

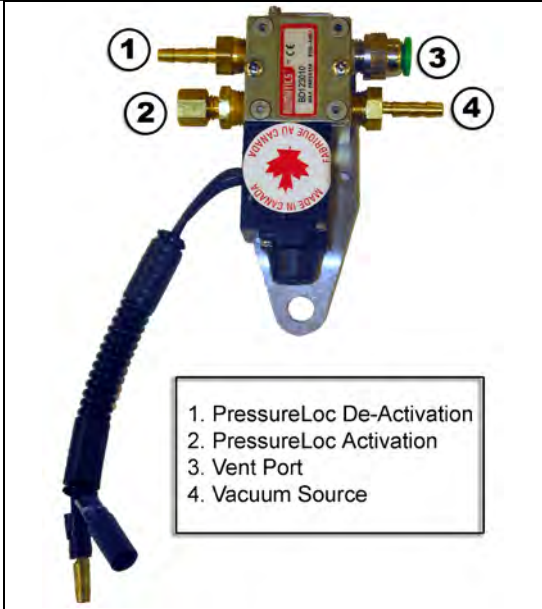
BD DODGE PRESSURELOC

Installation Manual

Part# 1030377

**** READ ALL INSTRUCTIONS BEFORE INSTALLATION ****

KIT COMPONENTS



Pool Valve



Switched Power Lead (12V)



BD PressureLoc and hoses/wire



**Signal Modifier
(24 Valves only)**



**Resistor / Shrink
Tubing**



**Hose, zip ties, screws,
relay jumper, and hose tee**

BD Engine Brake Inc.

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U.S. Shipping Address: 88-446 Harrison St, Sumas, WA 98295 U.S. Mailing Address: P.O. Box 231, Sumas, WA 98295

Phone: 604-853-6096 | Fax: 604-853-8749 | Internet: www.bd-power.com

THE BD PRESSURELOC ADVANTAGE

A **BD PressureLoc** increases torque convertor lock-up clutch applied pressure on 1994 to 2004 Dodge trucks by 30% at light throttle pressure. This kit can easily be installed on the stock transmission and assists in preventing torque convertor shuddering and transmission slippage.

Torque convertor clutch slippage results in high heat and eventual transmission failure! The higher the horsepower, the lower the transmission line pressure is, because line pressure is controlled by the position of the throttle pedal. Diesel engines have so much torque at light throttle pedal movement and thus low clutch apply pressure when the engine is at its peak torque! You can notice a shuddering torque convertor under throttle at low speeds, and ALSO under heavy throttle with high power engines.

The **PressureLoc**'s function is to increase the transmission line pressure **ONLY** when the lock-up clutch is engaged. The PressureLoc cylinder rotates the transmission's throttle valve shaft to simulate 3/4-throttle travel to increase the line pressure to 90% of what the valve body design can attain at wide open throttle. **(NOTE: The resulting pressure must be measured and set when the kits are installed)**

The **PressureLoc** is primarily designed for stock or mildly enhanced engine applications and owners who have installed an exhaust brake and want some extra protection. It is **NOT** a replacement for a modified valve body! High horsepower and heavy-loaded applications should also be equipped with a **BD Valve Body** with larger porting for pressures up to 180 psi.

The **PressureLoc** increases the clutch-applied pressure to 90% of what the valve body is capable of achieving at full throttle when you are only at 1/4 to 3/4 throttle travel. This kit addresses the need for more clutch holding pressure. This pressure increase remains within the valve body design. The stock valve body has 4.0 GPM flow when the torque convertor is locked up with the **PressureLoc** engaged. Without the **PressureLoc** engaged, this pressure will be 4.0 GPM or less, depending on throttle pressure.

Our testing has shown that a stock transmission front drive clutch will slip at 280 lbs of torque with the accelerator pedal at 1/2 throttle position, which is in the range of 75 psi of pressure, and at 410 ft lbs when the pressure is 100 psi. The torque convertor clutch will slip at 565 ft lbs with 75 psi. With a **PressureLoc** engaged the pressure is increased to around the 100 psi mark (130 psi on the 48RE).

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Tools Required

- 1/4" wrench (thin profile)
- 0-250psi pressure gauge
- 3/8" wrench
- 7/16" wrench
- 9/16" wrench

****CAUTION**** you **MUST** record transmission pressures **BEFORE** installation of the **BD PressureLoc**.

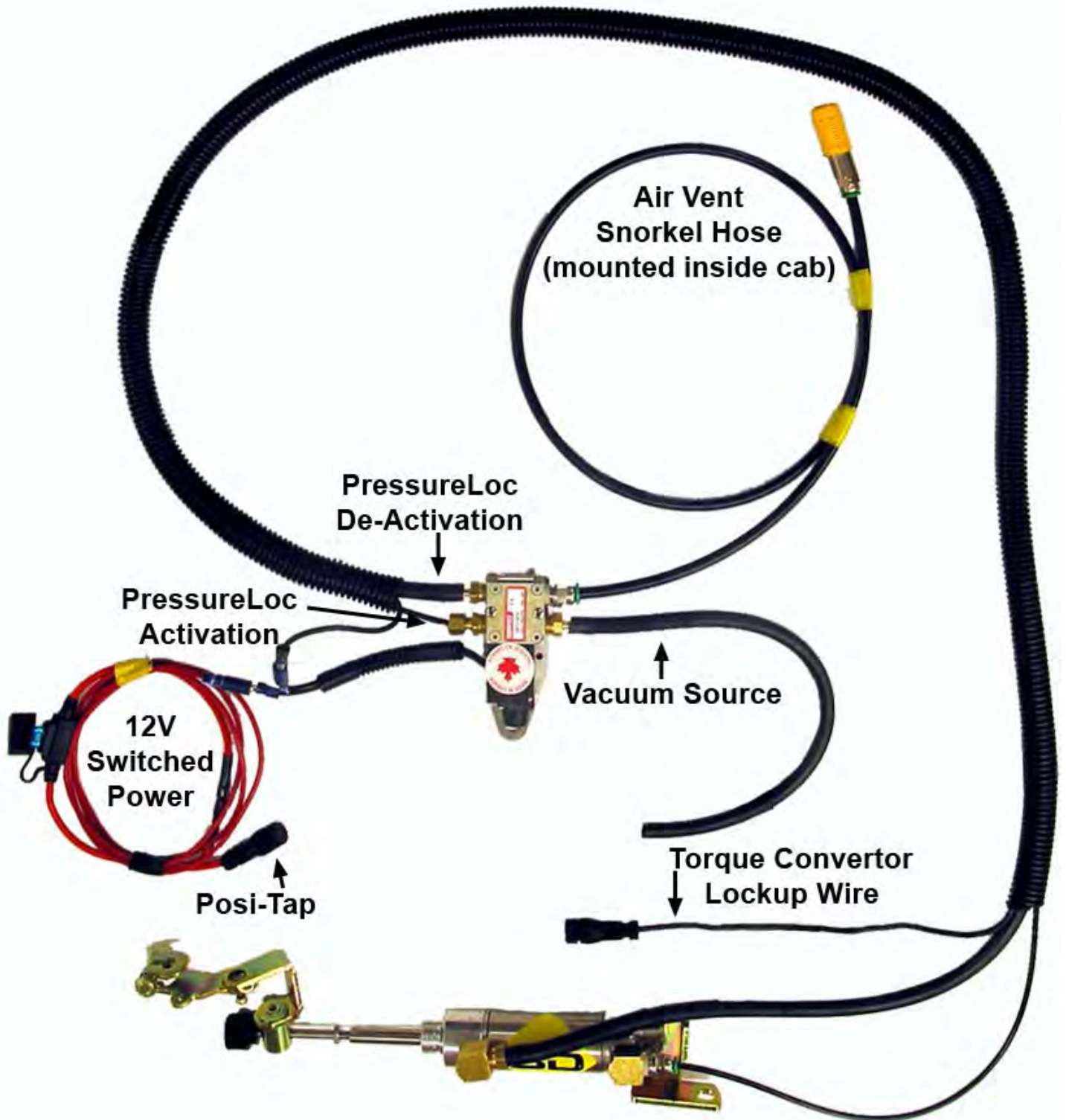


Hose for the pressure gauge installed in the middle port on the right hand side of the transmission.

