TRANSMISSIONS
AAMCO
TOTAL CAR CARE

Honda CVT Manual

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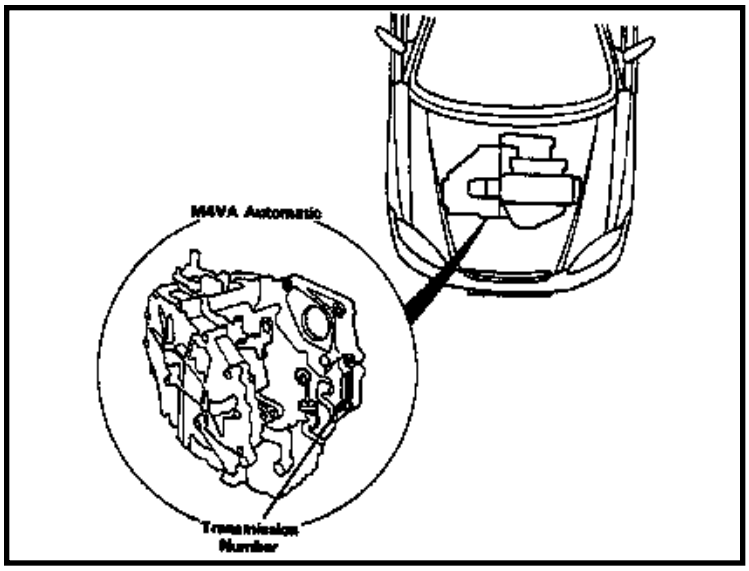


Transmission Number

M4VA - 5000001~

Transmission Type

M4VA :Continuously Variable Transmission (CVT)

Serial Number

M4VA
SLYA
SZCA*
MHTA*

*Hybrid Models

The information in this manual is specific to models of the Continuously Variable Transmission (CVT) used with gasoline engines. Hybrid models are similar. For detailed repair instructions on the Hybrid CVT consult the appropriate service publications.

General Specifications

Transaxle Drive
Transverse Front Wheel Drive

Transaxle Type
Honda CVT*
C = Continuously
V = Variable
T = Transmission
*Non-stage speed forward, 1 reverse gear

Gear Ratios
Low - OD 2.466-0.449
Reverse - 2.466
Secondary Reduction 1.333
Final Reduction 4.357

Electronic Transaxle Controls
Shift Timing
Pressure Control

Transaxle Fluid Capacity (Approximate)
At Changing: 3.9L (4.1 Qts)
Complete Overhaul: 6.4L (6.8 Qts)

Transaxle Fluid Type
Genuine Honda CVT Fluid

Position Quadrant
P, R, N, D, S, L

Pressure Taps Available
Forward Clutch Pressure
Reverse Brake Pressure
Drive Pulley Pressure
Driven Pulley Pressure
Lubrication Pressure
Start Clutch Pressure

Case Material
Die Cast Aluminum

Vehicle Application
1996 - Up Civic 2-door coupe
2000 - Up Insight Hybrid
2003 - Up Civic Hybrid

Unit Description

The Continuously Variable Transmission (CVT) is an electronically controlled automatic transmission with drive and driven pulleys, and a steel belt. The CVT provides non-stage speeds forward and one reverse. The entire unit is positioned in line with the engine.

Transmission

Around the outside of the flywheel is a ring gear which meshes with the starter pinion when the engine is being started. The transmission has four parallel shafts: the input shaft, the drive pulley shaft, the driven pulley shaft, and the secondary gear shaft. The input shaft is in line with the engine crankshaft. The drive pulley shaft and the driven pulley shaft consist of movable and fixed face pulleys. Both pulleys are linked by the steel belt.

The input shaft includes the sun gear. The drive pulley shaft includes the forward clutch which mounts the carrier assembly on the forward clutch drum. The carrier assembly includes the pinion gears which mesh with the sun gear and the ring gear. The ring gear has a hub-mounted reverse brake disc.

The driven pulley shaft includes the start clutch and the secondary drive gear which is integral with the park gear. The secondary gear shaft is positioned between the secondary drive gear and the final driven gear. The secondary gear shaft includes the secondary driven gear which serves to change the rotation direction, because the drive pulley shaft and the driven pulley shaft rotate the same direction. When certain combinations of planetary gears in the transmission are engaged by the clutches and the reverse brake, power is transmitted from the drive pulley shaft to the driven pulley shaft to provide L, S, D and R.

Transmission Controls

1996 - 1998 Models:

The electronic control system consists of the Transmission Control Module (TCM), sensors, three linear solenoids and a inhibitor solenoid. Shifting is electronically controlled under all conditions. The TCM is located below the dashboard, behind the kick panel on the driver's side.

1999 - Up Models:

The electronic control system consists of a Powertrain Control Module (PCM), sensors, three linear solenoids and an inhibitor solenoid. Shifting is electronically controlled under all conditions. A Grade Logic Control System to control shifting in D position while the vehicle is ascending or descending a slope. The PCM is located behind the passenger's side kick panel on 1999 & 2000 models and behind the glove box on 2001 & up.

Hydraulic Control

The lower valve body assembly includes the main valve body, the Pressure Low (PL) regulator valve body, the shift valve body, the start clutch control valve body and the secondary valve body. They are positioned on the lower part of the transmission housing.

The main valve body contains the Pressure High (PH) control valve, the lubrication valve and the pitot regulator valve. The secondary valve body contains the PH regulator valve, the clutch reducing valve, the start clutch valve accumulator and the shift inhibitor valve. The PL regulator valve body contains the PL regulator valve and the PH-PL control valve which is joined to the PH-PL control linear solenoid. The inhibitor solenoid valve is bolted on the PL regulator valve body.

The shift valve body contains the shift valve and the shift control valve, which is joined to the shift control linear solenoid. The start clutch control valve body contains the start clutch control valve, which is joined to the start clutch control linear solenoid. The linear solenoids and the inhibitor solenoid are controlled by the TCM or PCM. The manual valve body which contains the manual valve and the reverse inhibitor valve, is bolted on the intermediate housing.

The ATF pump assembly is located on the transmission housing and is linked with the input shaft by the sprockets and the sprocket chain. The pulleys and the clutch receive fluid from their respective feed pipes, and the reverse brake receives fluid from internal hydraulic circuit.

Shift Control Mechanism

Input from various sensors located throughout the vehicle determines which linear solenoid the TCM or PCM will activate. Activating the shift control linear solenoid changes the shift control valve pressure, causing the shift valve to move. This pressurizes the drive pulley pressure to the drive pulley and the driven pulley pressure to the driven pulley and changes their effective pulley ratio. Activating the start clutch control linear solenoid moves the start clutch control valve. The start clutch control valve uncovers the port, providing pressure to the start clutch to engage it.

Clutch & Brake Application

The shift lever has six positions:

P PARK, R REVERSE N NEUTRAL, D DRIVE, S SECOND, and L LOW.

Position		Description
P	PARK	Front wheels locked; park pawl engaged with the park gear on the driven pulley shaft. The start clutch and the forward clutch released.
R	REVERSE	Start clutch and reverse brake engaged.
N	NEUTRAL	Start clutch and forward clutch released.
D	DRIVE	Start clutch and forward clutch engaged. General driving; the transmission automatically adjusts to keep the engine at the best speed for driving conditions.
S	SECOND	Start clutch and forward clutch engaged. For rapid acceleration at highway speeds; the transmission shifts into a lower range of ratios for better acceleration and increased engine braking.
L	LOW	Start clutch and forward clutch engaged. For engine braking and power for climbing; the transmission shifts into the lowest range of the ratios.

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

Major Component Descriptions

Clutches/Reverse Brake:

The CVT uses the hydraulically-actuated clutches and brake to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum and the reverse brake piston cavity, the clutch piston and the reverse brake piston move. This presses the friction discs and the steel plates together, locking them so they don't slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear and through engaged ring gear to pinion gears.

Likewise, when the hydraulic pressure is bled from the clutch pack and the reverse brake piston cavity, 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.

Start Clutch:

The start clutch, which is located at the end of the driven pulley shaft, engages/disengages the secondary drive gear. The start clutch is supplied hydraulic pressure by its ATF feed pipes within the driven pulley shaft.

Forward Clutch:

The forward clutch, which is located at the end of the drive pulley shaft, engages/disengages the sun gear. The forward clutch is supplied hydraulic pressure by its ATF feed pipe within the drive pulley shaft.

Reverse Brake:

The reverse brake, which is located inside the intermediate housing around the ring gear, locks the ring gear in R position. The reverse brake discs are mounted to the ring gear and the reverse brake plates are mounted to the intermediate housing. The reverse brake is supplied hydraulic pressure by a circuit connected to the internal hydraulic circuit.

Planetary Gear:

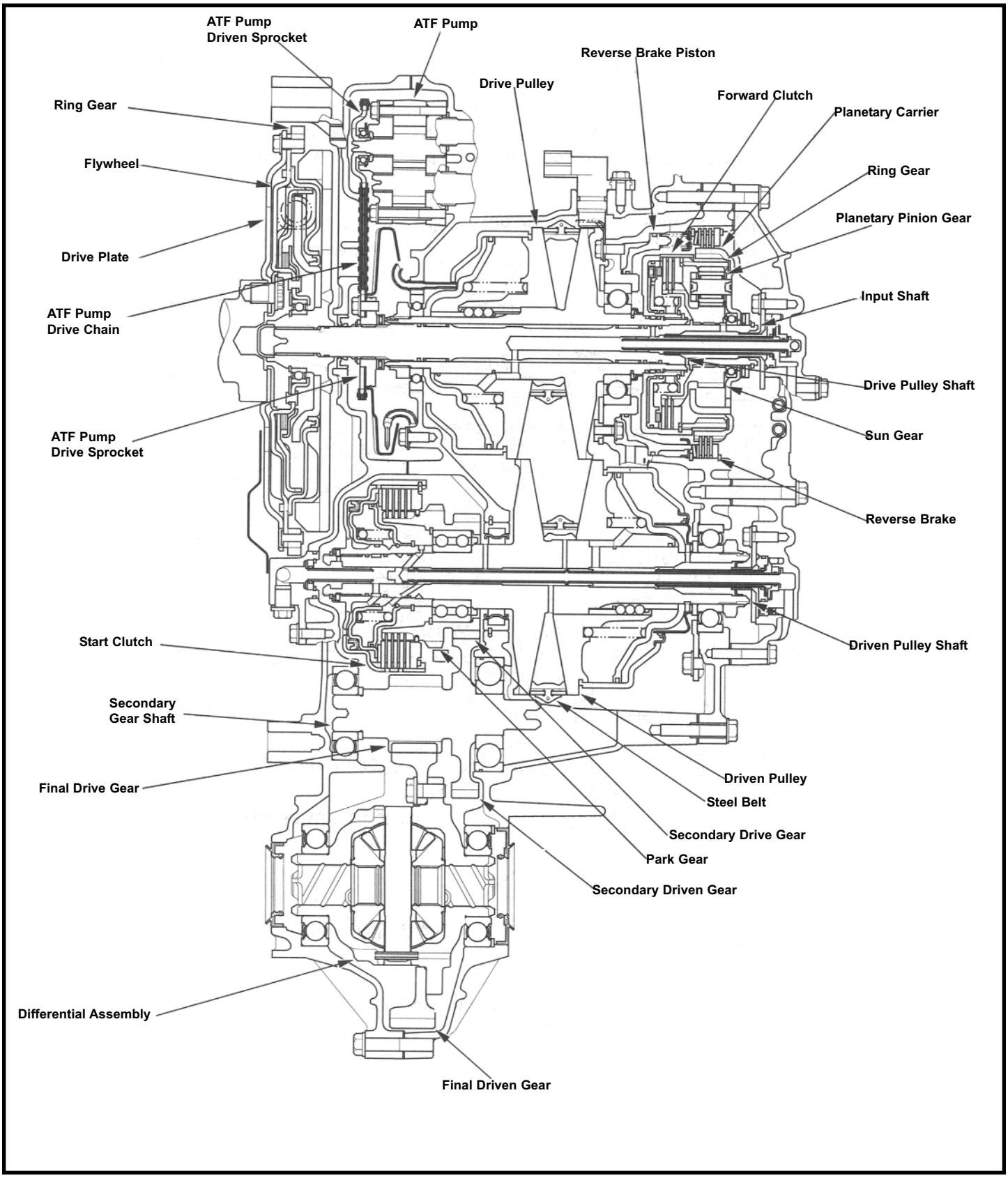
The planetary gear consists of a sun gear, a carrier assembly, and a ring gear. The sun gear is connected to the input shaft with splines. The pinion gears are mounted to the carrier, which is mounted to the forward clutch drum. The sun gear inputs the engine power via the input shaft to the planetary gear, and the carrier outputs the engine power. The ring gear is only used for switching the rotation direction of the pulley shafts. In D, S and L positions (forward range), the pinion gears don't rotate and revolve with the sun gear, so the carrier rotates. In R position (reverse range), the reverse brake locks the ring gear and the sun gear drives the pinion gears to rotate. The pinion gears rotate and revolve in the opposite direction from the rotation direction of the sun gear, and the carrier rotates with pinion gear revolution.

Major Component Descriptions Continued...

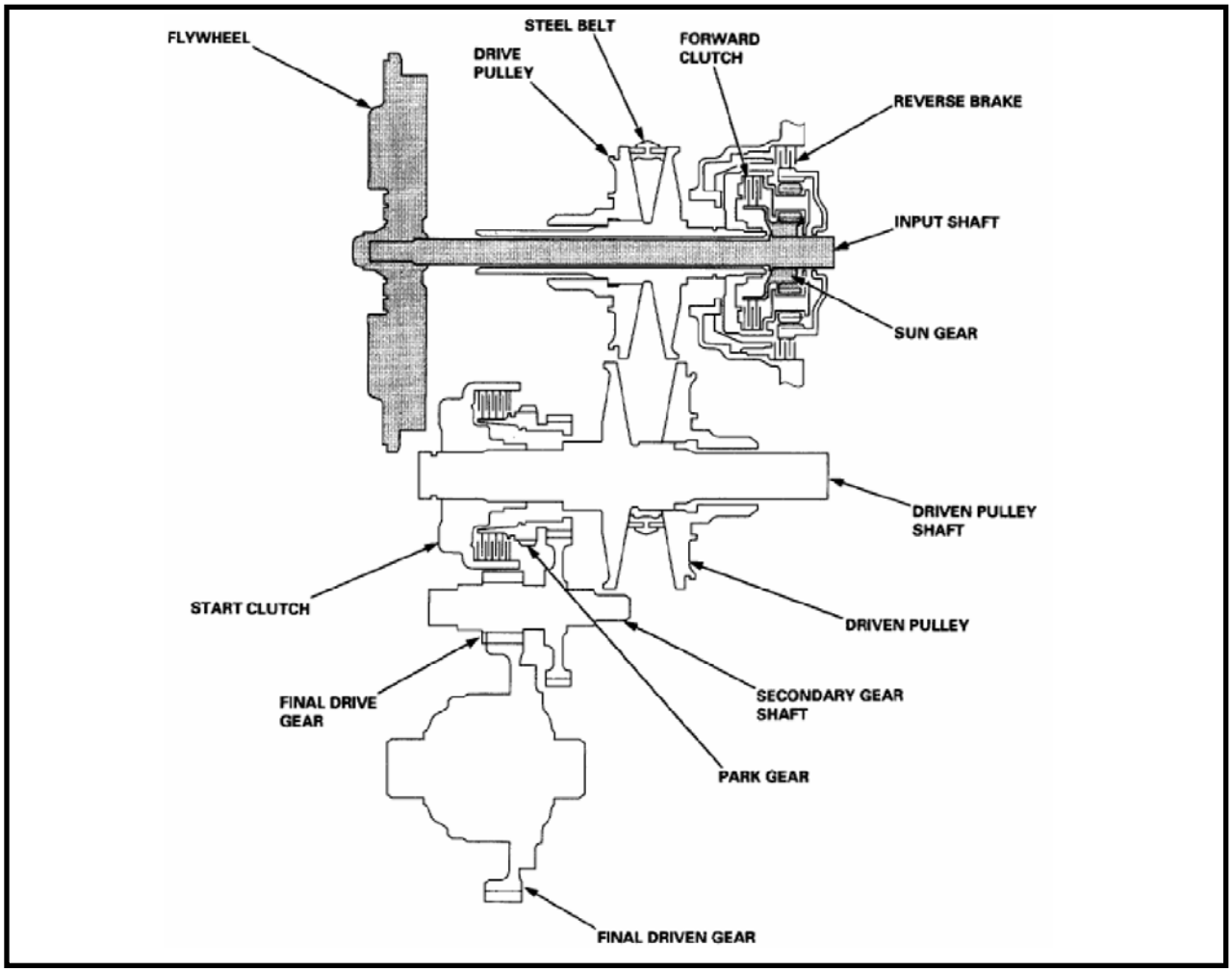
Pulleys:

Each pulley consists of a movable face and a fixed face, and the effective pulley ratio changes with engine speed. A steel belt links the drive pulley and the driven pulley. To achieve a low pulley ratio, high hydraulic pressure works on the movable face of the driven pulley and reduces the effective diameter of the drive pulley, and a lower hydraulic pressure works on the movable face of the drive pulley to eliminate the steel belt slippage. To achieve a high pulley ratio, high hydraulic pressure works on the movable face of the drive pulley and reduces the effective diameter of the driven pulley, and a lower hydraulic pressure works on the movable face of the driven pulley to eliminate the steel belt slippage.

Major Component Location



Power Flow - Park & Neutral



Park Position:

Start Clutch: released
Forward Clutch: released
Reverse Brake: released

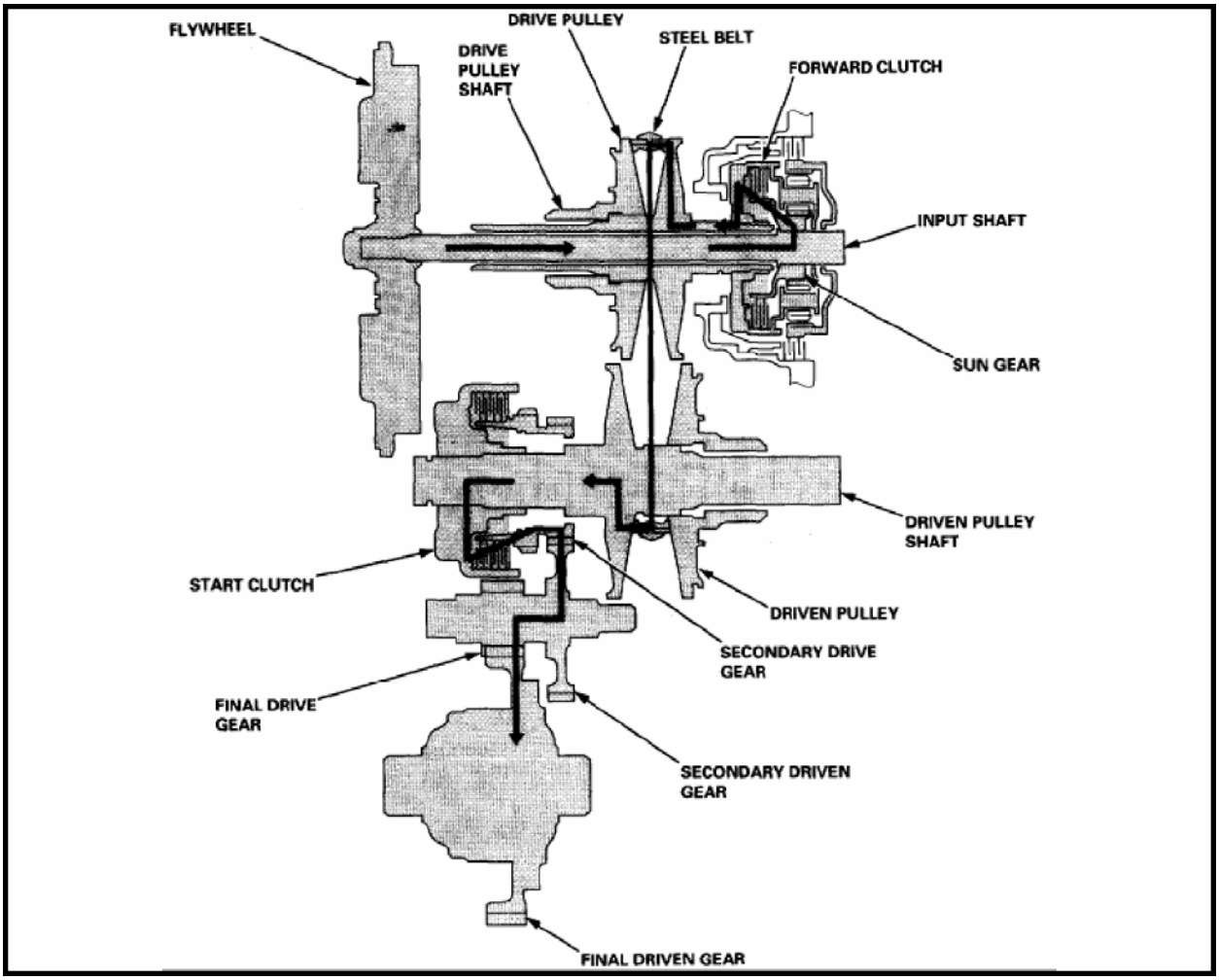
Hydraulic pressure is not applied to the start clutch, forward clutch and reverse brake. Power is not transmitted to the secondary drive gear. The secondary drive gear is locked by the park pawl interlocking the park gear.

Neutral Position:

Start Clutch: released
Forward Clutch: released
Reverse Brake: released

Hydraulic pressure is not applied to the start clutch, forward clutch and reverse brake. Power is not transmitted to the secondary drive gear.

Power Flow - Drive, Second & Low



Drive, Second and Low Position - Forward Range:

Start Clutch: engaged
Forward Clutch: engaged
Reverse Brake: released

1. Hydraulic pressure is applied to the forward clutch and start clutch, and the sun gear drives the forward clutch.

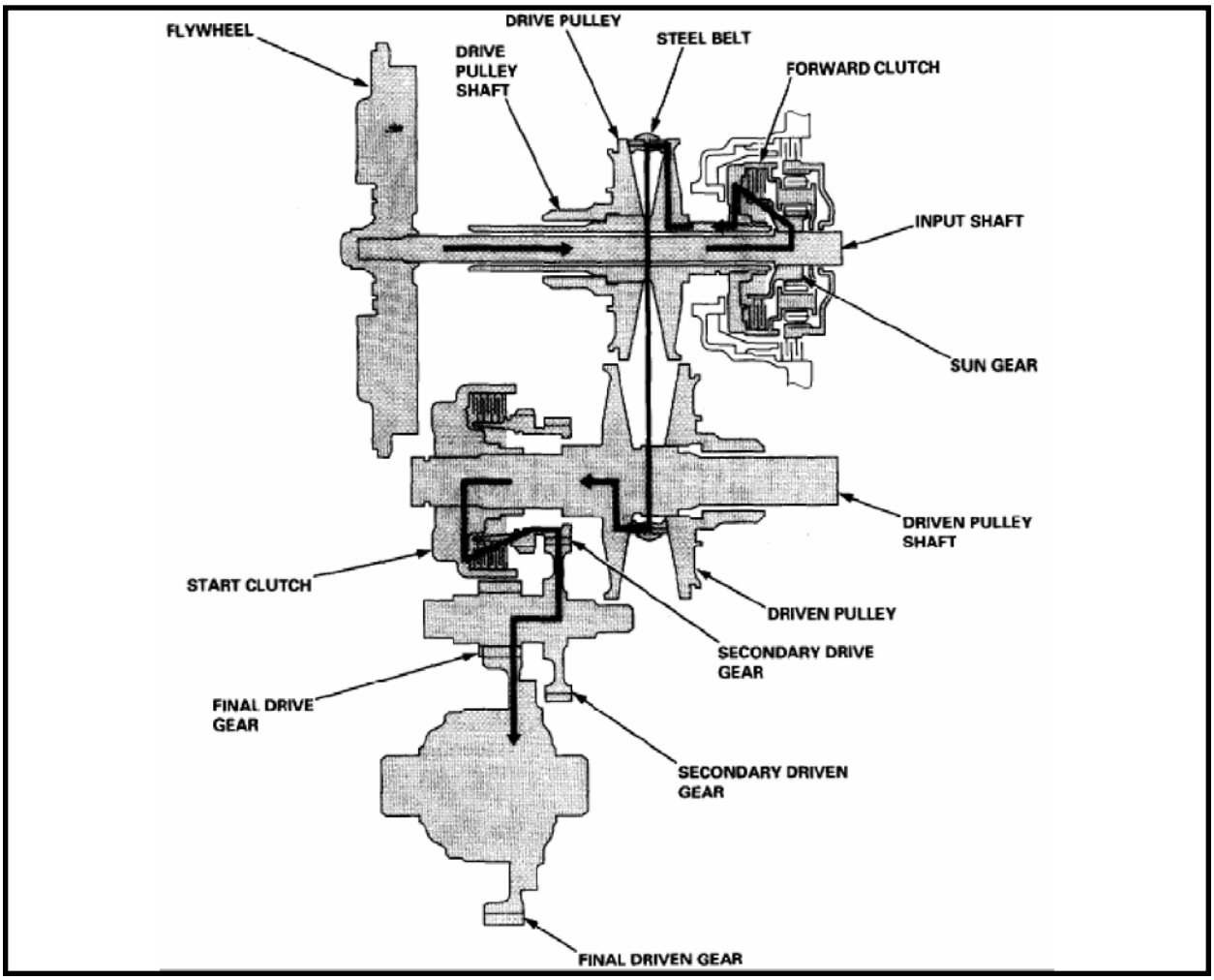
2. The forward clutch drives the drive pulley shaft, which drives the driven pulley shaft linked by the steel belt.

3. The driven pulley shaft drives the secondary drive gear, via the start clutch.

4. Power is transmitted to the secondary driven gear, which drives the final driven gear.

The working hydraulic pressure on the movable face of each shaft depends on the throttle opening position.

Power Flow - Reverse



Reverse Position:

Start Clutch: engaged
Forward Clutch: released
Reverse Brake: engaged

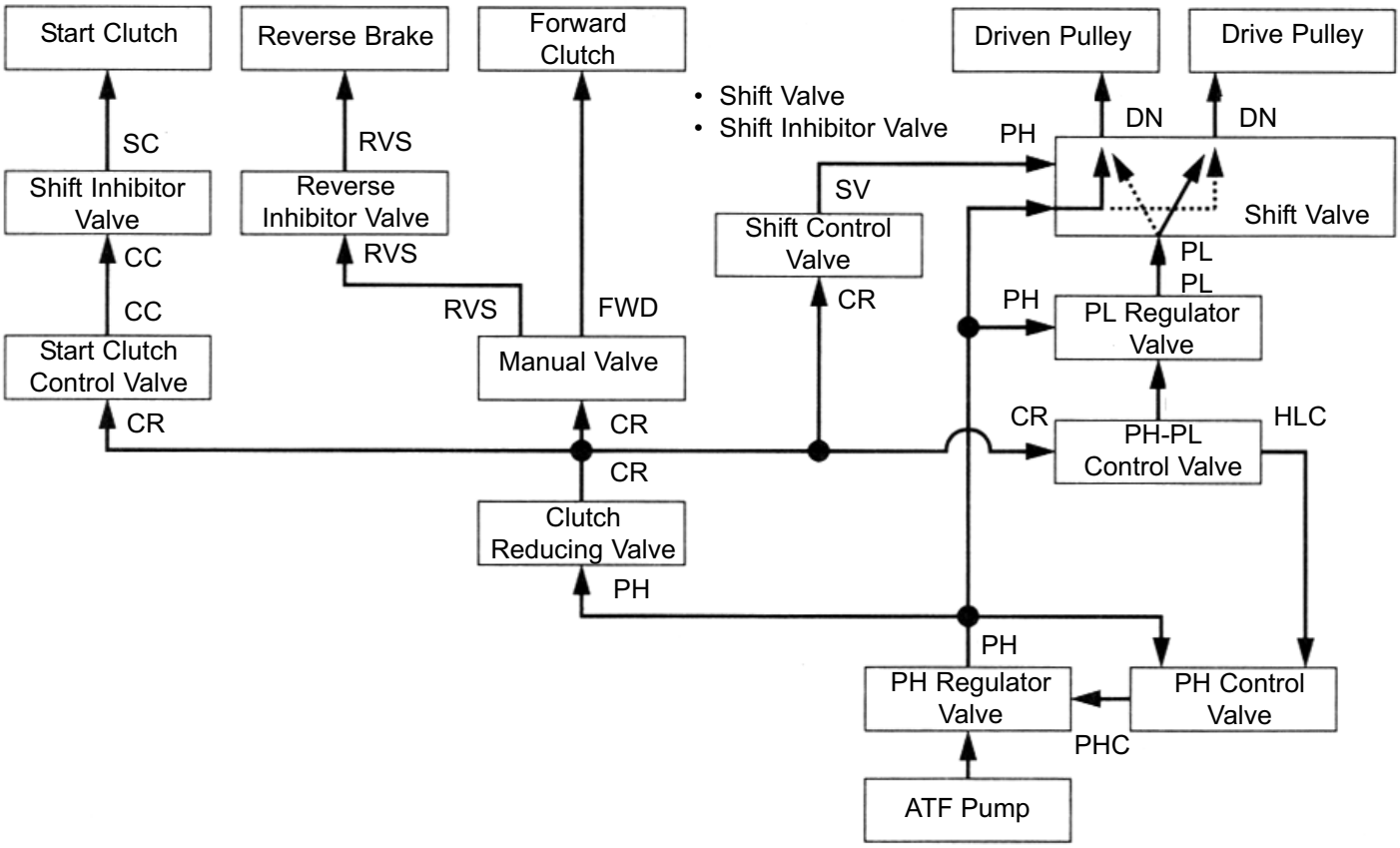
1. The hydraulic pressure is applied to the reverse brake and the start clutch. The sun gear drives the pinion gears, and the pinion gears revolve around the sun gear. The carrier assembly rotates in the opposite direction from the rotation direction of the sun gear.

2. The carrier assembly drives the drive pulley shaft via the forward clutch drum, and the drive pulley shaft drives the driven pulley shaft linked by the steel belt.

3. The driven pulley shaft drives the secondary drive gear via the start clutch.

4. Power is transmitted to the secondary driven gear, which drives the final driven gear.

Hydraulic Flow



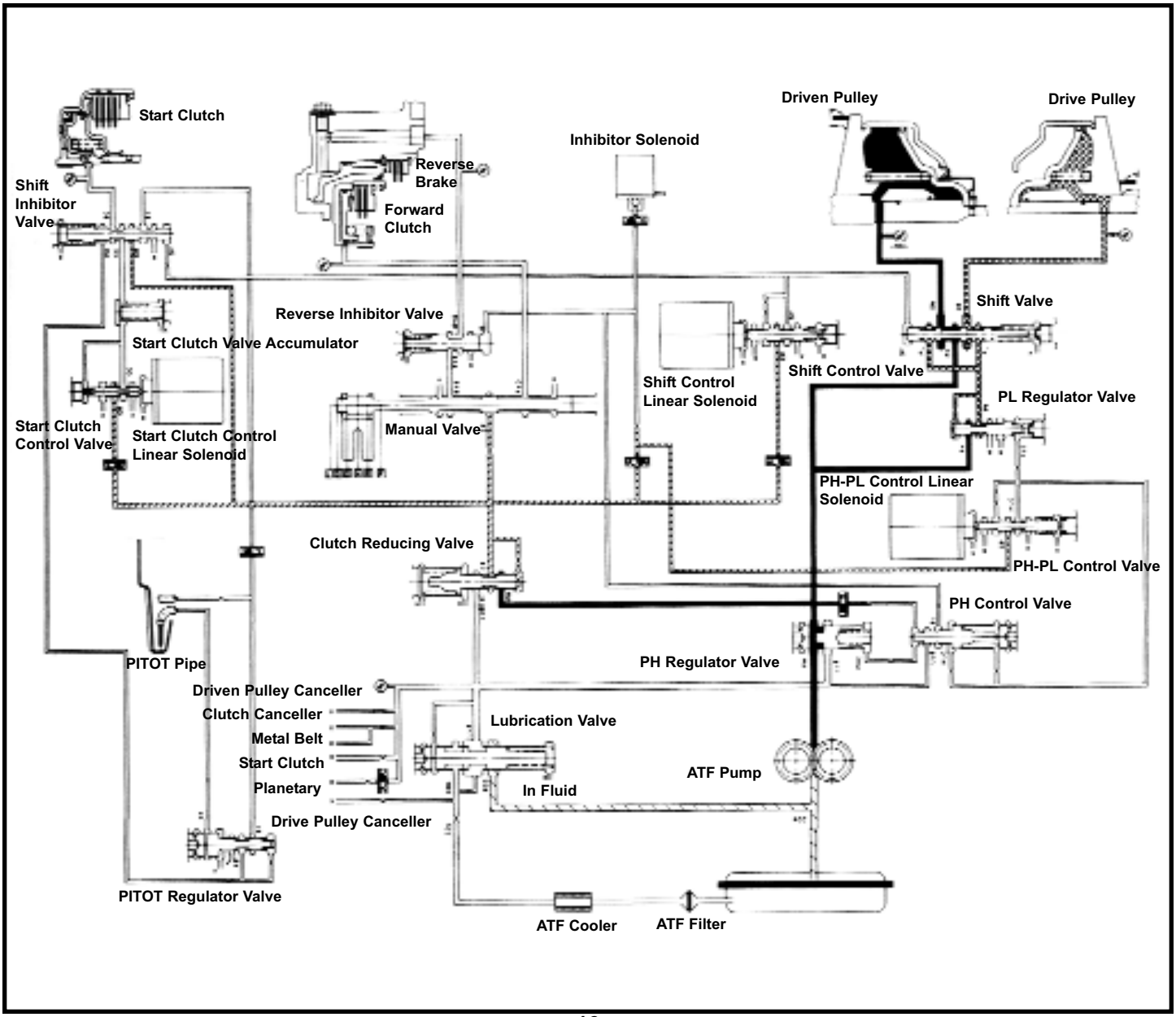
No.	Description of Pressure	No.	Description of Pressure
CC	Clutch Control	PP	PITOT Pipe
COL	ATF Cooler	PR	PITOT Regulator
CR	Clutch Reducing	RCC	Recirculation
DN	Driven Pulley	RI	Reverse Inhibitor
DR	Drive Pulley	RVS	Reverse Brake
FWD	Forward Clutch	SC	Start Clutch
HLC	PH-PL Control	SI	Shift Inhibitor
LUB	Lubrication	SUC	Suction
PH	Pressure High	SV	Shift Valve
PHC	PH Control	X	Leak
PL	Pressure Low		

Hydraulic Flow Continued...

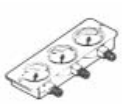
N Position

As the engine turns, the ATF pump also starts to operate. Fluid from the ATF pump flows to the PH regulator valve and the clutch reducing valve. The PH regulator valve regulates high pressure (PH), and send it to the shift valve and the PL regulator valve. The high pressure (PH) flows to the movable face of the driven pulley via the shift valve, and turns into low pressure (PL) at the PL regulator valve. The low pressure (PL) flows to the movable face of the drive pulley via the shift valve. At this time, the pulley ratio remains low.

The high pressure (PH) becomes the clutch reducing pressure (CR) at the clutch reducing valve. The clutch reducing pressure (CR) flows to the start clutch control valve, the manual valve, the PH-PL control valve, and the shift control valve, and is intercepted by those valves. Under this condition, hydraulic pressure is not applied to the clutches and reverse brake.



Line Pressure & Pressure Tap Locations

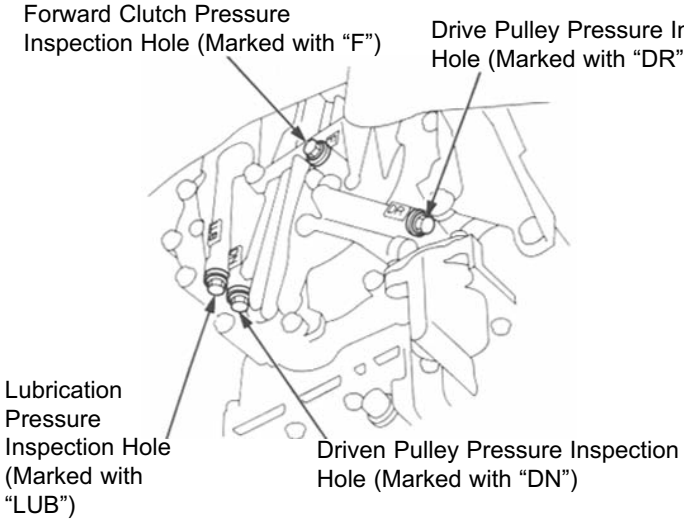


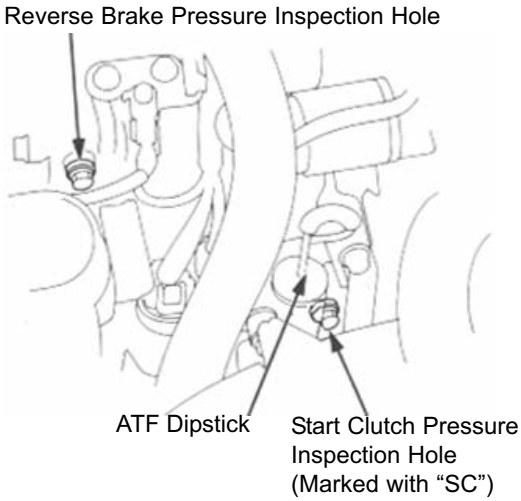
A/T Oil Pressure Gauge Set w/panel 07406-0020400

A/T Low Pressure Gauge w/panel 07406-0070300

A/T Pressure Hose Adapter 07MAJ-PY40120 (4 Required)

A/T Pressure Hose 2210 mm 07MAJ-PY4011A (4 Required)



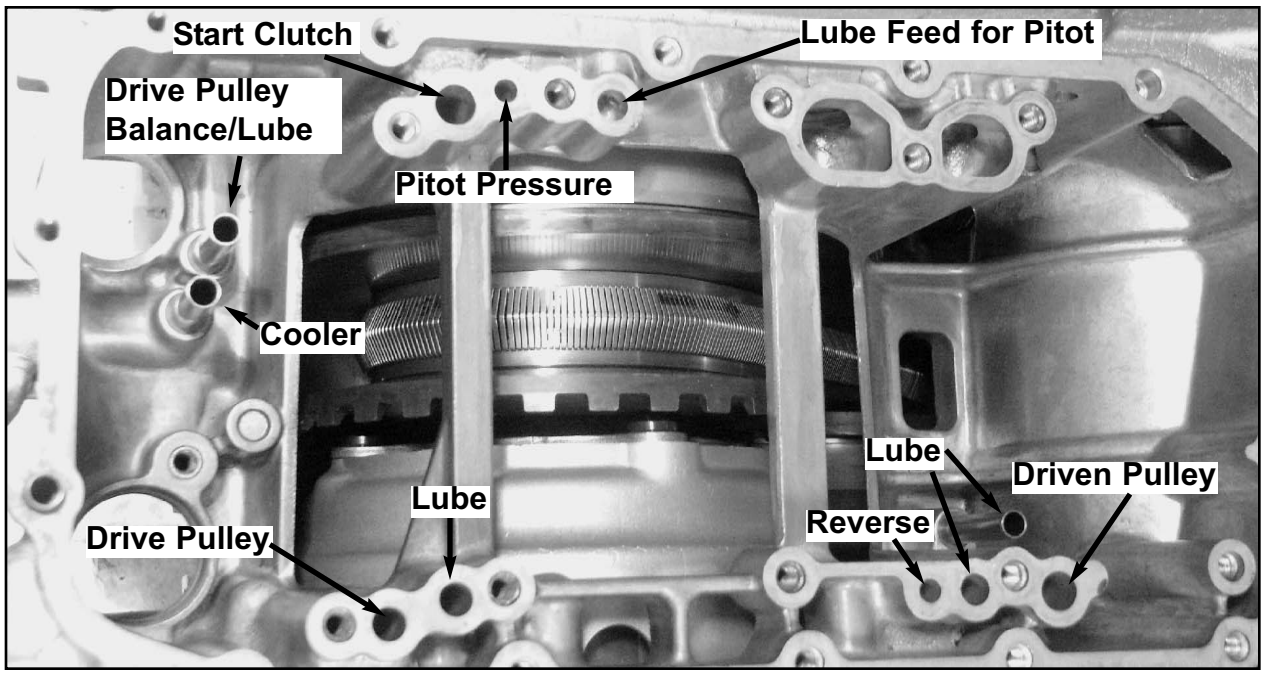


Pressure Specification

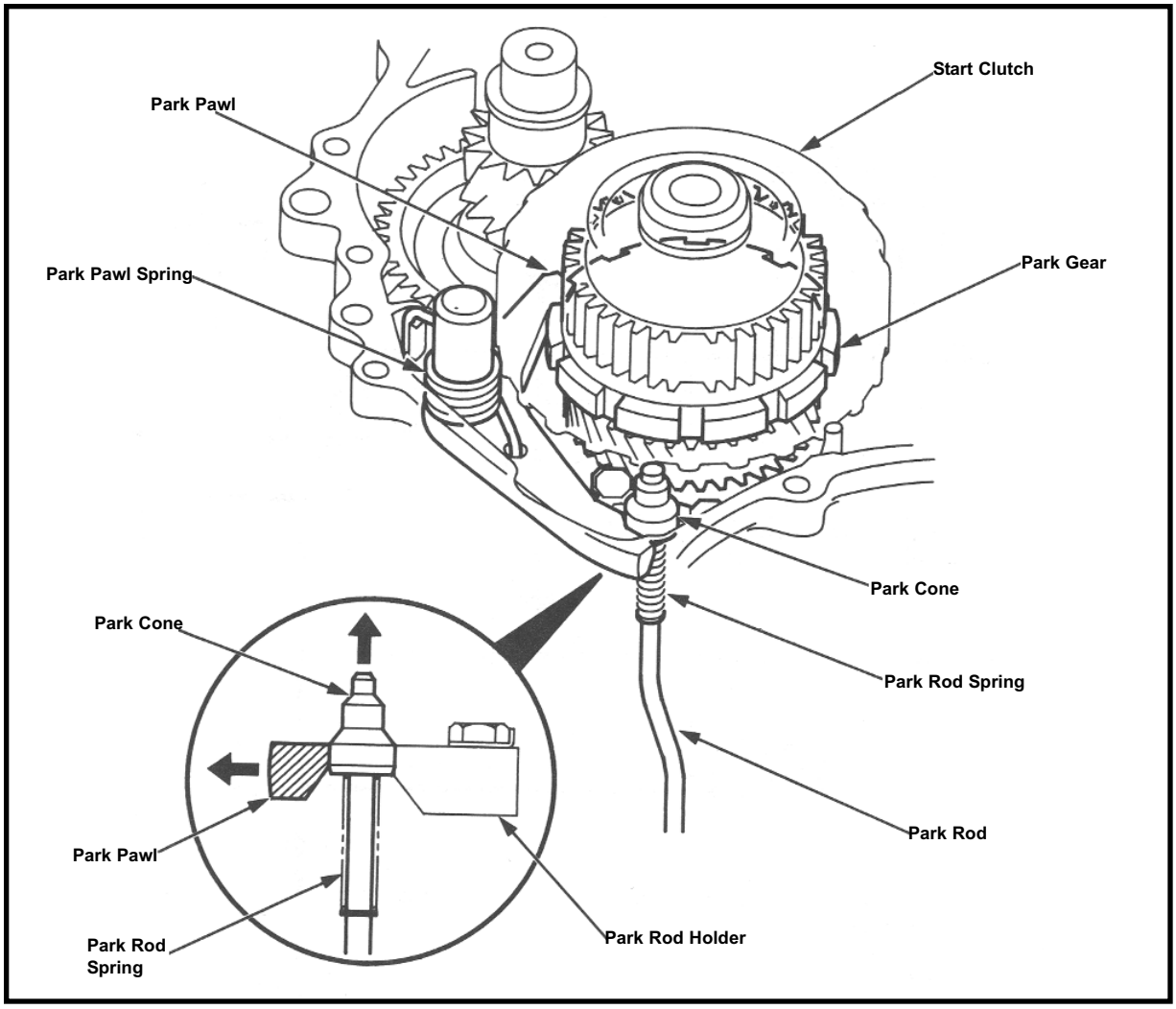
Shift Lever Position	Circuit Pressure	Condition	Pressure
D	Forward Clutch	Engine @ 1500 rpm with wheels turning freely	200-253 psi
R	Reverse Clutch	Engine @ 1500 rpm with wheels turning freely	200-253 psi
N	Drive Pulley	Engine @ 1500 rpm with wheels turning freely	28-101 psi
N	Driven Pulley	Engine @ 1500 rpm with wheels turning freely	218-334 psi
N	Lubrication	Engine @ 3000 rpm	Above 30 psi
D	Start Clutch	Idle	35-40 psi
D	Start Clutch	Stall	120-130 psi

CAUTION **When pressure testing drive and driven pulley pressure can exceed 700 psi if transaxle is in failsafe. Pressure this high can damage your gauges or rupture the hoses.**

Air Test Locations



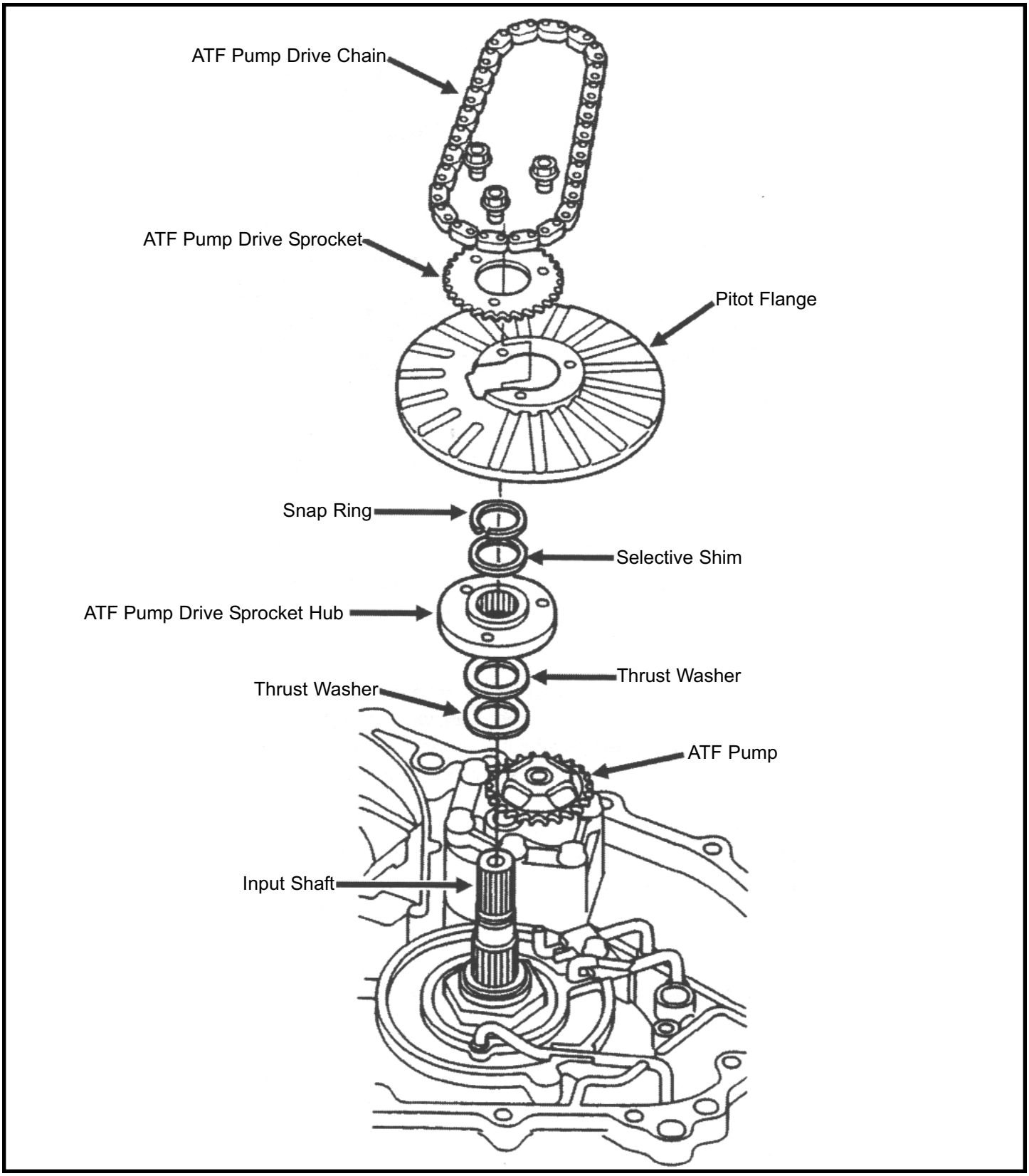
Park Mechanism Exploded View



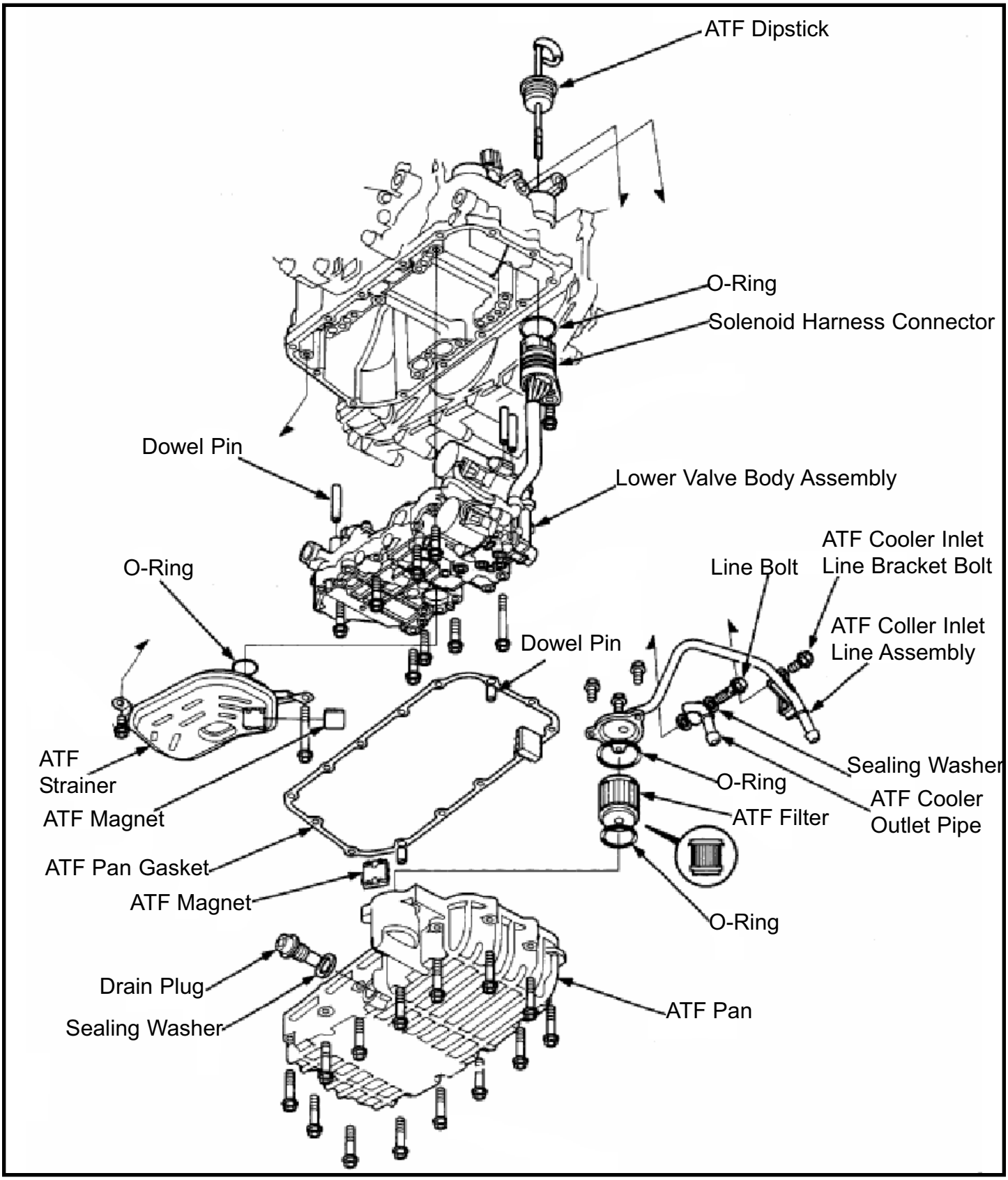
The park mechanism locks the transmission by engaging the park pawl with the park gear which is integral with the secondary drive gear. The secondary drive gear engages with the secondary driven gear which engages with the final driven gear.

Shifting to the P position causes the park cone (installed at the end of the park rod) to press the park pawl onto the park gear. Even if the end of the park pawl rides on the top of the park gear teeth, slight movement of the vehicle will cause the park pawl and the park gear to mesh with each other completely because the park cone receives the tension from the park rod spring. The park pawl receives the tension (which acts to separate the park pawl from the park gear) from the park pawl spring.

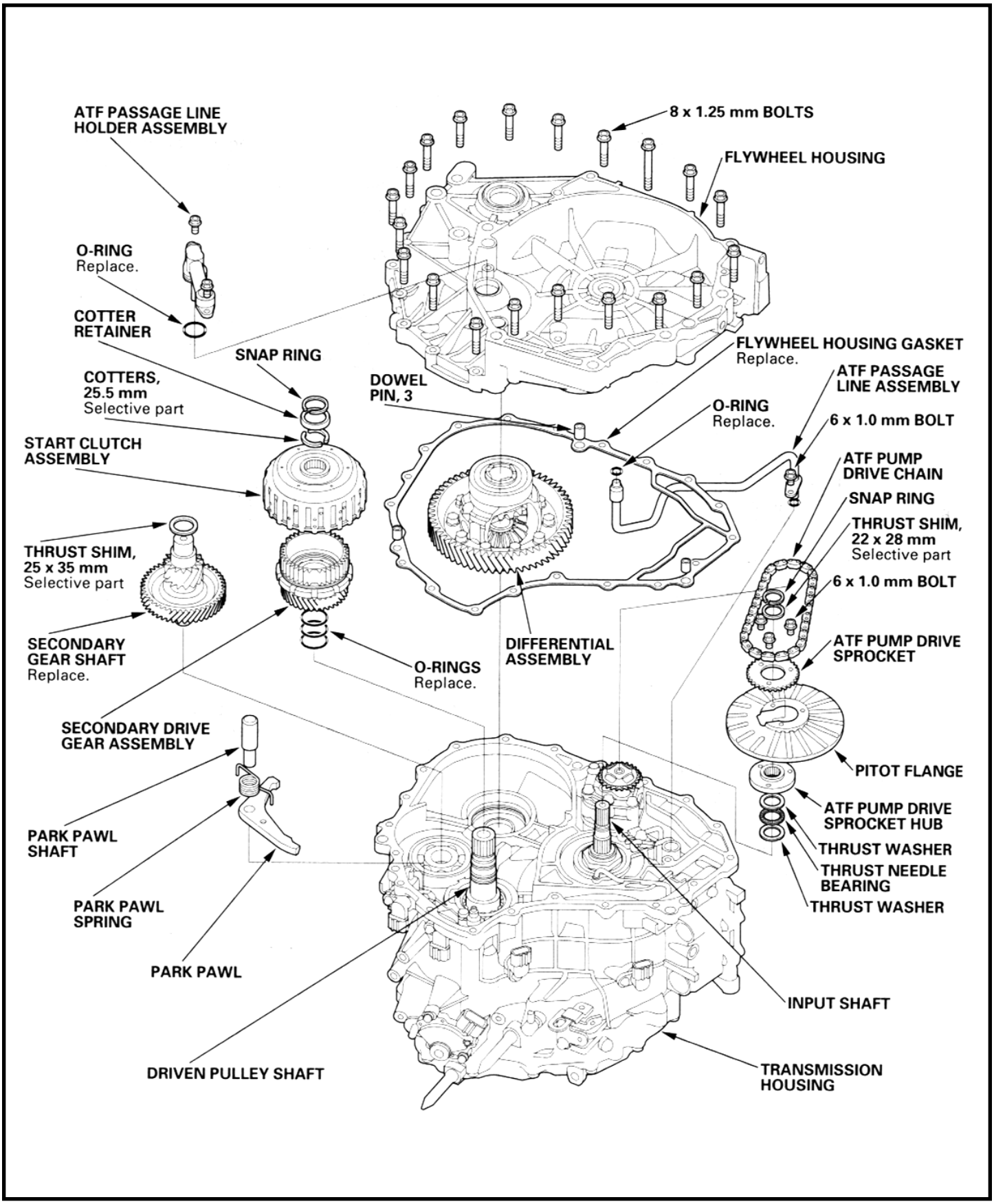
ATF Pump & Related Components Exploded View



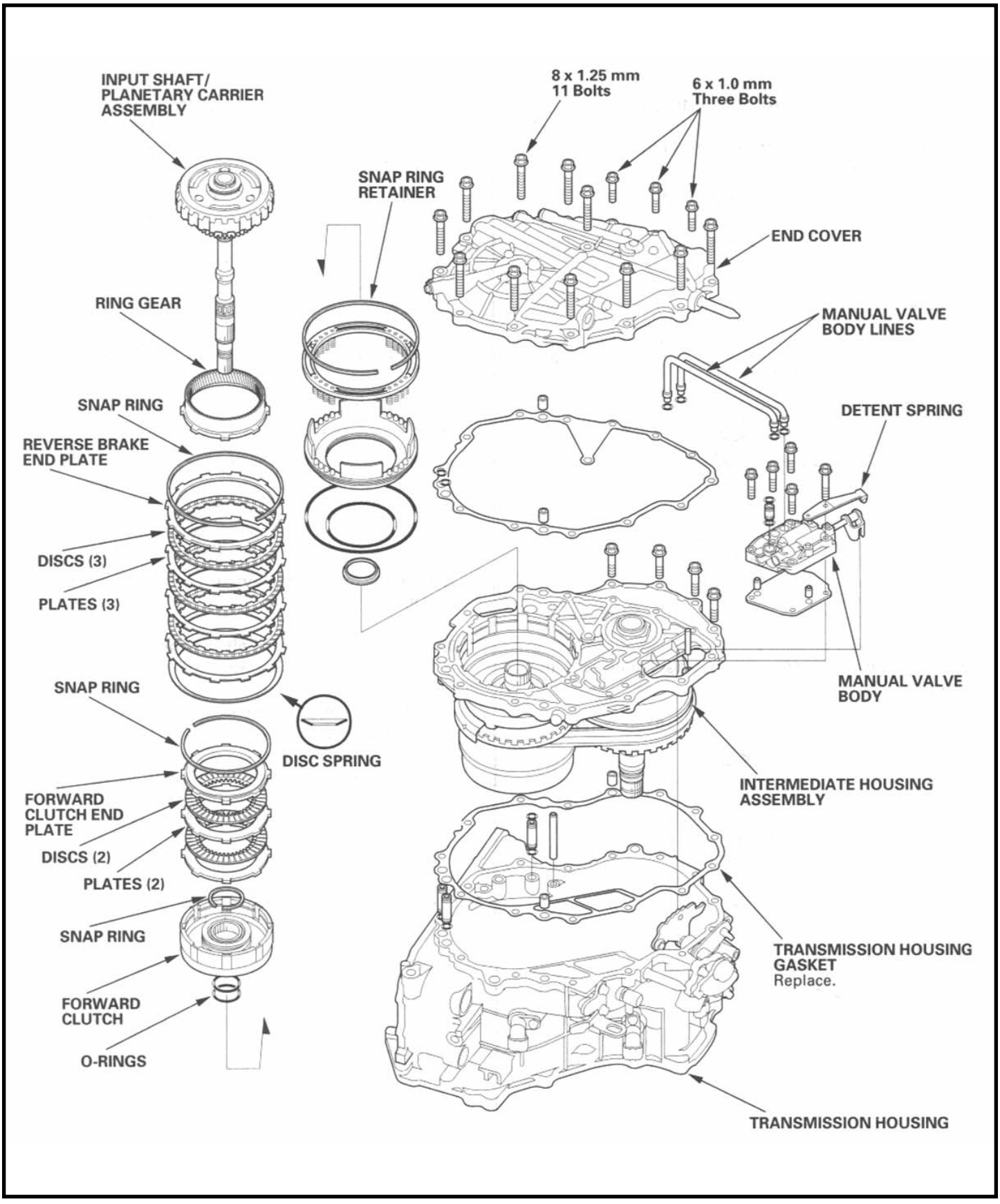
Transmission Lower Case/Valve Body Exploded View



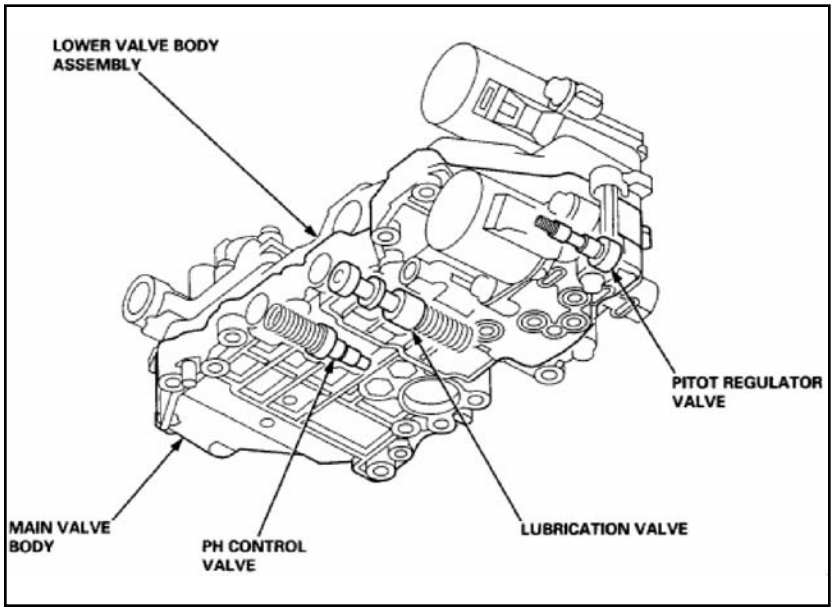
Flywheel Housing Exploded View



End Cover & Center Section Exploded View



Main Valve Body - Valves 1996-1999



The main valve body contains the PH control valve, the lubrication valve and the pitot regulator valve.

