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47RE/48RE BD Valve Body

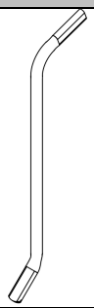
For 1996-2007 Dodge 5.9L Cummins Trucks

1030416	**1996-1998 Dodge 12-valve (47RE)**
1030416E	**1996-1998 Dodge 12-valve (47RE) w/ Solenoid**
1030418	**1998½-2002 Dodge 24-valve (47RE)**
1030418E	**1998½-2002 Dodge 24-valve (47RE) w/ Solenoid and transducer**
1030423	**2003-2007 Dodge CR (47RE/48RE)**
1030423E	**2003-2007 Dodge CR (47RE/48RE) w/ Solenoid and transducer**
1030423ET	**2003-2007 Dodge CR (47RE/48RE) Tap Shift Ready w/ Solenoid and transducer**

NOTE Diode/Resistor installation is NOT required on 2005-2007 trucks, and also not required on 2000-2004 trucks that use the transducer adapter included in 1030418E, 1030423E and 1030423ET.

See Instruction manual **I-00474** for manual valve body applications.

Kit Contents

	1600050	1030498	1030401
			
Valve Body	Front Servo Spring	Front Band Strut	E-clip Tool
Qty: 1	**Qty: 1**	**Qty: 1**	**Qty: 1**

4617216	22170	12776	12776J
			
Gov Housing Gasket	Transmission Pan Gasket	Trans Filter (1030416(E) only)	Trans Filter (1030418(E) & 1030423(E)/(ET))
Qty: 1	**Qty: 1**	**Qty: 1**	**Qty: 1**

Overpressure Diode Installation Parts (do not install on 2005-2007 or 2000+ “E” kits)

1600129	1210353	1330159	1300131
			
Diode	Butt Connector	Heat Shrink	Tie Wrap
Qty: 1	**Qty: 2**	**Qty: 3.5”**	**Qty: 2**

This part is only included in 1030418 and 1030423:

6595

Orifice Plug for Plastic Transducer
Qty: 1

Table of Contents

Optional Items

BD Trans Pan
(1989-2007)
1061501

HD Governor
Solenoid
4617213

2000+ Electronics
Upgrade
1060605

2005 Overdrive
Disable
1031350

Introduction

BD's 47RE and 48RE valve bodies incorporate a number of improvements over the stock unit which both improve shifting but also increase the transmissions power holding capability.

These valve bodies have increased line pressure for better clutch holding, increased torque converter cooling flow, an upgraded boost valve retainer, a custom BD separator plate that along with our other modifications provides improved shift quality and the ability to engage lockup in 1st and 2nd gears.

This kit also includes two additional parts which we have found to be weak links that can easily be addressed at this time; a billet second gear band strut and a stronger second gear servo return spring, designed to work best with our valve body.

BD Tap Shift Ready valve bodies are compatible with BD Tap Shifter electronic kits.

Tools Required

- Inch Pound Torque Wrench
- Socket sets including 7/16" , 1/2" & 1-5/16" sockets
- T25 Torx Bit or screwdriver
- T40 Torx Bit
- Combination Wrench Set including 7/16" & 3/4"
- High quality pressure gauge (0-300psi)
- 6" C-clamp

Additional Parts Required (Not included)

- Mopar ATF+4
- 1 Bottle of Red Lube Guard (recommended)

Pre-Installation

Before starting make sure you have read all of the instructions to ensure you are equipped for the job. Inspect the valve body and all components shipped to you to ensure no parts are missing or damaged. Confirm the part number ordered is the correct one for your truck.

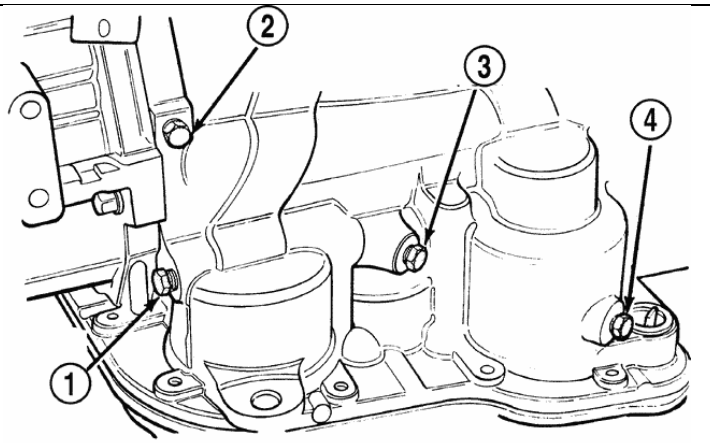
If you are installing a TapShift Ready valve body, ensure you have the TapShifter instruction manual handy.

Initial Pressure/Shift Testing

Transmission line pressure should be tested prior to engine or transmission performance modifications to confirm the transmissions capability to prevent clutch slipping. Slippage will result in premature converter and transmission wear (soft or hard shifting, high temperatures). Check transmission fluid level before these tests.

Install a pressure gauge and hose into the center 1/8”NPT port on the passenger side of the transmission (3), route the hose into the cab for viewing.

This is the accumulator test port and will only show pressure when the vehicle is in drive.



Road test the vehicle and record the pressures and shift point RPMs BEFORE modifications are carried out to confirm condition of transmission prior to installing this valve body. Pressure readings are to be taken in DRIVE.

48RE Transmissions				
Transmission Line Pressure	**OEM Pressure**	**BD Pressure**	**Test #1**	**Test #2**
Transmission in DRIVE w/Engine at idle	55-65psi	90-110psi		
Transmission in DRIVE w/Convertor Locked up @ WOT	110-120psi	170-200psi		

Transmission Shift Points		
Transmission Shift Point (RPM)	**Before**	**After**
2nd – 3rd Shift point (Normal Driving)		
2nd – 3rd Shift point (Wide Open Throttle)		

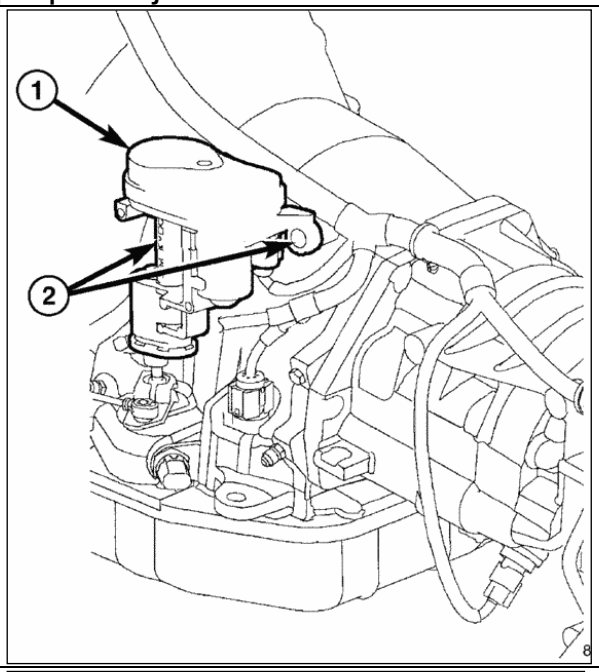
IMPORTANT If pressures or shift points are not to specs, the transmission must be repaired or serviced before modifications.

Installation

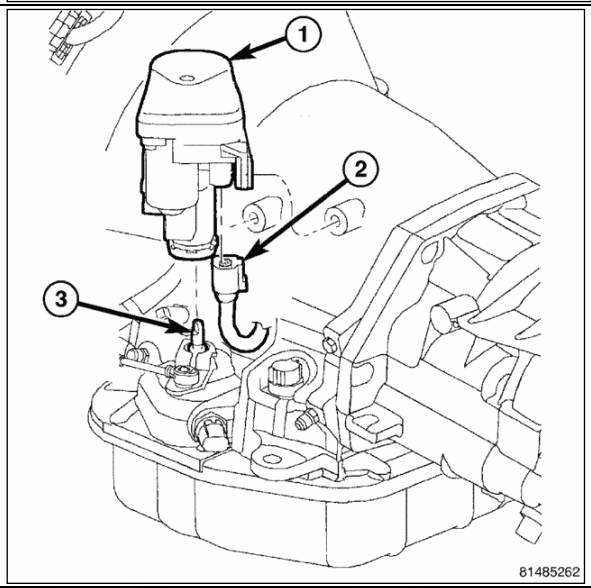
Valve Body Removal

Lift the truck on a vehicle hoist or with appropriate jack stands.

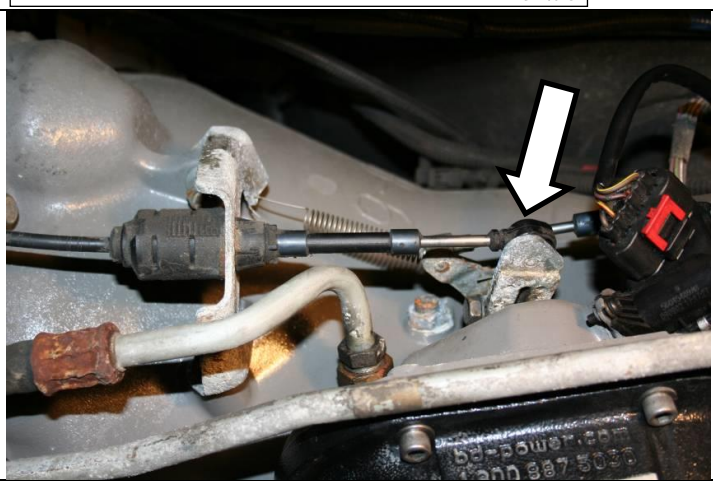
2005-2007 - remove the two TTVA motor bolts from the transmission.



2005-2007 – allow TTVA motor to swing out. Lift it off the throttle valve shaft and unplug the electrical connector. Place to the side.

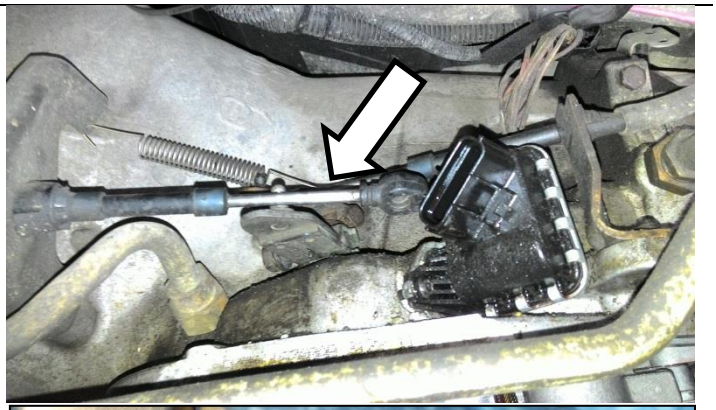


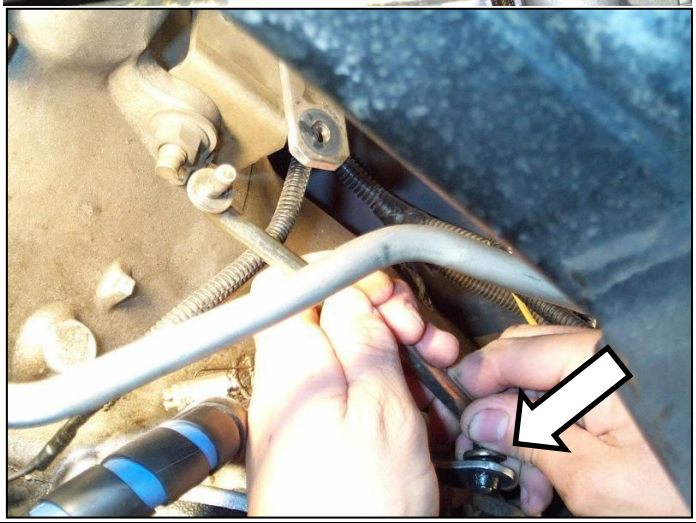
1996-2004 – Unclip the throttle valve cable from the lever. Unhook the throttle valve return spring from the bracket and the lever.



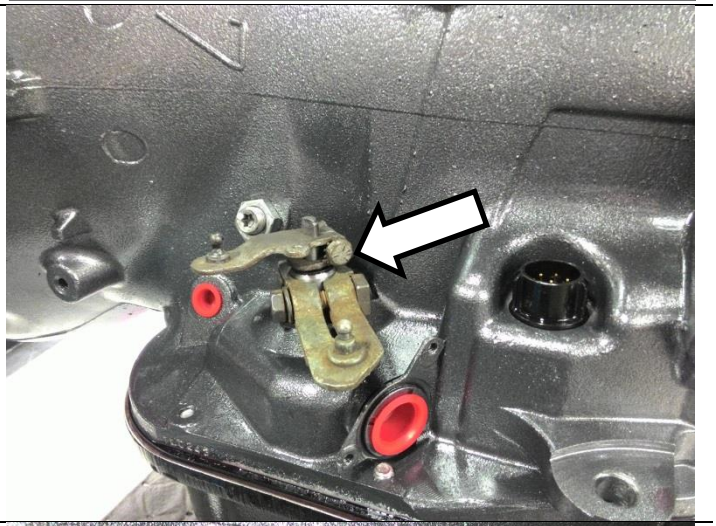
On trucks equipped with a shift cable, pop the end off of the shift lever.

On trucks equipped with a shifter rod linkage, remove the linkage from the transmission lever.



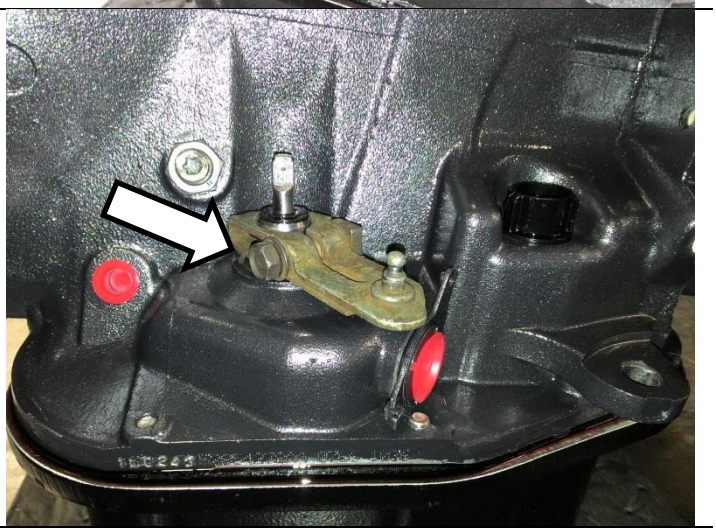


1996-2004 – Loosen the pinch bolt on the throttle valve lever and remove it from the transmission.

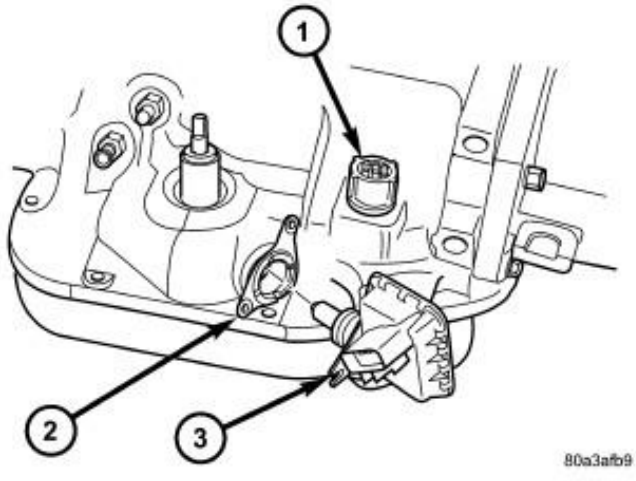


Rotate the shift lever to the front of the vehicle to put the transmission in LOW/1st. This will make E-clip removal easier.

Loosen the shift lever pinch bolt and remove from the transmission.



Disconnect the vehicle wiring harness (1) from the transmission by unplugging the round 8 pin electrical connector.

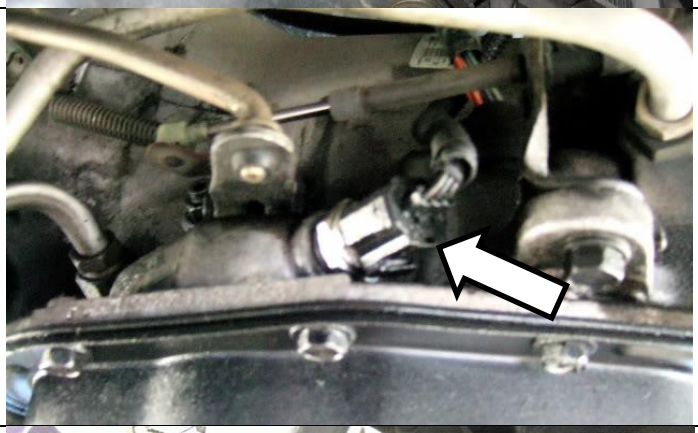


2003-2007 – Unplug the black connector from the PRNDL sensor. Remove the two Torx screws and pull the sensor out of the transmission.

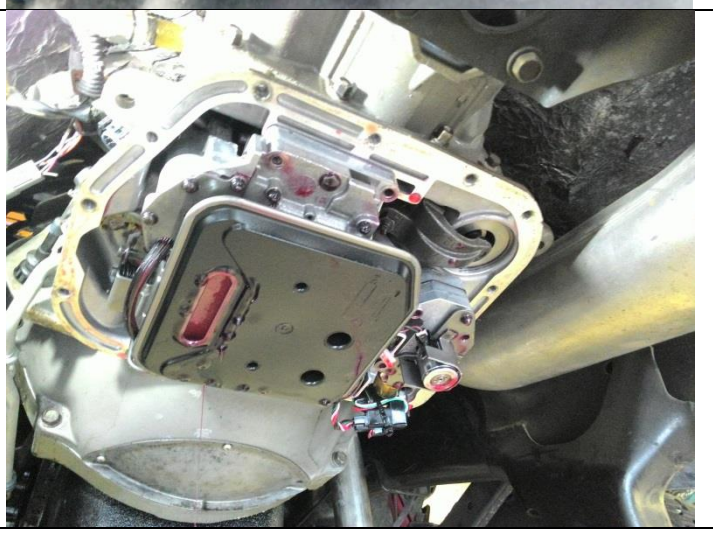
NOTE Some fluid may drain out, so place a drain pan below.

1996-2002 – Unplug the three-pin neutral safety switch and unscrew the switch from the transmission.

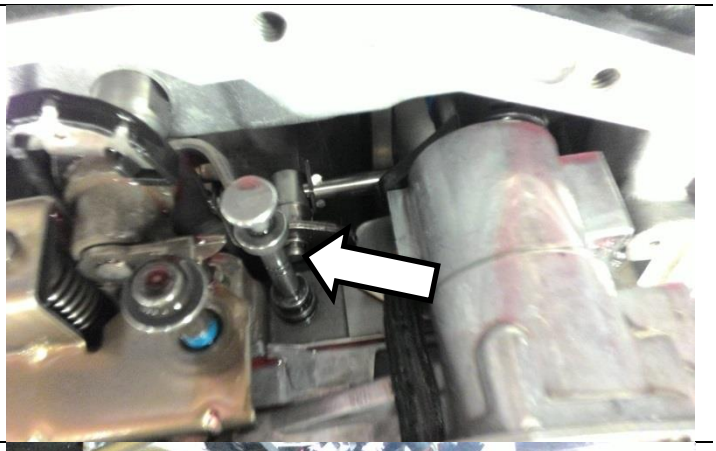
NOTE Some fluid may drain out, so place a drain pan below.



Place a large drain pan under the transmission. Remove the oil pan and drain the transmission fluid.

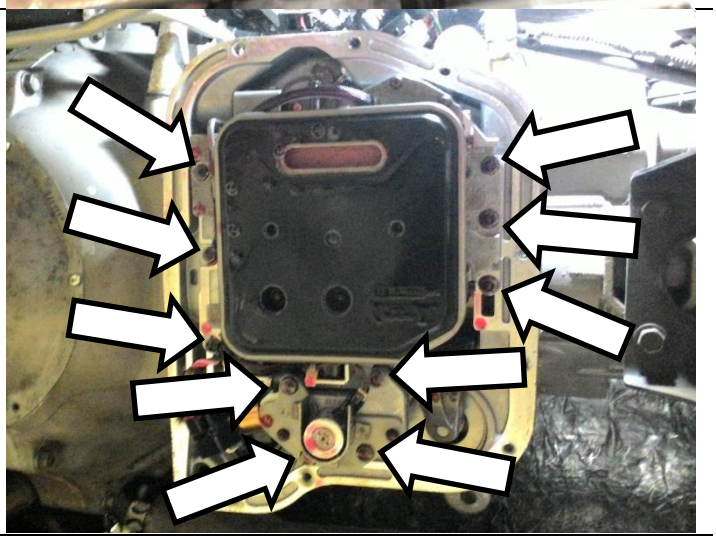


Carefully remove the E-clip from the park rod, leaving the park rod in the transmission.