NOTE: This should be done with a stock valve body or modified valve body to ensure there is no interference once the PressureLoc is installed.

	BEFORE INSTALLATION	AFTER INSTALLATION
Transmission in DRIVE w/ Engine at idle (should be the same before and after)		
Transmission in DRIVE w/Convertor locked up @ <u>1800 rpm</u>		
Transmission in OVERDRIVE w/Convertor locked up @ <u>1700 rpm</u>		

PressureLoc Hook Up and Layout



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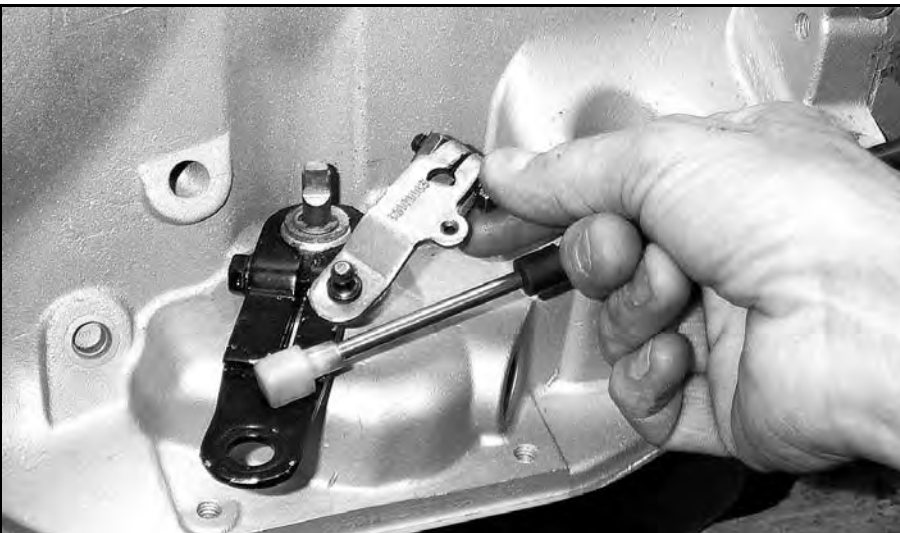
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BD PressureLoc Installation

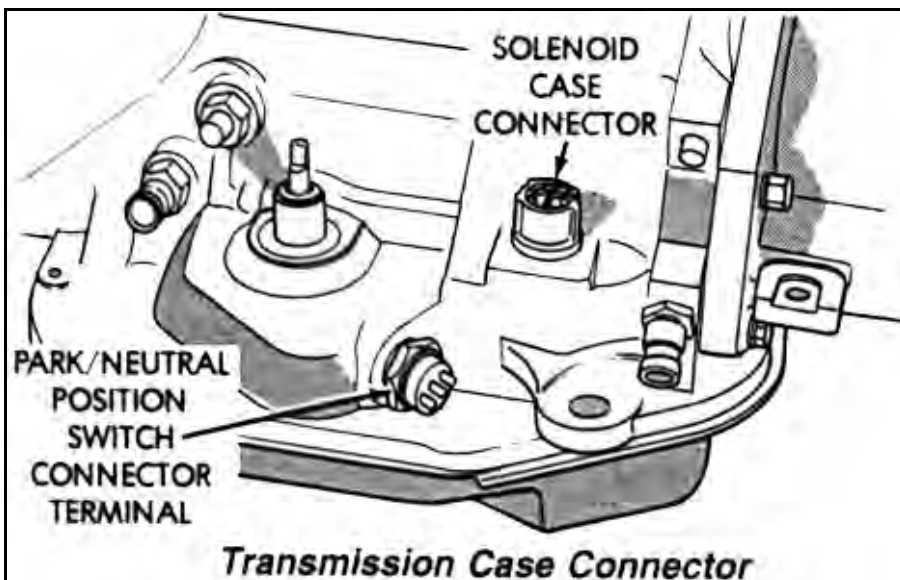


Remove the kick-down cable from the lever on the transmission.



Remove the original kick-down lever and return spring.

Save the original return spring for re-use later.



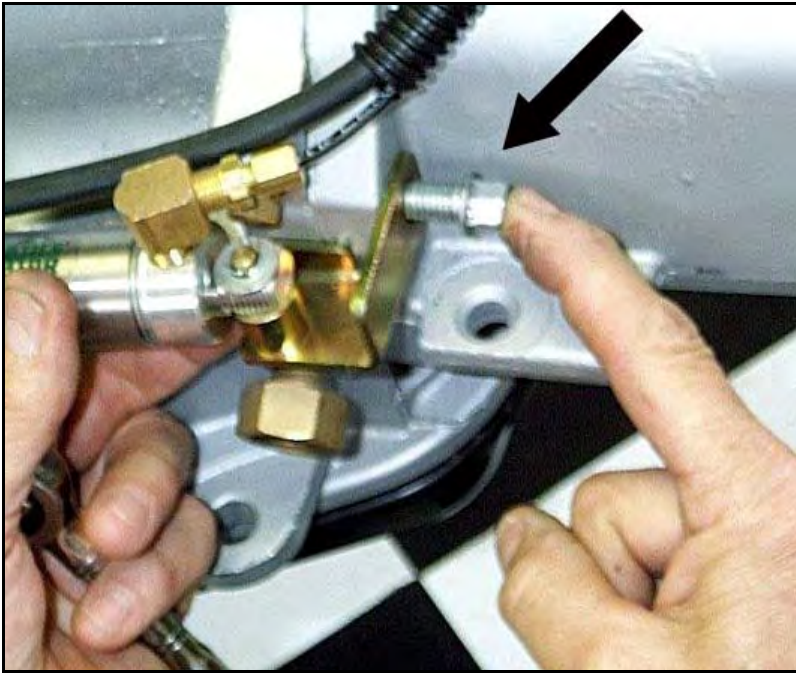
Disconnect the wiring harness plug from the solenoid case connector.

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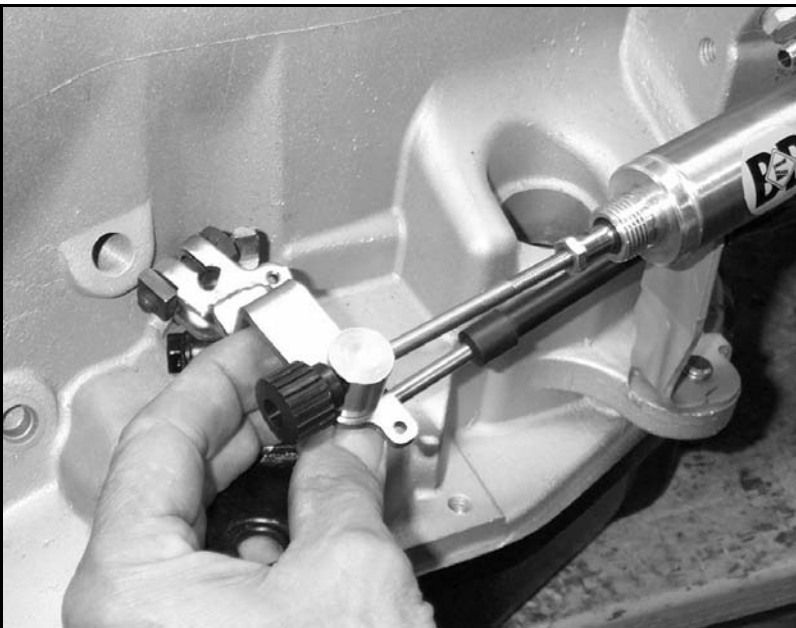
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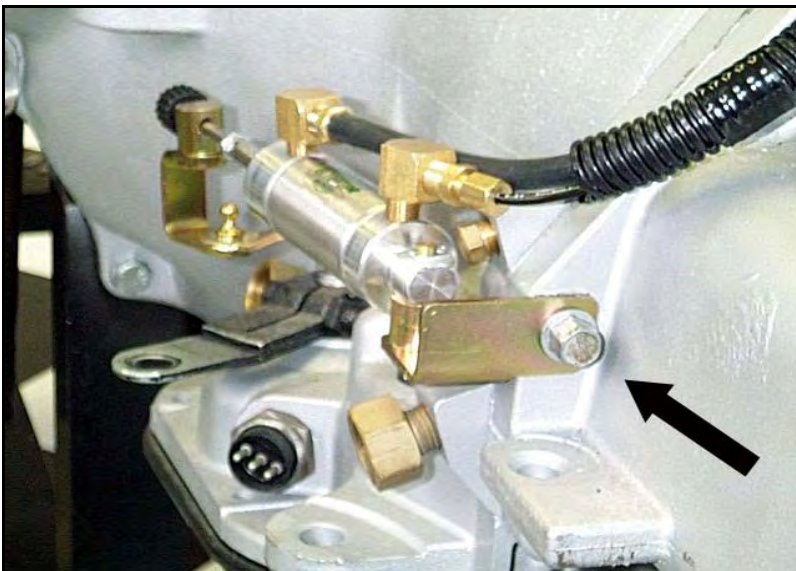
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Remove the mounting bolt from the overdrive housing.



