and rough movement.



2. Inspect the splines for excessive wear and damage.
3. Check the shaft bearing surface for scoring and excessive wear.
4. Before installing new 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 the idler gear in the direction shown.
7. Replace the locknut and the conical spring washer with new ones when assembling the transmission. The locknut has left-hand threads.
8. Check the clearance of 2nd gear (see page 14-294) and 1st gear (see page 14-295).

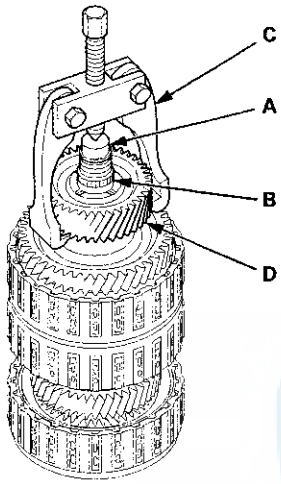
Secondary Shaft Idler Gear Removal and Installation

Special Tools Required

Attachment, 42 mm I.D. 07QAD-P0A0100

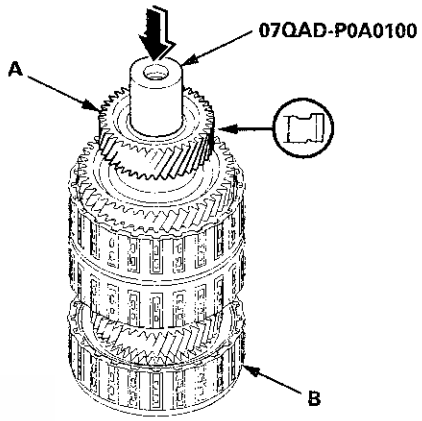
Removal

Place a spacer (A) on the secondary shaft (B), and set a puller (C) under the idler gear (D), then remove the idler gear.



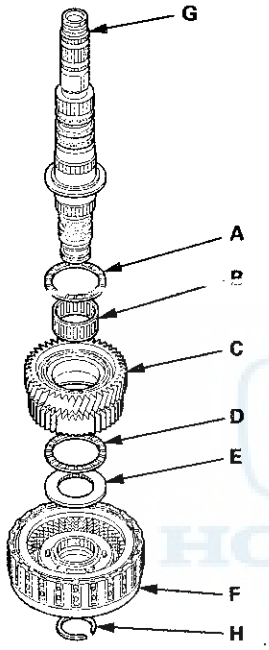
Installation

Install the idler gear (A) in the direction shown on the secondary shaft (B) using the 42 mm attachment and a press.



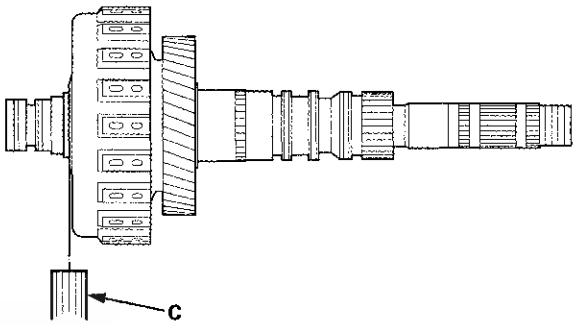
Secondary Shaft 2nd Gear Axial Clearance Inspection

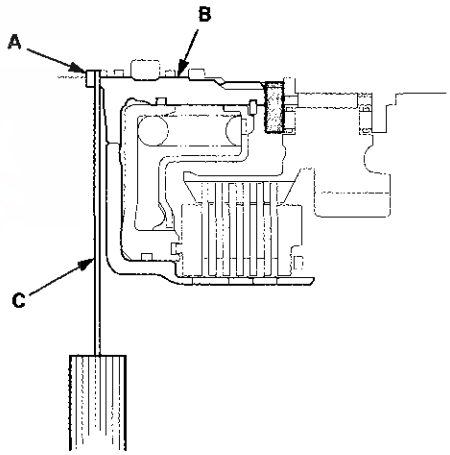
1. Install the thrust needle bearing (A), the needle bearing (B), 2nd gear (C), the thrust needle bearing (D), the 37 x 58 mm thrust washer (E), and the 2nd clutch (F) on the secondary shaft (G), then secure them with the set ring (H). Do not install the O-rings during inspection.



2. Measure the clearance between the set ring (A) and the 2nd clutch guide (B) using 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)





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

No.	Thickness
1	3.900 mm (0.154 in)
2	3.925 mm (0.155 in)
3	3.950 mm (0.156 in)
4	3.975 mm (0.156 in)
5	4.000 mm (0.157 in)
6	4.025 mm (0.158 in)
7	4.050 mm (0.159 in)
8	4.075 mm (0.160 in)
9	4.100 mm (0.161 in)
10	4.125 mm (0.162 in)
11	4.150 mm (0.163 in)
12	4.175 mm (0.164 in)
13	4.200 mm (0.165 in)
14	4.225 mm (0.166 in)
15	4.250 mm (0.167 in)
16	4.275 mm (0.168 in)
17	4.300 mm (0.169 in)
18	4.325 mm (0.170 in)
19	4.350 mm (0.171 in)
20	4.375 mm (0.172 in)

5. After replacing the thrust washer, make sure the clearance is within standard.

6. Disassemble the installed parts from the secondary shaft.

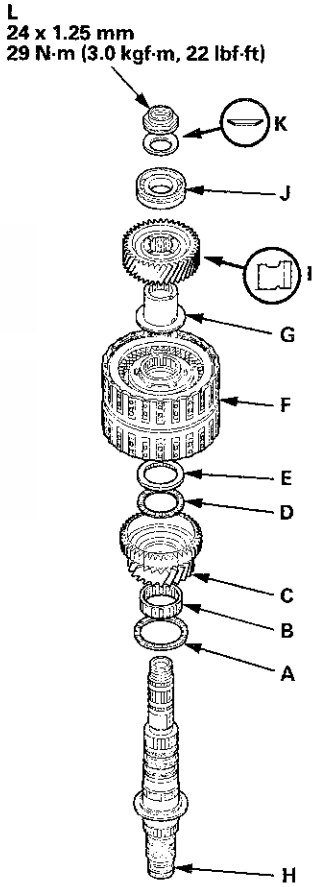
Secondary Shaft 1st Gear Axial Clearance Inspection

Special Tools Required

Attachment, 42 mm I.D. 07QAD-P0A0100

1. Remove the secondary shaft transmission housing bearing (see page 14-270).

2. Install the thrust needle bearing (A), the needle bearing (B), 1st gear (C), the thrust needle bearing (D), the 40 x 51.5 mm thrust washer (E), the 1st/3rd clutch (F), and the 3rd gear collar (G) on the secondary shaft (H). Do not install the O-rings during inspection.



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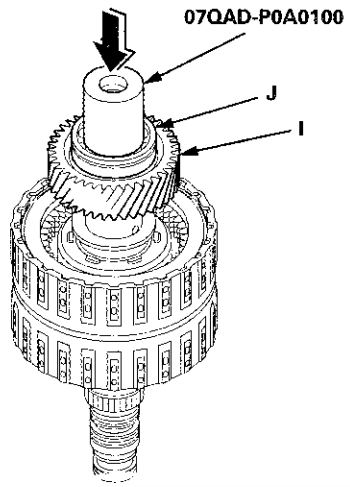
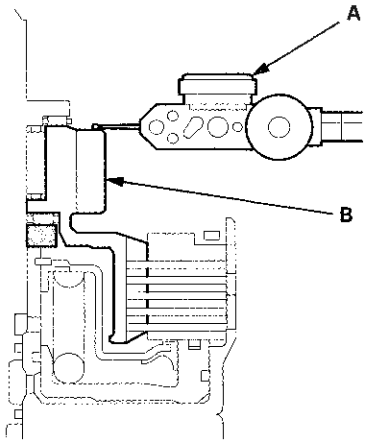
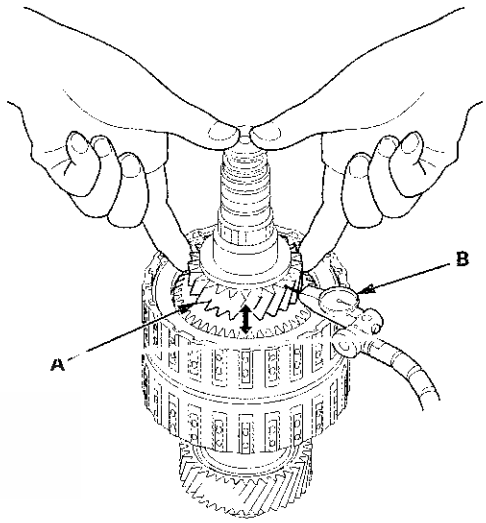
Secondary Shaft 1st Gear Axial Clearance Inspection (cont'd)



3. Install the idler gear (I), then install the transmission housing bearing (J) on the idler gear using the 42 mm I.D. attachment and a press.
4. Install the conical spring washer (K) and the locknut (L), then tighten the locknut to 29 N·m (3.0 kgf·m, 22 lbf·ft).
5. Turn the secondary shaft assembly upside down, and set a dial indicator (A) on 1st gear (B).



6. Lift 1st gear (A) up while holding the secondary shaft, and use the dial indicator (B) to read the 1st gear axial clearance.



7. Measure the 1st gear axial clearance in at least three places while moving 1st gear. Use the average as the actual clearance.

   Standard: 0.04—0.12 mm (0.002—0.005 in)

8. If the clearance is out of standard, remove the 40 x 51.5 mm thrust washer and measure its thickness.
9. Select and install a new thrust washer, then recheck.

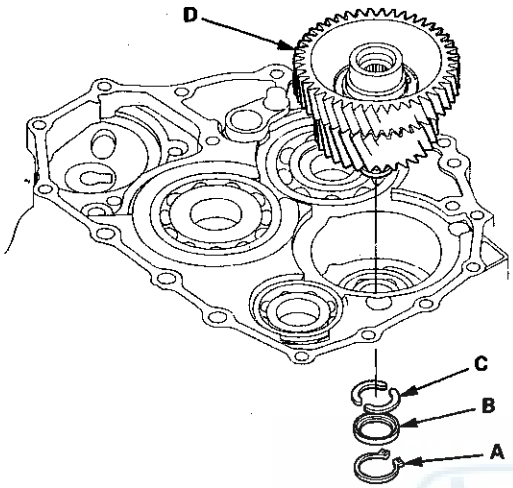
THRUST WASHER, 40 x 51.5 mm

No.	Thickness
1	4.80 mm (0.189 in)
2	4.85 mm (0.191 in)
3	4.90 mm (0.193 in)
4	4.95 mm (0.195 in)
5	5.00 mm (0.197 in)
6	5.05 mm (0.199 in)

10. After replacing the thrust washer, make sure the clearance is within standard.
11. Disassemble the installed parts from the secondary shaft.
12. Reinstall the transmission housing bearing in the transmission housing (see page 14-271).

Idler Gear Shaft Removal and Installation

1. Remove the snap ring (A), the cotter retainer (B), and the 17 mm cotters (C). Do not distort the snap ring.

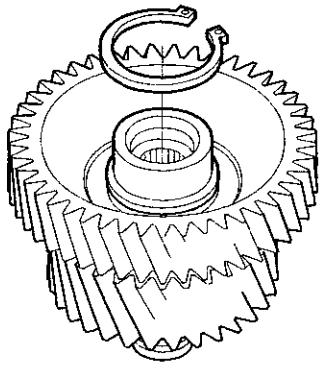


2. Remove the idler gear shaft/idler gear assembly (D) from the transmission housing.
3. Check the snap ring and the cotter retainer for wear and damage. Replace them if they are worn, distorted, or damaged.
4. Install the idler gear shaft/idler gear assembly in the reverse order of removal.

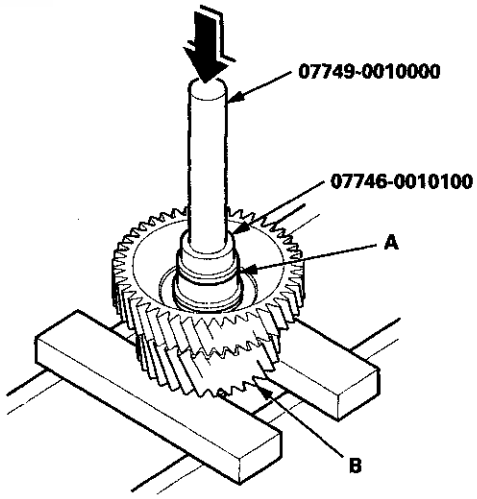
Idler Gear/Idler Gear Shaft Replacement

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 32 x 35 mm 07746-0010100

1. Remove the snap ring from the idler gear/idler shaft assembly. Do not distort the snap ring.



2. Check the snap ring for wear and damage. Replace it if it is worn, distorted, or damaged.
3. Remove the idler gear shaft (A) from the idler gear (B) using the driver handle, the 32 x 35 mm attachment, and a press.



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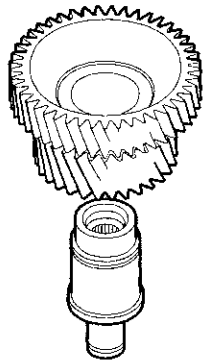
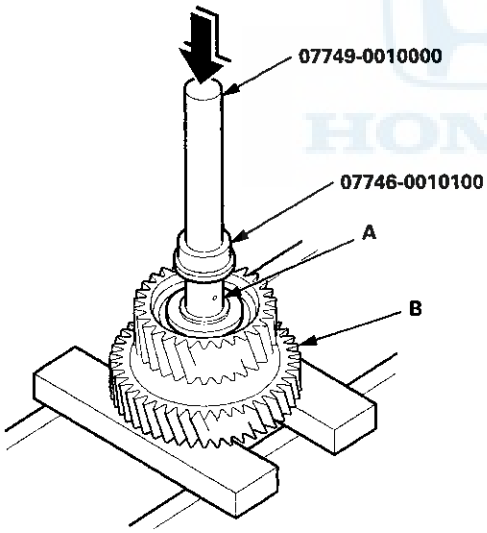
Idler Gear/Idler Gear Shaft Replacement (cont'd)

4. Replace the idler gear and/or the idler gear shaft, and attach the idler gear shaft to the idler gear.



5. Install the idler gear shaft (A) in the idler gear (B) using the driver handle, the 32 x 35 mm attachment, and a press.



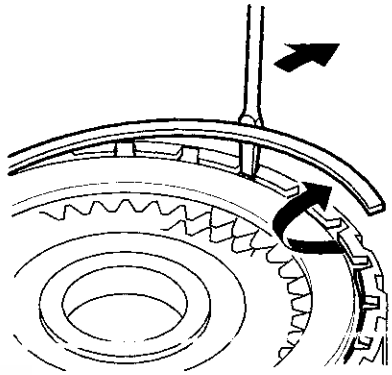
6. Install the snap ring.

Clutch Disassembly

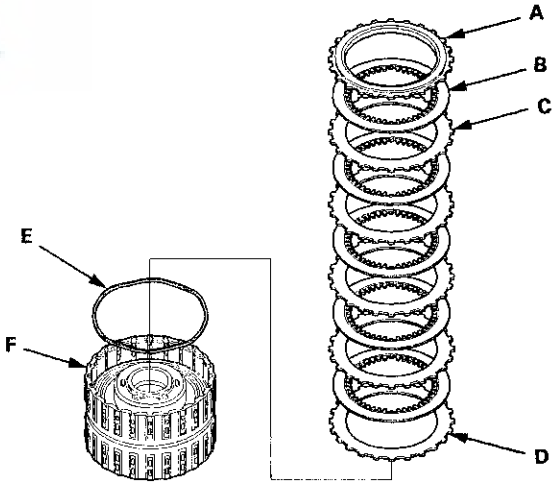
Special Tools Required

Clutch Spring Compressor Set 07LAE-PX40000

1. Remove the snap ring using a screwdriver.

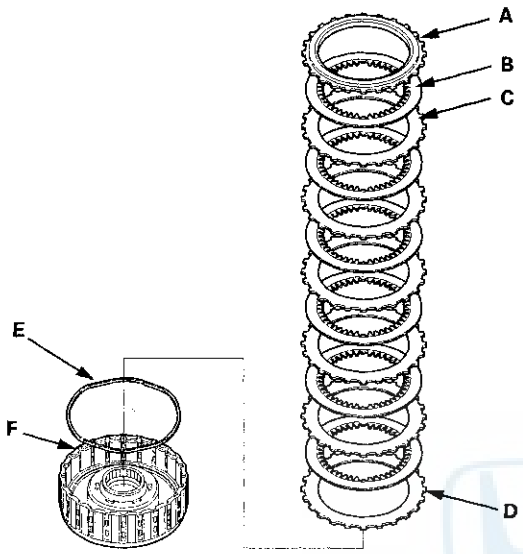


2. Remove the clutch end-plate (A), the clutch discs (B) (5), the clutch wave-plates (C) (4), the clutch flat-plate (D), and the waved spring (E) from the 1st clutch drum (F).