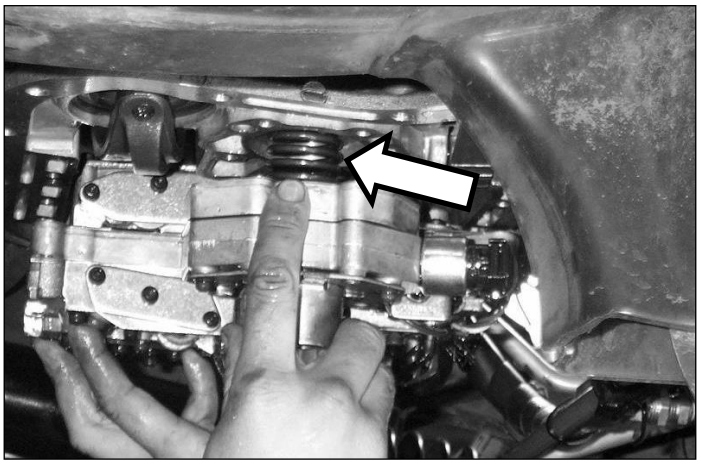
Remove the 10 valve body bolts.

Important The bolts are different lengths and are not all interchangeable, make note of their respective location for reassembly.



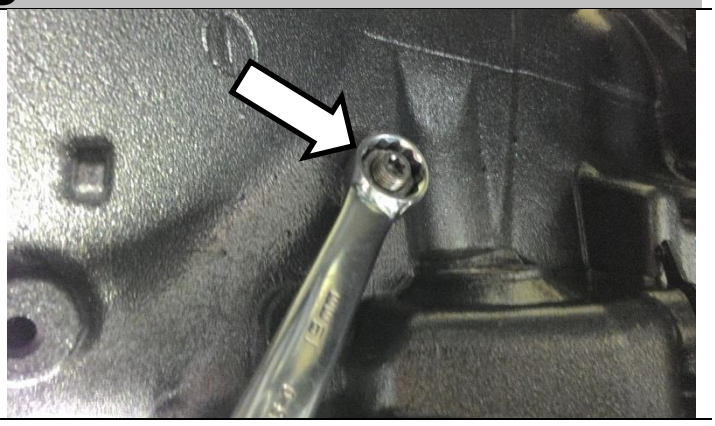
When lowering the valve body, gently work it out to ensure the electrical plug is not damaged and that the transmission park rod remains in the transmission.

Note As you lower the valve body, the accumulator spring and piston may fall out from above the governor housing. Use care to keep them from being lost or damaged.

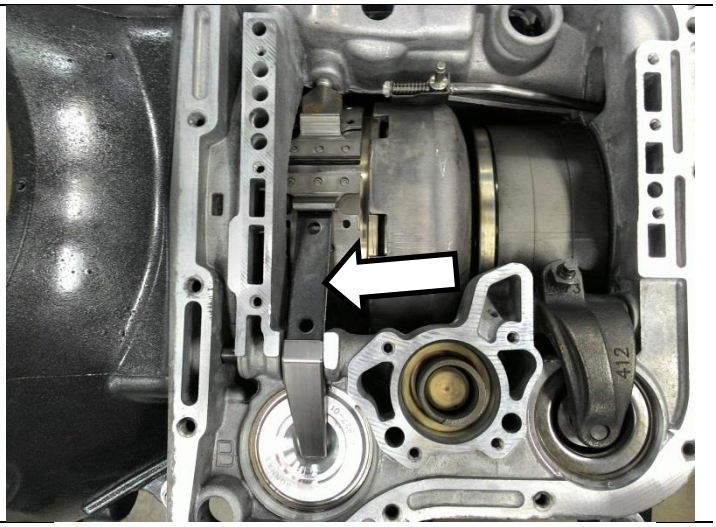


Band Strut and Servo Upgrade

Loosen the band adjusting screw lock nut on the outside of the transmission case with a 3/4" wrench. (This is located on the driver side, above the shift lever shaft).



Using a T40 Torx bit, loosen the adjuster screw until the stock band strut can be removed from the transmission.



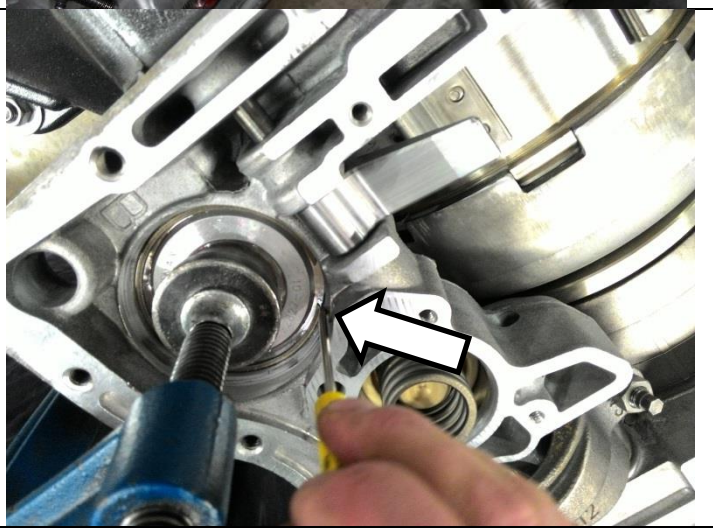
The next step involves installing the servo spring upgrade. This will require a 6” C-clamp and a 32mm or 1-5/16” socket to compress the servo.

Using the C-clamp and socket, compress the servo piston into the bore of the transmission.

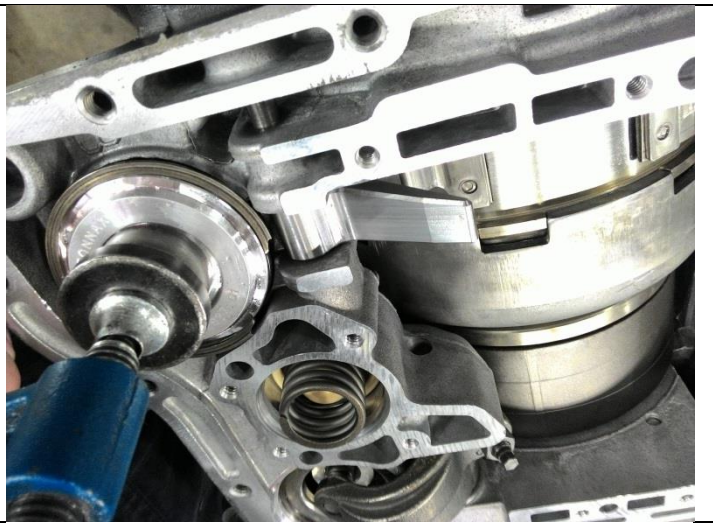
Important! Do not scratch the servo bore. This could seriously damage the transmission. Ensure the clamp or socket do not contact the servo bore.

Using a small screwdriver or pick tool, remove the servo retaining clip.

Caution The retainer clip may spring out. Wear eye protection and do not lose the retainer.



Loosen the C-clamp and allow the servo piston to come out of the transmission.



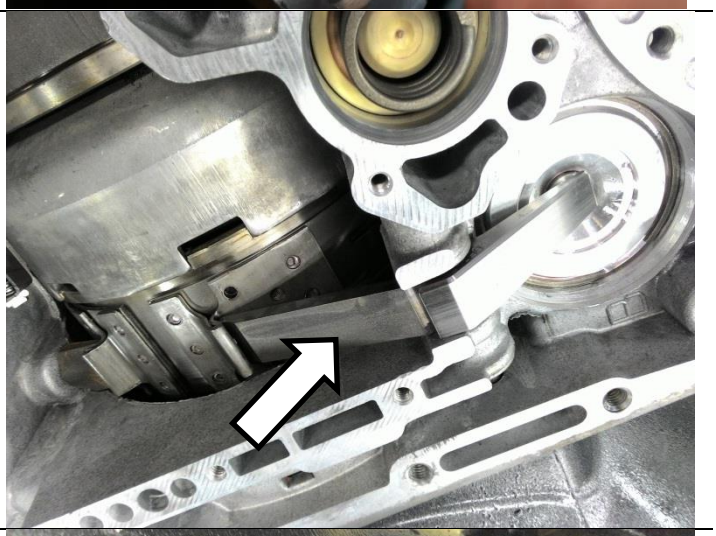
The original servo has a single spring. Add the new spring supplied in this valve body kit inside the original spring.

The servo assembly with both springs, ready to reinstall.

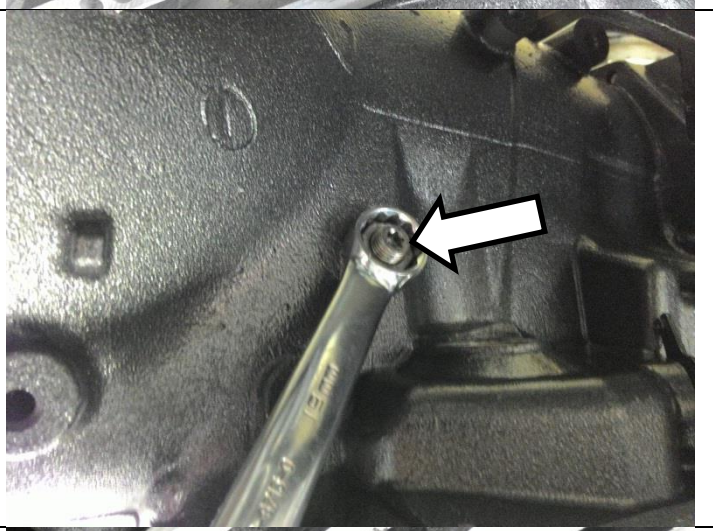
Reinstall the servo in the transmission using the C-clamp. Slowly and carefully install servo piston and use a small screwdriver to ensure the seal ring tucks in correctly and is not damaged. Compress far enough to reinstall the retainer.

Reinstall the retainer clip. Check it is fully seated in the groove.
Remove the C-clamp.

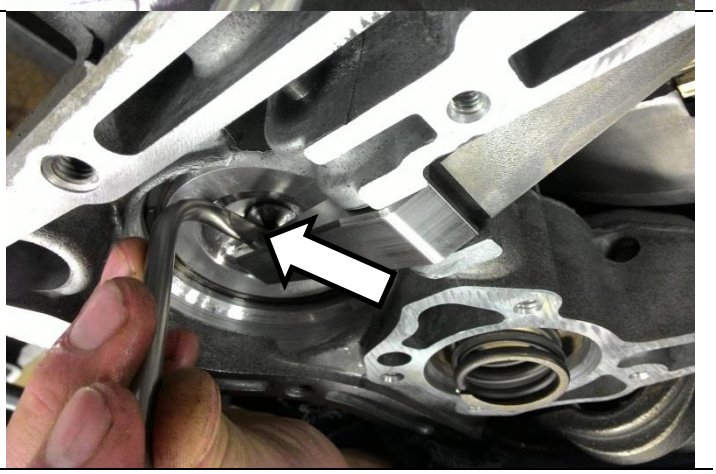
Install the new BD band strut supplied in this kit. The tapered side should face outwards (towards the pan).



Set the 2nd gear band adjustment. Torque the T40 band adjuster screw to 72in-lb, then back out 2-1/4 turns. Tighten lock nut while keeping adjuster screw from turning.



To confirm adjustment, pull the servo lever outwards. The airgap should measure 5/16”. The flattened end of the supplied E-clip installer can be used as a feeler for this measurement.

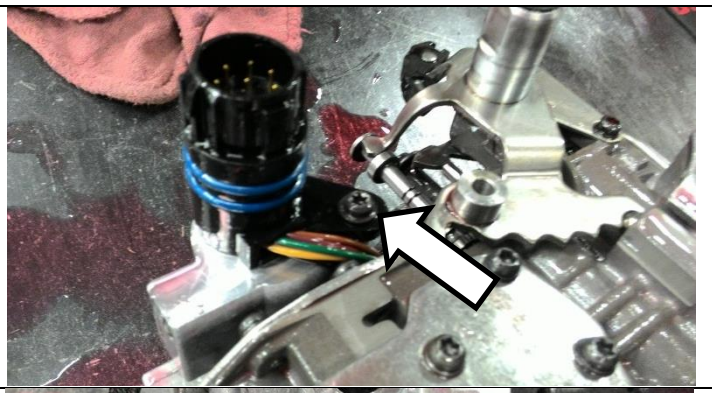


Remove Electronics from Old Valve Body

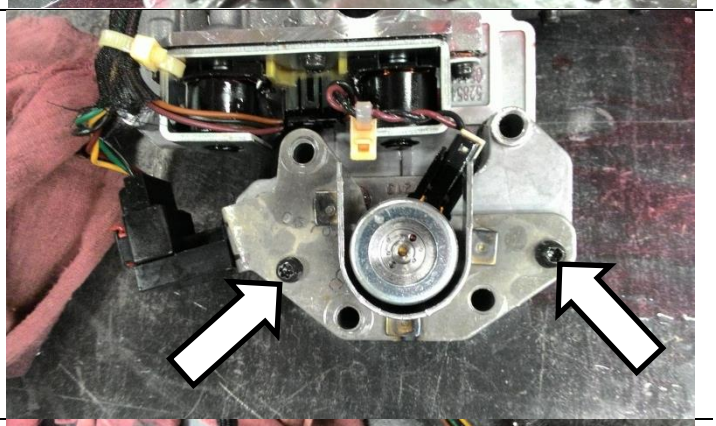
1030423ET TapShift VB

Refer to the instruction manual included with your Tap Shift electronics kit now for additional details on the following steps.

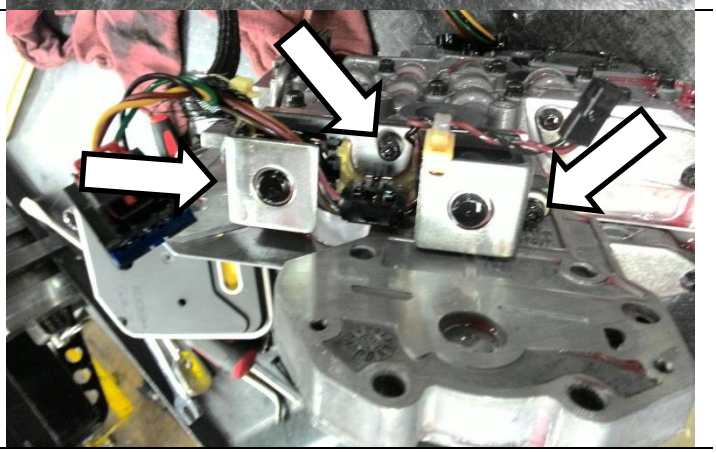
On the old valve body, remove the small Torx shoulder screw that holds the electrical connector to the valve body. This will get transferred to the new valve body.



Flip over the valve body and remove the two Torx screws from the governor solenoid housing. This will allow the housing to come off of the valve body.



Remove the three short Torx screws holding the overdrive/TCC solenoids to the valve body.



Electronics Upgrades/Modifications

1996-2004 Diode Installation(1030416/1030416E/1030418/1030423)

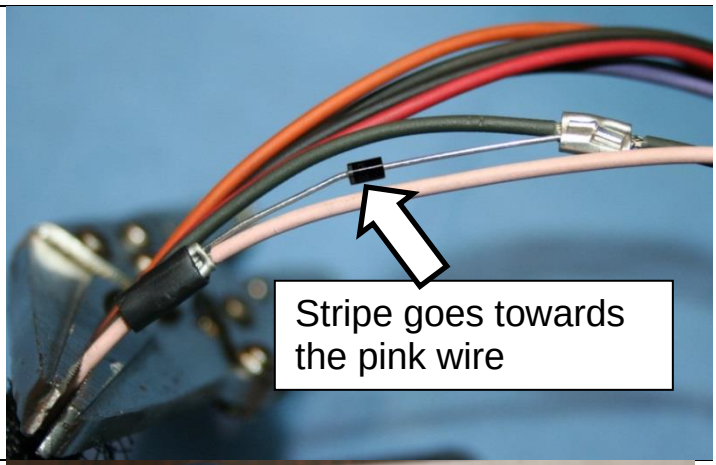
1996-2004 trucks without the transducer adapter will require a diode to be installed to prevent overpressure codes being set in the TCM.

2005-2007 trucks do **not** require this modification. 2000-2004 trucks using the BD transducer do **not** require this modification (1030418E/1030423E).

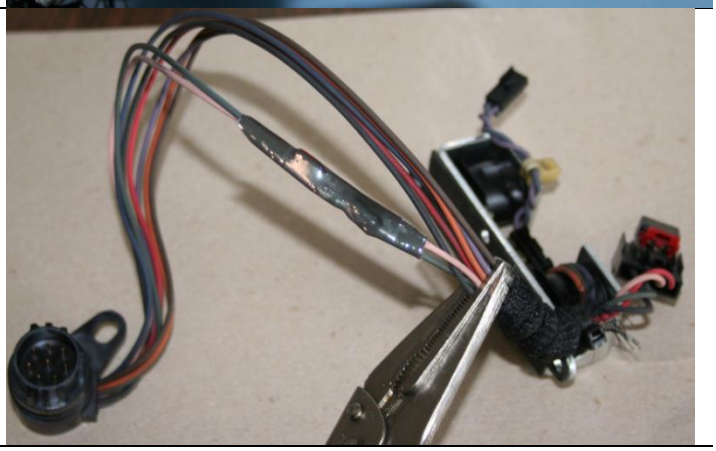
Pull back the braided sleeving on the transmission internal wiring harness to access the wires for modification.

Close to the 8 pin connector, cut the sensor ground wire (pin 3/green) and cut the sensor signal wire (pin 4/white). Slide the supplied heat shrink over both wires. Crimp the diode in with the stripe towards the white wire.

Note The white wire is often discolored to pink from the ATF.



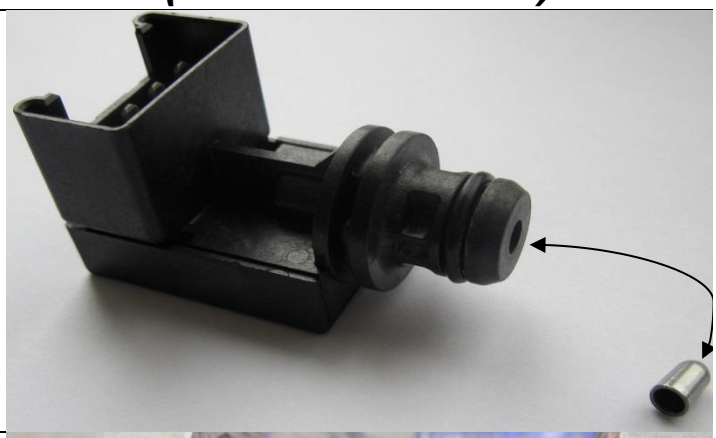
Slide the heat shrink back in place and shrink it over the connections to protect them. Slide the braided sleeve back over the wires.



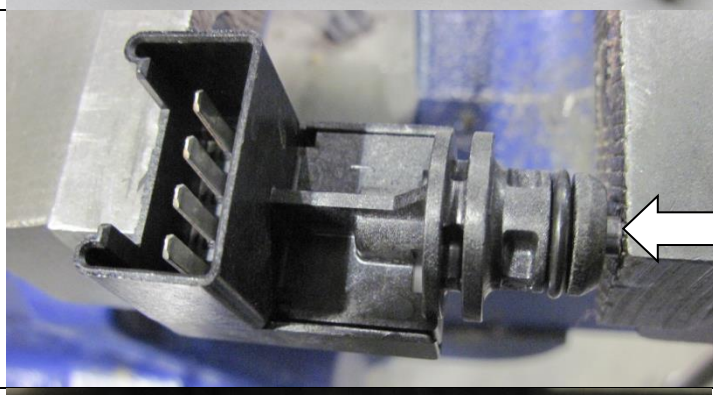
2000-2007 Plastic Transducer Restrictor (1030418/1030423)

2000-2007 If you are **not** installing the upgraded BD transducer a modification must be made to your plastic transducer.

(This is not required for 1030418E, 1030423E and 1030423ET which include an upgraded metal transducer)



Locate the restrictor included in this kit. Carefully install it into the transducer by squeezing it in a vice as shown.
Do not use a hammer!



The intention of this restrictor is to prevent over pressure damage from rapid increases in pressure.