Install the BD PressureLoc as one assembly by sliding on the new kick down lever. Re-install the TV cable.



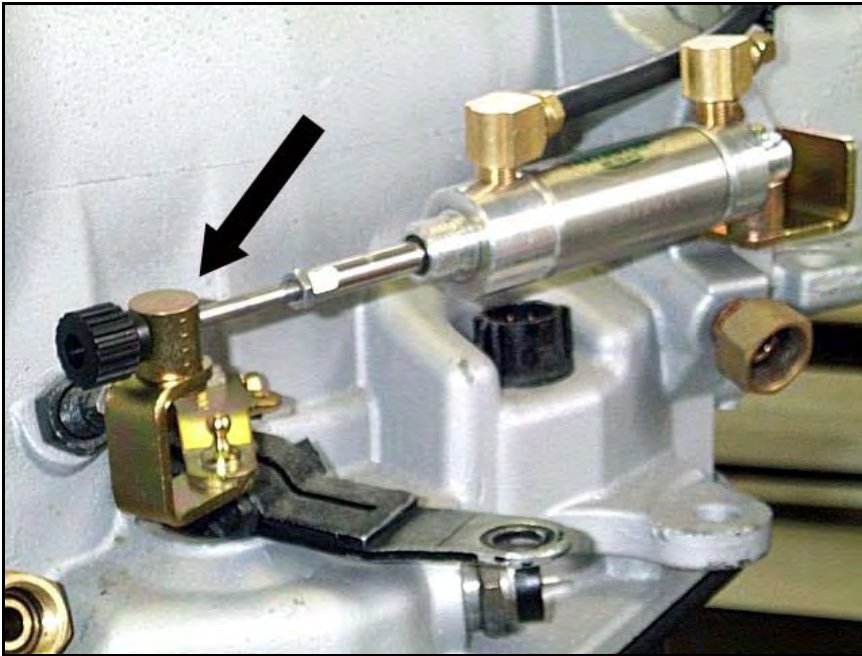
Re-attach the rear bolt to the overdrive housing.

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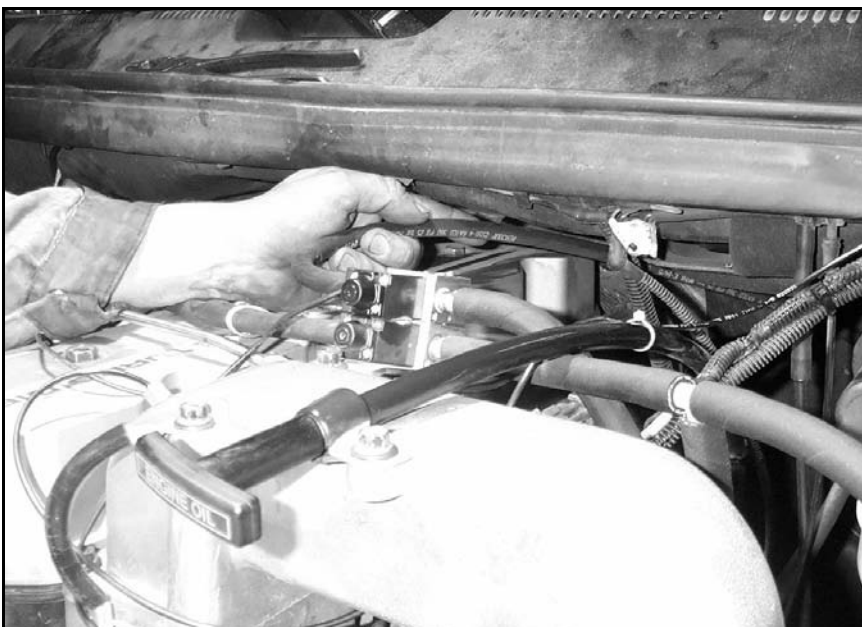


Re-install the original return spring and check travel for a binding condition.

**** ALIGNMENT IS CRITICAL TO PREVENT BINDING ****



Route the vacuum lines and wire up to the vacuum control valve.



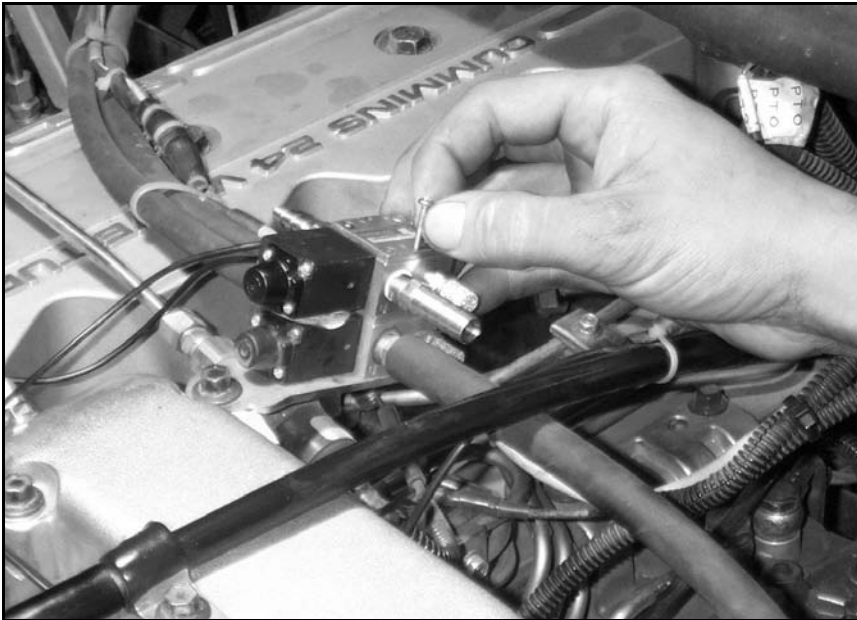
Ensure the vacuum and air lines are secured away from moving components and heat sources.

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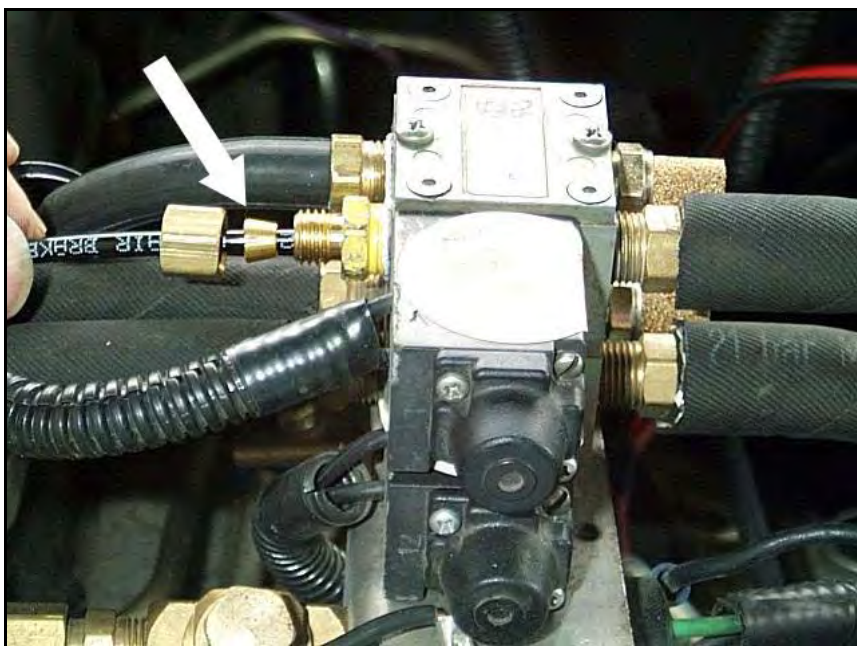
Mount the control spool valve on top of an existing spool valve using the long screws provided.