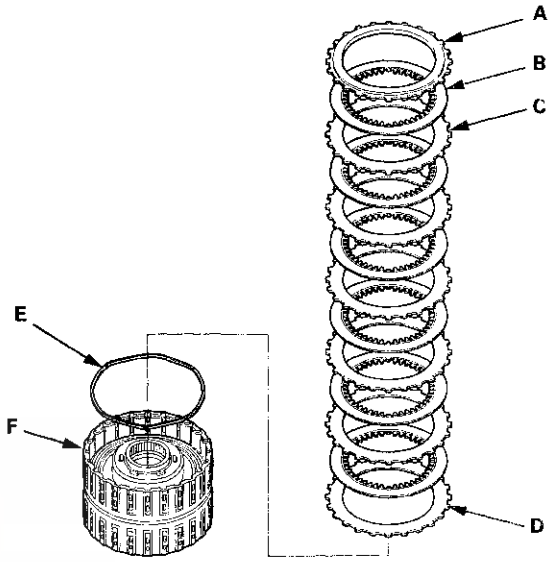
3. Make a reference mark on the clutch flat-plate.

4. Remove the clutch end-plate (A), the clutch discs (B) (6), the clutch wave-plates (C) (5), the clutch flat-plate (D), and the waved spring (E) from the 2nd clutch drum (F).



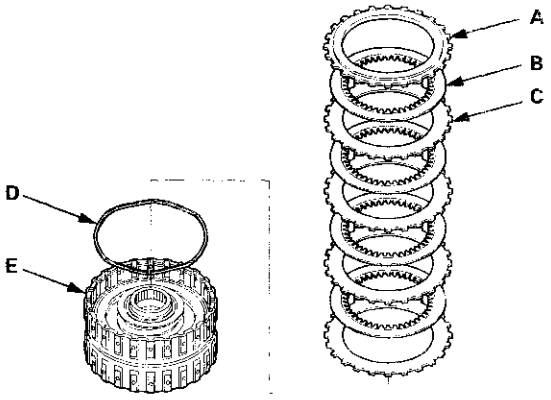
5. Make a reference mark on clutch the flat-plate.

6. Remove the clutch end-plate (A), the clutch discs (B) (6), the clutch wave-plates (C) (5), the clutch flat-plate (D), and the waved spring (E) from the 3rd clutch drum (F).



7. Make reference marks on the clutch flat-plate.

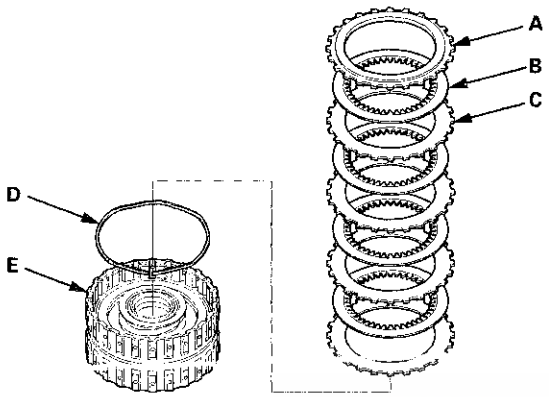
8. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (4), and the waved spring (D) from the 4th clutch drum (E).



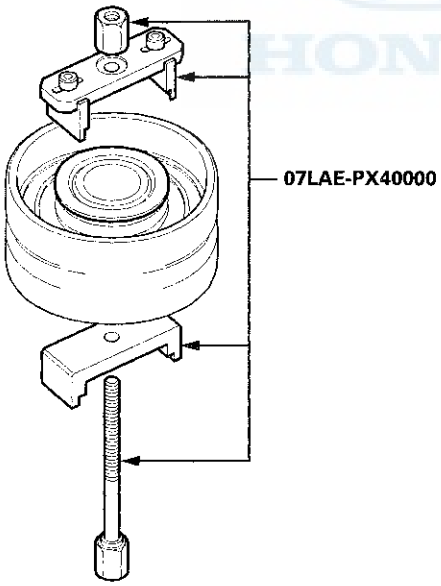
(cont'd)

Clutch Disassembly (cont'd)

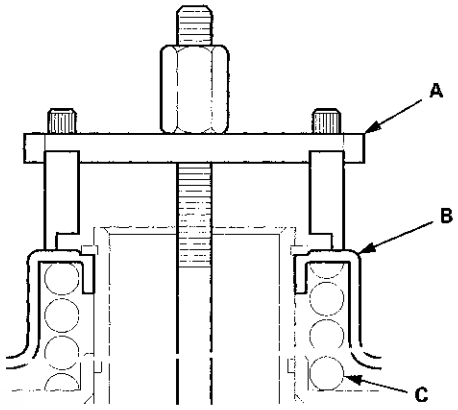
9. Remove the clutch end-plate (A), the clutch discs (B) (4), the clutch wave-plates (C) (4), and the waved spring (D) from the 5th clutch drum (E).



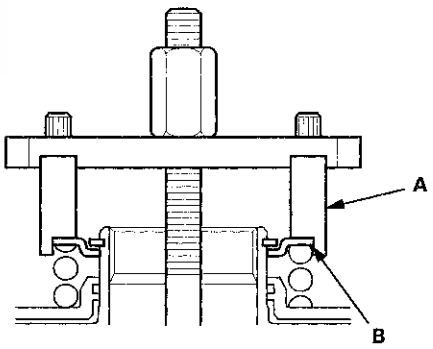
10. Install the clutch spring compressor.



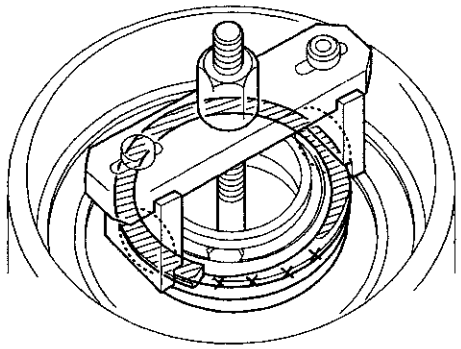
11. Set the clutch spring compressor (A) on the spring retainer (B) of the 1st, 2nd, and 3rd clutches so that it pushes on the clutch return spring (C).



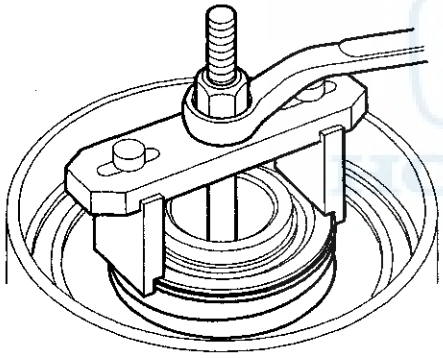
12. Be sure the clutch spring compressor (A) is adjusted to make full contact with the spring retainer (B) on the 4th and 5th clutches.



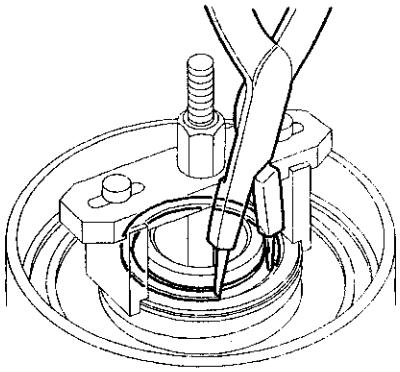
13. Check the placement of the clutch spring compressor. If either end of the clutch spring compressor is set over an area of the spring retainer which is unsupported by the return spring, the spring retainer may be damaged.



14. Compress the return spring until the snap ring can be removed.

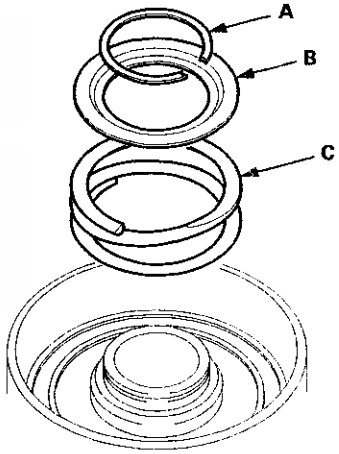


15. Remove the snap ring using snap ring pliers.



16. Remove the clutch spring compressor.

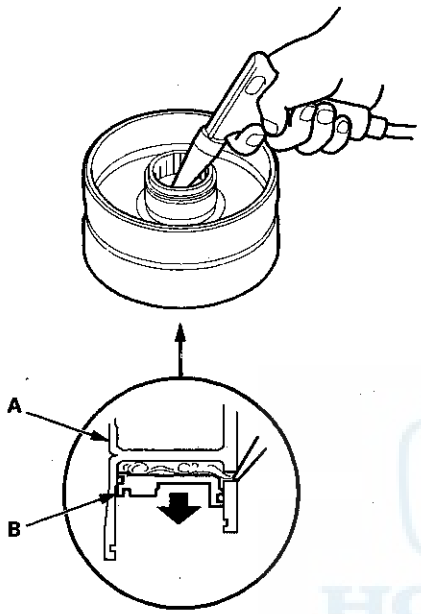
17. Remove the snap ring (A), the spring retainer (B), and the return spring (C).



(cont'd)

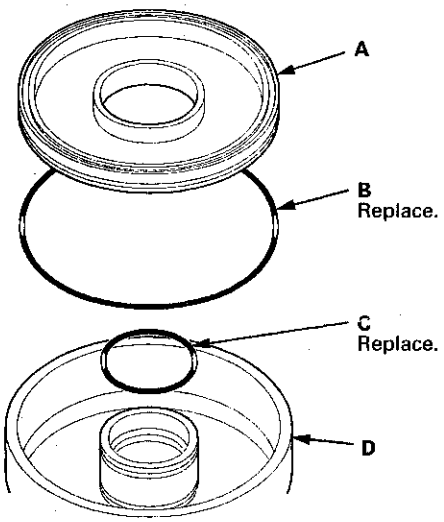
Clutch Disassembly (cont'd)

18. 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.



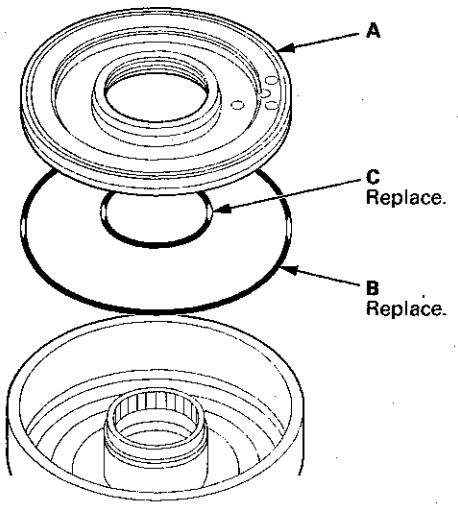
19. 1st, 2nd, and 3rd clutches:

    Remove the clutch piston (A), then remove the O-ring (B) from the clutch piston, and remove the O-ring (C) from the clutch drum (D).



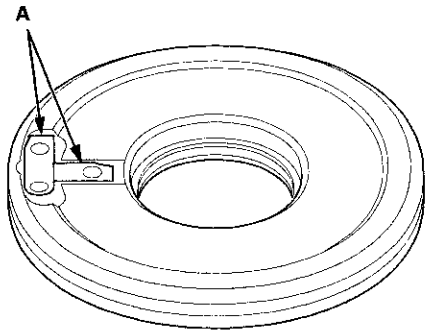
20. 4th and 5th clutches:

    Remove the clutch piston (A), then remove the outer O-ring (B) and the inner O-ring (C) from the clutch piston.

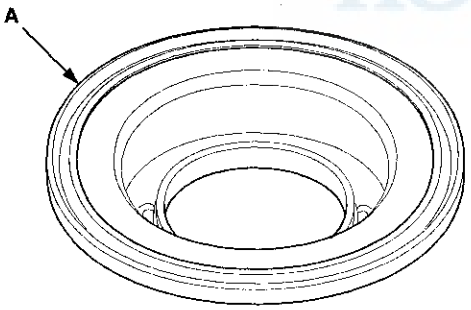


Clutch Inspection

1. Inspect the 4th and 5th clutch pistons and the clutch piston check valves (A).



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. If the spring retainer is worn or damaged, replace it.
5. Check the oil seal (A) on the spring retainer of the 1st, 2nd, and 3rd clutches for wear, damage, and peeling.



6. If the oil seal is worn, damaged, or peeling, replace the spring retainer.
7. Inspect the clutch discs, the clutch plates, and the clutch end-plate for wear, damage, and discoloration.

Clutch Discs for All Models
Standard Thickness: 1.94 mm (0.076 in)

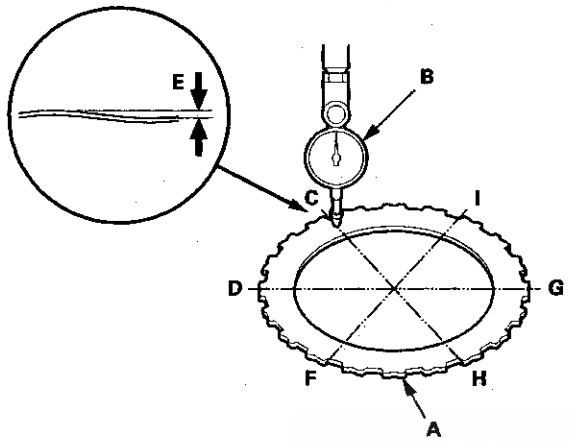
Clutch Plates
Standard Thickness:

1st Clutch	**Wave-plates:**	**1.6 mm (0.063 in)**
	Flat-plates:	**1.6 mm (0.063 in)**
2nd Clutch	**Wave-plates:**	**2.0 mm (0.079 in)**
	Flat-plate:	**2.0 mm (0.079 in)**
3rd Clutch	**Wave-plates:**	**1.6 mm (0.063 in)**
	Flat-plates:	**1.6 mm (0.063 in)**
4th Clutch (wave-plates):		**2.0 mm (0.079 in)**
5th Clutch (wave-plates):		**2.0 mm (0.079 in)**

8. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, do the clutch clearance inspection (see page 14-304).
9. If any clutch plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other wave-plates for a phase difference (see page 14-304). If the clutch plate is replaced, do the clutch clearance inspection (see page 14-304).
10. If the clutch end-plate is worn, damaged, or discolored, do the clutch clearance inspection (see page 14-304), then replace the clutch end-plate.

Clutch Wave-plate Phase Difference Inspection

1. Place the clutch wave-plate (A) on a surface plate, and set a dial indicator (B) on the wave-plate.



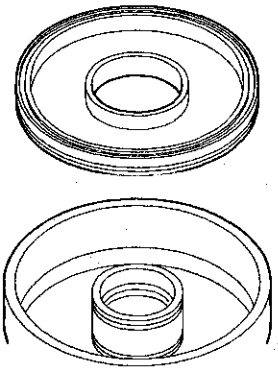
2. Find the bottom (C) of a phase difference of the wave-plate, zero the dial indicator and make a reference mark on the bottom of the wave-plate.
3. Rotate the wave-plate about 60-degrees apart from the bottom while holding the wave-plate by its circumference. The dial indicator should be at the top (D) of a phase difference. Do not rotate the wave-plate while holding its surface, always rotate it while holding its edges.
4. Read the dial indicator. The dial indicator reads the phase difference (E) of the wave-plate between bottom and top.

   Standard Phase Difference:
   1st Clutch: 0.15—0.25 mm (0.006—0.010 in)
   2nd Clutch: 0.10—0.20 mm (0.004—0.008 in)
   3rd Clutch: 0.10—0.20 mm (0.004—0.008 in)
   4th Clutch: 0.10—0.20 mm (0.004—0.008 in)
   5th Clutch: 0.10—0.20 mm (0.004—0.008 in)
5. Rotate the wave-plate about 60-degrees. The dial indicator should be at the bottom of a phase difference (F and G), and zero the dial indicator.
6. Measure the phase difference at the other two tops (H and I) of the wave-plate by following steps 3 thru 5.
7. If two of the three measurements are within the standard, the wave-plate is OK. If two of the three measurements are out of the standard, replace the wave-plate.