- **PH (Pressure High) Control Valve**

  The PH control valve supplies PH control pressure (PHC) in accordance with the PH-PL control pressure (HLC) and supplies PH control pressure to the PH regulator valve, which also regulates PH pressure. At kick-down, it increases PH control pressure which increases the high (PH) pressure. This shortens the shift speed by releasing the reverse inhibitor pressure (RI) from the inhibitor solenoid valve.

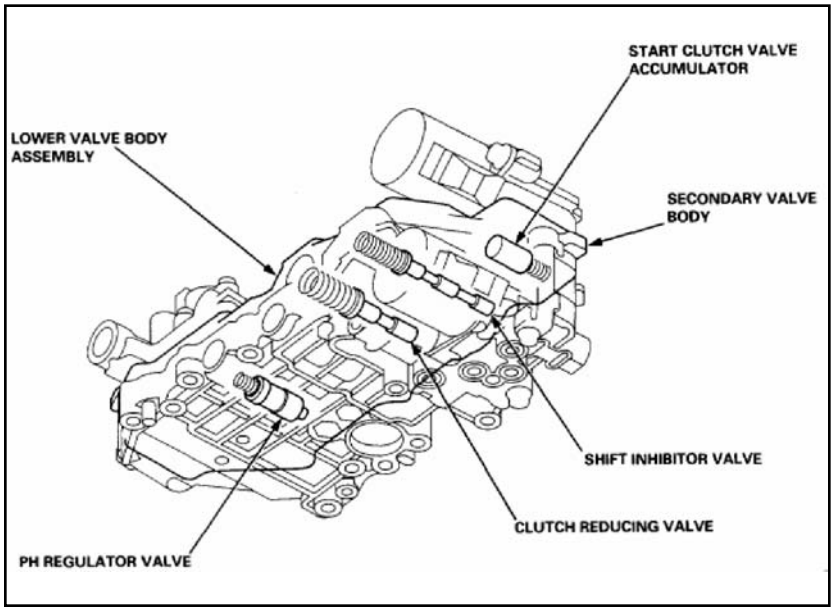
- **Lubrication Valve**

  The lubrication valve controls the lubrication pressure to each shaft and maintains lubrication pressure. When the pressure is too high, the spring is compressed. This moves the lubrication valve and opens the fluid leak passage.

- **Pitot Regulator Valve**

  The pitot regulator valve controls the start clutch pressure (SC) in accordance with the engine speed, when the electronic control system is faulty.

Secondary Valve Body 1996-1999



The secondary valve body contains the PH regulator valve, the clutch reducing valve, the start clutch valve accumulator and the shift inhibitor valve.

- **PH (Pressure High) Regulator Valve**

  The PH regulator valve maintains hydraulic pressure supplied from the ATF pump, and supplies PH pressure to the hydraulic control circuit and the lubrication circuit. PH pressure is regulated at the PH regulator valve by the PH control pressure (PHC) from the PH control valve.

- **Clutch Reducing Valve**

  The clutch reducing valve receives PH pressure from the PH regulator valve and regulates the clutch reducing pressure (CR). The clutch reducing valve supplies clutch pressure (CR) to the manual valve and the start clutch control valve and supplies signal pressure to the PH-PL pressure control valve, the shift control valve, and the inhibitor solenoid valve.

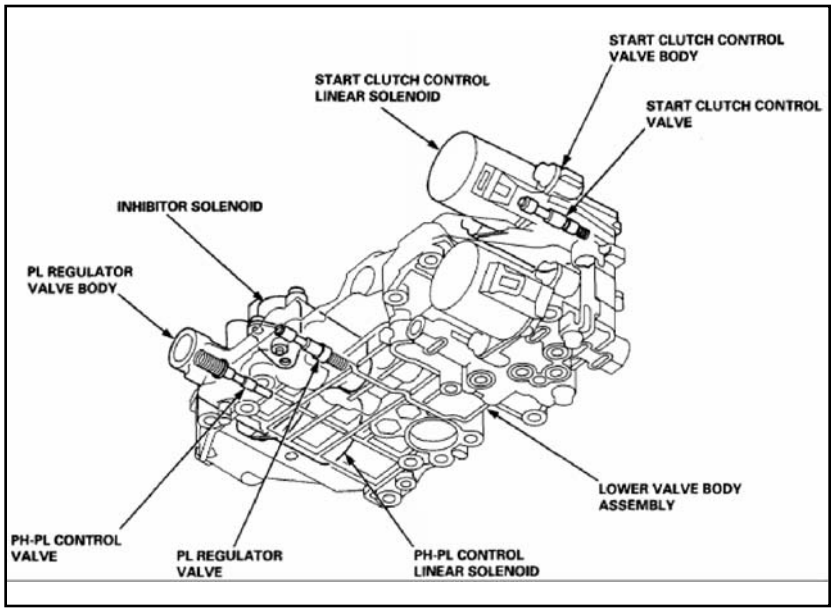
- **Start Clutch Valve Accumulator**

  The start clutch valve accumulator stabilizes the hydraulic pressure that is supplied to the start clutch.

- **Shift Inhibitor Valve**

  The shift inhibitor valve switches the fluid passage to switch the start clutch control from electronic control to hydraulic control when the electronic control system is faulty.
  It also supplies clutch reducing pressure (CR) to the pitot regulator valve and the pitot lubrication pipe.

PL Regulator & Start Clutch Control Valve Body 1996 to 1999



The PL regulator valve body contains the PL regulator valve and the PH-PL control valve, which is joined with the PH-PL control linear solenoid. The inhibitor solenoid is bolted on the PL regulator valve body.

- **PL (Pressure Low) Regulator Valve**

  The PL regulator valve supplies low pressure (PL) to the pulley to eliminate steel belt slippage. The PL pressure is controlled by the PH-PL control pressure (HLC).

- **PH-PL (Pressure High-Pressure Low) Control Valve**

  The PH-PL control valve controls the PL regulator valve according to engine torque. The PH-PL control valve supplies PH-PL control pressure (HLC) to the PH control valve to regulate PH pressure higher than PL pressure. The PH-PL control valve is controlled by the PH-PL control linear solenoid, which is controlled by the TCM or PCM.

- **Inhibitor Solenoid**

  The inhibitor solenoid controls the reverse inhibitor valve by turning on and off. The inhibitor solenoid also controls PH control pressure (PHC) by applying reverse inhibitor pressure (RI) to the PH control valve. The inhibitor solenoid is controlled by the TCM or PCM.

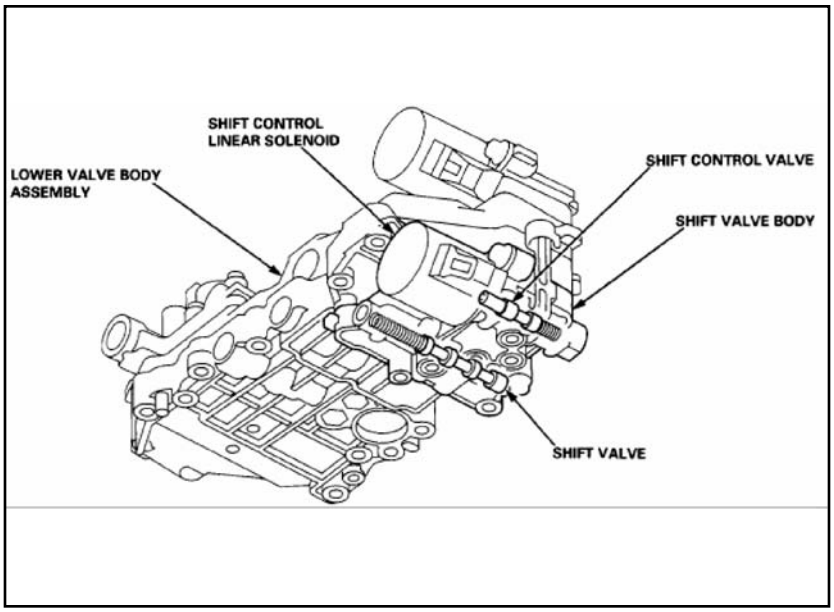
- **Start Clutch Control Valve Body**

  The start clutch control valve body contains the start clutch control valve. Both are joined to the start clutch control linear solenoid.

- **Start Clutch Control Valve**

  The start clutch control valve controls start clutch engagement according to the throttle opening. The start clutch control valve is controlled by the start clutch control linear solenoid, which is controlled by the TCM or PCM.

Shift Valve Body 1996-1999



The shift valve body contains the shift valve and the shift control valve. Both are joined to the shift control linear solenoid.

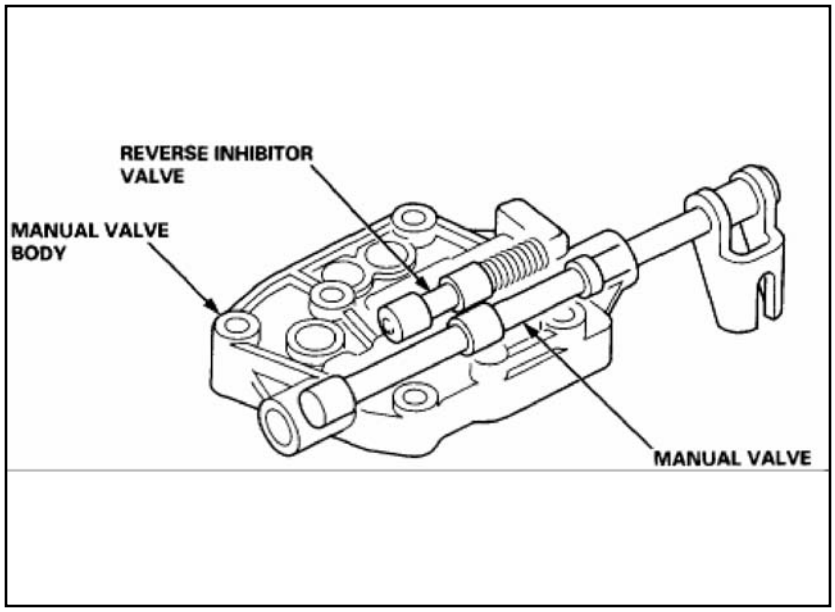
- **Shift Valve**

  The shift valve is controlled by shift valve pressure (SV) from the shift control valve. The shift valve distributes PH pressure and PL pressure to drive pulley and the driven pulley, to shift the transmission.

- **Shift Control Valve**

  The shift control valve controls the shift valve in accordance with the throttle opening and vehicle speed. The shift control valve is controlled by the shift control linear solenoid, which is controlled by the TCM or PCM. When the electronic control system is faulty, the shift control valve switches the shift inhibitor valve to uncover the port leading the pitot regulator pressure to the start clutch.

Manual & Reverse Inhibit Valve Body 1996-1999



The manual valve body contains the manual valve and the reverse inhibitor valve. The manual valve body is bolted to the intermediate housing.

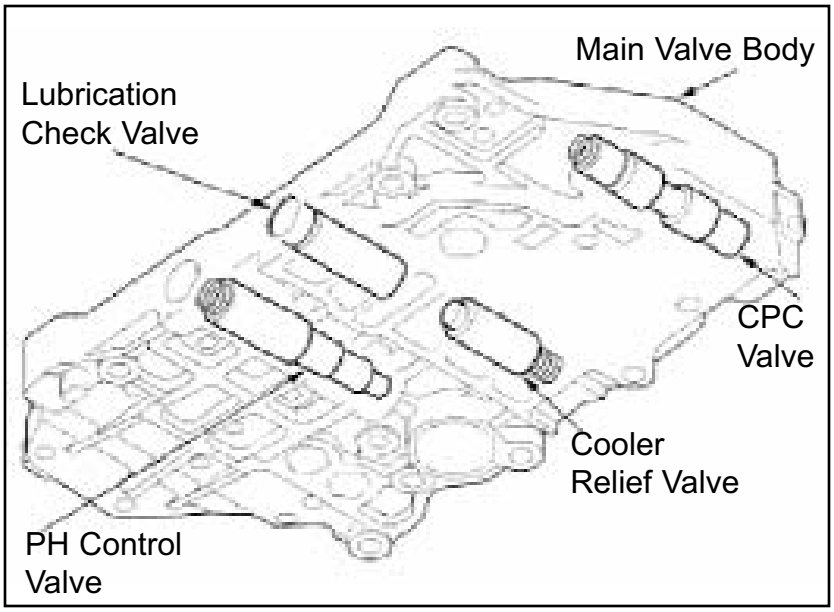
- **Manual Valve**

  The manual valve mechanically uncovers/covers the fluid passage according to the shift lever position.

- **Reverse Inhibitor Valve**

  The reverse inhibitor valve is controlled by the reverse inhibitor pressure (RI). It intercepts the hydraulic circuit to the reverse brake while the vehicle is moving forward at speeds over approximately 6 mph (10 km/h).

Main Valve Body 2000-2005



The main valve body contains the PH control valve, the CPC valve, the cooler relief valve, and the lubrication check valve.

•PH (Pressure High) Control Valve

The PH control Valve supplies PH control pressure to the PH regulator valve to regulate PH pressure in accordance with the PH - PL control pressure. At kick-down, it increases PH control pressure which increases the PH pressure.

•Lubrication Check Valve

The lubrication check valve stabilizes the lubrication pressure to the internal circuit.

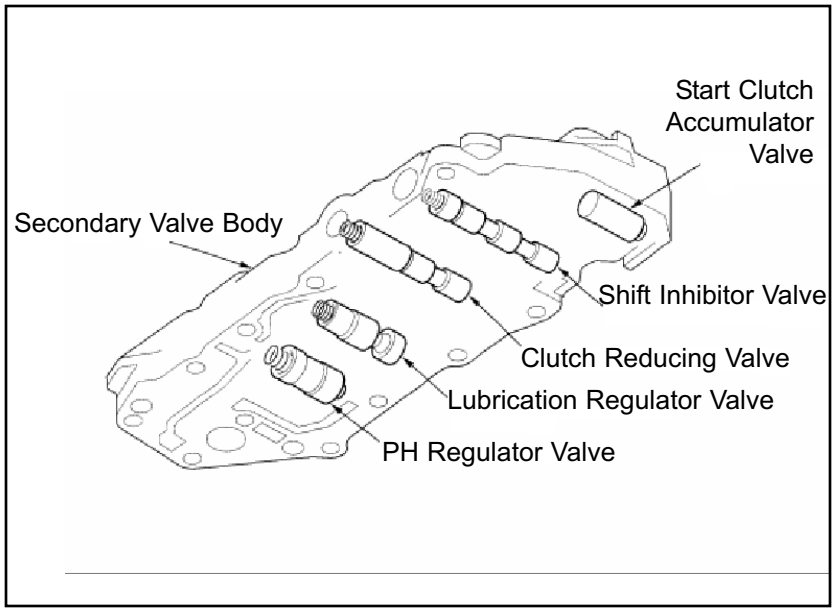
•Cooler Relief Valve

The cooler relief valve regulates ATF cooler pressure to the ATF cooler, and drain to the internal circuit.

•CPC (Clutch Pressure Control) Valve

The CPC valve regulates clutch pressure to the start clutch.

Secondary Valve Body 2000-2005



The secondary valve body contains the PH regulator valve, the lubrication regulator valve, the clutch reducing valve, the start clutch accumulator valve, and the shift inhibitor valve.

- **PH (Pressure High) Regulator Valve**

  The PH Regulator Valve maintains hydraulic pressure supplied from the ATF pump, and supplies pressure PH pressure to the hydraulic control circuit and the lubrication circuit. PH pressure is regulated at the PH regulator valve by the PH control pressure from the PH control valve.

- **Lubrication Regulator Valve**

  The lubrication regulator valve regulates lubrication pressure to the hydraulic circuit.

- **Clutch Reducing Valve**

  The clutch reducing valve receives PH pressure from the PH regulator valve and regulates the clutch reducing pressure.

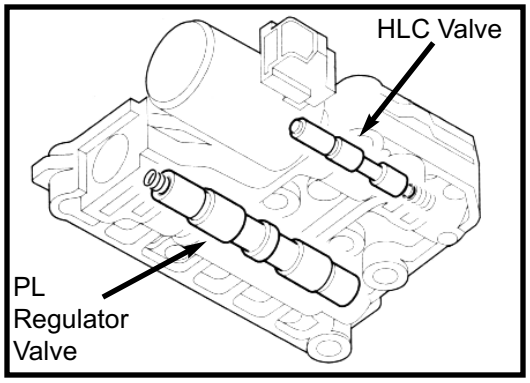
- **Start Clutch Accumulator Valve**

  The start clutch accumulator valve stabilizes the hydraulic pressure that is supplied to the start clutch.

- **Shift Inhibitor Valve**

  The shift inhibitor valve switches the fluid passage to switch the start clutch control from electronic control to hydraulic control.

Solenoid Valve Body 2000-2005



CVT Pulley Pressure Control Valve Body

The CVT pressure control valve body contains the PL regulator valve and the HLC valve, which is joined with the linear solenoid.

- **PL (Pressure Low) Regulator Valve**

  The PL regulator valve supplies low pressure to the pulleys to eliminate drive belt slippage.

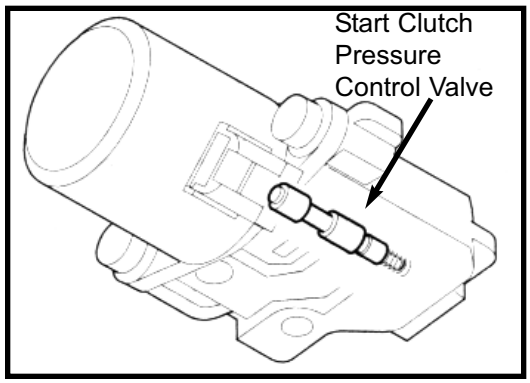
- **HLC (High-Low Control) Valve**

  The HLC valve controls the PL regulator valve according to the engine torque. The HLC valve supplies PH - PL control pressure to the PH control valve to regulate PH pressure higher than PL pressure. The HLC valve is controlled by the linear solenoid, which is controlled by the PCM.

- **Inhibitor Solenoid**

  The inhibitor solenoid is bolted to the CVT pulley pressure control valve body, and supplies SH-A pressure to the reverse inhibitor valve to control forward range and reverse range.

Solenoid Valve Body 2000-2005 Continued...

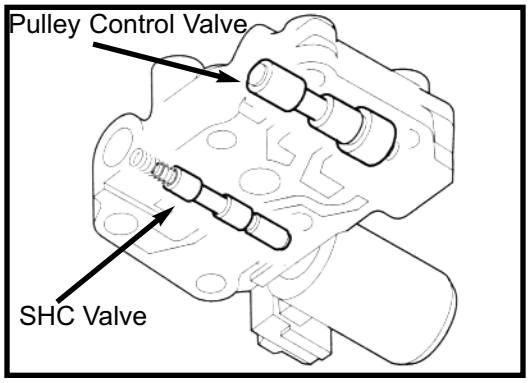


CVT Start Clutch Pressure Control Valve Body

The CVT start clutch pressure control valve body contains the start clutch control valve joined with the linear solenoid.

•Start Clutch Pressure Control Valve

The start clutch pressure control valve controls the start clutch engagement according to the throttle opening. The start clutch control valve is controlled by the linear solenoid, which is controlled by the PCM.



CVT Speed Change Control Valve Body

The CVT speed change control valve body contains the pulley control valve and the SHC valve joined with the linear solenoid.

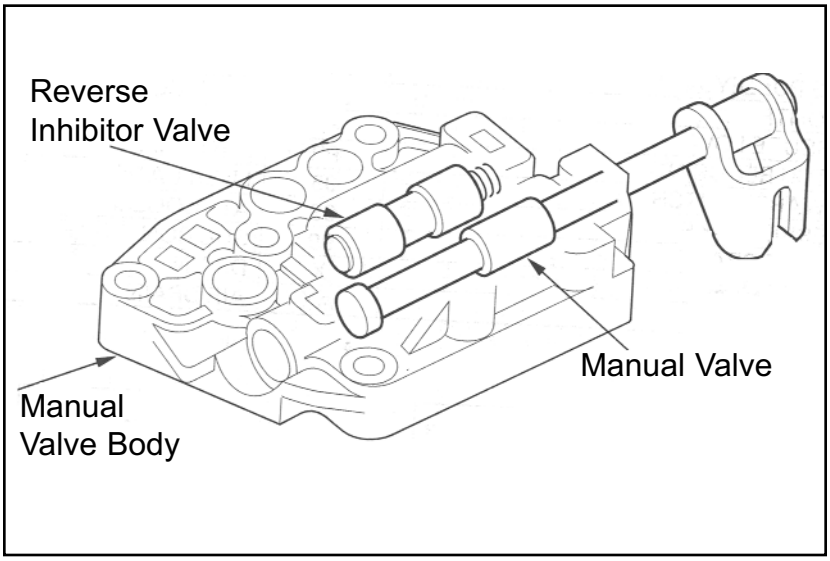
•Pulley Control Valve

The pulley control valve distributes PH pressure and PL pressure to the drive and driven pulleys, to shift the transmission.

•SHC (Shift Control) Valve

The SHC valve controls the pulley control valve by SHC pressure in accordance with the throttle opening and vehicle speed. The SHC valve is controlled by the linear solenoid, which is controlled by the PCM.

Manual & Reverse Inhibitor Valve Body 2000-2005



The manual & reverse inhibitor valve body contains the manual valve and the reverse inhibitor valves.

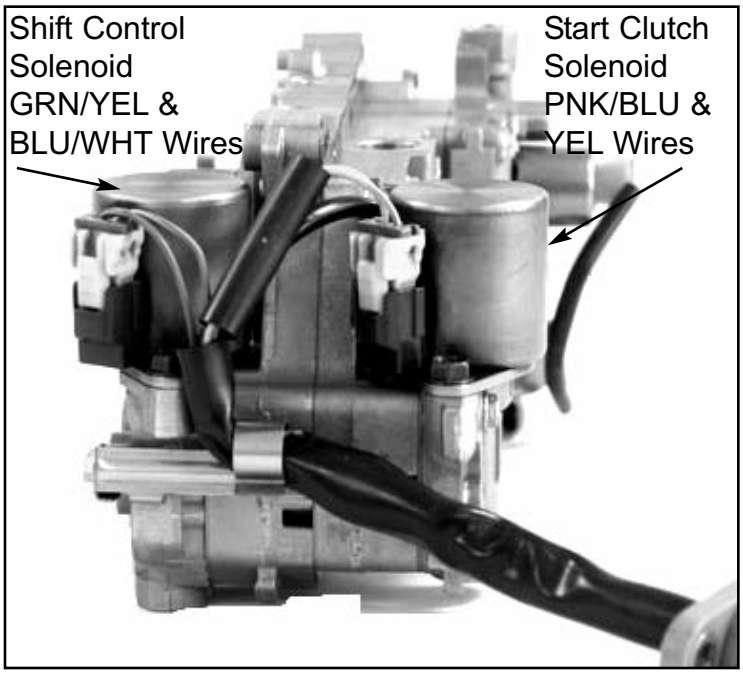
- **Manual Valve**

  The manual valve mechanically covers/uncovers the fluid passages according to the shifter lever positions.

- **Reverse Inhibitor Valve**

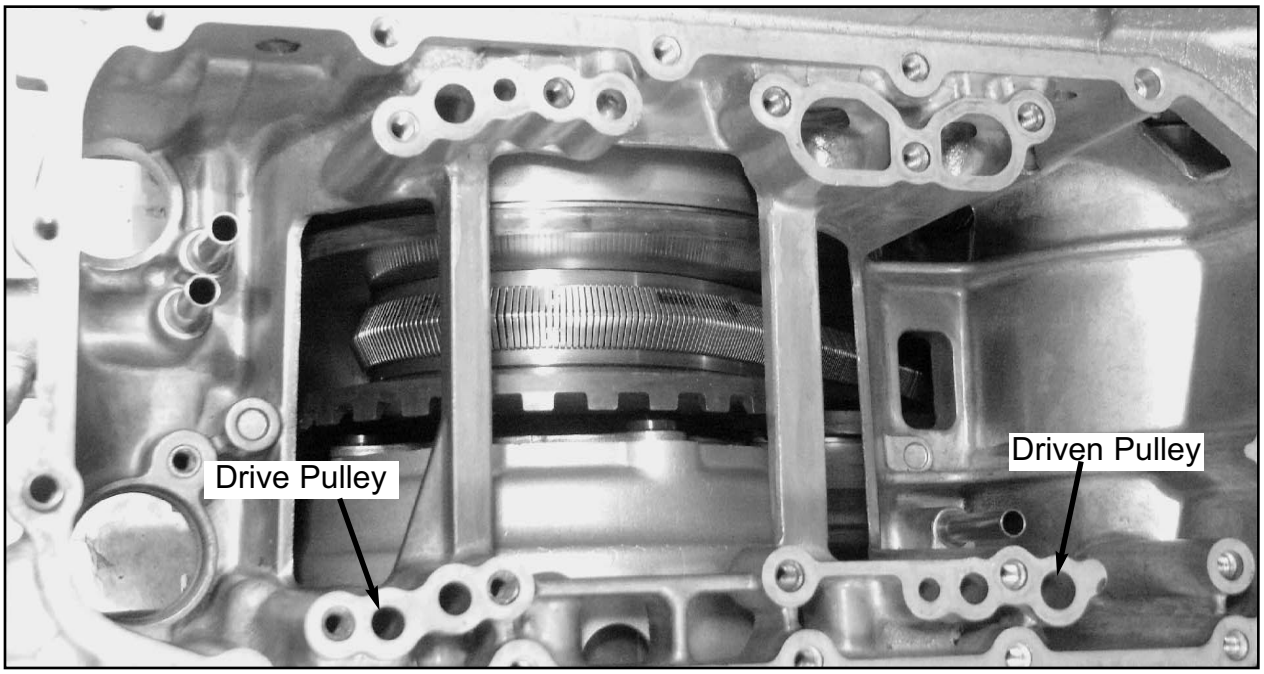
  The reverse inhibitor valve is controlled by the SH-A pressure from the reverse inhibitor solenoid. The reverse inhibitor valve interrupts the hydraulic circuit to the reverse brake while the vehicle is moving forward at speeds over about 6 mph.

Disassembly and Reassembly



Note location of shift control and start clutch solenoid wiring connectors.

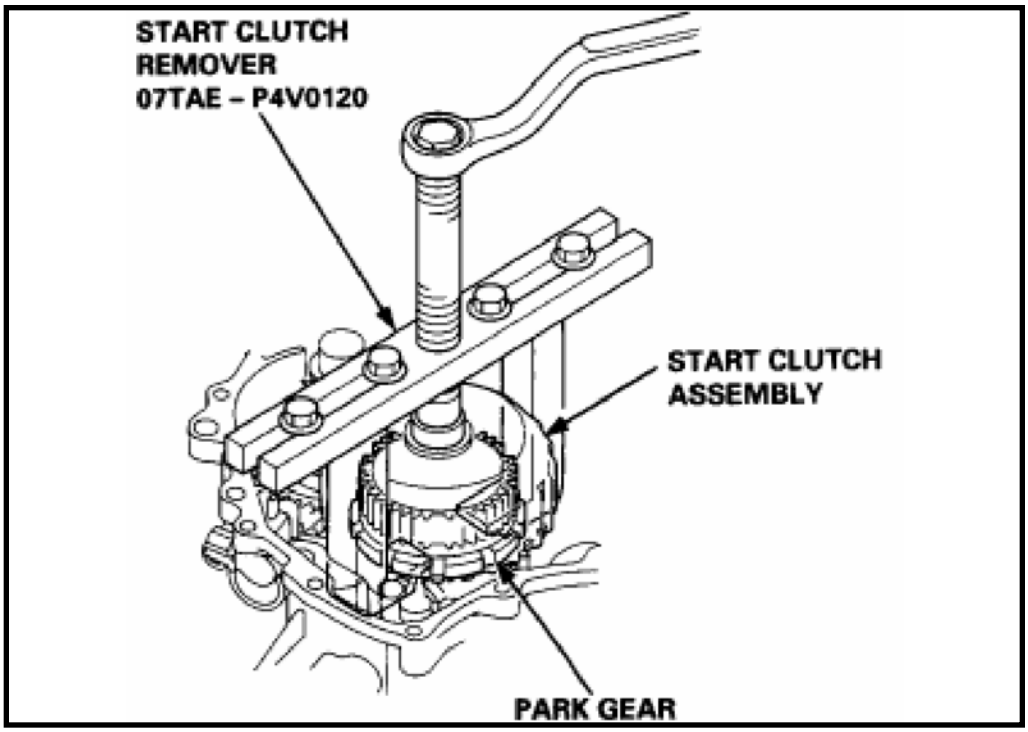
CAUTION ***Crossed wiring = engine stalls when put in gear.***



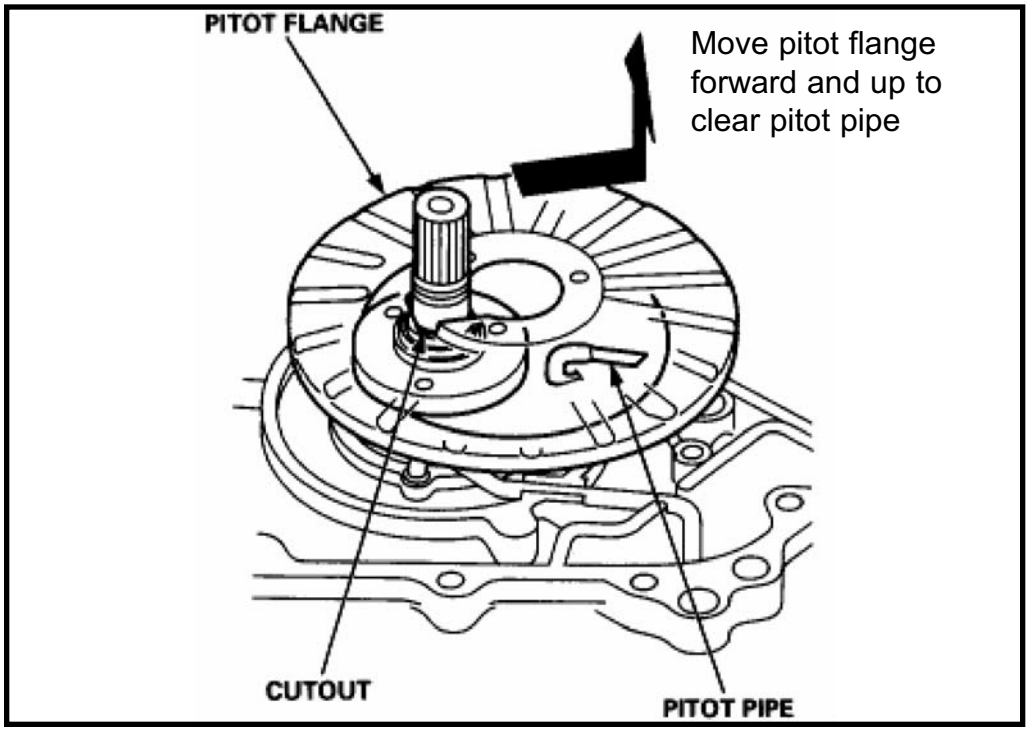
Air test pulleys before disassembly to check for hydraulic leaks.

Disassembly and Reassembly Continued...

Start Clutch Removal Exploded View

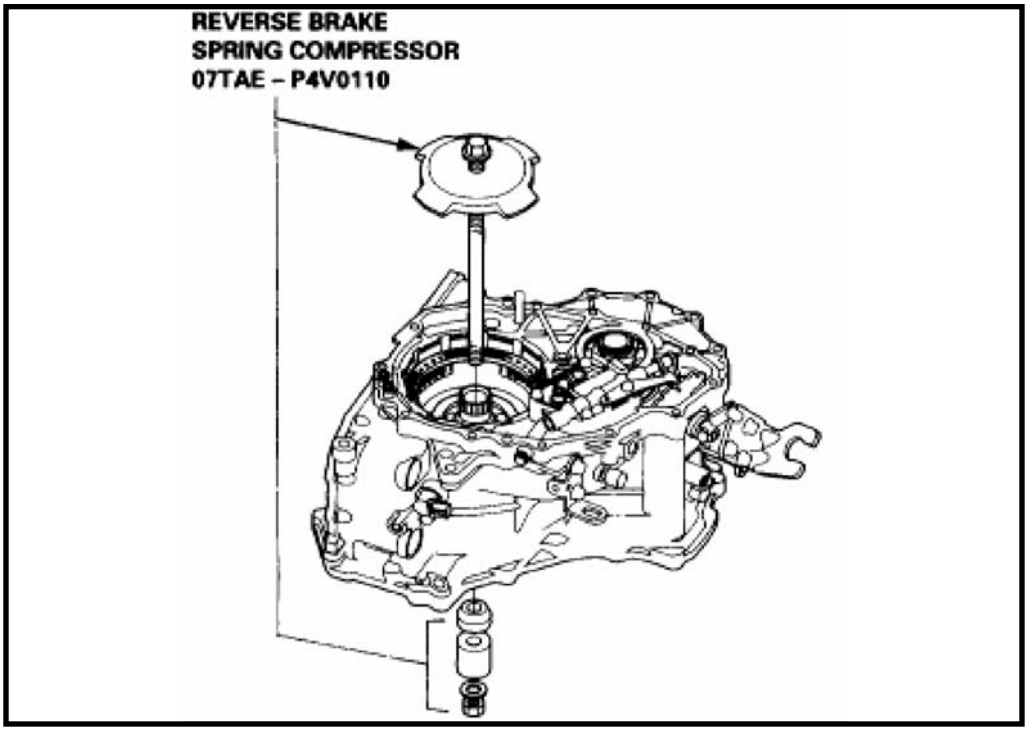


Pitot Flange Removal Exploded View



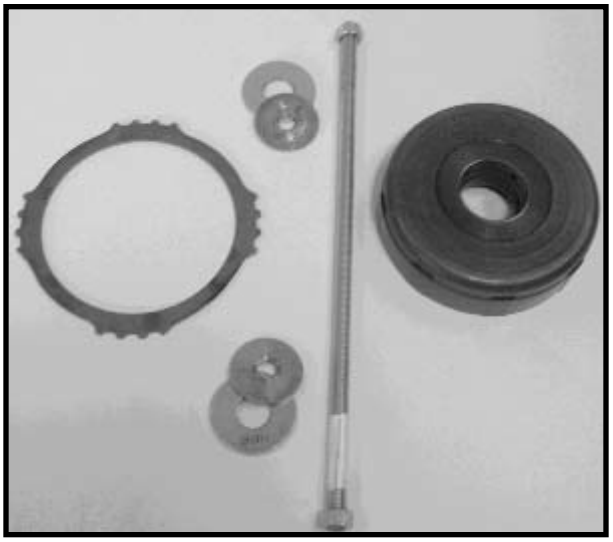
Disassembly and Reassembly Continued...

Reverse Brake Spring Retainer Removal Exploded View



How to Make Tool for Reverse Clutch

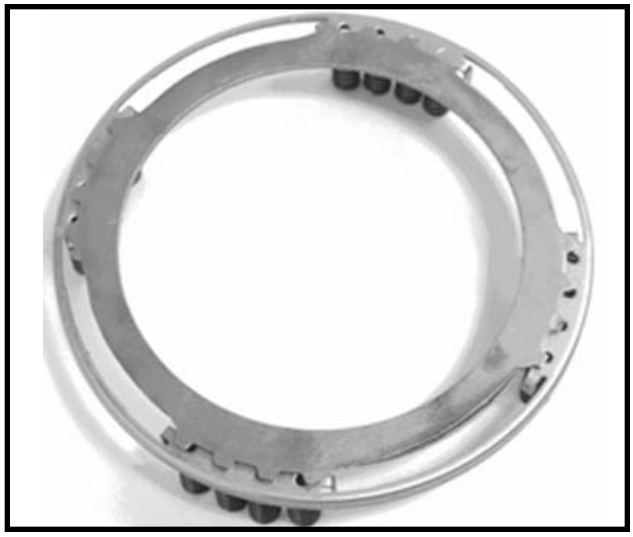
If you do not have the factory tool for compressing the reverse clutch piston return spring you can make a tool using a 2nd clutch steel plate from either a 3L30 or 4L30 transmission. You will also need a 12 inch long piece of 3/8 all thread, 4 large flat washes and two 3/8 course thread nuts.



How to Make Tool for Reverse Clutch Continued...

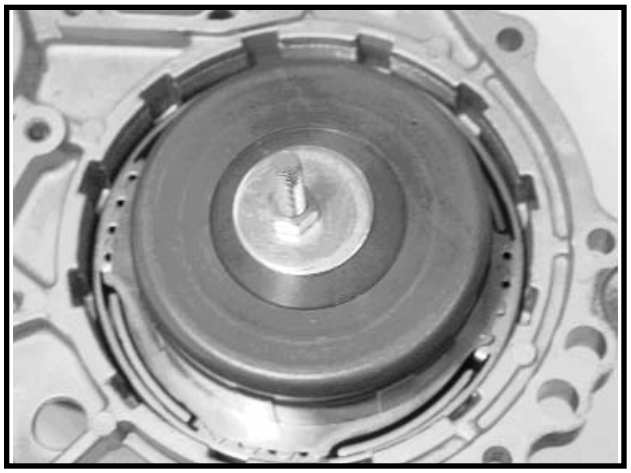
Start making your tool by modifying the steel plate. To do this, place the second clutch steel plate on top of the reverse clutch spring retainer. Mark all of the clutch teeth that are not in an area of the retainer where the return springs are located. Next grind off all the marked teeth. Continue to grind in the area where you removed the teeth so the remainder of the clutch plate will fit down into the reverse clutch apply piston.

SAFETY NOTE ***Always wear safety glasses while working with grinding equipment and in shop areas.***



To use the tool, place your all thread with two washers and a nut on one end up through the drive pulley shaft. Lay your modified steel clutch plate on top of the reverse clutch spring retainer. Now get the forward clutch drum and place it upside down on top of the modified clutch plate. Put the all-thread up through the clutch drum and install the remaining two flat washers and nut on the all thread. Make sure you align the steel plate so it will clear the reverse clutch piston. To compress the spring hold the lower nut and tighten the upper one.

NOTE **We made one nut on our all thread stationary. You can do this by flattening the threads, or welding. This step is optional.**

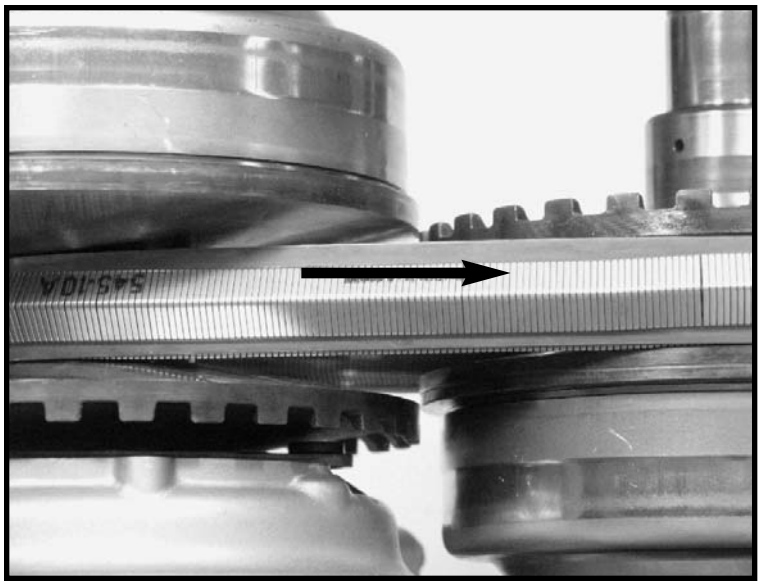


Disassembly and Reassembly Continued...

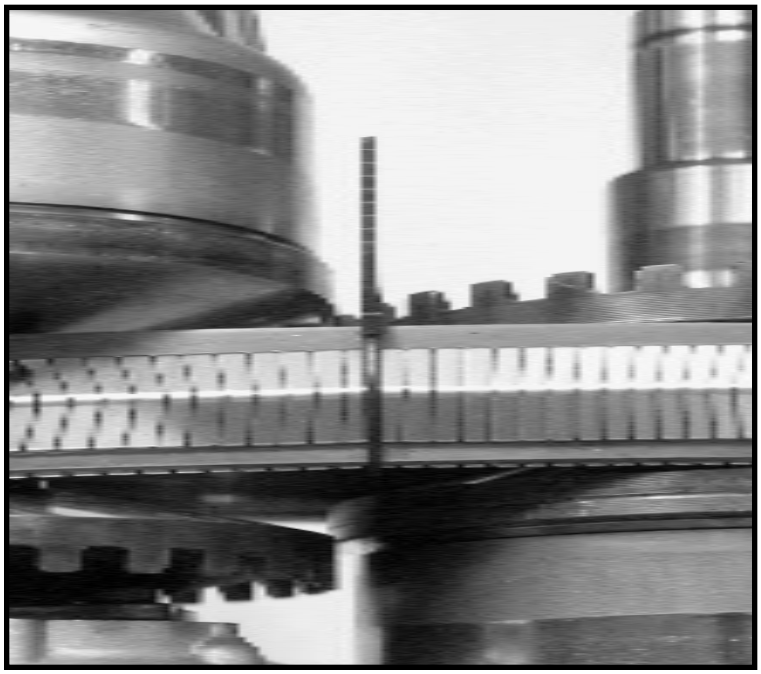
CAUTION **DO NOT WASH THE PULLEYS OR BELT IN SOLVENT OR RUN THEM THROUGH THE CLEANING MACHINE.**

Drive & Driven Pulley

1) Note the direction of the arrow on the drive belt before disassembly. The drive belt rotates in the same direction as engine rotation. The drive belt is directional. It is very important the drive belt be reinstalled with the arrow pointing in the correct direction.



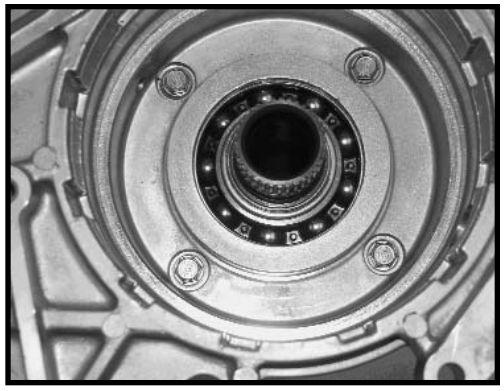
2) Install two wire ties on the belt to keep it from coming apart.

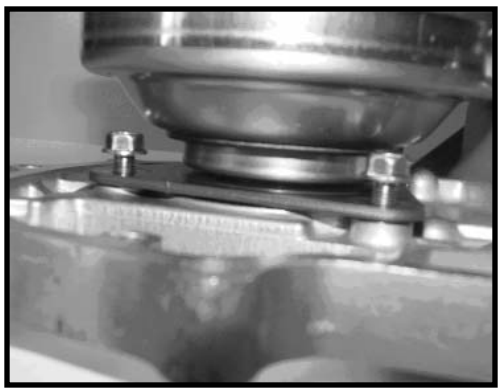


Disassembly and Reassembly Continued...

Drive & Driven Pulley Continued...

3) Remove the bearing retaining bolts from both bearing retainers.





4) Use a bar puller to push the Driven Pulley out of the center section.

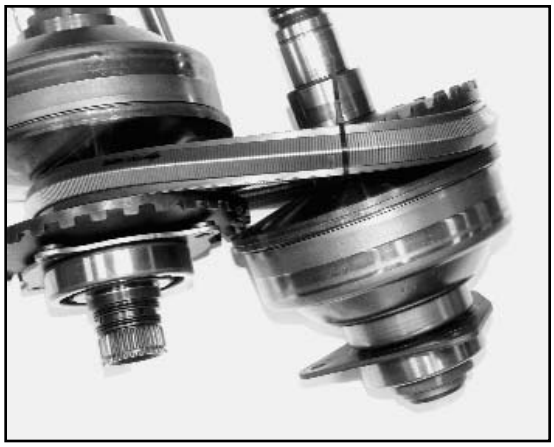
5) Use a two jaw puller to compress the movable face of the Drive Pulley to its maximum wide position.

TECH TIP **You can use a 4" plastic drain pipe coupling to support the pulleys during disassembly and assembly.**

Disassembly and Reassembly Continued...

Drive & Driven Pulley Continued...

6) Once the Drive Pulley is completely expanded you will need to position both the Drive and Driven pulleys inside one another so the Drive belt can be removed.

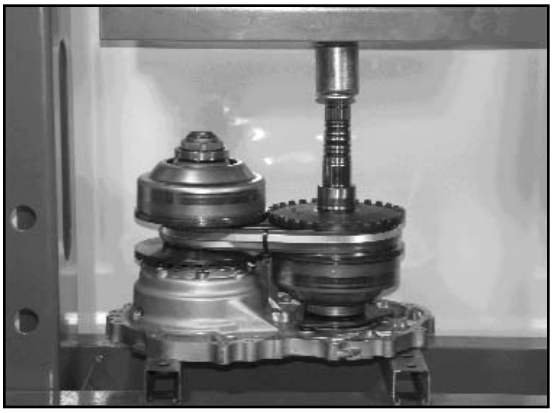


7) To reassemble, position the pulleys inside one another like they were in step 6.

IMPORTANT **Make sure that the Drive Belt is installed with the arrow pointing in the correct direction.**

8) Position the Drive and Driven pulleys side by side and remove the two jaw puller.

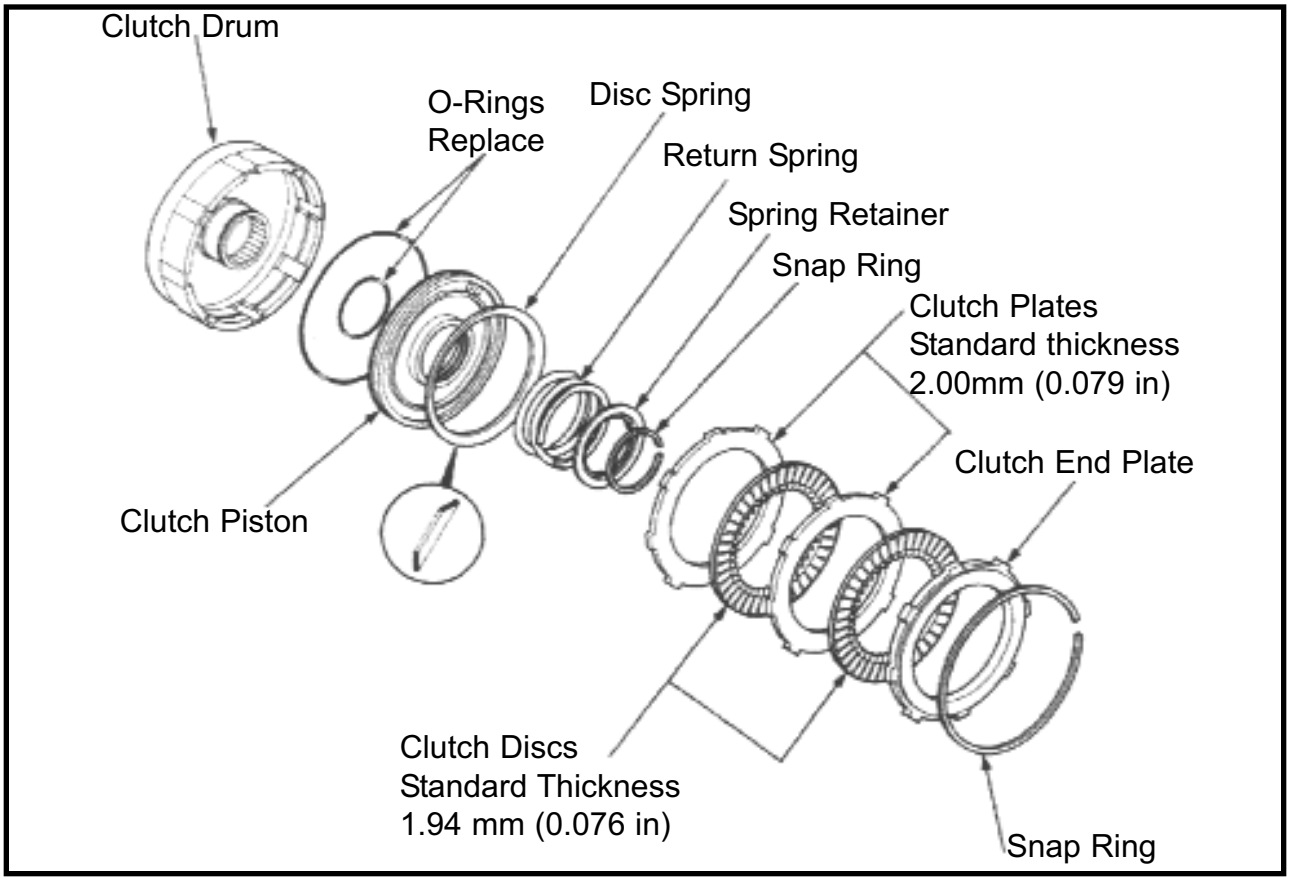
9) Start the pulley bearings into the center section. Make sure that the bearings are aligned in the center of the bearing pockets. The Drive Pulley bearing retainer will need to be positioned with the long flat facing the long flat on the intermediate housing. Using a press, carefully press the Drive pulley into the center section until the bearing bottoms out.



10) Reinstall the bearing retainer bolts. The bolts, for the Drive pulley retainer can not be torqued due to the position of the pulley. Therefore, they will need to be appropriately but not over tightened by feel. Torque the Driven Pulley retainer bolts to 8.7 Ft.(104 In. Lbs.)

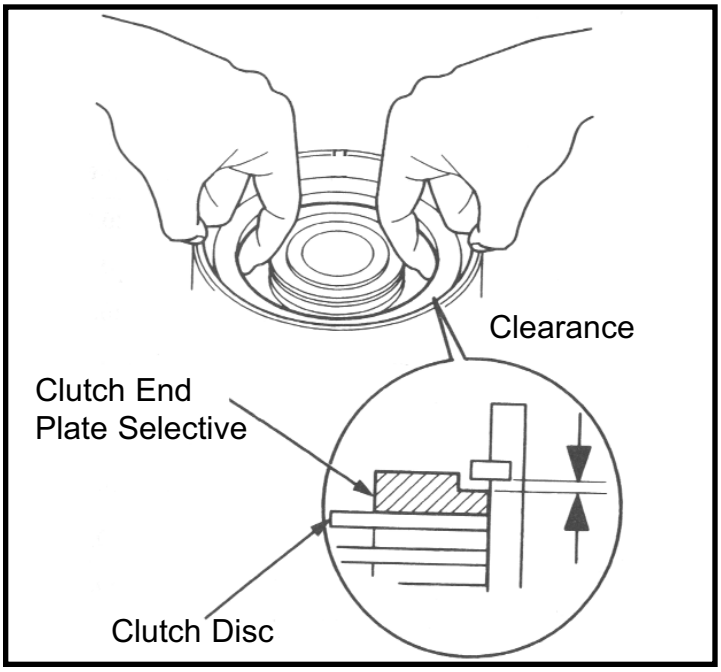
Setting Clutch Clearances

Forward Clutch Exploded View



Forward Clutch Clearance

Clutch end plate to snap ring clearance: 0.024 - 0.031”
Selective: Clutch end plate

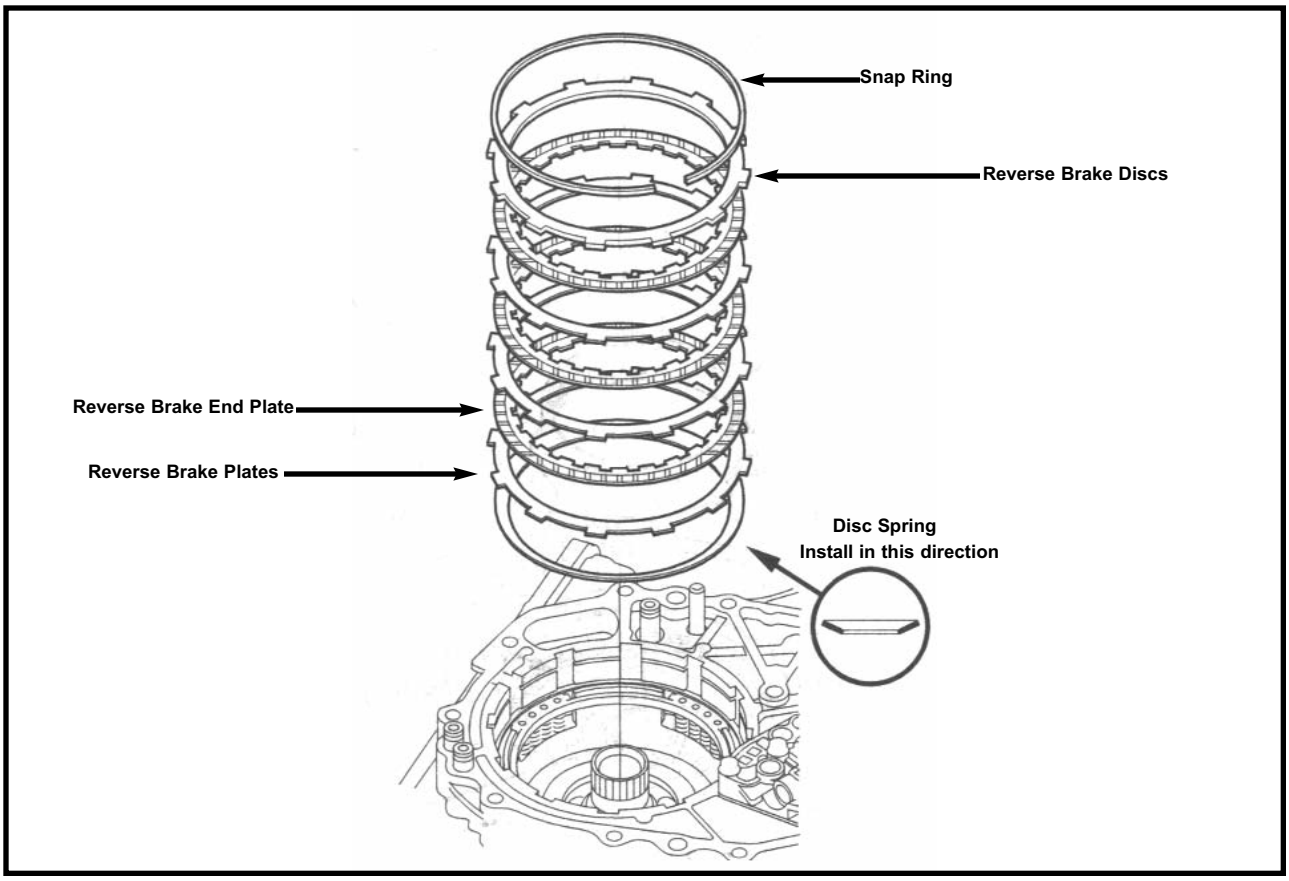


Forward Clutch End Plate

Plate No.	Part Number	Thickness
1 or 15	22561-P4V-003	3.5 mm (0.138 in)
2 or 16	22562-P4V-003	3.6 mm (0.142 in)
3 or 17	22563-P4V-003	3.7 mm (0.146 in)
4 or 18	22564-P4V-003	3.8 mm (0.150 in)
5 or 19	22565-P4V-003	3.9 mm (0.154 in)
6 or 20	22566-P4V-003	4.0 mm (0.157 in)
7 or 21	22567-P4V-003	4.1 mm (0.161 in)
8 or 22	22568-P4V-003	4.2 mm (0.165 in)
9 or 23	22569-P4V-003	4.3 mm (0.169 in)
10 or 24	22570-P4V-003	4.4 mm (0.173 in)
11 or 25	22571-P4V-003	4.5 mm (0.177 in)
12 or 26	22572-P4V-003	4.6 mm (0.181 in)
13 or 27	22573-P4V-003	4.7 mm (0.185 in)

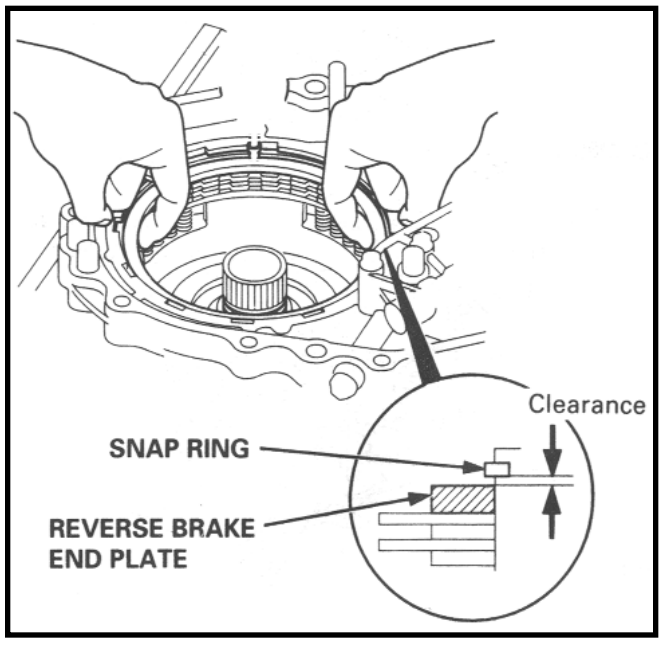
Setting Clutch Clearances Continued...

Reverse Brake Exploded View



Reverse Brake Clearance

Brake end plate to snap ring clearances: 0.018 - 0.030”
Selective: Brake end plate

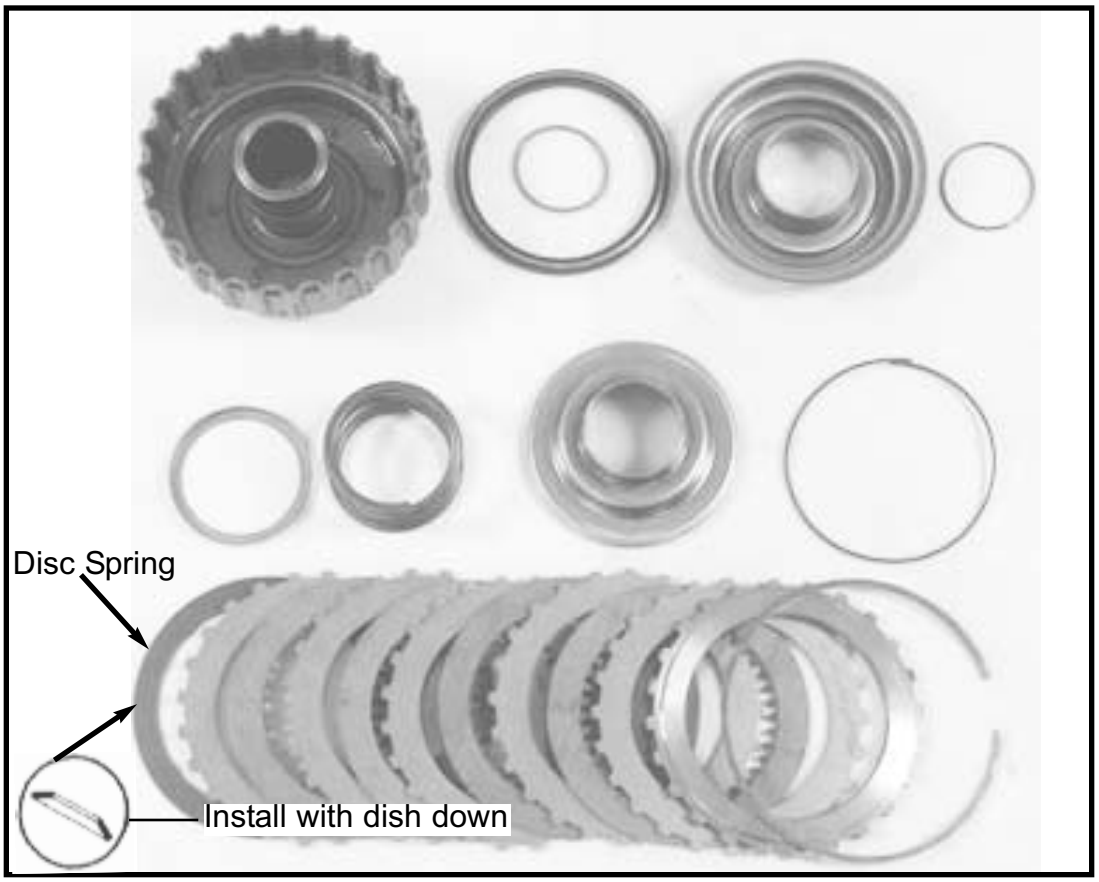


Reverse Brake End Plate

Plate No.	Part Number	Thickness
1	22551-P4V-003	3.6 mm (0.142 in)
2	22552-P4V-003	3.8 mm (0.150 in)
3	22553-P4V-003	4.0 mm (0.157 in)
4	22554-P4V-003	4.2 mm (0.165 in)
5	22555-P4V-003	4.4 mm (0.173 in)
6	22556-P4V-003	4.6 mm (0.181 in)
7	22557-P4V-003	4.8 mm (0.189 in)
8	22558-P4V-003	5.0 mm (0.200 in)

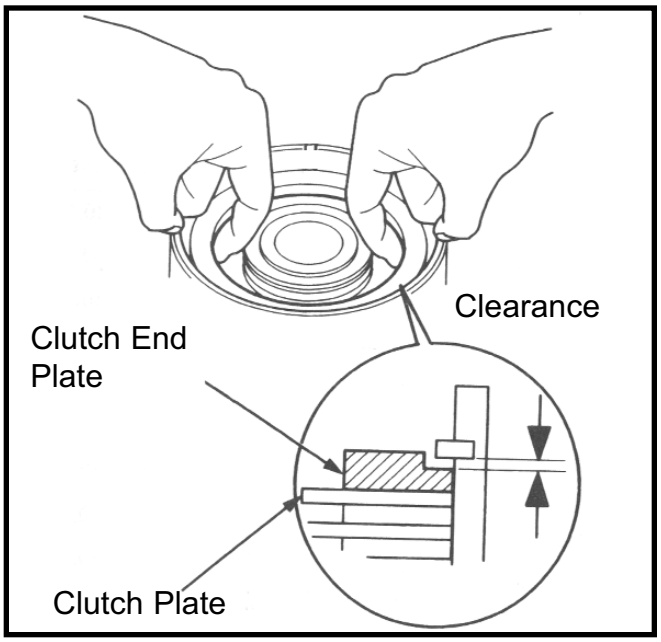
Setting Clutch Clearances Continued...