If no other spool valve is present, mount the valve on intake plenum by removing one of the rear bolts and using the mounting bracket supplied.



Position the vacuum lines and then cut each one to length (extra length is supplied for your convenience).

To install the 5/32" vacuum hose, push hose over ribbed fitting.



To install the 1/8" plastic air hose, remove the locking nut from the brass fitting and remove the ferrule.

Install the nut over the hose and then install the ferrule with the tapered end towards the spool valve. Insert the plastic line into the control valve and tighten.

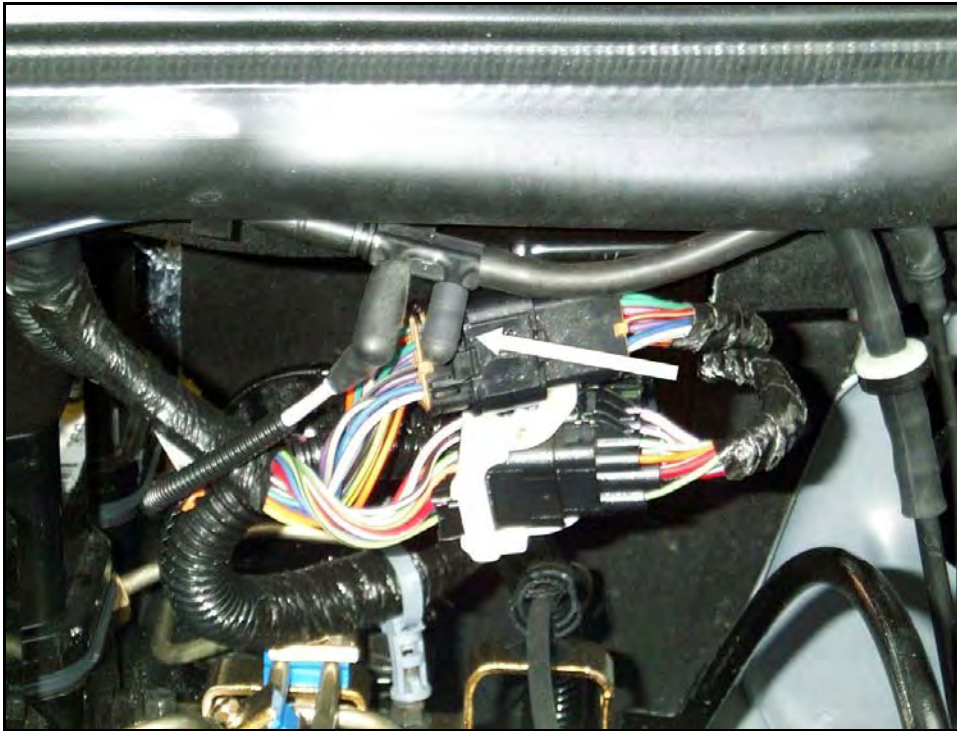
DO NOT OVER-TIGHTEN OR THE LINE WILL CRIMP!

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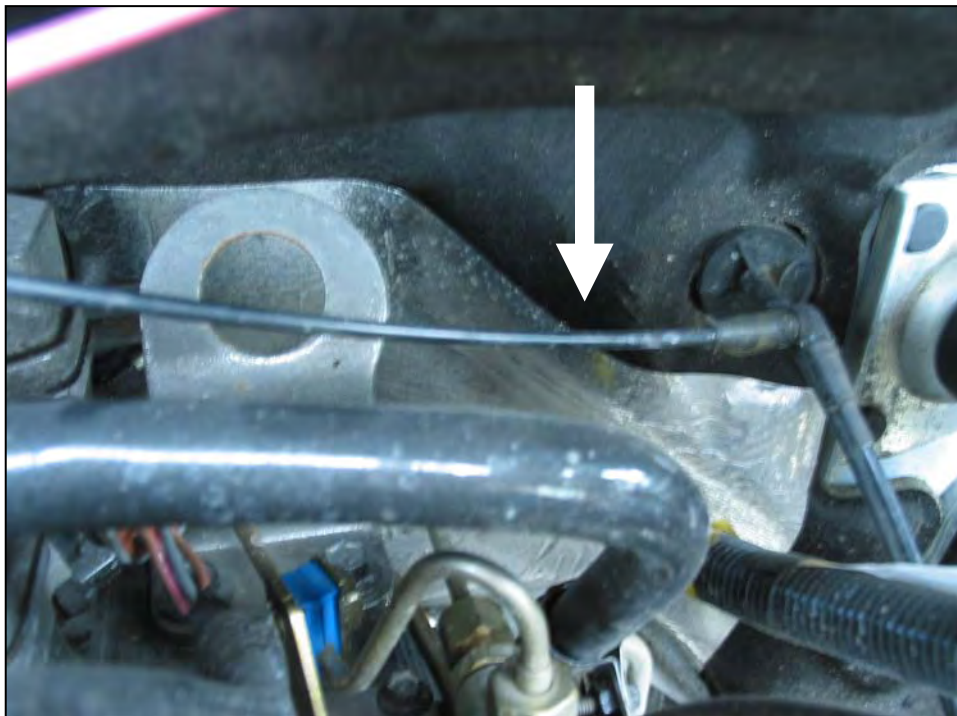
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Attach a short 12" piece of 5/32" hose to the free fitting on the control valve and the other end to the vacuum tee fitting on the firewall.



On 2003-2004+ trucks you will need to locate the vacuum line source next to the brake master cylinder on the driver's side of the engine compartment.

Cut this line and insert the provided plastic tee for your vacuum source. Route this new line towards the spool valve.

Attach the length of 1/4" air hose with the plastic yellow filter to the vent fitting on the control valve. Route the vent end of the hose through the firewall into the cab. This will prevent moisture from entering the valve.

Attach the fused end of the red wire to a switched 12-volt power source using the black Posi-Tap. Attach other end of red wire to the mating bullet connector on the control valve.