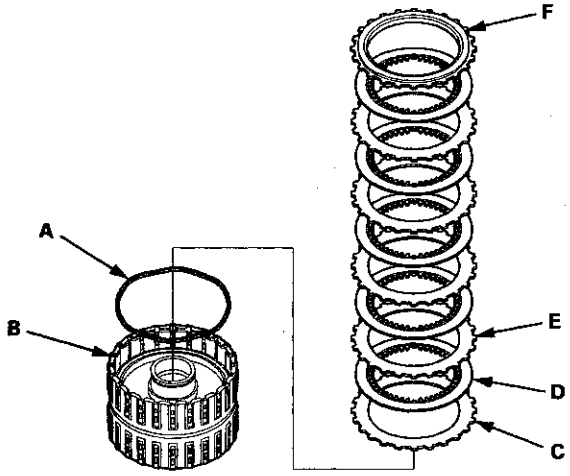
Clutch Clearance Inspection

Special Tools Required
Clutch Compressor Attachment 07ZAE-PRP0100

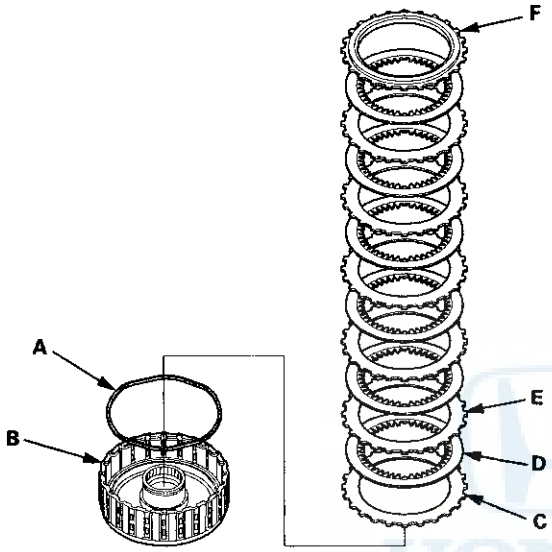
1. Inspect the clutch piston, the clutch discs, the clutch plates, and the clutch end-plate for wear and damage (see page 14-303), and inspect the clutch wave-plate phase difference (see page 14-304), if necessary.
2. Install the clutch piston in the clutch drum. Do not install the O-rings during inspection.



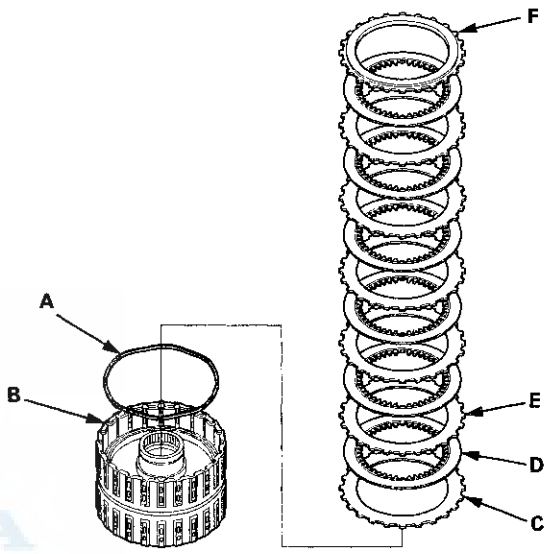
3. Install the waved spring (A) in the 1st clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch discs (D) (5) and the clutch wave-plates (E) (4), then install the clutch end-plate (F) with the flat side toward the top disc.



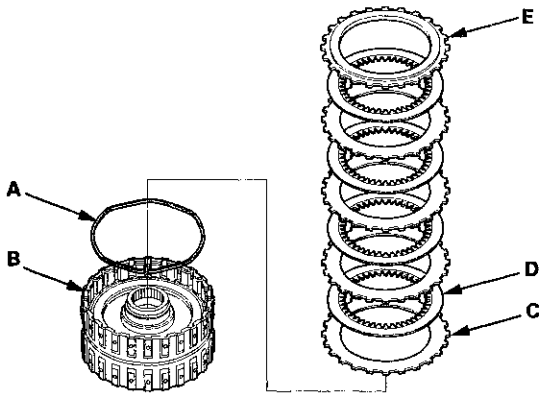
4. Install the waved spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch discs (D) (6) and the wave-plates (E) (5), then install the clutch end-plate (F) with the flat side toward the top disc.



5. Install the waved spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch discs (D) (6) and the clutch wave-plates (E) (5), then install the clutch end-plate (F) with the flat side toward the top disc.



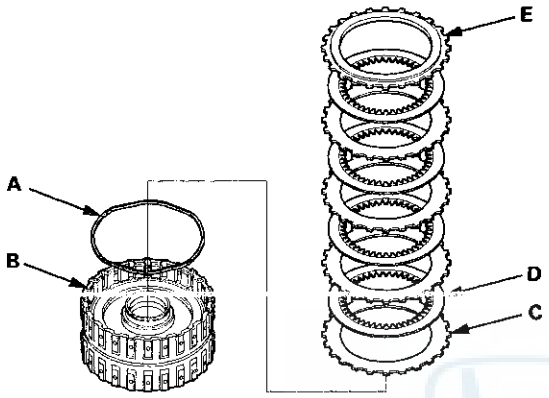
6. Install the waved spring (A) in the 4th clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (4) and the clutch discs (D) (4), then install the clutch end-plate (E) with the flat side toward the top disc.



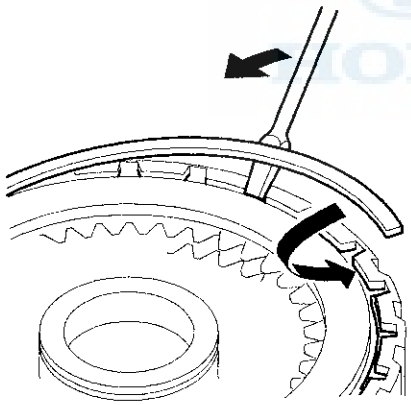
(cont'd)

Clutch Clearance Inspection (cont'd)

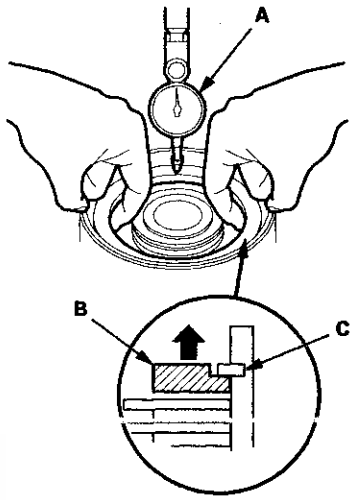
7. Install the waved spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the clutch wave-plates (C) (4) and the clutch discs (D) (4), then install the clutch end-plate (E) with the flat side toward the top disc.



8. Install the snap ring using a screwdriver.

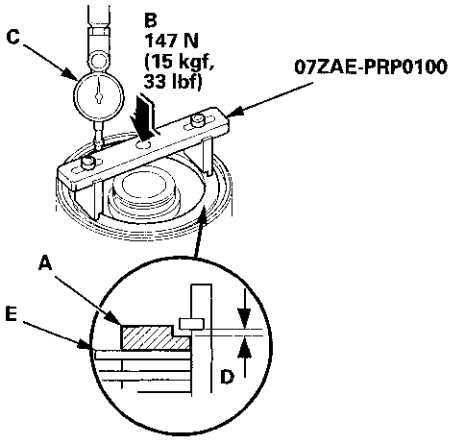


9. Set a dial indicator (A) on the clutch end-plate (B).



10. Zero the dial indicator with the clutch end-plate lifted up to the snap ring (C).

11. Release the clutch end-plate to lower the clutch end-plate, then put the clutch compressor attachment on the clutch end-plate (A).

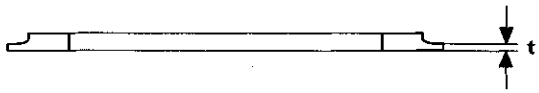


12. Press the clutch compressor attachment down with 147 N (15 kgf, 33 lbf) (B) using a force gauge, and read the dial indicator (C).

13. The dial indicator reads the clearance (D) between the clutch end-plate and the top disc (E). Take measurements in at least three places, and use the average as the actual clearance.

Clearance between Clutch End-Plate and Top Disc
Standard:
1st Clutch: 1.38—1.58 mm (0.054—0.062 in)
2nd Clutch: 1.14—1.34 mm (0.045—0.053 in)
3rd Clutch: 1.23—1.43 mm (0.048—0.056 in)
4th Clutch: 0.93—1.13 mm (0.037—0.044 in)
5th Clutch: 0.93—1.13 mm (0.037—0.044 in)

14. If the clearance is out of the standard, select a new clutch end-plate from the following table.



1ST CLUTCH END-PLATES

Mark	Thickness (t)
1	2.6 mm (0.102 in)
2	2.7 mm (0.106 in)
3	2.8 mm (0.110 in)
4	2.9 mm (0.114 in)
5	3.0 mm (0.118 in)
6	3.1 mm (0.122 in)
7	3.2 mm (0.126 in)
8	3.3 mm (0.130 in)
9	3.4 mm (0.134 in)

(cont'd)

Clutch Clearance Inspection (cont'd)

2ND CLUTCH END-PLATES

Mark	Thickness (t)
10	2.4 mm (0.094 in)
11	2.5 mm (0.098 in)
1	2.6 mm (0.102 in)
2	2.7 mm (0.106 in)
3	2.8 mm (0.110 in)
4	2.9 mm (0.114 in)
5	3.0 mm (0.118 in)
6	3.1 mm (0.122 in)
7	3.2 mm (0.126 in)

3RD, 4TH, and 5TH CLUTCH END-PLATES

Mark	Thickness (t)
1	2.1 mm (0.083 in)
2	2.2 mm (0.087 in)
3	2.3 mm (0.091 in)
4	2.4 mm (0.094 in)
5	2.5 mm (0.098 in)
6	2.6 mm (0.102 in)
7	2.7 mm (0.106 in)
8	2.8 mm (0.110 in)
9	2.9 mm (0.114 in)

15. Install a new clutch end-plate, and 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 the clutch plates.

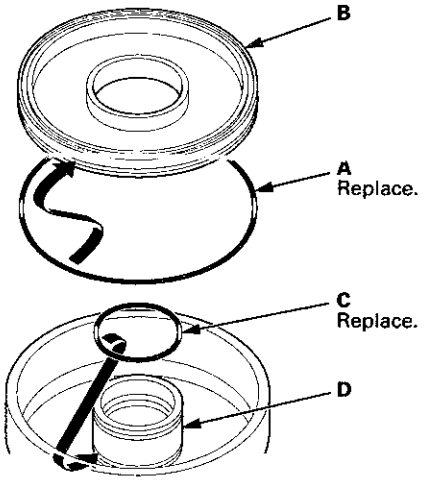
1st, 2nd, and 3rd Clutch Reassembly

Special Tools Required

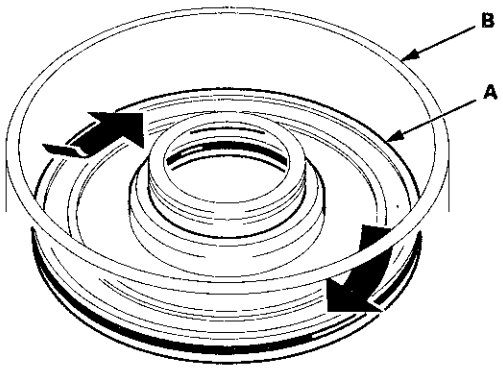
Clutch Spring Compressor Set 07LAE-PX40000

NOTE: Hold the spring compressor in a vise with soft jaws. Be careful not to damage the clutch drum.

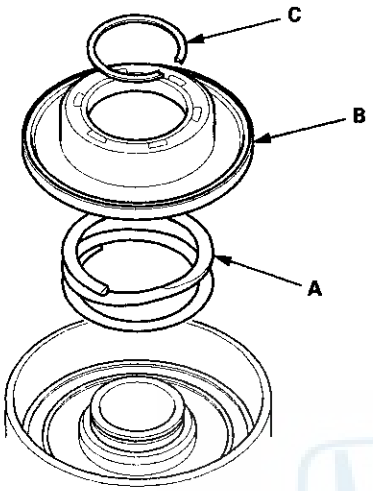
1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.
2. Install a new O-ring (A) in the 1st, 2nd, and 3rd clutch pistons (B), and install a new O-ring (C) on the clutch drums (D).



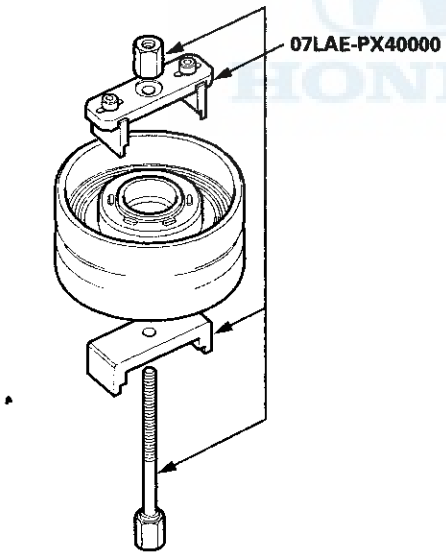
3. Install the clutch piston (A) in the clutch drum (B). Apply pressure and rotate to ensure proper seating. Lubricate the piston O-ring with ATF before installing. Do not pinch the O-ring by installing the piston with too much force.



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

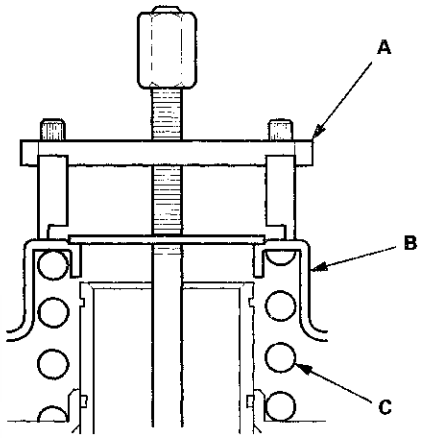


5. Install the clutch spring compressor.



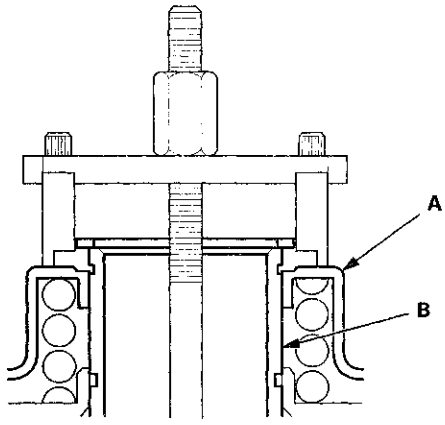
6. Set the clutch spring compressor (A) on the spring retainer (B) so that it compresses the clutch return spring (C).

NOTE: Coat the circumference of the spring retainer and areas where the spring retainer contacts the clutch piston with ATF before installation.



7. Compress the return spring carefully until the snap ring can be installed. Check that the spring retainer (A) is properly installed on the clutch hub (B). If improperly installed, change the position of the spring compressor and the spring retainer.

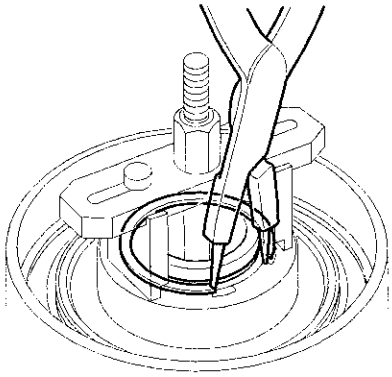
NOTE: Insert the spring retainer so it can be adjusted (center of tolerance) to prevent damaging the spring retainer oil seal.