Start Clutch Exploded View



Start Clutch Clearance

Clutch end plate to snap ring clearance: 0.020 - 0.030
Selective: Not Adjustable Check Clearance Only

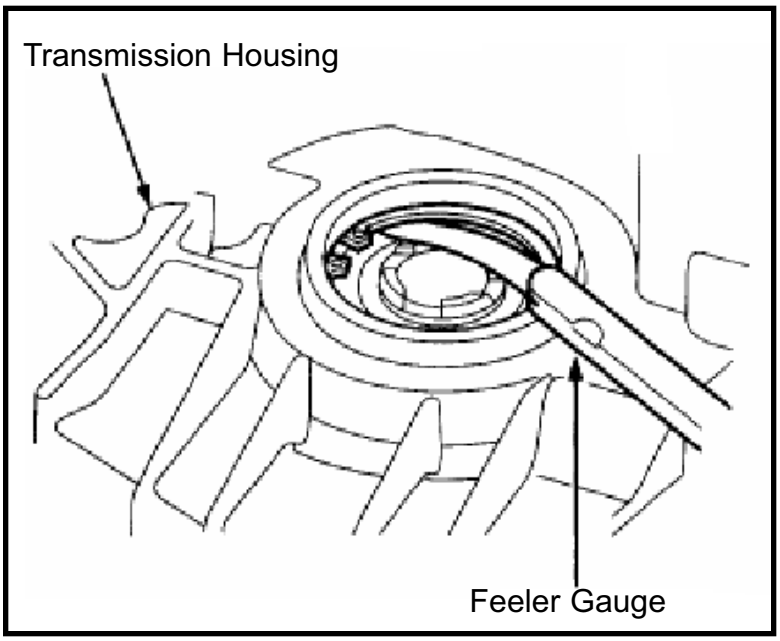


Setting Unit End Plays

Differential Side Clearance

With gasket in place and case bolted together, measure clearance between snap ring and differential bearing.

Set ring to outer race of ball bearing in the transmission housing clearance: 0 - 0.006”
Selective: Snap Ring



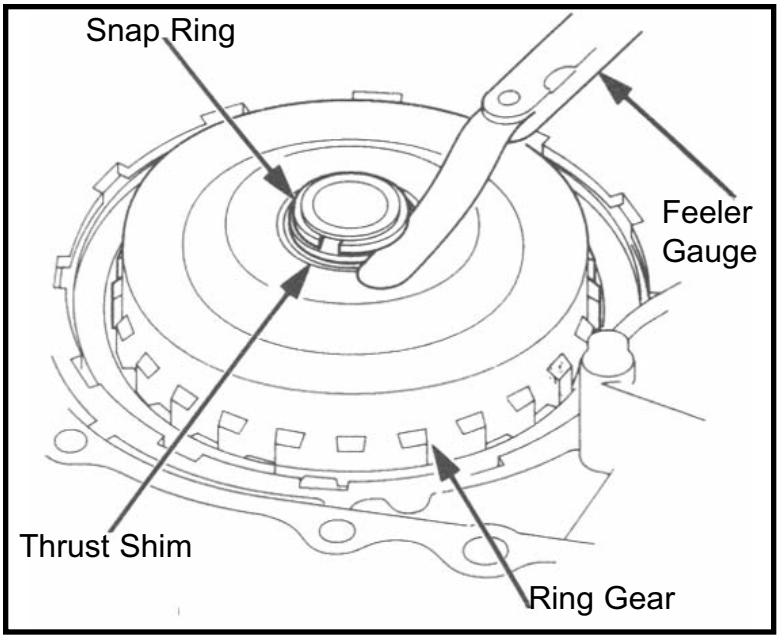
Snap Ring, 80 mm

Part Number	Thickness
90414-689-000	2.50 mm (0.098 in)
90415-689-000	2.60 mm (0.102 in)
90416-689-000	2.70 mm (0.106 in)
90417-689-000	2.80 mm (0.110 in)
90418-689-000	2.90 mm (0.114 in)
90419-PH8-000	3.00 mm (0.118in)

Setting Unit Endplays Continued...

Carrier Assembly Clearance

Thrust shim to snap ring: 0.002 - 0.004
Selective: Thrust shim



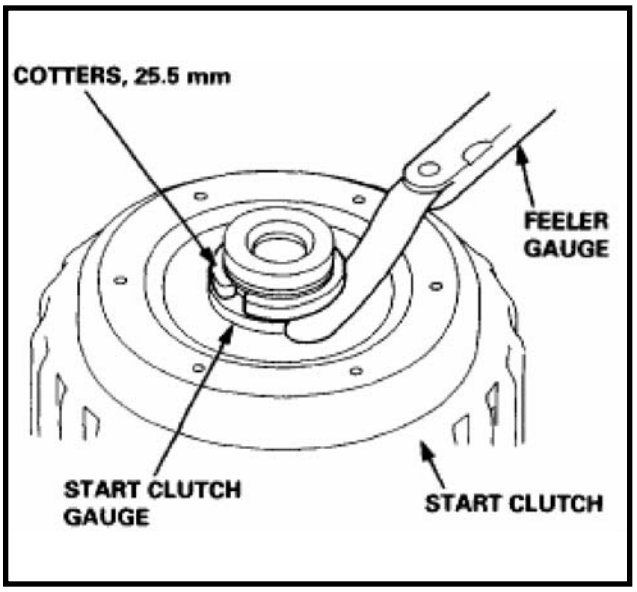
Thrust Shim 25x31 mm

No.	Part Number	Thickness
A	90451-P4V-000	1.05 mm (0.041 in)
B	90452-P4V-000	1.12 mm (0.044 in)
C	90453-P4V-000	1.19 mm (0.047 in)
D	90454-P4V-000	1.26 mm (0.050 in)
E	90455-P4V-000	1.33 mm (0.052 in)
F	90456-P4V-000	1.40 mm (0.055 in)
G	90457-P4V-000	1.47 mm (0.058 in)
H	90458-P4V-000	1.54 mm (0.061 in)
I	90459-P4V-000	1.61 mm (0.063 in)
J	90460-P4V-000	1.68 mm (0.066 in)
K	90461-P4V-000	1.75 mm (0.069 in)
L	90462-P4V-000	1.82 mm (0.072 in)
M	90480-P4V-000	1.085 mm (0.0427 in)
N	90481-P4V-000	1.155 mm (0.0454 in)
O	90482-P4V-000	1.225 mm (0.0482 in)
P	90483-P4V-000	1.295 mm (0.0510 in)
Q	90484-P4V-000	1.365 mm (0.0537 in)
R	90485-P4V-000	1.435 mm (0.0565 in)
S	90486-P4V-000	1.505 mm (0.0593 in)
T	90487-P4V-000	1.575 mm (0.0620 in)
U	90488-P4V-000	1.645 mm (0.0648 in)
V	90489-P4V-000	1.715 mm (0.0675 in)
W	90490-P4V-000	1.785 mm (0.0703 in)

Setting Unit End Plays Continued...

Start Clutch Clearance

Cotters to start clutch guide: 0-0.005”
Selective: Cotters

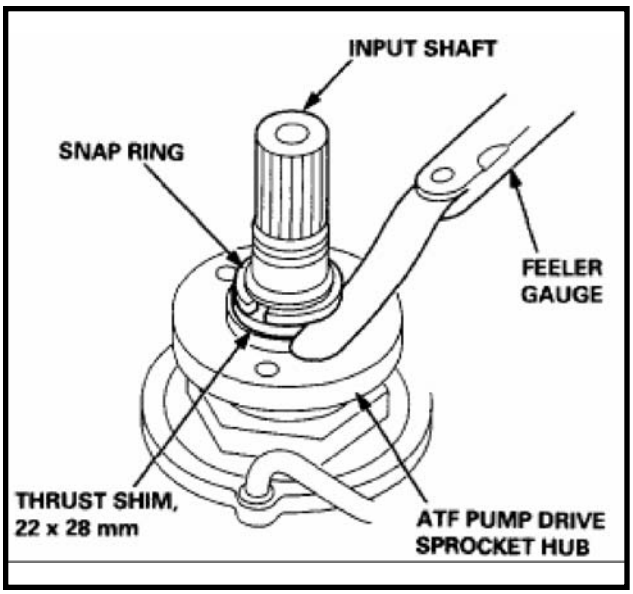


Cotters, 25.5 mm

No.	Part Number	Thickness
A	90429-P4V-000	2.9mm (0.114 in)
B	90430-P4V-000	3.0 mm (0.118 in)
C	90431-P4V-000	3.1 mm (0.122 in)
D	90432-P4V-000	3.2 mm (0.126 in)

ATF Pump Hub Clearance

Thrust shim to snap ring: 0.015-0.026:
Selective: Thrust shim



Thrust Shim, 22 x 28 mm

No.	Part Number	Thickness
C	90573-P4V-000	1.15 mm (0.045 in)
D	90574-P4V-000	1.40 mm (0.055 in)
E	90575-P4V-000	1.65 mm (0.065 in)
F	90576-P4V-000	1.90 mm (0.075 in)
G	90577-P4V-000	2.15 mm (0.085 in)
H	90578-P4V-000	2.40 mm (0.095 in)

Setting Unit End Plays Continued...

Secondary Gear Shaft End Play

1) Measure the distance between the flywheel housing surface and the ball bearing - This is measurement A **(See Figures 1 & 2)**.

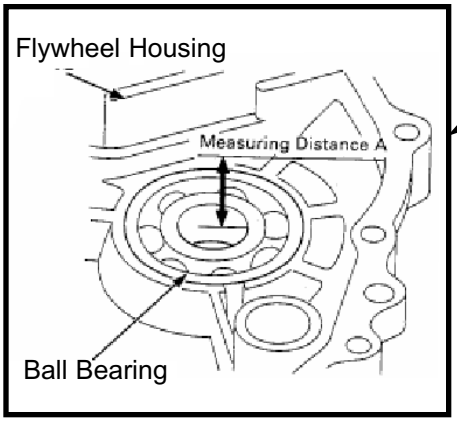


Figure 1

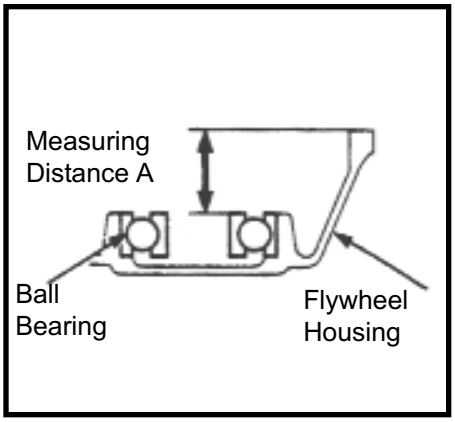


Figure 2

2) Install the secondary gear shaft in the transmission housing.
3) Measure the distance between the transmission housing surface and the thrust washer mounting surface of the secondary gear shaft - This is measurement B **(See Figure 3 & 4).**

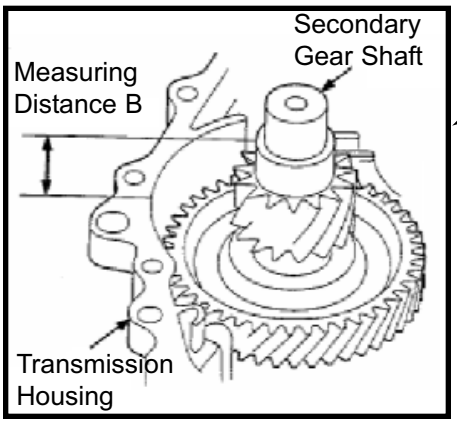


Figure 3

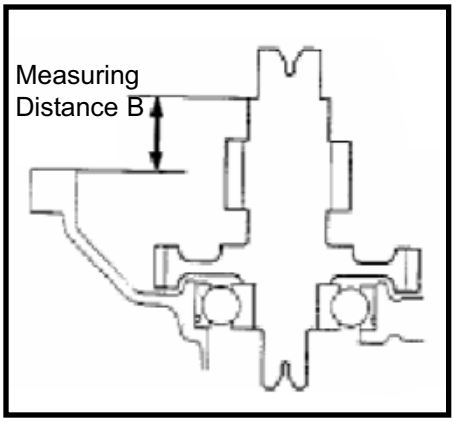


Figure 4

4) Calculate the thrust shim thickness by subtracting measurement B + 0.020" (the thickness of the flywheel housing gasket) from measurement A. For example:

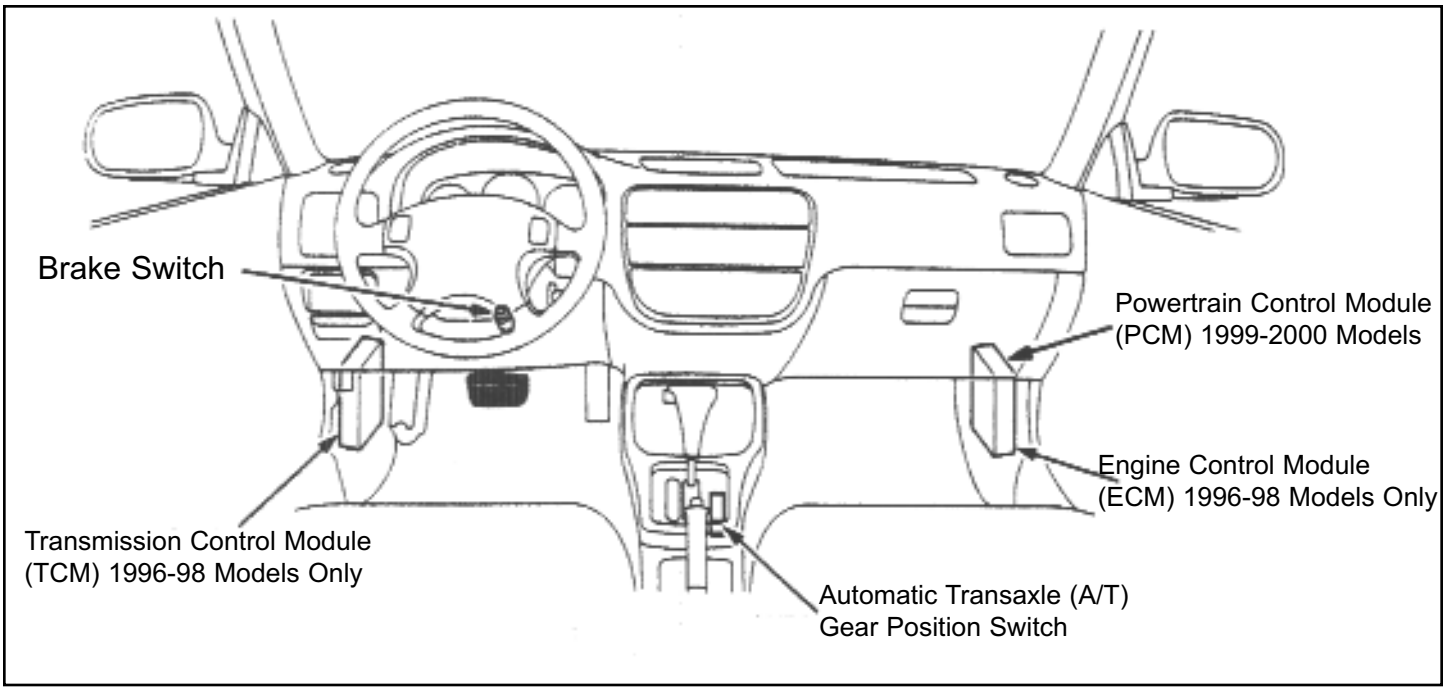
Measurement A = 1.287"
Measurement B = 1.185"
Thrust shim thickness should be:
(1.287" - 1.185" + 0.020" =) 0.122"

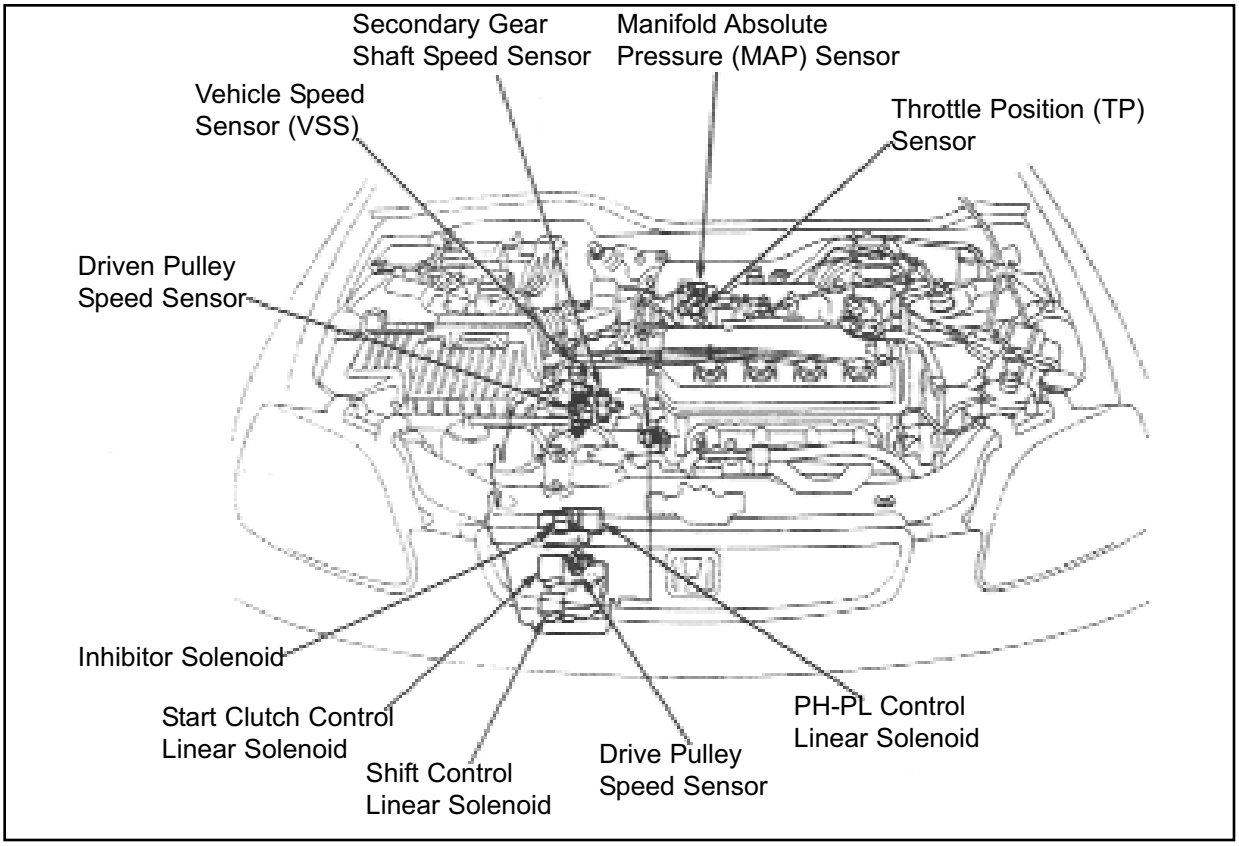
5) Select the thrust shim from the table below.

Thrust Shim 25x35 mm

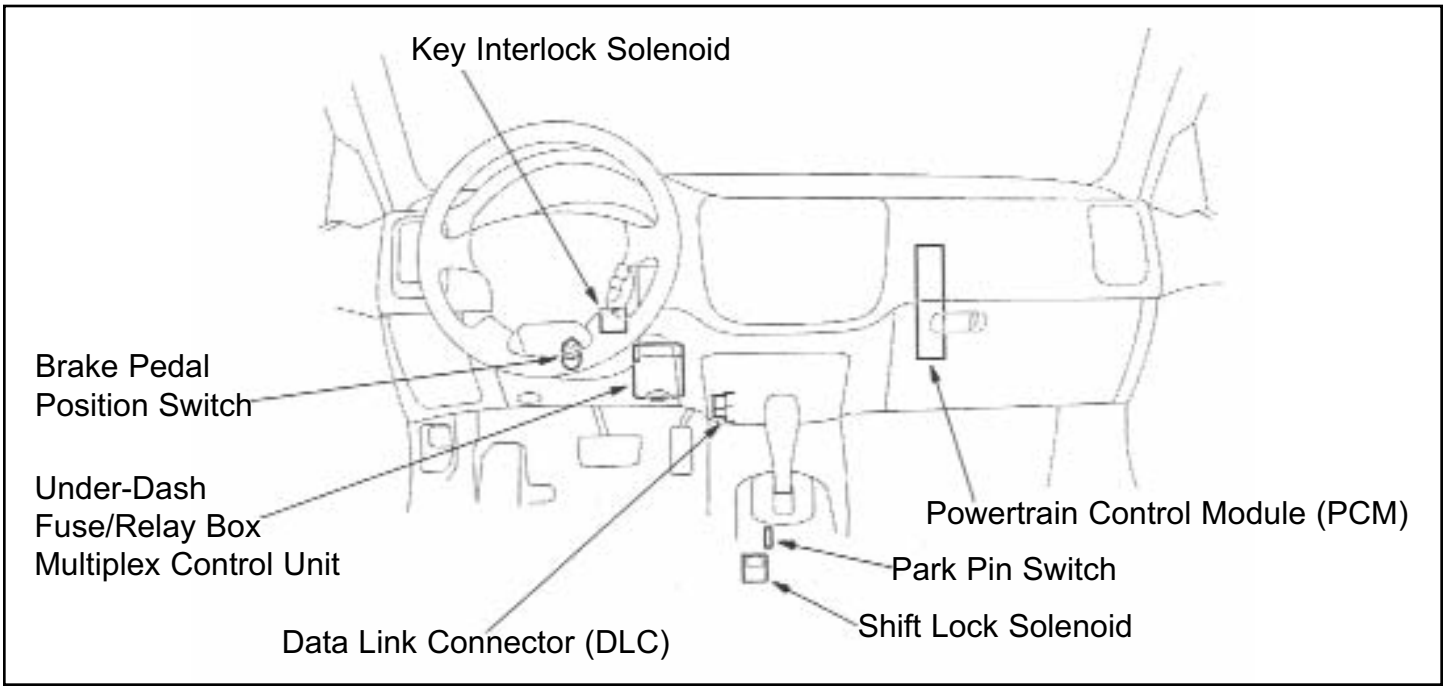
No.	Part Number	Thickness	No.	Part Number	Thickness
A	90551-P4V-000	2.8 mm (0.110 in)	G	90557-P4V-000	3.4 mm (0.134 in)
B	90552-P4V-000	2.9 mm (0.114 in)	H	90558-P4V-000	3.5 mm (0.138 in)
C	90553-P4V-000	3.0 mm (0.118 in)	I	90559-P4V-000	3.6 mm (0.142 in)
D	90554-P4V-000	3.1 mm (0.122 in)	J	90560-P4V-000	3.7 mm (0.146 in)
E	90555-P4V-000	3.2 mm (0.126 in)	K	90561-P4V-000	3.8 mm (0.150 in)
F	90556-P4V-000	3.3 mm (0.130 in)			

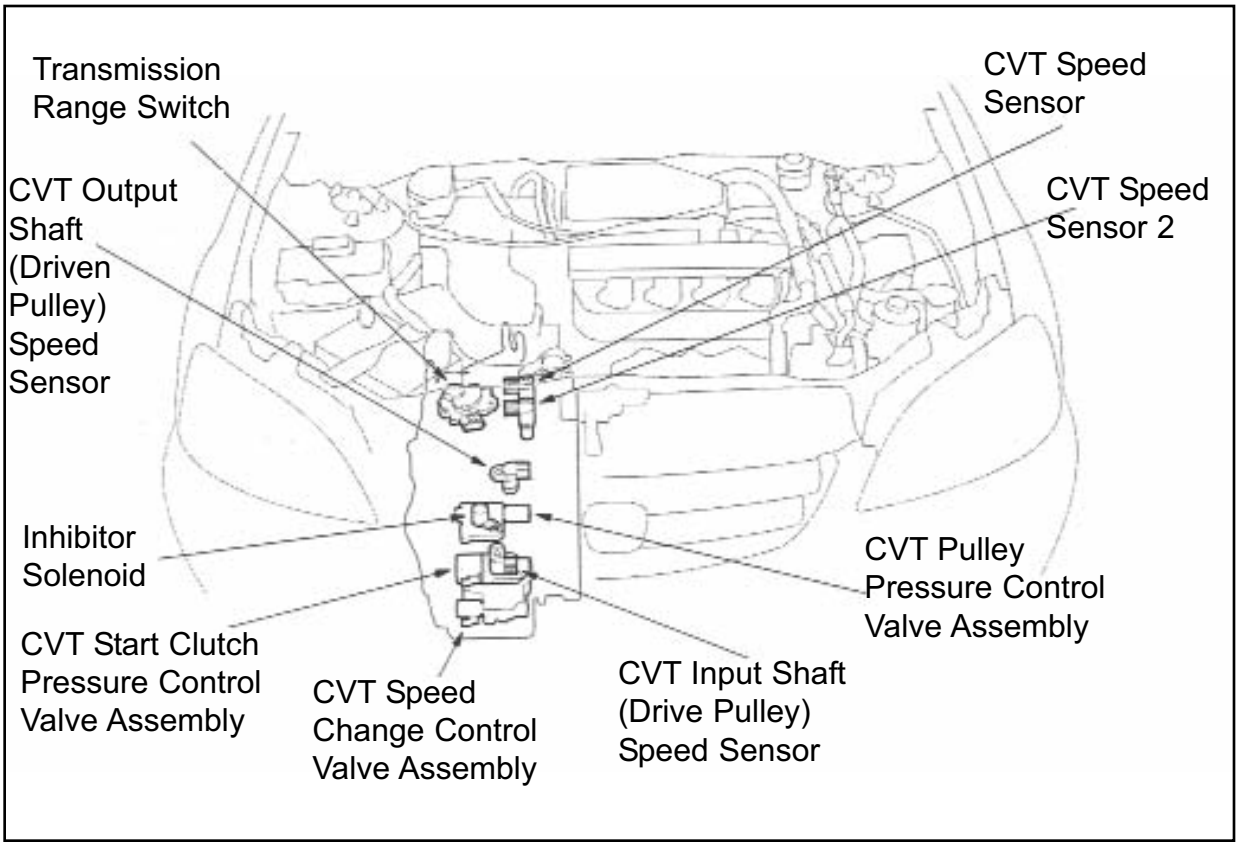
Electronic Component Location 1996-2000



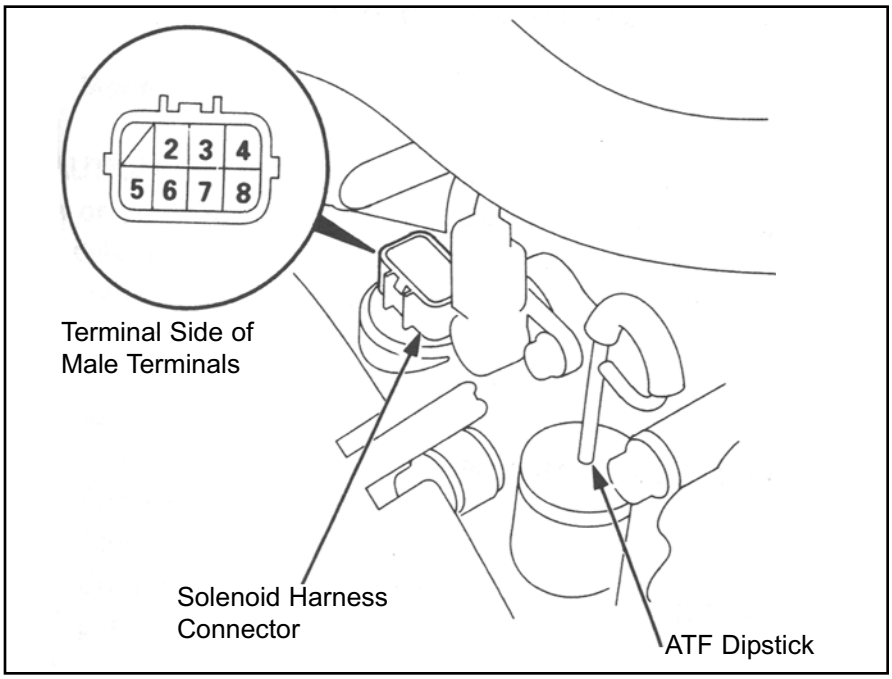


Electronic Component Location 2001-2005





Case Connector and Solenoid Information



Pin #	Function	Resistance in Ohms
2	PH-PL Control Solenoid +	3.8-6.8
3	Shift Control Solenoid +	3.8-6.8
4	Start Clutch Control Solenoid +	3.8-6.8
5	Inhibitor Solenoid +	11.7-21.0
6	PH-PL Control Solenoid -	3.8-6.8
7	Shift Control Solenoid -	3.8-6.8
8	Start Clutch Control Solenoid -	3.8-6.8

Speed Sensor Resistance 1996-2000*

Speed Sensors	Resistance
Secondary Gear Shaft	350-600 ohms
Drive Pulley Speed Sensor	350-600 ohms
Driven Pulley Speed Sensor	350-600 ohms

*2001-2005 Speed sensors are hall effects type-cannot test by resistance

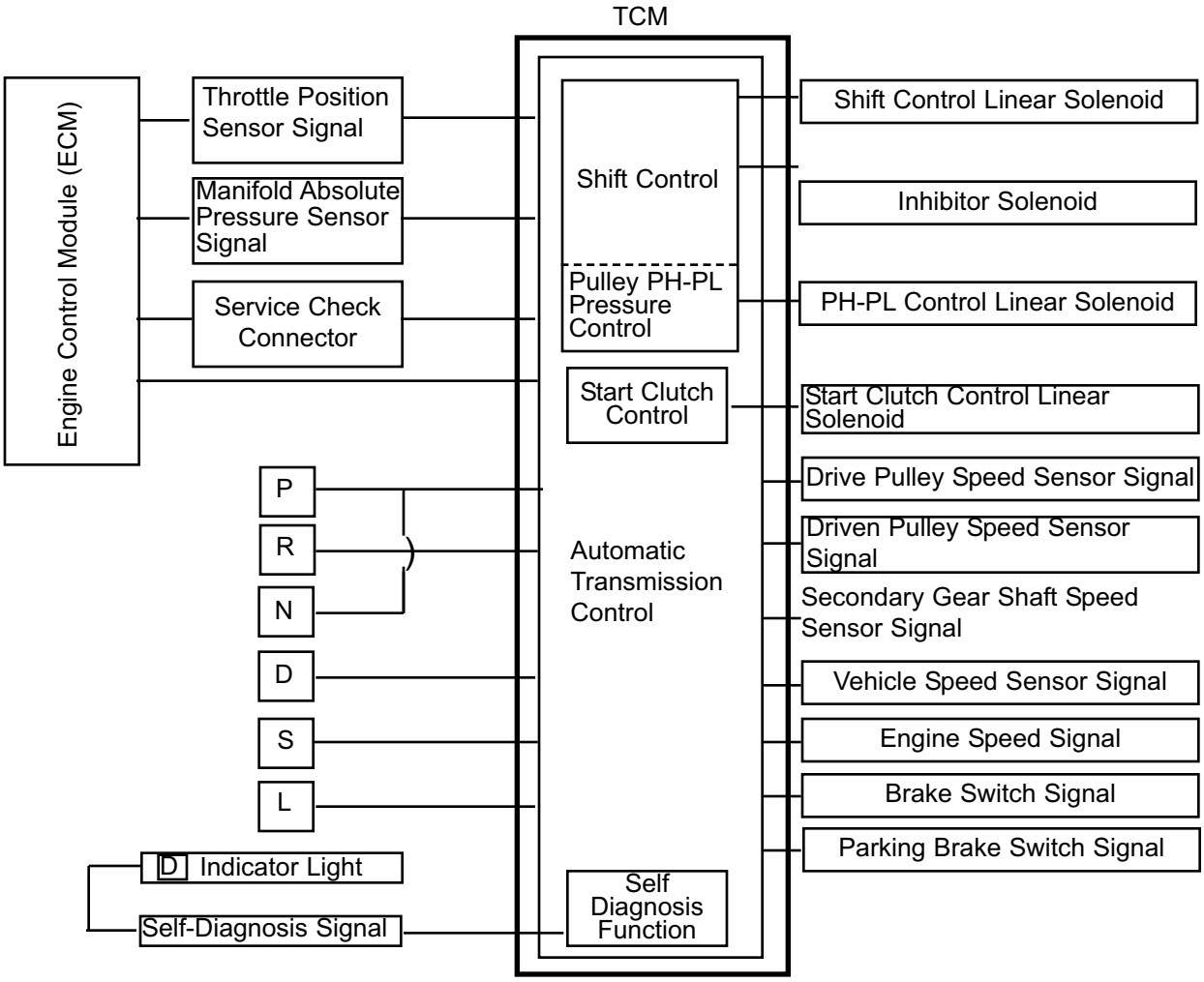
Electronic Control System 1996-1998 Models

The electronic control system consists of the Transmission Control Module (TCM), sensors, three linear solenoids, and an inhibitor solenoid. Shifting is electronically controlled under all conditions. The TCM is located below the dashboard, behind the kick panel on the driver's side.

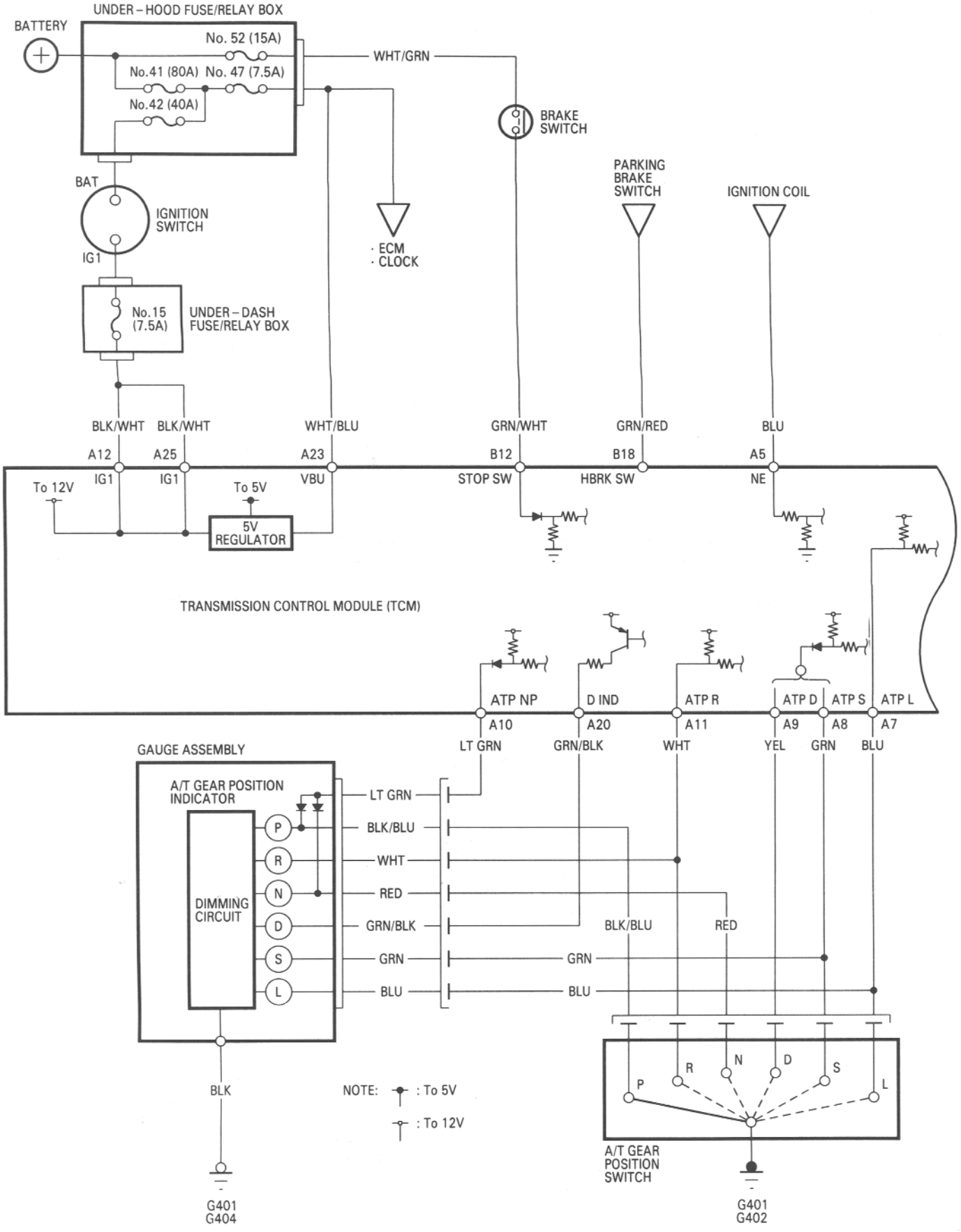
The TCM controls the transmission to reduce engine speed and retain the engine's cooling efficiency when the vehicle is driven with full throttle acceleration. If the vehicle is continuously driven at full throttle acceleration, the TCM regulates the pulley hydraulic pressure to increase the pulley ratio, which, as the result, reduces the engine speed and retains the designed cooling efficiency. After the vehicle has been driven at a lower engine speed for a while, the TCM increases the pulley ratio to the original ratio.

For smooth starting in the R position, the TCM sends a signal to the ECM to cut off the A/C clutch (if the A/C is on) and increases the engine speed to 900 rpm when the transmission is shifted to the R position.

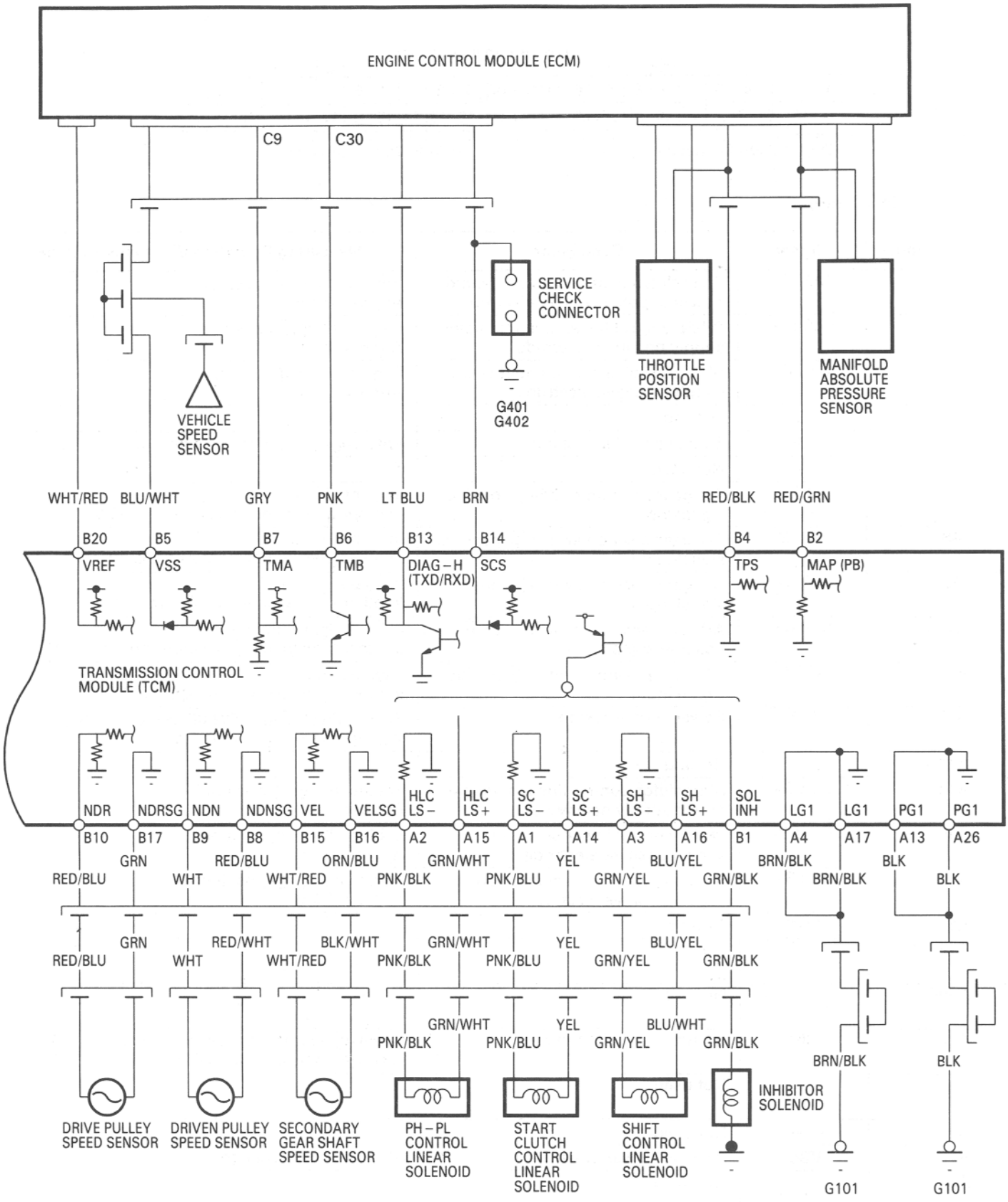
The start clutch functions to make smooth starting possible. To let the start clutch function properly, the TCM regulates the start clutch hydraulic pressure based on the engine's negative pressure memorized in the N position.



TCM Circuit Diagram 1996-1998



TCM Circuit Diagram 1996-1998 continued...



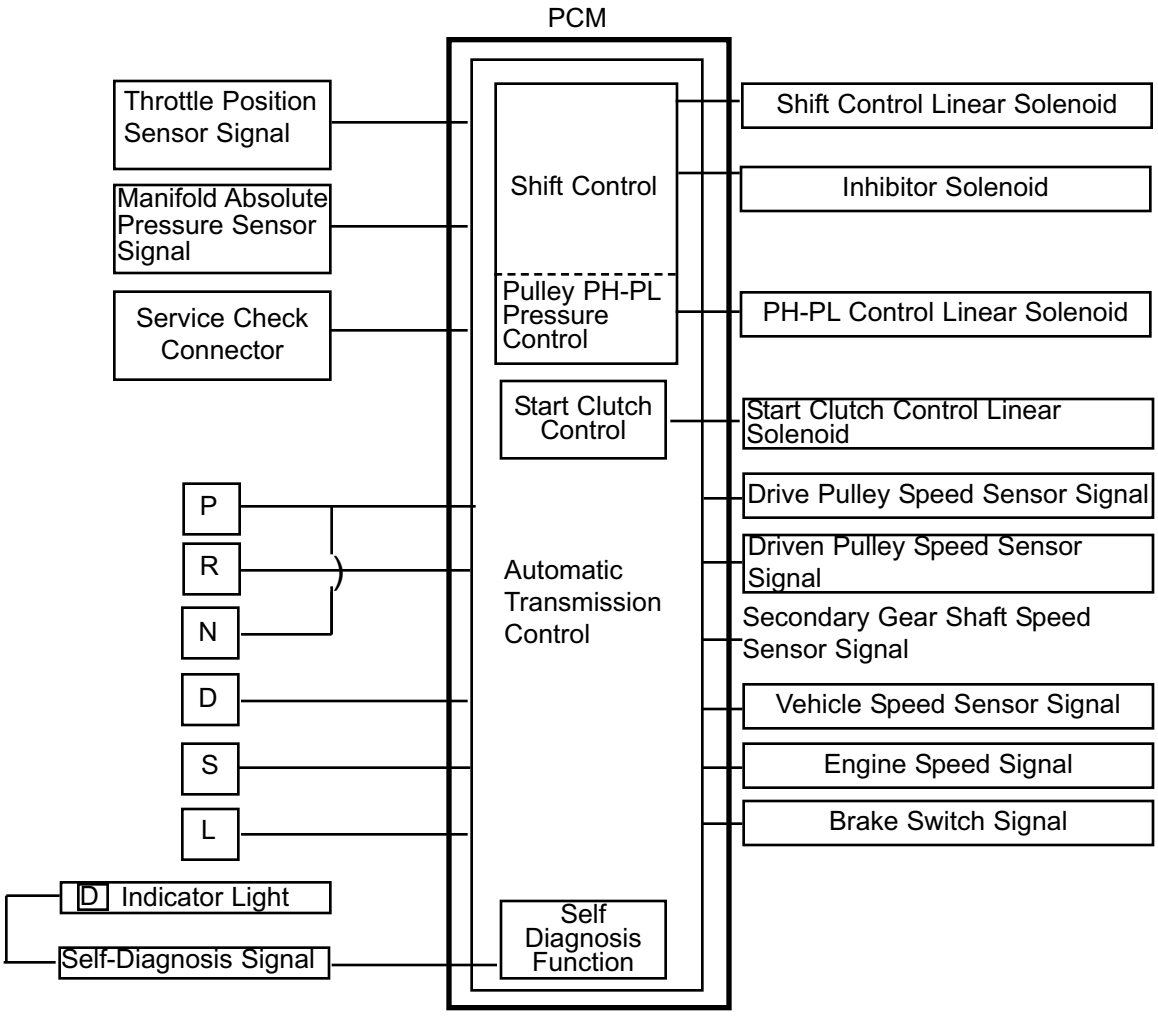
Electronic Controls System 1999-2000

The electronic control system consists of a Powertrain Control Module (PCM), sensors, three linear solenoids and an inhibitor solenoid. Shifting is electronically controlled under all conditions. A Grade Logic Control System to control shifting in D position while the vehicle is ascending or descending a slope. The PCM is located below the dashboard, under the kick panel on the passenger's side.

The PCM controls the transmission to reduce engine speed and retain the engine's cooling efficiency when the vehicle is driven with full throttle acceleration. If the vehicle is continuously driven at full throttle acceleration, the PCM regulates the pulley hydraulic pressure to increase the pulley ratio which, as a result, reduces the engine speed and retains the designed cooling efficiency. After the vehicle has been driven at a lower engine speed for a while, the PCM increases the pulley ratio to the original ratio.

For smooth starting in the R position, the PCM cuts off the A/C clutch (if the A/C is on) and increases the engine speed to 900 rpm when the transmission is shifted to the R position.

The start clutch functions to make smooth starting possible. To let the start clutch function properly, the PCM regulates the start clutch hydraulic pressure based on the engine's negative pressure memorized in the N position.



Electronic Controls System 1999-2000 Continued...

Grade Logic Control System

How it works:

The PCM compares actual driving conditions with memorized driving conditions, based on the input from the vehicle speed sensor, the throttle position sensor, the manifold absolute pressure sensor, the engine coolant temperature sensor, the brake switch signal and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.

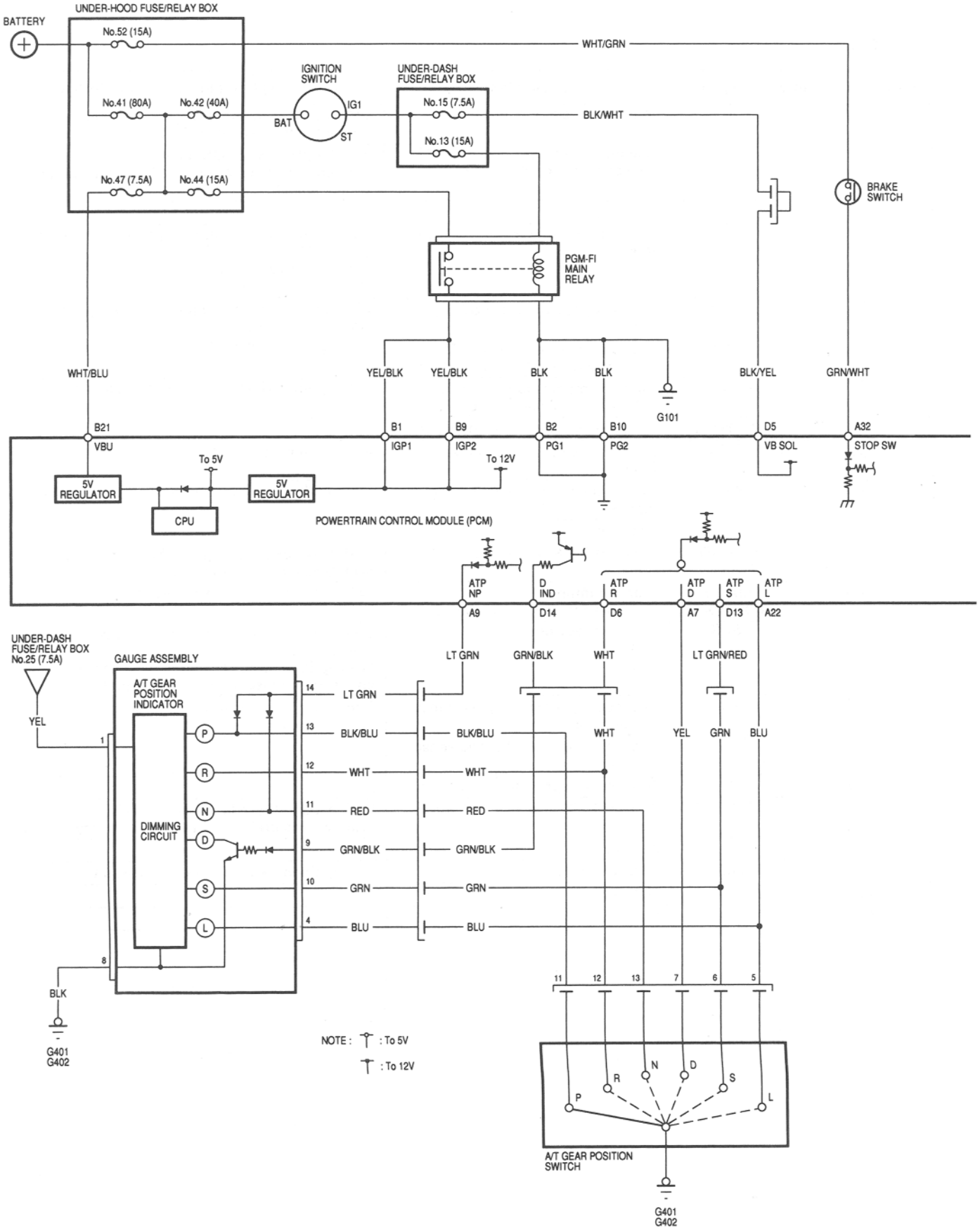
Ascending Control

When the PCM determines that the vehicle is climbing a hill in D position, the system selects the most suitable shift schedule (pulley ratio) according to the magnitude of a gradient, so the vehicle can run smooth and have more power when needed. There are three ascending modes with different shift schedules according to the magnitude of a gradient in the PCM.

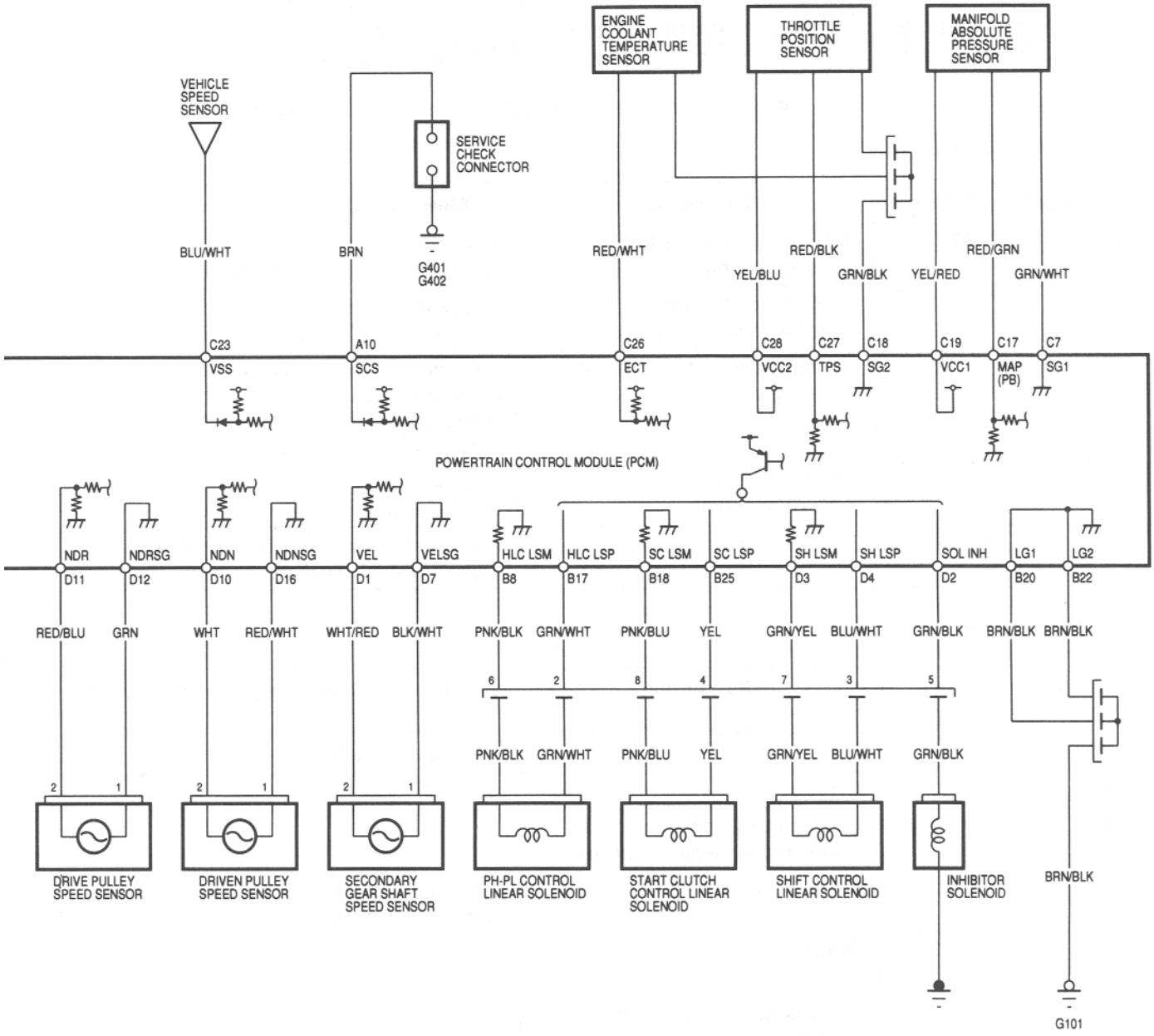
Descending Control

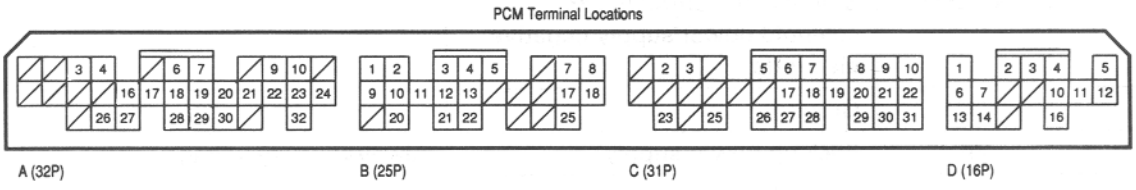
When the PCM determines that the vehicle is going down a hill in D position, the system selects the most suitable shift schedule (pulley ratio) according to the magnitude of a gradient. This, in combination with engine braking, achieves smooth driving when the vehicle is descending. There are three descending modes with different shift schedules according to the magnitude of a gradient in the PCM.

PCM Circuit Diagram 1999-2000



PCM Circuit Diagram 1999-2000 Continued...



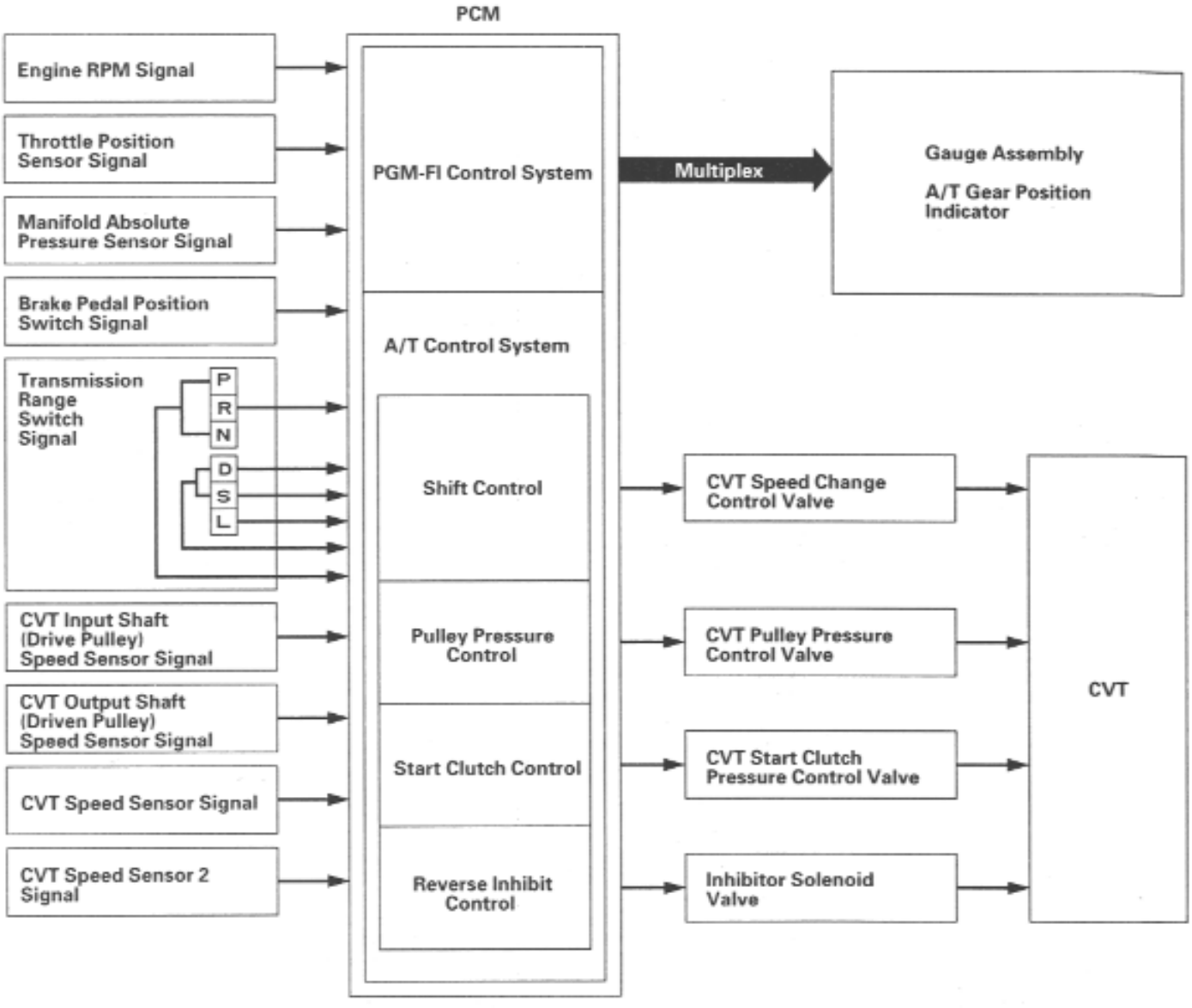


Electronic Control System 2001-2005

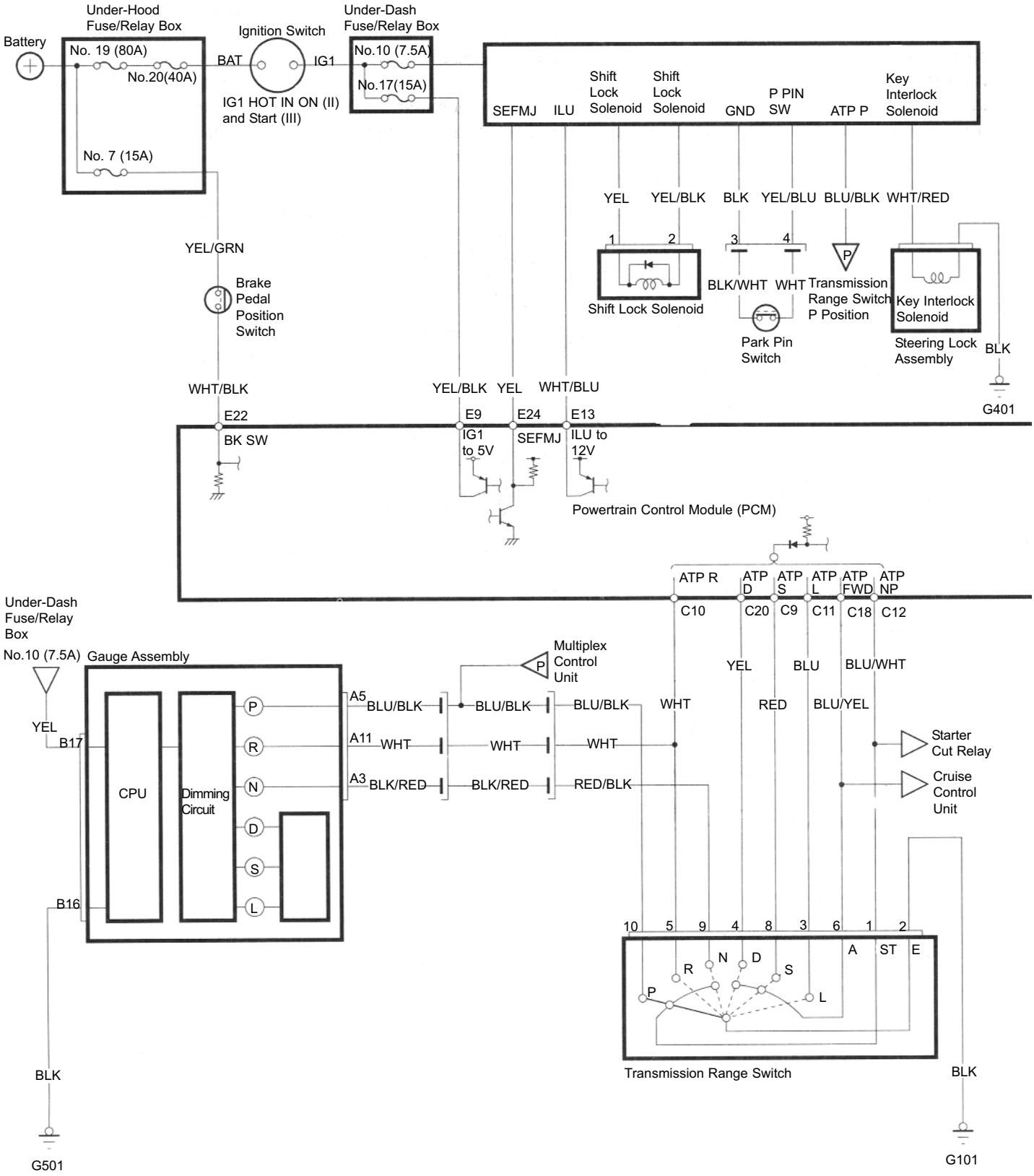
The electronic control system consists of the powertrain control module (PCM), sensors, switches, and solenoid valves. Shifting is electronically controlled for comfortable driving under all conditions.

The PCM inputs signals from the sensors and switches, perform processing data, and outputs signals for engine control system and A/T control system. The A/T control system includes shift control, pulley pressure control, start clutch pressure control, and reverse inhibit control, is stored in the PCM.