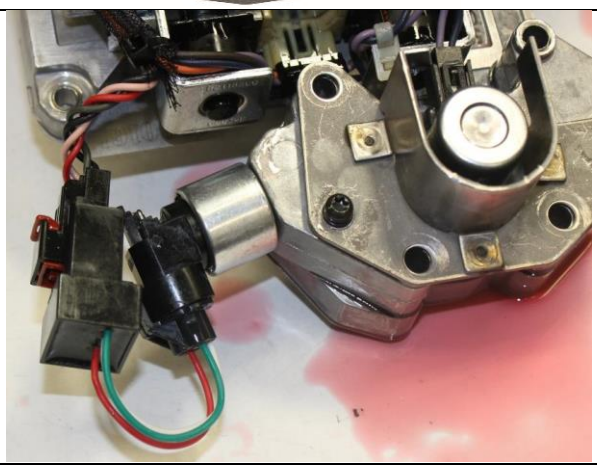
To avoid this modification use 1030418E/1030423E or purchase the upgrade separately.

2000-2007 Transducer Upgrade Installation (1030418E/1030423E)

These two kits include the heavy duty transducer with the adapter required to use this transducer on your truck. Locate the transducer and the adapter supplied in your kit.

Follow the directions included in the transducer upgrade kit to connect the new transducer and pigtail and to make the modifications required to the original bracket.

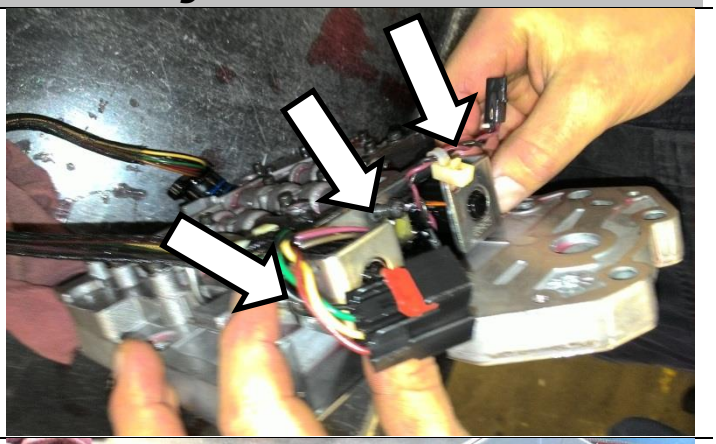
(1996-1999 do not use the adapter)



Transfer Parts to New Valve Body

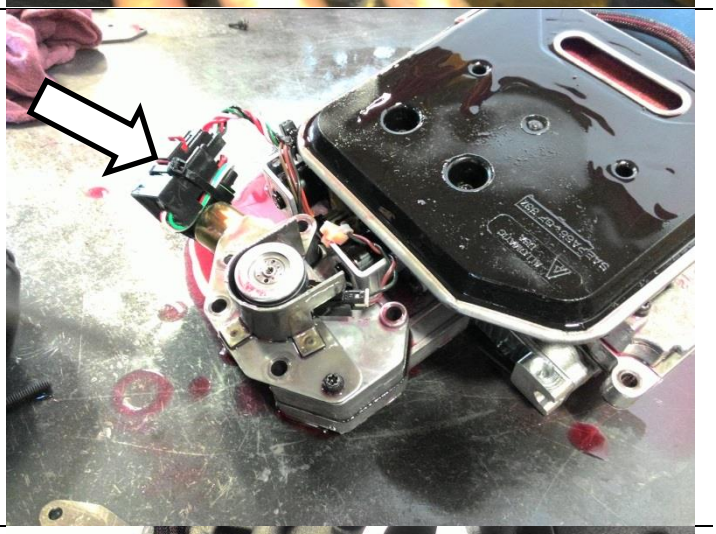
Install your original OD/TCC solenoids to the new valve body by attaching it with the three small Torx screws removed earlier.

Torque to 50in-lb (4ft-lb)



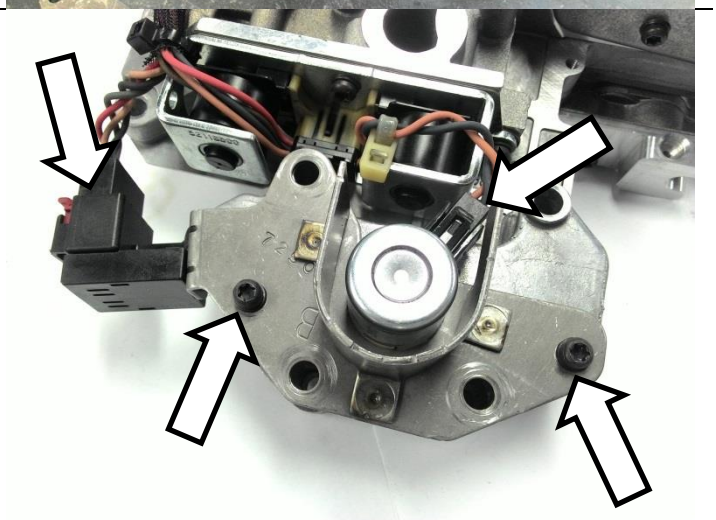
If you have purchased a 1030416E/1030418E/1030423E/ 1030423ET install the new HD solenoid and transducer supplied in the kit.

Note 1998½-1999 trucks with the 1030418E valve body will use the transducer but will discard the adapter; it is for 2000+ trucks only.

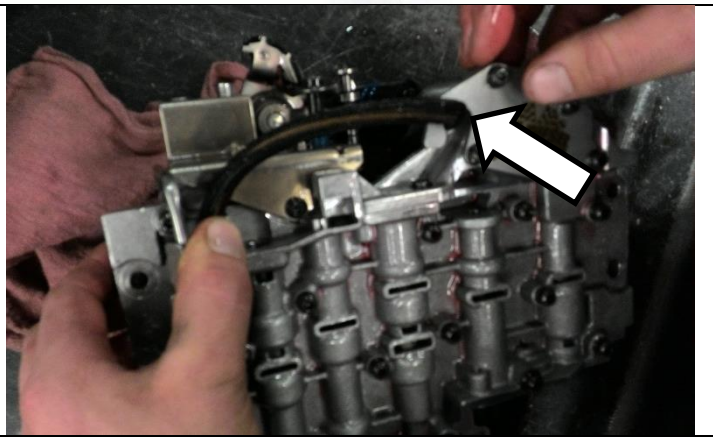


If you are transferring your old governor solenoid and pressure sensor, install the housing as removed from the old valve body with the two long Torx screws and plug in the two connectors. Torque to 50in-lb (4ft-lb).

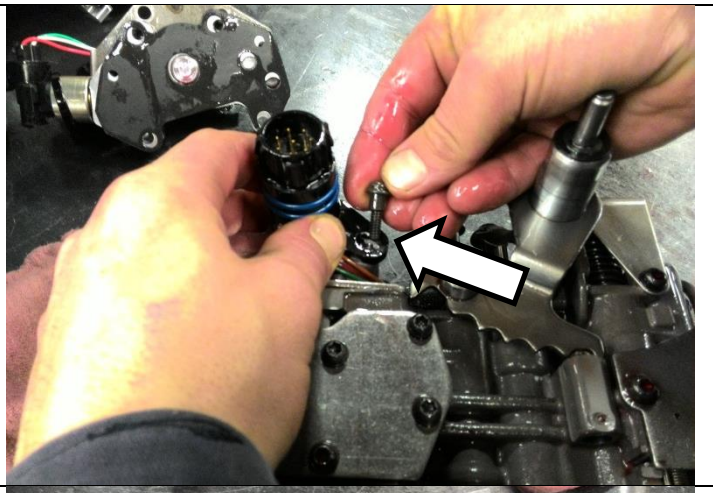
Suggestion These two parts are high failure rate items. Now is a good time to upgrade with BD parts or purchase new OEM parts.



Route the solenoid wiring harness around the valve body. Route the wire through the holder shown.

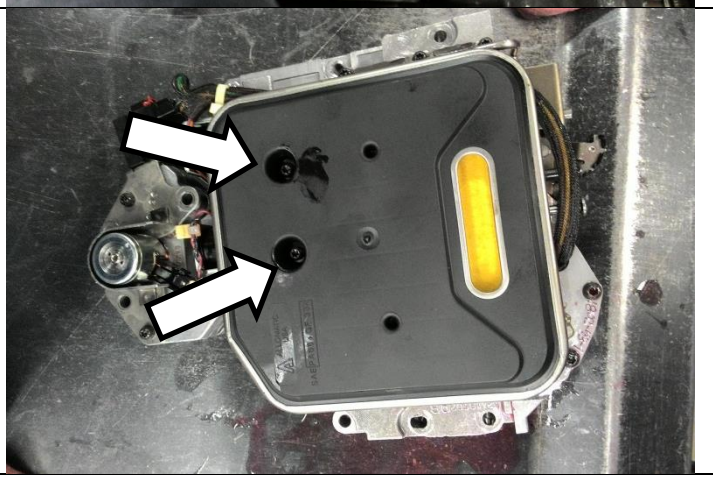


Install the solenoid wiring harness electrical connector using the special shoulder screw removed earlier. Ensure the locator nub on the bottom of the connector is engaged to the valve body for correct alignment.



Install the new transmission filter supplied in this valve body kit. Reuse the long filter screws from your old valve body. Torque to 50in-lb (4ft-lb).

Note Early model filter has three screws rather than two.

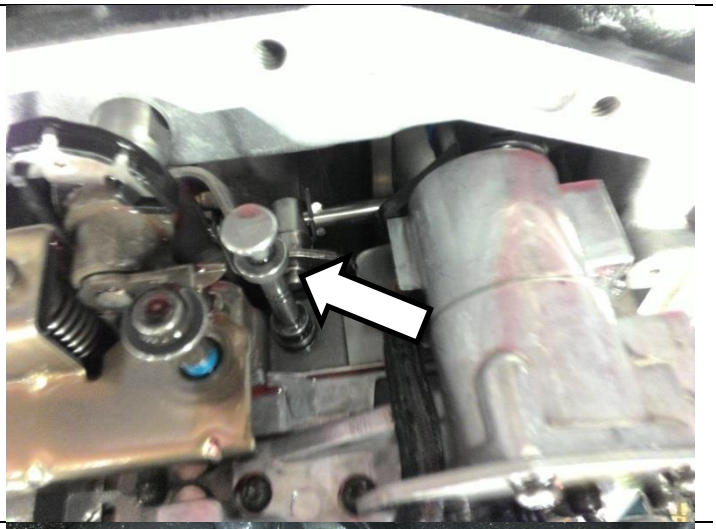


Valve Body Installation

Now that the valve body is fully assembled, it is time to install it in the transmission.

The accumulator piston and spring need to be reinstalled with the valve body. If you cannot balance these parts on the valve body, hold them in place with a supporting tool or wire until the valve body is installed.

Lubricate the manual shaft seal and electrical connector seal with ATF. Lift the valve body into the transmission. Line up and install the park rod into the manual shift lever. Hold the valve body in place with a couple of bolts.



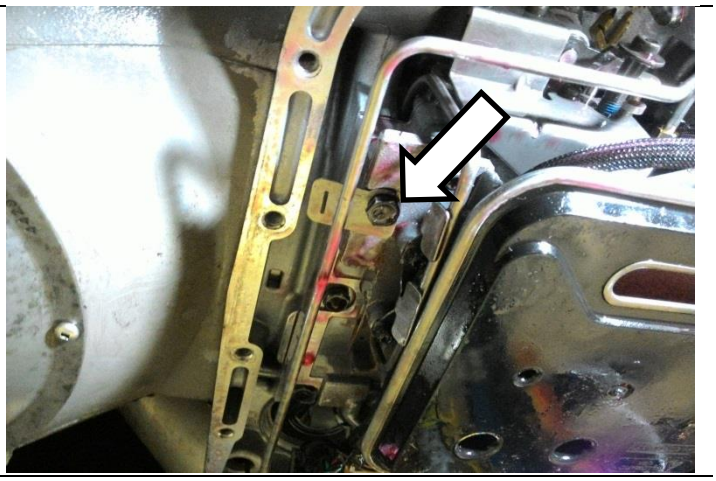
Install the E-clip on the park rod using the supplied E-clip installation tool.

Install the rest of the valve body bolts. There are different lengths, be sure they go in the correct places.

Torque all valve body bolts to 120 in-lb (10ft-lb)

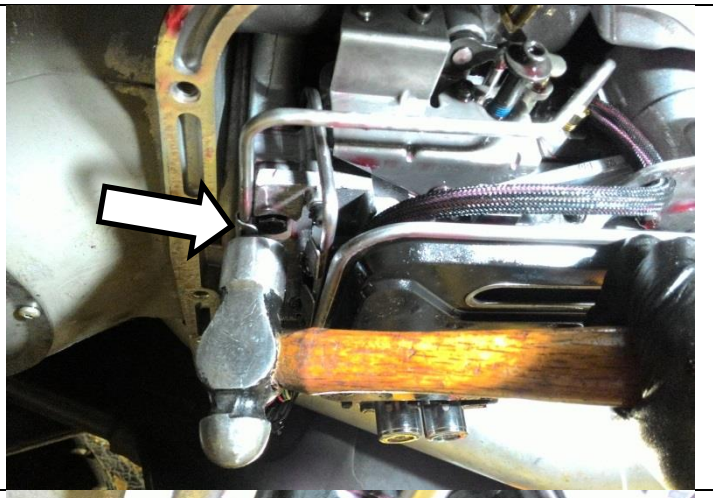
1030423ET TapShift VB Only

Install the supplied metal bracket that is supplied with the valve body to support the steel tube to keep it from vibrating. Install the steel bracket under one of the valve body bolts as shown.



1030423ET TapShift VB Only

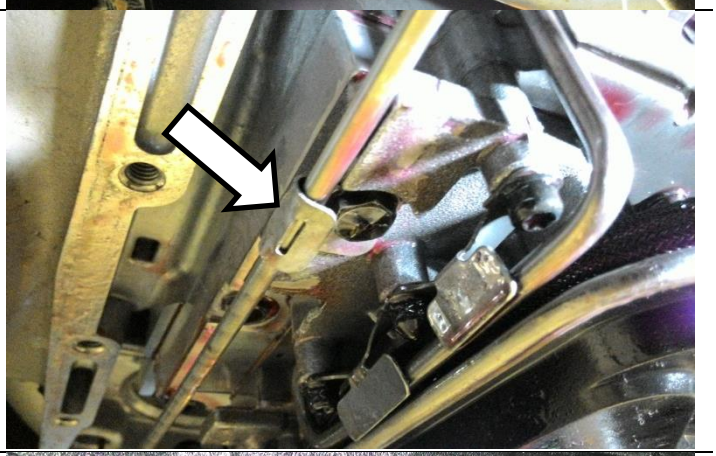
Then bend the bracket around the line and using a small hammer tap it so that it tightly holds the steel line.



1030423ET TapShift VB Only

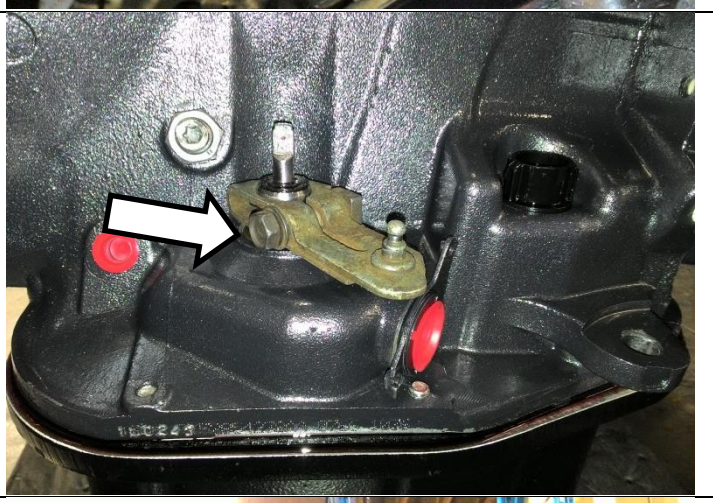
Bracket shown installed.

IMPORTANT Not installing this bracket on the TapShift valve bodies may cause premature fatigue failure of this line.

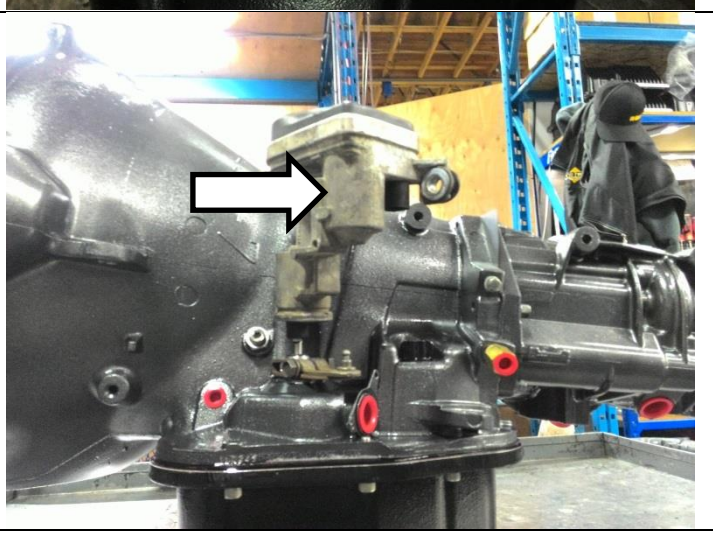


Install the manual lever on the outside of the transmission. Slide it fully down the shaft and tighten the pinch bolt.

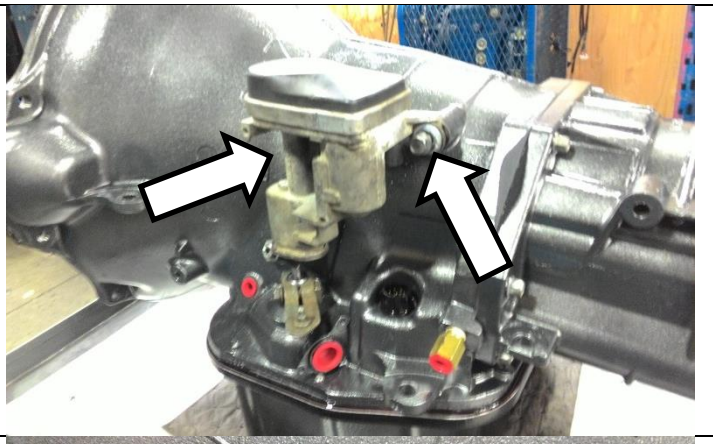
Clip the shift cable back in place.



2005-2007 – Position the TTVA motor on the throttle valve shaft and swing it towards the transmission.



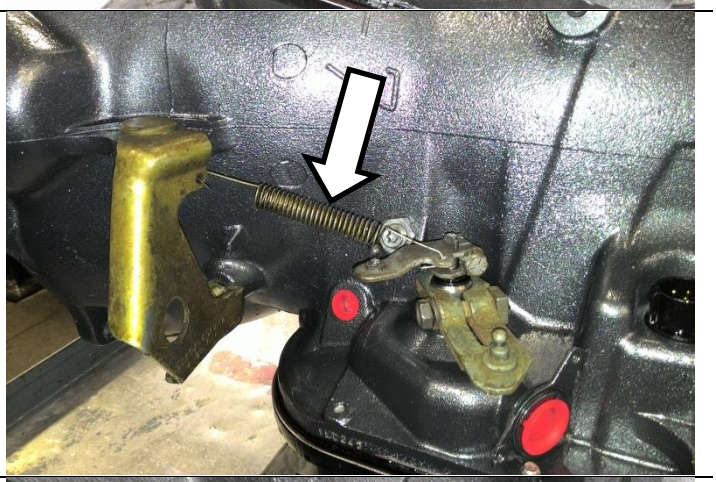
2005-2007 – Bolt the TTVA motor to the transmission case with the two bolts removed earlier. Plug in the TTVA motor electrical connector.



1996-2004 – Install the throttle valve lever above the shift lever. Tighten the pinch bolt to secure it in place.

1996-2003 – Reinstall the return spring on the throttle valve lever.

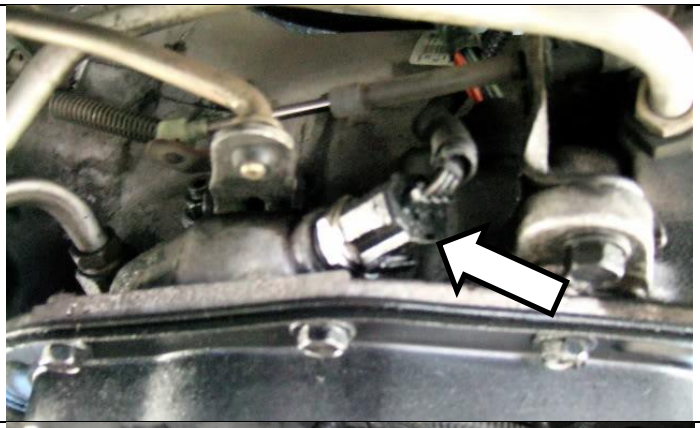
Clip the throttle valve cable back onto the lever.