(cont'd)

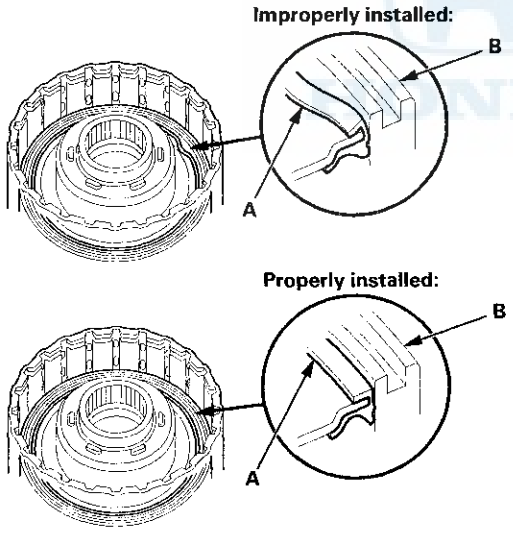
1st, 2nd, and 3rd Clutch Reassembly (cont'd)

8. Install the snap ring using snap ring pliers.

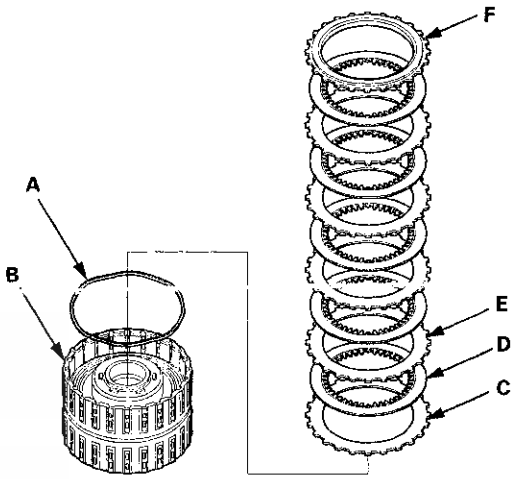


9. Remove the clutch spring compressor.

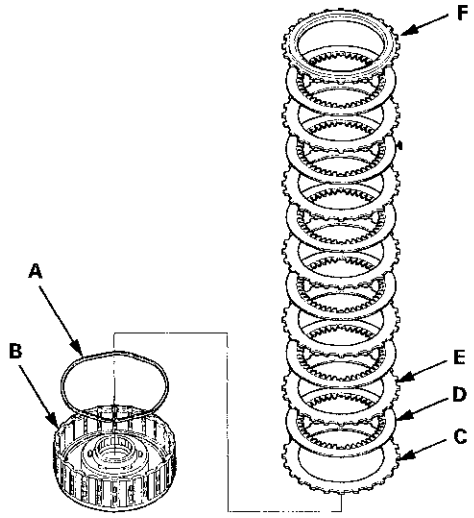
10. Make sure the oil seal of the spring retainer (A) is properly installed on the clutch piston (B). If the oil seal was damaged or cracked, replace the spring retainer.



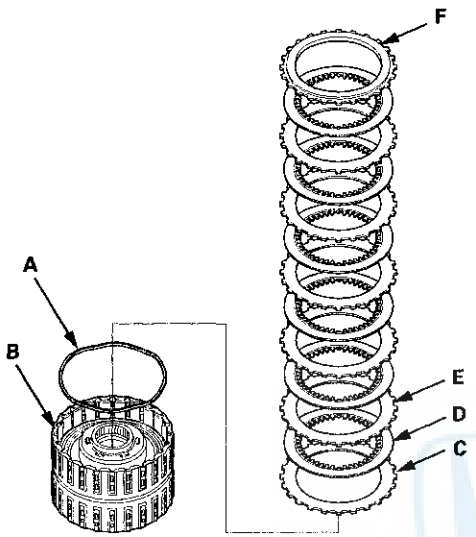
11. Install the wave spring (A) in the 1st clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch discs (D) (5) and the wave-plates (E) (4). Install the clutch end-plate (F) with the flat side toward the top disc.



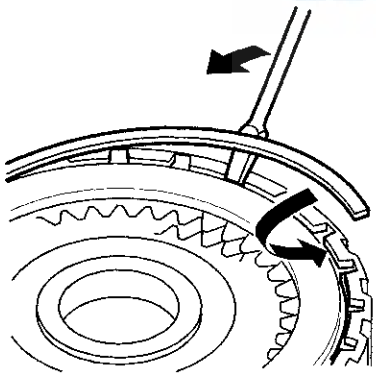
12. Install the wave spring (A) in the 2nd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch discs (D) (6) and the wave-plates (E) (5). Install the clutch end-plate (F) with the flat side toward the top disc.



13. Install the wave spring (A) in the 3rd clutch drum (B). Install the clutch flat-plate (C), then starting with the clutch disc, alternately install the clutch discs (D) (6) and the wave-plates (E) (5). Install the clutch end-plate (F) with the flat side toward the top disc.



14. Install the snap ring using a screwdriver to secure the clutch end-plate.

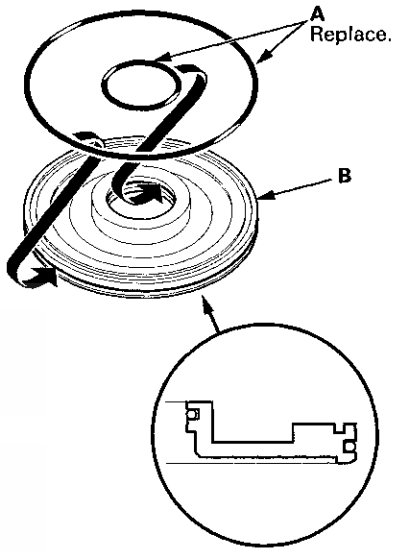


15. Check that the clutch piston moves by applying air pressure into fluid passage.

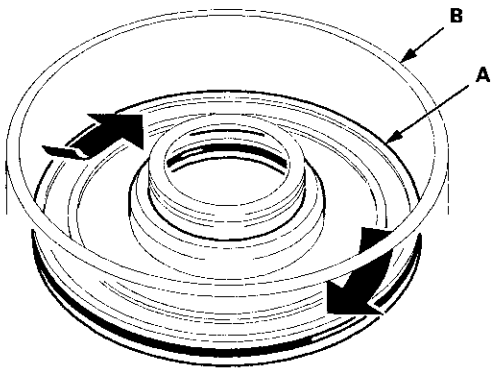
Special Tools Required

Clutch Spring Compressor Set 07LAE-PX40000

1. Soak the clutch discs thoroughly in ATF for at least 30 minutes.
2. Install new O-rings (A) on the clutch piston (B). Do not twist the O-rings.



3. Install the clutch piston (A) in the clutch drum (B) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



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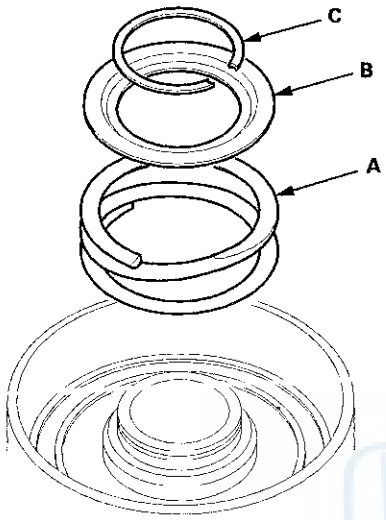
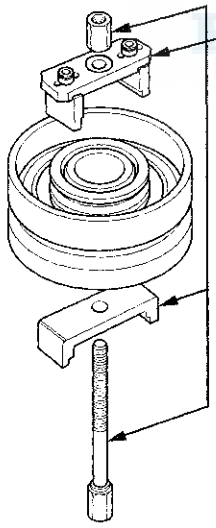
4th and 5th Clutch Reassembly (cont'd)

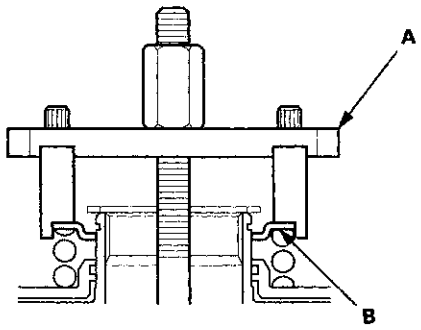
4. Set the return spring (A) and the spring retainer (B) on the clutch piston, and position the snap ring (C) on the spring retainer.



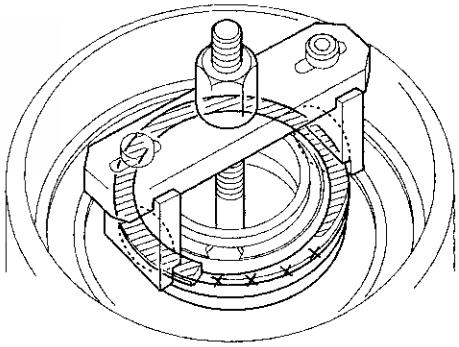
5. Install the clutch spring compressor.



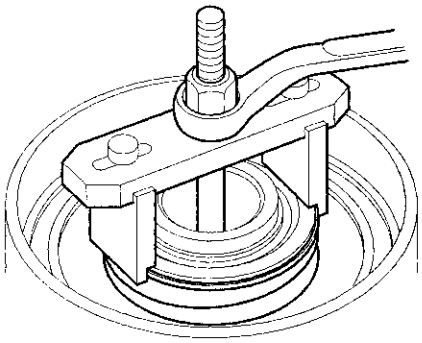
6. Be sure the clutch spring compressor (A) is adjusted to make full contact with the spring retainer (B).



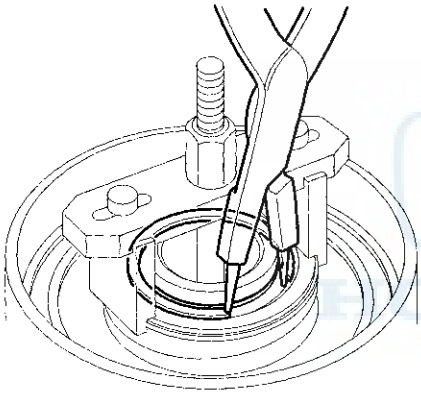
7. Check the placement of the clutch spring compressor. If either end of the clutch spring compressor is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.



8. Compress the return spring until the snap ring can be installed.

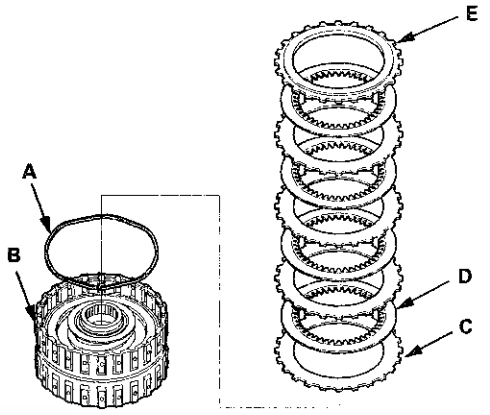


9. Install the snap ring using snap ring pliers.

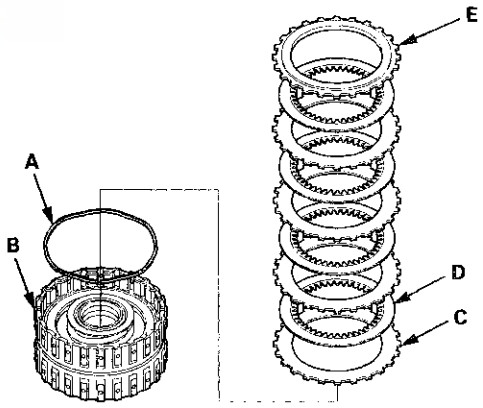


10. Remove the clutch spring compressor.

11. Install the wave spring (A) in the 4th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (4) and the clutch discs (D) (4). Install the clutch end-plate (E) with the flat side toward the top disc.



12. Install the wave spring (A) in the 5th clutch drum (B). Starting with the clutch wave-plate, alternately install the wave-plates (C) (4) and the clutch discs (D) (4). Install the clutch end-plate (E) with the flat side toward the top disc.



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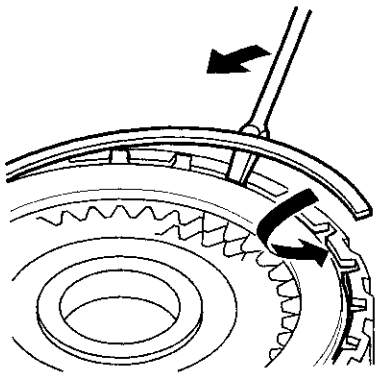
4th and 5th Clutch Reassembly (cont'd)

13. Install the snap ring using a screwdriver to secure the clutch end-plate.

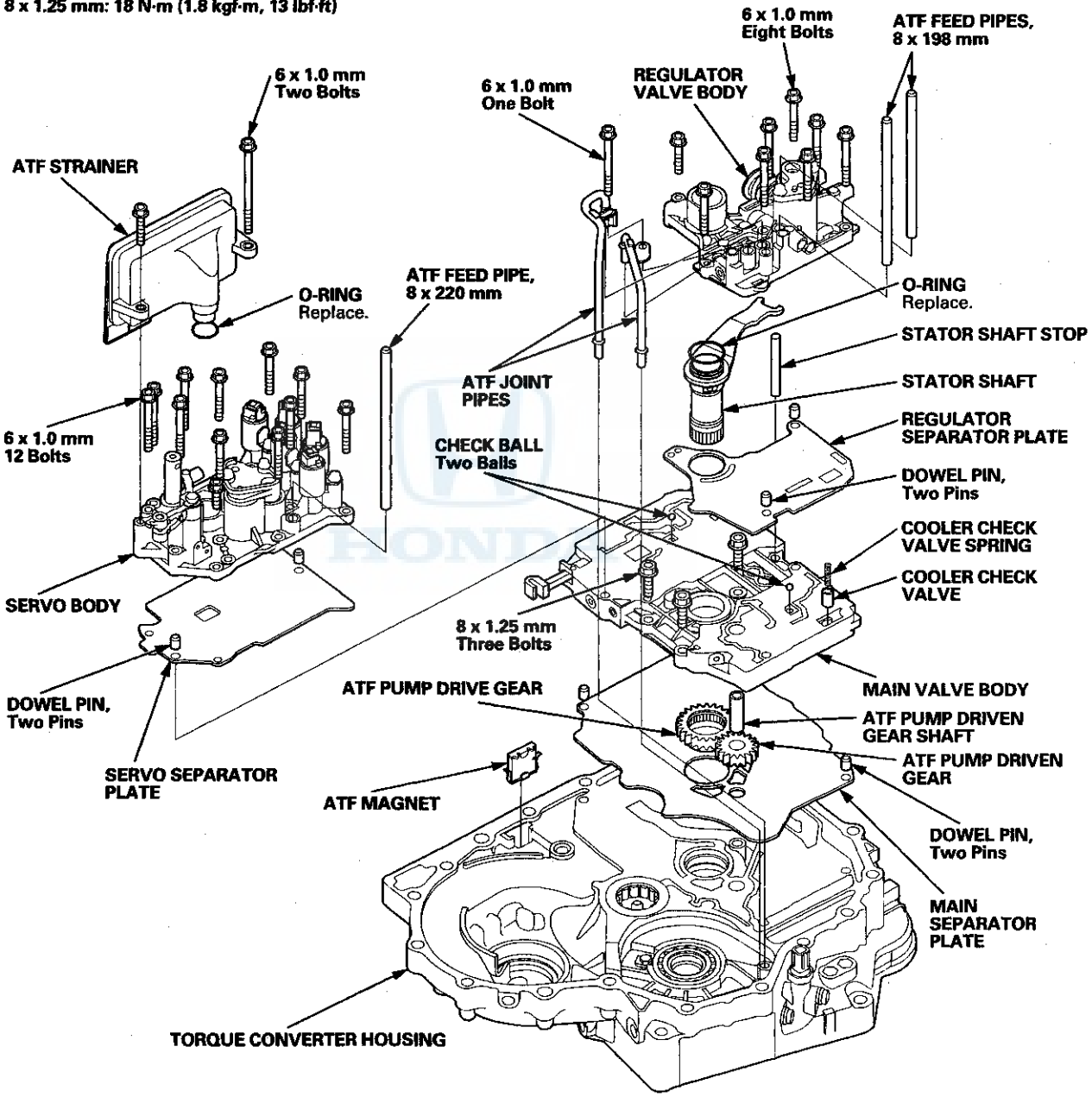


14. Check that the clutch piston moves by applying air pressure into fluid passage.

Valve Body and ATF Strainer Installation

Exploded View

Torque Specifications:
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)
8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)

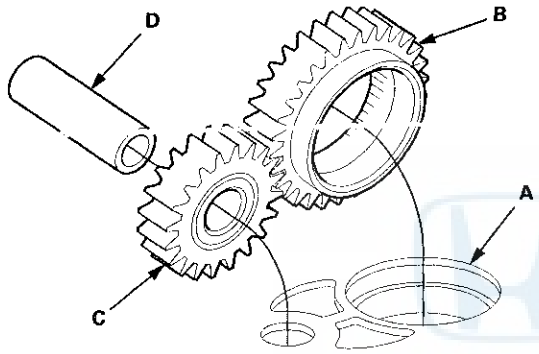


(cont'd)

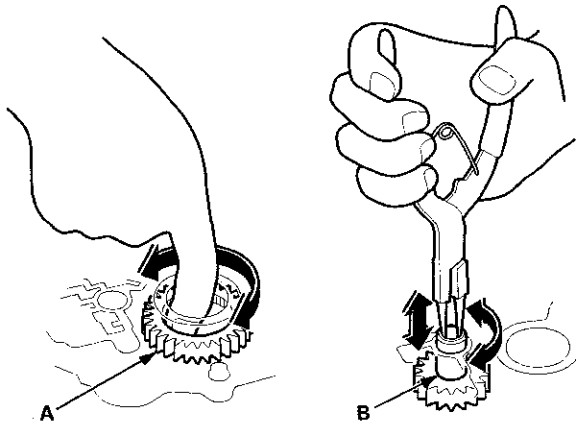
Valve Body and ATF Strainer Installation (cont'd)

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

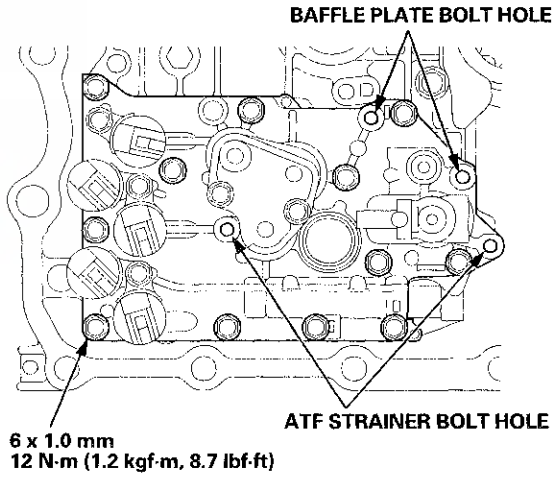
1. Make sure that the ATF magnet is clean and installed in the torque converter housing.
2. Install the main separator plate (A) and the two dowel pins on the torque converter housing. Then install the ATF pump drive gear (B), the ATF pump driven gear (C), and the ATF pump driven gear shaft (D). Install the ATF pump driven gear with its grooved and chamfered side facing down.