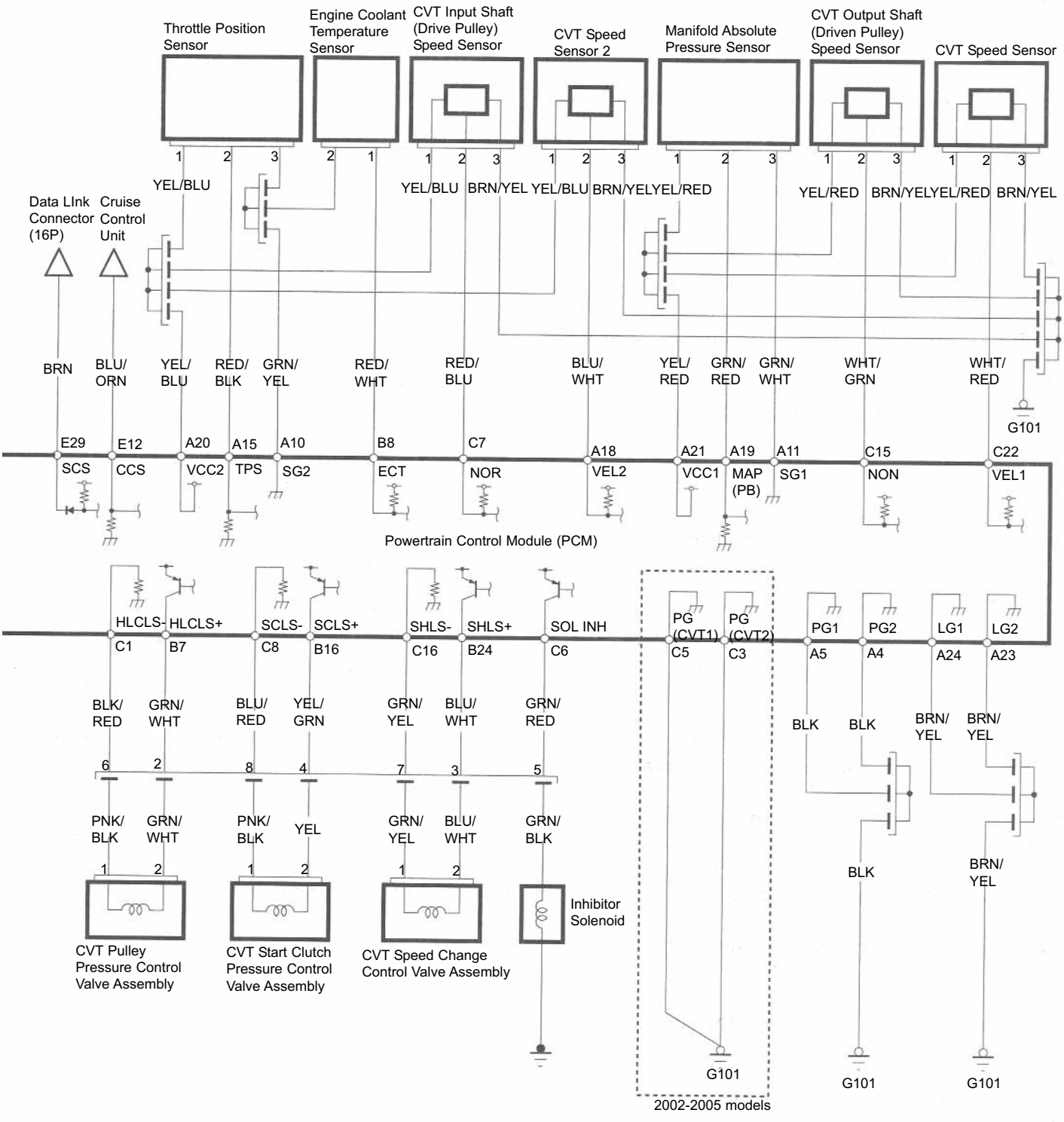
The PCM actuates the solenoid valves to control shifting transmission pulley ratios.



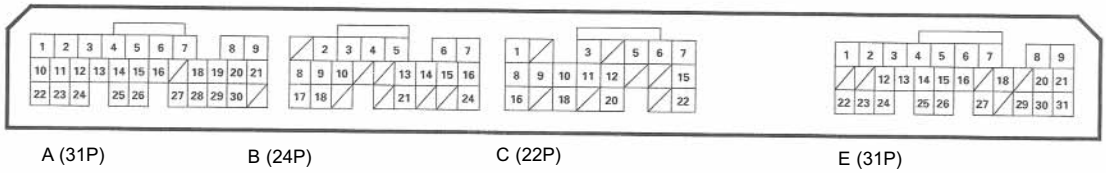
PCM Circuit Diagram 2001-2005



PCM Circuit Diagram 2001-2005 continued...



PCM Connector Terminal Locations



A (31P) B (24P) C (22P) E (31P)

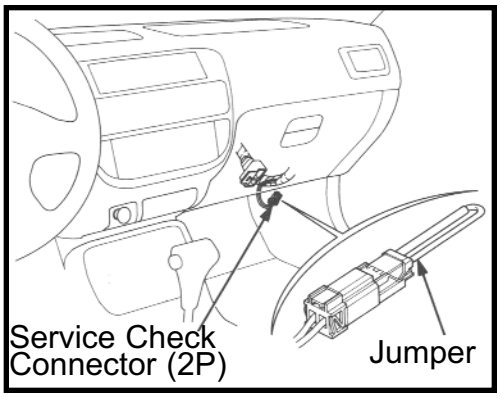
NOTE: C5 and C3 terminals apply to 2002-2005 models

Start Clutch Calibration Procedure 1996 ONLY

CAUTION **USE THIS START CLUTCH CALIBRATION PROCEDURE ON 1996 VEHICLES ONLY.**

1. Apply parking brake and block front wheels.

2. Connect a jumper wire to the service check connector. The service check connector is located under the passenger side of the dash.



3. Start the engine and warm it to normal operating temperature (the radiator fan should come on twice)

4. Shift the transaxle to D position. Fully depress the brake pedal and hold it. Then fully depress the accelerator pedal for 20 seconds.

NOTE **Perform the following step within one minute after the radiator fan goes off.**

5. Shift transaxle into N or P position. To store the engine vacuum signal reading into the memory, let the engine idle in N or P position for one minute under the following conditions.

- With brake pedal depressed.
- With the A/C switch off.
- With the combination switch off.
- With the heater fan off.
- Turn off all other electrical systems.

6. Shift the transaxle into D position and let the engine idle for 2 minutes to store the feedback signal into memory under the same conditions as in step 5.

7. Disconnect jumper wire from the service connector.

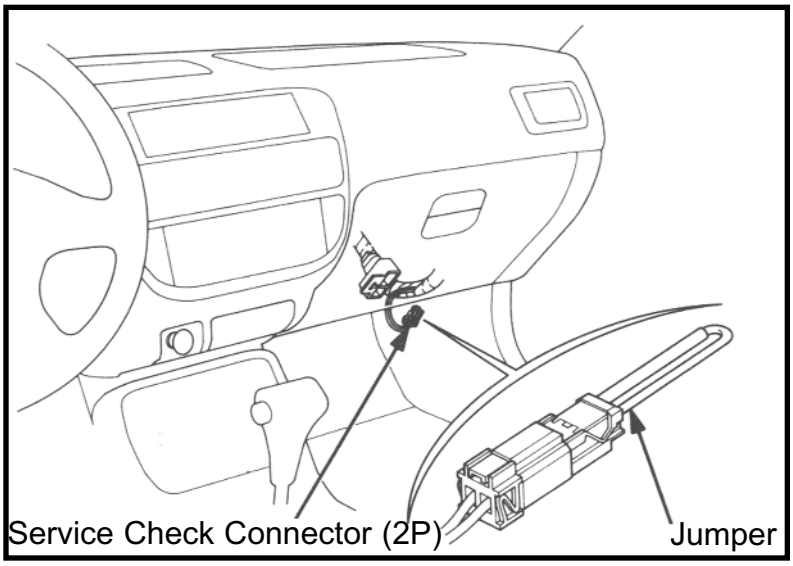
8. If the engine stalls or any shifting failure occurs at start off, re-calibrate the start clutch feed back control signal.

NOTE **The TCM will not store the feedback signal when the fluid temperature is less then 104° (40° C) even if the engine coolant temperature reaches normal operating temperature.**

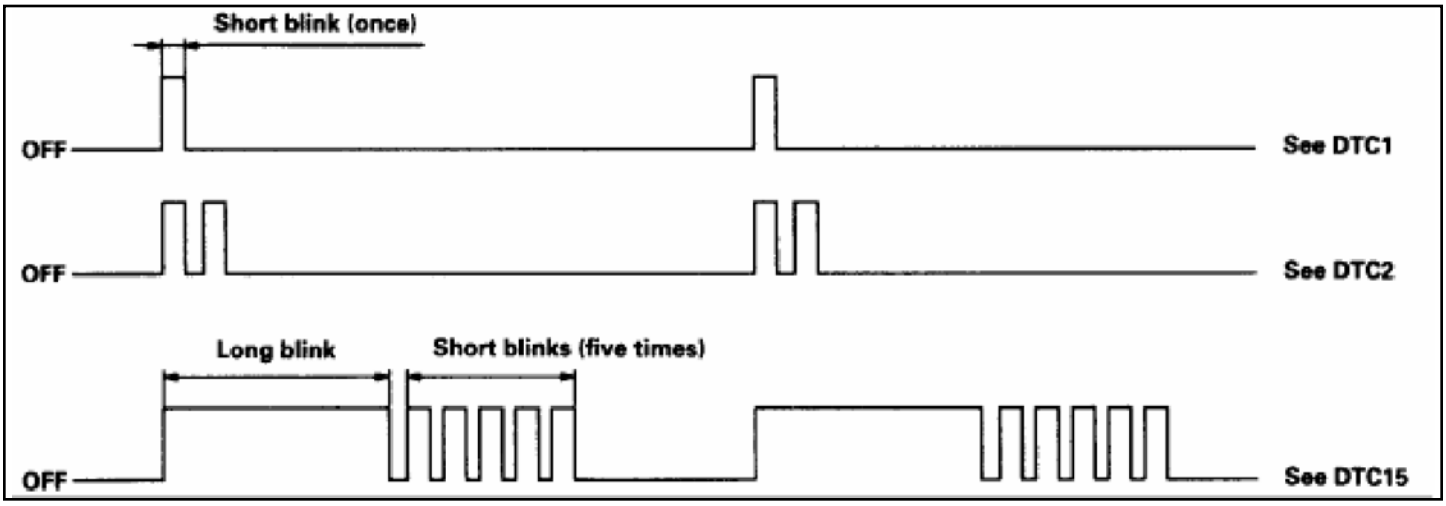
Start Clutch Calibration 1997-2005

1. Start the engine and warm it to normal operating temperature (radiator fan comes on).
2. Shift transaxle to the D position.
3. Turn off all electrical systems.
4. Road test the vehicle up to 37 mph (60km/h) after the speed reaches 37 mph (60km/h), release the accelerator for 5 seconds. **DO NOT APPLY THE BRAKE PEDAL**. The TCM/PCM will memorize the feedback signal.
5. Test-drive the vehicle and check that the engine does not stall at a stop and the vehicle takes off smoothly.
6. If the engine stalls or any shifting failure occurs at start off, re-calibrate the start clutch feed back control signal.

Code Retrieval 1996-2000



To access codes use a suitable jumper to connect the two terminals of the Service Check Connector together. The Service Check Connector has 2-pins and is located under the dash on the passenger's side of the vehicle. DTCs will be displayed by the blinking of the D indicator light with the Service Check Connector jumped.

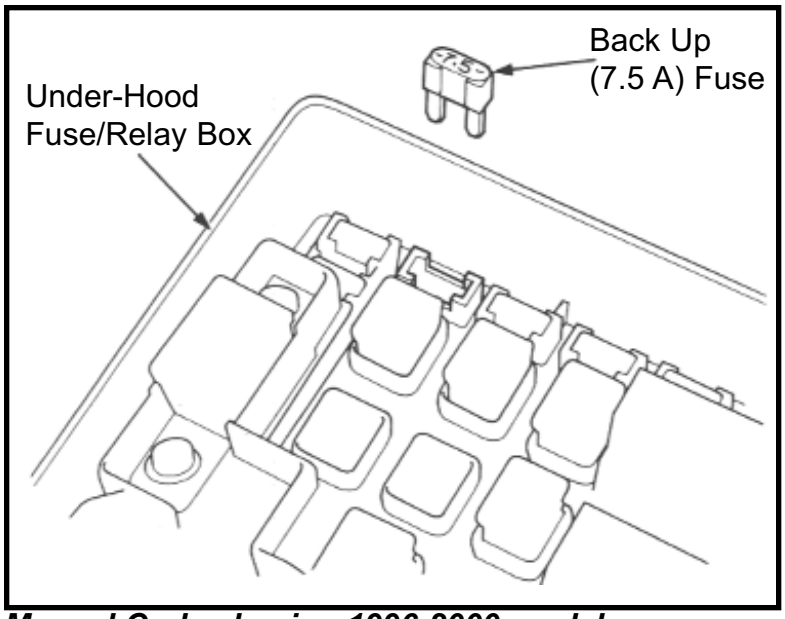


Codes 1 through 9 are indicated by individual blinks. Codes 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks.

To clear DTCs, turn the ignition key off and remove the BACK UP fuse in the under-hood fuse/relay box for more than 10 seconds.

On 1999 and 2000 model vehicles DTCs can also be pulled or cleared using a scan tool capable of accessing Honda vehicles.

Code Retrieval 1996-2000 Continued...



Manual Code clearing 1996-2000 models

NOTE **Disconnecting the BACK UP fuse also cancels the radio preset stations, clock setting and the feedback signal for the start clutch control. Make note of the radio presets before removing the fuse so you can reset them, and to memorize the feedback signal for the start clutch control again, follow the Memorizing Feedback Signal procedures.**

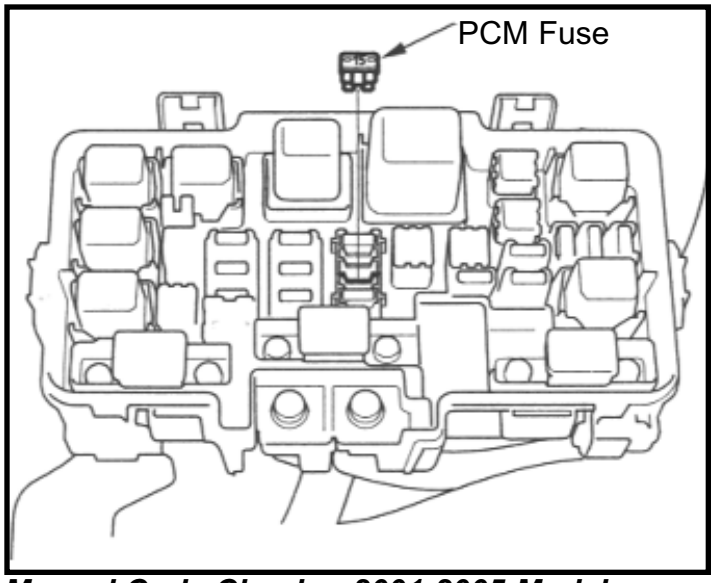
Code Retrieval 2001-2005

The preferred method of displaying or clearing Diagnostic Trouble Codes (DTCs) is by using a scan tool capable of accessing Honda vehicles.

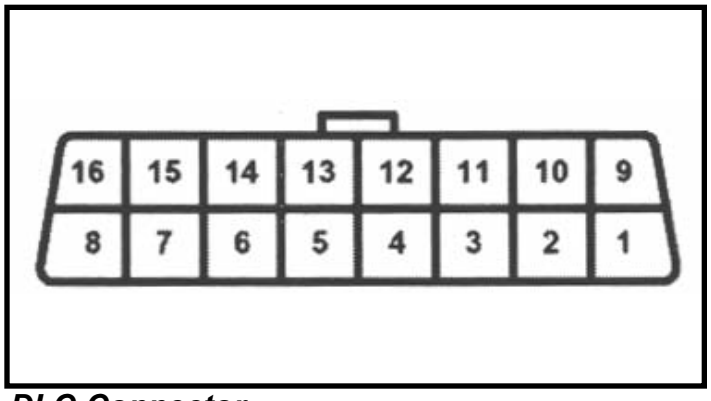
If a scanner is not available DTCs may be displayed by the blinking of the D indicator light. To access codes in this manner use a suitable jumper to connect terminals 4 and 9 of the DLC together. The DLC is located under the left side of the dashboard near the center console.

Codes 1 and 9 are indicated by individual blinks. Codes 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks.

To clear DTCs, turn the ignition key off and remove the PCM fuse in the under-hood fuse/relay box for more than 10 seconds.



Manual Code Clearing 2001-2005 Models



DLC Connector

1996-1998 Code List

DTC	Flashes	Definition
P1790	3	TPS Circuit
P1791	4	VSS
P1705	5	Gear Position Sensor
P1706	6	Gear Position Sensor
P0725	11	Ignition Coil Circuit
P1793	12	MAP Circuit
P1870	30	Shift Control Linier Solenoid Circuit
P1873	31	PH-PL Control Linier Solenoid Circuit
P1879	32	Start Clutch Solenoid Circuit
P1882	33	Inhibitor Solenoid Circuit
P1885	34	Drive Pulley Speed Sensor Circuit
P1886	35	Driven Pulley Speed Sensor Circuit
P1888	36	Secondary Shaft Speed Sensor Circuit
P1655	37	Communication Error TCM to PCM
P1890	42	Shift Control System (slip)
P1891	43	Start Clutch Control System (slip)

1999-2003 Code List

DTC* **D** Indication*	**D** Indicator	MIL 	Detection Item
P1705 (5)	Blinks	ON	Transmission range switch (short to ground)
P1706 (6)	OFF	ON	Transmission range switch (open)
P1870 (30)	Blinks	ON	CVT speed change control valve assembly
P1873 (31)	Blinks	ON	CVT pulley pressure control valve assembly
P1879 (32)	Blinks	ON	CVT start clutch pressure control valve assembly
P1882 (33)	Blinks	OFF	Inhibitor solenoid
P1885 (34)	Blinks	ON	CVT drive pulley speed sensor
P1886 (35)	Blinks	ON	CVT driven pulley speed sensor
P1888 (36)	Blinks	ON	CVT driven pulley speed sensor
P1889 (93)	Blinks	ON	CVT speed sensor 2
P1890 (42)	Blinks	ON	Shift control system
P1891 (43)	Blinks	ON	Start clutch control system

The DTC in parentheses is the flash code which the D indicator indicates when the Service Check Connector or Data Link Connector (DLC) is jumped to display codes.

2004-2005 Code List

DTC	D Indicator	MIL	Detection Item
P0501 (36-5)*	Blinks	ON	CVT speed sensor circuit (range/performance)
P0502 (36-3)*	Blinks	ON	CVT speed sensor circuit (no signal input)
P0705 (5-2)*	Blinks	ON	Transmission range switch circuit (short to ground) (two-position signal input)
P0706 (6-2)*	Not Blinks	ON	Transmission range switch circuit (open)
P0716 (34-5)*	Blinks	ON	CVT Input shaft (drive pulley) speed sensor circuit (range/performance)
P0717 (34-3)*	Blinks	ON	CVT input shaft (drive pulley) speed sensor circuit (no signal input)
P0721 (35-5)*	Blinks	ON	CVT output shaft (driven pulley) speed sensor circuit (range/performance)
P0722 (35-3)*	Blinks	ON	CVT output shaft (driven pulley) speed sensor circuit (no signal input)
P0780 (42-2)	Blinks	ON	Shift control system
P0801 (33-2)*	Blinks	OFF	Inhibitor solenoid circuit
P0811 (43-2)*	Blinks	ON	Start clutch control system
P0962 (30-3)*	Blinks	ON	CVT speed change control valve assembly circuit (low current output)
P0963 (30-4)*	Blinks	ON	CVT speed change control valve assembly circuit (high current output)
P0966 (31-3)*	Blinks	ON	CVT pulley pressure control valve assembly circuit (low current output)
P0967 (31-4)*	Blinks	ON	CVT pulley pressure control valve assembly circuit (high current output)
P0970 (32-3)*	Blinks	ON	CVT start clutch pressure control valve assembly circuit (low current output)
P0971 (32-4)*	Blinks	ON	CVT start clutch pressure control valve assembly circuit (high current output)
P02159 (93-5)*	Blinks	OFF	CVT speed sensor 2 circuit (range/performance)
P02160 (93-3)*	Blinks	OFF	CVT speed sensor 2 circuit (no signal input)

NOTE

The DTC in parentheses is the Honda code that you will see when you use the Honda Diagnostic System (HDS). The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the Data Link Connector (DLC) is jumped to display codes.

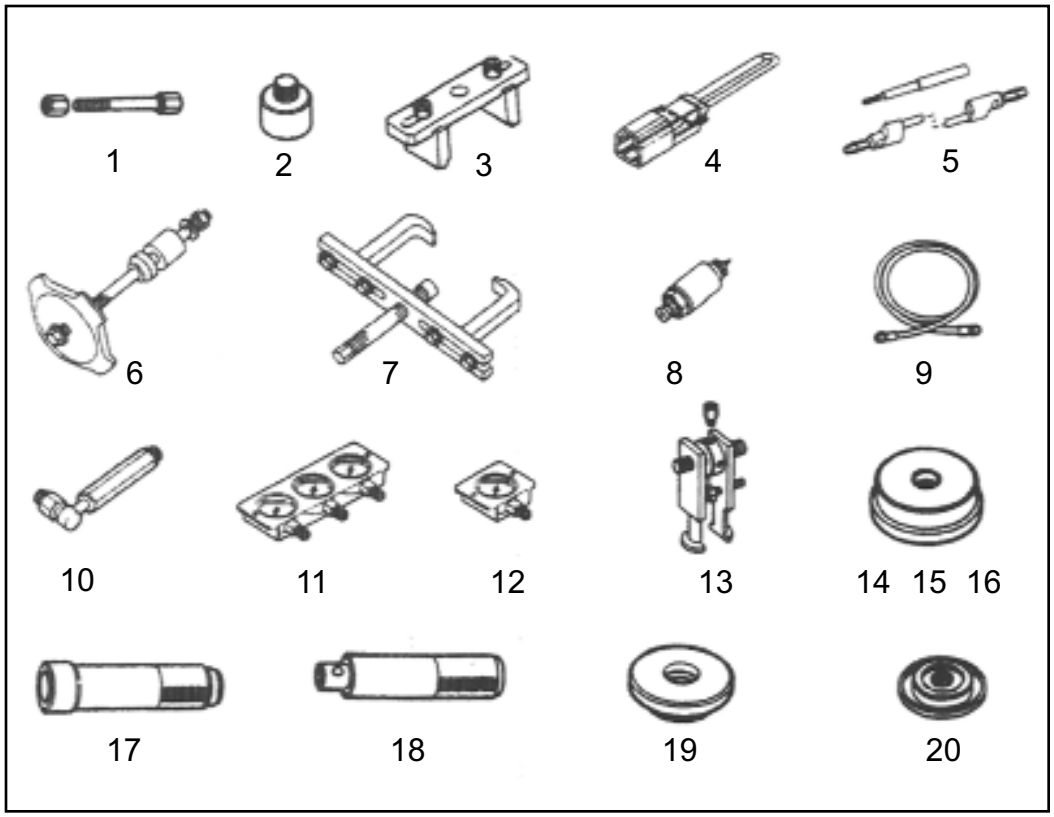
***This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.**

Bolt Torque Specifications

Bolt Location	Bolt Size	Torque in Lbs/Ft
Valve Body Bolts	6 mm	8.7*
ATF Filter Bolts	6 mm	8.7
Solenoid Harness Connector Bolt	6 mm	8.7
Pan Bolts	6 mm	8.7
Drain Plug	-	36
ATF Cooler Outlet Pipe Bolt	8 mm	21
ATF Cooler Inlet Pipe Bolt	8 mm	20
Flywheel Housing Bolts	8 mm	22
ATF Passage Line Holder Bolts	6 mm	8.7
Pump Bolts	6 mm	8.7
End Cover Bolts	8 mm	27
	6 mm	8.7
Manual Valve Body Bolts	6 mm	8.7
Intermediate Housing Bolts	8 mm	22
Flywheel Drive Plate Bolts	12 mm	54
Starter Motor Bolts	-	33

8.7 Lbs/Ft = 104 Lbs/In

Special Tools Available from Honda



Reference #	Honda Part #	Description
1	07GAE-PG40200	Clutch Spring Compressor Bolt Assembly
2	07JAD-PH80200	Pilot, 26 x 30 mm
3	07LAE-PX40100	Clutch Spring Compressor Attachment
4	07PAZ-0010100	SCS Service Connector
5	07SAZ-001000A	Backprobe Set
6	07TAE-P4V0110	Reverse Brake Spring Compressor
7	07TAE-P4V0120	Start Clutch Remover
8	07TAE-P4V0130	Start Clutch Installer
9	07MAJ-PY4011A	Oil Pressure Hose, 2210 mm
10	07MAJ-PY40120	Oil Pressure Hose, Adapter
11	07406-0020400	Oil Pressure Gauge Set w/panel
12	07406-0070300	Low Pressure Gauge w/panel
13	07736-A01000A	Adjustable Bearing Puller, 25-40 mm
14	07746-0010100	Attachment, 32 x 35 mm
15	07746-0010500	Attachment, 62 x 68 mm
16	07746-0010600	Attachment, 72 x 75 mm
17	07746-0030100	Driver 40 mm ID
18	07749-0010000	Driver
19	07947-6110501	Driver Attachment, 68 mm
20	07947-6340201	Driver Attachment, 58 x 72 mm

2006-2011 SPSA

Transmission Number

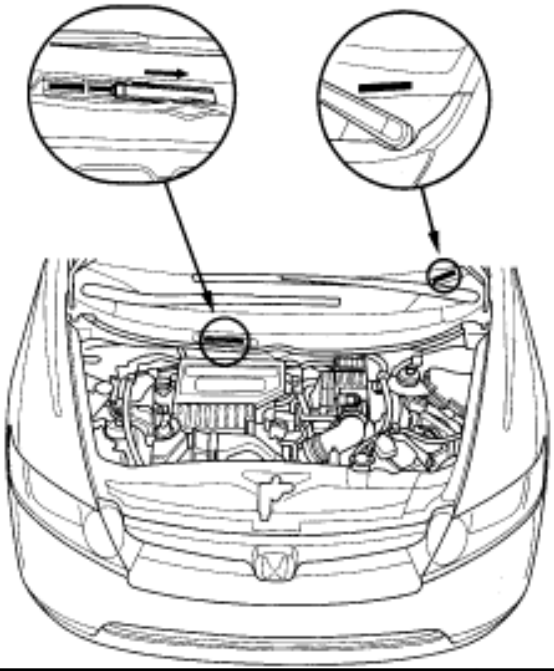
SPSA - 2000001

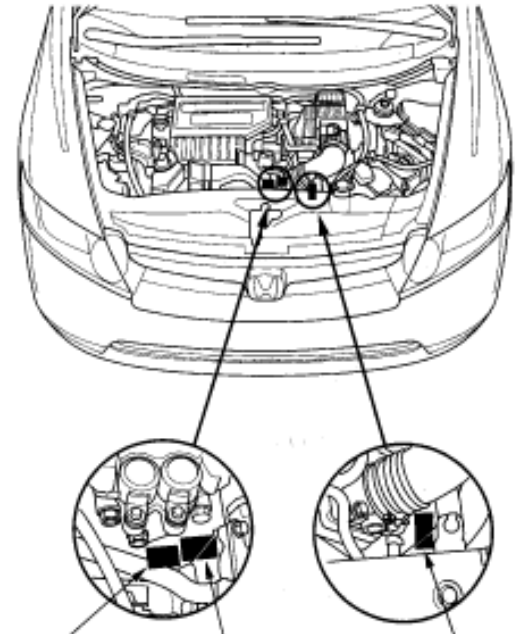
a b

a. **Transmission Type**
SPSA: CVT
b. **Serial Number**

Identification Number Locations

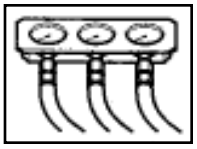
Vehicle Identification Number (VIN)



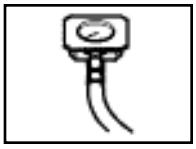


2006-2011 SPSA

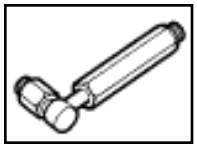
Pressure Tests

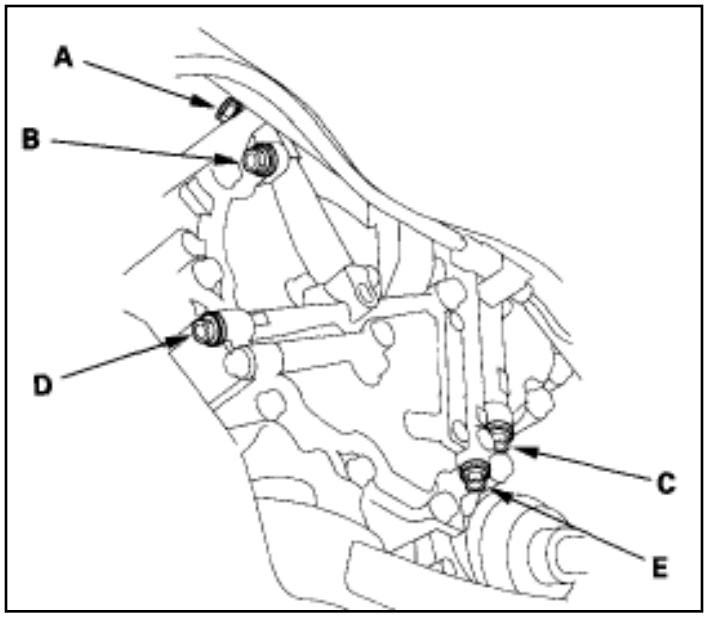

A/T Oil Pressure Gauge Set w/Panel


A/T Low Pressure Gauge


A/T High Pressure Gauge


A/T Pressure Hose 2,210 mm


A/T Pressure Hose Adapter



A	Reverse Brake Pressure Inspection Port
B	Forward Clutch Pressure Inspection Port
C	Lubrication Pressure Inspection Port
D	Drive Pulley Pressure Inspection Port
E	Driven Pulley Pressure Inspection Port

Start the engine and warm up the engine to normal operating temperature (the radiator fan comes on).

Pressure	Standard
Forward Clutch	1.57-1.84 MPa (16.0-18.8 kgf/cm^2,228-267 psi)
Reverse Brake	1.57-1.84 MPa (16.0-18.8 kgf/cm^2,228-267 psi)
Drive Pulley	0.24-0.54 MPa (2.5-5.5 kgf/cm^2,36-78 psi)
Driven Pulley	0.83-1.13 MPa (8.5-11.5 kgf/cm^2,120-164 psi)
Lubrication	0.25-0.40 MPa (2.5-4.1 kgf/cm^2,36-58 psi)

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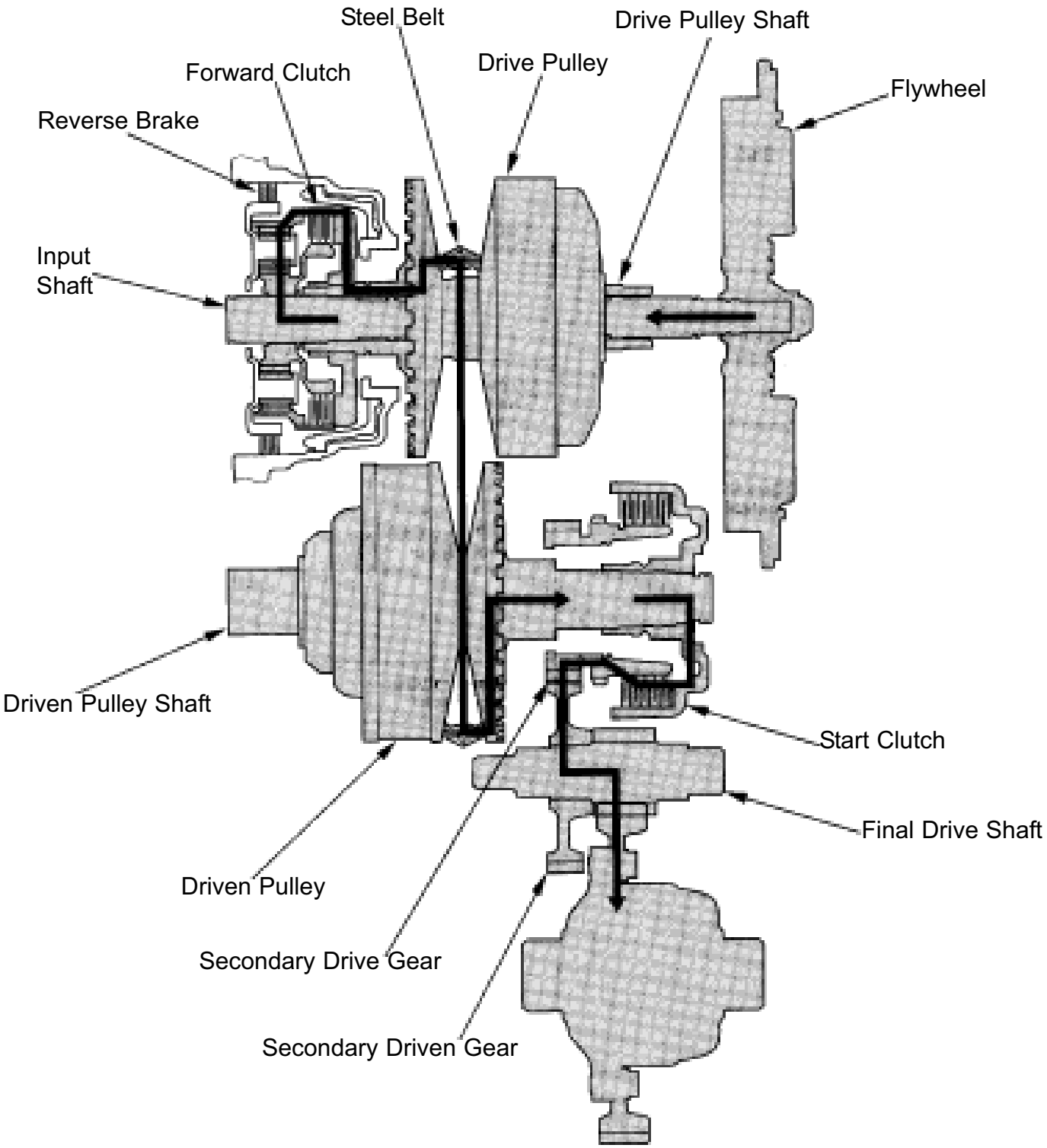
Power Flow



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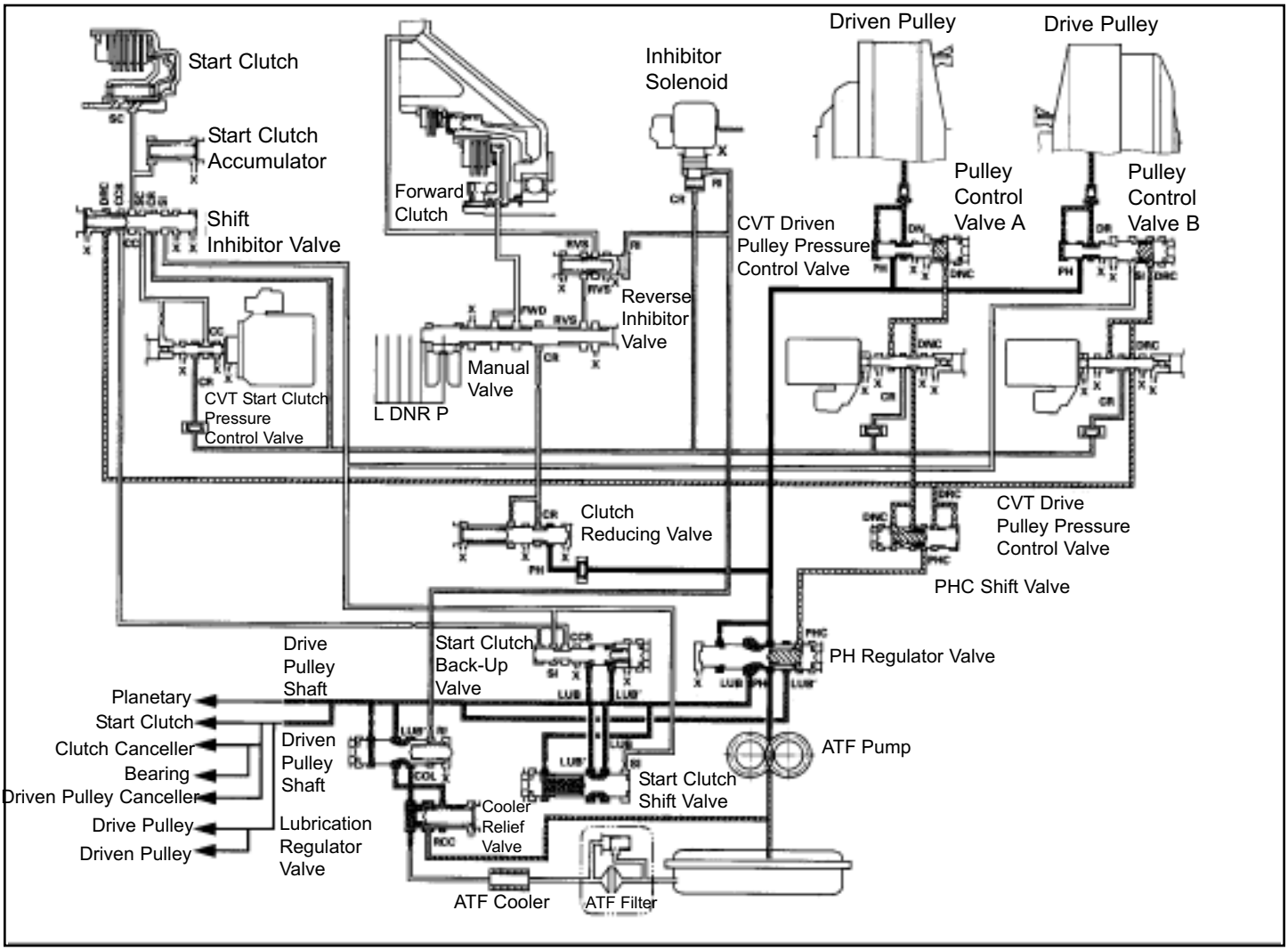

D Position, at high speed range

Vehicle speed is further increased, the PCM controls the CVT driven pulley pressure control valve and the CVT drive pulley pressure control valve to apply hydraulic pressure to the drive pulley and to the driven pulley. The drive pulley receives high pressure and the driven pulley receives low. The drive pulley provides the steel belt a large-diameter contact and the driven pulley provides a small-diameter contact, and the result is a high pulley ratio. Hydraulic pressure remains to apply to the start and forward clutches.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

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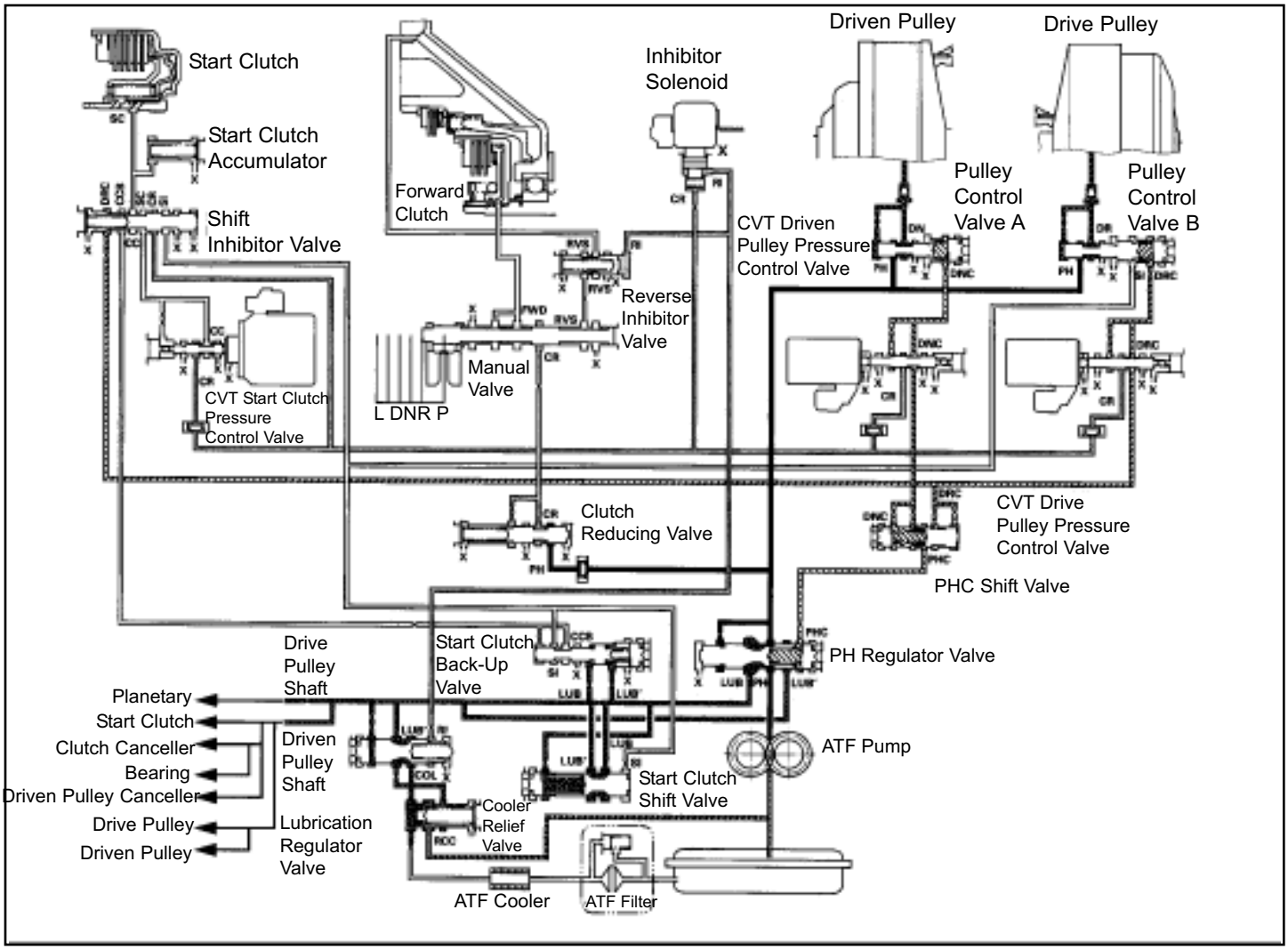
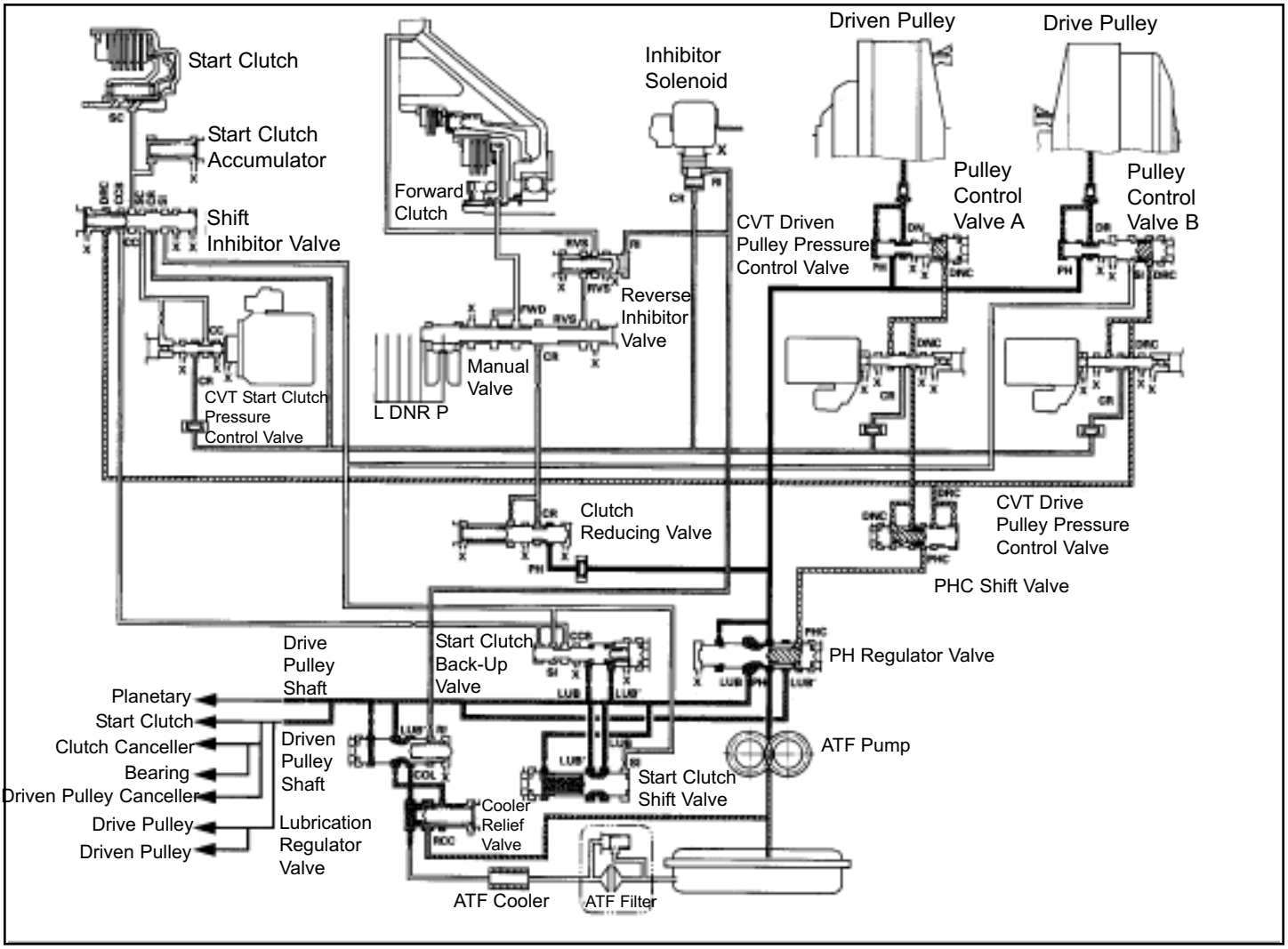


R Position

The manual valve is shifted into the R position, uncovers the port leading to the reverse brake pressure (RVS) to the reverse inhibitor valve. The reverse inhibitor solenoid is turned OFF by the PCM, and reverse inhibitor pressure (RI) is applied to the right end of the reverse inhibitor valve. The reverse inhibitor valve is moved to the left side, and uncovers the port leading reverse brake pressure (RVS) to the reverse brake. Clutch reducing pressure (CR) becomes reverse brake pressure (RVS), and flows to the reverse brake via the reverse inhibitor valve. The reverse brake is engaged, and it locks the planetary carrier.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

2006-2011 SPSA

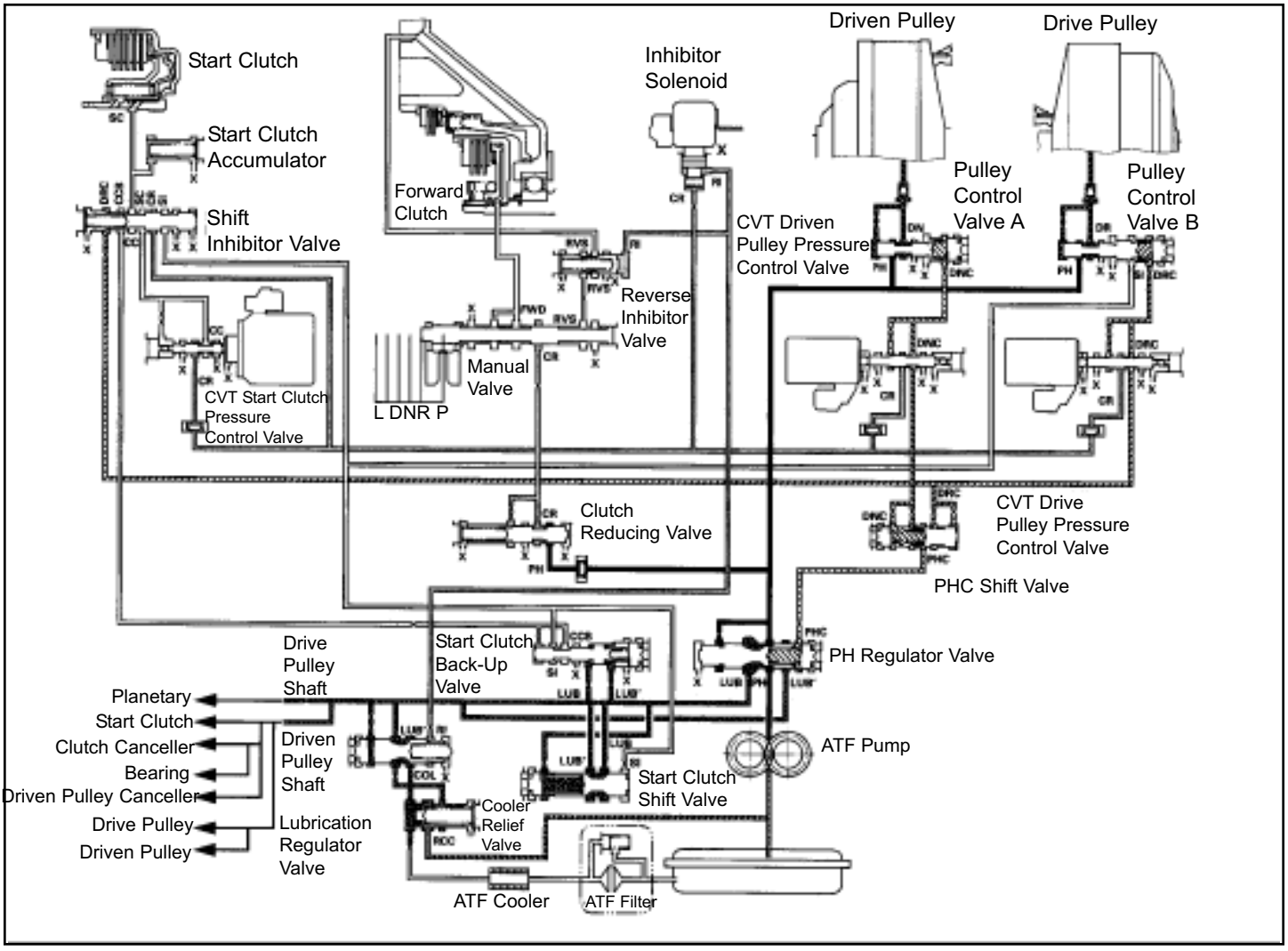


R Position: Reverse Inhibitor Control

If the R position is selected while the vehicle is moving forward at speeds over 6 mph (10 km/h) , the PCM outputs signal to turn ON the reverse inhibitor solenoid, and reverse inhibitor pressure (RI) in the right end of the reverse inhibitor valve is released. The reverse inhibitor valve is moved to the right side, and uncovers the port to stop reverse brake pressure to the reverse brake from the manual valve. Reverse brake pressure (RVS) is not applied to the reverse brake, and power is not transmitted to the reverse direction.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

2006-2011 SPSA

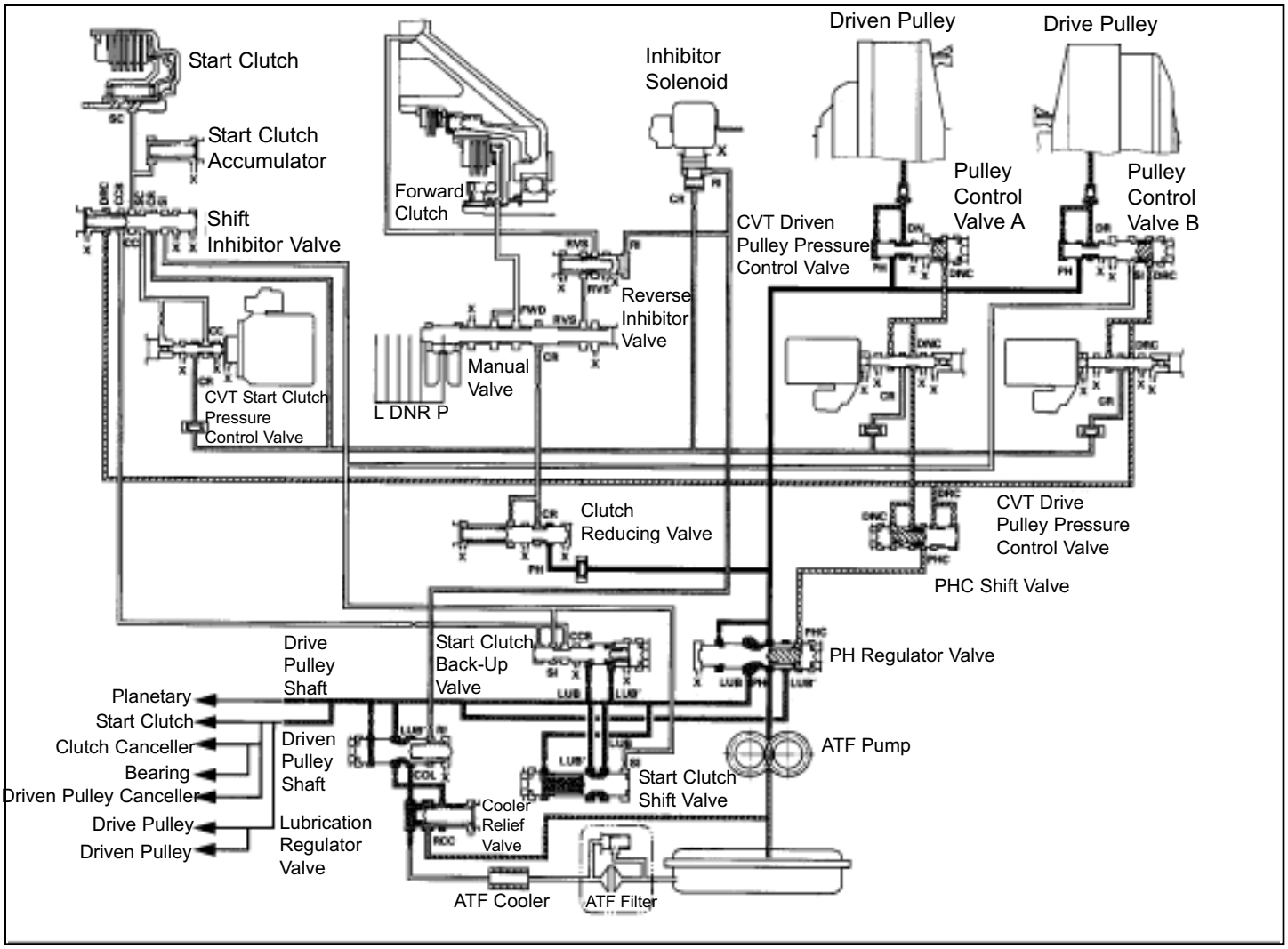


P Position

The manual valve is shifted into the P position, the manual valve intercepts hydraulic pressure to the forward clutch. Hydraulic pressure is not applied to the start and forward clutches, and power is not transmitted to the drive pulley shaft.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

2006-2011 SPSA



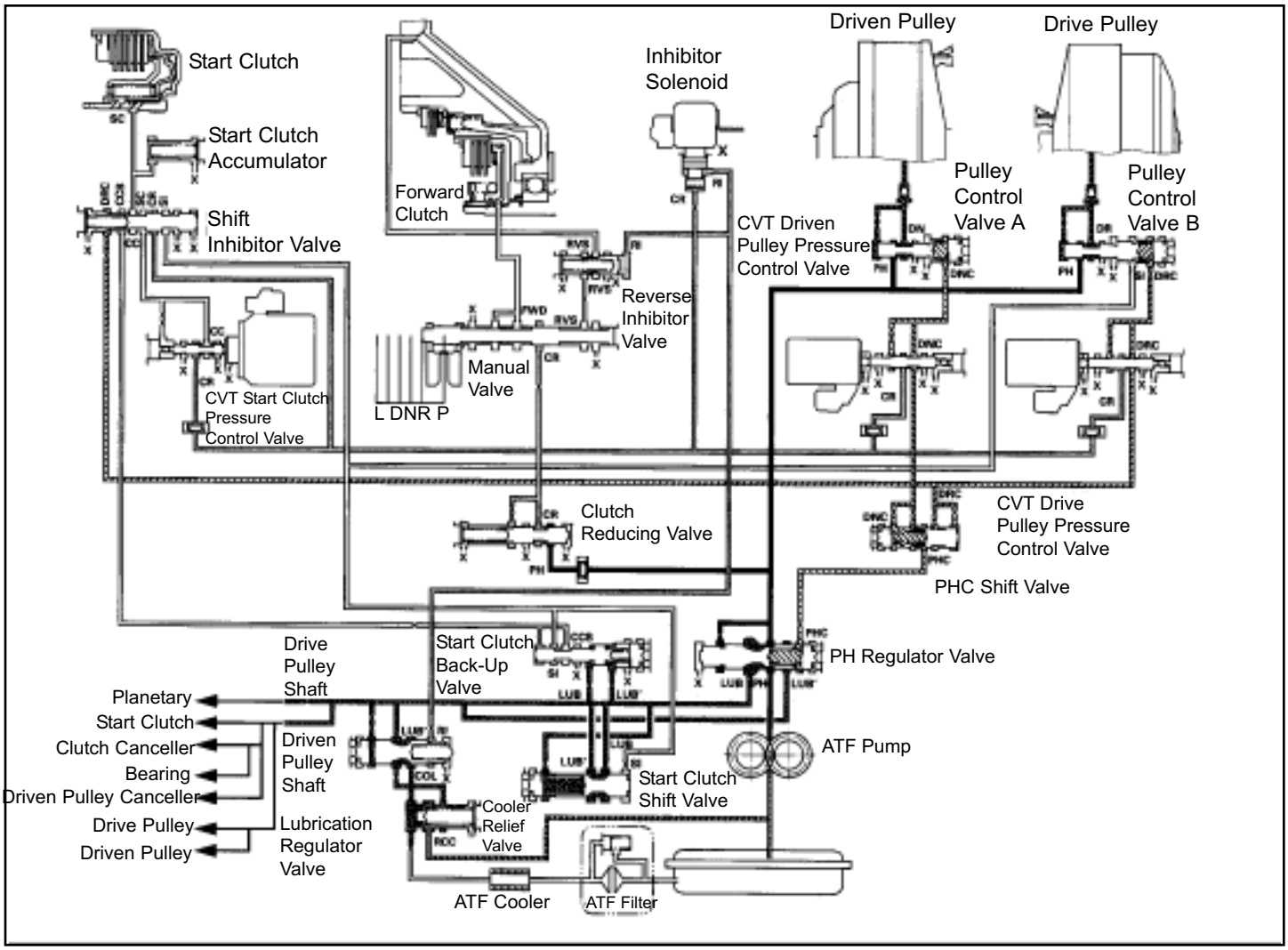
D Position, when an electronic control system malfunction occurs.

When an electronic control system malfunction occurs in the D position, the CVT start clutch pressure control valve cannot operate the control start clutch pressure circuit, the transmission creates a temporary circuit for the start clutch pressure control to allow the vehicle to be driven.

The CVT start clutch control valve covers the port leading start clutch control pressure (CC) to the shift inhibitor valve, and the shift inhibitor valve is moved to the left side by drive pulley control pressure (DRC). Clutch reducing pressure (CR) becomes shift inhibitor pressure (SI) at the shift inhibitor valve, flows to the left side of the start clutch back-up valve, and becomes start clutch,control B pressure (CCB). Start clutch control B pressure (CCB) becomes start clutch pressure (SC) at the shift inhibitor valve, and flows to the start clutch. Clutch reducing pressure (CR) also flows to the manual valve and becomes forward clutch pressure (FWD). The start clutch and the forward clutch are engaged, and the vehicle will move.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

2006-2011 SPSA



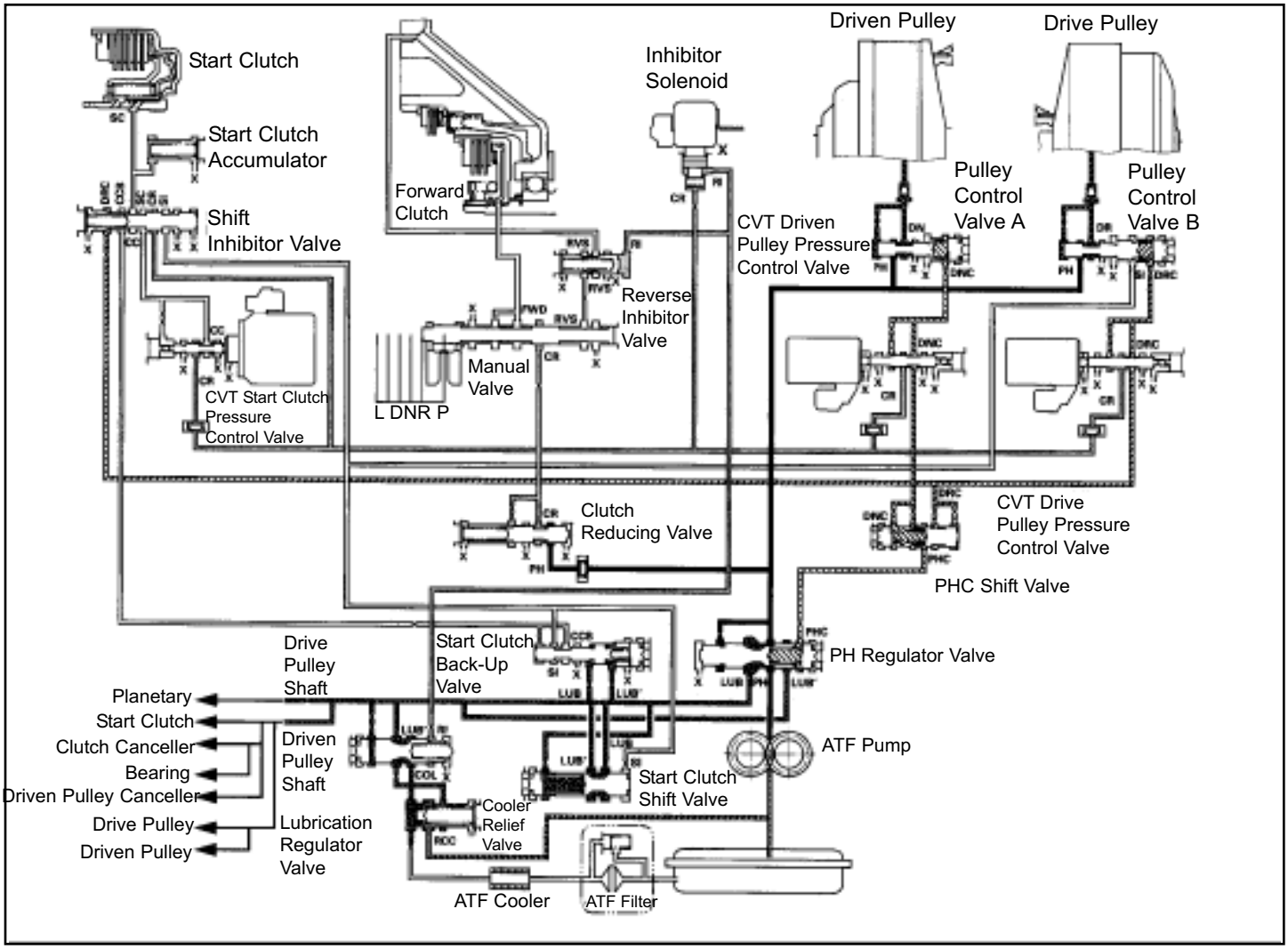
R Position, when an electronic control system malfunction occurs.