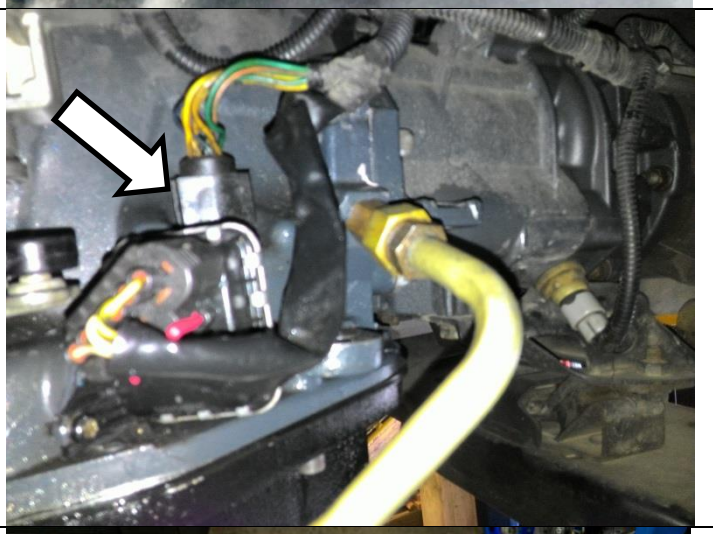
2003-2007 – Install the range sensor (PRNDL sensor) into the transmission. Attach with the two Torx fasteners. Torque to 45in-lb (3.7ft-lb).

Plug in the electrical connector.

1996-2002 – Install the neutral safety switch by screwing it back into the transmission. Torque to 25 ft-lb. Plug in the electrical connector.



Plug in the 8 pin round electrical connector to the transmission.



Install the transmission oil pan using the supplied pan gasket. Torque fasteners to 125in-lb (10ft-lb).

Suggestion A BD transmission pan adds extra capacity, cooling fins, a magnetic drain plug and adds stiffness – now is a good time to upgrade.

Refill the transmission with 8-9 quarts of ATF.

Important Do not overfill, top up as required.

Start engine and move the shift lever through the gears slowly, recheck fluid. The fluid level may drop slightly as the valve body is refilled with fluid.

Throttle Valve Adjustment/Initialization

Throttle Cable Adjustment (1996-2004)

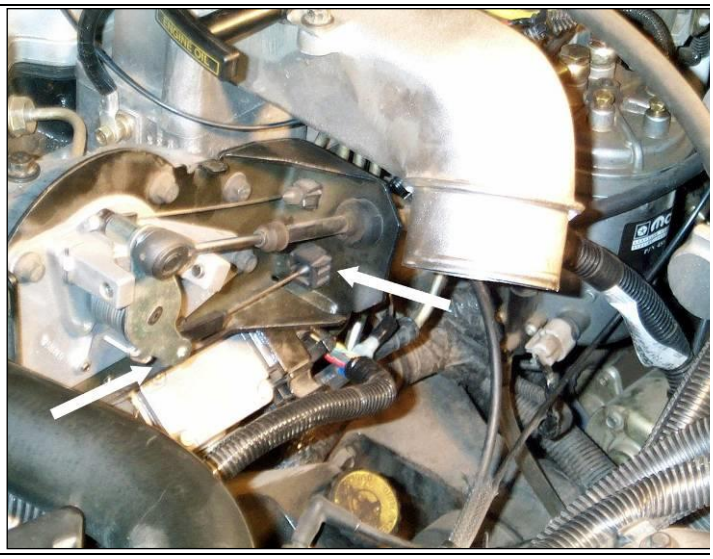
Throttle cable (kick down cable) adjustment is critical for transmission operation. Adjustment of this cable changes shift points and transmission line pressure.

The kick down cable is located under the plastic cover shown. Remove the 2 Philips screws and unclip the cover.

Adjust the cable so the kick down lever is pulled all the way back (to its furthest travel) at wide open throttle. Check this with the engine off and pushing the throttle pedal to the floor.

Adjust the cable forward (towards radiator) to make the transmission shift earlier and to the rear (towards the firewall) to make it shift later.

Install plastic cover when complete.



TTVA Motor Re-Initialization (2005-2007)

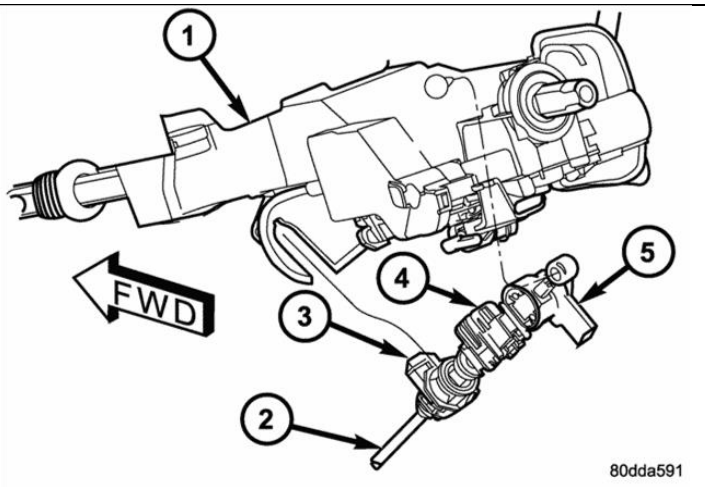
Turn the key on for 30 seconds without starting the truck. This is the time required for the ECM to auto-zero the TTVA position.

Gear Shift Cable Adjustment (2003-2007)

The 2003-2007 trucks use a range sensor instead of a simple neutral safety switch. This is more sensitive and thus requires shifter cable adjustment be completed.

Shift transmission into PARK. Release cable adjuster tab (3) under steering column. Under the vehicle, ensure the transmission gearshift lever is centered in the park position (fully rearward). Back in the cab, ensure the shift lever is centered in the park detent and snap the adjuster tab (3) back in place.

Check the truck only starts in PARK or NEUTRAL to confirm adjustment.



Road Test and Verification

Recheck transmission pressures now that the valve body has been installed. Use the chart used at the beginning of the manual to confirm the increase in line pressure.

Test drive the vehicle. Confirm shift quality is acceptable and verify wide open throttle shifts are correct.

Before you call Tech Support

If you experience one of the symptoms below, please have these pressure tests completed before calling in as they will help with diagnosis.

2-3 STACK SHIFT / 2nd & 3rd GEAR STARTS

- ☐ TTVA relearn procedure completed?
- ☐ Governor Pressure @ 0 MPH = _____
- ☐ Governor PSI @ idle? _____
- ☐ Governor PSI @ 10 MPH? _____
- ☐ Transmission Governor pressure = Mainline pressure after 2-3 shift? _____
- ☐ Mainline Pressure = _____
- ☐ Checked to see if transmission has power? _____

LAZY SHIFT

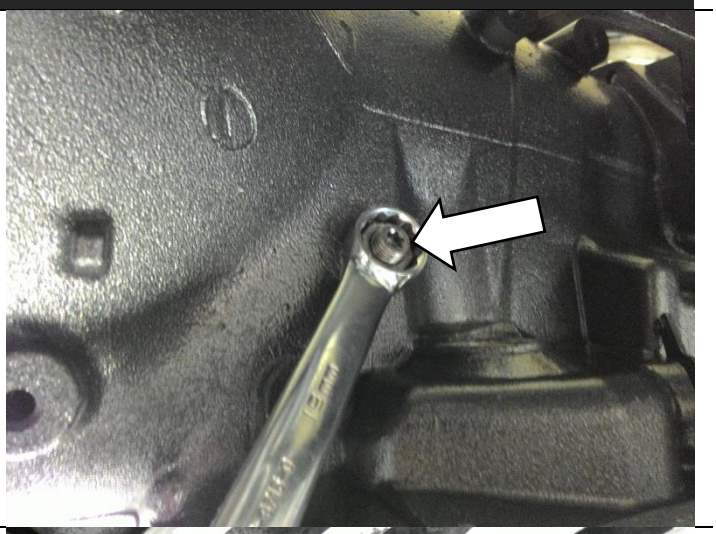
- ☐ Line Pressure @ IDLE = _____
- ☐ Band adjustment checked? _____
- ☐ Band adjustment nut turns @ 72 in/lbs = _____(# of turns)

Questions?

If you require assistance with this kit, please call oour Transmission Technical Support Line at (800) 887-5030, Monday to Friday from 7:00-3:30pm Paicific Standard Time (PST).

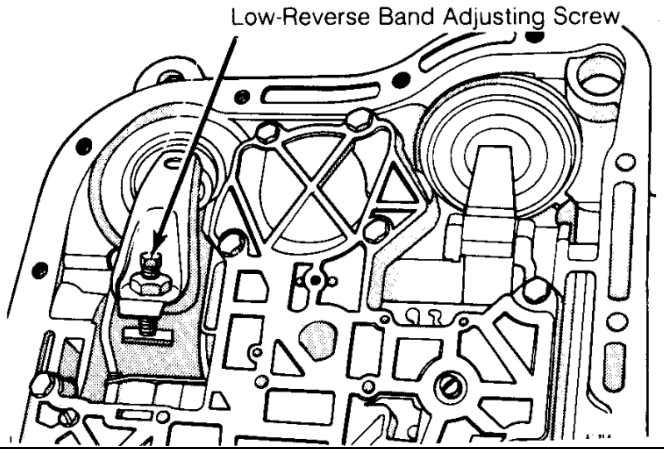
Service Adjustments

Set the 2nd gear band adjustment. Torque the T40 band adjuster screw to 72in-lb, then back out 2-1/4 turns. Tighten lock nut while keeping adjuster screw from turning.



To confirm adjustment, pull the servo lever outwards. The airgap should measure 5/16”. The flattened end of the supplied E-clip installer can be used as a feeler for this measurement.

Set the low reverse gear band adjustment. Loosen nut with 14mm wrench then back off the adjuster screw 5 turns. Next tighten the adjuster screw to 72in-lb, then back screw off 3 turns and tighten jam nut.



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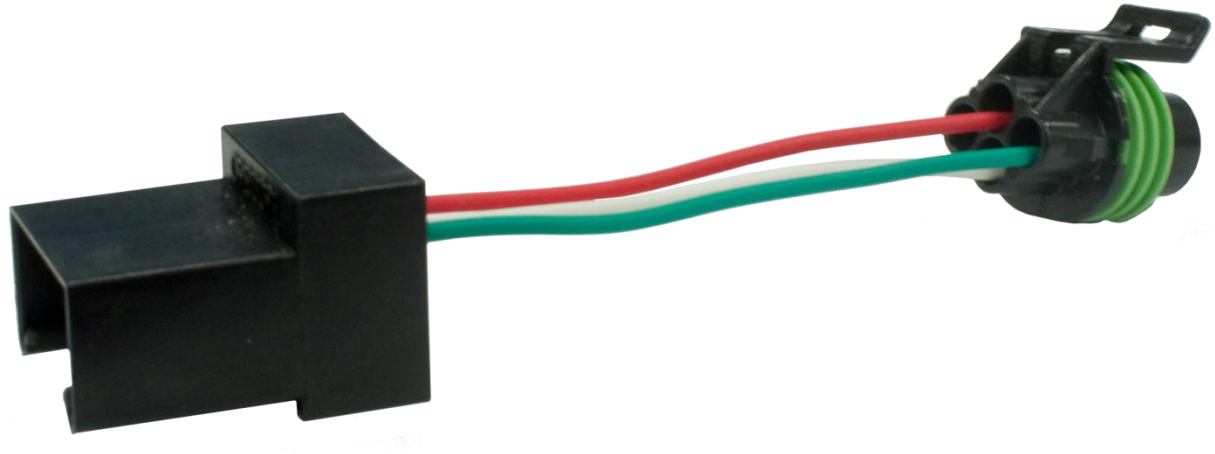
All previously installed resistors or diodes to limit over pressure codes must be removed before installing this product.



Pressure Transducer Upgrade Kit

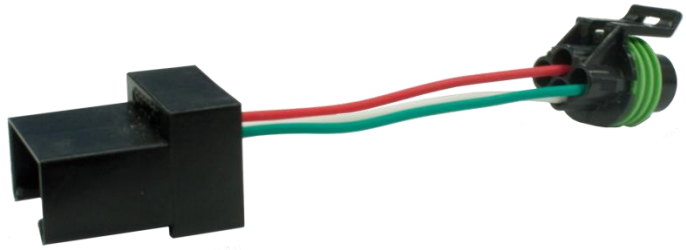
2000-2007 48RE, 47RE, 46RE, 44RE, 42RE, (A500, A518, A618) Transmissions

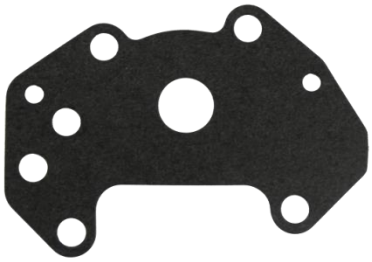
P/N#	**1060602**
P/N#	**1060605**

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION

C O M M O N K I T C O N T E N T S :

Please check to make sure that you have all the parts listed in this kit ***before*** you start the disassembly of your vehicle.

1600365	4617219
	
Pressure Transducer Adapter	Clip for metal transducer
QTY: 1	**QTY: 1**

56041403AA	4617216
	
Metal pressure transducer	Governor Body Gasket
QTY: 1	**QTY: 1**

The 1060605 also includes the following pressure governor solenoid:

4717213

Governor Solenoid
QTY: 1

WHY USE THIS PRODUCT?

One of the leading causes of transmission faults with the 47RE and 48RE Dodge transmissions is failed governor pressure transducers. The BD pressure transducer adapter addresses this issue by allowing the original sensor to be replaced by a much

more reliable and durable sensor which can handle higher transmission line pressures without failure.

This adapter is plug and play - no soldering or splicing required!

Transducer problems are especially prevalent on performance transmissions which run higher line pressures. The 1996-1999 47RE transmissions utilized a very rugged and reliable metal pressure transducer rather than the lower quality plastic transducer used in the late models. The BD pressure transducer adapter allows late model transmissions to use this early sensor. The adapter has an electronic circuit built in that converts the sensor pressure signal to the correct range and even stops fault codes in applications running higher than stock line pressures. Additionally, the circuit has its own built-in temperature sensor for improved reliability.

INSTALLATION

VEHICLE SHOULD BE SAFELY SECURED BEFORE INSTALLATION.

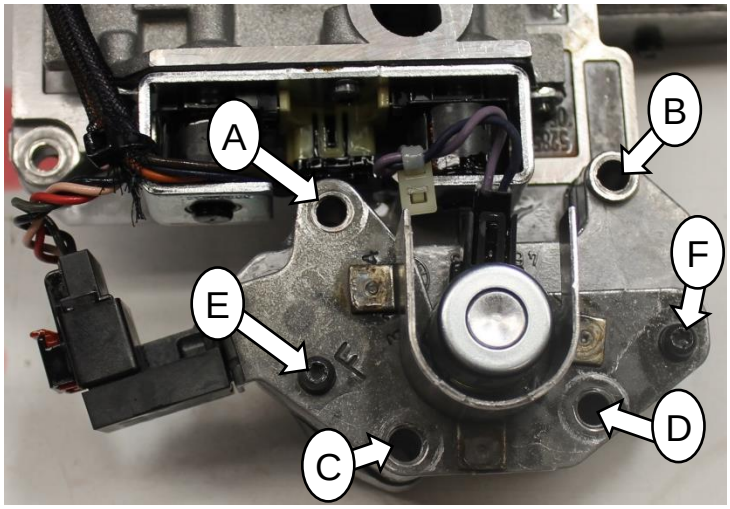
Raise and properly support vehicle.

Drain transmission fluid into a suitable, clean container.

Remove transmission oil pan.

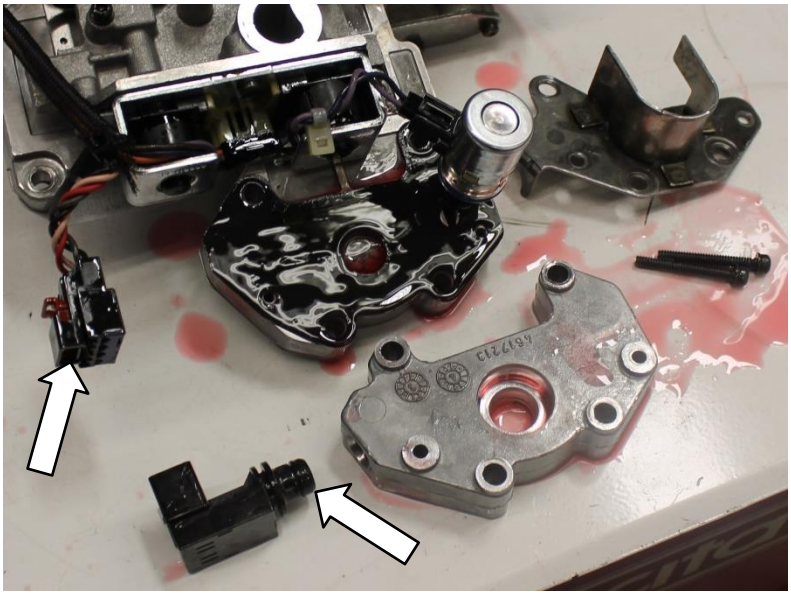
Remove the four bolts connecting the governor housing to the transmission (A-D).

Unbolt and remove the governor pressure solenoid, sensor retainer bracket and housing. (E&F)



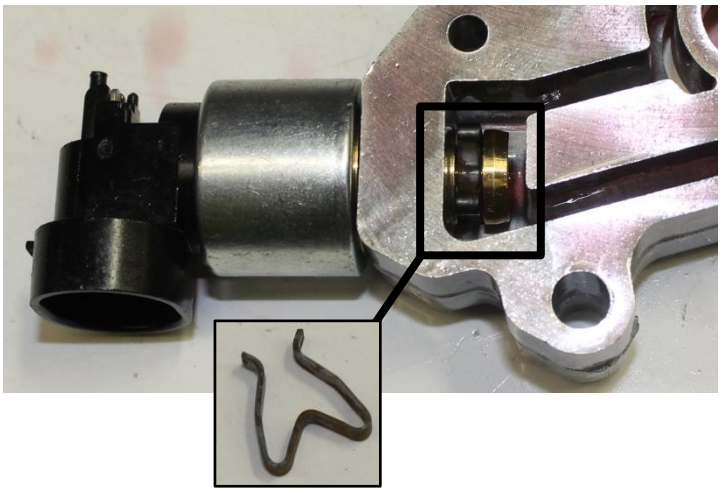
Disconnect electrical connector from the old plastic pressure transducer.

NOTE: Pulling back on the red locking tab of the connector will help release the connector.



Remove the old pressure transducer from the governor housing.

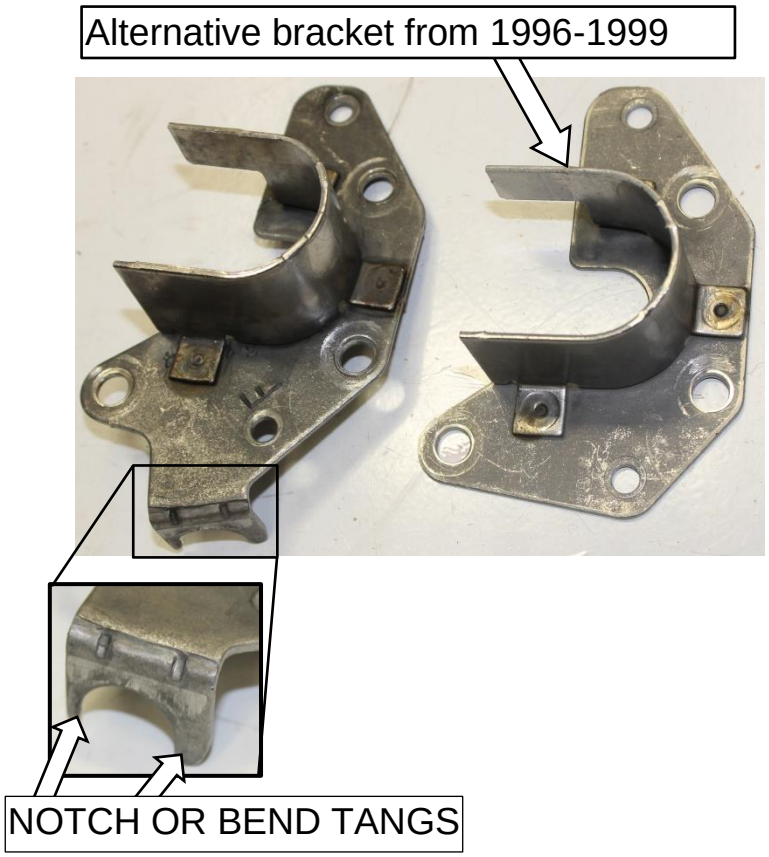
Lubricate the O-ring on the new sensor with ATF and insert into the governor housing.