3. Install the main valve body (three bolts).
4. 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.



5. If the ATF pump drive gear and the 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.
6. Make sure that the two check balls and the cooler check valve are in the main valve body, then install the cooler check valve spring in the cooler check valve.
7. Install the servo separator plate and the two dowel pins on the main valve body.
8. Install the servo body (12 bolts).
9. Install a new O-ring on the ATF strainer, and install the ATF strainer (two bolts) on the servo body.

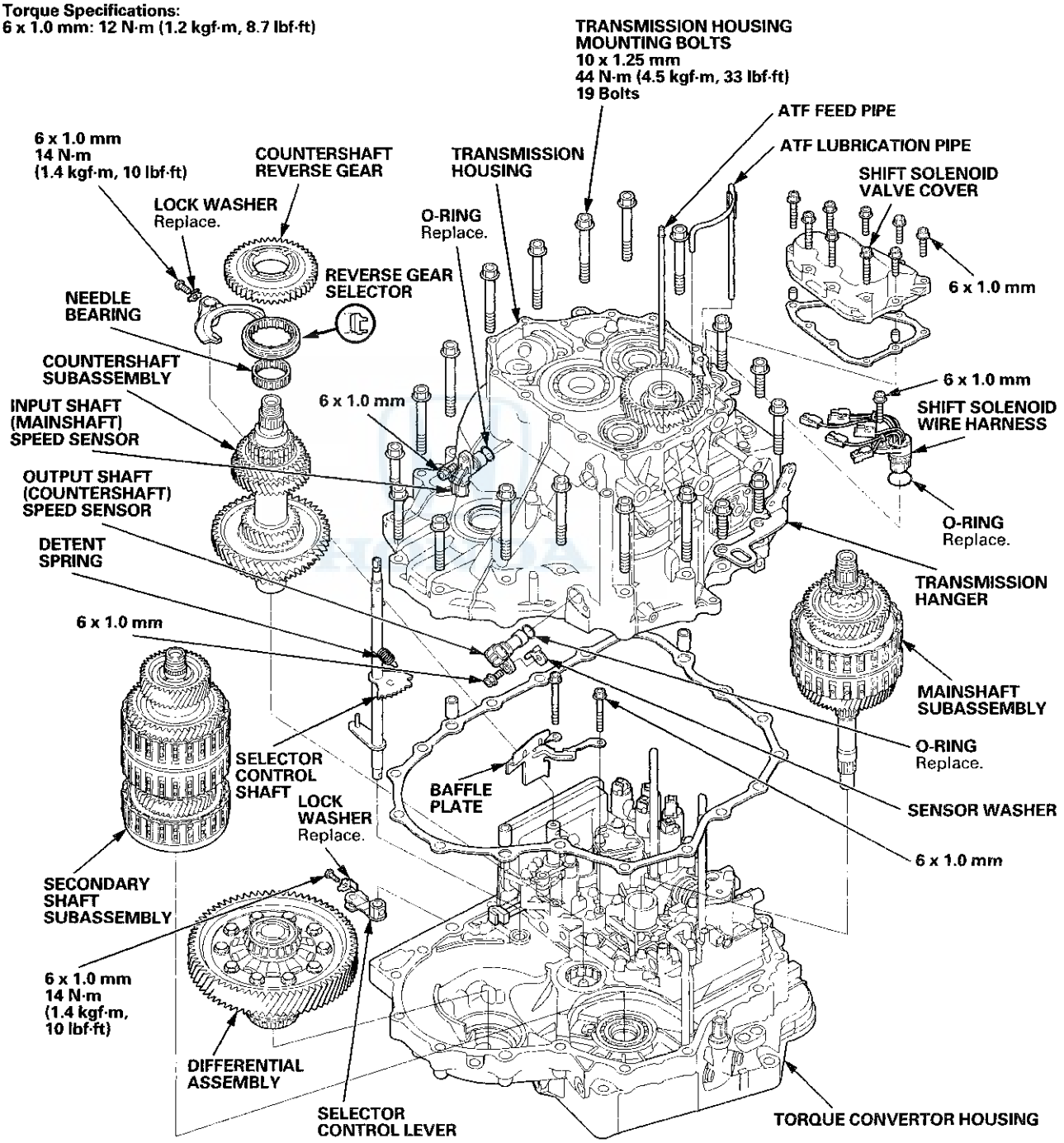


10. Install the regulator separator plate and the two dowel pins on the main valve body.
11. Install a new O-ring on the stator shaft, and install the stator shaft and the stator shaft stop.
12. Install the regulator valve body (eight bolts).
13. Install the ATF joint pipes (one bolt).
14. Install the ATF feed pipes in the regulator valve body and the servo body.

Shaft Assembly and Housing Installation

Exploded View

Torque Specifications:
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)

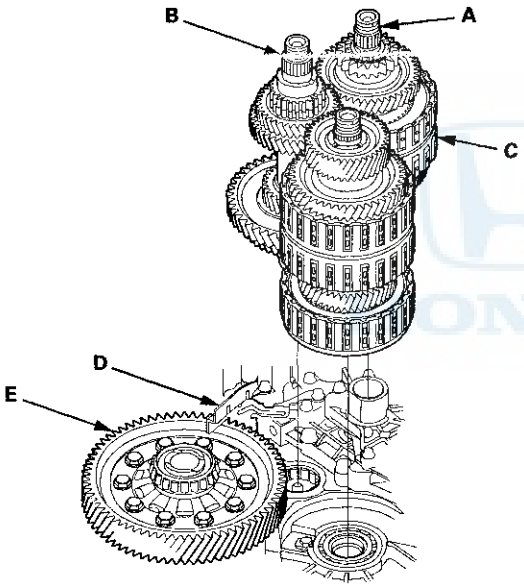


(cont'd)

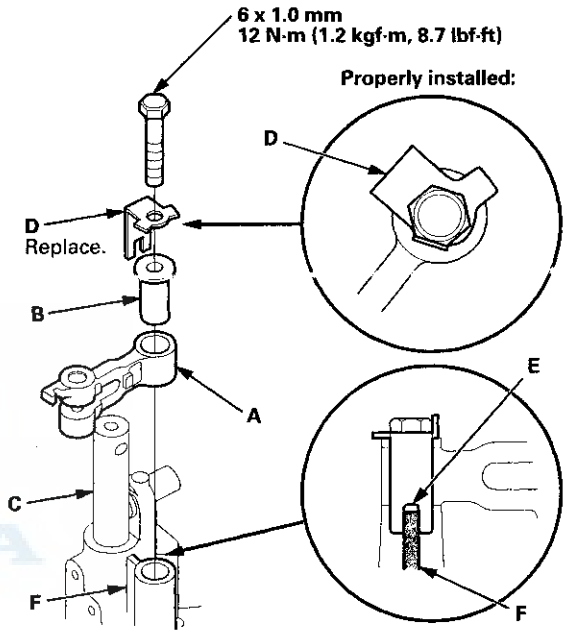
Shaft Assembly and Housing Installation (cont'd)

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

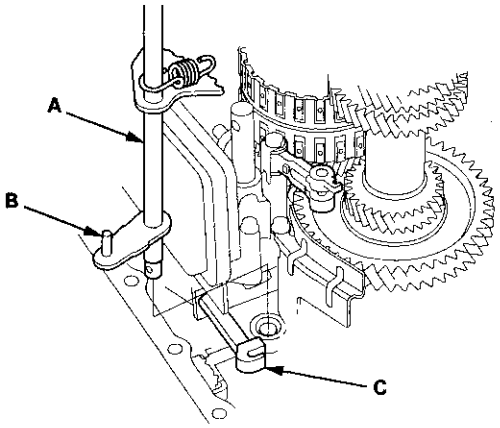
1. Install the differential assembly in the torque converter housing.
2. Install the baffle plate on the servo body.
3. Assemble the mainshaft, the countershaft, and the secondary shaft.
4. Join the mainshaft subassembly (A), the countershaft subassembly (B), and the secondary shaft subassembly (C) together. Then install them in the torque converter housing. Do not bump the countershaft on the baffle plate (D).



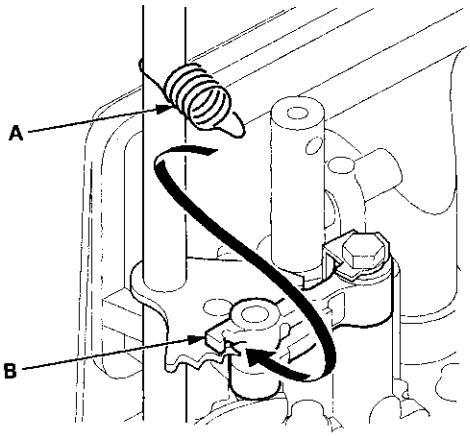
5. Make sure the countershaft subassembly and the differential assembly (E) are clear of the baffle plate.
6. If the detent arm was removed, install the detent arm (A) with the arm collar (B) on the servo body (C), and install a new lock washer (D) by aligning its cutout (E) with the projection (F) of the servo body. Install and tighten the bolt, then bend the lock tab of the lock washer against the bolt head.



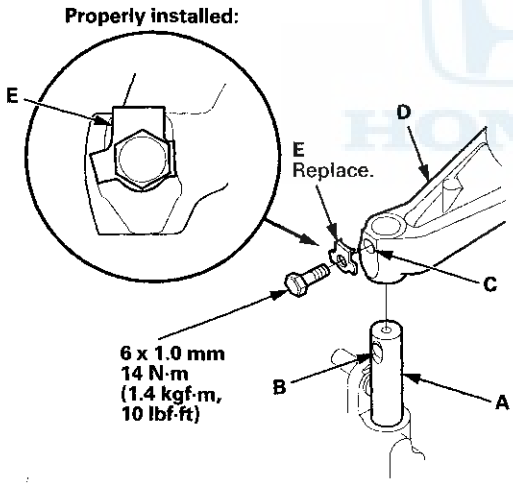
7. Install the selector control shaft (A) in the torque converter housing aligning the manual valve lever pin (B) on the selector control shaft with the guide of the manual valve (C). Pull the manual valve gently when aligning the manual valve with the selector control shaft.



8. Hook the detent spring (A) to the detent arm (B).



9. Turn the shift fork shaft (A) so the large chamfered hole (B) is facing the fork bolt hole (C) of the reverse shift fork (D).



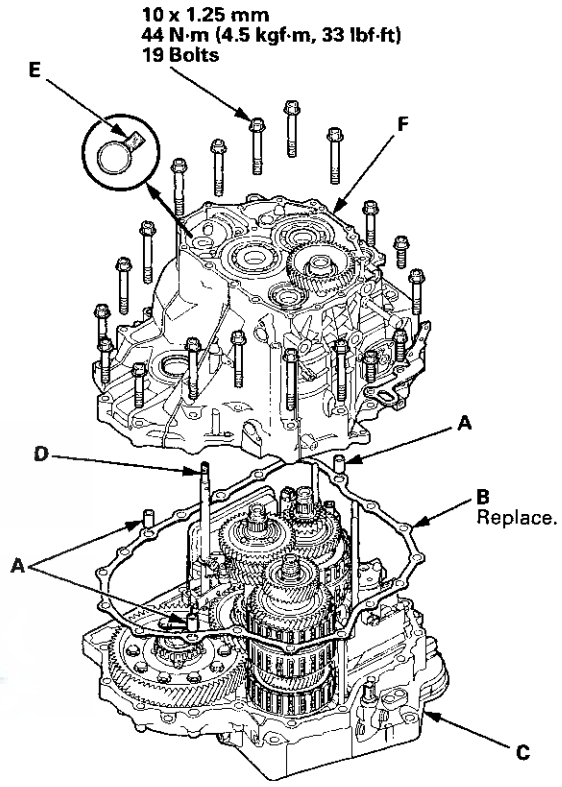
10. Install the reverse shift fork and the reverse selector together on the shift fork shaft and the countershaft subassembly. Secure the reverse shift fork to the shift fork shaft with the lock bolt and a new lock washer (E), then bend the lock tab of the lock washer against the bolt head.

11. Install the needle bearing and the countershaft reverse gear on the countershaft subassembly.

12. Install the reverse idler gear in the transmission housing (see page 14-272), if it was removed.

13. Install the idler gear shaft/idler gear assembly (see page 14-297), if it was removed.

14. Install the three dowel pins (A) and a new gasket (B) on the torque converter housing (C).



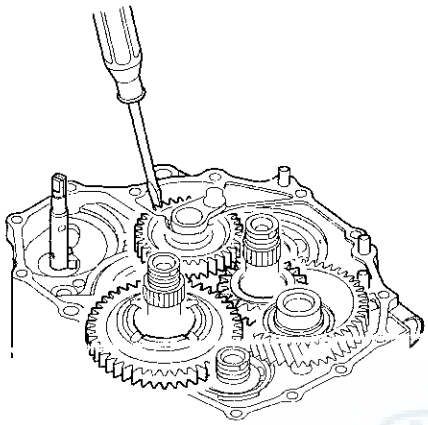
15. Align the spring pin of the selector control shaft (D) with the transmission housing groove (E) by turning the selector control shaft. Do not squeeze the end of the selector control shaft tips together when turning the selector control shaft. If the tips are squeezed together, it will cause a faulty shift position signal or position due to the play between the selector control shaft and the transmission range switch.

16. Place the transmission housing (F) on the torque converter housing. Do not install the mainshaft and countershaft speed sensors before installing the transmission housing on the torque converter housing.

(cont'd)

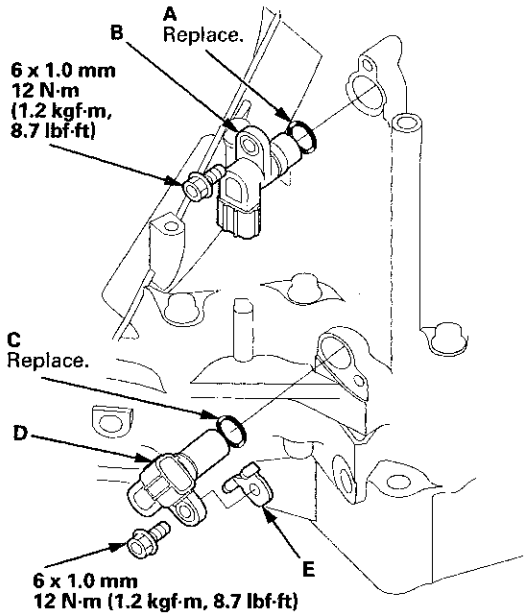
Shaft Assembly and Housing Installation (cont'd)

17. Wrap a screwdriver tip with tape to prevent damage to the reverse idler gear teeth. Engage the reverse idler gear with reverse gears by rotating the reverse idler gear using the screwdriver.