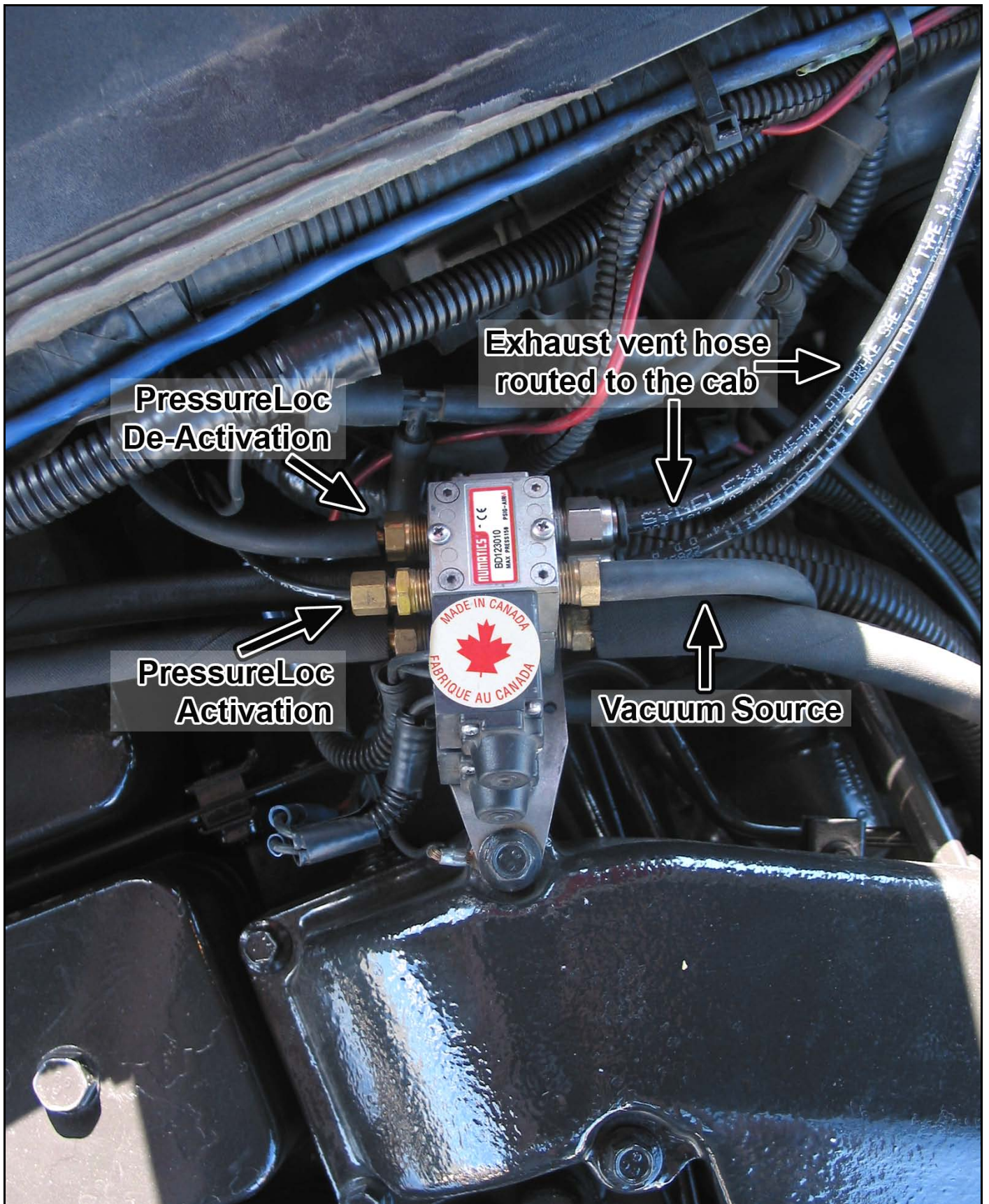
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PressureLoc Diagram (Under-hood Connections)



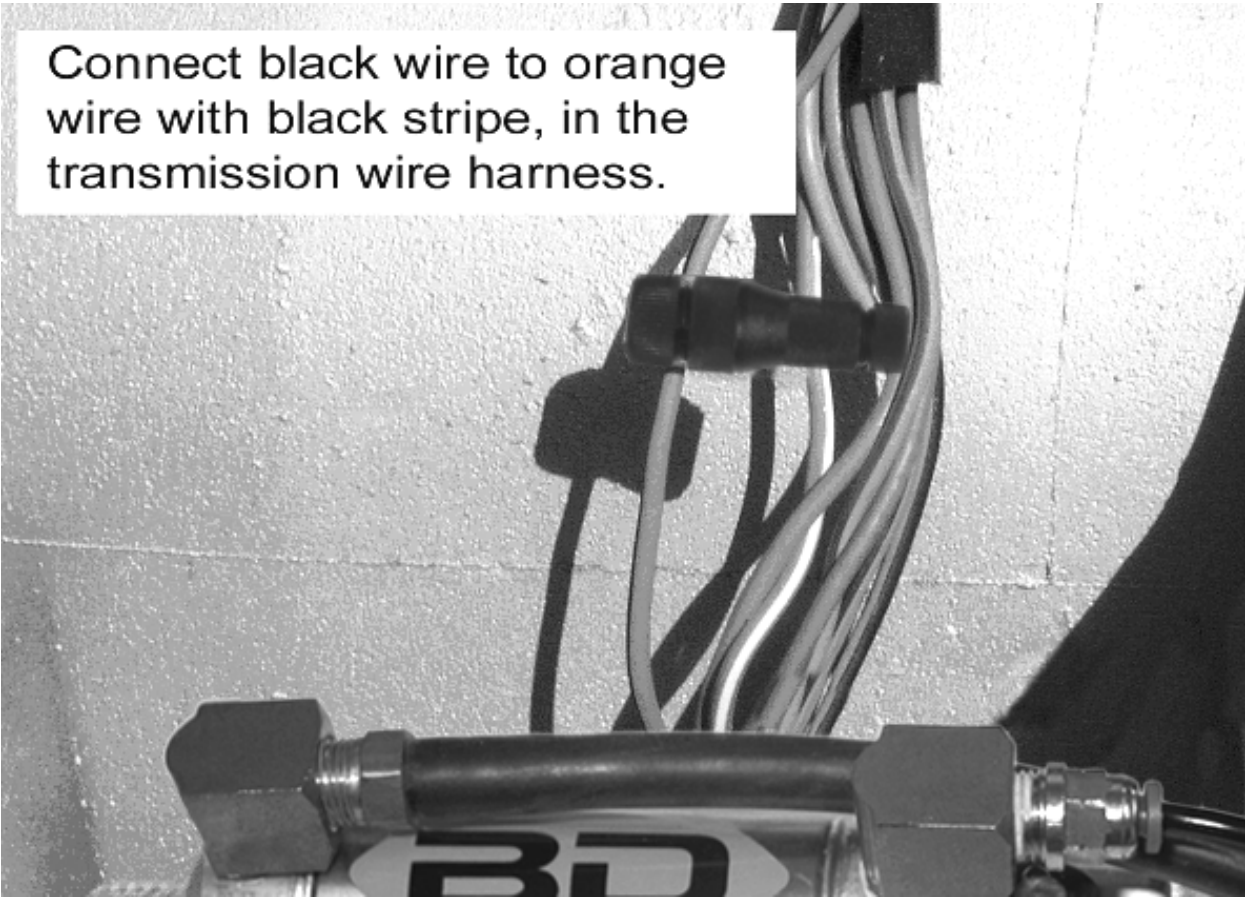
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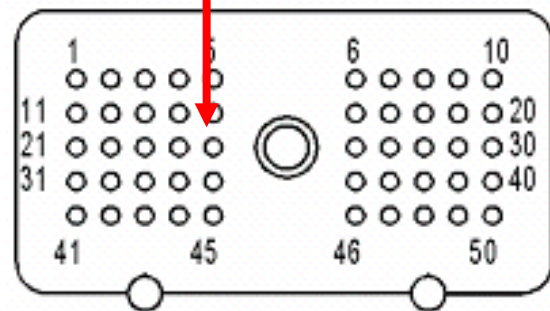
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Connect black wire to orange wire with black stripe, in the transmission wire harness.



On 1994 – 2002 vehicles attach the lower end of the black wire to transmission convertor lock-up wire (orange w/black stripe) using the other black Posi-Tap. Powertrain control module connector C2 .

For the TCC wire on 2004 vehicles (single PCM/ECM located on driver's side of engine) you will need to locate a Yellow w/Light Blue tracer wire. This wire is located on **Connector #2** (50 pin) at **pin number 25**.



**ENGINE CONTROL
MODULE C2
(DIESEL)**

****NOTE: With an AutoLoc or TorqLoc installed, connect the Black wire to the Blue wire between the TorqLoc or AutoLoc and transmission.**

Attach the other end of the Black wire to the open bullet connector on the control valve.

Check the transmission solenoid case connector to ensure pins are not bent and then re-connect the wiring harness plug.