Install the metal retainer clip to hold the sensor in the housing.

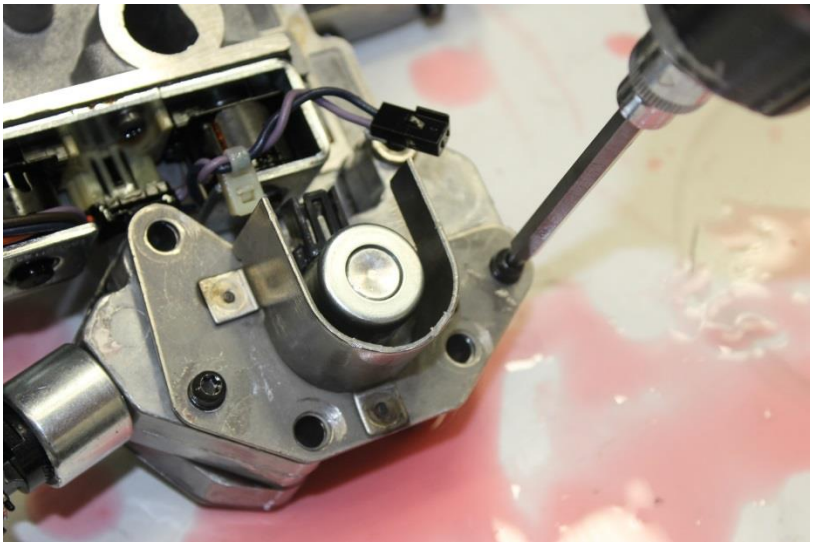
The metal retainer bracket will not fit around the new sensor, so the bracket can either be notched with a cutting wheel or the two tangs may be bent out of the way.

Alternatively, a bracket from a 1996-1999 47RE transmission can be utilized which will not require any modification.



Replace the old governor solenoid housing to valve body gasket with the gasket supplied in this kit. (**4617216**).

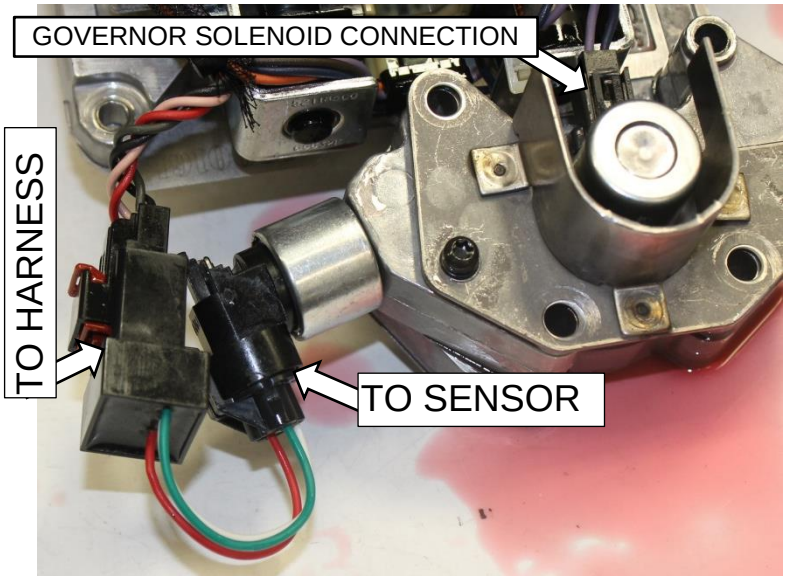
If a **1060605** kit was purchased, replace the old governor solenoid with the **4717213** provided in the kit.



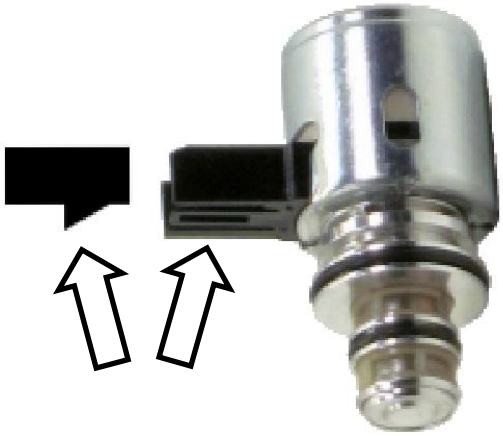
Install housing with solenoid, sensor and bracket to the valve body. Tighten attaching screws to **50in-lb**.

Reconnect governor solenoid connector if it was disconnected during the install.

Connect the BD transducer adapter to the sensor and to the transmission wiring harness.



If installing the STOCK governor solenoid, the latch tab will point towards you.
If installing an UPGRADE governor solenoid, the latch tab will point away from you.



Reinstall the transmission oil pan. Replace gasket if required. Tighten attaching bolts to **125in-lb**.

Refill the transmission with fluid to factory specifications. Start engine and check fluid level.

Shift through all gears a few times to ensure valve body is filled with fluid, then road test vehicle.

For further detailed instructions or general transmission diagnosis and repair instructions, we recommend purchasing the appropriate ATRA transmission repair and diagnosis manuals.

If you have any technical difficulties please phone our Technical Support hotline at (800) 887-5030 between 8:30am-5:00pm PST (Pacific Standard Time) Monday to Friday.

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47RE/48RE TapShifter

Dodge Transmission Controller Kit

1031381	**2003-2007 Dodge 47RE and 48RE TapShifter Electronics Kit**

This kit contains all the electrical parts necessary to install a BD Diesel TapShift transmission or valve body.
Requires an aftermarket transmission pan.

BD Engine Brake Inc.
1-800-887-5030 | https://www.bddiesel.com

Kit Contents

1607258	5057438AC-P	1607253
		
Control Module	Shift Lever (Auto-4)	Display Module (4spd)
Qty: 1	**Qty: 1**	**Qty: 1**

1607256	1607257	1330054	1300131
			
Transmission Harness	Shifter/Display Harness	Double Sided Tape	Tie Wrap
Qty: 1	**Qty: 1**	**Qty: 1**	**Qty: 12**

The following items are included in/with the Tap Shift transmission or valve body and are not in the 1031381 kit.

1607259	1607254	1300348	1607266
			
Harness; Thru-Pan	Harness; Gov Solenoid	Posi-Tap	Wire Pigtail; TapShift Throttle Pedal
Qty: 1	**Qty: 1**	**Qty:1**	**Qty:1**

Note: 1300348 and 1607266 are used only for additional tap shifter modes. Contact BD technical support to inquire about custom shift mode and lockup mode.

Table of Contents

Introduction

BD's Dodge TapShifter gives you control over your automatic transmission with just the touch of a button.

Dodge 47RE and 48RE transmissions lack the same level of control later model trucks provide over gear selection. This kit gets you back in control of your transmission without the sacrifices associated with manual valve bodies or standalone controllers.

The BD Diesel TapShifter kit comes with a new shift lever which goes in the stock location and a small gear display that tucks in beside the instrument cluster for a sleek install.

The kit comes with a special valve body and a controller kit that gives you a full spectrum of capabilities ranging from simple gear limiting all the way to manual gear selection and lockup control – all with the touch of a button.

NOTE The rear servo does not get applied in first gear in drive, so if holdback is required you must move the shift lever to the manual low position like normal.

Operation

To turn on the TapShifter, tap the **-** button on the shift lever. The BD TapShifter will detect what gear you are in and will light up the BD gear display with that gear. You can now shift up and down using the **+** and **-** buttons as required. Shifting operation and torque converter operation can be configured to be automatic or manual depending on the mode used. See modes below for more details.

To turn off the TapShifter, keep pressing the **+** button until you go past 4th gear. This will turn off the display and let the TCM control the transmission again.

Automatic Mode (Mode 1)

Mode 1 allows the driver to select the maximum gear to shift up to. This means whatever gear you select on the display will be the highest gear the transmission will reach. This mode also provides convenient downshifting capabilities while retaining automatic shifting. The Tow/Haul or OD OFF button still functions like stock with the shifter turned on. This mode works just like the late model 68RFE trucks shifter. This is the default mode when it leaves the factory.

Automatic Mode with TorqLoc (Mode 2)

Mode 2 works the same as mode 1, except now the Tow/Haul button is re-purposed into a lockup button when the shifter is turned on. This means the stock torque converter lockup strategy is maintained, but at the tap of a button you can achieve lockup (the padlock will illuminate in the display). The TapShifter takes care of the minimum speed engagement and disengage points for you based on the gear you've selected so there is no need to worry about stalling the truck.

Automatic Mode with TorqLoc/TorqUnLoc (Mode 3)

Mode 3 is similar to mode 2 except it keeps the TCM from being able to lock up the torque converter and only engages when the driver commands it.

CAUTION Do not leave the torque converter disengaged for long periods when towing or driving on the highway or it will elevate transmission temperatures.

Full Manual Mode (Mode 7)

Mode 7 mimics the function of a manual valve body. You can drive in any gear at any time and get full control of the torque converter lockup using the Tow/Haul button which will illuminate the padlock symbol. This mode improves on manual valve bodies as it has downshift over-rev protection and torque converter anti-stall protection, plus as soon as you turn off the TapShifter, the truck regains the convenience of automatic shifting.

Mode Changes

To change a mode, turn the TapShifter off (if not already). Press and hold the **+** button on the shifter for a few seconds until the display lights up with a number. This number refers to the mode the TapShifter is set to. For mode 7 it will show a **3**+**4**. To change the mode, keep tapping the **+** button to cycle through the modes. To select the mode press the **-** button. The TapShifter will remember modes through power cycles so you only need to set it when you want to make a change.

Tools Required for Installation

- Socket set + Wrenches
- Side cutters
- Pliers
- Punch + Hammer
- Knife
- Pick
- T25 Torx screwdriver/socket
- T27 Torx bit + ratchet
- Trim removal tool

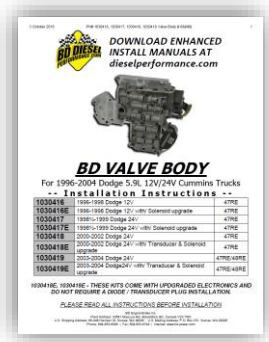
Additional tools required for valve body/transmission install. Refer to the manual included with the valve body or transmission for more information.

Installation

Before starting make sure you have the valve body or transmission installation instructions supplied with your TapShift ready valve body or transmission.

(I-00245 Valve Body Instructions)
(I-00235 Transmission Instructions)

This instruction manual does not cover valve body or transmission installation.



Disconnect both vehicle batteries before installation for safety.

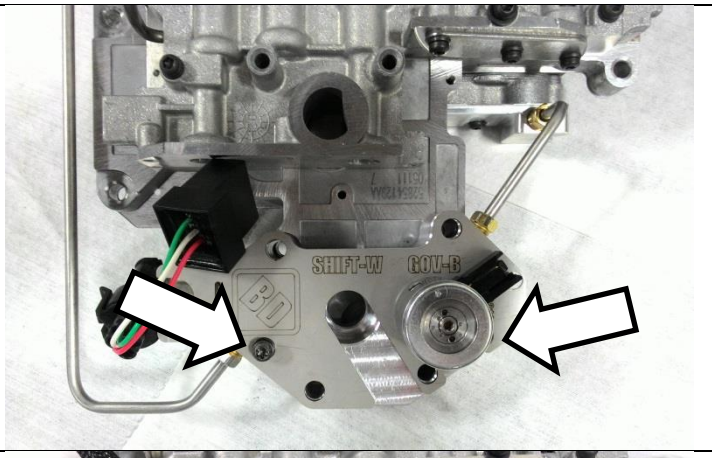
If installing a TapShift Ready transmission, skip the next section as it is for valve body installations only.

Solenoid Installation – Valve Body Installation

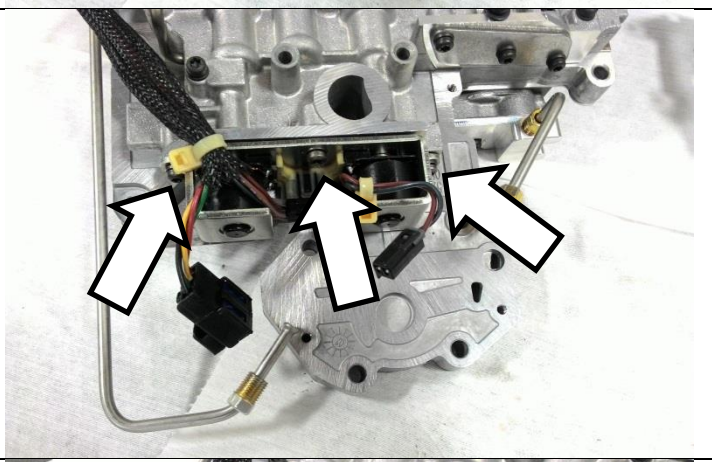
Refer to the instruction manual included with your valve body for detailed installation steps. What follows is only the steps related to the TapShifter kit.

TapShift ready valve bodies have a spare port to accept the additional solenoid included in this kit.

To install your stock transmission wiring harness and OD/TCC solenoids, the governor solenoid aluminum housing must be moved out of the way. Loosen off the two 3/8” nuts on the two tubes connected to the housing. Then remove the two T25 Torx screws.

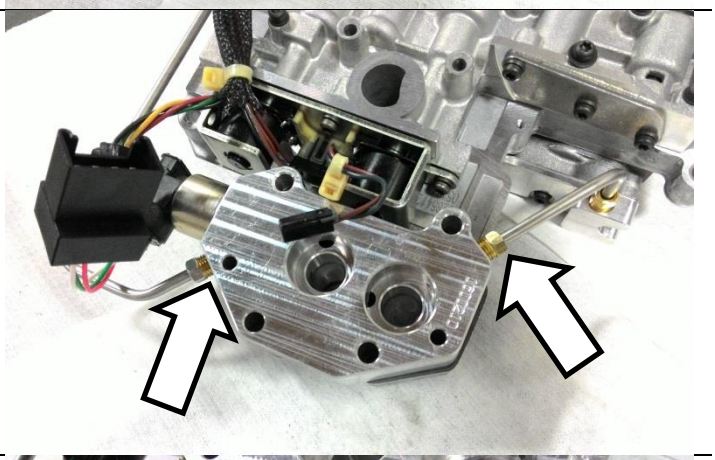


Install your harness and solenoids using the three small T25 screws from the old valve body.

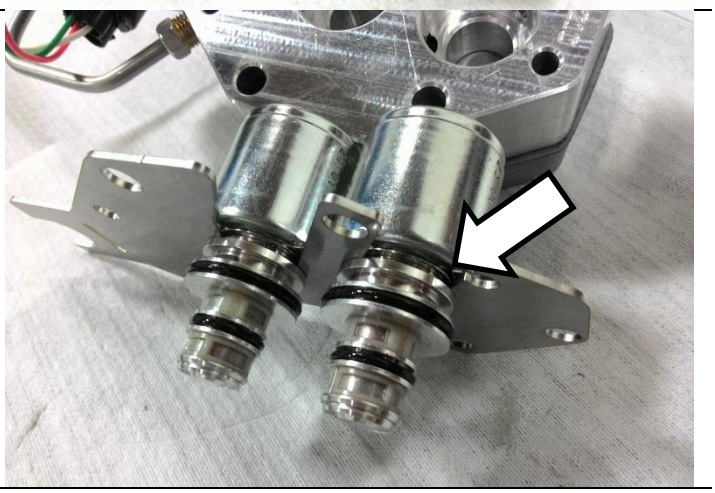


Place the aluminum solenoid block in place with the gasket below it.

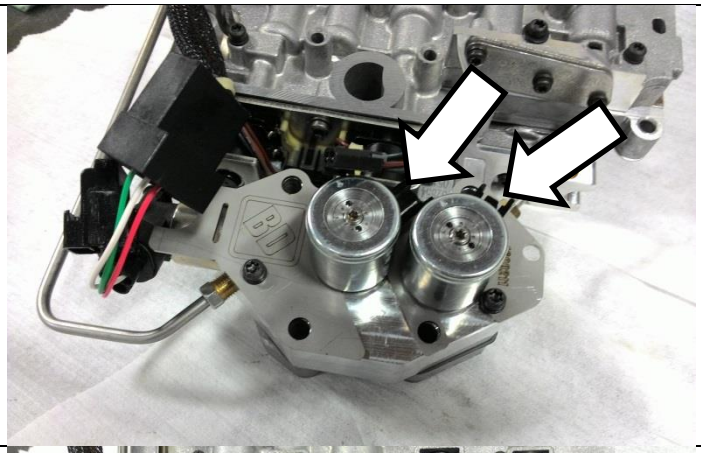
Start the two tube nuts by hand, do not tighten yet.



Locate the two solenoids (4617213) supplied in the valve body kit and slide them in the retainer bracket as shown. The plate goes in the top most land of the solenoid.

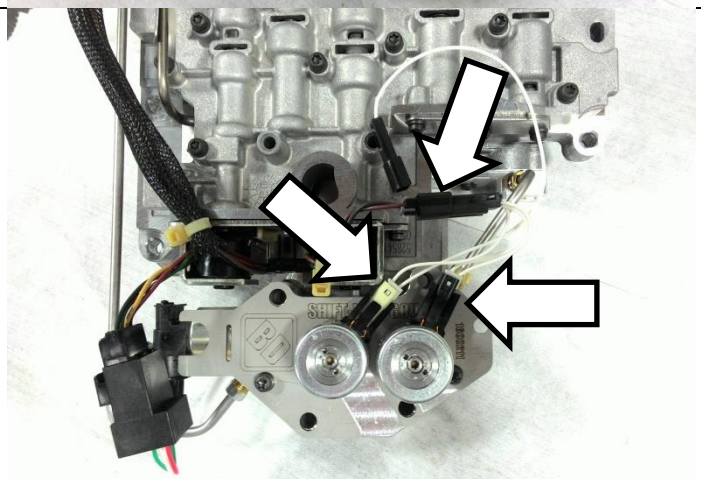


Push the solenoids back down into the governor solenoid housing with the plugs in the orientation shown. Reinstall the two Torx fasteners. Now tighten the two tube nuts with a 3/8 wrench. Do not over torque, they thread into aluminum.



Connect the 1607254 governor solenoid harness (supplied with the valve body) with the white connector going to the solenoid labelled SHIFT-W and the black connector going to the solenoid labelled GOV-B.

The remaining two pin plug from this harness connects to the stock valve body wiring harness.



Install a wire tie to support the large black plug to the steel solenoid hold down plate if required.

Do not pinch the white wire against sharp edges where it could possibly chafe through.

Route the solenoid harness wiring around the valve body and install the screw as shown to hold the connector in place.

Continue with the instructions included in the valve body installation manual to install the valve body into the transmission.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BD VALVE BODY

For 1996-2004 Dodge 5.9L 12V/24V Cummins Trucks

-- Installation Instructions --

1030416	1996-1998 Dodge 12V	47RE
1030416E	1996-1998 Dodge 12V with Solenoid upgrade	47RE
1030417	1998½-1999 Dodge 24V	47RE
1030417E	1998½-1999 Dodge 24V with Solenoid upgrade	47RE
1030418	2000-2002 Dodge 24V	47RE
1030418E	2000-2002 Dodge 24V with Transducer & Solenoid upgrade	47RE
1030419	2003-2004 Dodge 24V	47RE/48RE
1030419E	2003-2004 Dodge24V with Transducer & Solenoid upgrade	47RE/48RE

1030418E, 1030419E - THESE KITS COME WITH UPGRADED ELECTRONICS AND DO NOT REQUIRE A DIODE / TRANSDUCER PLUG INSTALLATION.

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION

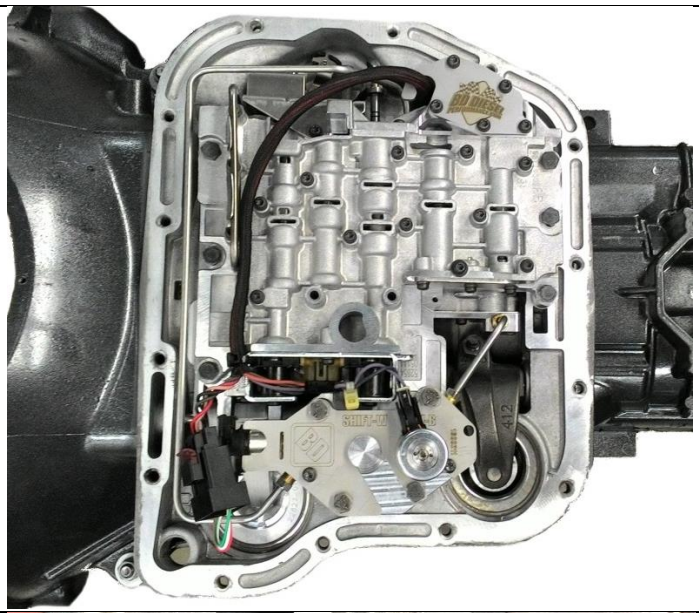
Solenoid Installation – TapShift Ready Transmission

Refer to the instruction manual included with your transmission for detailed installation steps. What follows is only the steps related to the TapShifter kit.