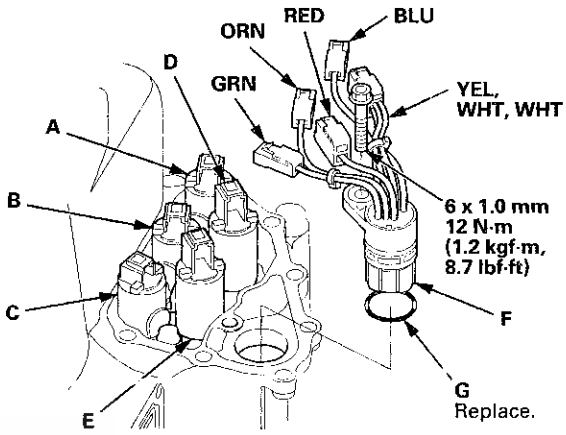
18. Install the transmission housing mounting bolts, and tighten the 19 bolts to 44 N·m (4.5 kgf·m, 33 lbf·ft) in at least two steps, in a crisscross pattern.

19. Install a new O-ring (A) on the input shaft (mainshaft) speed sensor (B), and install the input shaft (mainshaft) speed sensor in the transmission housing.



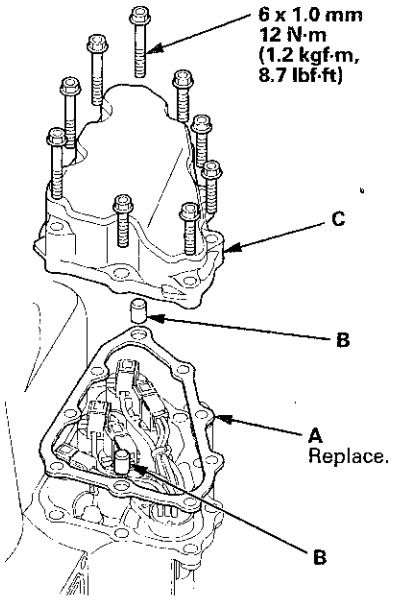
20. Install a new O-ring (C) on the output shaft (countershaft) speed sensor (D), and install the output shaft (countershaft) speed sensor with the washer (E).

21. Install the shift solenoid wire harness (F) in the transmission housing with a new O-ring (G).



22. Connect the shift solenoid wire harness connectors to the shift solenoid valves:
    - BLU wire connector to shift solenoid valve A.
    - ORN wire connector to shift solenoid valve B.
    - GRN wire connector to shift solenoid valve C.
    - YEL, WHT, and WHT wire connector to shift solenoid valve D.
    - RED wire connector to shift solenoid valve E.

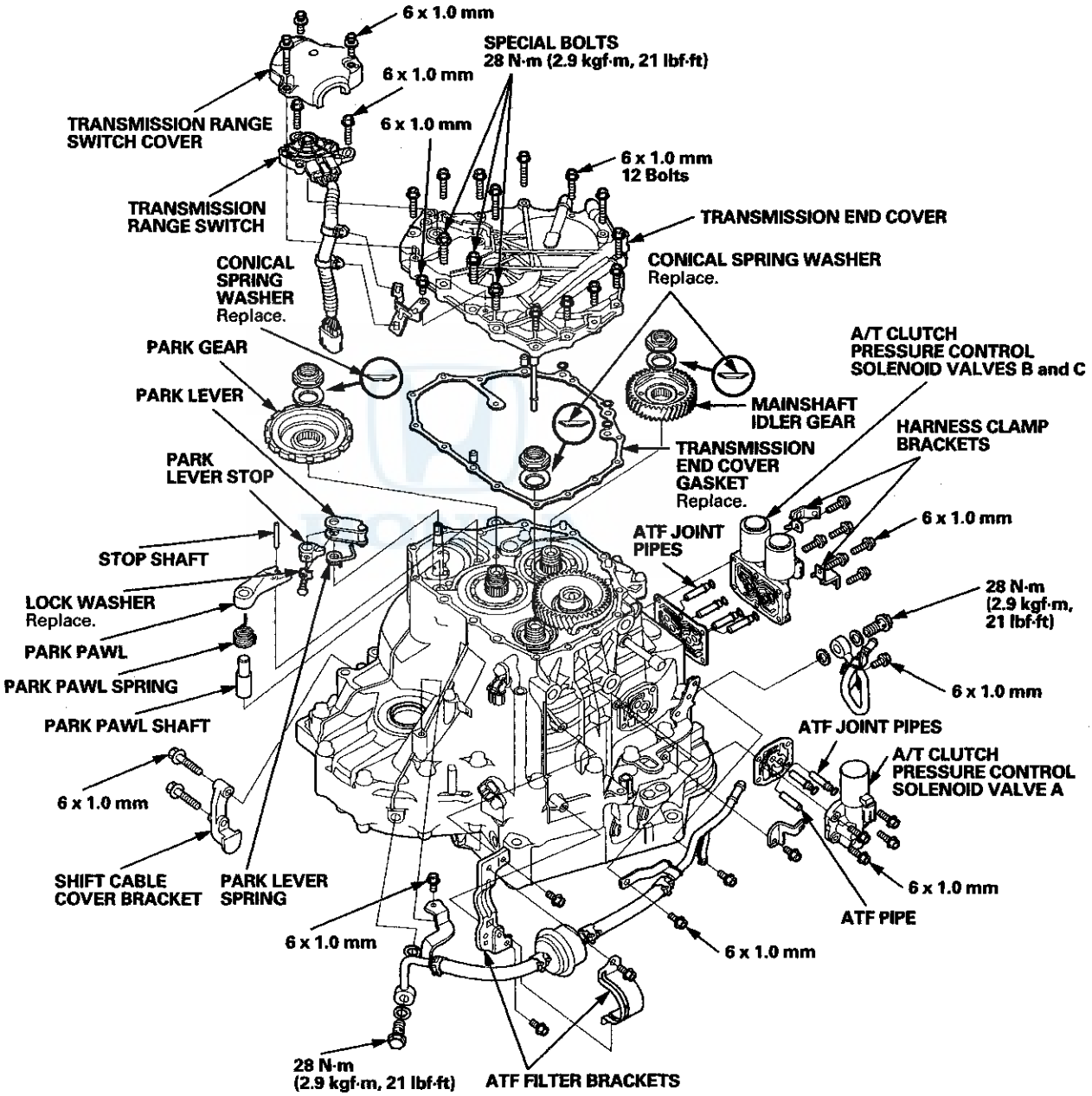
23. Install a new gasket (A) and the dowel pins (B), then secure the shift solenoid valve cover (C) with the bolts.



End Cover Installation

Exploded View

Torque Specifications:
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)



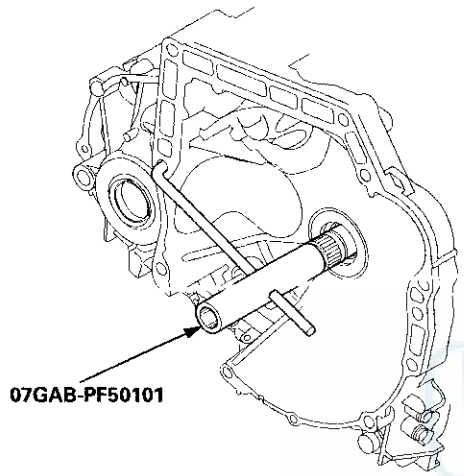
(cont'd)

End Cover Installation (cont'd)

Special Tools Required
Mainshaft Holder 07GAB-PF50101

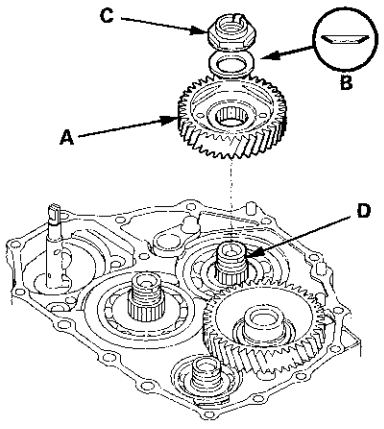
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Install the mainshaft holder onto the mainshaft.

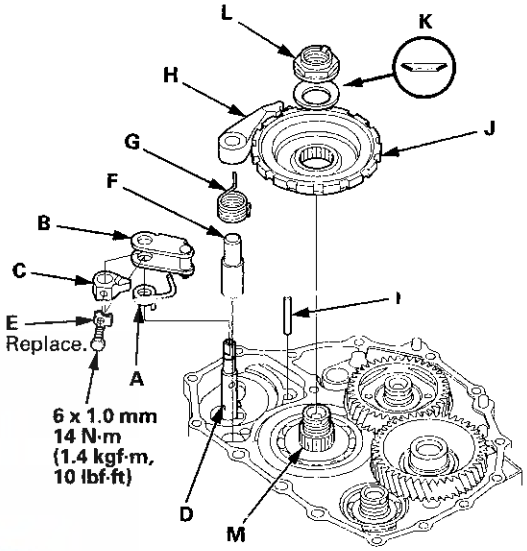


2. Lubricate the following parts with ATF:
   - Splines and threads of the mainshaft.
   - Splines of the mainshaft idler gear.
   - The old conical spring washer and the old locknut.
3. Install the mainshaft idler gear (A), the old conical spring washer (B), and the old locknut (C) on the mainshaft (D), and tighten the locknut to 226 N·m (23.0 kgf·m, 166 lbf·ft).

   NOTE:
   - Do not tap the mainshaft idler gear to install.
   - Use a torque wrench to tighten the locknut. Do not use an impact wrench.



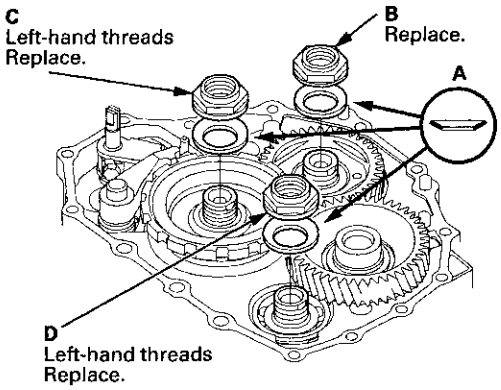
4. Install the park lever spring (A), the park lever (B), and the park lever stop (C) on the selector control shaft (D), then install the lock bolt with a new lock washer (E). Do not bend the lock tab of the lock washer until step 18.



5. Install the park pawl shaft (F), the park pawl spring (G), the park pawl (H), and the stop shaft (I) on the transmission housing.
6. Lubricate the following parts with ATF:
   - Threads and splines of the countershaft.
   - The old conical spring washer and the old locknut.
   - Areas where the park gear contacts the conical spring washer.
7. Install the park gear (J), the old conical spring washer (K), and the old locknut (L) on the countershaft (M).
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 the conical spring washers from the mainshaft and the countershaft.
10. Lubricate the threads of the shafts, new locknuts, and new conical spring washers with ATF.

11. Install conical spring washers (A) with facing stamped mark side up in the direction shown, and install the mainshaft locknut (B), the countershaft locknut (C), and the secondary shaft locknut (D).



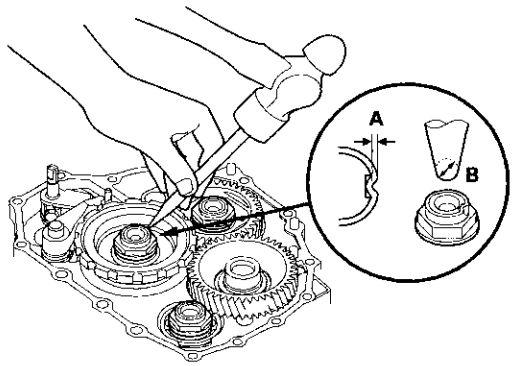
12. Tighten the locknuts to 167 N·m (17.0 kgf·m, 123 lbf·ft).

NOTE:

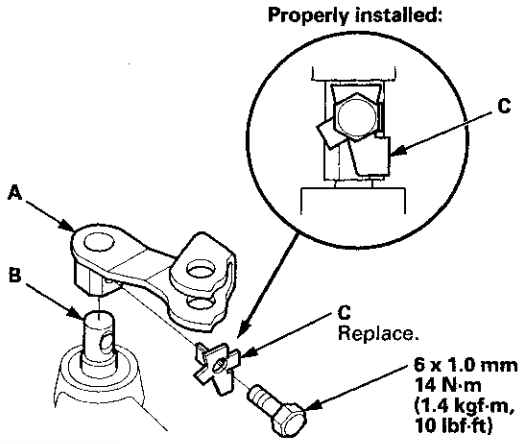
- Be sure to install the conical spring washers in the direction shown.
- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- Countershaft and secondary shaft locknuts have left-hand threads.

13. Remove the mainshaft holder from the mainshaft.

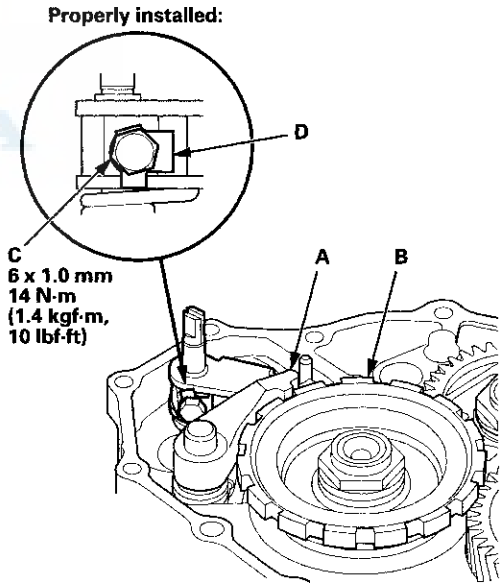
14. Stake the locknuts into the shafts to a depth (A) of 0.7—1.3 mm (0.03—0.05 in) using a 3.5 mm punch (B).



15. VIN begins with JHM: Install the selector control lever (A) on the selector control shaft (B), and install the bolt with a new lock washer (C), then bend the lock tab of the lock washer against the bolt head.



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



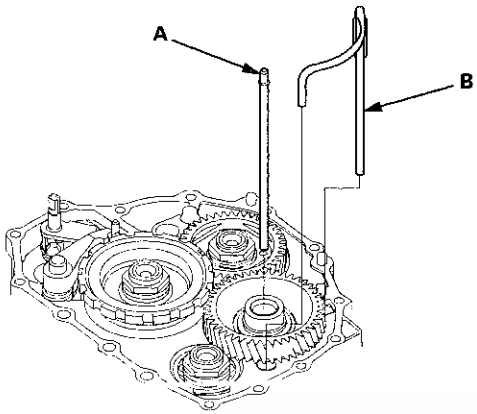
17. If the park pawl does not engage fully, do the park lever stop inspection and adjustment (see page 14-265).

18. Tighten the lock bolt (C), and bend the lock tab of the lock washer (D) against the bolt head.

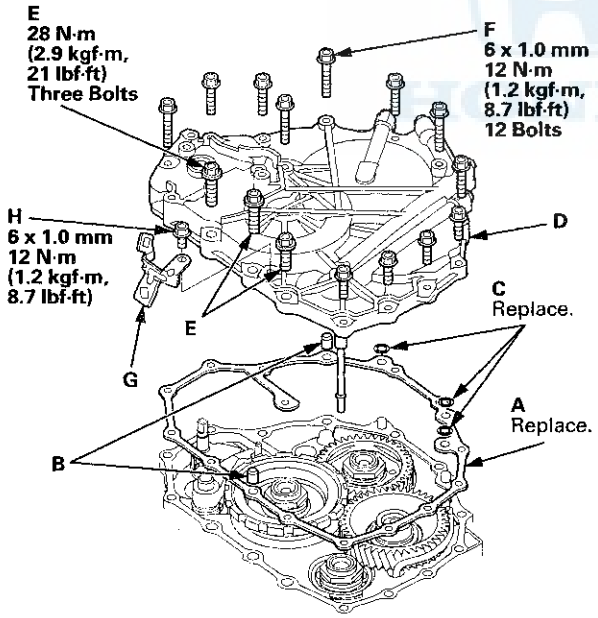
(cont'd)

End Cover Installation (cont'd)

19. Install the ATF feed pipe (A) into the idler gear shaft, and install the ATF lubrication pipe (B) into the transmission housing.