When an electronic control system malfunction occurs in the R position, and the CVT start clutch pressure control valve cannot operate the control start clutch pressure circuit, the transmission creates the temporary circuit of the start clutch pressure control to allow the vehicle to be driven.

The CVT start clutch control valve covers the port leading start clutch control pressure (CC) to the shift inhibitor valve, and the shift inhibitor valve is moved to the left side by drive pulley control pressure (DRC). Clutch reducing pressure (CR) becomes shift inhibitor pressure (SI) at the shift inhibitor valve, flows to the left side of the start clutch back-up valve, and becomes start clutch control B pressure (CCB). Start clutch control B pressure (CCB) becomes start clutch pressure (SC) at the shift inhibitor valve, and flows to the start clutch. Clutch reducing pressure (CR) also flows to the manual valve and becomes reverse brake pressure (RVS). The start clutch and the reverse brake are engaged, and the vehicle will reverse.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

2006-2011 SPSA



Park Mechanism

The park mechanism locks the transmission by engaging the park pawl with the park gear which is integral with the secondary drive gear. The secondary drive gear engages with the secondary driven gear which is splined to the final drive shaft, and the final drive gear integrated with the final drive shaft engages the final driven gear.

Shifting to the P position causes the park cone (installed at the end of the park rod) to press the park pawl onto the park gear. Even if the end of the park pawl rides on the top of the park gear teeth, slight movement of the vehicle will cause the park pawl and park gear to mesh with each other completely because the park rod spring puts tension on the park cone. The park pawl receives the tension (which acts to separate the park pawl from the park gear) from the park pawl spring.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

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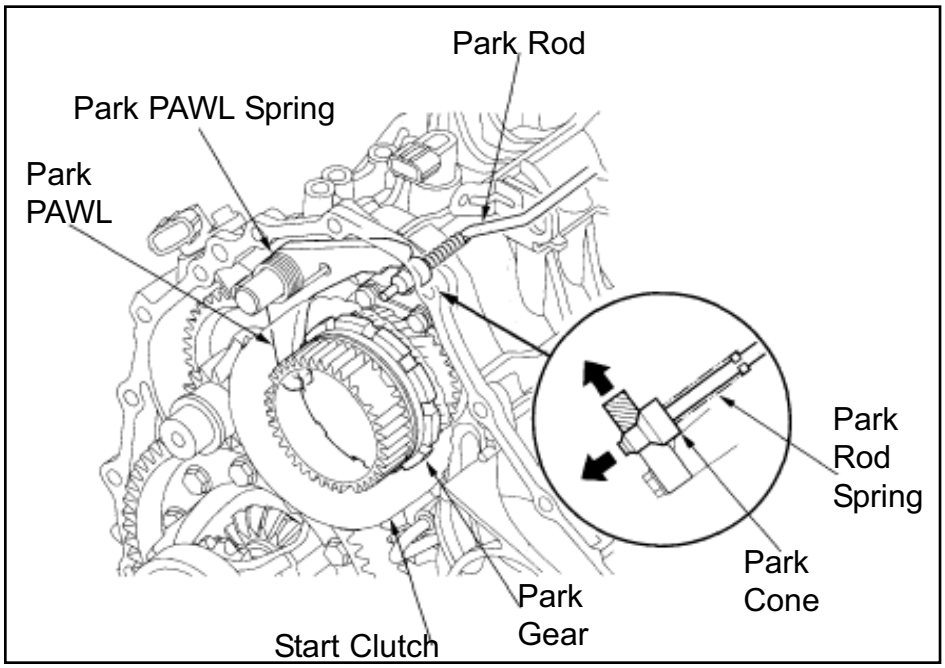
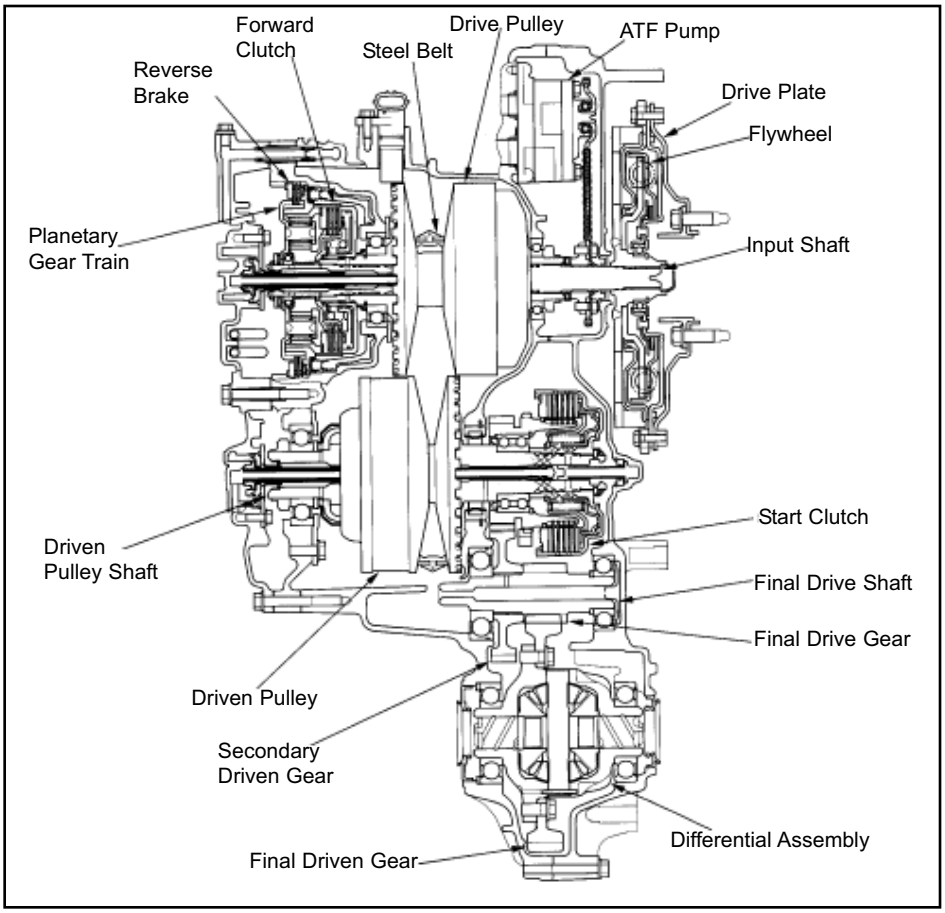
Park





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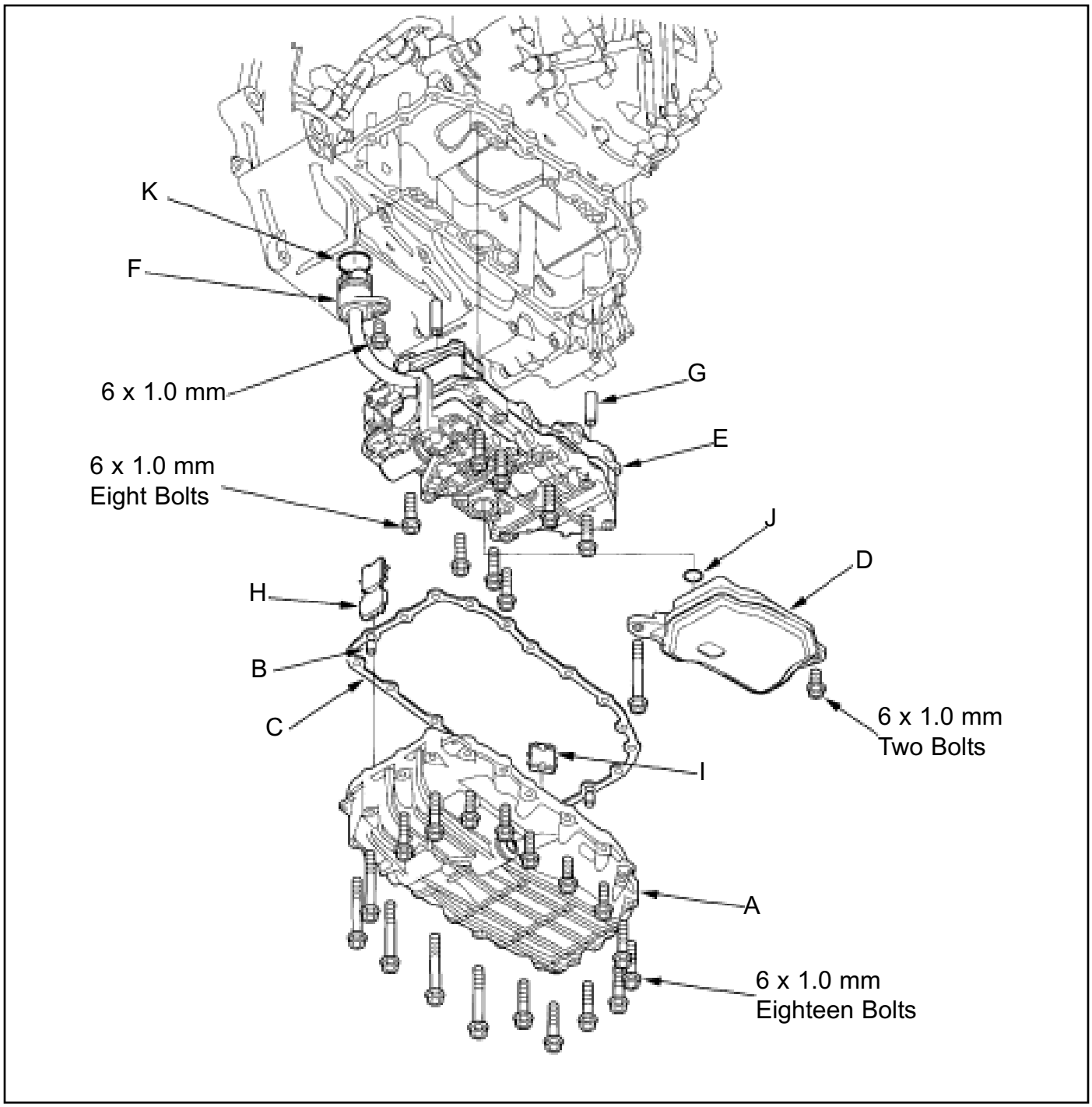
Disassembly



Remove the ATF pan (A) (18 bolts), dowel pins (B) (2), and ATF pan gasket (C).

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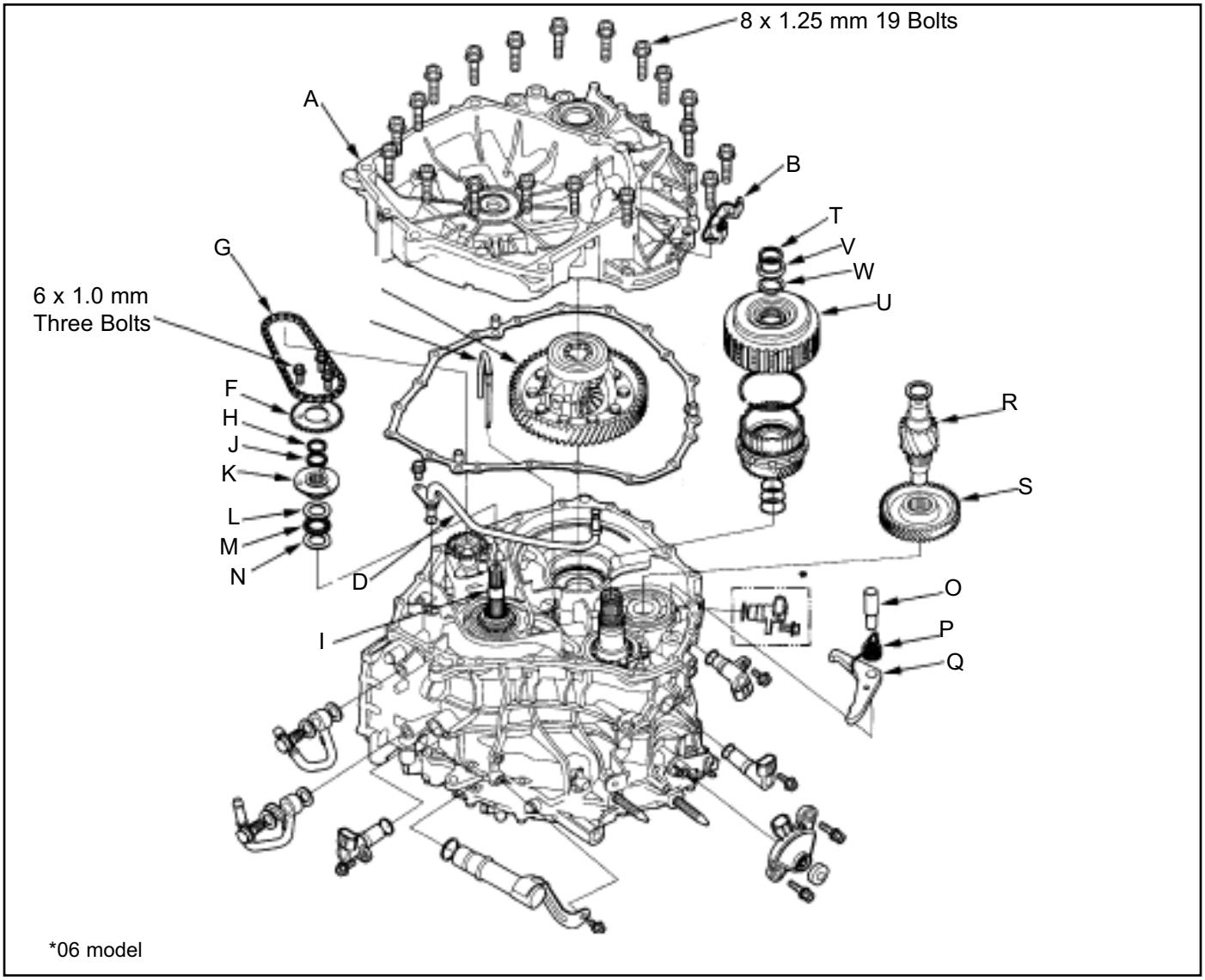
Disassembly



Remove the differential assembly (C).
Remove the ATF passage pipe (D) and lubrication pipe (E).
Remove the three bolts securing the ATF pump drive sprocket (F), then remove the ATF pump drive chain (G) and ATF pump drive sprocket.
Remove the snap ring (H) from the input shaft (I), and remove the thrust shim (J), ATF pump drive sprocket hub (K), thrust washer (L), thrust needle bearing (M), and the thrust washer (N) from the input shaft.
Remove the park pawl shaft (O), and remove the park pawl spring (P) and park pawl (Q).
Remove the final drive shaft (R), then remove the secondary driven gear (S).
Remove the snap ring (T) securing the start clutch (U), and remove the cotter retainer (V) and cotters (W).
Set the special tool on the start clutch (A), and attach the pawl (B) of the special tool to the park gear (C) securely. Do not place the pawl of the special tool on the start clutch guide. If the pawl contacts the start clutch guide, the clutch guide may be damaged. Be sure not to allow dust and other foreign particles to enter the driven pulley shaft.

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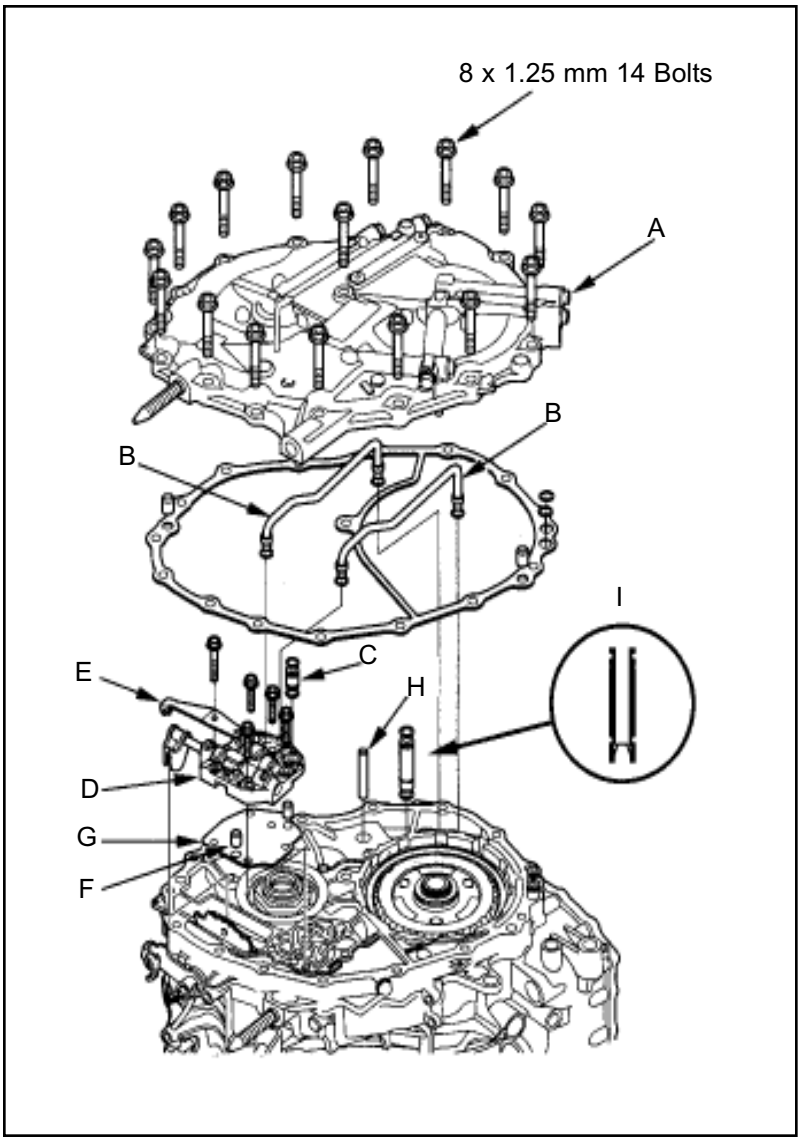
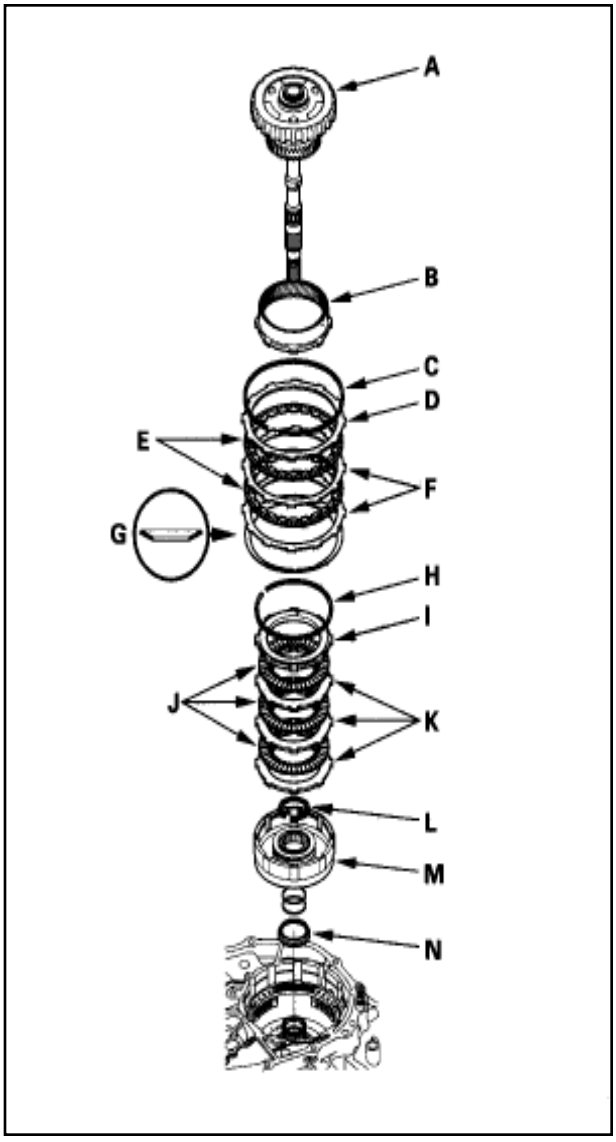
Disassembly



Remove the ATF feed pipes (B).
Remove the ATF feed pipe (10.9 x 18.6 mm) (C) from the manual valve body (D).
Remove the manual valve body, detent spring (E), dowel pins (F) (two), and separator plate (G).
Remove the 8 mm ATF pipe (H) and ATF feed pipe (10.9 x 39.6 mm) (I).
Remove the planetary carrier/input shaft assembly (A), then remove the ring gear (B).



Remove the reverse brake snap ring (C), then remove the reverse brake end plate (D), brake discs (E), brake plates (F), and disc spring (G).
Remove the snap ring (H) securing the forward clutch end-plate (I), then remove the forward clutch end-plate, clutch discs (J) and clutch plates (K).
Remove the snap ring (L) securing the forward clutch (M) to the drive pulley shaft, then remove the forward clutch and snap ring retainer (N).
Install the special tool to remove the snap ring securing the reverse brake return spring retainer.

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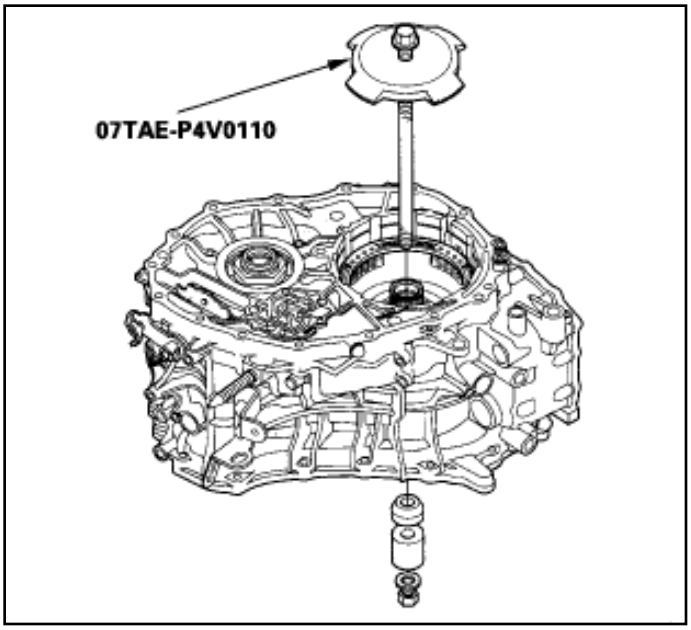
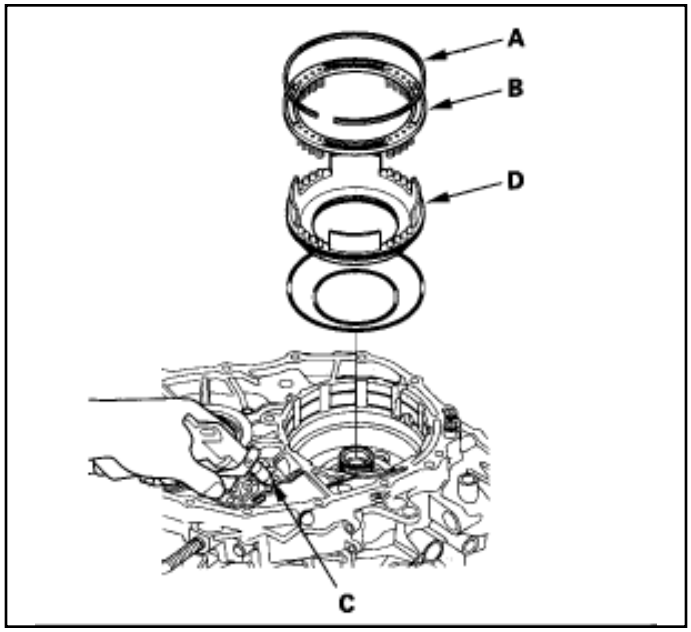
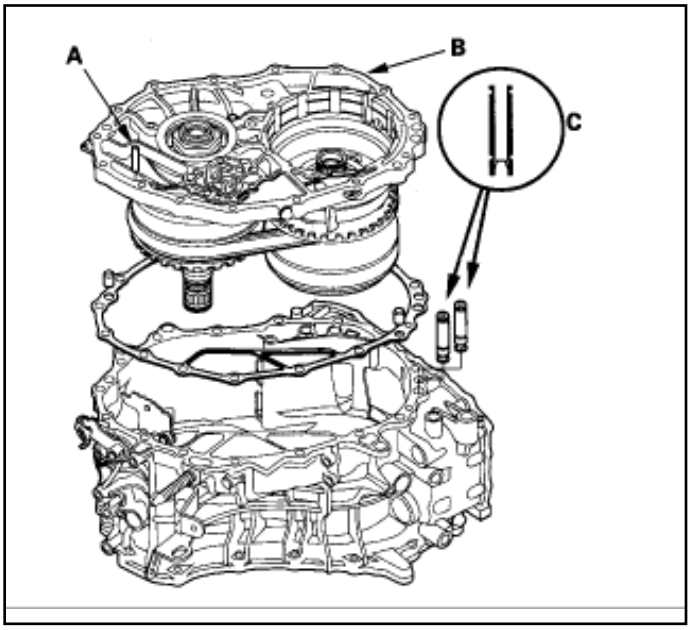
Disassembly





Remove the special tool, then remove the spring retainer/return spring assembly (B).
Apply air pressure to reverse brake pressure circuit hole (C) to remove the reverse brake piston (D).
Remove the roller (A).



Direction of belt.

Remove the intermediate housing (B).
Remove the ATF feed pipes (10.9 x 39.6 mm) (C).

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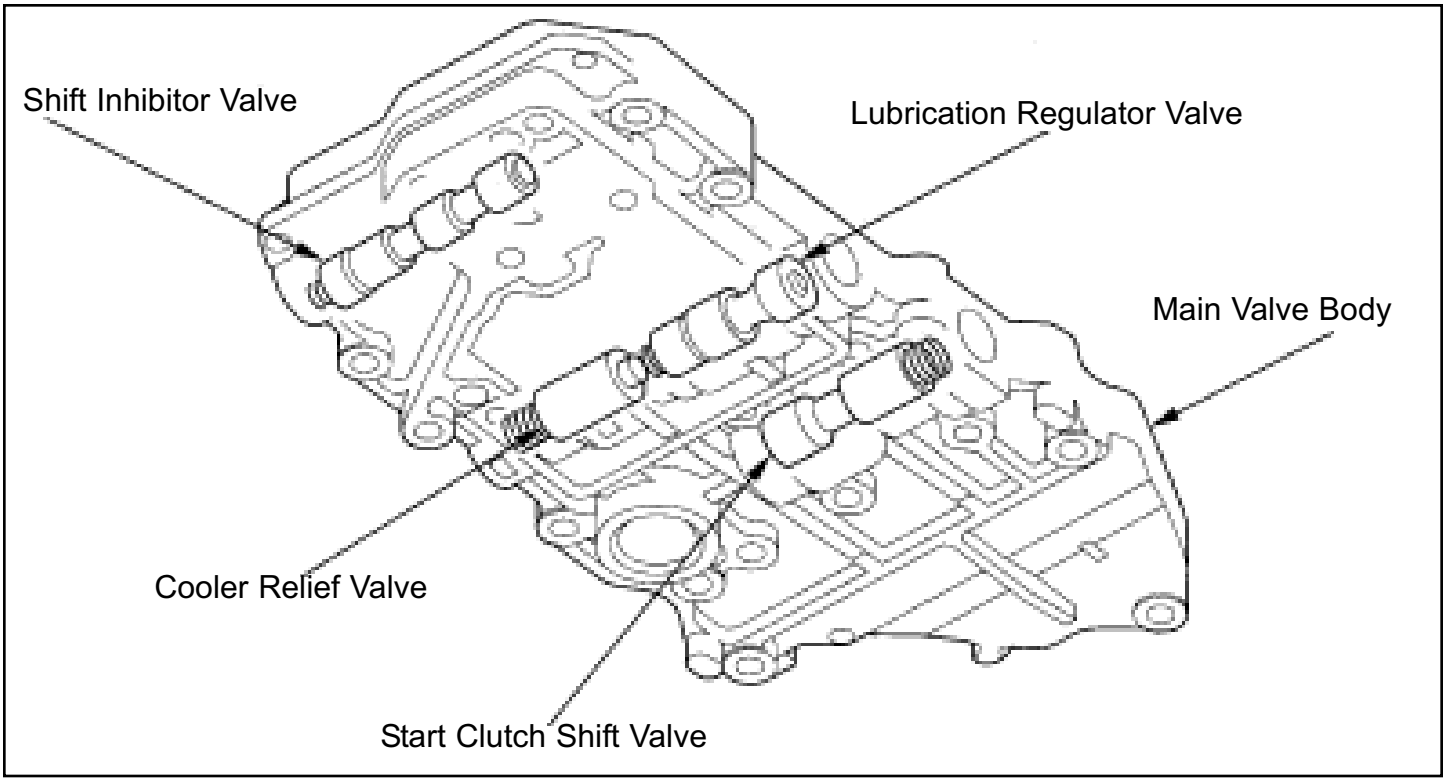
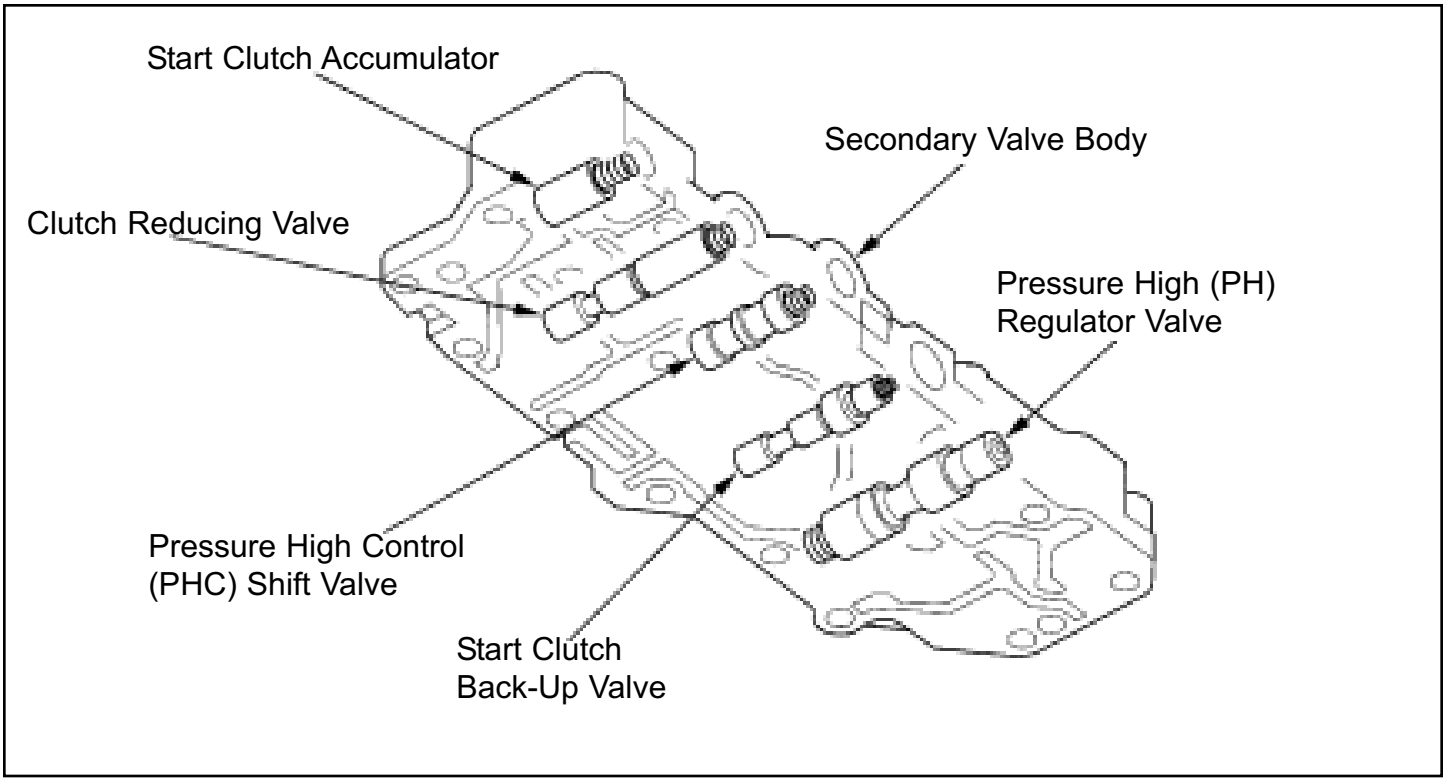
Disassembly

Valvebody





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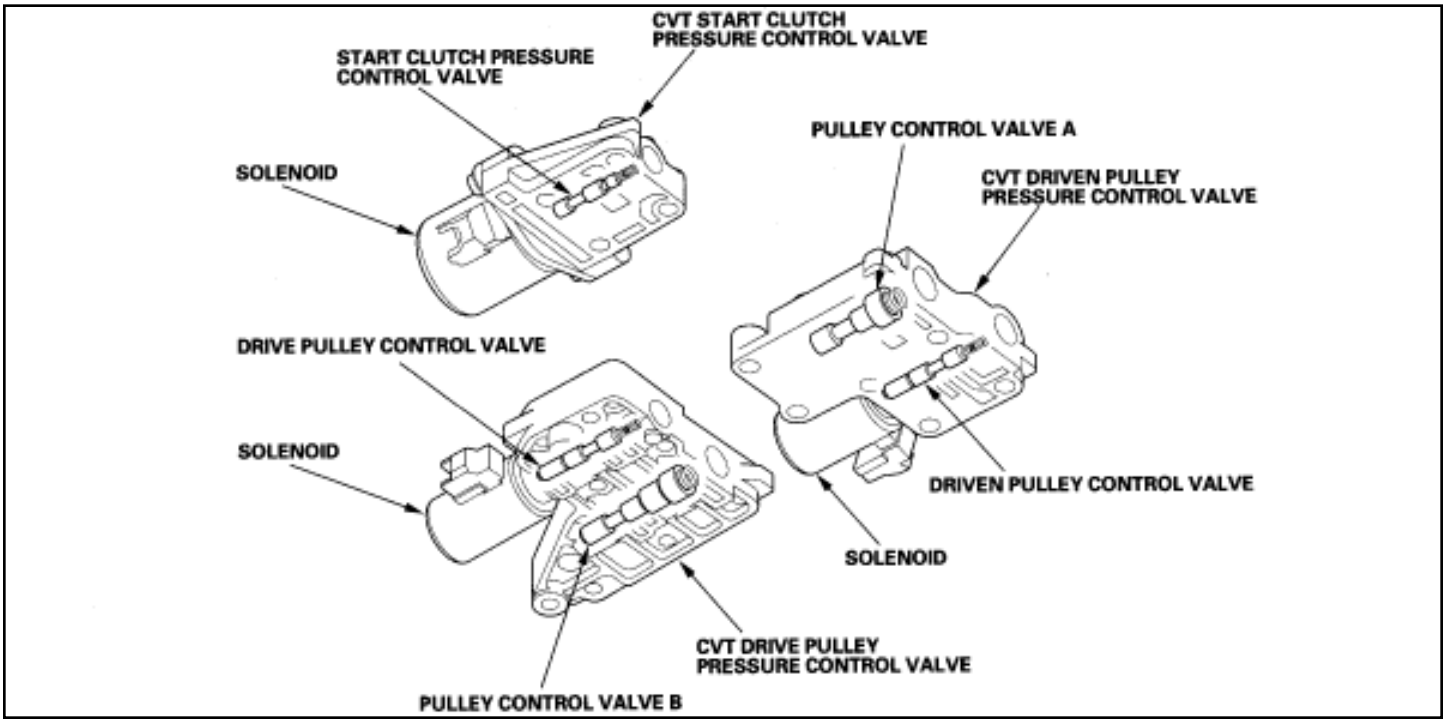
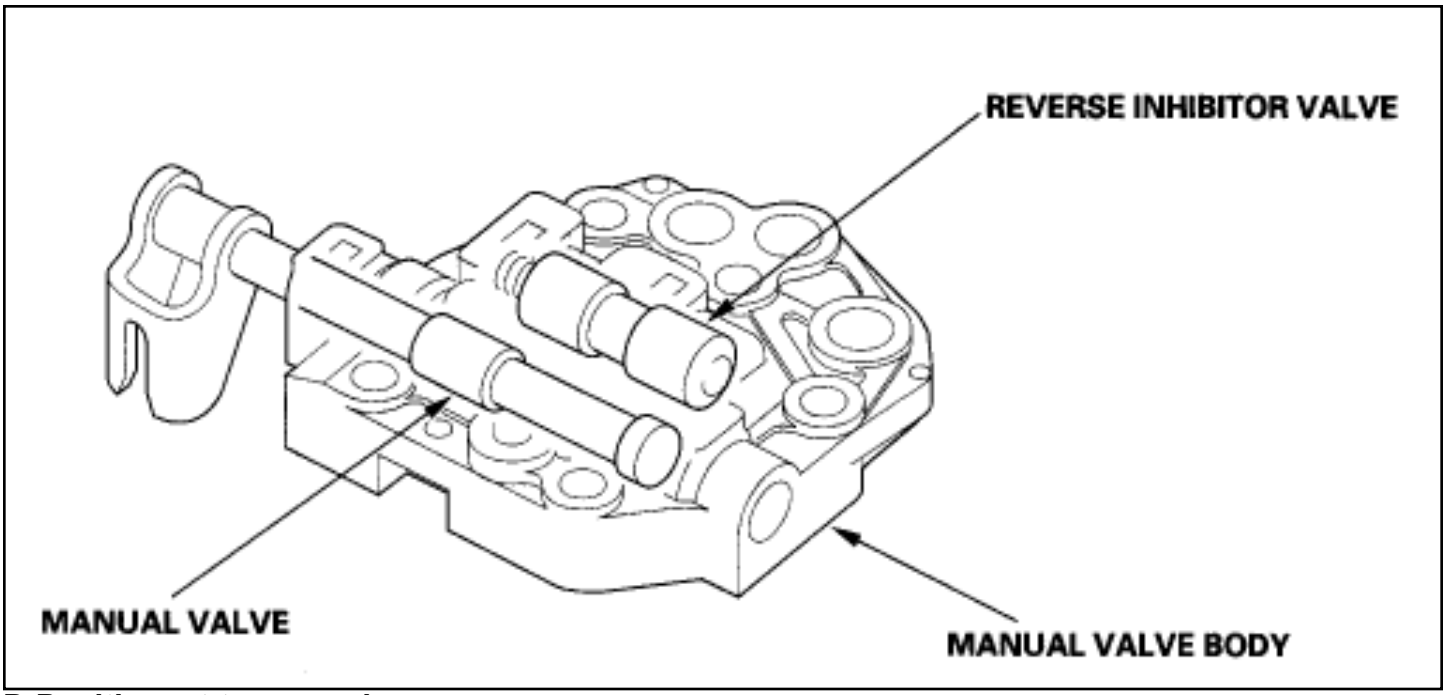
Disassembly

Valvebody





D Position, at top speed range

As the speed of the vehicle reaches the programmed value, the PCM controls the CVT driven pulley pressure control valve and the CVT drive pulley pressure control valve to provide about the same hydraulic pressure to the pulleys. The diameter in contact with the steel belt on the drive and driven pulleys becomes nearly equal, and the pulley ratio is in high. Hydraulic pressure is then applied to the start and forward clutches.

NOTE **WHEN USED, “LEFT” OR “RIGHT” INDICATES DIRECTION ON THE HYDRAULIC CIRCUIT.**

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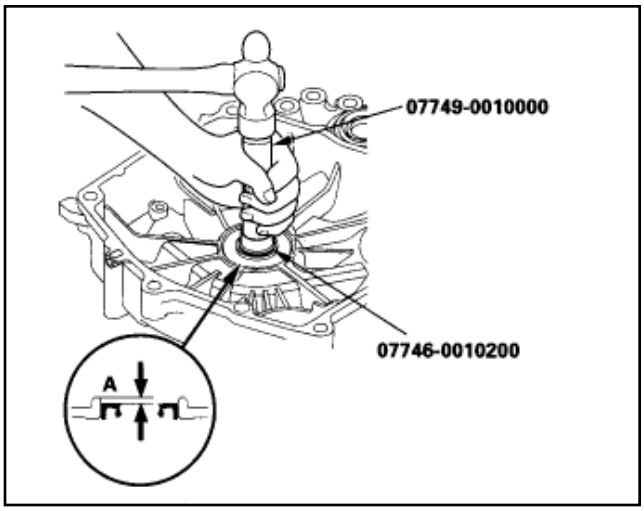
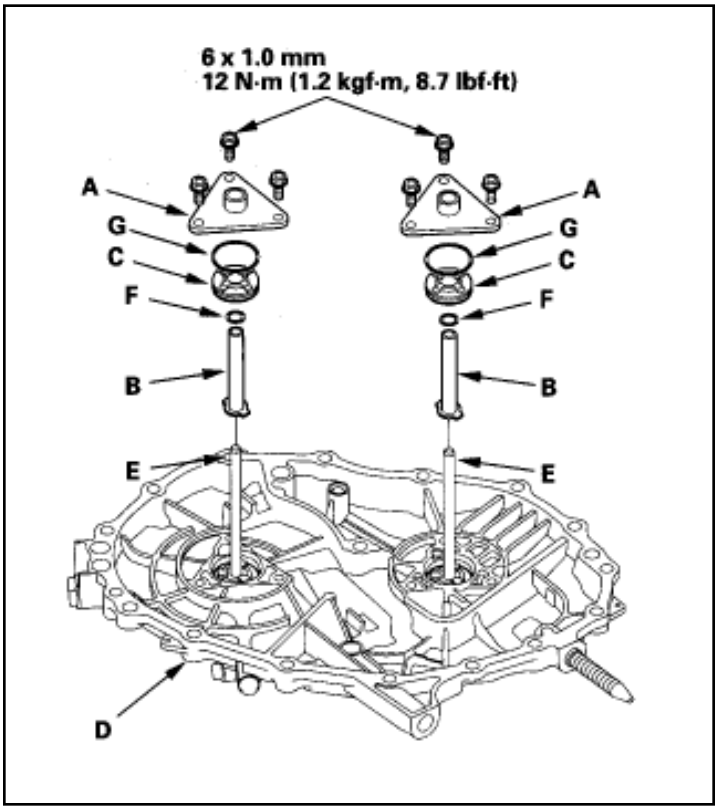
Disassembly

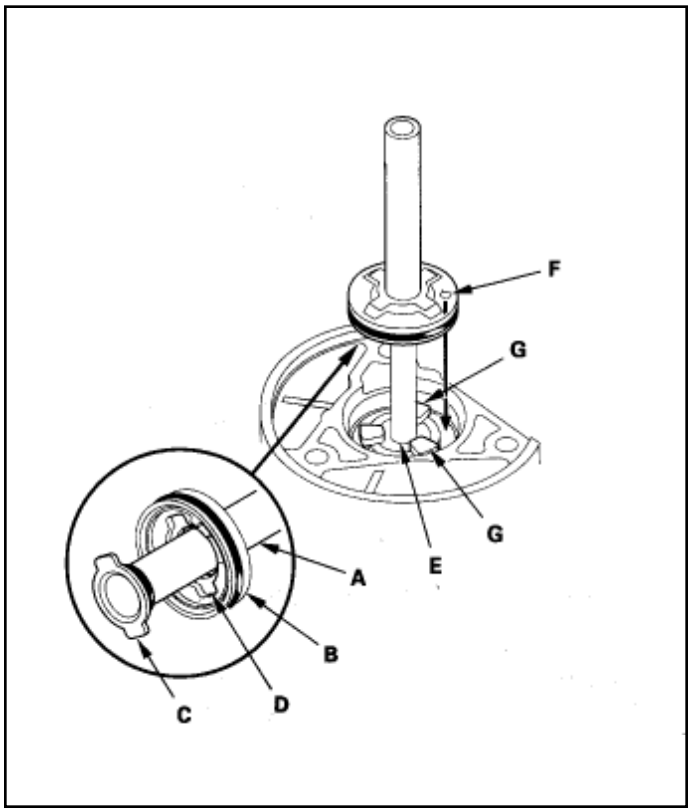
Valvebody



End Cover



Install new O-rings (F) over the ATF feed pipes. Install new O-rings (G) on the feed pipe flanges. Install the feed pipe (A) through the feed pipe flange (B) by aligning the feed pipe tab (C) with the guide (D) on the flange.



Install the ATF feed pipe over the undetectable feed pipe (E), and align the mark (F) on the feed pipe flange between the tabs (G) on the end cover. Install the feed pipe flange plate.

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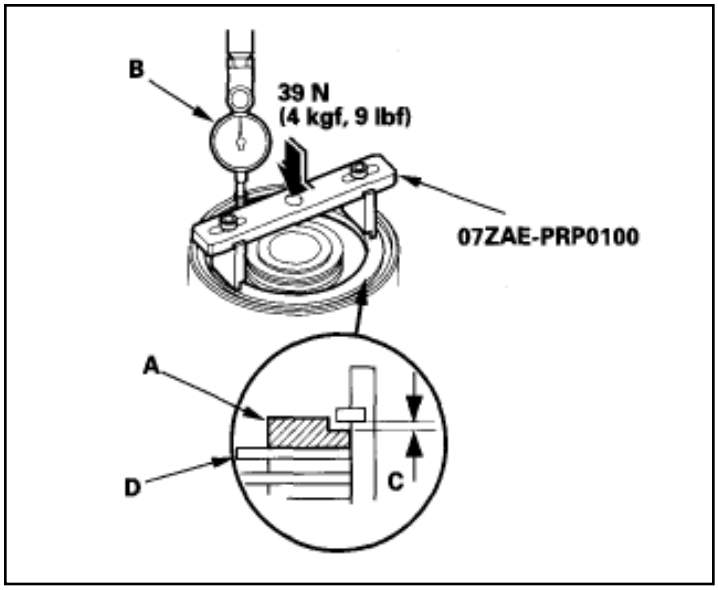
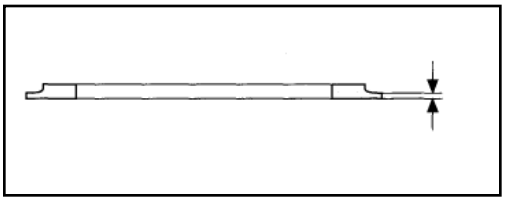
Disassembly

Forward Clutch





Forward Clutch End Plate

Mark	Part Number	Thickness
4	22554-PC9-000	2.7 mm (0.106 in.)
5	22555-PC9-000	2.8 mm (0.110 in.)
6	22556-PC9-000	2.9 mm (0.114 in.)
7	22557-PC9-000	3.0 mm (0.118 in.)
8	22558-PC9-000	3.1 mm (0.122 in.)
9	22559-PC9-000	3.2 mm (0.126 in.)
10	22560-PC9-000	3.3 mm (0.130 in.)
14	22574-P4V-003	3.4 mm (0.134 in.)
15	22561-P4V-003	3.5 mm (0.138 in.)
16	22562-P4V-003	3.6 mm (0.142 in.)
17	22563-P4V-003	3.7 mm (0.146 in.)
18	22564-P4V-003	3.8 mm (0.150 in.)
19	22565-P4V-003	3.9 mm (0.154 in.)
20	22566-P4V-003	4.0 mm (0.157 in.)
21	22567-P4V-003	4.1 mm (0.161 in.)
22	22568-P4V-003	4.2 mm (0.165 in.)
23	22569-P4V-003	4.3 mm (0.169 in.)
24	22570-P4V-003	4.4 mm (0.173 in.)
25	22571-P4V-003	4.5 mm (0.177 in.)

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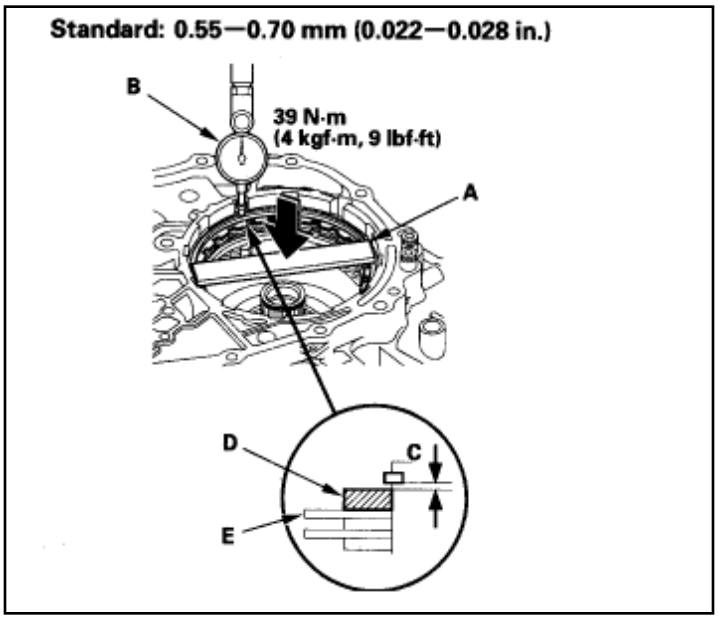
Disassembly

Reverse Clutch



Reverse Brake End-Plate

No.	Part Number	Thickness
1	22551-P4V-003	3.6 mm (0.142 in.)
A	22551-PWR-000	3.7 mm (0.146 in.)
2	22552-P4V-003	3.8 mm (0.150 in.)
B	22553-PWR-000	3.9 mm (0.154 in.)
3	22553-P4V-003	4.0 mm (0.157 in.)
C	22553-PWR-000	4.1 mm (0.161 in.)
4	22554-P4V-003	4.2 mm (0.165 in.)
D	22554-PWR-000	4.3 mm (0.169 in.)
5	22555-P4V-003	4.4 mm (0.173 in.)
E	22555-PWR-000	4.5 mm (0.177 in.)
6	22556-P4V-003	4.6 mm (0.181 in.)
F	22556-PWR-000	4.7 mm (0.185 in.)
7	22557-P4V-003	4.8 mm (0.189 in.)
8	22558-P4V-003	5.0 mm (0.197 in.)

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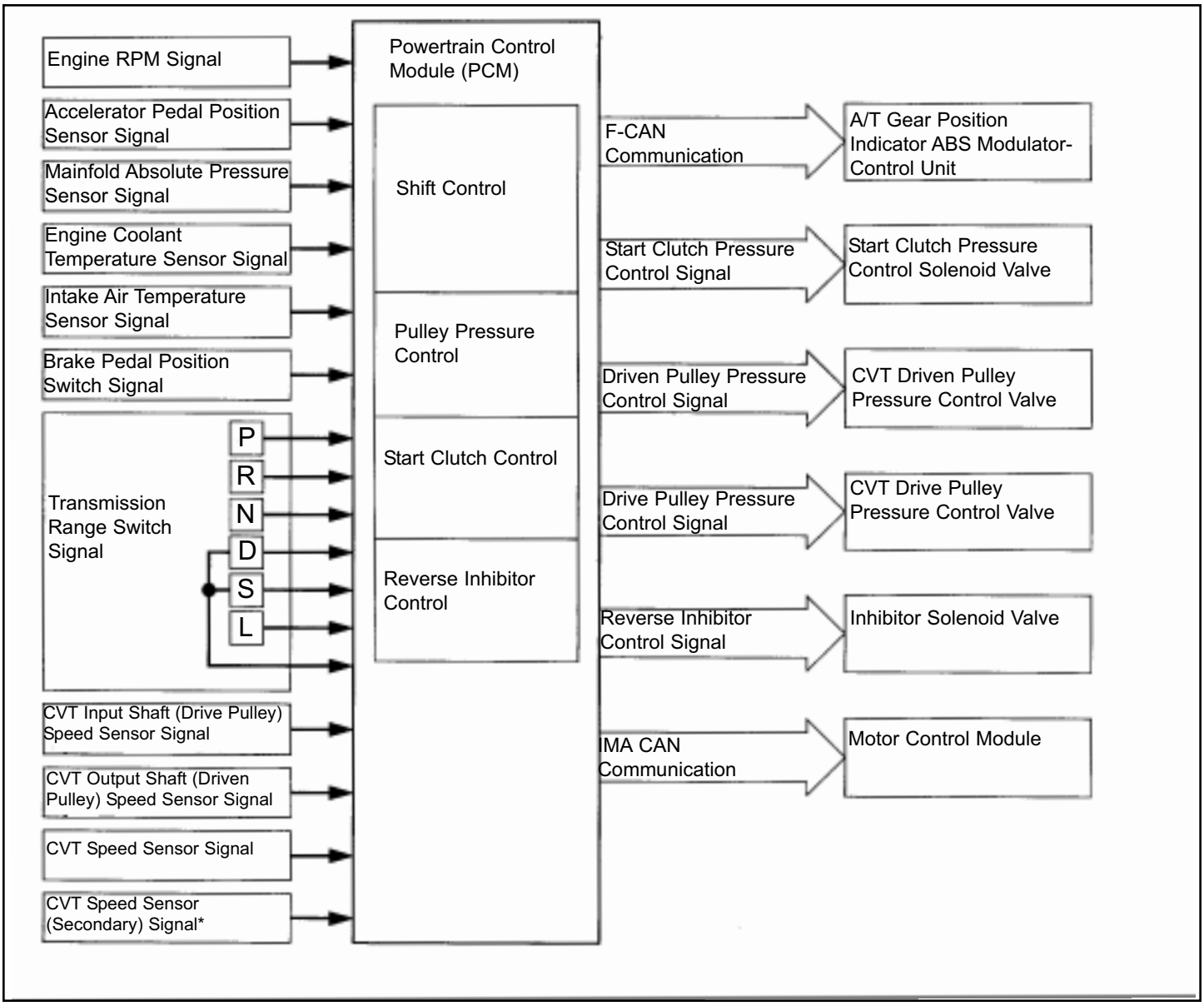
Disassembly

Electrical

Electrical Control System

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

The PCM receives input signals from the sensors, switches and other control units, processes data, and outputs signals for the engine control system and the CVT control system. The CVT control system includes shift control, pulley pressure control, start clutch pressure control and reverse inhibitor control. The PCM actuates the pulley control solenoids to control pulley control valve A and B shifting transmission pulley ratios.



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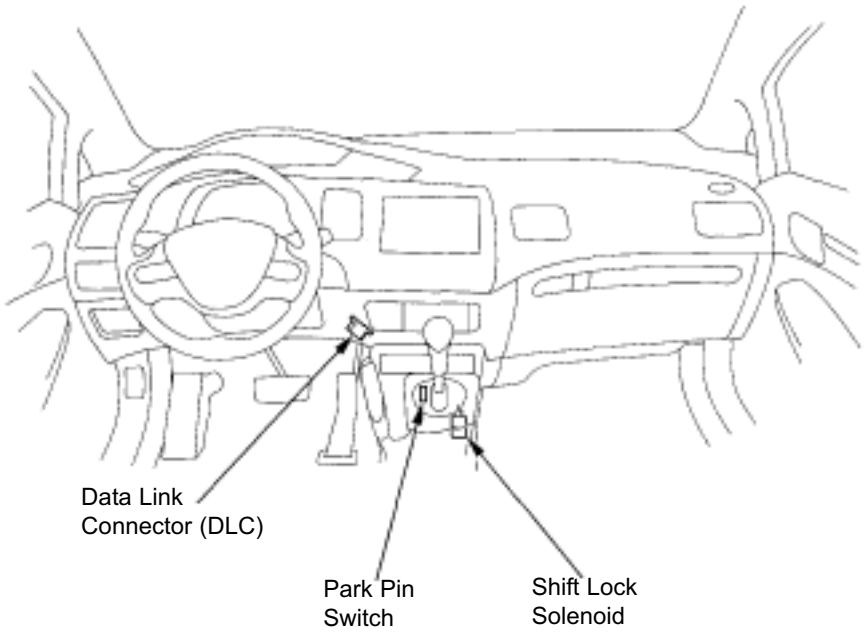
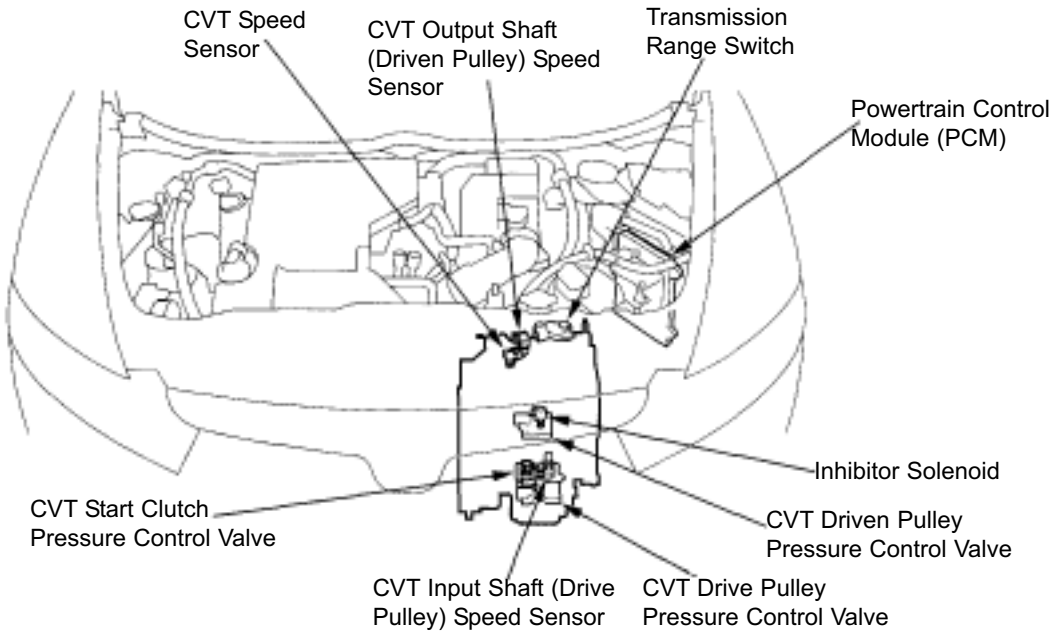
Disassembly

Electrical

Electronic Controls Locations

07 Model





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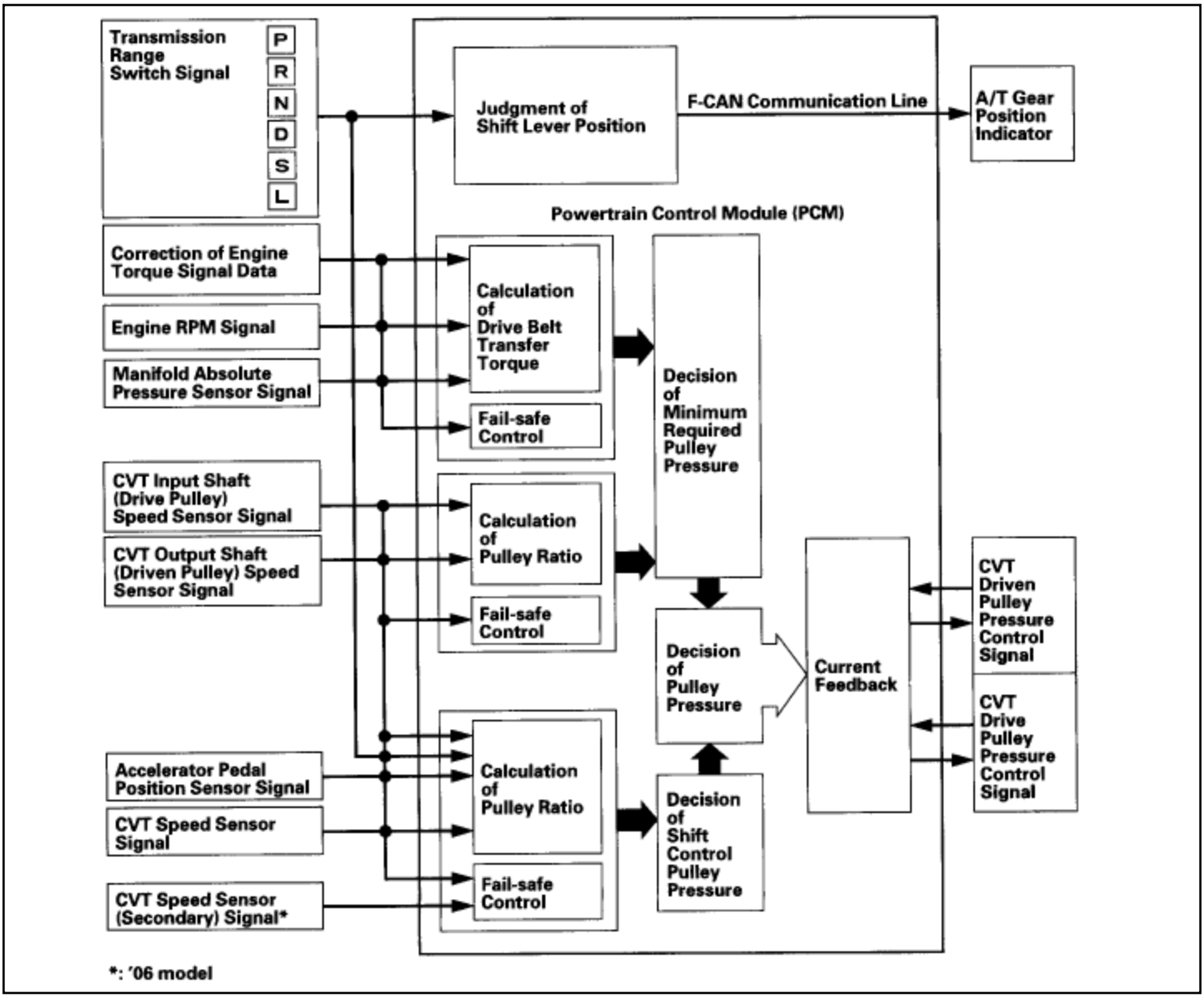
Disassembly

Pulley Pressure Control/Shift Control

To reduce belt slippage and increase belt life, the PCM calculates signals from the sensors and switches, and actuates the pulley pressure control solenoid valves to maintain optimum pulley pressure. When the pulley ratio is low (low vehicle speed), high hydraulic pressure works on the movable face of the driven pulley and reduces the effective diameter of the driven pulley, and a lower hydraulic pressure works on the movable face of the drive pulley to eliminate the steel belt slippage. When the pulley ratio is high (high vehicle speed), high hydraulic pressure works on the movable face of the drive pulley and reduces the effective diameter of the drive pulley, and a lower hydraulic pressure works on the movable face of the driven pulley to eliminate the steel belt slippage.
The PCM compares actual driving conditions with programmed driving conditions to control shifting, and it instantly determines a drive pulley ratio from various signals sent from sensors and switches. The PCM activates the CVT drive pulley pressure control valve to control pulley pressure to the pulleys. The drive pulley drives the driven pulley via a steel belt at varying ratios ranging from 2.526 to 0.421 in the D position.