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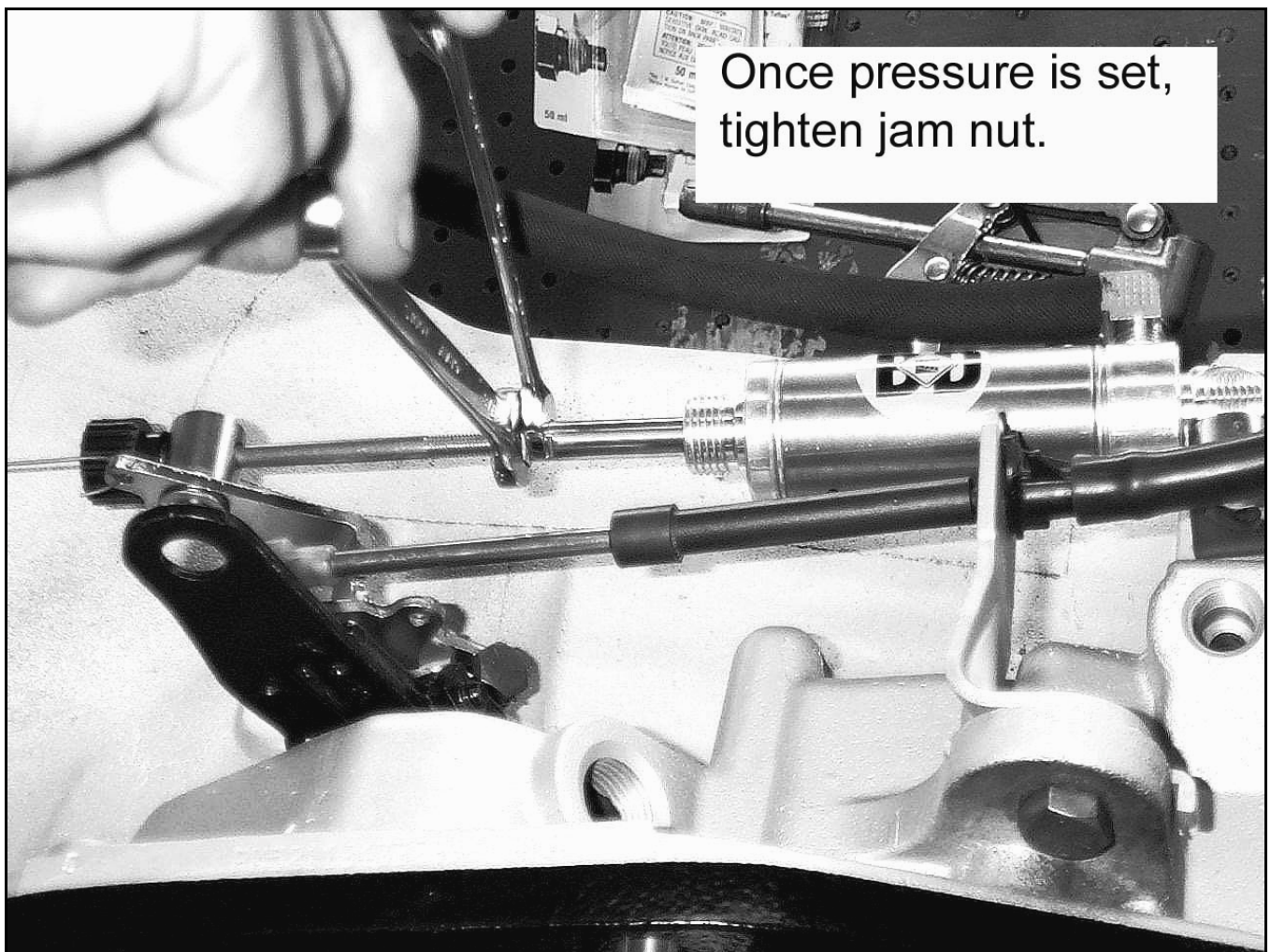
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Transmission Pressures during road test in “Drive Position”
With convertor locked up and PressureLoc engaged

	47RE	48RE
Stock Valve Body	95 – 100 psi	125-130 psi
Transgo Shift Kit	100 – 105 psi	
BD Valve Body	115 – 125 psi	125-130 psi

While driving, when the convertor locks up, the line pressure should increase by **20-30psi** from stock pressures. If the transmission suddenly downshifts, it is likely caused by an incorrect adjustment.

NOTE - Too high of a pressure setting will cause downshifting.



- **Shorten** adjustment rod to **increase** the pressure.
- **Lengthen** adjustment rod to **decrease** pressure.
- Ensure to tighten and Loc-tite the jam nut when adjustment is set.

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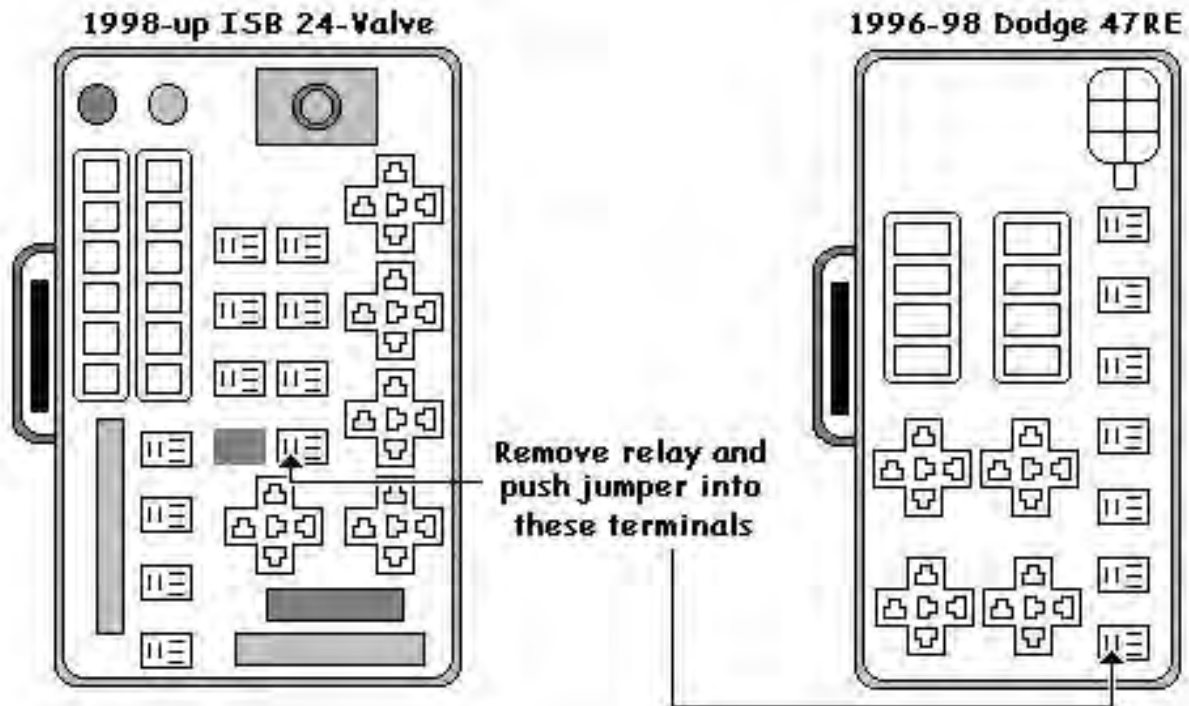
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1996-2002 Dodge "Trans" Relay Bypass

Remove the cover on the Power Distribution Centre (PDC) box, located behind the driver's side battery and replace the "Trans" relay (see diagrams below, or bottom of PDC cover) with the copper jumper provided.



This MAY NOT be required on some 1999-2002 trucks, particularly trucks built to California Specifications.

If the Engine Service light comes on after operation, clear fault code from ECM and then try reinstalling the relay.