20. Install a new gasket (A) on the transmission housing, and install the two dowel pins (B) and new O-rings (C) over the top of the ATF feed pipes.

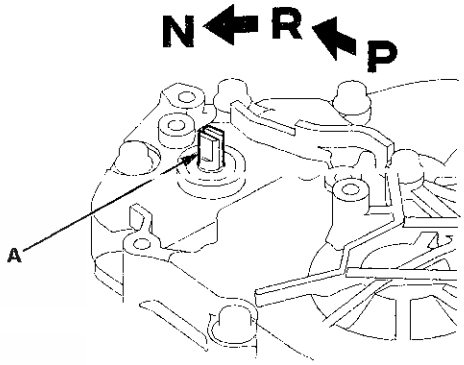


21. Install the end cover (D), and tighten the three special bolts (E) and the 6 x 1.0 mm bolts (F) (12 bolts).

22. Install the harness clamp bracket (G) on the end cover with the bolt (H).

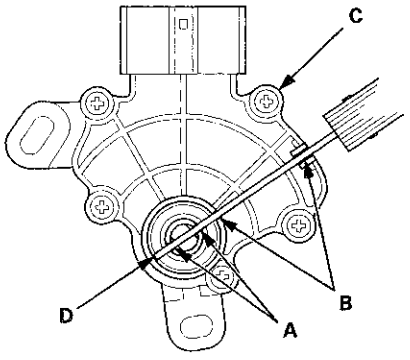
23. Move the selector control shaft (A) from the P position to the N position by turning the selector control shaft on the torque converter side.

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 transmission range switch.

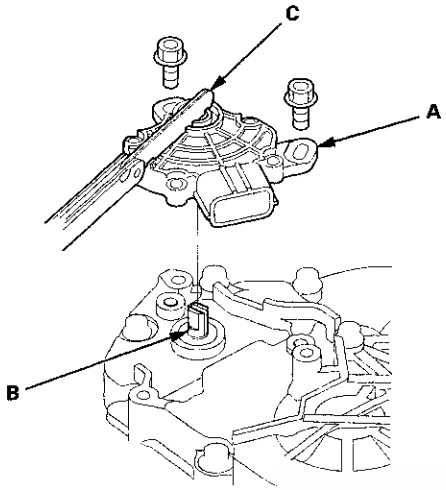


24. Align the cutouts (A) on the rotary-frame with the neutral positioning cutouts (B) on the transmission range switch (C), then put a 2.0 mm (0.08 in) feeler gauge blade (D) in the cutouts to hold in the N position.

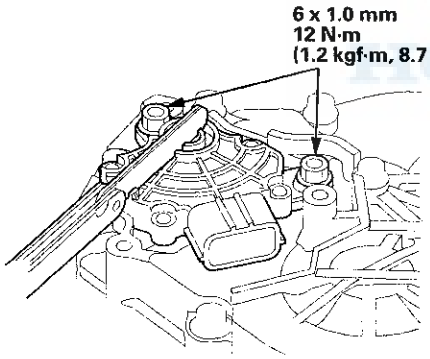
NOTE: Be sure to use a 2.0 mm (0.08 in) blade or equivalent to hold the transmission range switch in the N position.



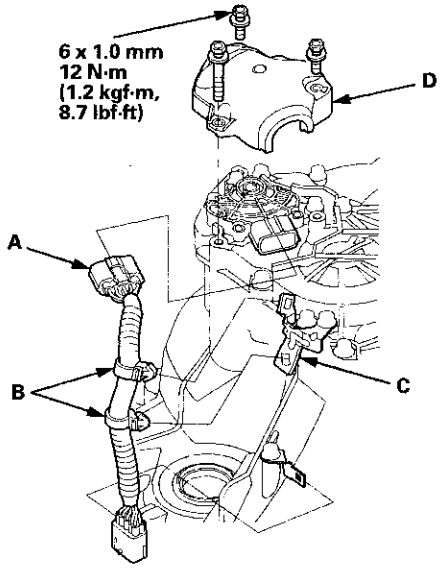
25. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position with the 2.0 mm (0.08 in) blade (C).



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



27. Connect the transmission range switch connector (A) securely, then install the harness clamps (B) on the clamp bracket (C).



28. Install the transmission range switch cover (D).

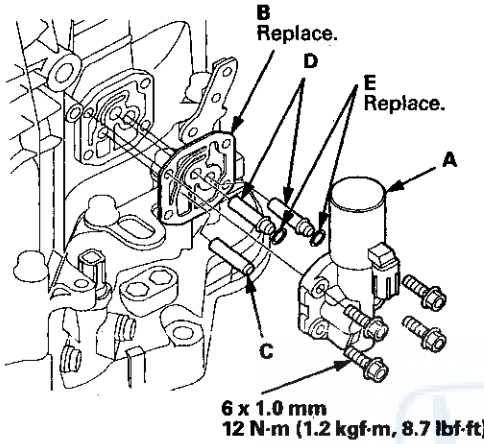
29. Clean the mounting surface and the fluid passage of A/T clutch pressure control solenoid valve A and the transmission housing.

(cont'd)

End Cover Installation (cont'd)

30. Install a new gasket (B) on the transmission housing, and install the ATF pipe (C) and the ATF joint pipes (D).

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.

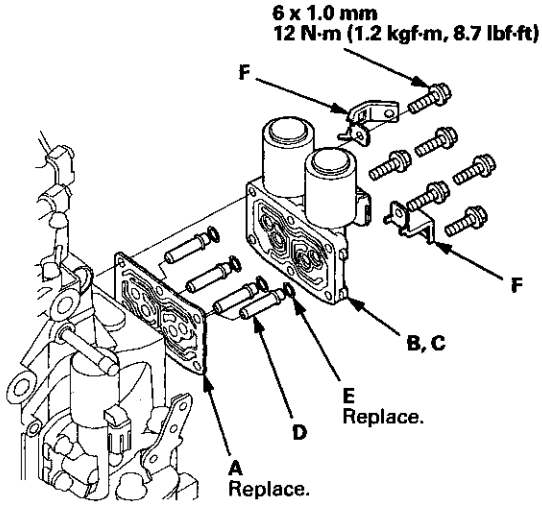


31. Install new O-rings (E) over the ATF joint pipes, and install A/T clutch pressure control solenoid valve A.

32. Clean the mounting surface and the fluid passage of A/T clutch pressure control solenoid valves B and C and the transmission housing.

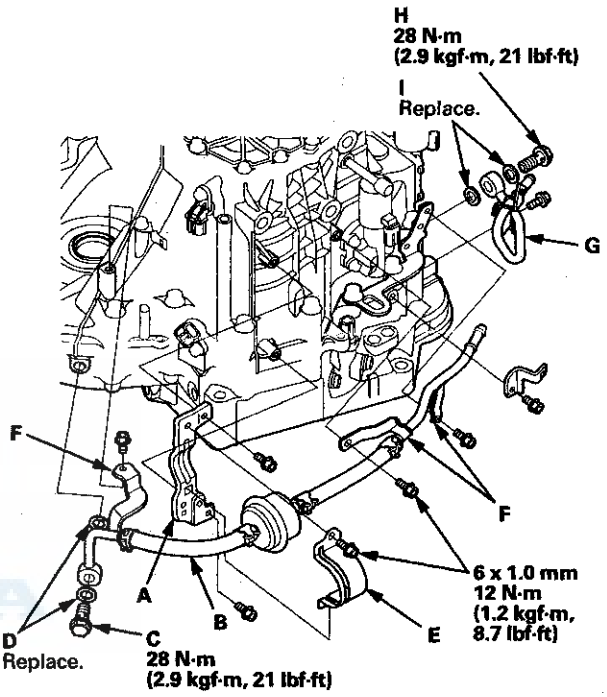
33. Install a new gasket (A) and the ATF joint pipes (D) on the transmission housing, and install new O-rings (E) over the ATF joint pipes.

    NOTE: Be sure to install a new gasket with the blue side toward the transmission housing.



34. Install A/T clutch pressure control solenoid valves B and C with the harness clamp brackets (F).

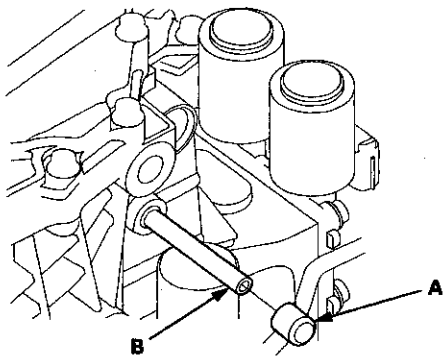
35. Install the ATF filter bracket (A) on the transmission housing, then install the ATF cooler line/ATF filter (B) with the line banjo bolt (C) and new sealing washers (D). Secure the ATF filter with its bracket (E).



36. Secure the line brackets (F) with three bolts.

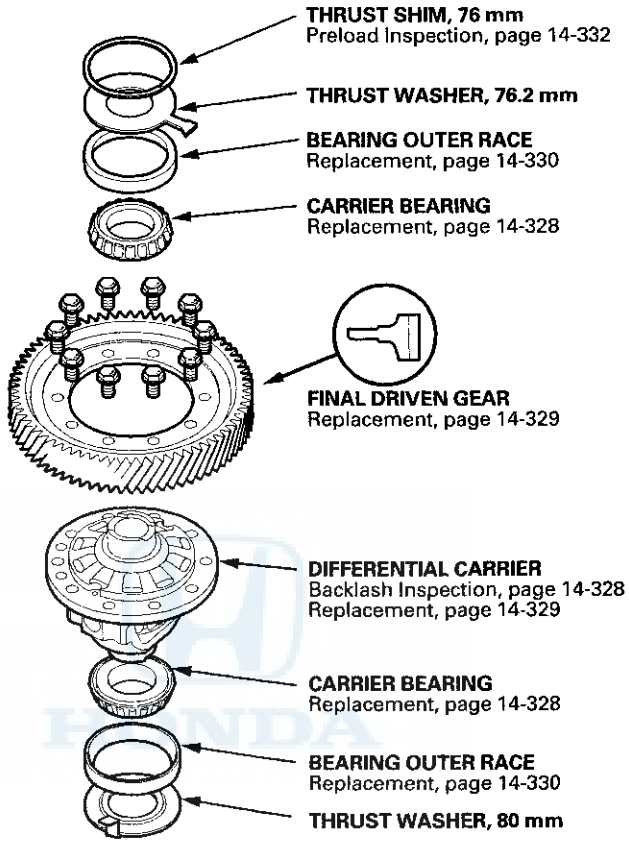
37. Install the ATF cooler outlet line (G) with the line banjo bolt (H) and new sealing washers (I).

38. Install the breather cap (A) on the breather pipe (B).



39. Install the dipstick.

Component Location Index

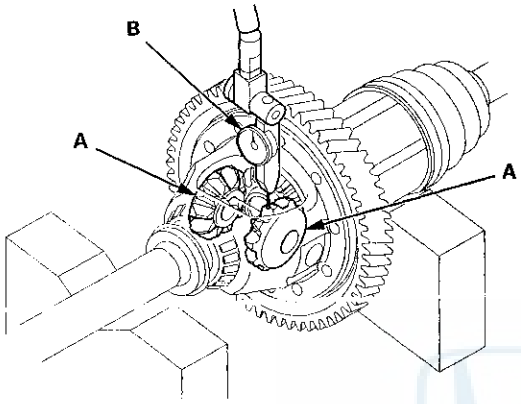


A/T Differential

Backlash Inspection

1. Install both axles into the A/T differential, then place the axles on V-blocks.
2. Check the backlash of the pinion gears (A) using 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 (see page 14-329).

Carrier Bearing Replacement

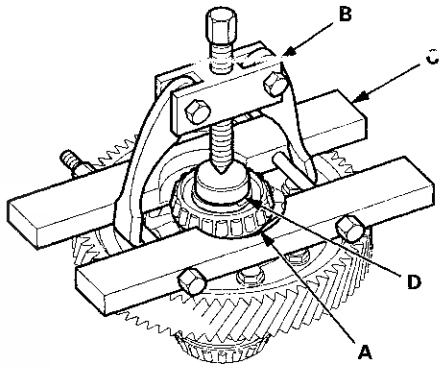
Special Tools Required

Attachment, 40 x 50 mm 07LAD-PW50601

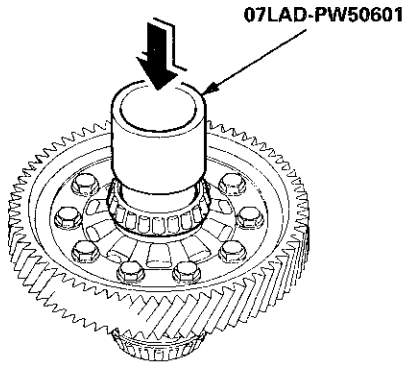
NOTE:

- The bearing and the 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.

1. Remove the carrier bearing (A) using a commercially available puller (B), a bearing separator (C), and a spacer (D).



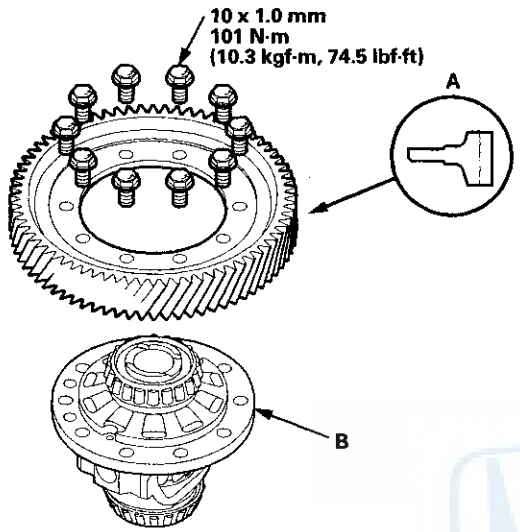
2. Install new carrier bearings using the 40 x 50 mm attachment with the small end and a press. Press the carrier bearing on securely so there is no clearance between the carrier bearing and the differential carrier.



Differential Carrier and Final Driven Gear Replacement

1. Remove the final driven gear (A) from the differential carrier (B).

   NOTE: Differential carrier bolts have left-hand threads.

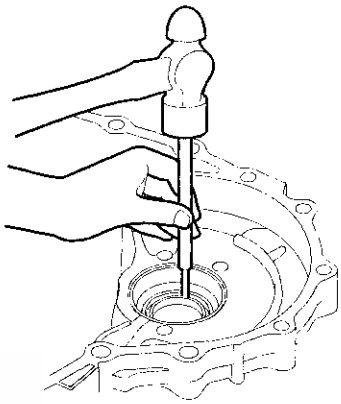


2. Install the final driven gear in the direction shown on the differential carrier.
3. Secure the final driven gear and the differential carrier with the bolts. Tighten the bolts to the specified torque in a crisscross pattern in at least two steps.

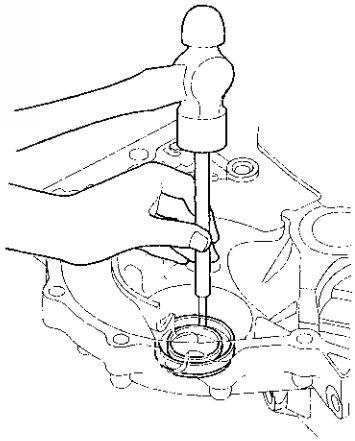
Oil Seal Replacement

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Oil Seal Driver Attachment 07947-SD90101
- Oil Seal Driver Attachment 07JAD-PH80101

1. Remove the oil seal from the transmission housing.



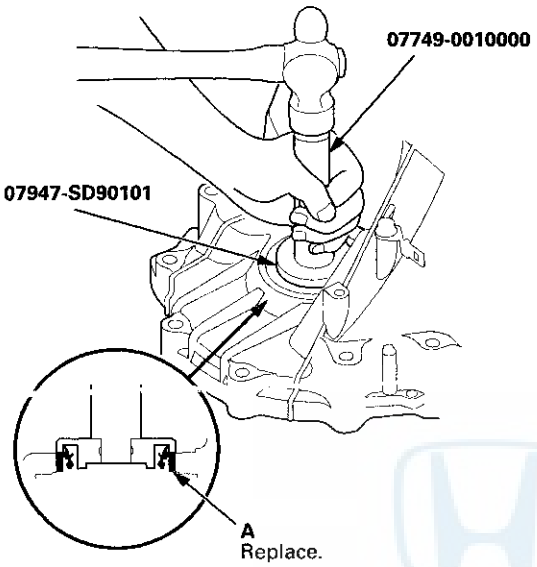
2. Remove the oil seal from the torque converter housing.