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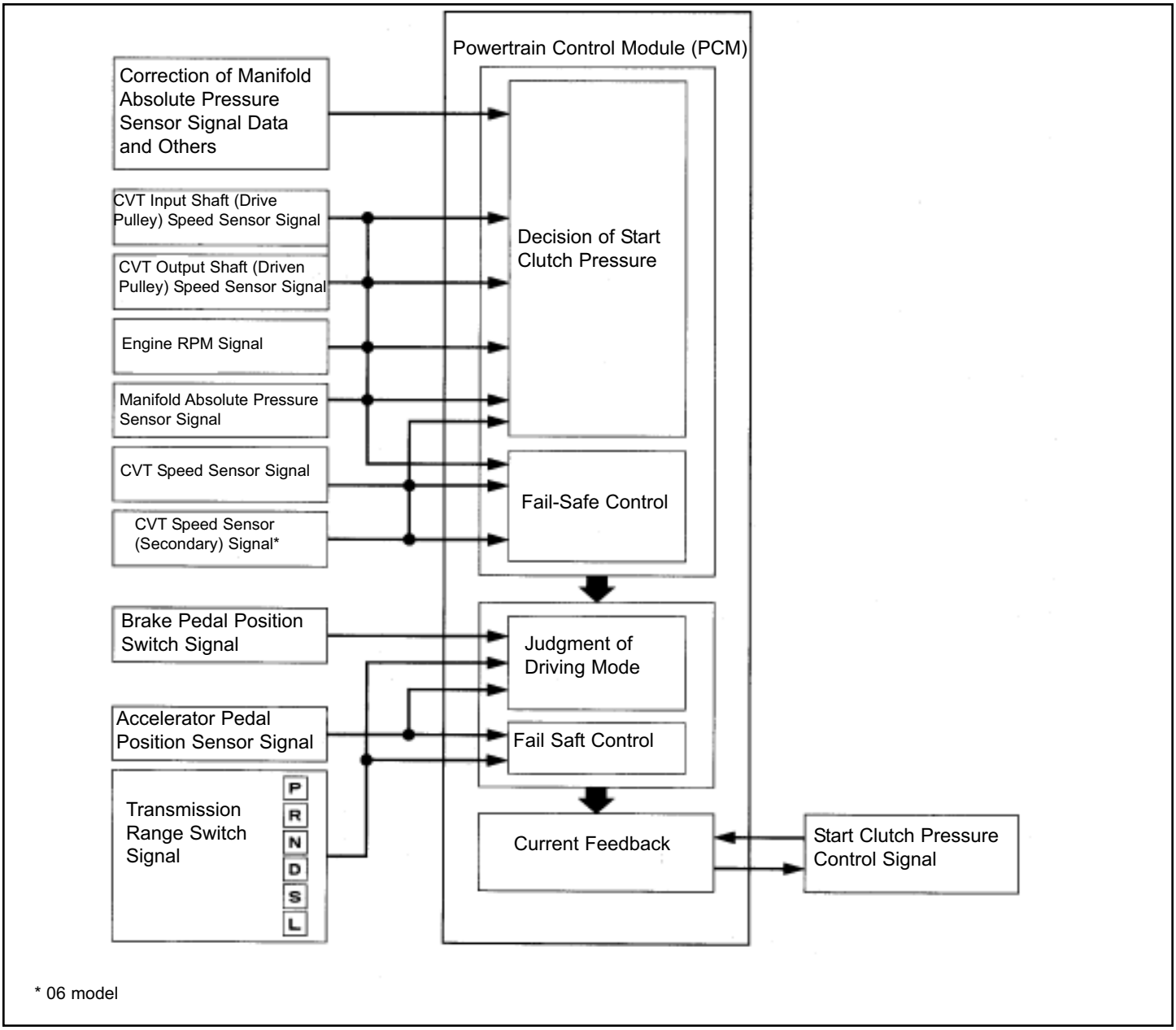
Disassembly

Electrical

Pulley Pressure Control/Shift Control

Start Clutch Pressure Control

The hydraulic-controlled start clutch controls smooth starting-off and creeping in the D, S, L, and R positions like a torque converter. The PCM inputs signals from the sensors, and switches, and actuates the start clutch pressure control valve to regulate the clutch reducing pressure, and the clutch reducing pressure controls the start clutch.

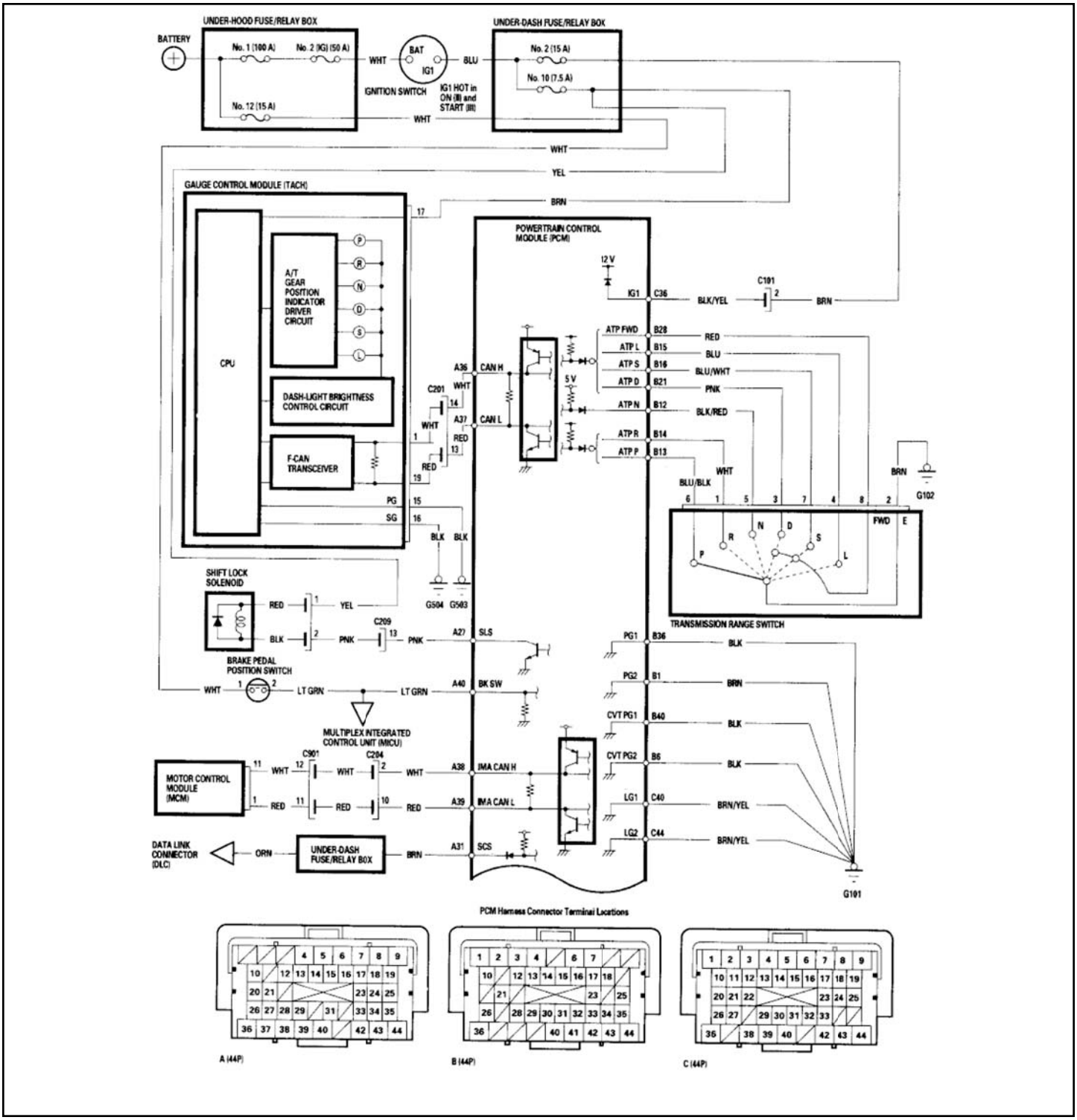


2006-2011 SPSA

Disassembly

Electrical

PCM CVT Control System Electrical Connections



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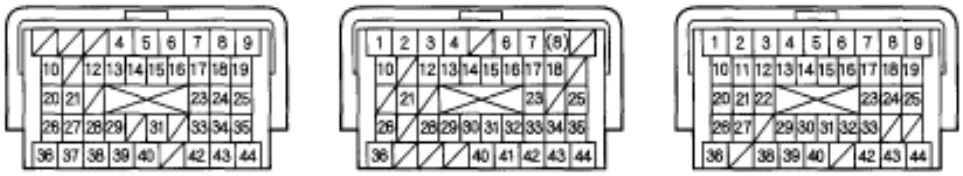
Disassembly

Electrical

PCM CVT Control System Inputs and Outputs (Part 1)

PCM Harness Connector Terminal Locations



A (44P) B Δ (44P) C Δ (44P)

Terminal side of female terminals

PCM Connector A (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
A27	PNK	SLS (Shift Lock Solenoid)	Drives shift lock solenoid	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: Battery voltage
A31	BRN	SCS (Service Check Signal)	Detects service check signal	With service check signal shorted using the HDS: About 0 V; with service check signal opened: About 5.0 V
A36	WHT	CAN H (CAN Communication Signal High)	Sends and receives communication signal	With ignition switch ON (II): About 2.5 V (pulses)
A37	RED	CAN L (CAN Communication Signal Low)	Sends and receives communication signal	With ignition switch ON (II): About 2.5 V (pulses)
A38	WHT	IMA CAN H (IMA CAN Communication Signal High)	Sends and receives communication signal	With ignition switch ON (II): About 2.5 V (pulses)
A39	RED	IMA CAN L (IMA CAN Communication Signal Low)	Sends and receives communication signal	With ignition switch ON (II): About 2.5 V (pulses)
A40	LT GRN	BK SW (Brake Pedal Position Switch)	Detects brake pedal position switch signal	With brake pedal pressed: Battery voltage, with brake pedal released: About 0 V

NOTE **Standard battery voltage is about 12 v.**

PCM Connector B Δ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B1	BRN	PG2 (Power Ground)	Ground circuit for PCM circuit	Less than 1.0 V at all times

NOTE **Standard battery voltage is about 12 v.**

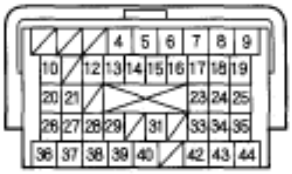
2006-2011 SPSA

Disassembly

Electrical

PCM CVT Control System Inputs and Outputs (Part 2)

PCM Harness Connector Terminal Locations


A (44P)


B ∆ (44P)


C ○ (44P)

Terminal side of female terminals

PCM Connector B ∆ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B6	BLK	CVT PG2 (CVT Power Ground)	Ground circuit for PCM CVT control circuit	Less than 1.0 V at all times
B8	WHT/BLK	VEL2 (CVT Speed Sensor (Secondary))	Detects CVT Speed Sensor (secondary) signal	With ignition switch ON (II): About 0 V or about 5.0 V; with vehicle moving: About 2.5 V (pulses)
B10	GRN/BLK	INH SOL (Inhibitor Solenoid Valve)	Drives inhibitor solenoid valve	With engine running in the P, N, D, S, and L positions: Battery voltage, with engine running in the R position: About 0 V
B12	BLK/RED	ATP N (Transmission Range Switch N)	Detects transmission range switch N position signal	In the N position: About 0 V; in any position other than N: About 5.0 V
B13	BLU/BLK	ATP P (Transmission Range Switch P)	Detects transmission range switch P position signal	In the R position: About 0 V; In any position other than R: Battery voltage
B14	WHT	ATP R (Transmission Range Switch R)	Detects transmission range switch R position signal	With ignition switch ON (II): About 2.5 V (pulses)
B15	BLU	ATP L (Transmission Range Switch L)	Detects transmission range switch L position signal	In the L position: About 0 V; In any position other than L: Battery voltage
B16	BLU/WHT	ATP S (Transmission Range Switch S)	Detects transmission range switch S position signal	In the S position: About 0 V; In any position other than S: Battery voltage
B17	RED/BLU	NDR (CVT Input Shaft (Drive Pulley) Speed Sensor)	Detects CVT input shaft (drive pulley) speed sensor signal	With the ignition switch ON (II): About 0 V or about 5.0V With engine idling in the N position: About 2.5 V (pulses)

NOTE **Standard battery voltage is about 12 v.**

* 1: '06 model

2006-2011 SPSA

Disassembly

Electrical

PCM CVT Control System Inputs and Outputs (Part 3)

PCM CONNECTOR B Δ (44P)

Terminal Number	Wire Color	Terminal Name	Description	Signal
B18	YEL/BLU	VCC2 (Sensor Voltage)	Provides sensor reference voltage	With ignition switch ON (II): About 5.0 V
B21	PNK	ATP D (Transmission Range Switch D)	Detects transmission range switch D position signal	In the D position: About 0 V; In any position other than D; Battery voltage
B25	YEL	SCLS+ (CVT Start Clutch Pressure Control Valve + Side)	Drives CVT start clutch pressure control valve	With ignition switch ON (II): Current controlled
B28	RED	ATP FWD (Transmission Range Switch FWD)	Detects transmission range switch D, S, and L postions signal	In the D, S, and L positions: About 0 V. In any position other than D, S, and L; Battery voltage
B33	GRN/YEL	SG2 (Sensor Ground)	Sensor Ground	Less than 1.0 V at all times
B35	GRN/WHT	DN LS+ (CVT Driven Pulley Pressure Control Valve + Side)	Drives CVT driven pulley pressure control valve	with ignition switch ON (II): Current controlled
B36	BLK	PG1 (Power Ground)	Ground circuit for PCM circuit	Less than 1.0 V at all times
B40	BLK	CVT PG1 (CVT Power Ground)	Ground circuit for PCM CVT control circuit	Less than 1.0 V at all times
B41	PNK/BLU	SC LS- (CVT start clutch pressure control valve - side)	Ground for CVT start clutch pressure control valve	with ignition switch ON (II): About 4.5 V (between SC LS+ terminal and SC LS - terminal)
B42	PNK/BLK	DN LS - (CVT Driven Pulley Pressure Control Valve - Side)	Ground for CVT driven pulley pressure control valve	with ignition switch ON (II); About 4.5 V (between DN LS + terminal and DN LS - terminal)
B43	GRN/YEL	DR LS-(CVT Drive Pulley Pressure Control Valve - Side)	Ground for CVT drive pulley pressure control valve	with ignition switch ON (II): About 4.5 V (between DR LS + terminal and DR LS -terminal)
B44	BLU/WHT	DN LS+ (CVT Drive Pulley Pressure Control Valve + Side)	Drives CVT drive pulley pressure control valve	with ignition switch ON (II); Current controlled

NOTE STANDARD BATTERY VOLTAGE IS ABOUT 12 V.

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Disassembly

Electrical

PCM CVT Control System Inputs and Outputs (Part 4)

PCM Harness Connector Terminal Locations

A (44P) B Δ (44P) C ○ (44P)

Terminal side of female terminals

PCM Connector C ○ (44P)

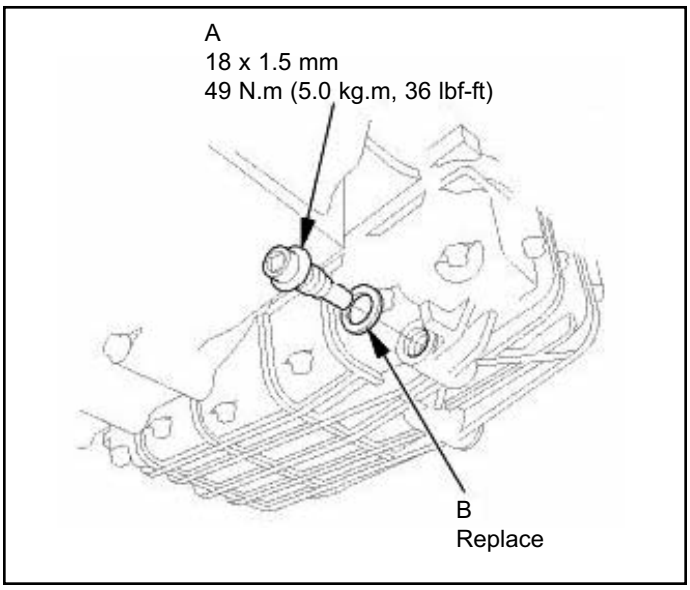
Terminal Number	Wire Color	Terminal Name	Description	Signal
C10	WHT	NDN (CVT Output Shaft (Driven Pulley) Speed Sensor)	Detects CVT output shaft (driven pulley) speed sensor signal	With ignition switch ON (II): About 0 V or about 5.0 V; with engine idling in the N position: About 2.5 V (pulses)
C13	YEL/RED	VCC1 (Sensor Voltage)	Provides sensor reference voltage	With ignition switch ON (II): About 5.0 V
C14	GRN/WHT	SG1 (Sensor Ground)	Sensor ground	Less than 1.0 V at all times
C36	BLK/YEL	IG1 (Ignition Signal)	Detects ignition signal	With ignition switch ON (II): About 5.0 V
C40	BRN/YEL	LG1 (Logic Ground)	Ground circuit for PCM circuit	Less than 1.0 V at all times
C43	WHT/RED	VEL1 (CVT Speed Sensor)* VEL (CVT Speed Sensor)*	Detects CVT Speed Sensor Signal	With ignition switch ON (II): About 0 V or about 5.0 V With vehicle moving: About 2.5 V (pulses)
C44	BRN/YEL	LG2 (Logic Ground)	Ground circuit for PCM circuit	Less than 1.0 V at all times

NOTE **Standard battery voltage is about 12 v.**

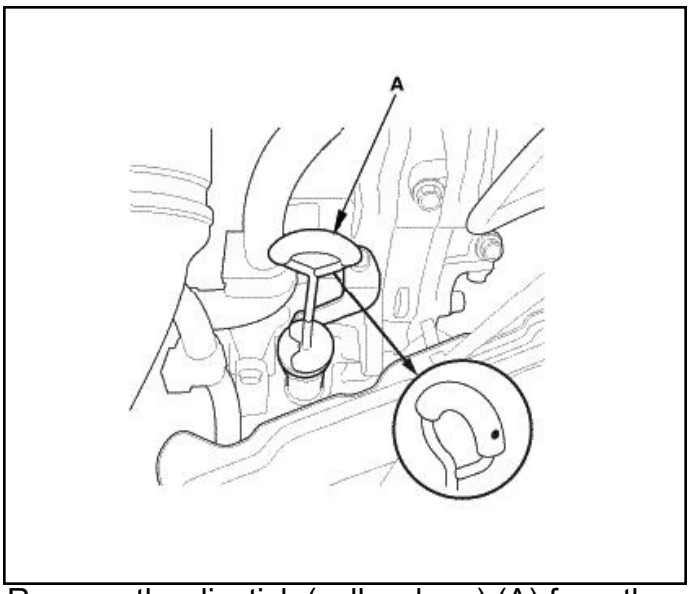
* 1: ‘06 model
* 2: ‘07 model

2012-Up SPSA

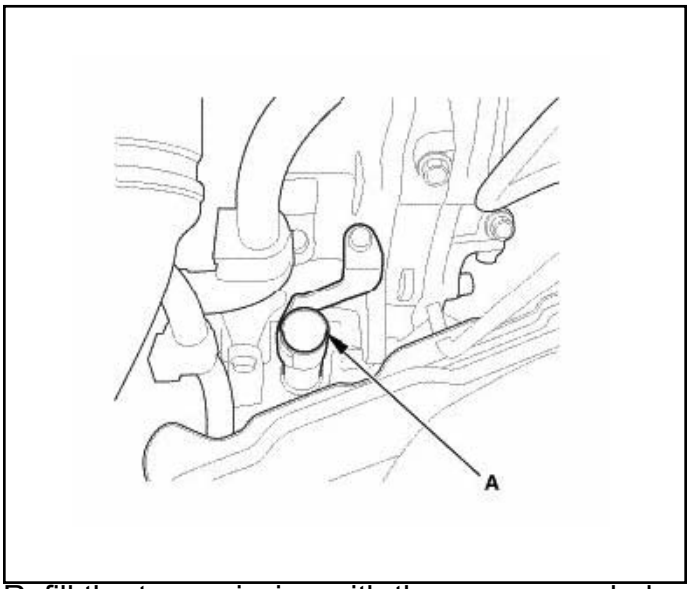
CVTF - Drain and Refill



Drain plug (A), and drain the CVT fluid (CVTF).

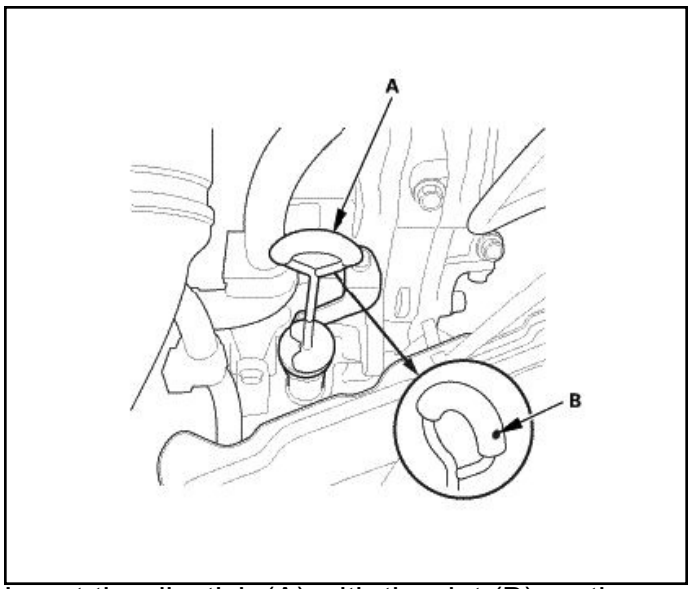


Remove the dipstick (yellow loop) (A) from the dipstick tube.



Refill the transmission with the recommended fluid through the dipstick tube opening (A) to bring the fluid level between the upper mark and the lower mark of the dipstick. Always use Honda CVTF. Using a non-Honda CVTF can affect shift quality.

CVT FLUID CAPACITY
2.8 l (3.0 us qt) at change
5.3 L (5.6 US qt) at overhaul

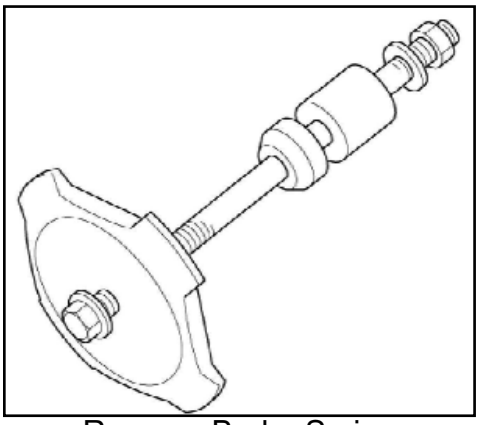


Insert the dipstick (A) with the dot (B) on the handle facing to the left of the vehicle

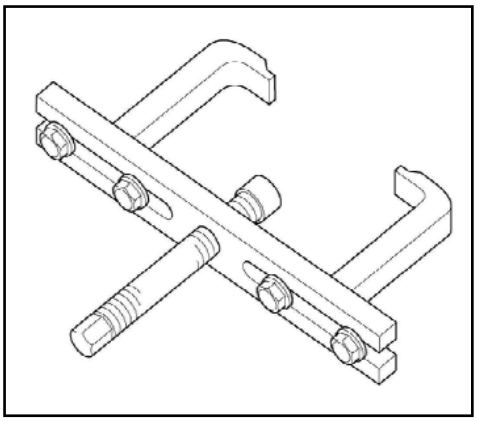
2012-Up SPSA

CVT Transmission Disassembly and Reassembly

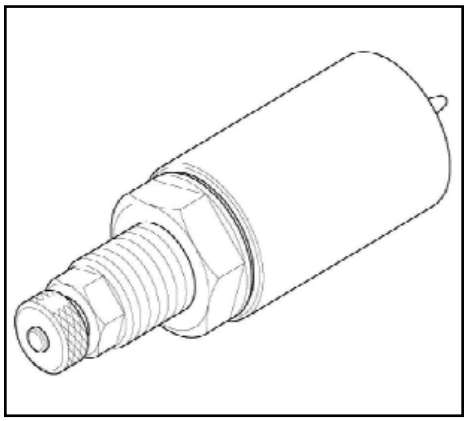
Special Tools Required



Reverse Brake Spring Compressor 07TAE-P4V0110



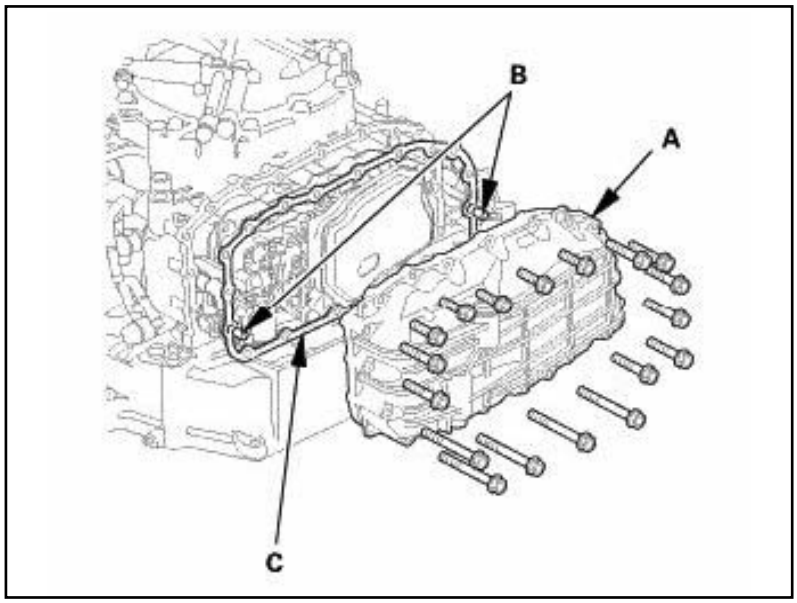
Start Clutch Remover 07TAE-P4V0120



Start Clutch Installer 07TAE-P4VA131

Disassembly

CVTF Pan Assembly



Remove the CVTF pan (A), the dowel pins (B), and the gasket (C).

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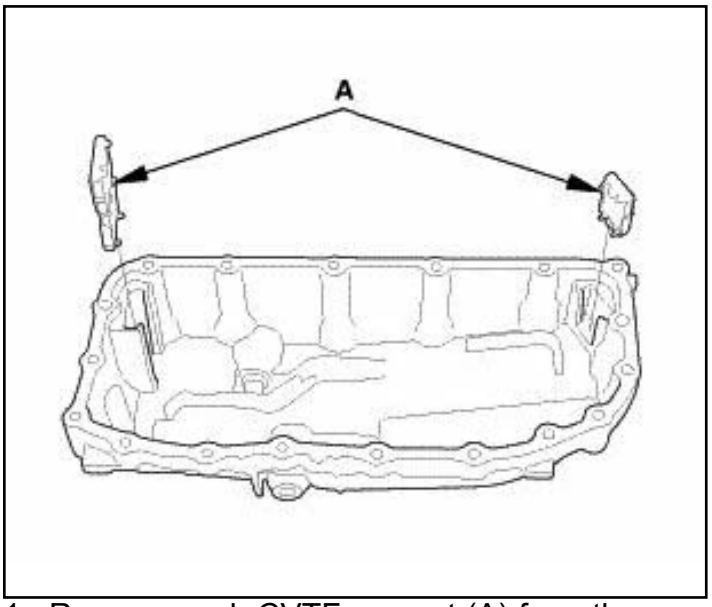
CVT Transmission Disassembly and Reassembly

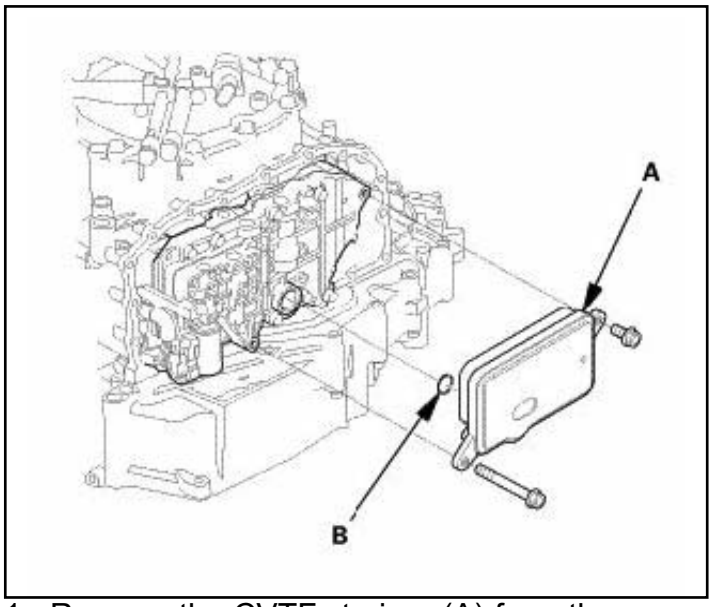
Disassembly

CVTF Pan



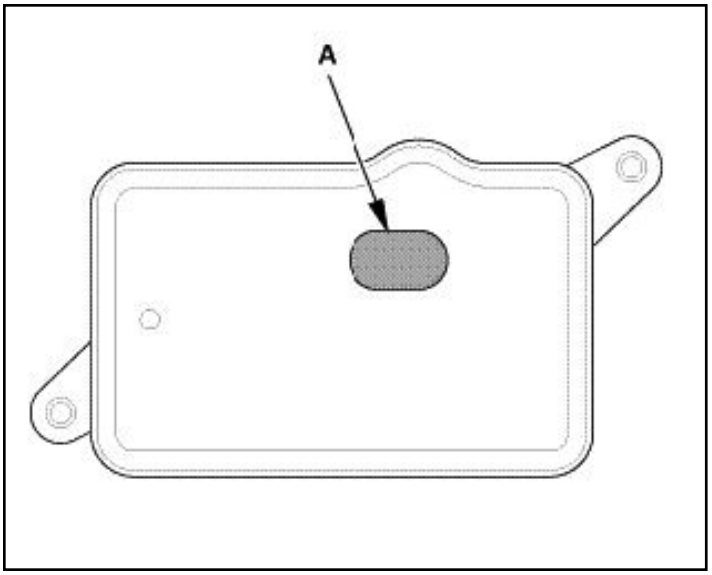
1. Remove each CVTF magnet (A) from the CVTF pan.
2. Remove metal dust from each CVTF magnet.
3. Reinstall each CVTF magnet in the CVTF pan.

CVTF Strainer



1. Remove the CVTF strainer (A) from the lower valve body.
2. Remove the O-ring (B) from the CVTF strainer.

CVTF Strainer - Clean and Test



1. Clean the inlet opening (A) of the CVTF strainer thoroughly with compressed air.
2. Check that the CVTF strainer is in good condition and that the inlet opening is not clogged.
3. Test the CVTF strainer by pouring clean CVTF through the inlet opening and replace it if it is clogged or damaged.

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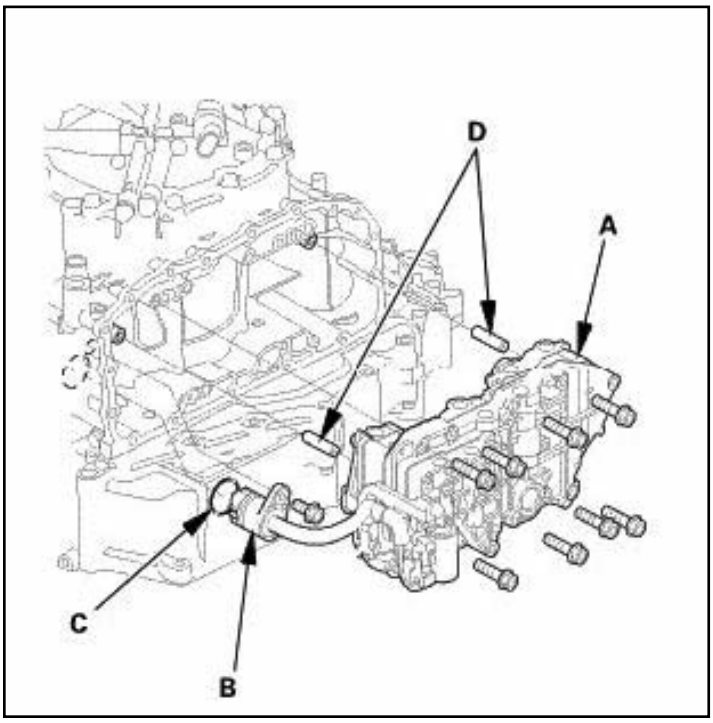
CVT Transmission Disassembly and Reassembly

Disassembly

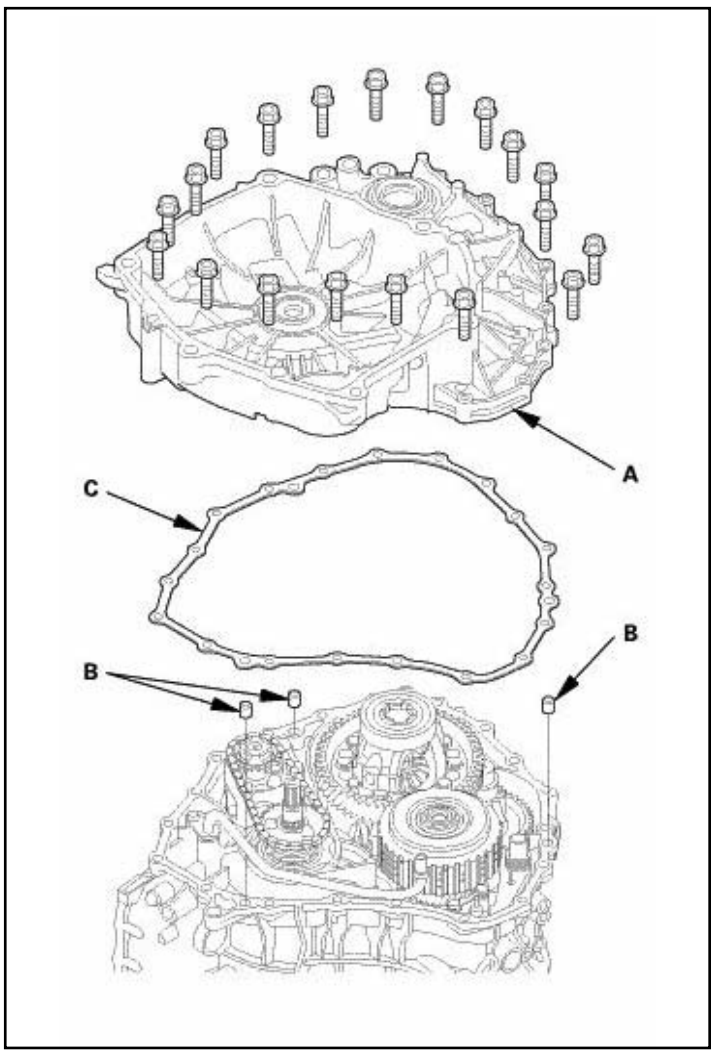
Lower Valve Body Assembly



1. Remove the lower valve body (A) and the connector (B) from the transmission housing, and hold the lower valve body.
2. Remove the O-ring (C) from the solenoid wire harness connector.
3. Remove the 8 x 40 mm pipes (D).

Turn the transmission end cover down

Flywheel Housing Assembly



1. Remove the flywheel housing (A), the dowel pins (B), and the gasket (C).

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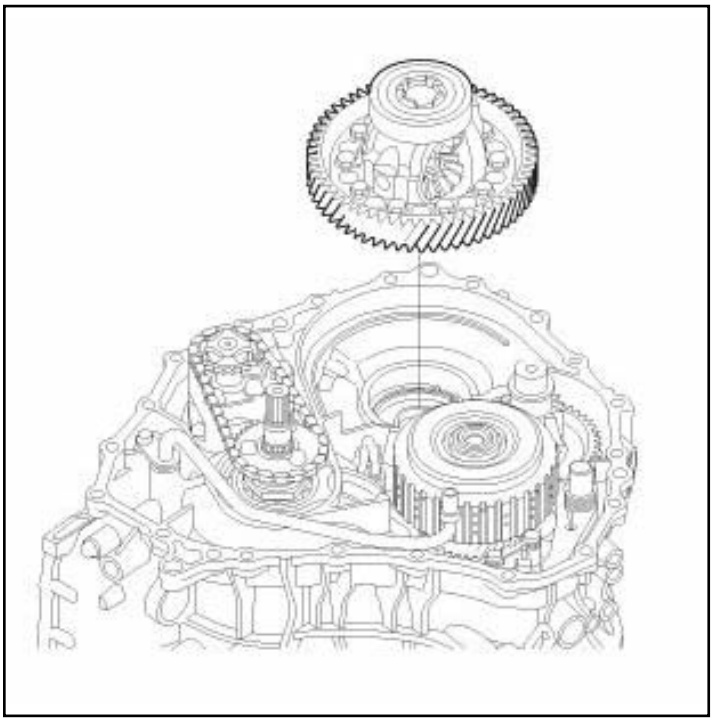
CVT Transmission Disassembly and Reassembly

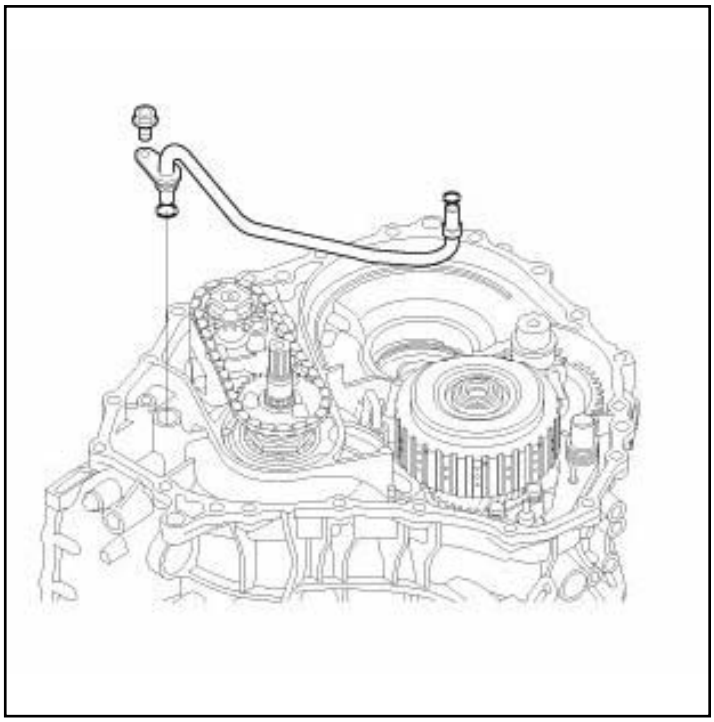
Disassembly

CVT Differential Assembly



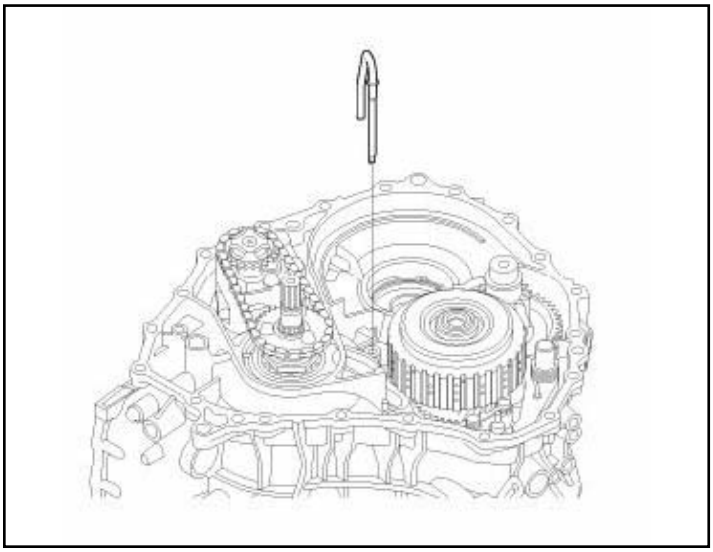
1. Remove the CVT differential assembly.

Lubrication Pipe



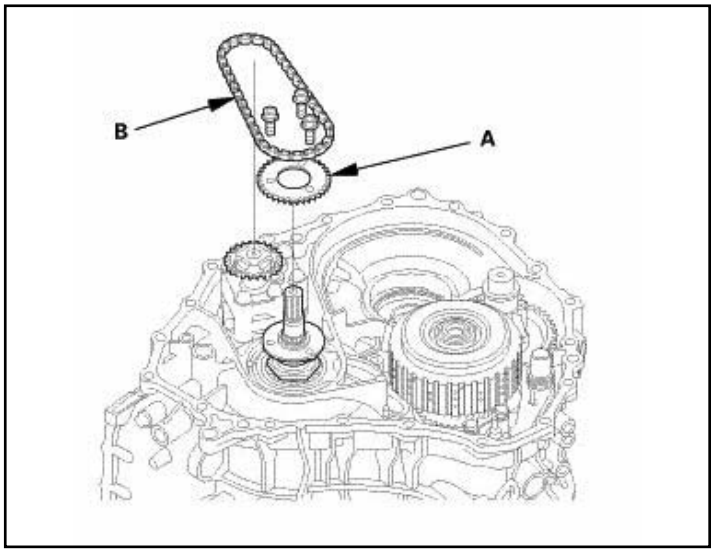
1. Remove the lubrication pipe.

Oil Passage Pipe



1. Remove the oil passage pipe.

Pump Drive Sprocket and Pump Drive Chain



1. Remove the CVTF pump drive sprocket (A) and the CVTF pump drive chain (B).

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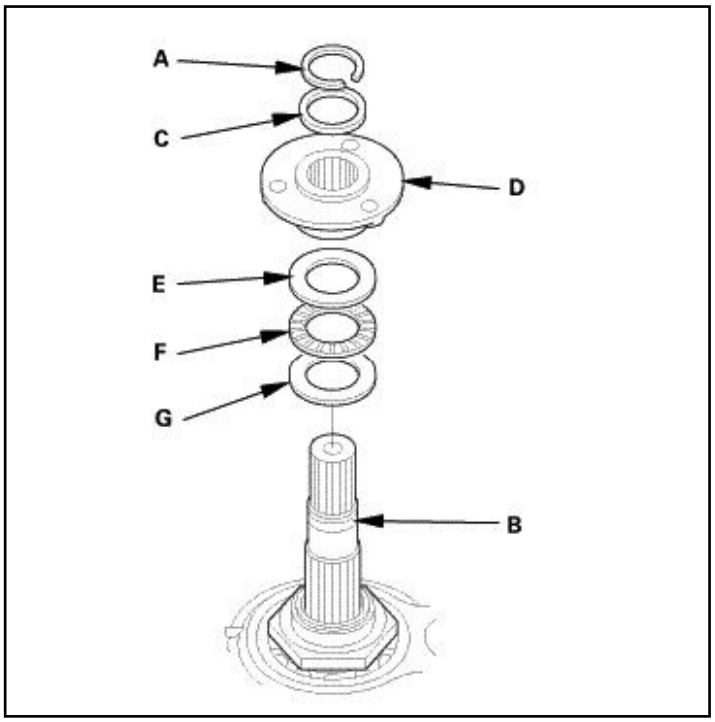
CVT Transmission Disassembly and Reassembly

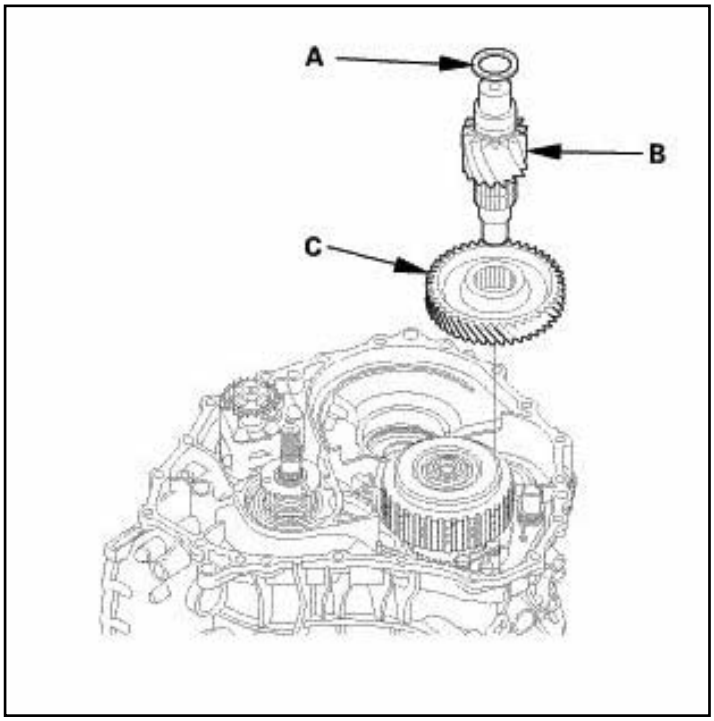
Disassembly

CVTF Pump Drive Sprocket Hub



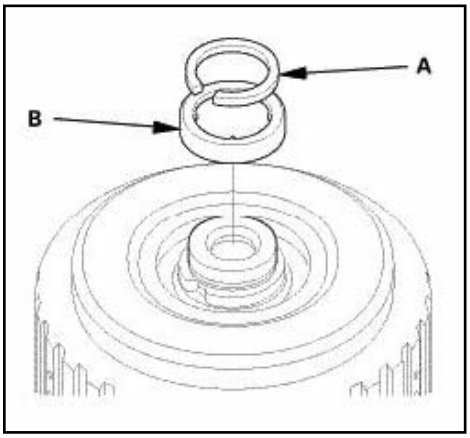
1. Remove the snap ring (A) from the input shaft (B).
2. Remove the thrust shim (C), the CVTF pump drive sprocket hub (D), the thrust washer (E), the thrust needle bearing (F), and the thrust washer (G) from the input shaft.

Secondary Driven Gear

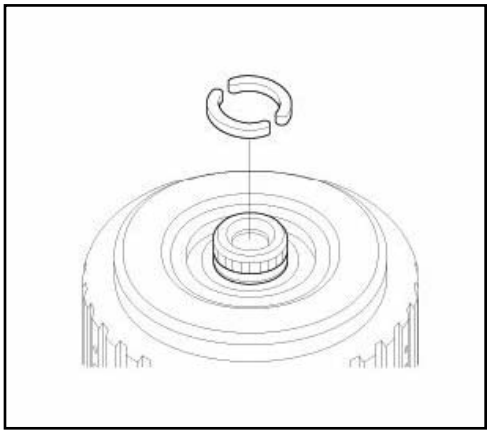


1. Remove the thrust shim (A) and the final drive shaft (B), then remove the secondary driven gear (C)

Start Clutch Assembly



1. Remove the snap ring (A) securing the start clutch.
2. Remove the cotter retainer (B).
3. Remove the 25.5 mm cotters.

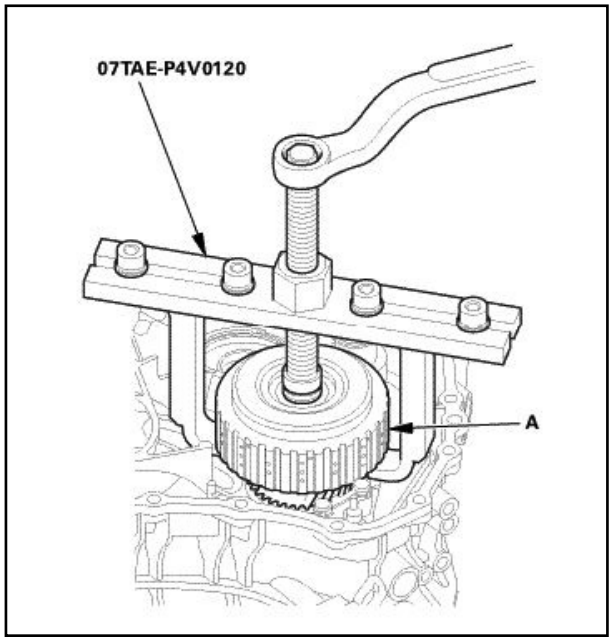


2012-Up SPSA

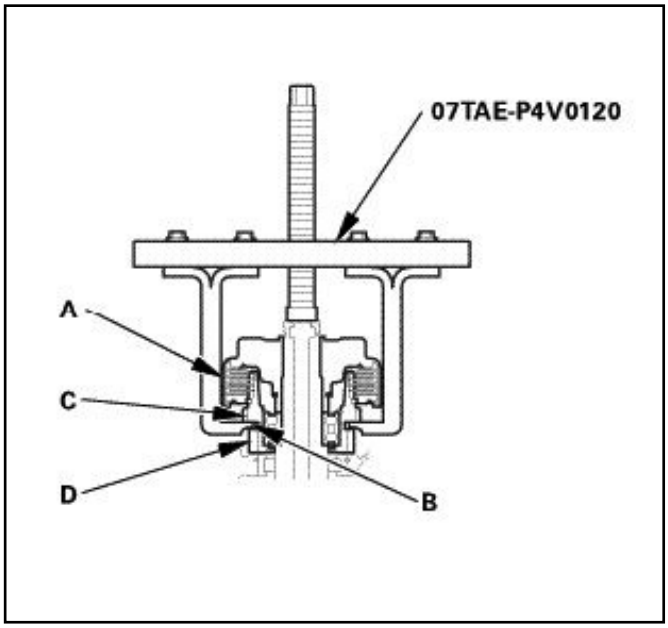
CVT Transmission Disassembly and Reassembly

Disassembly

Start Clutch Assembly



Start Clutch Cutaway View



4. Set the start clutch remover on the start clutch (A), and attach the pawl (B) of the start clutch remover to between the secondary driven gear (C) and the park gear (D) securely.

NOTE **DO NOT PLACE THE PAWL OF THE START CLUTCH REMOVER ON THE START CLUTCH GUIDE. IF THE PAWL CONTACTS THE START CLUTCH GUIDE, THE CLUTCH GUIDE MAY BE DAMAGED.**

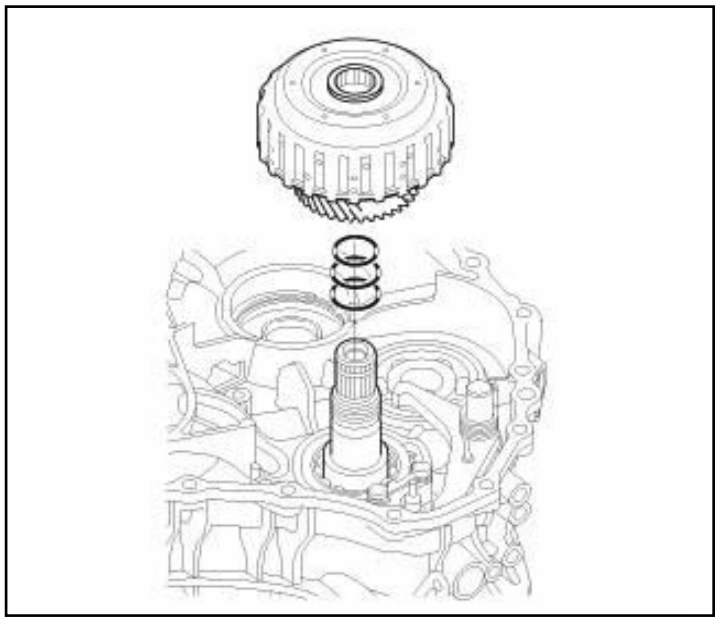
BE SURE NOT TO ALLOW DUST AND OTHER FOREIGN PARTICLES TO ENTER THE DRIVEN PULLEY SHAFT.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

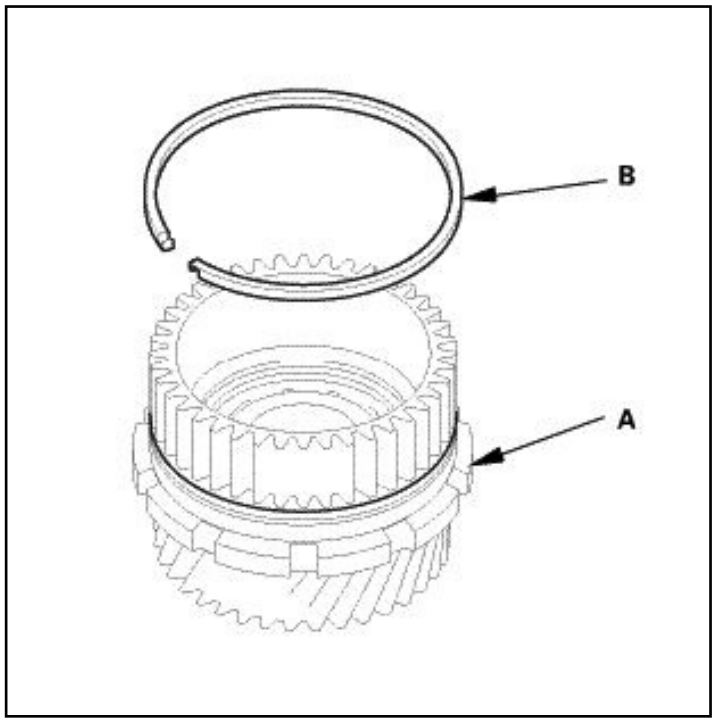
Disassembly

Start Clutch Assembly



5. Remove the start clutch assembly and the secondary drive gear/park gear together from the driven pulley shaft.

Secondary Drive Gear



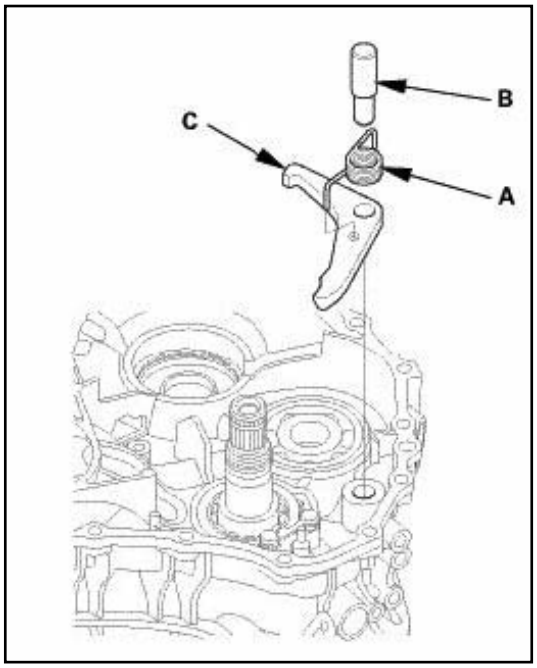
1. Remove the secondary drive gear/park gear (A) from the start clutch.
2, Remove the sealing ring (B) from the secondary drive gear/park gear.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

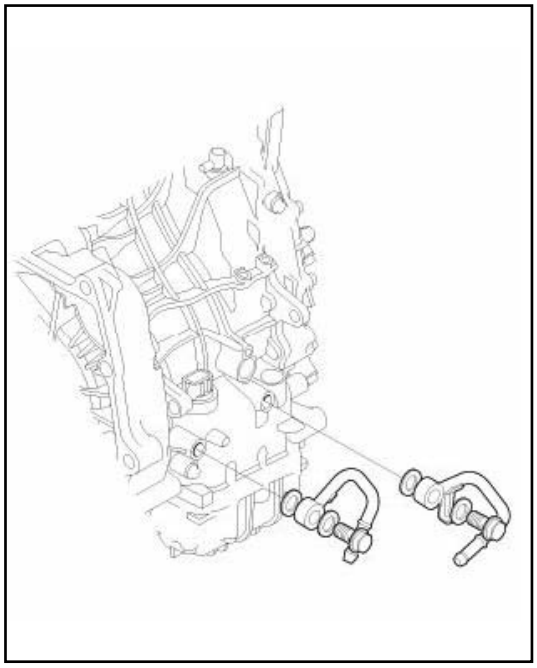
Disassembly

Park Pawl Shaft Assembly



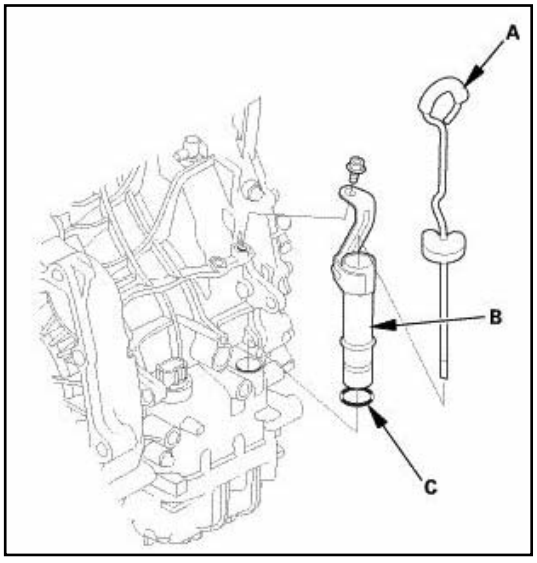
1. Remove the park pawl spring (A) and the park pawl shaft (B), then remove the park pawl (C).

CVTF Cooler Line



1. Remove the CVTF cooler lines and the sealing washers.

Dipstick Tube



1. Remove the CVTF dipstick (A).
2. Remove the dipstick tube (B).
3. Remove the O-ring (C) from the dipstick tube.

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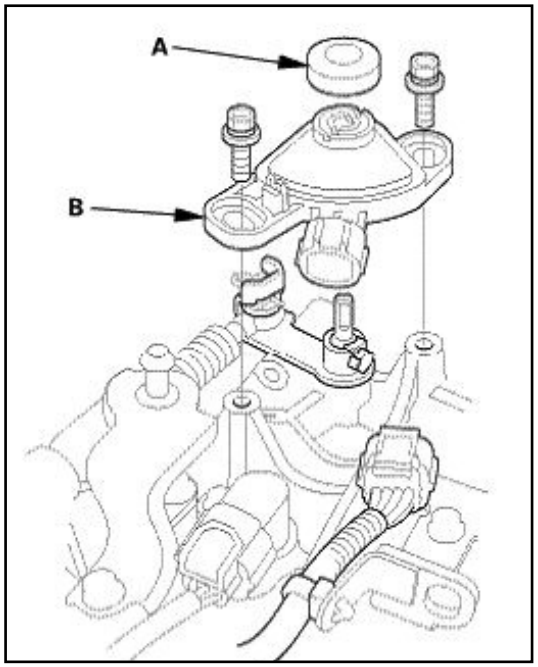
CVT Transmission Disassembly and Reassembly

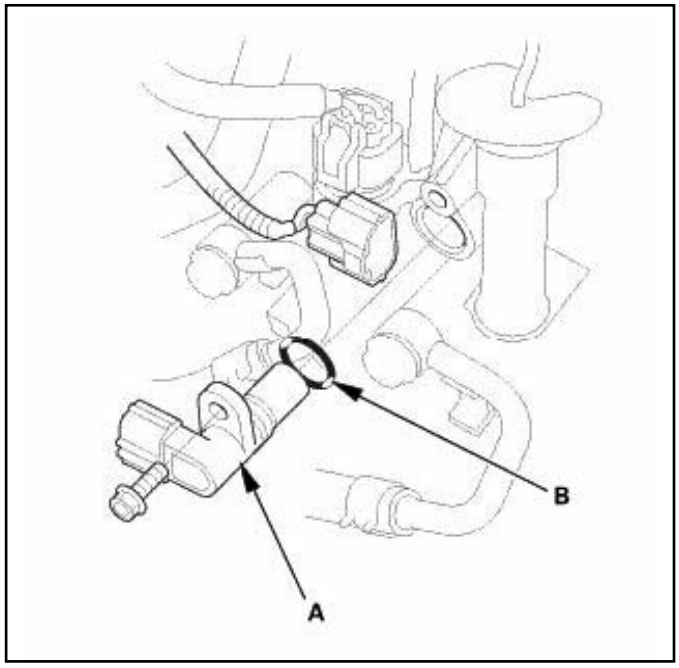
Disassembly

Transmission Range Switch



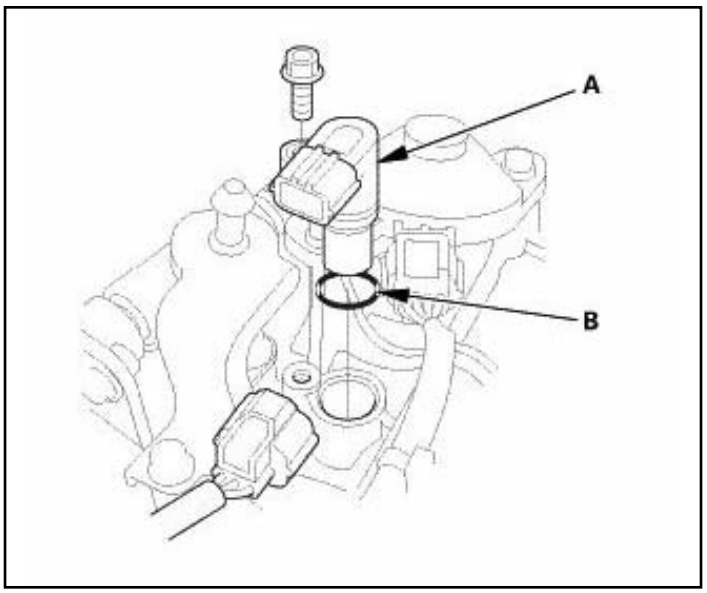
1. Remove the control shaft cover (A).
2. Remove the transmission range switch (B).