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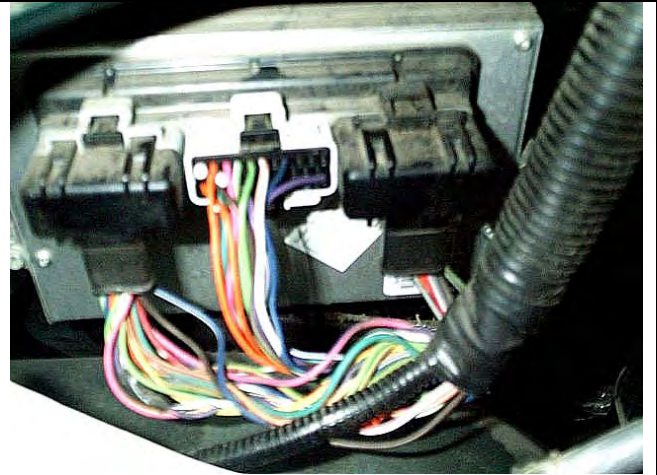
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WARNING - If a BD Valve Body is installed on your truck, this amendment DOES NOT apply!!!

If you receive a "GOV PRESSURE OUT OF LIMIT" causing LIMP MODE (stuck in 3rd gear) trouble code, check the voltage at Pin # 31 at the PCM.



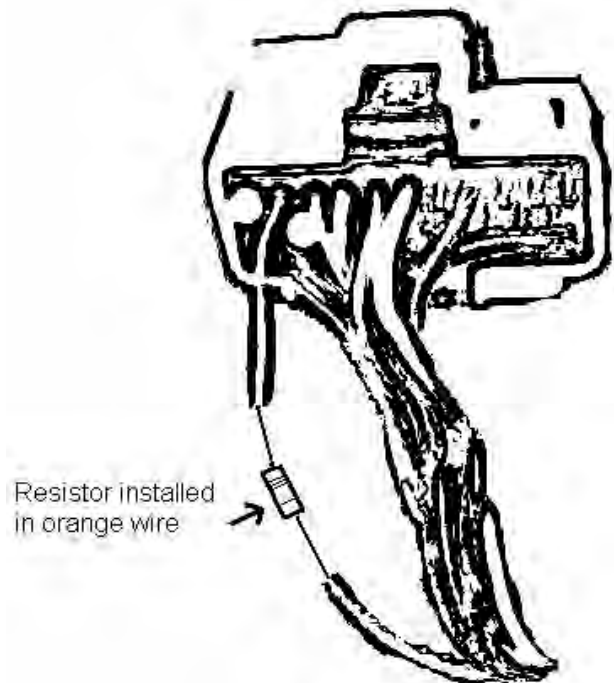
PCM Connectors: Under hood on firewall. Remove air box for easy access.



Remove middle cover and locate the **orange wire (1994-2002) or Violet/White tracer (2003)** at pin # 31.



Isolate wire and install resistor. Resistor can be installed either way.



Solder and use shrink tubing

IMPORTANT - Dodge requires Pin 31 on the connector to have a signal of about +5.0 V. Because some vehicles produced have a signal voltage higher than this (5.1 – 5.3 V), this modification allows the voltage to remain below @ 5.0 V as required to ensure a trouble code of "Gov pressure out of limit" causing limp mode (stuck in 3rd gear).

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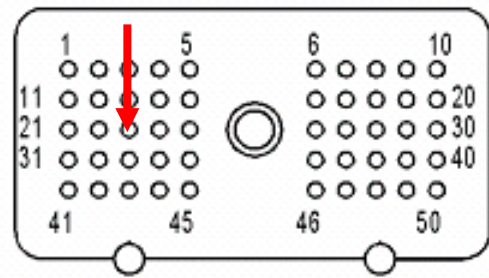
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Install the 100 Ohm, ¼ watt resistor provided to bring the voltage below 5V.

On 2004 model year trucks (single PCM/ECM on the driver's side of engine) you may need to install this resistor inline at Pin 23 which is a Yellow with a Pink tracer.



**ENGINE CONTROL
MODULE C2
(DIESEL)**

IMPORTANT

CUMMINS 24-VALVE ONLY!!!

THIS IS NOT REQUIRED ON 12-VALVE CUMMINS ENGINES.

On some trucks, the VSS of the transmission misinterprets the electronic signal of the BD PressureLoc wiring. To rectify this we have developed an electronic signal modifier specifically for this problem.

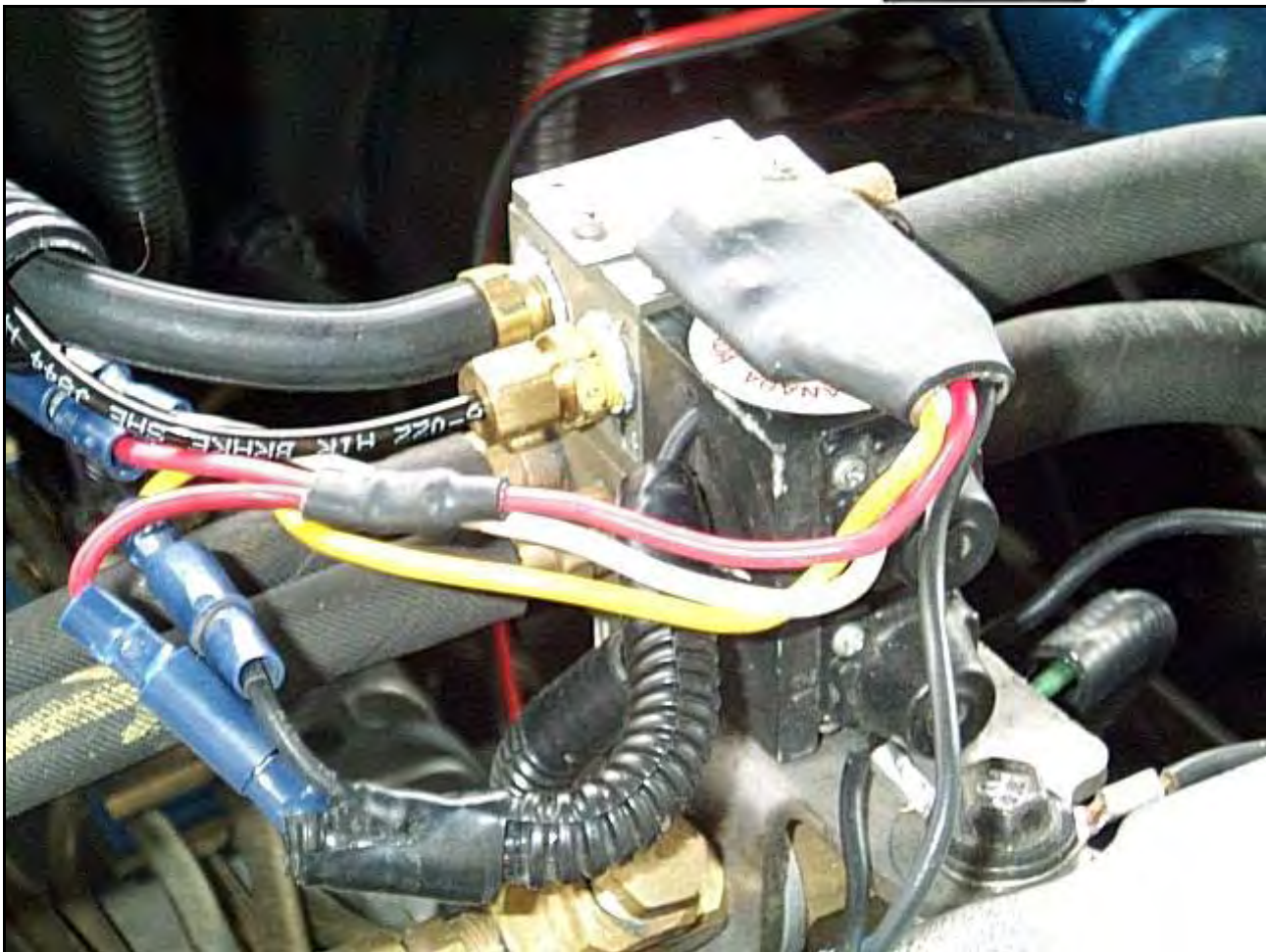
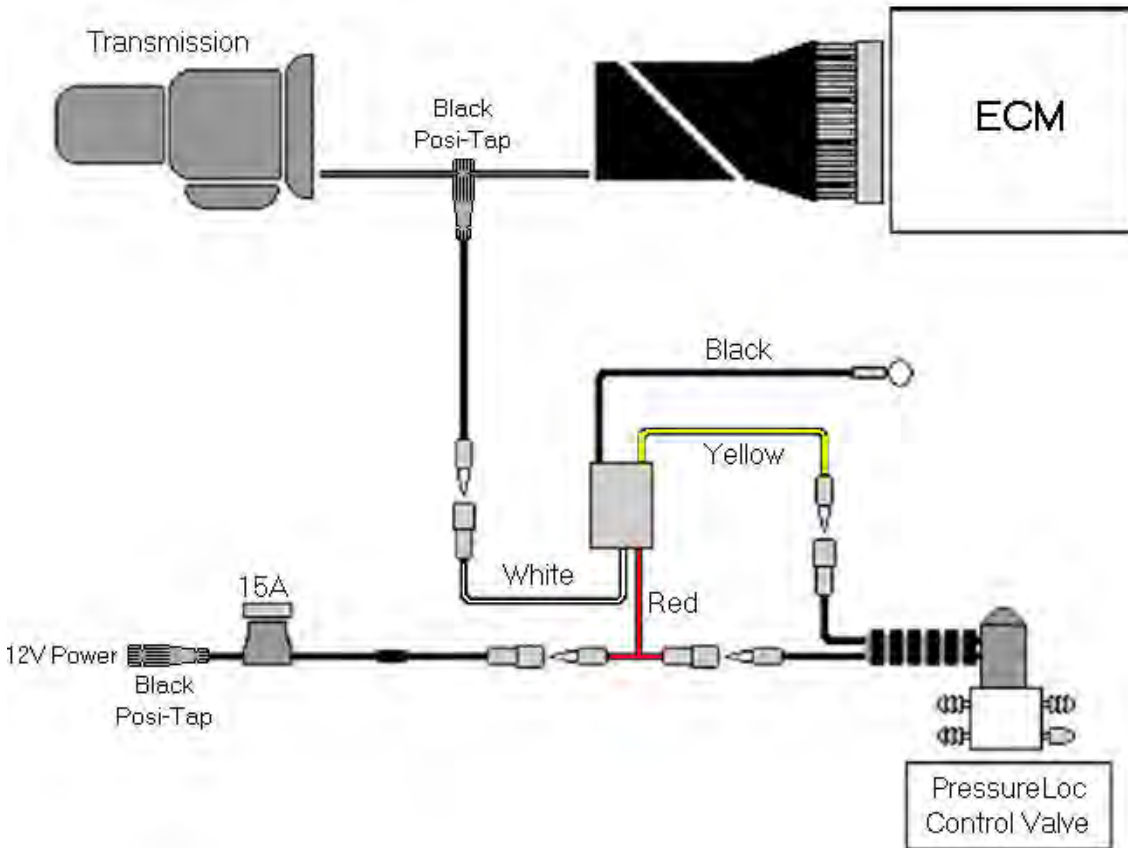
If your vehicle reverts to a transmission fault code, "Limp mode" (starting in 3rd gear) or even dies when you put the truck in gear, install the signal modifier into the PressureLoc wiring as indicated in the diagram below.