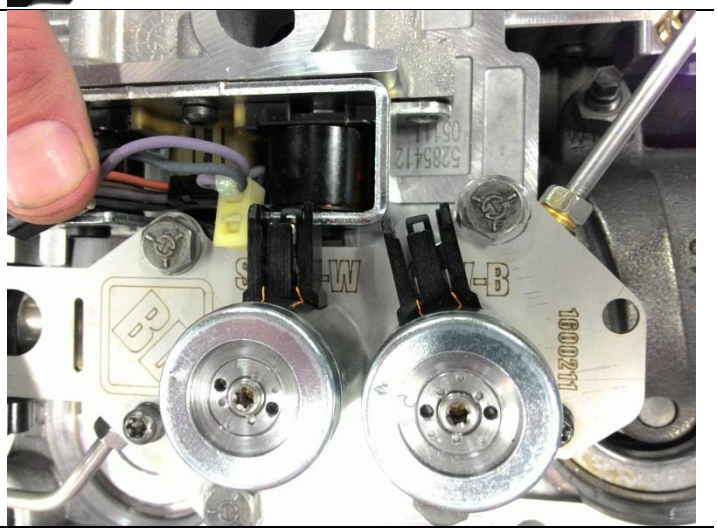
This process is best done once the transmission is installed in the vehicle so that the pan can easily be removed.

Remove the transmission pan from the transmission, revealing the valve body.

Note Transmission fluid filter not shown here for clarity but would be installed. Removal is not required.

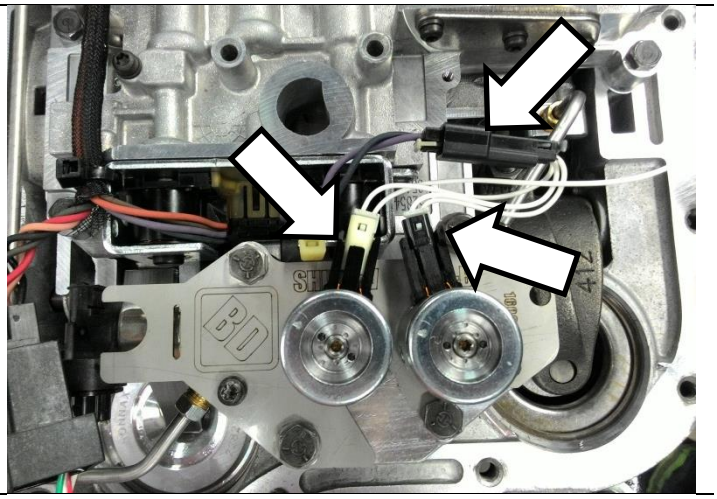


Unplug the transmission wiring harness from the governor solenoid by releasing the tab on the bottom side.



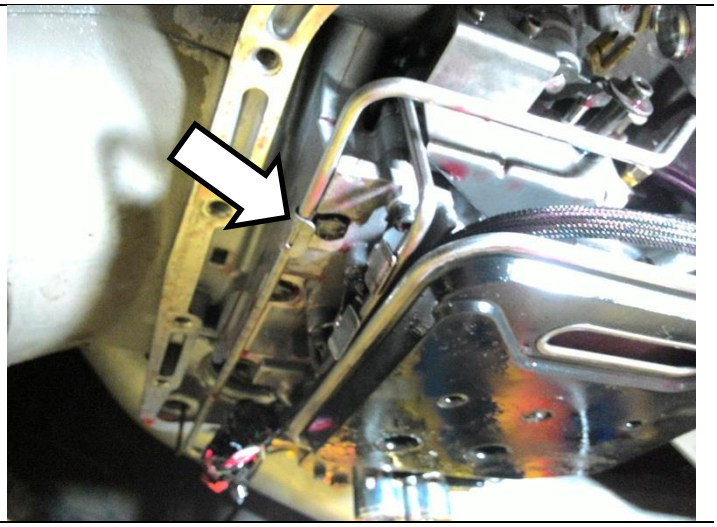
Connect the 1607254 solenoid harness (supplied with valve body) with the white plug going to the solenoid labelled SHIFT-W and the black plug going to GOV-B.

The remaining two pin plug connects to the stock wiring. Be sure the small white wire won't chafe or pinch on any sharp edges.



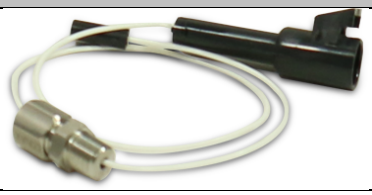
When you are finished this section, the transmission should have both solenoids connected. The loose single wire will be connected when the pan is reinstalled.

Important Check to ensure the steel tube support bracket is still in place and adequately supporting the tube. It may have been moved the previous steps.



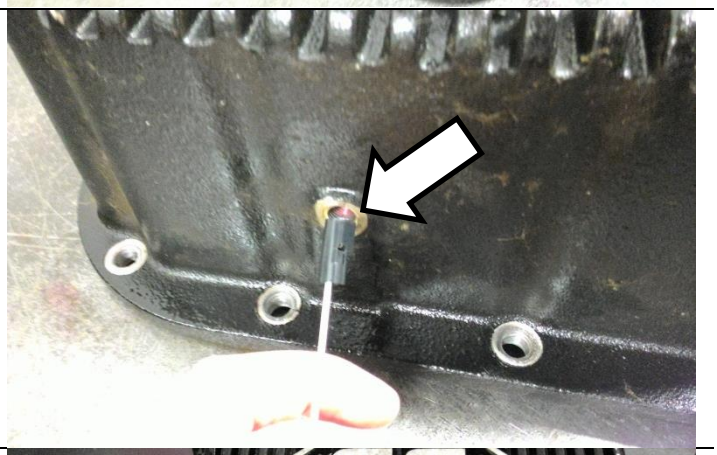
Through-Pan Wiring

Locate the thru-pan wiring assembly (1607259) supplied with your valve body. (Pre-installed in transmissions)



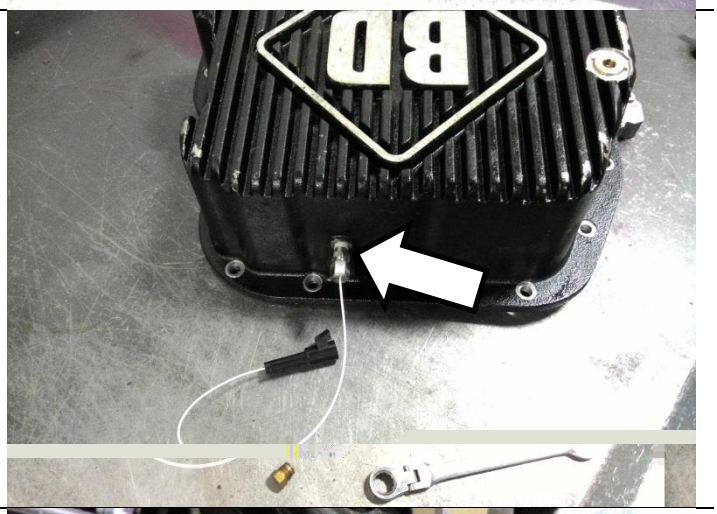
The TapShifter requires a wire run through the transmission pan to control the additional solenoid installed. A BD Transmission will come with an oil pan that has a 1/8”NPT threaded port that can be used for this. Many aftermarket pans will also have a port available. If using a cast aluminum pan with no spare ports, you will need to drill and tap one. The stock pan is not expected to work with this kit.

Feed the small end of the wire harness from the outside of the transmission pan to the inside.

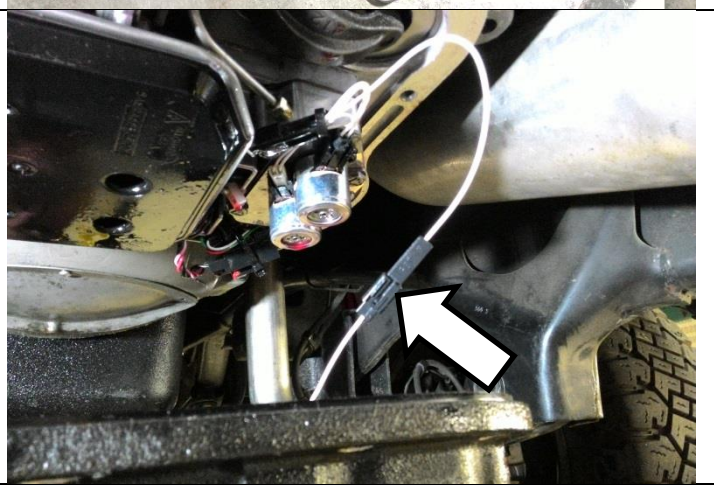


Apply thread sealant to the threads of the supplied harness/fitting and tighten it into the transmission pan.

Ensure the compression fitting nut is tight. Gently pull on the wire and ensure it is tightly held in the fitting and does not slide through.



Raise the transmission pan below the transmission and connect the one pin connector from the governor solenoid wiring to the through pan wiring harness.



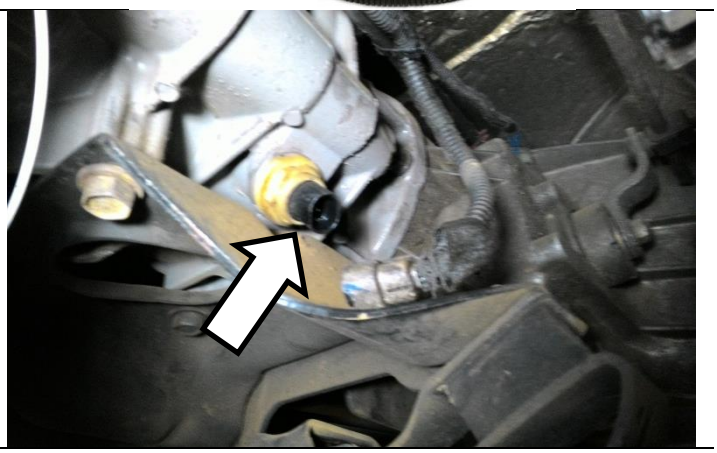
Ensure when the pan is raised the wire slack will be away from moving parts (like the band struts, etc.) and proceed to raise the transmission pan. Install the pan fasteners.

Install a wire tie around the transmission mounting ear and loosely support this small white wire and connector there for connection in the next section.

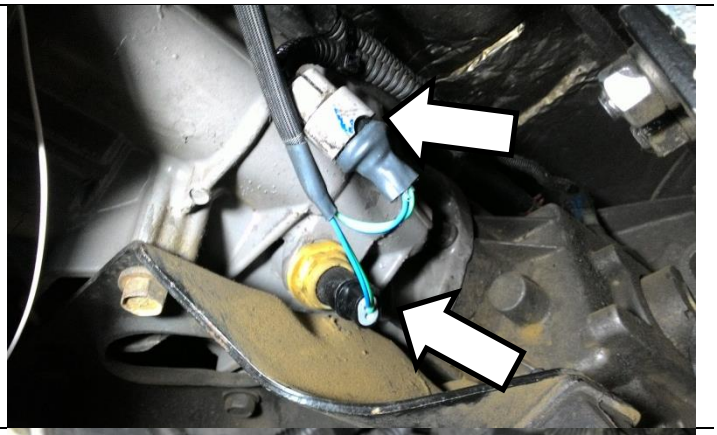
Transmission Wiring Harness

Locate the transmission wiring harness supplied in this kit (1607256). This harness will be installed in this section.

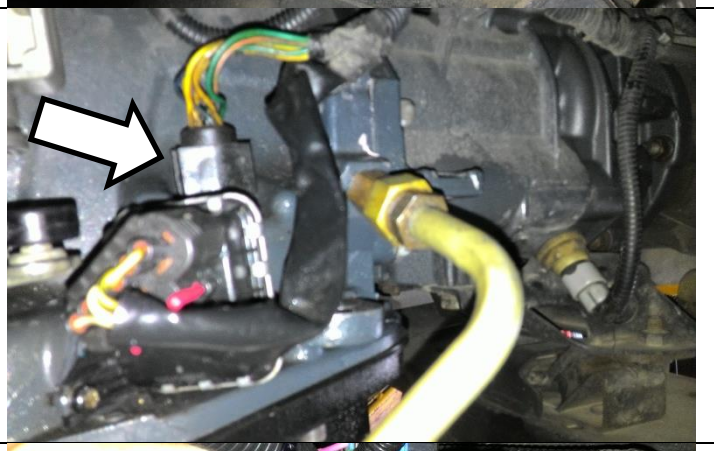
Locate the transmission output speed sensor at the rear driver side of the transmission. Unplug the connector.



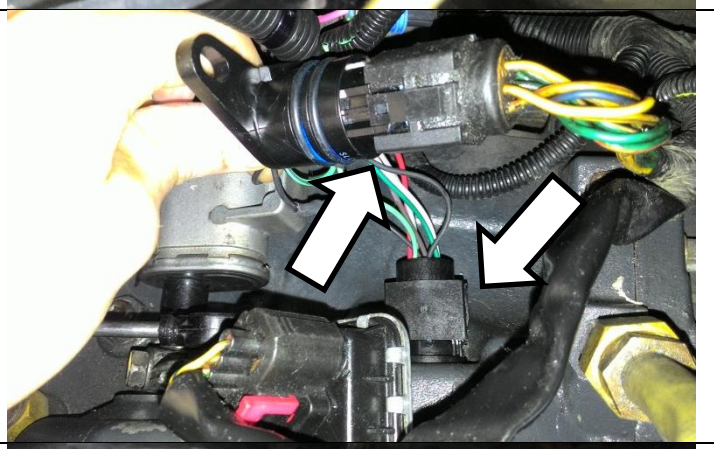
Connect the BD harness to the speed sensor and plug the stock wiring into the BD harness.



Locate the 8 pin electrical solenoid connector for the transmission, ahead of the speed sensor. Unplug the connector.



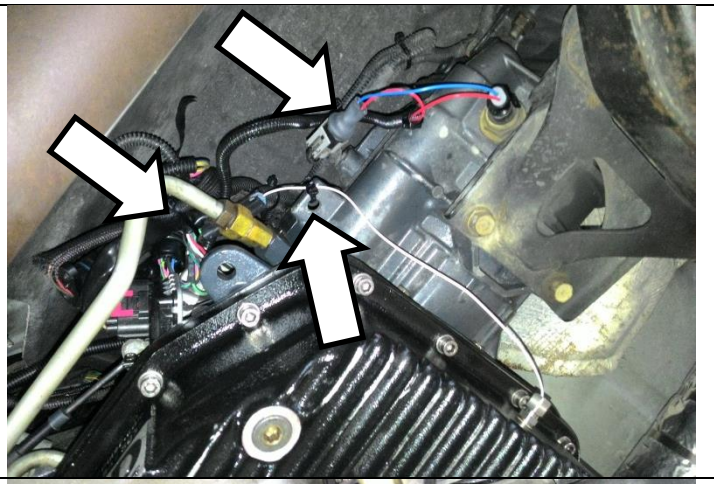
Connect the BD harness to the transmission connector and plug the stock wiring back into the BD harness.



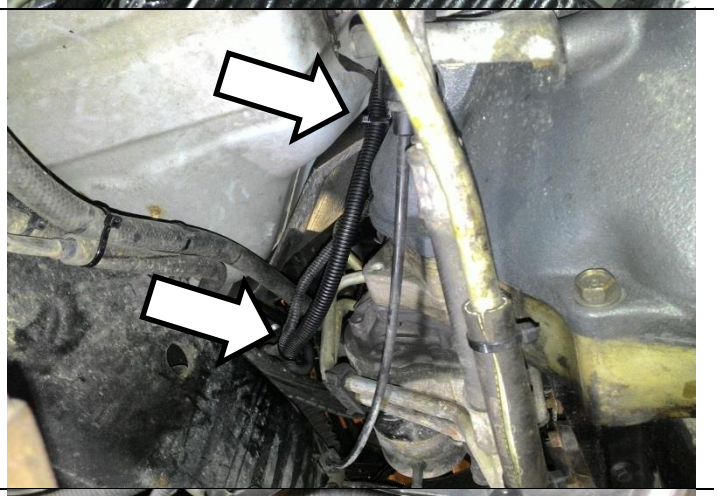
Connect the single pin connector from the BD harness to the wire previously run through the transmission pan. Ensure the small white wire is not strained and is supported.

The BD transmission harness should be supported along the same route as the factory wiring harness and should be attached with wire ties to ensure it does not get near any moving parts and does not put significant strain on any of the wiring connectors.

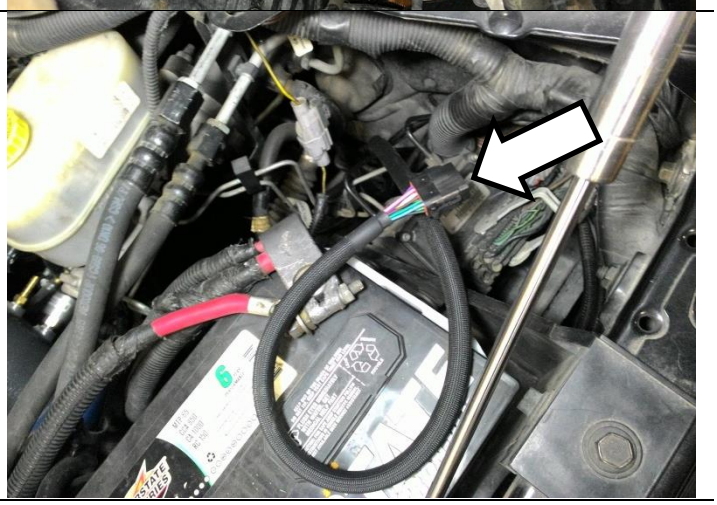
Note Pay attention that the thin white wire is supported and will not be broken.



Route the remaining end of the BD transmission wiring harness towards the engine bay. Support it with wire ties to the stock wiring harnesses.



Bring the harness up by the driver side battery near the firewall and leave it here for now, it will be connected to the module later.

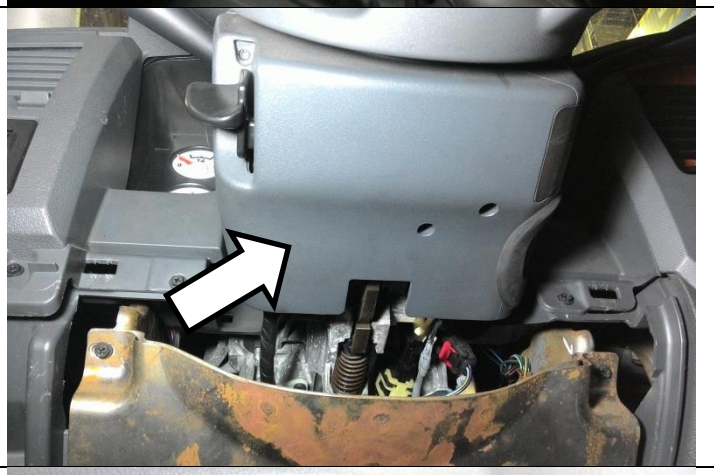


Shift Lever Installation

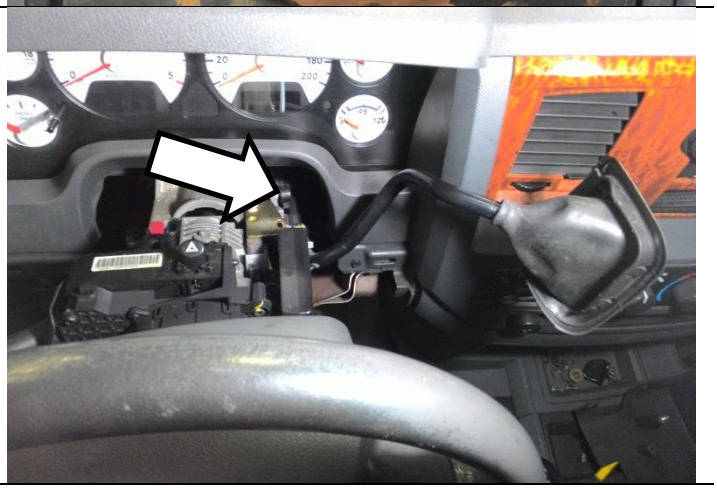
Inside the truck, remove the driver's side knee bolster below the steering column.