CVT Input Shaft (Drive Pulley) Speed Sensor



1. Remove the CVT input shaft (drive pulley) speed sensor (A)
2. Remove the O-ring (B) from the CVT input shaft (drive pulley) speed sensor.

CVT Output Shaft (Driven Pulley) Speed Sensor



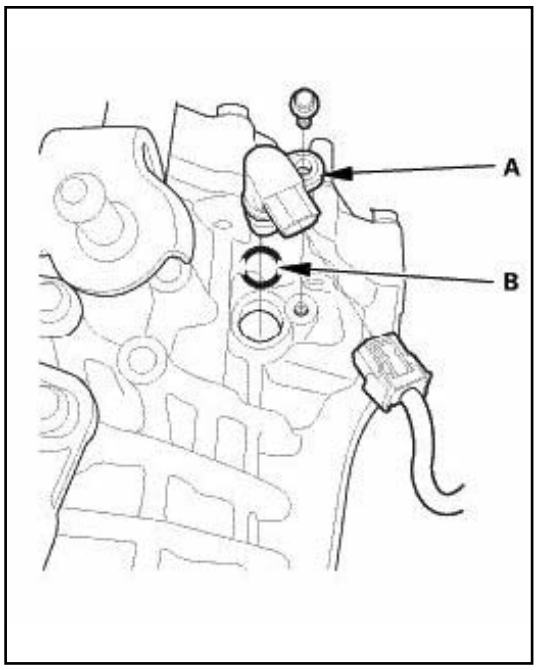
1. Remove the output shaft (driven pulley) speed sensor (A).
2. Remove the O-ring (B) from the output shaft (driven pulley) speed sensor.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Disassembly

Vehicle Speed Sensor

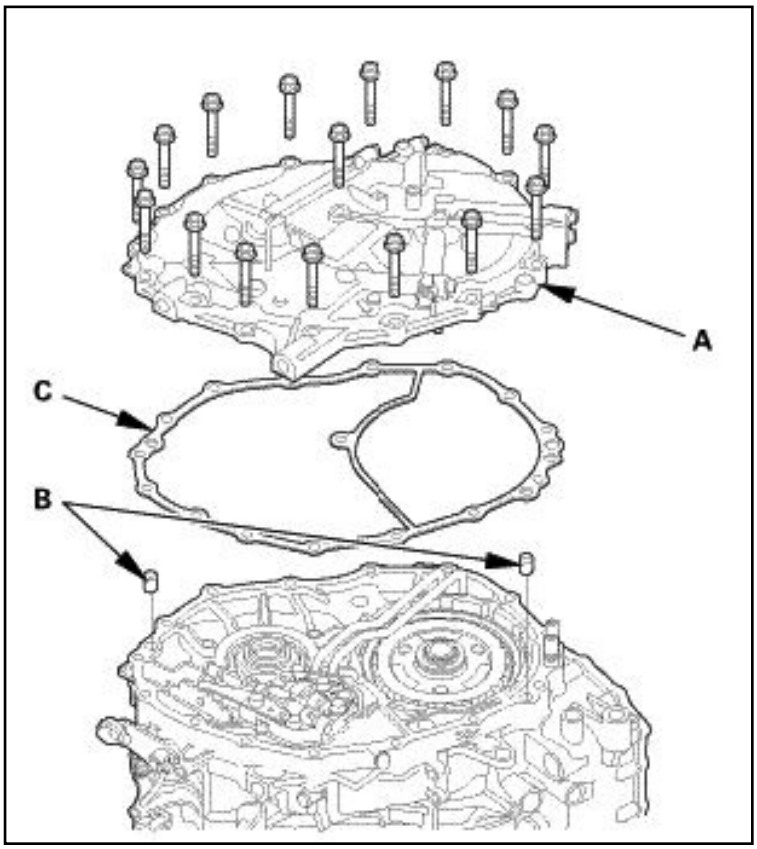


1. Remove the vehicle speed sensor (A).
2. Remove the O-ring (B) from the vehicle speed sensor.

Turn transmission upside down

1. Turn the transmission upside down, and set it on a workbench to prevent damaging the input shaft and the driven pulley shaft.

Transmission End Cover Assembly



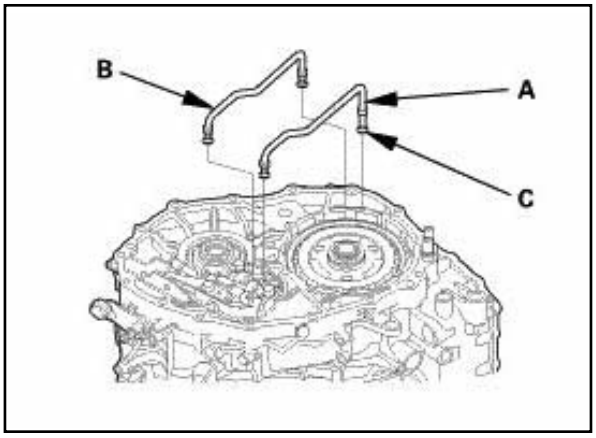
1. Remove the end cover (A), the dowel pins (B), and the gasket (C).

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

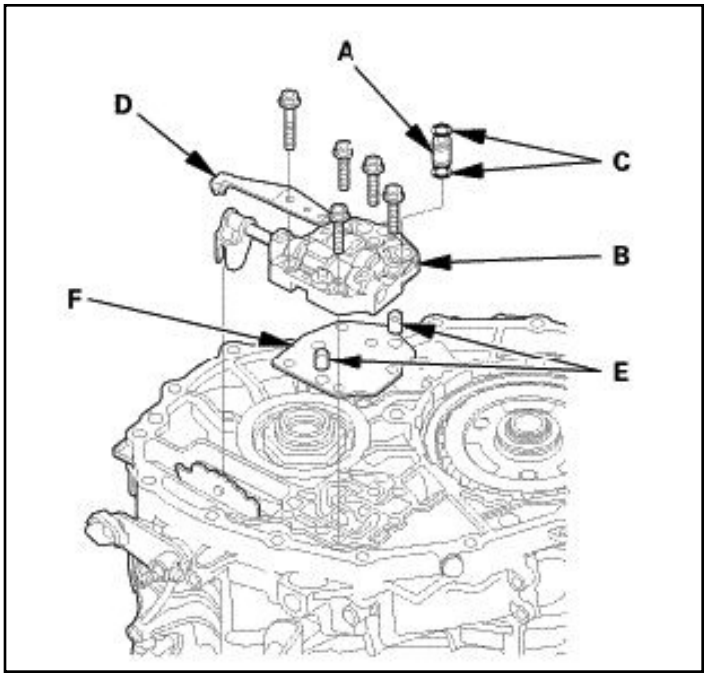
Disassembly

Manual Valve Body Pipe A and B



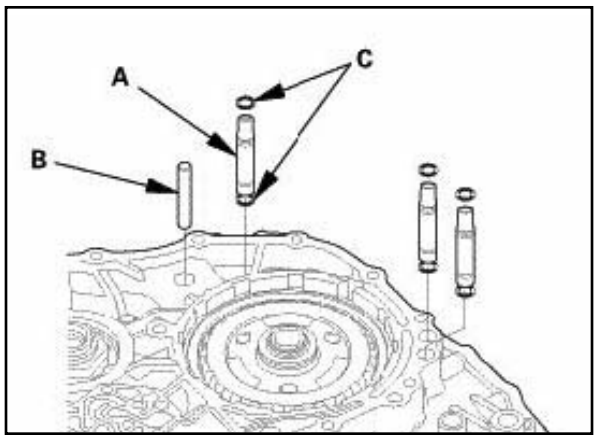
1. Remove manual valve body pipes A and B.
2. Remove the o-rings (C) from manual valve body pipes A and B.

Manual Valve Body Assembly



1. Remove the 10.9 x 18.6 mm pipe (A) from the manual valve body (B).
2. Remove the O-rings (C) from the 10.9 x 18.6 mm pipe.
3. Remove the detent spring (D) from the manual valve body.
4. Remove the manual valve body, the dowel pins (E), and the separator plate (F).

CVTF Pipe



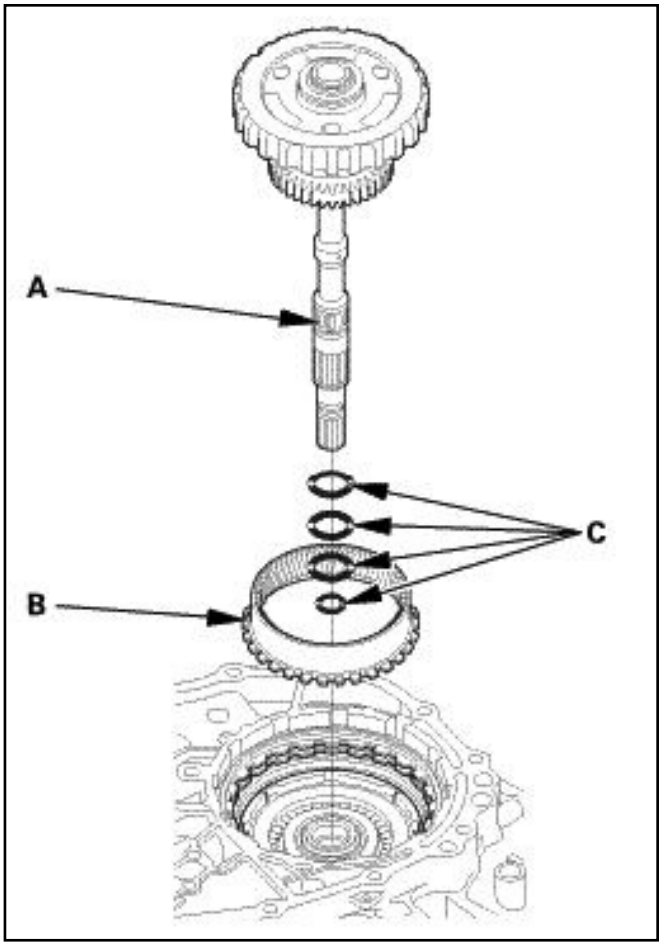
1. Remove the 10.9 x 46 mm pipes (A) and the 8 x 50 mm pipe (B) from the intermediate housing.
2. Remove the O-rings (C) from the 10.9 x 46 mm pipes.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

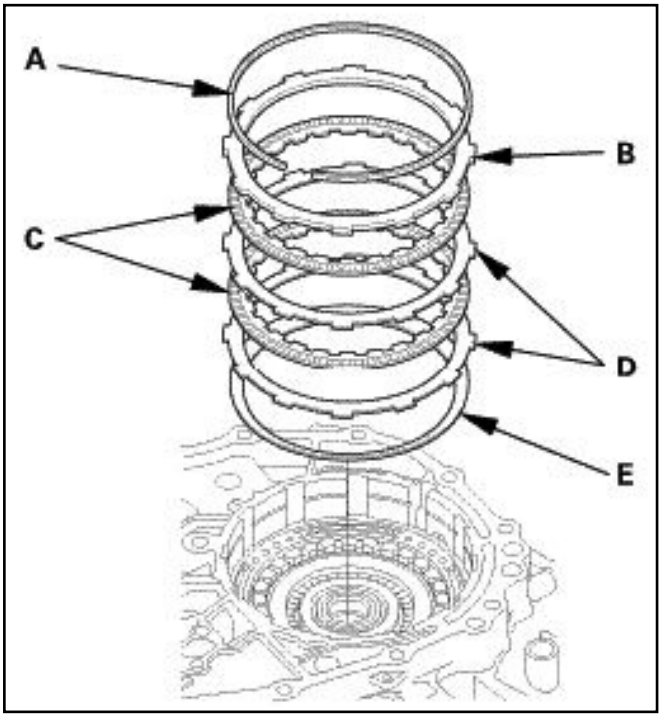
Disassembly

CVT Planetary Carrier/Input Shaft Assembly



1. Remove the planetary carrier/input shaft assembly (A).
2. Remove the ring gear (B).
3. Remove the sealing rings (C) from the planetary carrier/input shaft assembly.

Reverse Brake Disc and Plate



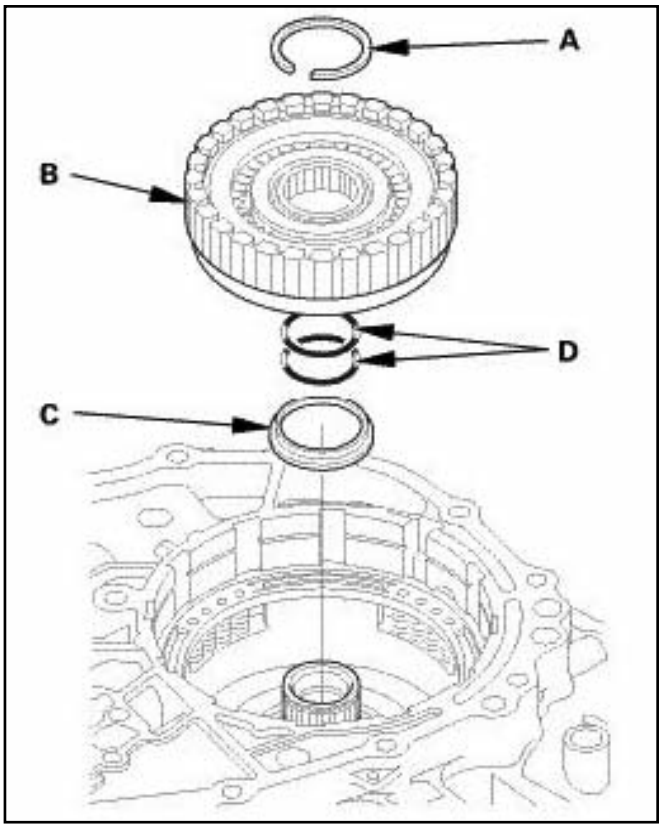
1. Remove the snap ring (A).
2. Remove the reverse brake end-plate (B), the reverse brake discs (C), the reverse brake plates (D), and the disc spring (E).

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

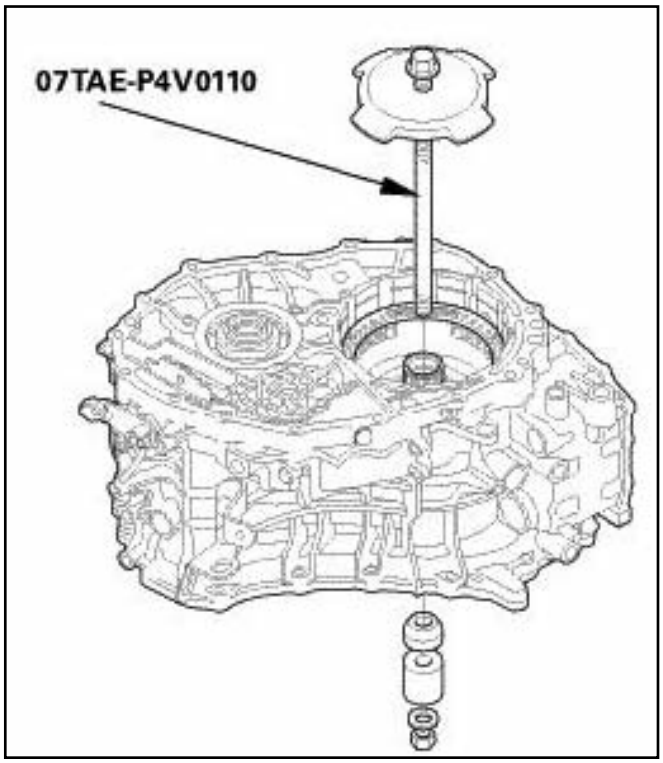
Disassembly

Forward Clutch



1. Remove the snap ring (A).
2. Remove the forward clutch assembly (B) and the snap ring retainer (C).
3. Remove the O-rings (D) from the drive pulley shaft.

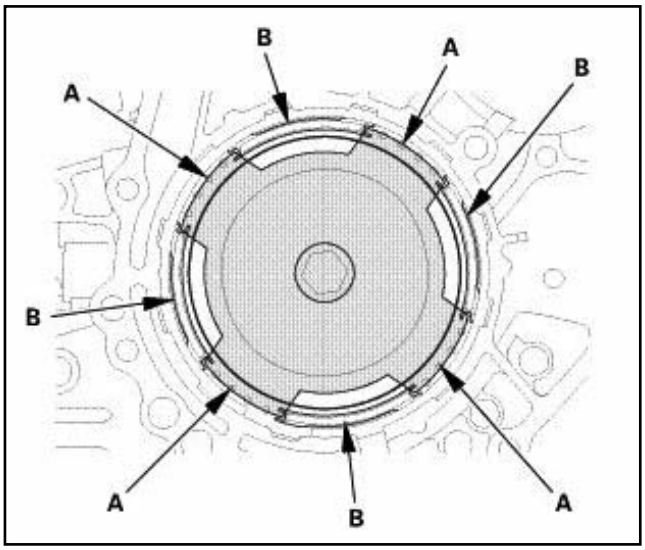
Reverse Brake Piston

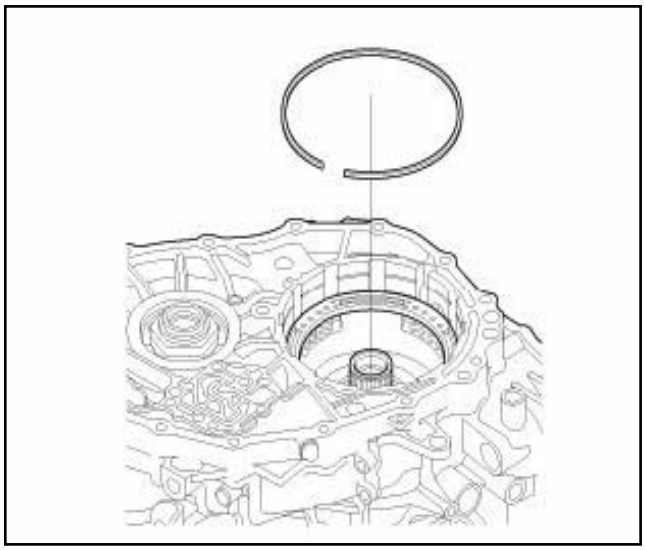


2012-Up SPSA

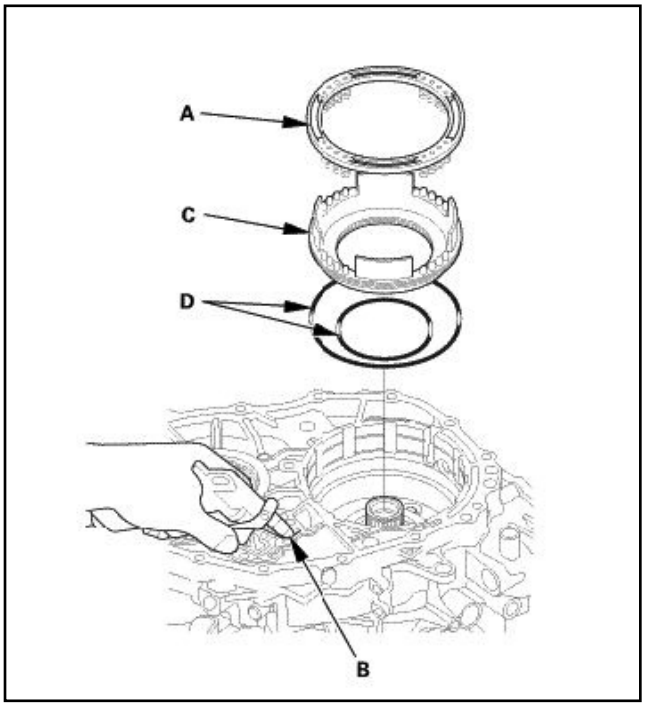
CVT Transmission Disassembly and Reassembly

Disassembly





1. Install the reverse brake spring compressor.
2. Put the reverse brake spring compressor on the spring retainer/return spring assembly. Be sure the attachement set over the return springs (A), not on the reverse brake piston (B).
3. Compress the return springs using the reverse brake spring compressor until the snap ring securing the return spring retainer can be removed.
4. Remove the snap ring.
5. Remove the reverse brake spring compressor.



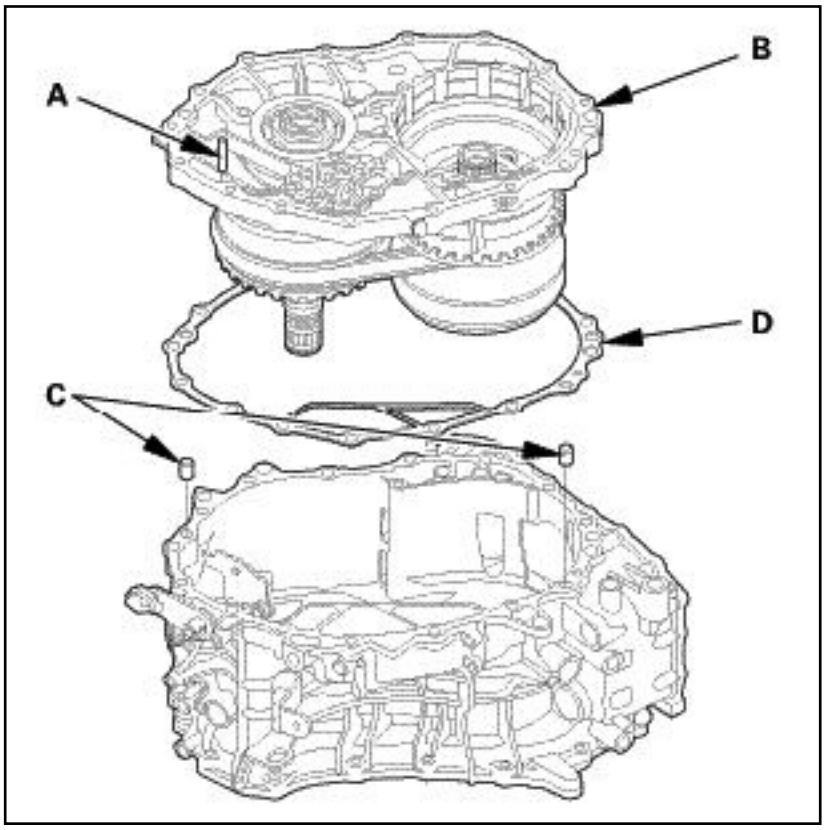
6. Remove the spring retainer/return spring assembly (A).
7. Apply air pressure to the reverse brake pressure circuit hole (B) to remove the reverse brake piston (C).
8. Remove the o-rings (D) from the reverse brake piston.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Disassembly

Intermediate Housing Assembly



1. Remove the 6 x 45.6 mm roller (A) from the intermediate housing (B).
2. Remove the intermediate housing, the dowel pins (C), and the gasket (D).

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

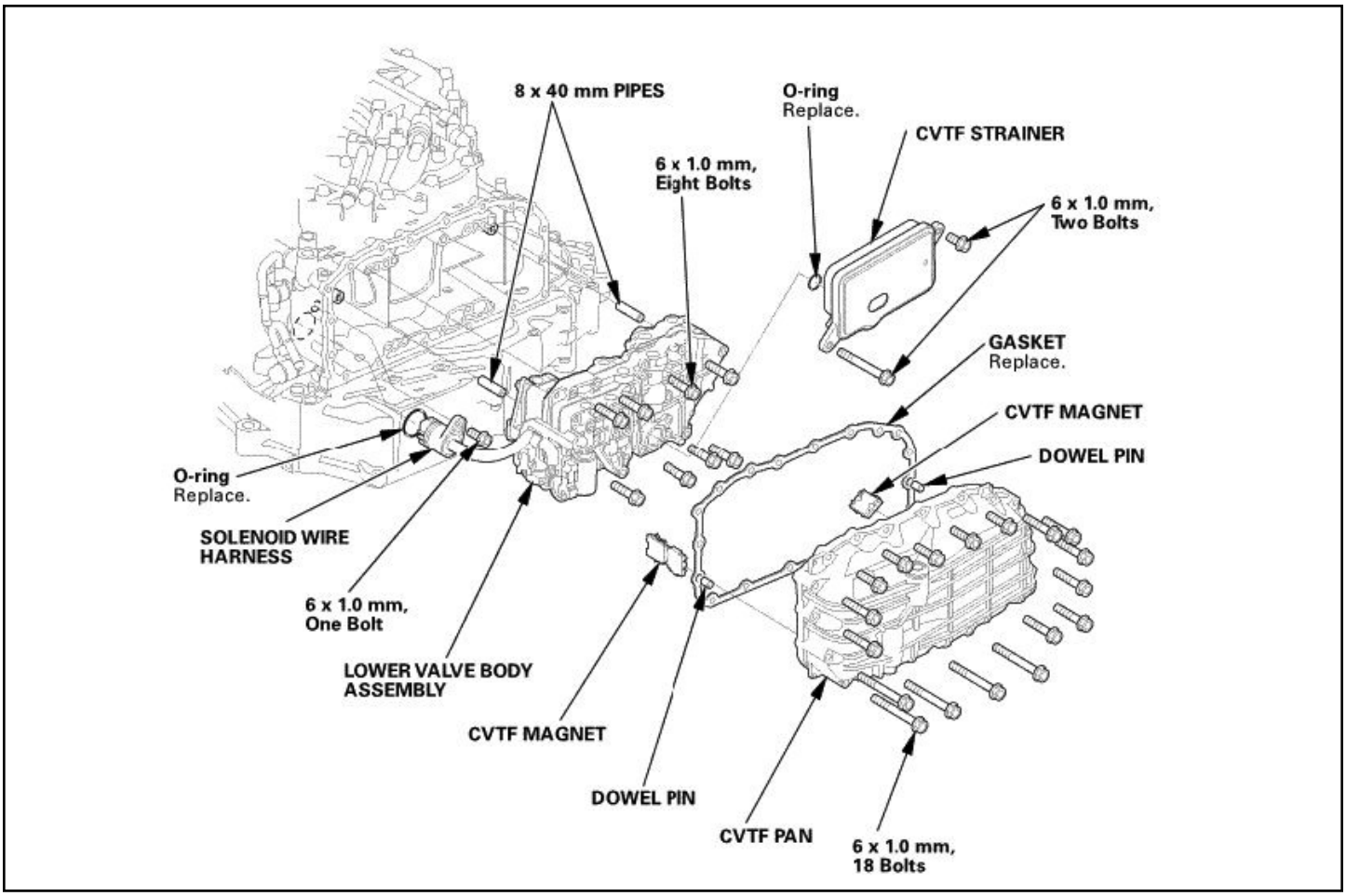
Reassembly

NOTE

- **REFER TO THE EXPLODED VIEW AS NEEDED DURING THE REASSEMBLING PROCEDURE.**
- **WHEN YOU REASSEMBLE THE TRANSMISSION, APPLY A LIGHT COAT OF CLEAN CVTF ON OIL SEALS, O-RINGS, AND BEARINGS. ALSO SOAK THE START CLUTCH ASSEMBLY, THE FORWARD CLUTCH ASSEMBLY, AND THE REVERSE BRAKE DISCS, IN CLEAN CVTF FOR A T LEAST 30 MINUTES PRIOR TO INSTALLATION**

BOLT TIGHTENING TORQUE
6 x 1.0 mm: 12 Nm (1.2 kgfm, 9 lb. ft.)
8 x 1.25 mm: 27 Nm (2.8 kgfm, 20 lb. ft.)

CVTF Pan Side Exploded View

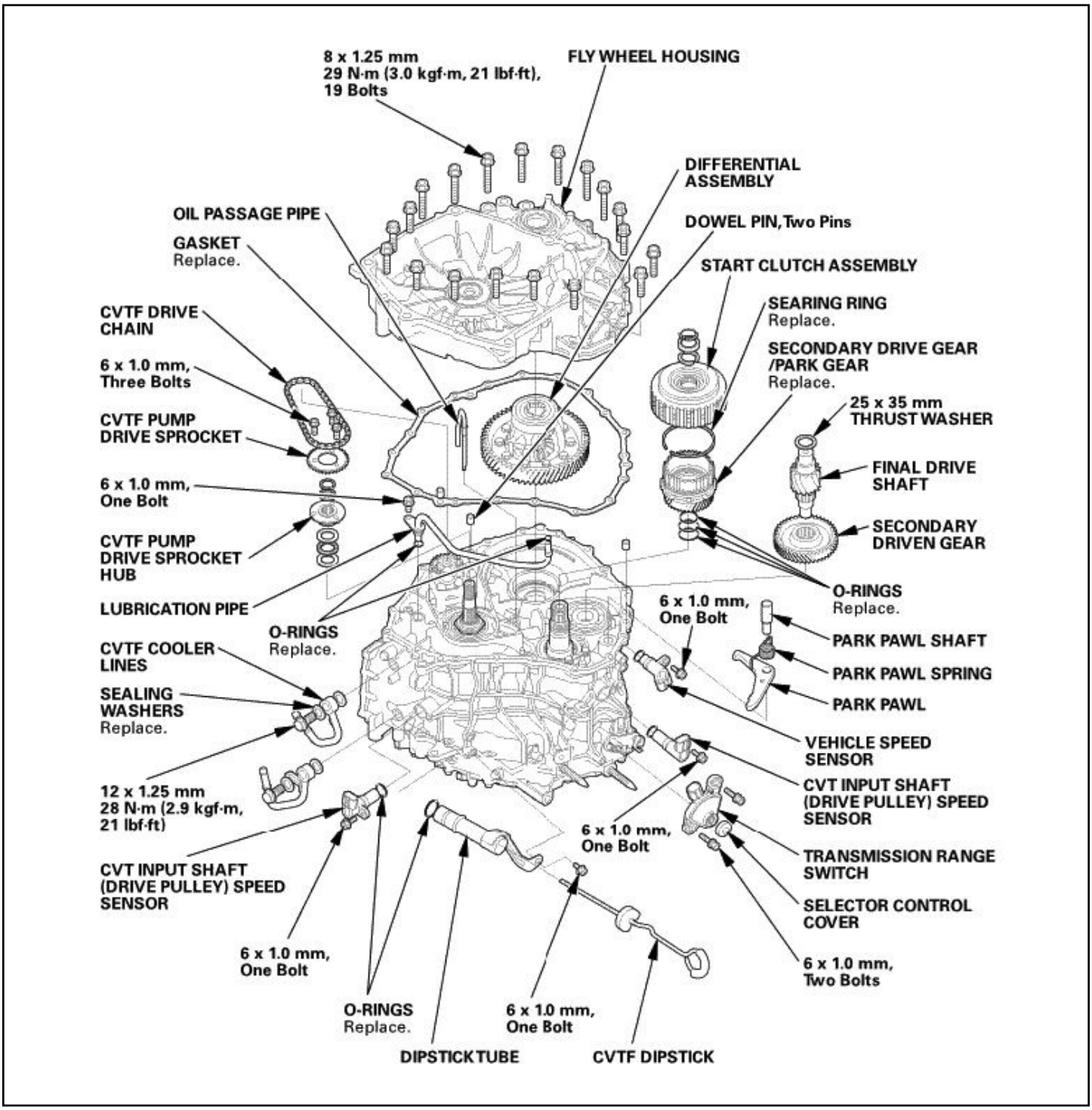


2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Reassembly

Flywheel Housing Side Exploded View

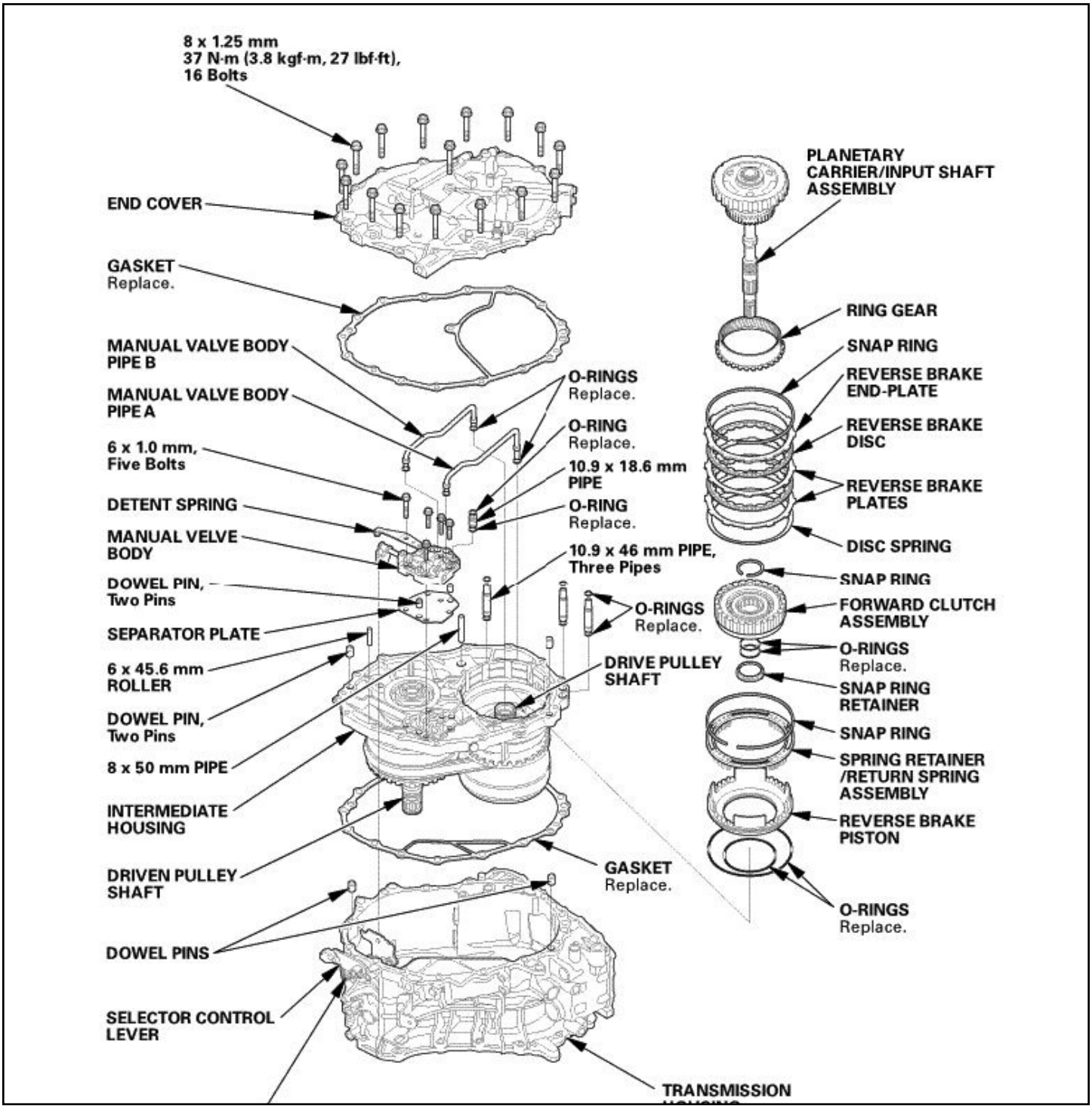


2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Reassembly

End Cover Side Exploded View

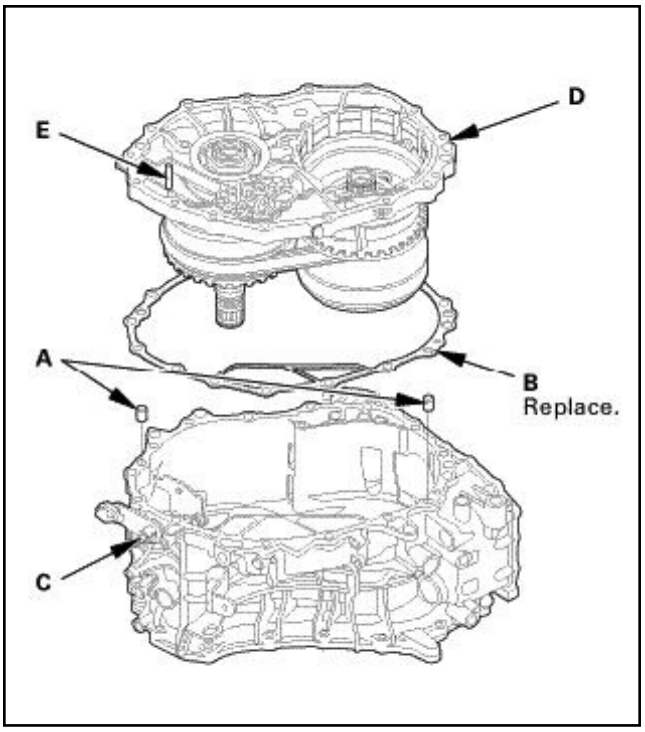


2012-Up SPSA

CVT Transmission Disassembly and Reassembly

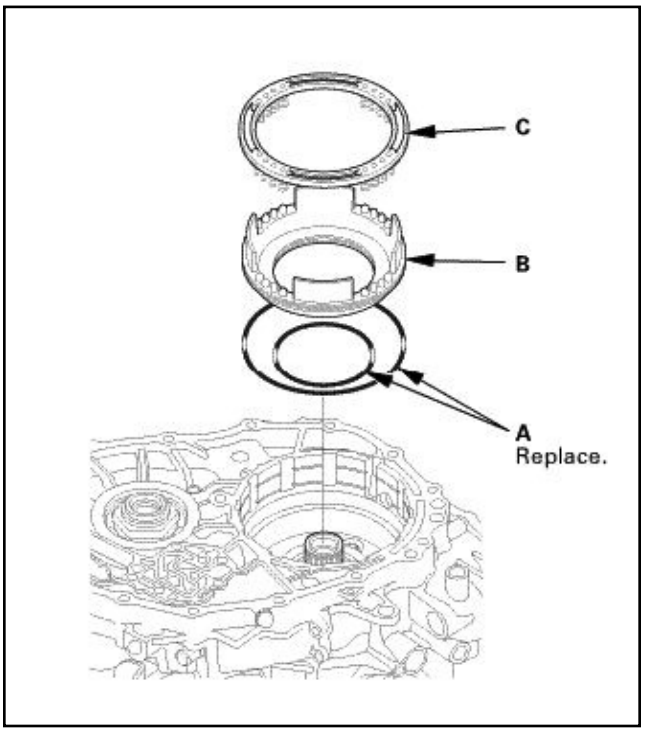
Reassembly

Intermediate Housing Assembly



1. Install the dowel pins (A) and a new gasket (B) on the transmission housing.
2. Push the selector control shaft (C) toward the out side of the transmission housing, then install the intermediate housing (D).
3. Pull the selector control shaft back, then install the 6 x 45.6 mm roller (E) in the intermediate housing by aligning the groove on the selector control shaft.

Reverse Brake Piston

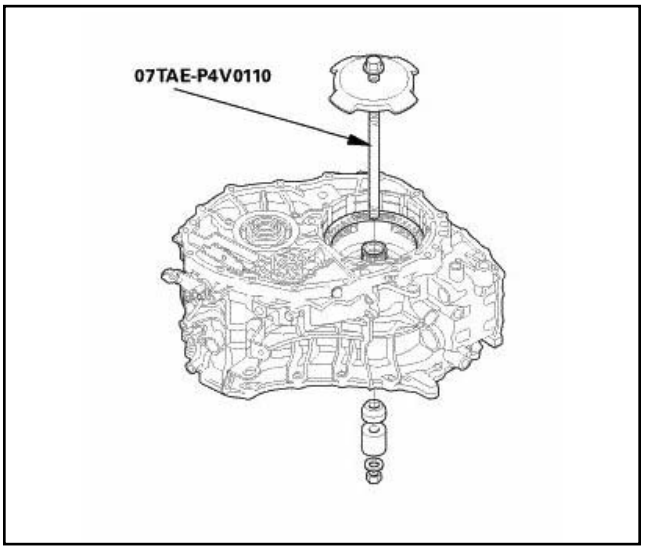


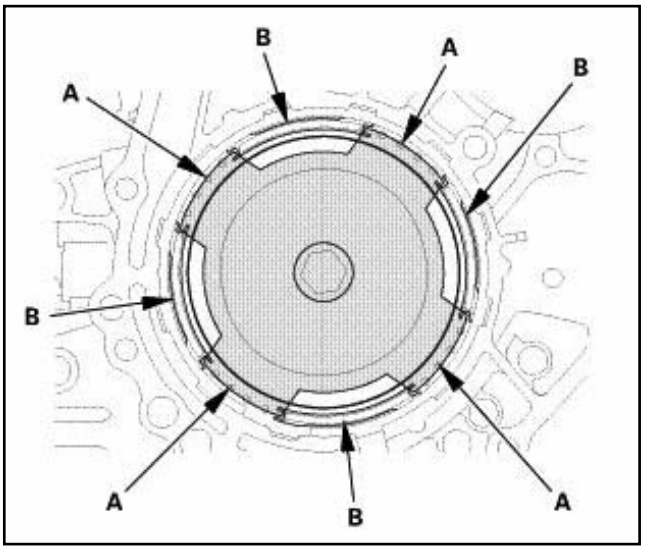
1. Install new o-rings (A) on the reverse brake piston (B).
2. Install the reverse brake piston in the intermediate housing.
3. Install the spring retainer/return spring assembly (C) on the reverse brake piston.

2012-Up SPSA

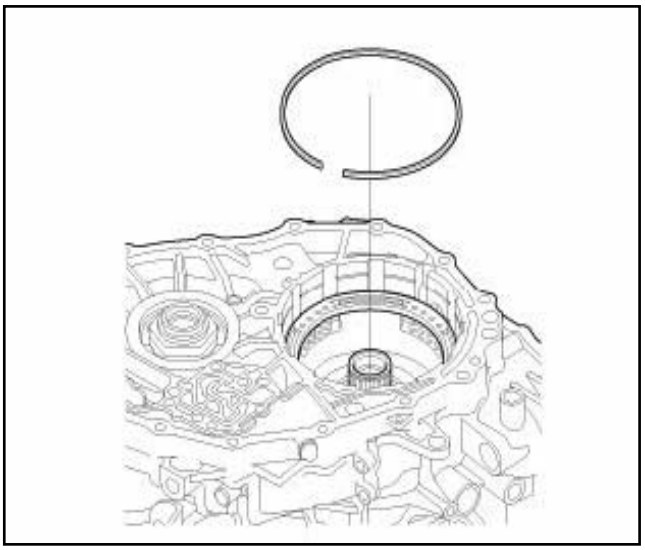
CVT Transmission Disassembly and Reassembly

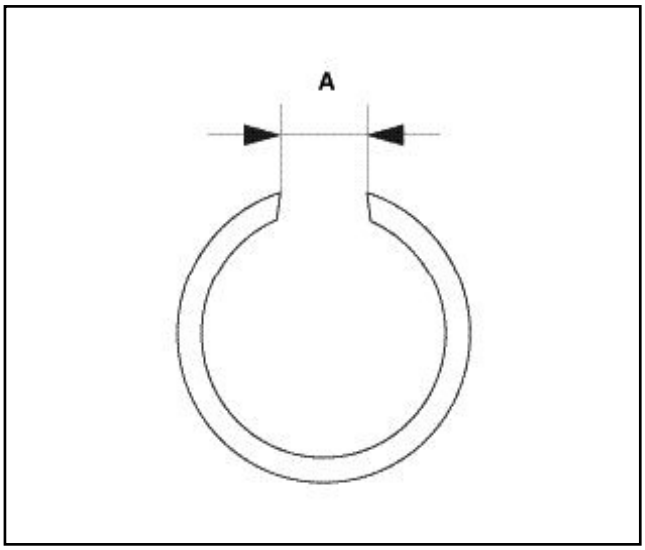
Reassembly





4. Install the reverse brake spring compressor.
5. Put the reverse brake spring compressor on the spring retainer/return spring assembly. Be sure the attachment set over the return springs (A), not on the reverse brake piston (B).
6. Compress the return springs using the reverse brake spring compressor until the snap ring securing the return spring retainer can be installed.





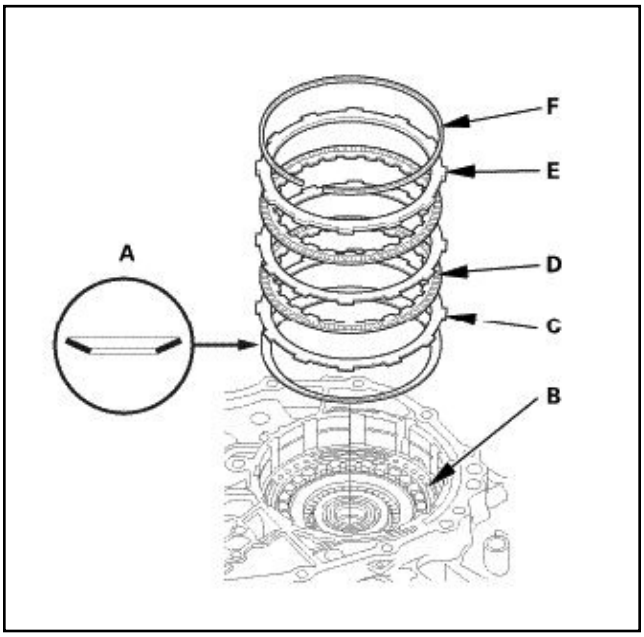
7. Install the snap ring in the intermediate housing above the spring retainer.
8. Remove the reverse brake spring compressor.
9. Check that the snap ring is seated in the snap ring groove of the intermediate housing, and that the snap ring end gap (A) is 15 mm (0.59 in) or more.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

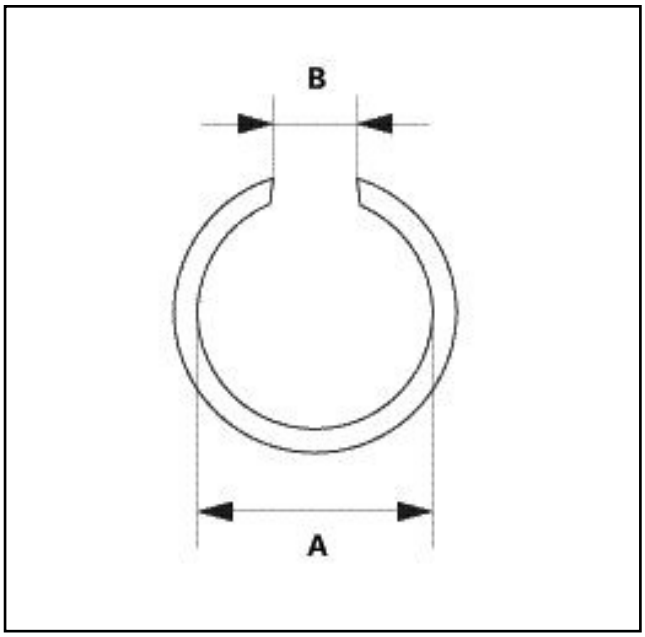
Reassembly

Reverse Brake Disc and Plate



NOTE **IF THE REVERSE BRAKE END-PLATE IS REPLACED, INSTALL THE SNAP RING, AND CHECK THAT THE SNAP RING INSIDE DIAMETER AND END GAP IS WITHIN THE TOLERANCE.**

1. Install the disc spring (A) on the spring retainer (B) in the direction shown.
2. Starting with one of the reverse brake plate (C), alternately install the two reverse brake plates and the reverse brake discs (D). Install the reverse brake end-plate (E), then install the snap ring (F).

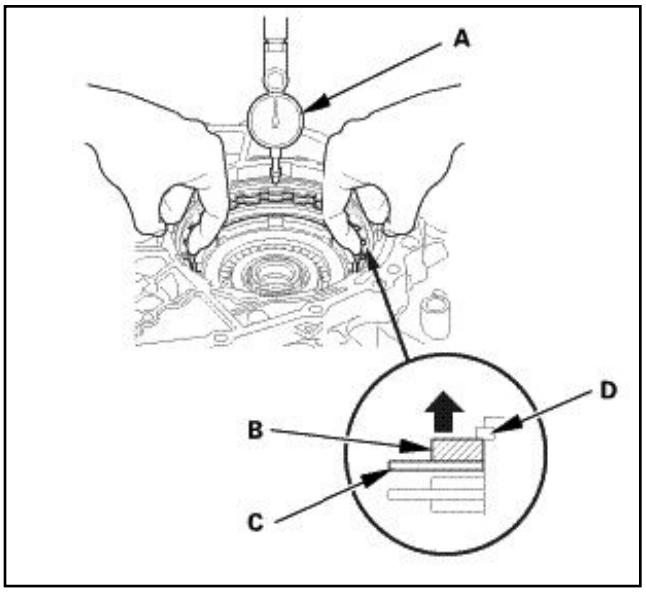


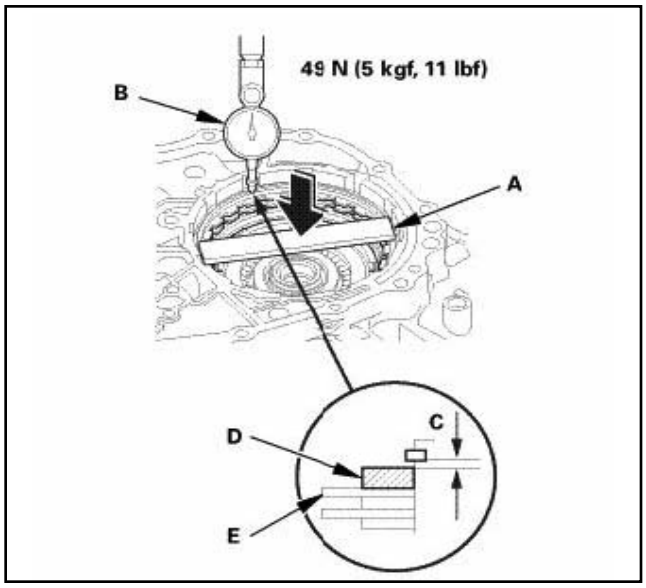
3. Check that the snap ring is seated in the snap ring groove of the intermediate housing, and that the snap ring inside diameter (A) is 143.5 mm (5.650 in) or more, and also check that the snap ring end gap (B) is 8.7 mm (0.343 in) or more.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Reassembly





4. Set up a dial indicator (A) on the reverse brake end-plate (B).
5. Zero the dial indicator by lifting the top disc (C) up against the reverse brake end-plate and the reverse brake end-plate up against the snap ring (D), and release the reverse brake end-plate to lower the reverse brake end-plate.
6. Place a steel plate (A) across width of the reverse brake end-plate.
7. Press the steel plate down with 49 N (5 kgf, 11 lbf) using a force gauge, and read the dial indicator (B). The dial indicator reads the clearance (C) between the reverse brake end-plate (D) and the top-disc (E). Take measurements in at least three places, and use the average as the actual clearance.

Standard: 0.550.70 mm (0.02170.276 in)

If the clearance is out of the standard, remove the reverse brake end-plate, and measure its thickness. Select a new reverse brake end-plate from the following table and install it, then recheck that the clearance is within the standard.

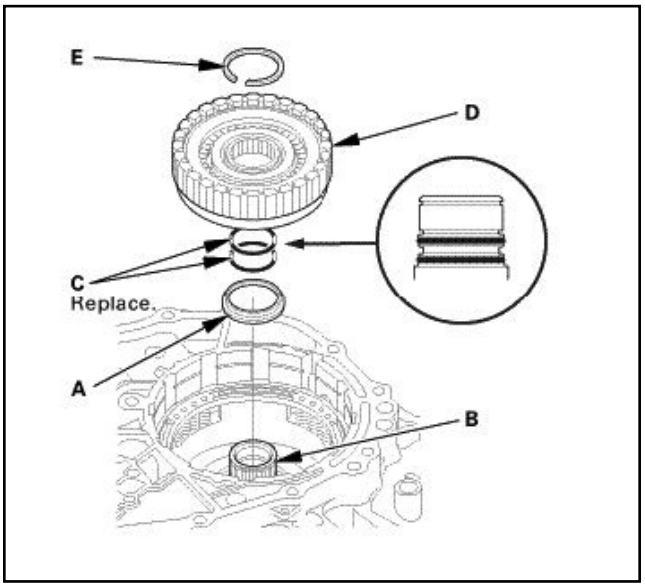
No.	Thickness
2	3.80 mm (0.1496 in)
B	3.90 mm (0.1535 in)
3	4.00 mm (0.1575 in)
C	4.10 mm (0.1614 in)
4	4.20 mm (0.1654 in)
D	4.30 mm (0.1693 in)
5	4.40 mm (0.1732 in)
E	4.50 mm (0.1772 in)
6	4.60 mm (0.1811 in)
F	4.70 mm (0.1850 in)
7	4.80 mm (0.1890 in)
8	5.00 mm (0.1969 in)

2012-Up SPSA

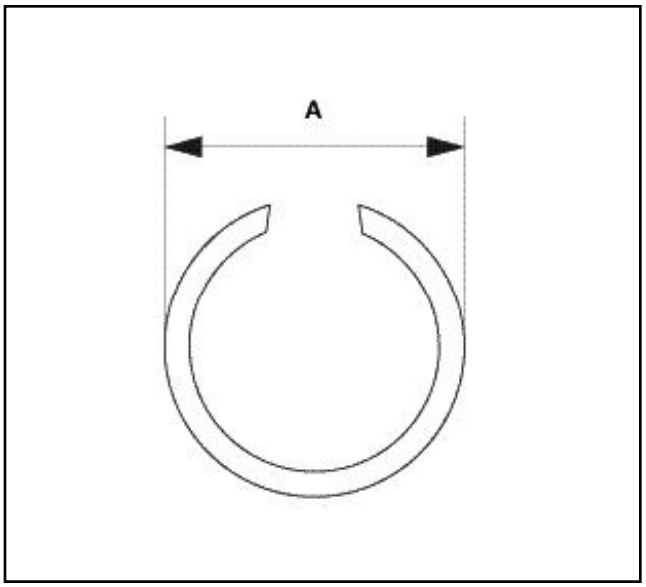
CVT Transmission Disassembly and Reassembly

Reassembly

Forward Clutch Assembly



1. Install the snap ring retainer (A) over the drive pulley shaft (B).
2. Wrap the drive pulley shaft splines with tape to prevent o-ring damage. Install two new o-rings (C) in the drive pulley shaft o-ring grooves, then remove the tape.
3. Install the forward clutch assembly (D) on the drive pulley shaft.
4. Install the snap ring (E) to secure the forward clutch.
5. Check that the snap ring is seated in the snap ring groove of the drive pulley shaft, and that the snap ring outside diameter (A) is 41.4 mm (1.630 in) or less.

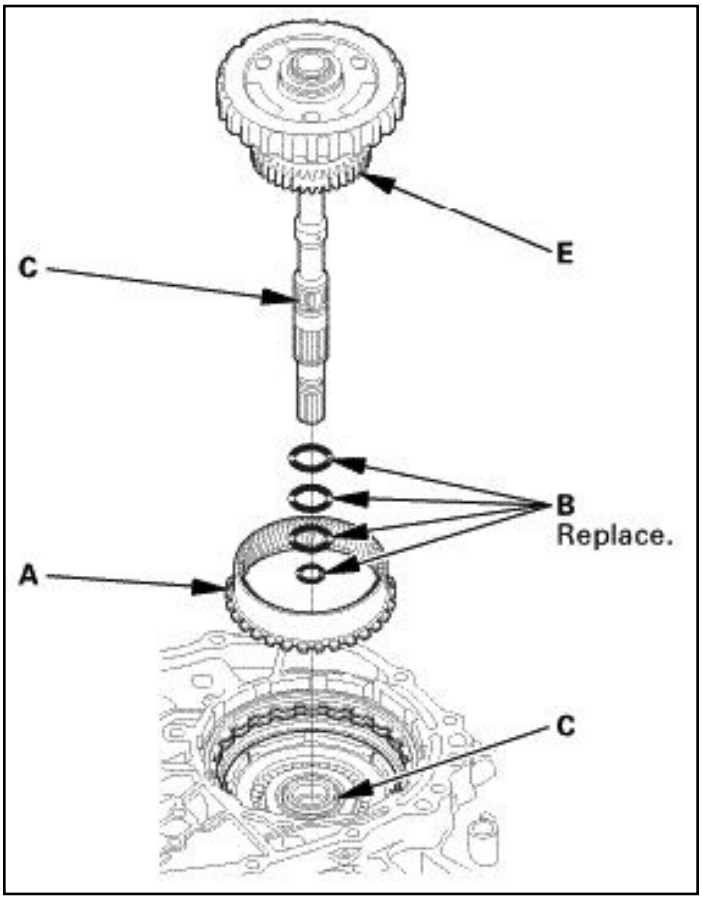


2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Reassembly

Planetary Carrier/Input Shaft Assembly

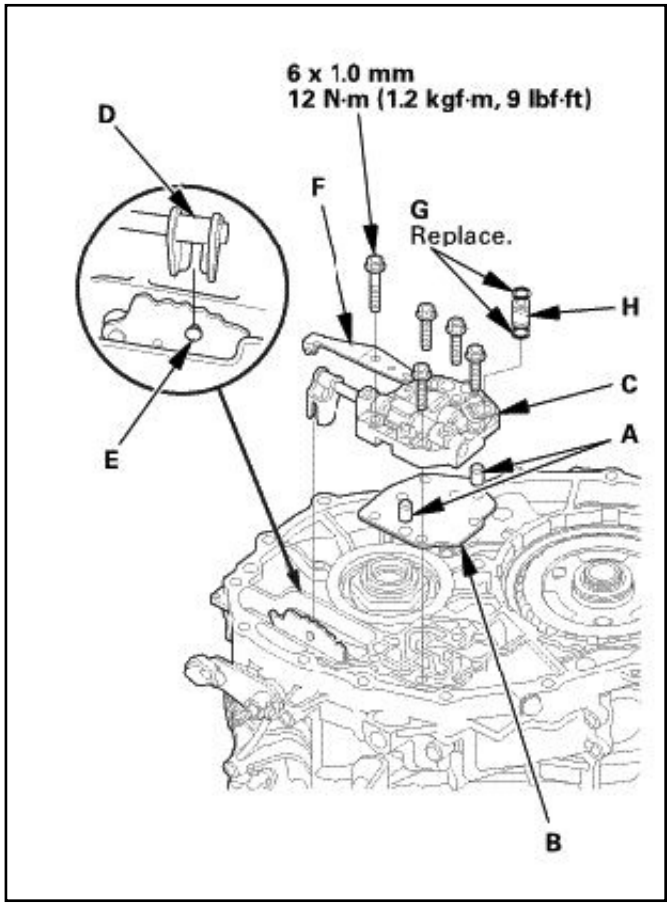


NOTE

THE SEALING RINGS OF THE INPUT SHAFT MUST BE REPLACED WHEN DISASSEMBLING THE TRANSMISSION.

1. Install the ring gear (A) on the forward clutch.
2. Wrap the input shaft splines with tape to pre vent sealing rings damage. Install four new sealing rings (B) in the input shaft sealing ring grooves, then remove the tape.
3. Install the input shaft/planetary carrier assembly (C) through the drive pulley shaft (D) by aligning the sun gear (E) with the forward clutch discs and the planetary carrier with the reverse brake discs.

Manual Valve Body Assembly



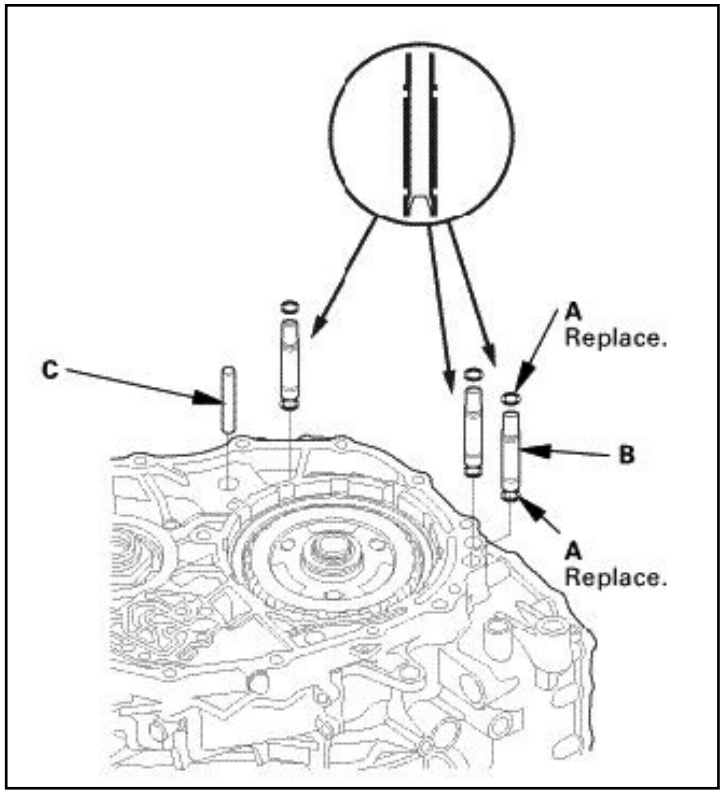
1. Install the dowel pins (A) and the manual valve body separator plate (B) on the intermediate housing.
2. Install the manual valve body (C) by aligning the manual valve (D) with the projection (E) of the selector control shaft.
3. Install the detent spring (F) on the manual valve body.
4. Install new o-rings (G) on the 10.9 x 18.6 mm pipe (H)
5. Install the 10.9 x 18.6 mm pipe in the manual valve body.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

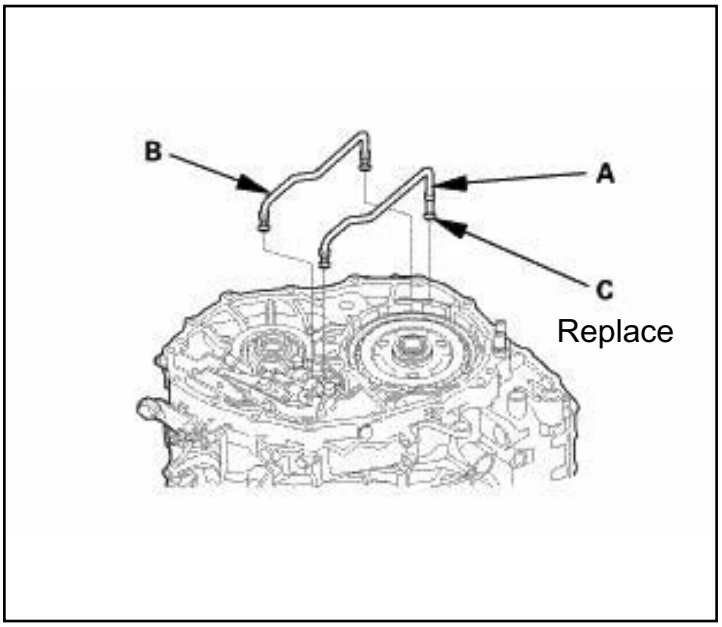
Reassembly

CVTF Pipe



1. Install new o-ring (A) on the 10.9 x 46 mm pipes (B).
2. Install the 10.9 x 46 mm pipes and the 8 x 50 mm pipe (C) in the intermediate housing.