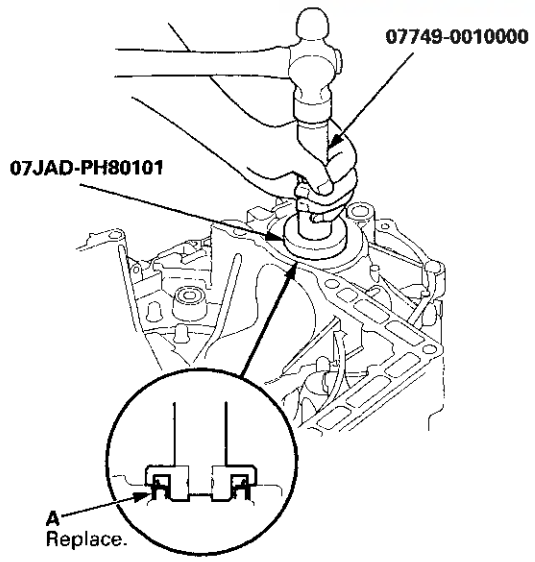
(cont'd)

Oil Seal Replacement (cont'd)

3. Install a new oil seal (A) flush with the transmission housing using the driver handle and the oil seal driver attachment.



4. Install a new oil seal (A) flush with the torque converter housing using the driver handle and the oil seal driver attachment.



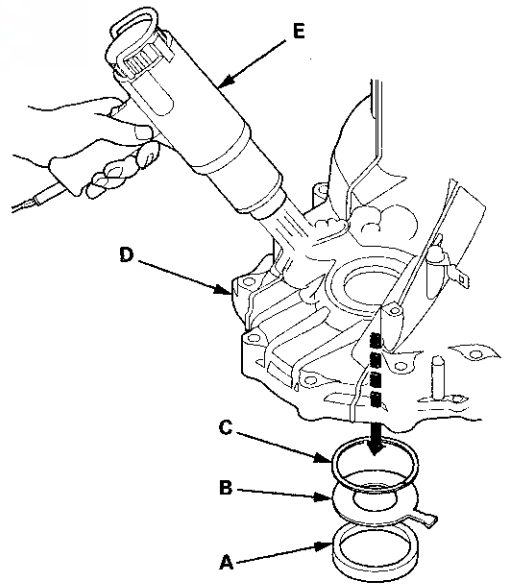
Carrier Bearing Outer Race Replacement

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100
- Attachment, 72 x 75 mm 07746-0010600

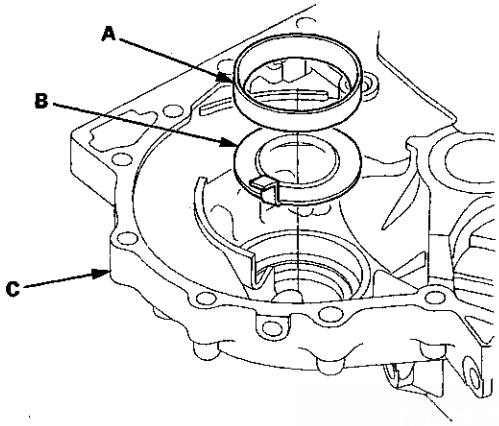
NOTE:
- The bearing and the bearing outer race should be replaced as a set.
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use the thrust shim from the torque converter housing.
- Adjust bearing preload after replacing the bearing and the outer race.
- Cost all parts with ATF during installation.

1. Remove the bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the transmission housing to about 212 °F (100 °C) using a heat gun (E). Do not heat the transmission housing more than 212 °F (100 °C).

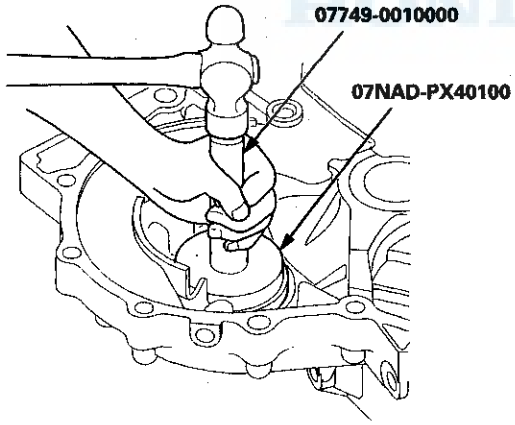
   NOTE: Let the transmission housing cool to room temperature before installing the bearing outer race.



2. Remove the bearing outer race (A) and the 80 mm thrust washer (B) from the torque converter housing (C).

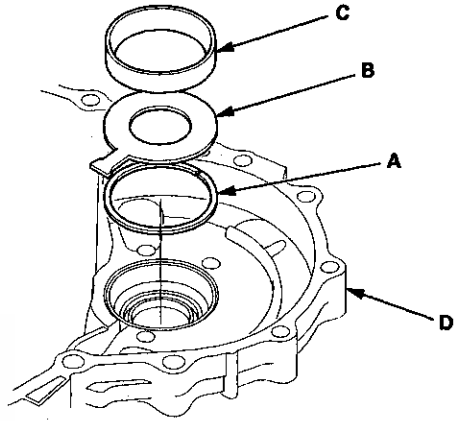


3. Install the 80 mm thrust washer and a new bearing outer race in the torque converter housing.
4. Install the bearing outer race securely in the torque converter housing using the driver handle and the 78 x 80 mm attachment.

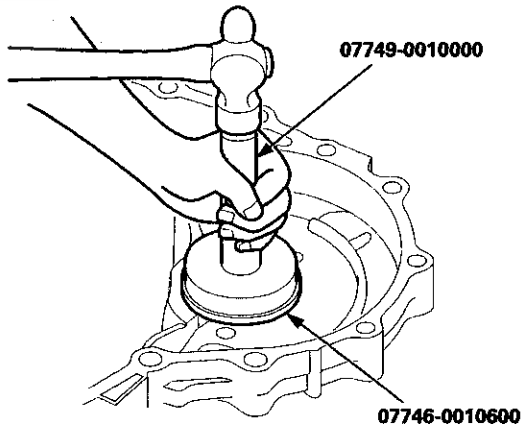


5. Install the 76 mm thrust shim (A), the 76.2 mm thrust washer (B), and a new bearing outer race (C) in the transmission housing (D).

NOTE: Be sure to install the 76.2 mm thrust washer with the "41382 RKY" mark facing downward.



6. Install the bearing outer race securely so there is no clearance between the bearing outer race, the 76.2 mm thrust washer, the 76 mm thrust shim, and the transmission housing, using the driver handle and the 72 x 75 mm attachment.



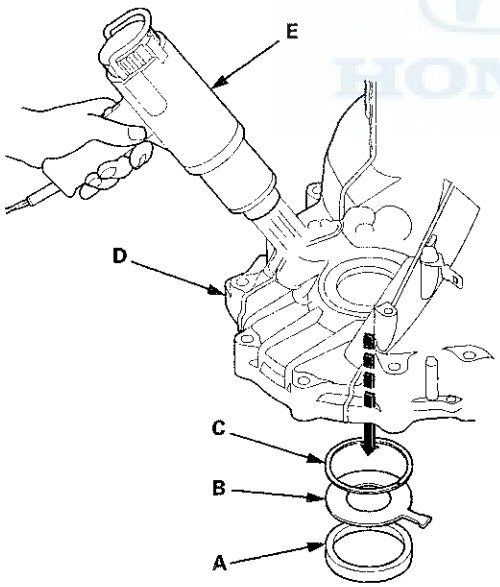
Carrier Bearing Preload Inspection

Special Tools Required
- Driver Handle, 15 x 135L 07749-0010000
- Attachment, 72 x 75 mm 07746-0010600
- Preload Inspection Tool 07HAJ-PK40201

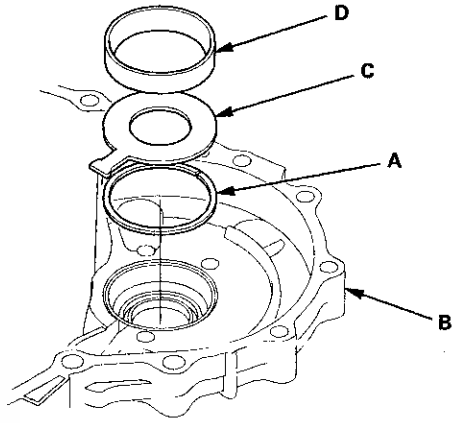
NOTE:
- If the transmission housing, the torque converter housing, the differential carrier, the carrier bearing, and the outer race, or the thrust shim were replaced, the bearing preload must be adjusted.
- Coat all parts with ATF during installation.
- Do not use the thrust shim from the torque converter housing.

1. Remove the bearing outer race (A), the 76.2 mm thrust washer (B), and the 76 mm thrust shim (C) from the transmission housing (D) by heating the transmission housing to about 212 °F (100 °C) using a heat gun (E). Do not heat the transmission housing more than 212 °F (100 °C).

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



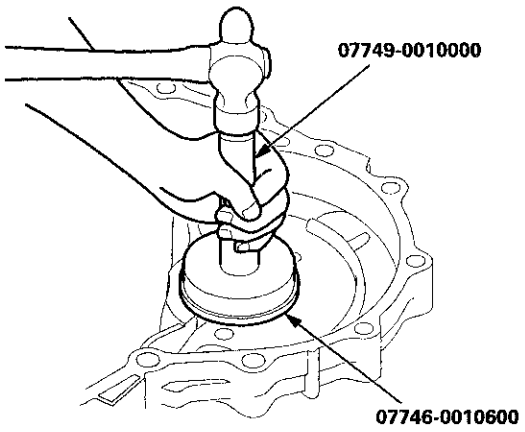
2. Install the 76 mm thrust shim (A) in the transmission housing (B). If you replace the 76 mm thrust shim with a new one, use the same thickness shim as the old one.



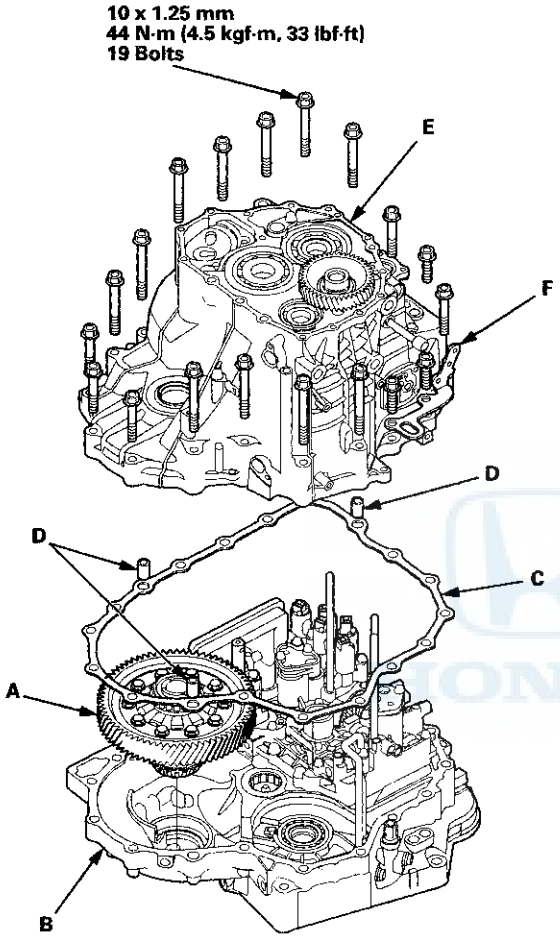
3. Install the 76.2 mm thrust washer (C) and the bearing outer race (D) in the transmission housing.

   NOTE: Be sure to install the 76.2 mm thrust washer with the "41382 RKY" mark facing downward.

4. Install the bearing outer race securely so there is no clearance between the bearing outer race, the 76.2 mm thrust washer, the 76 mm thrust shim, and the transmission housing, using the driver handle and the 72 x 75 mm attachment.

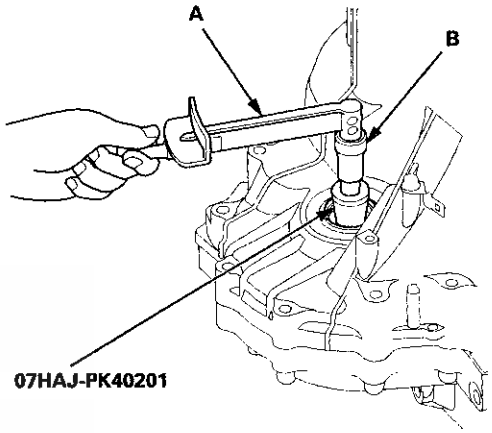


5. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and the dowel pins (D) on the torque converter housing.



6. Install the transmission housing (E) and the transmission hanger (F), 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 in both directions using the preload inspection tool, a torque wrench (A), and a socket (B) at normal room temperature.

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)**



(cont'd)

Carrier Bearing Preload Inspection (cont'd)

9. If the starting torque is out of standard, remove the 76 mm thrust shim and select a 76 mm thrust shim from the following table. Install a new 76 mm thrust shim, and recheck. To increase the starting torque, increase the thickness of the 76 mm thrust shim. To decrease the starting torque, decrease the thickness of the 76 mm thrust shim. Changing the 76 mm thrust shim to the next size will increase or decrease starting torque about 0.3—0.4 N·m (3—4 kgf·cm, 2—3 lbf·in).

TYPE A THRUST SHIM, 76 mm

No.	Thickness
S	2.05 mm (0.081 in)
T	2.10 mm (0.083 in)
U	2.15 mm (0.085 in)
A	2.20 mm (0.087 in)
B	2.25 mm (0.089 in)
C	2.30 mm (0.091 in)
D	2.35 mm (0.093 in)
E	2.40 mm (0.094 in)
F	2.45 mm (0.096 in.)
G	2.50 mm (0.098 in)
H	2.55 mm (0.100 in)
I	2.60 mm (0.102 in)
J	2.65 mm (0.104 in)
K	2.70 mm (0.106 in)
L	2.75 mm (0.108 in)
M	2.80 mm (0.110 in.)
N	2.85 mm (0.112 in)
O	2.90 mm (0.114 in)
P	2.95 mm (0.116 in)
Q	3.00 mm (0.118 in)
R	3.05 mm (0.120 in)
0A	1.55 mm (0.061 in)
0B	1.60 mm (0.063 in)
0C	1.65 mm (0.065 in)
0D	1.70 mm (0.067 in)
0E	1.75 mm (0.069 in)
0F	1.80 mm (0.071 in)
0G	1.85 mm (0.073 in.)
0H	1.90 mm (0.075 in)
0I	1.95 mm (0.077 in)
0J	2.00 mm (0.079 in)

TYPE B THRUST SHIM, 76 mm

No.	Thickness
A	1.575 mm (0.062 in)
B	1.625 mm (0.064 in)
C	1.675 mm (0.066 in)
D	1.725 mm (0.068 in.)
E	1.775 mm (0.070 in)
F	1.825 mm (0.072 in.)
G	1.875 mm (0.074 in)
H	1.925 mm (0.076 in)
I	1.975 mm (0.078 in)
J	2.025 mm (0.080 in)
K	2.075 mm (0.082 in)
L	2.125 mm (0.084 in)
M	2.175 mm (0.086 in)
N	2.225 mm (0.088 in)
O	2.275 mm (0.090 in)
P	2.325 mm (0.092 in)
Q	2.375 mm (0.094 in)
R	2.425 mm (0.095 in)
S	2.475 mm (0.097 in)
T	2.525 mm (0.099 in)
U	2.575 mm (0.101 in)
V	2.625 mm (0.103 in)
W	2.675 mm (0.105 in)
X	2.725 mm (0.107 in)
Y	2.775 mm (0.109 in)
Z	2.825 mm (0.111 in)
0A	2.875 mm (0.113 in)
0B	2.925 mm (0.115 in)
0C	2.975 mm (0.117 in)
0D	3.025 mm (0.119 in)