Remove the steering wheel tilt lever using a T20 screwdriver.

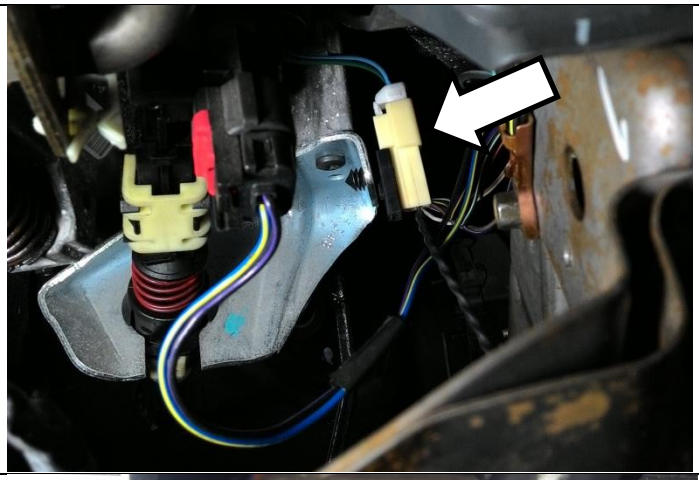
Remove the screws from the bottom of the steering column covers and remove the plastic covers.



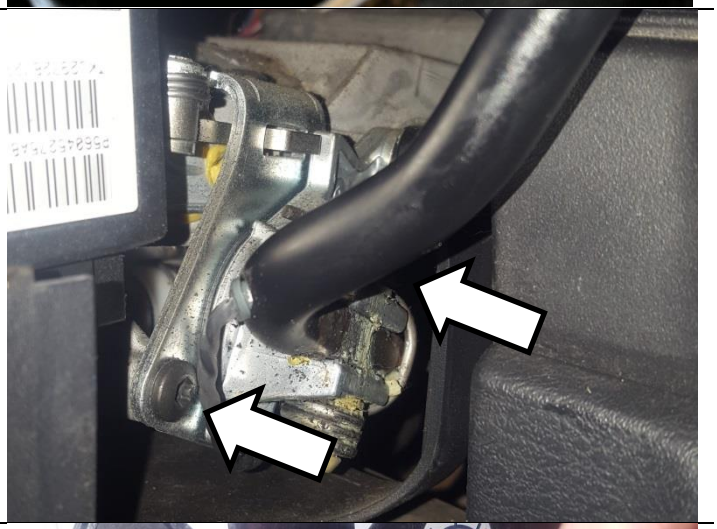
Using a trim removal tool, pop off the transmission shift cable from the shift lever.



Follow the twisted black wire from the stock shift lever under the column to the two pin connector. Disconnect the plug and remove the push in retainer.



Remove the three T27 Torx fasteners securing the shift lever to the steering column. Two of the fasteners are located on the lower right side of the column.



The remaining fastener is located on the top of the column. If you do not have a small T27 bit and ratchet, removal of the instrument cluster surround may be necessary to remove this screw.

Remove the shift lever assembly from the column. The shifter assembly needs to be rotated to release it from the shifter locking mechanism.

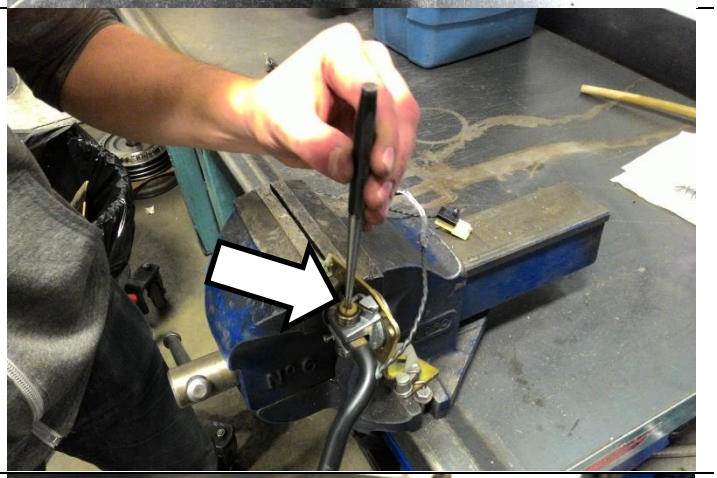
Note You may need to move the lever to various positions until it will come out. Do not pry on it or break the linkage.

Take the shift lever over to a work bench with a vice. The next steps will involve transferring the new handle (5057438AC-P) into the original bracket.

Mount the old shifter bracket in a vice and use a punch or other suitable tool to drive the shifter pin out.

Make note of the orientation of the spring and bushings prior to disassembly.

Set the pin, bushing and spring aside.



Remove the shift lever from the bracket.

Apply a small amount of grease to the new shift lever in the area that it will contact the shifter bracket and slide it into the bracket in the same orientation as the old lever.

Reposition the spring and bushings for installation.

Note orientation of the spring and bushings relative to the lever and bracket should match the picture.

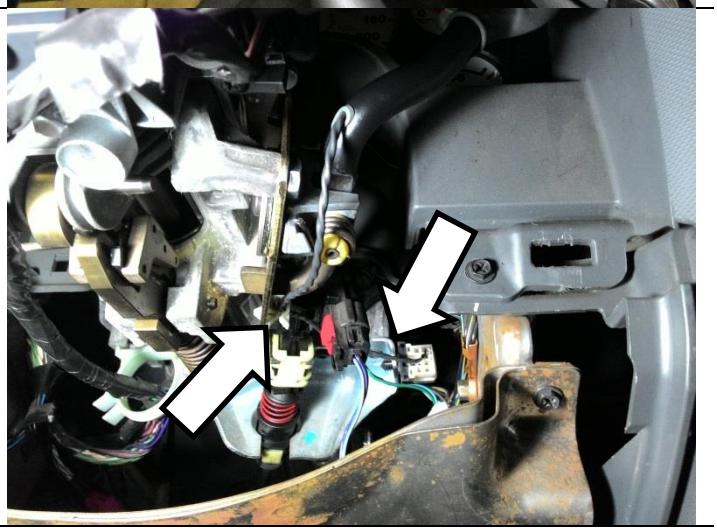
To start the pin you must squeeze the spring, moving the bushing into alignment.

Tap the roll pin through the lever until it reaches the bottom bushing, then squeeze it into position and continue until the pin is driven in flush.

Reinstall the shift lever in the truck. Rotate the lever into place so that the shifter lock mechanism is in place. Install the three Torx fasteners removed earlier.

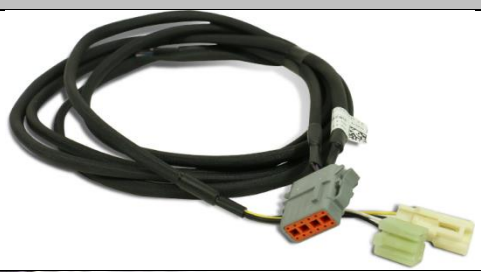
Connect the shifter linkage by pushing the socket back onto the ball.

Route the thin twisted wire from the shift handle in the same routing as the original shift lever. Put the wire in the original support clip and push in the Christmas tree clip. Ensure the wire does not impede shift lever movement and that the wire will not become chaffed.

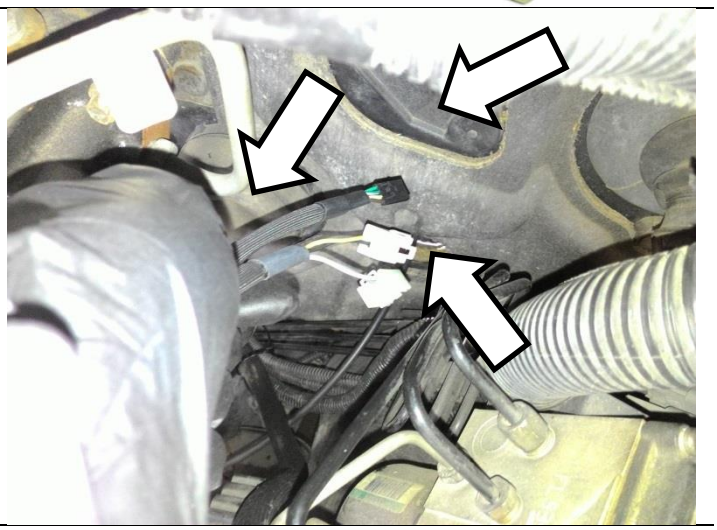


Shifter/Display Wiring Harness

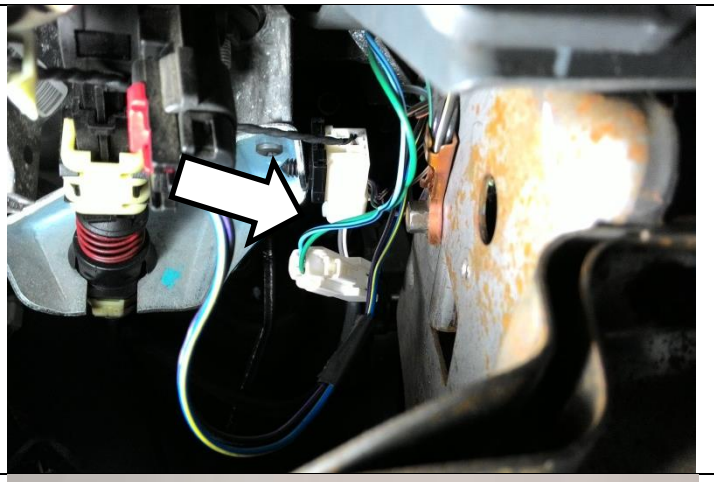
Locate the remaining wiring harness supplied in the kit (1607257). This harness will connect to the shift lever and the gear indicator display.



Route the wire harness through the firewall so the gray plug is located in the engine bay and the other connectors are under the dash. You may either cut a slit in a boot to accomplish this or put the wire through the knock out that would be used for the clutch master cylinder. Here we are going through the hood release cable boot.

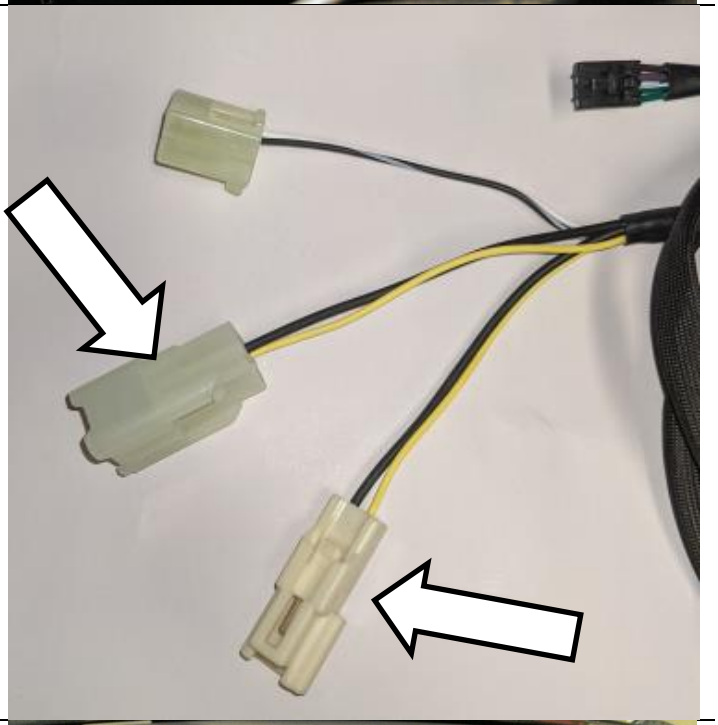


Route the two white plugs behind the dash to the shift lever connectors. Connect the harness to the shift lever and to the trucks stock wiring harness.



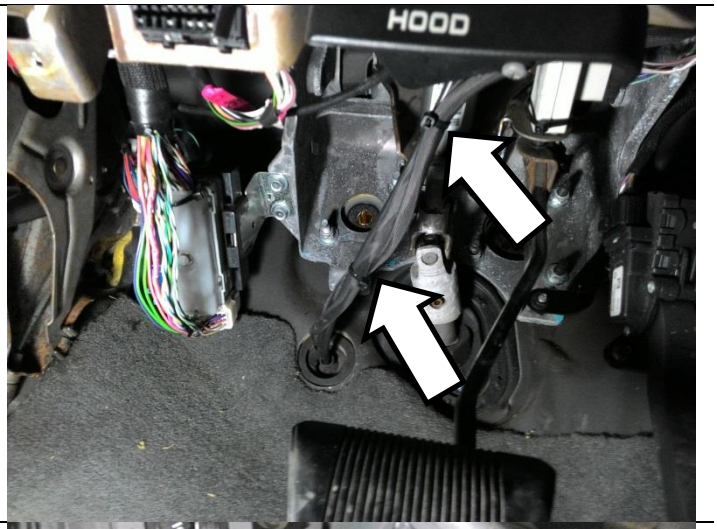
NOTE
2003-2006 trucks have a factory 2 pin shifter connector. For these vehicles, use the 2 pin connector, and the 6 pin connector will be left unused.

2007 trucks have a factory 6 pin shifter connector. For these vehicles, use the 6 pin connector, and the 2 pin connector will be left unused.



Route the small black plug to the location desired for installation of the gear display. This can go anywhere that the wire will reach and is up to the drivers preference. We suggest the lower right corner of the instrument cluster bezel, the wire may be run between the cluster and the bezel.

Install wire ties under the dash to support the harness to the existing vehicle wire harnesses.



Now that the wire harness has been installed the steering column covers may be reinstalled and the knee bolster reinstalled.

Display Module

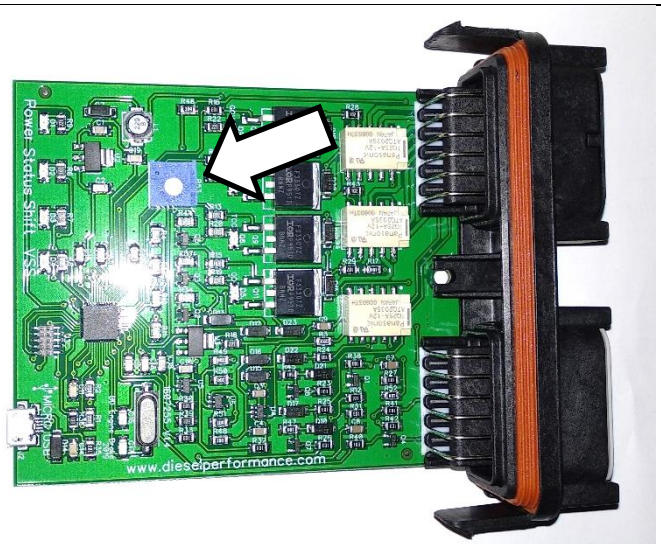
Locate the gear display (1607253) and double sided mounting tape (1330054) supplied in this kit.

Clean the surface where the display will be mounted with alcohol or other cleaner to ensure the adhesive sticker will adhere correctly. Plug in the module and stick it down in the chosen location.

Ensure the display is visible to the driver of the vehicle.

The brightness of the display LEDs can be adjusted inside the Tap Shifter module.

Turn the knob on the potentiometer with a small screwdriver to change the brightness. Clockwise for brighter, counter clockwise for less bright.



Control Module Installation

Locate the control module (1607258) supplied in the kit. This will be installed in the engine bay.

Plug in the gray and black connectors to the module.

Install wire ties on the remainder of these wires to keep them away from the steering shaft or other moving parts.

Mount the module using wire ties in the engine bay. Here we show it attached to the engine wiring harness on the driver's side of the firewall.

Installation should now be complete.
Ensure all wiring is correctly secured.
Refill the transmission fluid and check for leaks.
Reconnect vehicle batteries.

Proceed to functional checks below to verify operation.

Functional Checks – Complete prior to vehicle delivery

Preliminary Check

Start the engine and drive the vehicle.
Keep the TapShifter turned off and check for normal operation of the transmission. The transmission should shift through the gears and the TCC should engage normally with no fault codes.

Check that pressing the Tow/Haul button on the shifter still toggles the Tow/Haul or OD OFF state of the truck.

If transmission does not function normally with the TapShifter turned off, diagnose this first as the transmission must operate normally for the TapShifter to control it.

If the TapShifter kit is suspected to exibit a defect, disconnect the BD transmission harness from the 8 pin transmission connector and 2 pin speed sensor connector, this would eliminate possible TapShifter kit issues. TapShift Ready transmissions and valve bodies will work with stock control so they are backwards compatible for testing purposes.

Gear Shifting Check

With the engine running, change the operation mode to “Automatic – Mode 1” (refer to operation section).
Put the truck in “D” and while stationary press the **-** button on the shifter. The gear display should light up with “1” and the truck should now stay in first gear as the truck is accelerated and not shift up. Now, press the **+** button to put the TapShifter in “2”. Accelerate and observe that the transmission does not shift *above* 2nd gear. Repeat the test for 3rd and 4th gear. Once in top gear, use the shifter to command downshifts to slow the vehicle down.
If this works it confirms the gear control portion of the TapShifter is functional.

To check manual mode functions, change the operation mode to “Manual – Mode 7”. Like before, put the truck in D and press the **-** button to turn the shifter on.

Unlike before, try gearing up earlier than the stock TCM would allow. Then confirm downshifting capability.

If both automatic and manual modes are working, this confirms all functions of the TapShifter.

TCC Lockup Check

With the engine running, change the operation mode to “Automatic – Mode 2” (refer to operation section).
Put the truck in “D” and turn the TapShifter on. Press the Tow/Haul button on the shift lever and observe that the pad lock symbol lights up on the display. If the vehicle is going fast enough the transmission should lock up the torque converter. Confirm this in the lower gears and at speeds low enough that the stock TCM would not engage the TCC to confirm operation.

Troubleshooting

The TapShifter kit is fairly complex as it interfaces with the factory TCM and also can control the transmission. The TapShifter has LED indicators on the PCB for diagnostic purposes and the TapShifter display can show some error codes as well.

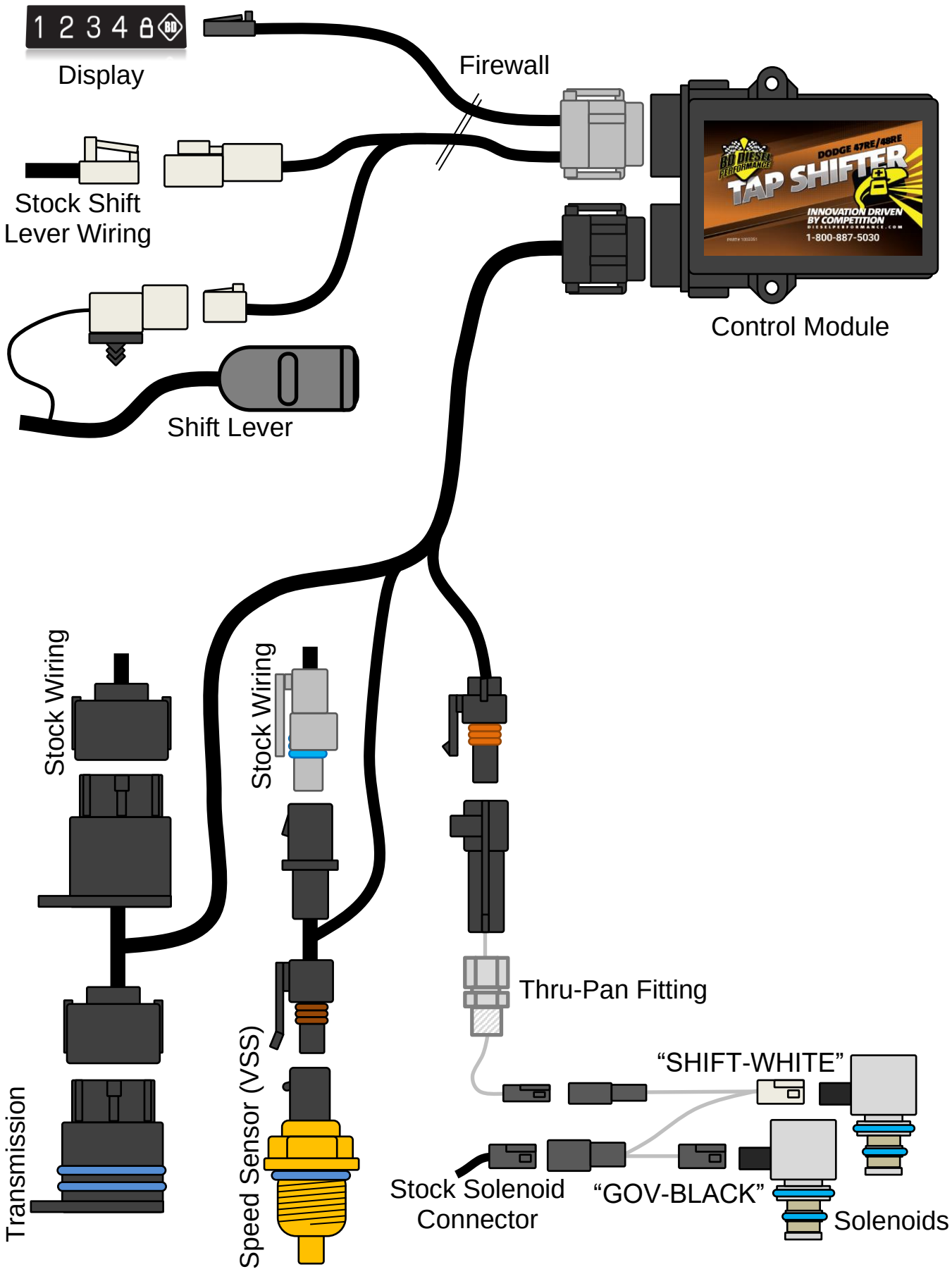
POWER Lit when the module is powered. The module power comes from the transmission power only when the engine is running and not in limp mode.
STATUS Will be illuminated solid when the shifter is turned on and controlling the transmission. It will flash if the module detects an error in vehicle speed and governor pressure correlation. The light will be off if the TapShifter is turned off.
SHIFT This light will momentarily flash every time one of the three buttons on the shift lever is pressed. This is used to confirm operation of the shift lever buttons.
VSS Lit when the VSS detects output shaft speed over 500RPM, flashing when speed is over 5RPM. Off otherwise. Used to confirm VSS input.