Manual Valve Body Pipe A and B

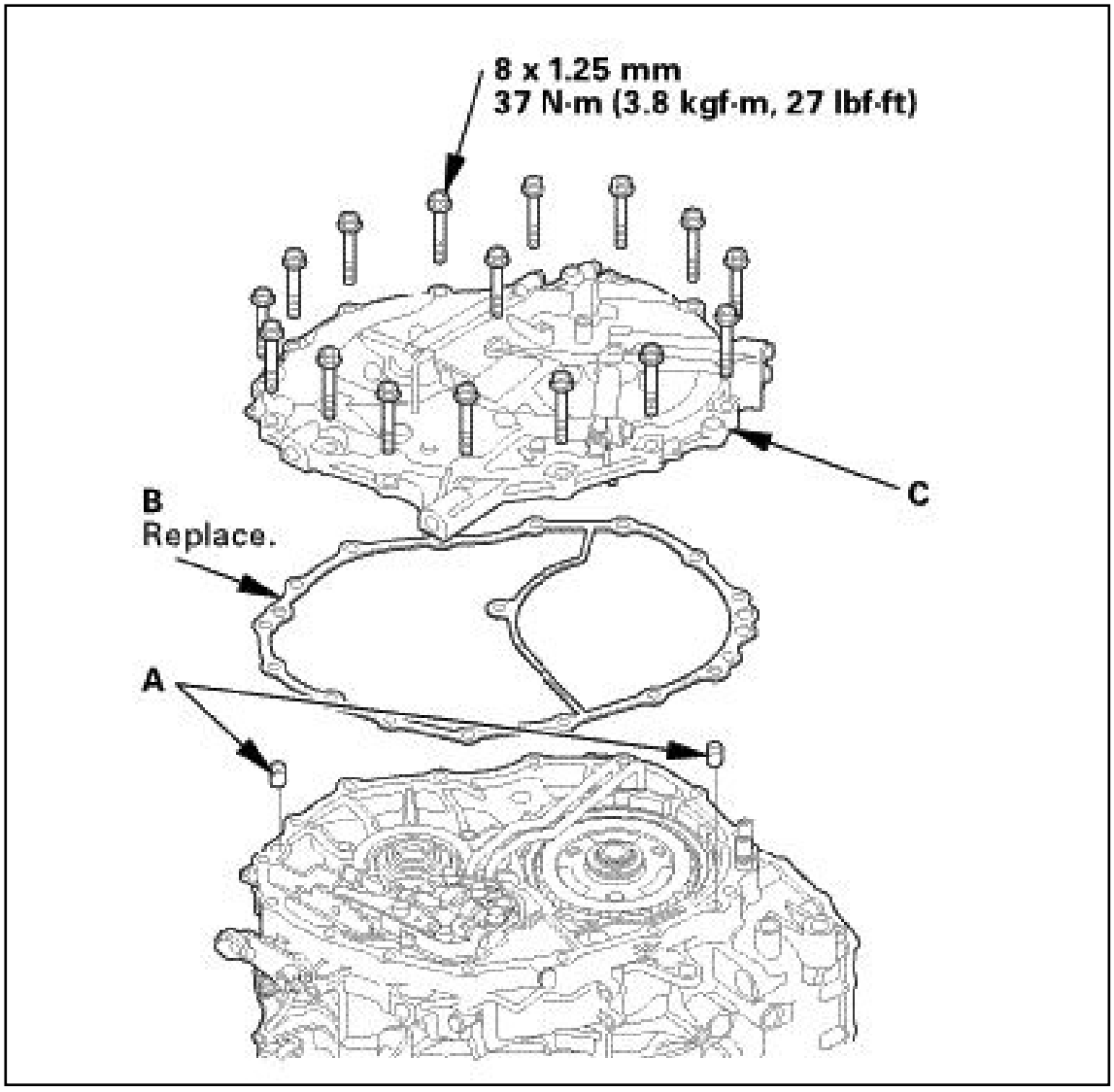


1. Install new o-rings (C) on manual valve body pipes A and B.
2. Install manual valve body pipes A and B in the intermediate housing.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Reassembly



1. Install the dowel pins (A) and a new gasket (B) on the intermediate housing.
2. Install the end cover (C), and tighten them to the specified torque in a crisscross pattern in at least two or three steps.

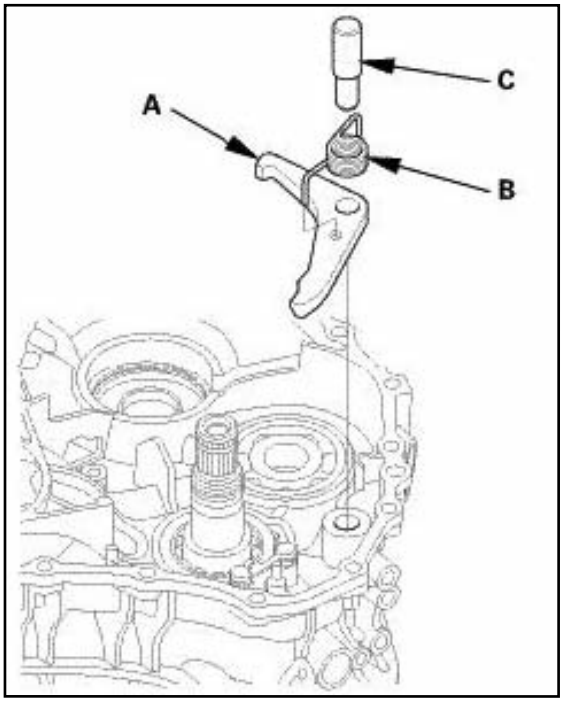
Turn the transmission end cover down.

2012-Up SPSA

CVT Transmission Disassembly and Reassembly

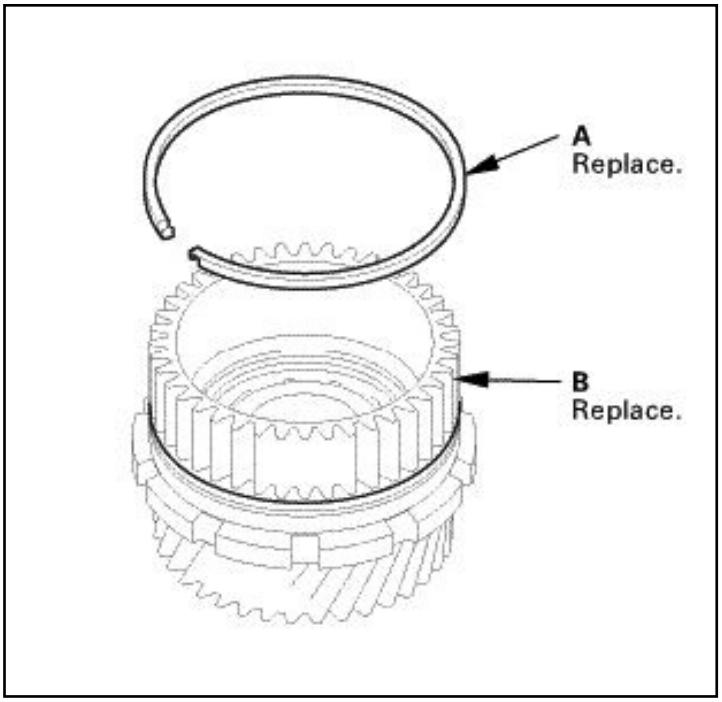
Reassembly

Park Pawl Shaft Assembly



1. Install the park pawl (A), the park pawl spring (B), and the park pawl shaft (C) on the transmission housing.
2. Move the selector control lever to any position other than P.

Secondary Drive Gear



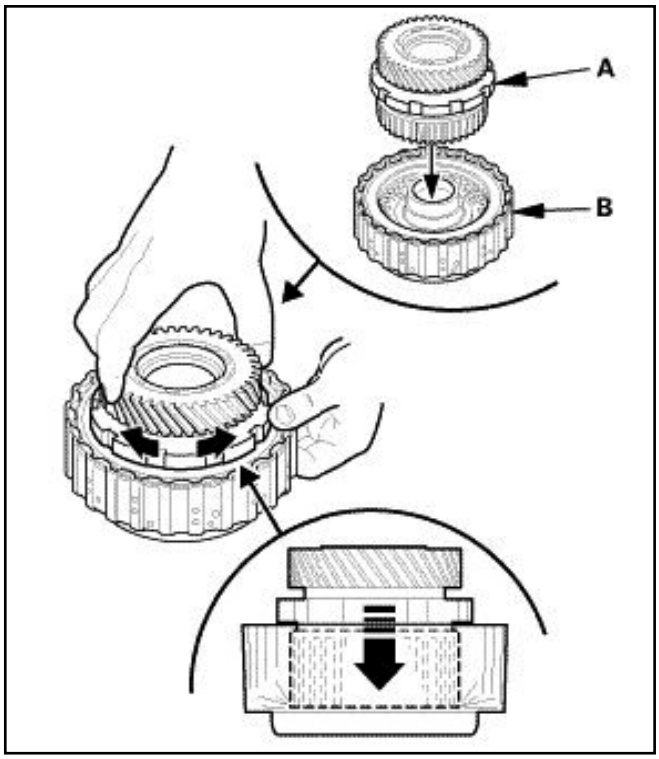
NOTE **THE SECONDARY DRIVE GEAR/PARK GEAR MUST BE REPLACED WHEN DISASSEMBLING THE TRANSMISSION.**

1. Install a new sealing ring (A) on a new secondary drive gear/park gear (B).

2012-Up SPSA

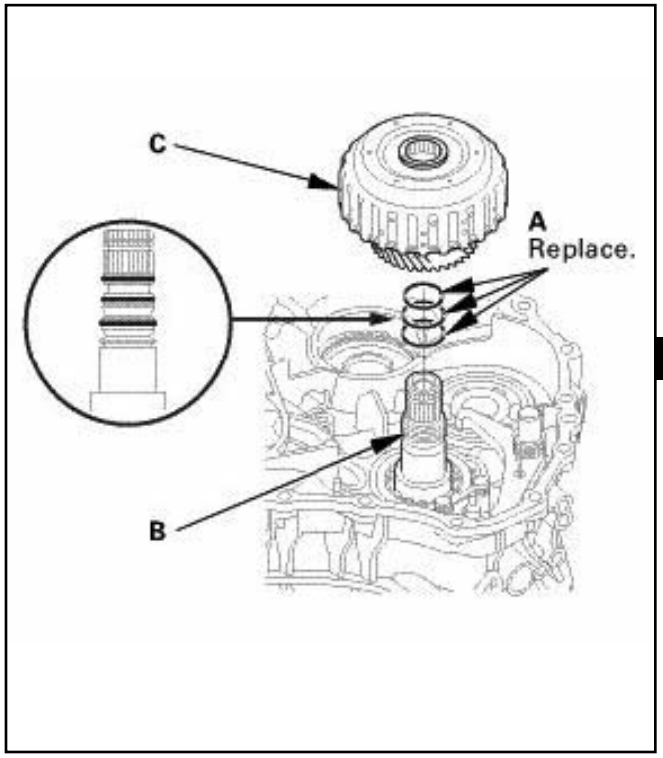
CVT Transmission Disassembly and Reassembly

Reassembly



Start Clutch Assembly

2. Insert the secondary drive gear/park gear (A) into the start clutch assembly (B). Wiggle the secondary drive gear/park gear back and forth as it goes into the start clutch discs, and push in the secondary drive gear until it bottoms out.



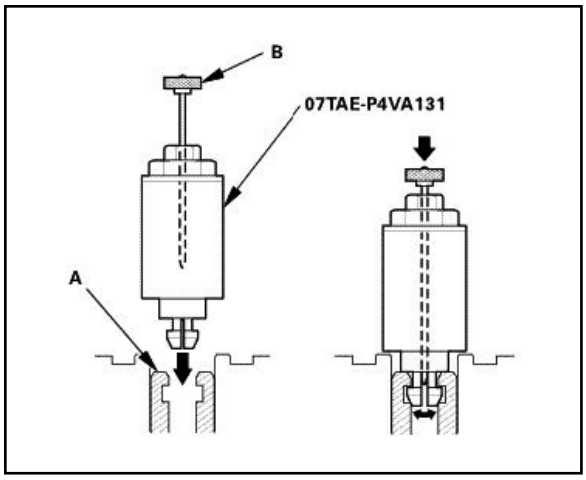
1. Use the CVTF to lubricate new o-rings (A) for the driven pulley shaft (B), then install the o-rings on the driven pulley shaft.
2. Install the start clutch assembly and the secondary drive gear/park gear (C) together on the driven pulley shaft.

NOTE **MAKE SURE TO HOLD THE SECONDARY DRIVE GEAR ENGAGED INTO THE START CLUTCH DISCS WHEN YOU INSTALL THE START CLUTCH ASSEMBLY AND THE SECONDARY DRIVE GEAR/PARK GEAR ONTO THE DRIVEN PULLEY SHAFT.**

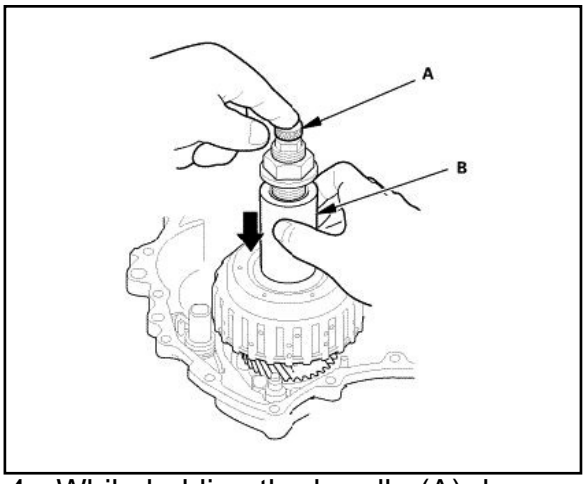
2012-Up SPSA

CVT Transmission Disassembly and Reassembly

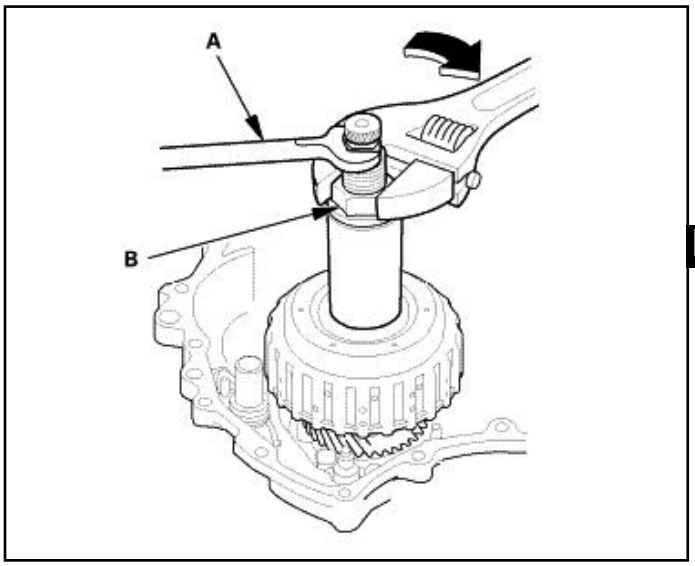
Reassembly



3. Seat the start clutch by aligning the tip of the start clutch installer with the driven pulley shaft hole (A) and then pushing down the handle (B).



4. While holding the handle (A) down, push down the bottom part (B) of the start clutch installer until it contacts the seating surface of the start clutch.



5. Hold the upper hex section of the start clutch installer with a 19 mm wrench (A), then use an adjustable wrench to tighten the lower nut (B) of the start clutch installer until the start clutch seats.

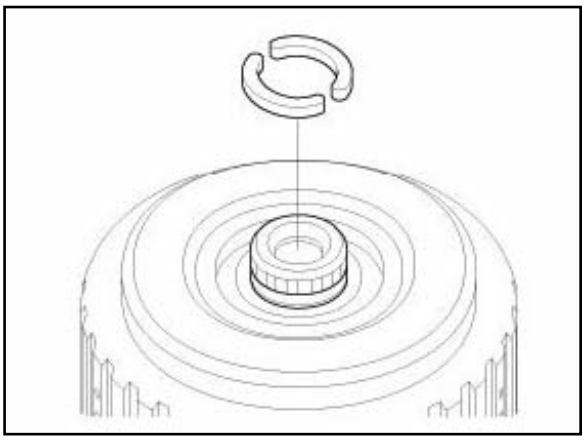
NOTE **WHEN USING THE START CLUTCH INSTALLER, HOLD THE UPPER HEX SECTION AND THEN TURN THE LOWER NUT. TURNING THE UPPER HEX SECTION COULD DAMAGE THE START CLUTCH INSTALLER.**

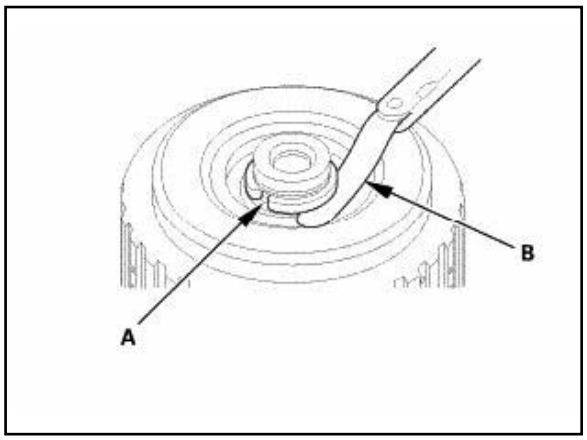
2012-Up SPSA

CVT Transmission Disassembly and Reassembly

Reassembly

6. Remove the start clutch installer.
7. Reach under the start clutch to confirm that the clutch end-plate can move up and down slightly (less than 1.0 mm (0.039 in)).





8. Install the 25.5 mm cotters to the cotter groove on the driven pulley shaft.
9. Measure the clearance between the cotters and the start clutch guide (A) using a feeler gauge (B). Take measurements in at least three places, and use the average as the actual clearance.

Standard: 00.13 mm (00.005 in)

If the clearance is out of the standard, remove the cotters, and measure its thickness. Select new 25.5 mm cotters from the following table and install it. Then recheck that the clearance is within the standard.

Cotters, 25.5 mm	
No.	Thickness
A	2.90 mm (0.1142 in)
B	3.00 mm (0.1181 in)
C	3.10 mm (0.1220 in)
D	3.20 mm (0.1260 in)

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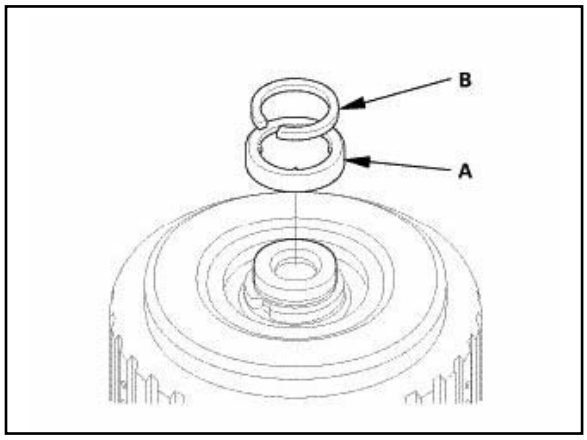
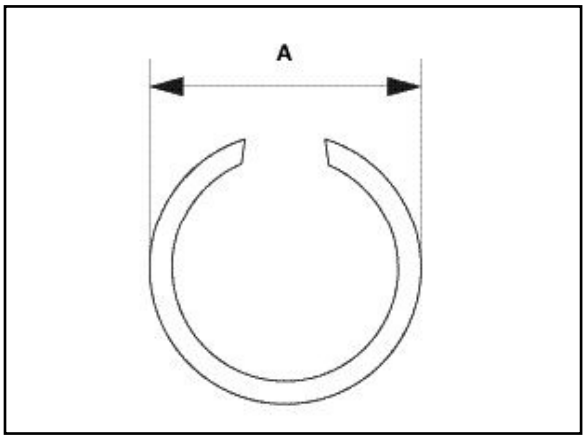
CVT Transmission Disassembly and Reassembly

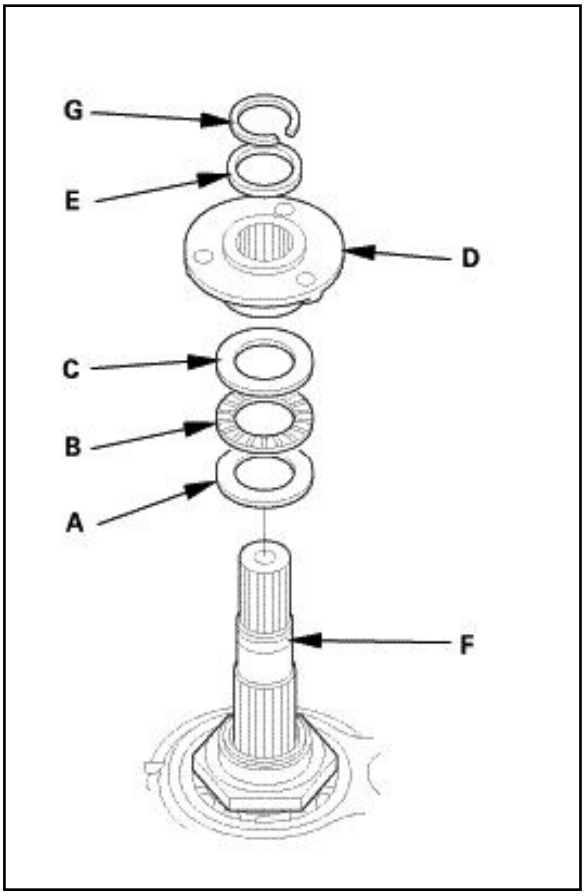
Reassembly





10. Install the cotter retainer (A) and the snap ring (B) to the driven pulley shaft.
11. Check that the snap ring is seated in the snap ring groove of the driven pulley shaft, and that the snap ring outside diameter (A) is 33.9 mm (1.335 in) or less.

Pump Drive Sprocket Hub



1. Install the thrust washer (A), the thrust needle bearing (B), the thrust washer (C), the CVTF pump drive sprocket hub (D), and the 22 x 28 mm thrust shim (E) on the input shaft (F).
2. Install the snap ring (G) to the input shaft.

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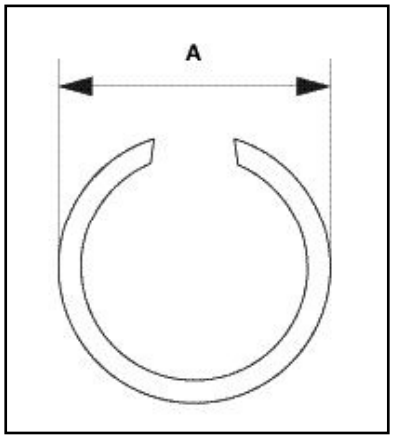
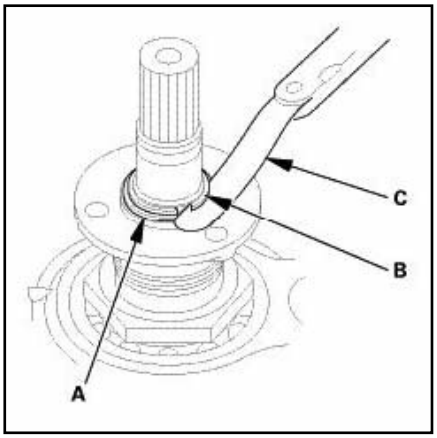
CVT Transmission Disassembly and Reassembly

Reassembly



3. Check that the snap ring is seated in the snap ring groove of the input shaft, and that the snap ring outside diameter (A) is 26.3 mm (1.035 in) or less.
4. Measure the clearance between the 22 x 28 mm thrust shim (A) and the snap ring (B) using a feeler gauge (C). Take measurements in at least three places, and use the average as the actual clearance.



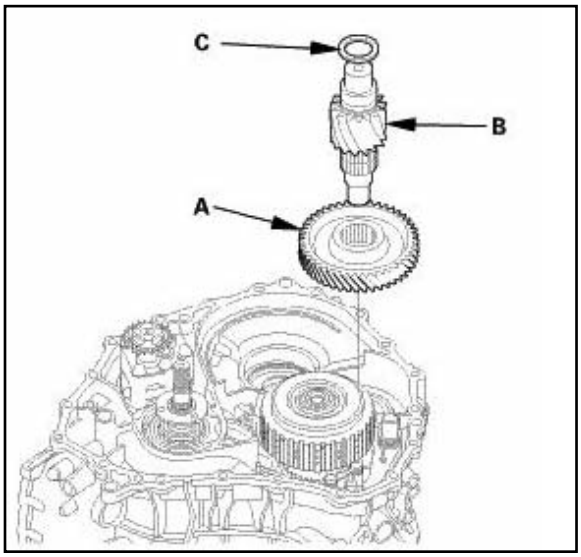
Standard: 0.370.65 mm (0.0150.025 in)

If the clearance is out of the standard, remove the 22 x 28 mm thrust shim, and measure its thickness. Select a new 22 x 28 mm thrust shim from the following table and install it, then recheck that the clearance is within the standard.

If the 22 x 28 mm thrust shim is replaced, install the snap ring, and check that the snap ring outside diameter is within the tolerance.

Thrust Shim, 22 x 28 mm	
No.	Thickness
C	1.15 mm (0.0453 in)
D	1.40 mm (0.0551 in)
E	1.65 mm (0.0650 in)
F	1.90 mm (0.0748 in)
G	2.15 mm (0.0846 in)
H	2.40 mm (0.0945 in)

Secondary Driven Gear



1. Place the secondary driven gear (A) on the transmission housing by aligning it with the secondary drive gear, and install the final drive shaft (B) through the secondary driven gear into the transmission housing.
2. Install the 25 x 35 mm thrust shim (C) on the final drive shaft.

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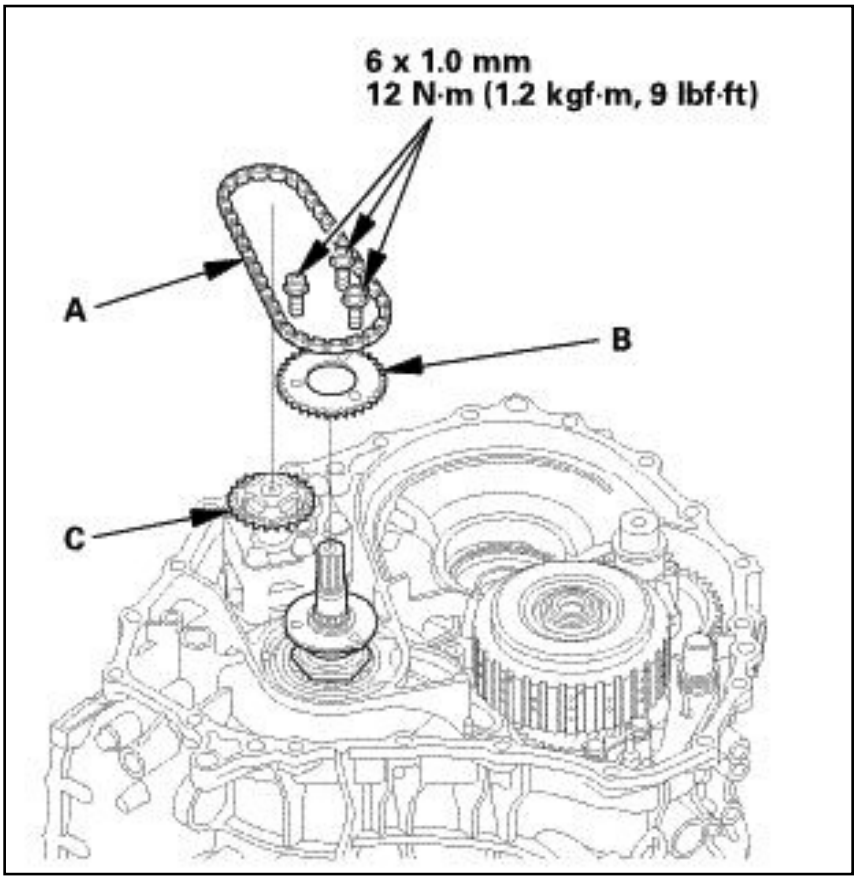
CVT Transmission Disassembly and Reassembly

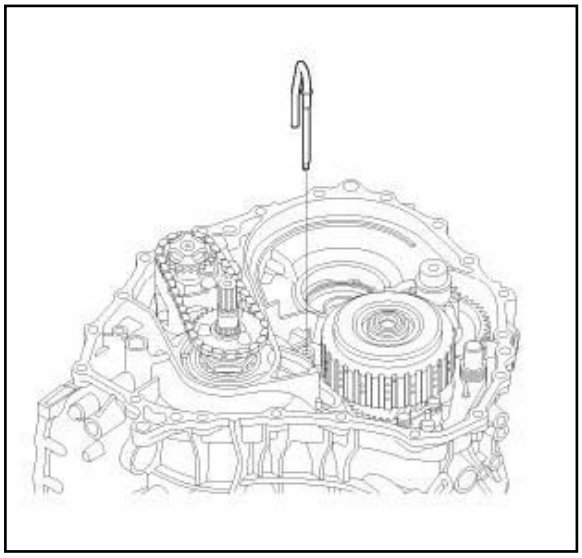
Reassembly

Pump Drive Sprocket and Pump Drive Chain



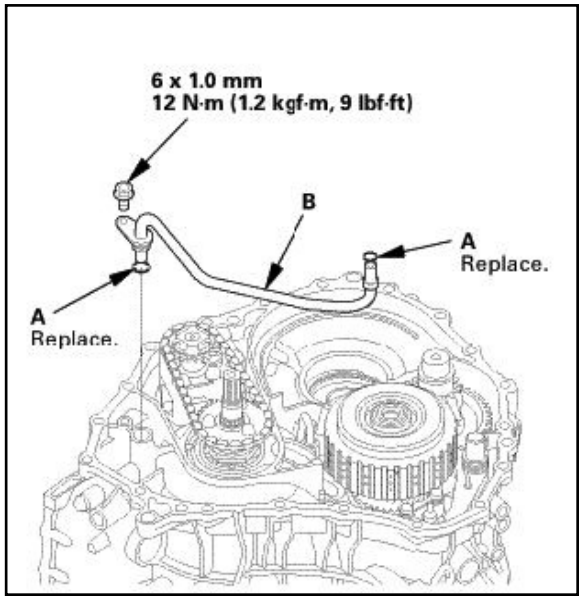
1. Install the CVTF pump drive chain (A) by aligning sprocket tooth on the CVTF pump drive sprocket (B) and the CVTF pump driven sprocket (C).
2. Position the CVTF pump drive sprocket and the CVTF pump drive chain together on the CVTF pump drive sprocket hub.
3. Secure the CVTF pump drive sprocket with the bolts.

Oil Passage Pipe



1. Install the oil passage pipe.

Lubrication Pipe



1. Install new o-rings (A) on the lubrication pipe (B).
2. Install the lubrication pipe.

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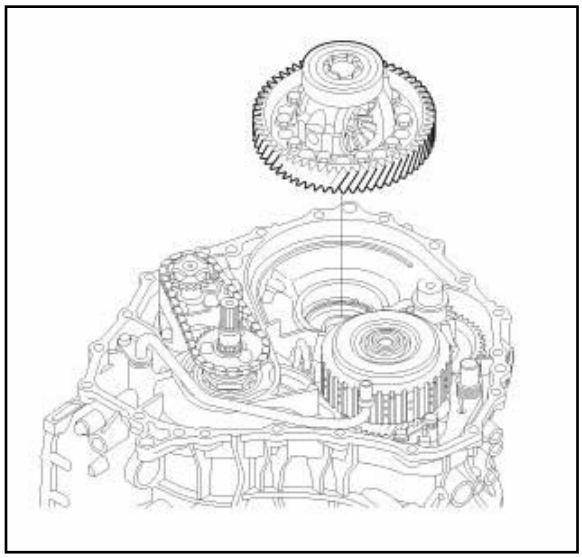
CVT Transmission Disassembly and Reassembly

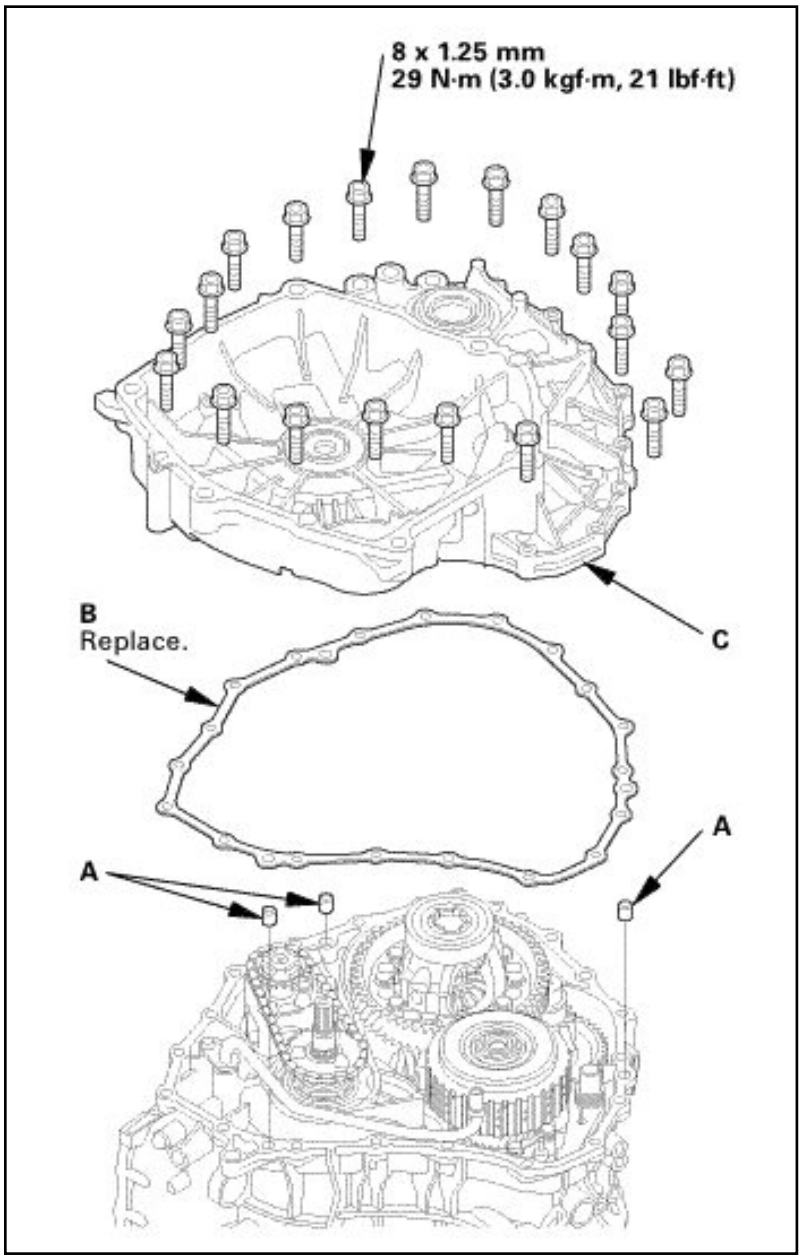
Reassembly

CVT Differential Assembly



1. Install the differential assembly onto the transmission housing.

Flywheel Housing Assembly



1. Install the dowel pins (A) and a new gasket (B) on the transmission housing.
2. Install the flywheel housing (C) on the transmission housing, and tighten them to the specified torque in a crisscross pattern in at least two or three steps.

Turn flywheel housing down.

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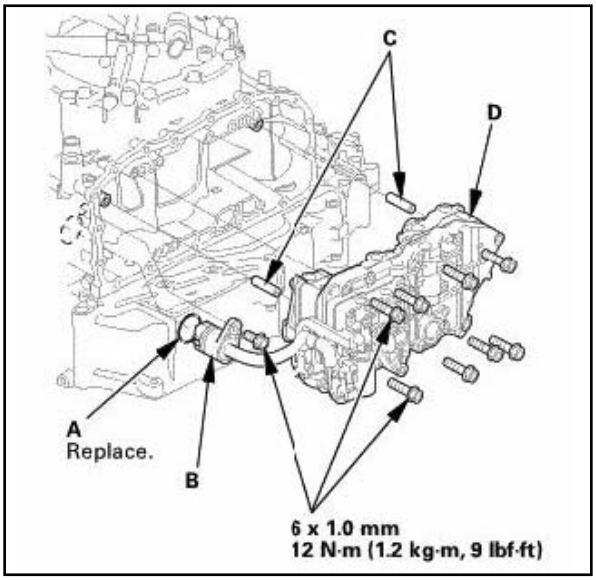
CVT Transmission Disassembly and Reassembly

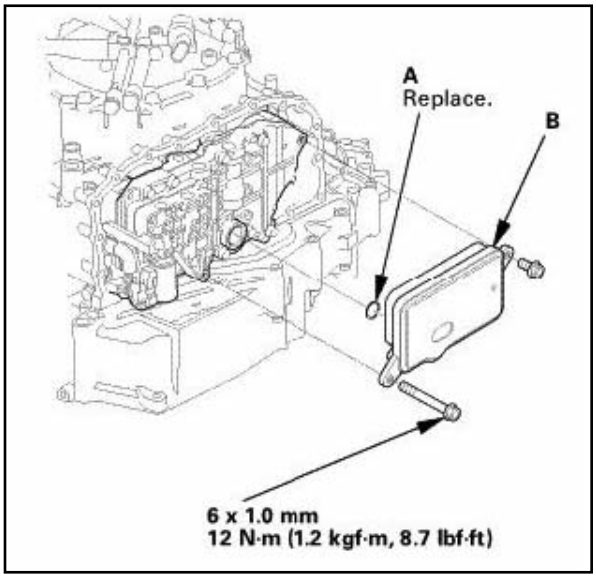
Reassembly

Lower Valve Body Assembly



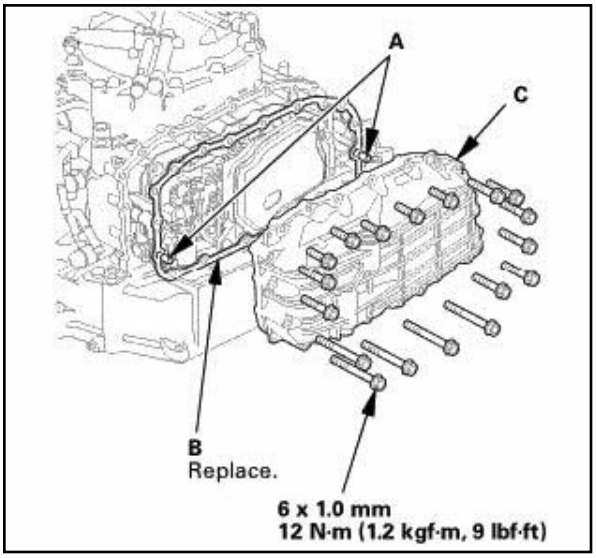
1. Check the connector for corrosion, dirt, or oil, and clean or repair if necessary.
2. Install a new o-ring (A) on the connector (B)
3. Install the 8 x 40 mm pipes (C) on the CVT driven pulley pressure control solenoid valve and the CVT clutch pressue control solenoid valve.
4. Install the connector and the lower valve body (D) in the transmission housing.

CVTF Strainer



1. Install a new o-ring (A) on the CVTF strainer (B).
2. Install the CVTF strainer on the lower valve body.

CVTF Pan Assembly



1. Install the dowel pins (A) and a new gasket (B) on the transmission housing.
2. Install the CVTF pan (C) and tighten them to the specified torque in a crisscross pattern in at least two or three steps.

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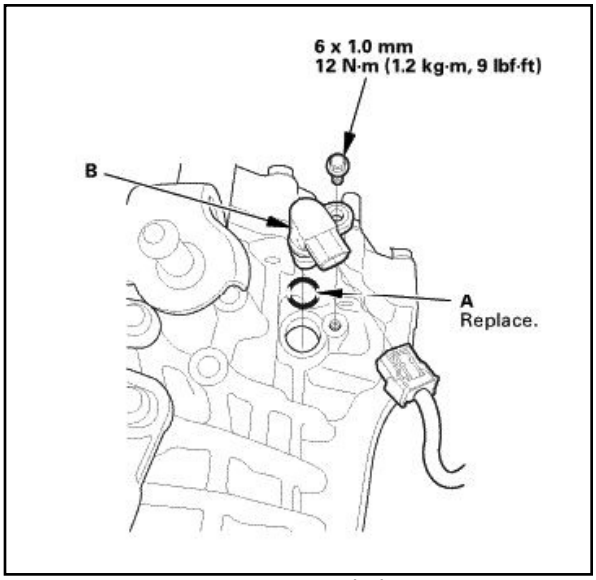
CVT Transmission Disassembly and Reassembly

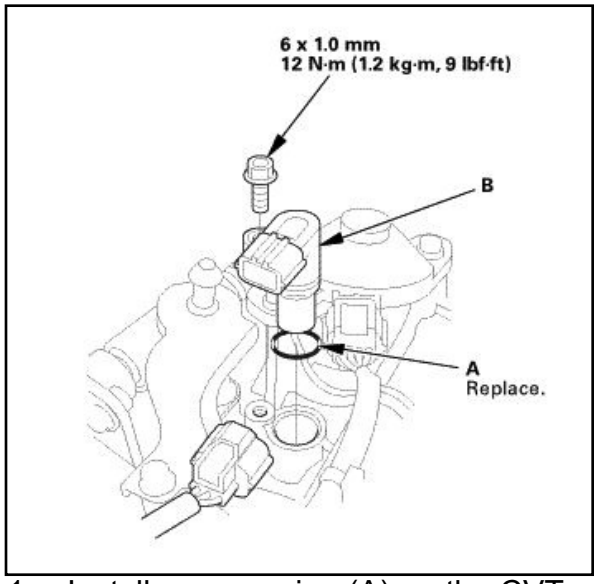
Reassembly

Vehicle Speed Sensor



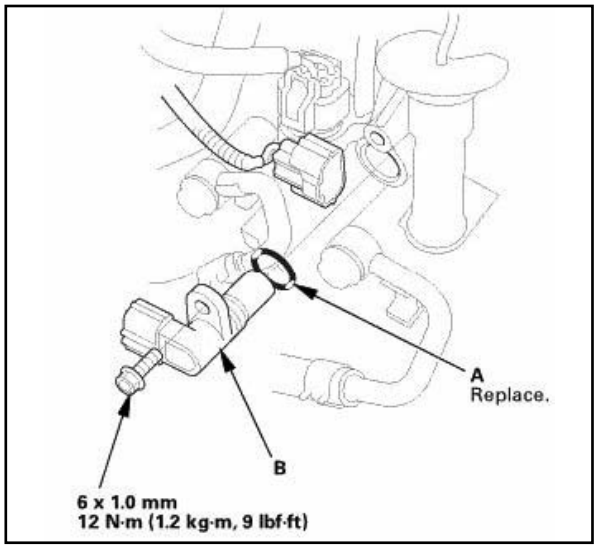
1. Install a new o-ring (A) on the vehicle speed sensor (B).
2. Install the vehicle speed sensor.

CVT Output Shaft (Driven Pulley) Speed Sensor



1. Install a new o-ring (A) on the CVT output shaft (driven pulley) speed sensor (B).
2. Install the CVT output shaft (driven pulley) speed sensor.

Input Shaft (Drive Pulley) Speed Sensor



1. Install a new o-ring (A) on the CVT input shaft (drive pulley) speed sensor (B).
2. Install the CVT input shaft (drive pulley) speed sensor.

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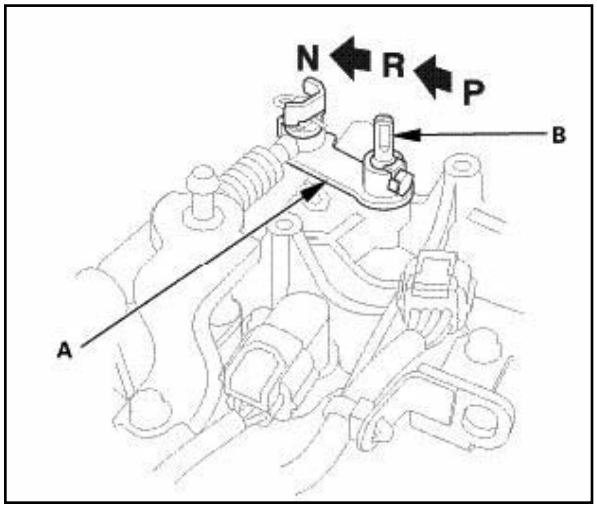
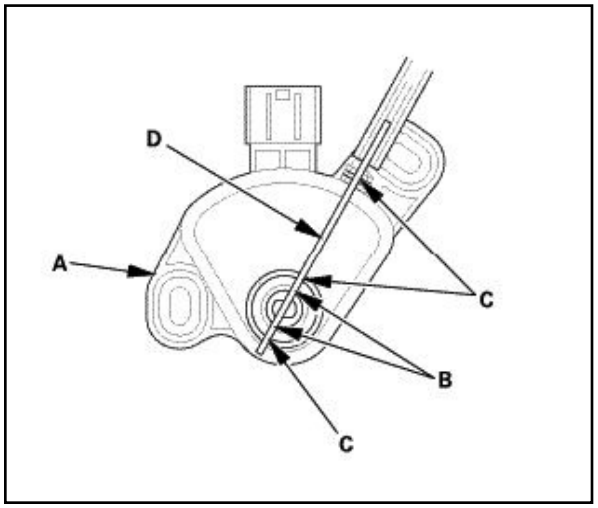
CVT Transmission Disassembly and Reassembly

Reassembly

Transmission Range Switch





1. Make sure the selector control shaft is in the N position. If necessary, move the selector control lever (A) from the P position to the N position by turning the selector control lever.

NOTE **DO NOT USE THE SELECTOR CONTROL SHAFT (B) 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.**

2. Set the 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 (0.079 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 (0.079 IN) FEELER GAUGE BLADE OR EQUIVALENT TO HOLD THE TRANSMISSION RANGE SWITCH IN THE N POSITION.**

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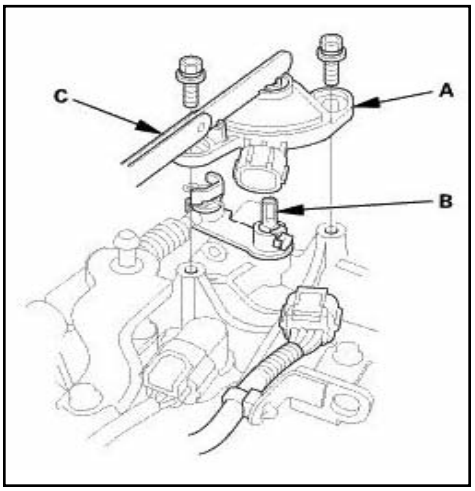
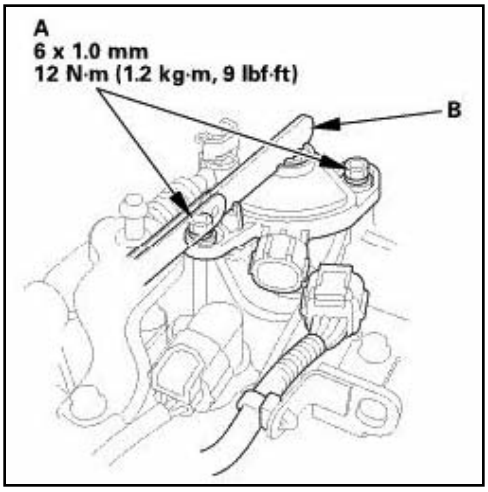
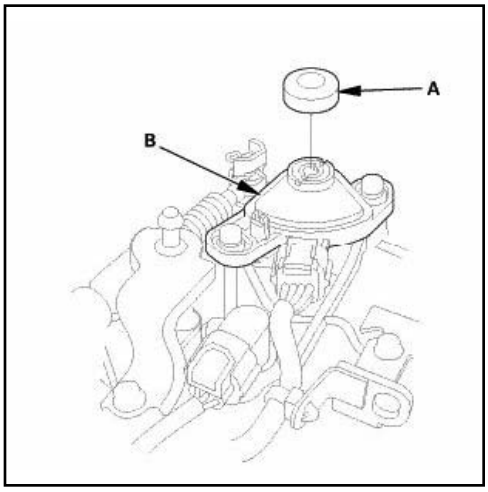
CVT Transmission Disassembly and Reassembly

Reassembly

Transmission Range Switch

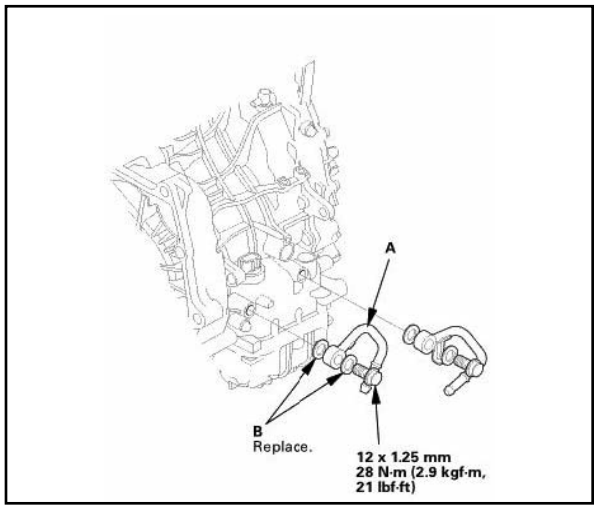






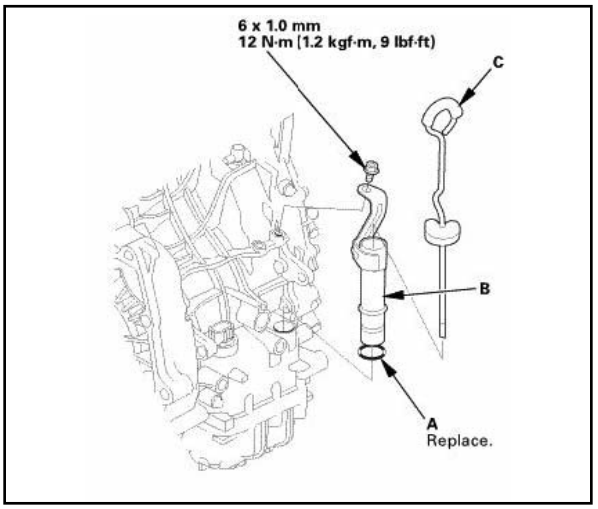
3. Install the transmission range switch (A) gently on the selector control shaft (B) while holding it in the N position with the 2.0 mm (0.079 in) feeler gauge blade (C).
4. Tighten the bolts (A) on the transmission range switch while you continue to hold the N position with the 2.0 mm (0.079 in) feeler gauge blade. (B). Do not move the transmission range switch when tightening the bolts. Then remove the 2.0 mm (0.079 in) feeler gauge blade.
5. Install the selector control shaft cover (A) on the transmission range switch (B).

CVTF Cooler Line



1. Install the CVTF cooler lines (A) with new sealing washers (B).

Dipstick Tube



1. Install a new o-ring (A) on the dipstick tube (B).
2. Install the dipstick tube on the transmission housing.
3. Install the CVTF dipstick (C) in the dipstick tube.

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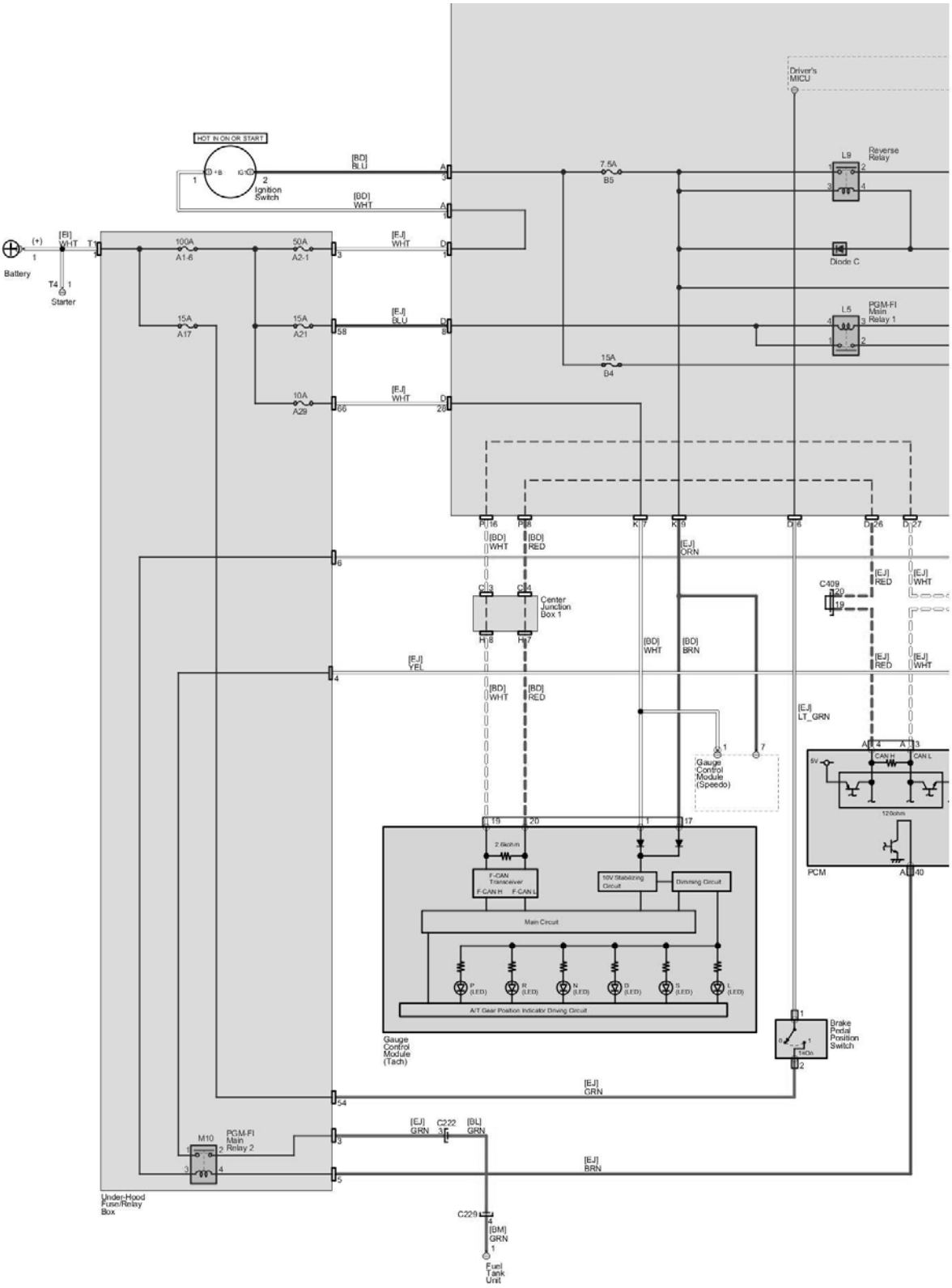
CVT Transmission Disassembly and Reassembly

Wiring Diagrams



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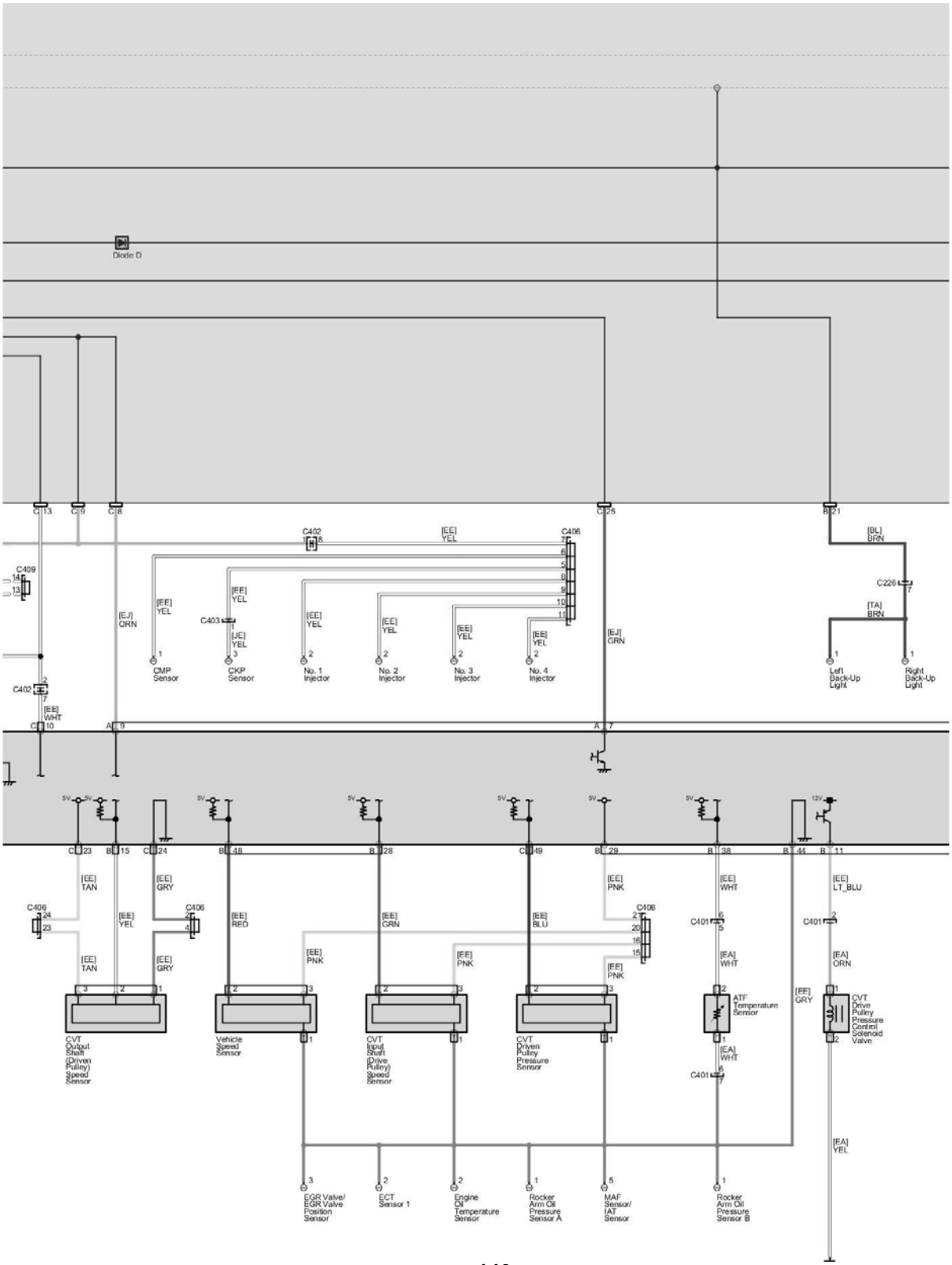
CVT Transmission Disassembly and Reassembly

Wiring Diagrams



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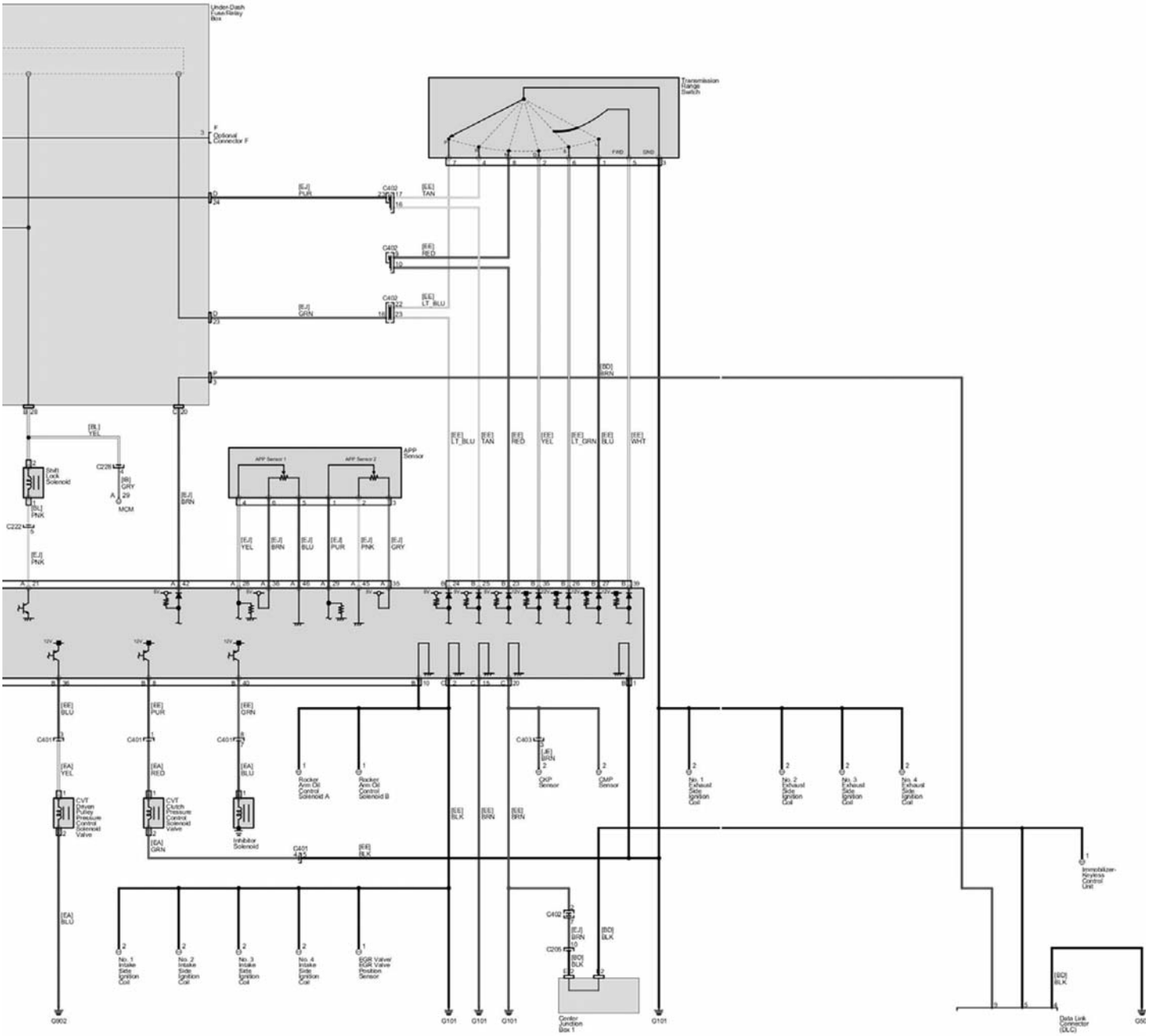
CVT Transmission Disassembly and Reassembly

Wiring Diagrams



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