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Electronic signal modifier installed and secured on control valve.

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SPOOL VALVE MAINTENANCE

DISASSEMBLY ---

- Remove the two coil screws.
- Remove the two rear plate screws.
- Pop out the white and black bumpers, springs, and O-rings.
- Remove the spool and sleeve assembly from the spool valve body with a plastic or wooden rod approximately the same size as the outside diameter of the sleeve.

CLEANING ---

- Clean the spool and sleeve with some WD40 or compressed air.
- Inspect the spool and sleeve for any damage and inspect the o-rings.
- The spool should move freely within the sleeve.

RE-ASSEMBLY ---

- Reinstall the rear plate, o-ring, and black bumper onto the body.
- Gently slide the sleeve into the body cavity by pushing and turning at the same time.
- Drop the spring into the sleeve.
- Gently insert the spool into the sleeve with a slow, turning action.
NOTE: The residual WD40 should be enough lubricant for assembly.
- Check to ensure that there is very little resistance felt when it's inserted.
NOTE: If any resistance or binding is noted, remove the spool and try again.
- Once the spool is inserted and moving freely, reattach the coil, white bumper, and O-ring.

TESTING ---

- After reassembly is completed, push and release the manual override button. The spool should move and return freely.

- If you have an air compressor, blow low-pressure (20-30 psi) air into Port #1, and then push the override button. There should be a transfer of flow from Port #2 to Port #4.

- Re-install the valve on the engine, hook up the disconnected vacuum lines and wiring, then check for correct operation of Brake, PressureLoc, etc.

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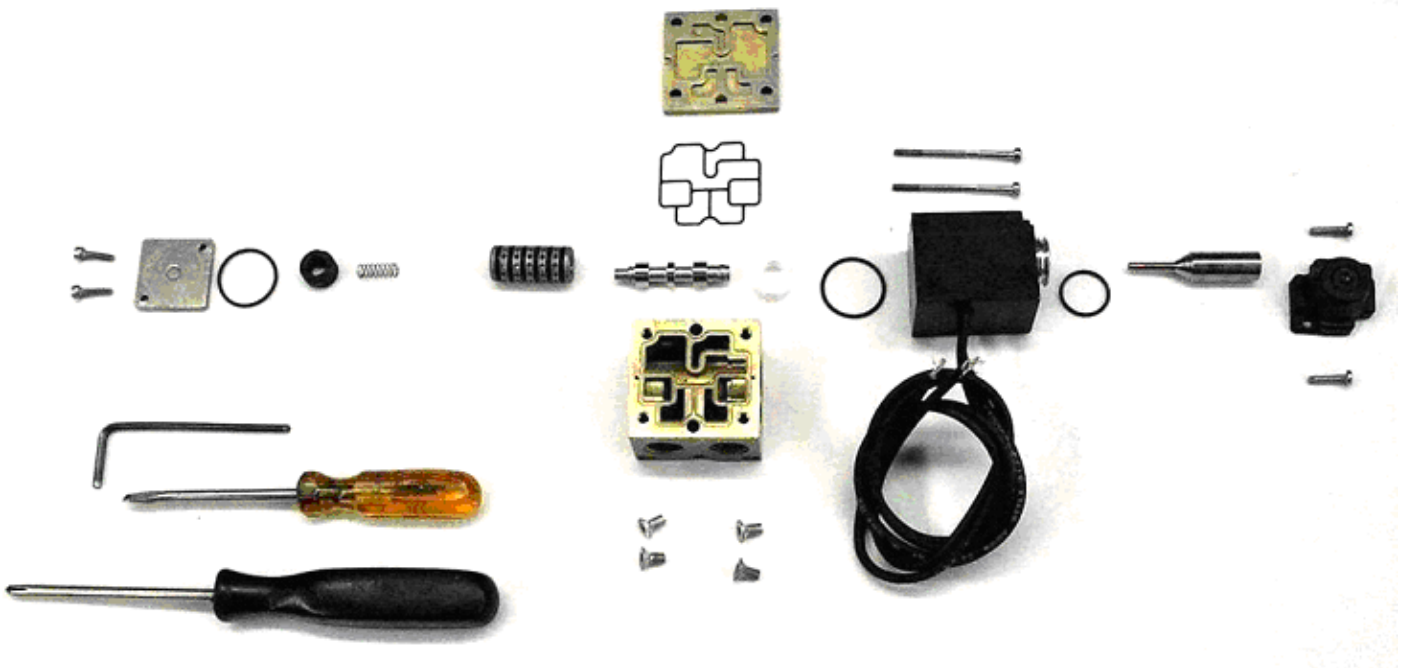
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HELPFUL HINTS

- Make sure all parts are spread out on a clean, lint-free surface while servicing valve.
- **CAUTION**:** Do NOT use heavy grease or oils on the spool, sleeve, or O-rings. (Oil based lubricants will swell and distort the rubber O-rings).
- Do not use any abrasive compounds on the spool or the sleeve.
 - Make sure all of the O-rings are re-installed and are in good condition by checking for nicks, scoring, or other damage.



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