Can’t turn on shifter AND can’t change modes Gear display never lights up	No power to the module – open cover and check for POWER LED. Engine needs to run and transmission cannot be in limp. Power is from trans power, ground is through OE shifter wiring. Shift lever problem – open module cover and check the SHIFT LED. If it is not blinking when the buttons are pressed check the wiring to the shifter and the shift lever resistance.
Gear display flashes lock symbol and won’t turn on when pressing the **-** button	The shifter is disabling operation intentionally due to an observed fault. The padlock flashes 4 times followed by the error number: Error 1 – Module sees 0 VSS with non 0psi governor pressure. Indicates module is not getting VSS signal or the governor pressure sensor is reading too high for zero speed. Error 2 – Governor pressure sensor showing low voltage, likely due to a problem with the sensor or wiring.
Torque converter	Check what mode the TapShifter is in. Mode 3 and mode 7

never locks up when TapShifter is on	disable the TCC until the driver commands it. For normal daily driving use mode 1 which uses stock TCC control. If using mode 2, 3 or 7: The TapShifter may not be getting a VSS signal, check the VSS LED in the module to confirm operation. In mode 1 the TapShifter follows the OE computer.
On vehicles equipped with an exhaust brake: The brake doesn't turn on when using the TapShifter in 2nd gear	2006-2007 exhaust brake kits usually use the ECM to control the brake. Due to the factory programming the ECM may not command the exhaust brake when the gear shifts are being overridden in some conditions. A DFIV or throttle switch may be required to be able to use the brake in these conditions.
Rough idle/stumble on 2007 model	2007 model year vehicles must use PCB version 1.4 or newer. (Labelled on the PCB itself). Other years not affected.
Shift light on control module is blinking at a constant rate	This indicates an open or shorted circuit in the shift lever. Check the wired connections from the control module to the shift lever. The end cap of the lever that houses the Tow/Haul button may be pulled off so that the connection to the PCB housed in the shifter can be checked. The shift lever PCB integrity can be checked by measuring the resistance values from the two pin shifter connector. Refer to the table below for expected values.

No button press	18.6k ohm
Tow haul	4.1k ohm
Shift +	1.6k ohm
Shift -	0.5k ohm

Wiring Diagram



General Policy
All core returns must be,

- like for like, no mixed models
- drained of all fluids ($50 Charge)
- be returned in the original packaging
- Part Disassembled
- No junkyard cores (core must have been removed from vehicle)
- No fire damage
- Free of excessive Rust or Water Damage

Returned cores that fail to follow the above conditions will be disallowed and scrapped or returned at the customer's expense. Freight and removal damage are not covered. BD Diesel reserves the right to adjudicate cores as it sees fit and may deviate from its policy.

BD FUEL INJECTION CORE ACCEPTANCE POLICY

Model	Deduction	No Credit
P7100 Injection Pump	• AFC Housing Damaged (25% Deduction) • Governor Housing Damaged Front or Back (25% Deduction)	• Contaminated/Bio Diesel • Damaged Camshaft on 911/913 pumps. • Main Body Damaged
Bosch VE Pump	• AFC Housing Damaged (25% Deduction) • Cold Advanced Housing Damaged (50% Deduction) • Governor housing damaged front or back (25% deduction) • Main Body Damaged (50% Deduction)	• Contaminated/Bio Diesel • Seized Head (Does not turn)
CP3		• Contaminated/Bio Diesel • Seized (Does not turn) • Catastrophic Shaft Failure (Frost Plugs Damaged or Missing) • Front Cover Damaged
VP44	• Damaged Electronics (50% Deduction)	• Contaminated/Bio Diesel • Seized Head (Does not turn)
Common Rail Injectors	• Solenoid melted or destroyed, stretched terminals (25% Deduction) • 5.9/6.7 Broken Solenoid Terminal Divider (No Deduction)	• Contaminated/Bio Diesel • Damaged Body
Mechanical Injectors		• Contaminated/Bio Diesel • Damaged Body

BD TURBOCHARGER CORE ACCEPTANCE POLICY

Turbo Model/ Application	Deduction	No Credit
Cummins ISX VGT Air or Electronic Actuated	• Damaged Electronics (50% Deduction) • Missing Clamps (25% Deduction) • Missing Parts or Actuators (50% Deduction) • Turbine Wheel Separation (50% Deduction)	• Knock Off Models (Not Genuine) • Part Disassembled
Caterpillar (Ball Bearing) Models		• Knock Off Models (Not Genuine) • Wheel Separation
Caterpillar (Standard Turbocharger) 704604-9007, 704604-9011		• Knock Off Models (Not Genuine) • Turbo with 3 support Webs

Detroit Diesel VGT	• Damaged Electronics (50% Deduction)	• Knock Off Models (Not Genuine) • Wheel Separation
Ford 6.4 Powerstroke	• Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine) • Part disassembled • Wheel Separation
Ford 6.7 Powerstroke	• Missing Parts or Actuators (50% Deduction)	• Wheel Separation
GM 6.6 L5P	• L5D Version (due to incorrect compressor cover) (25% Deduction) • Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine) • Wheel Separation
Dodge Cummins 6.7 HE351VG/HE300VG	• Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine)
Standard Turbochargers (All Models, Non VGT)	• Damaged Electronics (50% Deduction) • Missing Clamps (25% Deduction) • Missing Parts or Actuators (50% Deduction)	• Knock Off Models (Not Genuine) • Wheel Separation

The above criteria apply to customer core returns. The following criteria will apply for core purchases.

Deduction	No Credit
• Cracked or Damaged due to freight • Damaged Electronics • Missing Parts or Actuators • Heavily Damaged Wheels and/or Shaft • Missing Clamps • Turbine Wheel Separation • Heavily Modified Turbochargers	• Knock Off Models (Not Genuine)

BD TRANSMISSION/TORQUE CONVERTOR CORE ACCEPTANCE POLICY

Model	Deduction	No Credit
Transmissions	• Cracked Overdrive housings ($100 Deduction) • 68rfe Cracked Case (25% Deduction) • Part disassembled (50% Deduction) • Missing Transmission Shipping Crate ($200 Deduction) • Missing TC/Transmission bracket ($50 Deduction)	• Cracked Case (Except 68rfe)
Torque Convertors	• Hub and Impeller damaged. (50% Deduction)	• Excessive corrosion • Part disassembled
Valve Bodies	• Missing electronics (25% Deduction)	• Excessive corrosion • Part disassembled

GENERAL CORE ACCEPTANCE POLICY

Model	Deduction	No Credit
EGR Cooler		• Brackets broken

Please note that all cores have a time eligibility restriction. Please see BD Terms & Conditions for further details. https://cdn.bddiesel.com/downloads/bd_terms_general.pdf

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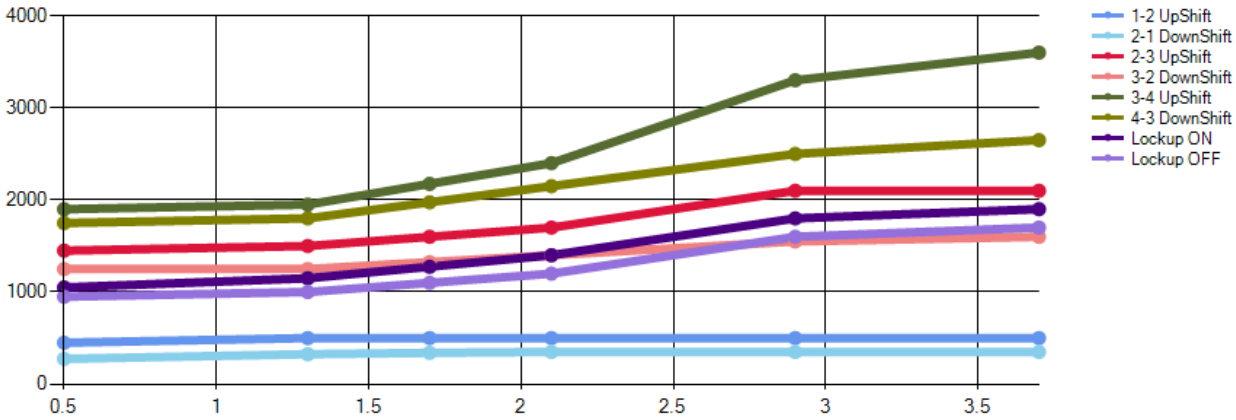


47RE/48RE Tapshifter Enhanced Mode Editor

This document explains how to use the BD Tapshifter Enhanced Mode Editor software to enable Custom Shift modes and Lock-up mode.

1607258	Dodge TapShifter 48RE

This software upgrade is OPTIONAL and not required for installation of a BD TapShifter kit.

This software is only compatible with PCB hardware version V1.5 and newer.

Disclaimer: BD Diesel does not provide recommendations for shift maps or take responsibility for the updates made to the 48RE Tapshifter using the Tap shifter configurator software. This software is intended for professionals and users should exercise care.

Table of Contents

Introduction

BD's Dodge Tapshifter gives you control over your automatic transmission with just the touch of a button. Dodge 47RE and 48RE transmissions lack the same level of control later model trucks provide over gear selection. This kit gets you back in control of your transmission without the sacrifices associated with manual valve bodies or standalone controllers.

By updating your Tapshifter module with our new enhanced editor software, additional modes will be unlocked. These modes allow custom shift scheduling for upshift, downshift as well as torque converter lock-up and unlock adjustments. All of the original Tap shifter modes and functions remain with this update.

This software requires Tapshifter module hardware V1.5 (This does not refer to the firmware version listed on the sticker). Check Appendix I for instructions to find the module version. To add this functionality an additional wire will need to be added connecting the accelerator pedal to the Tapshifter module. The wiring instructions can be found in Appendix II.

Tools Required for Installation

Micro-USB cable	BD Tapshifter Editor	Tapshifter Module V1.5	1300348* 18-22AWG Posi-Tap	1607266* Wire Pigtail APPS Input
NOT INCLUDED 	*Downloadable* BD Tapshifter Editor			

*****Provided in New 1031381 Tapshifter kits. Contact BD if you need replacement parts.

Operation

To turn on the TapShifter, tap the **-** button on the shift lever. The BD TapShifter will detect what gear you are in and will light up the BD gear display with that gear. You can now shift up and down using the **+** and **-** buttons as required. Shifting operation and torque converter operation can be configured to be automatic or manual depending on the mode used. See modes below for more details.

To turn off the TapShifter, keep pressing the **+** button until you go past 4th gear. This will turn off the display and let the TCM control the transmission again.

Automatic Mode (Mode 1)

Mode 1 allows the driver to select the maximum gear to shift up to. This means whatever gear you select on the display will be the highest gear the transmission will reach. This mode also provides convenient downshifting capabilities while retaining automatic shifting. The Tow/Haul or OD OFF button still functions like stock with the shifter turned on. This mode works just like the late model 68RFE trucks shifter. This is the default mode when it leaves the factory.

Automatic Mode with TorqLoc (Mode 2)

Mode 2 works the same as mode 1, except now the Tow/Haul button is re-purposed into a lockup button when the shifter is turned on. This means the stock torque converter lockup strategy is maintained, but at the tap of a button, you can achieve lockup (the padlock will illuminate in the display). The TapShifter takes care of the minimum speed engagement and disengage points for you based on the gear you've selected so there is no need to worry about stalling the truck.

Automatic Mode with TorqLoc/TorqUnLoc (Mode 3)

Mode 3 is similar to mode 2 except it keeps the TCM from being able to lock up the torque converter and only engages when the driver commands it.
CAUTION Do not leave the torque converter disengaged for long periods when towing or driving on the highway or it will elevate transmission temperatures.

Custom Modes (Mode 4 & Mode 5)

Mode 4 and Mode 5 allow shift points and lock/unlock to customize to the driver's wants and needs. A base shift schedule is provided as a starting point. From there all gear shift points from off throttle to part throttle and through to full throttle are completely adjustable. Torque converter lock/unlock is also adjustable throughout the throttle range. The software instructions are included later in this manual.

Lock-Up Control Mode (Mode 6)

Mode 6 does not allow the adjustment of shiftpoints. The intention of Mode 6 is to only control the torque converter. There is one lock-up point and one unlock point solely based on output shaft RPM. OE lock-up is disabled in Mode 6. Once the torque converter is locked it will remain that way until output shaft RPM falls below the unlock speed. This mode can be used for drag racing.

Full Manual Mode (Mode 7)

Mode 7 mimics the function of a manual valve body. You can drive in any gear at any time and get full control of the torque converter lockup using the Tow/Haul button which will illuminate the padlock symbol. This mode improves on manual valve bodies as it has downshift over-rev protection and torque converter anti-stall protection, plus as soon as you turn off the TapShifter, the truck regains the convenience of automatic shifting.

Mode Changes

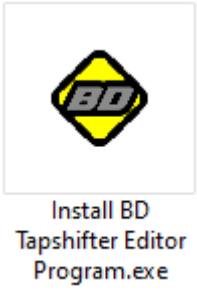
To change a mode, turn the TapShifter off (if not already). Press and hold the **+** button on the shifter for a few seconds until the display lights up with a number. This number refers to the mode the TapShifter is set to. For mode 7 it will show a **3**+**4**. To change the mode, keep tapping the **+** button to cycle through the modes. To select the mode press the **-** button. The TapShifter will remember modes through power cycles so you only need to set it when you want to make a change.

MODE 1	
MODE 2	
MODE 3	
MODE 4	
MODE 5	
MODE 6	
MODE 7	

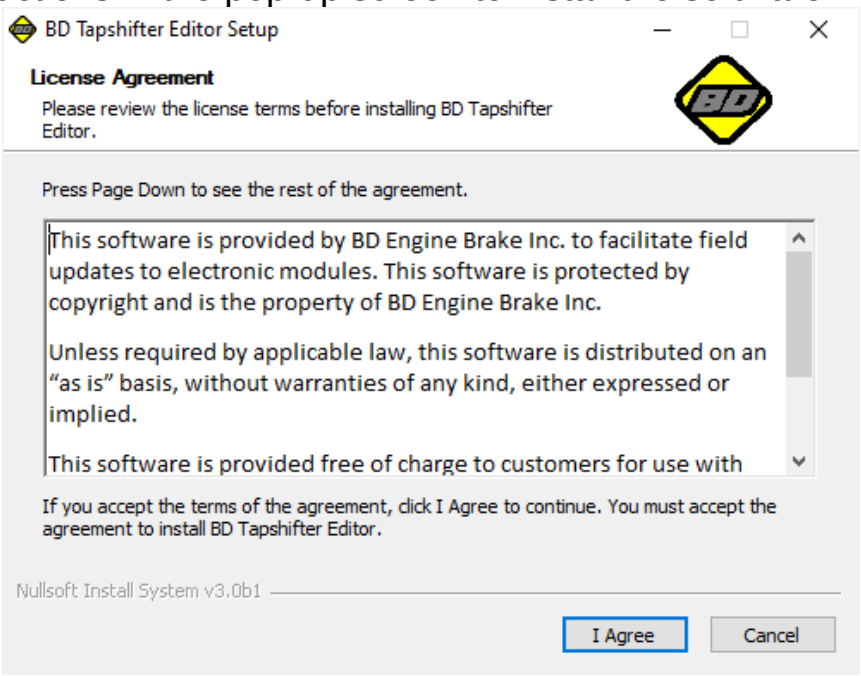
Instructions

Software Installation

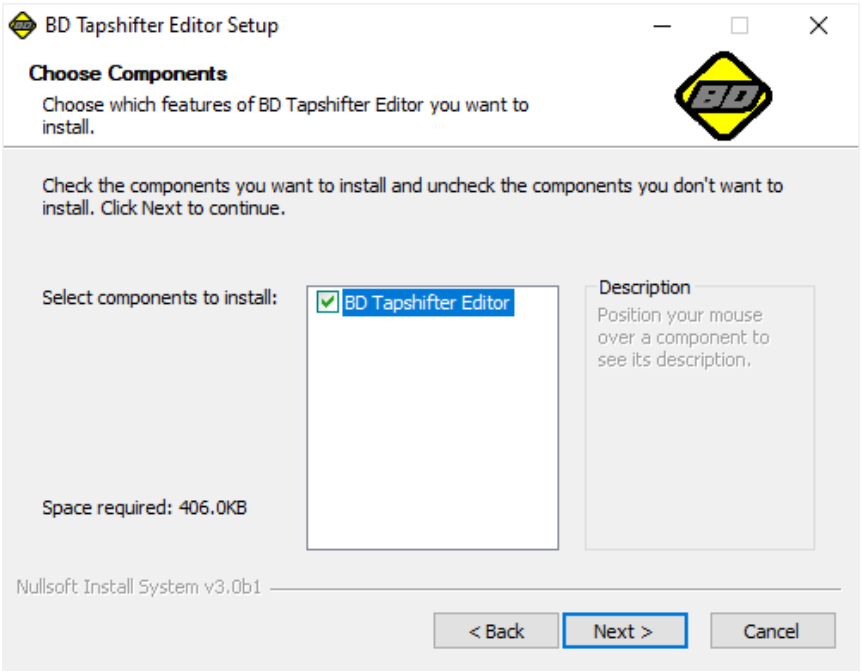
Download the Tapshifter enhanced mode software from the resources tab on the BD Diesel website.



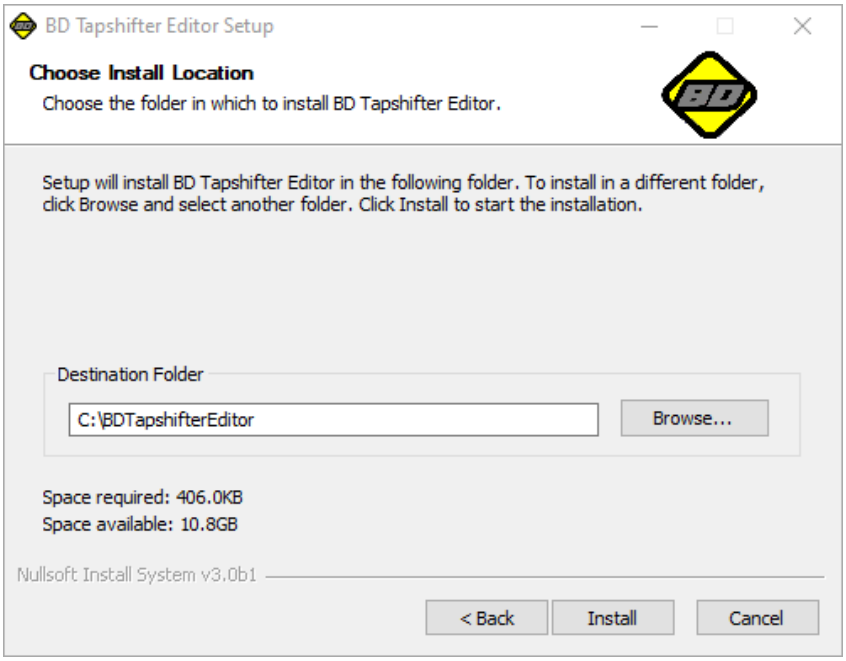
Follow the instructions in the pop-up screen to install the software

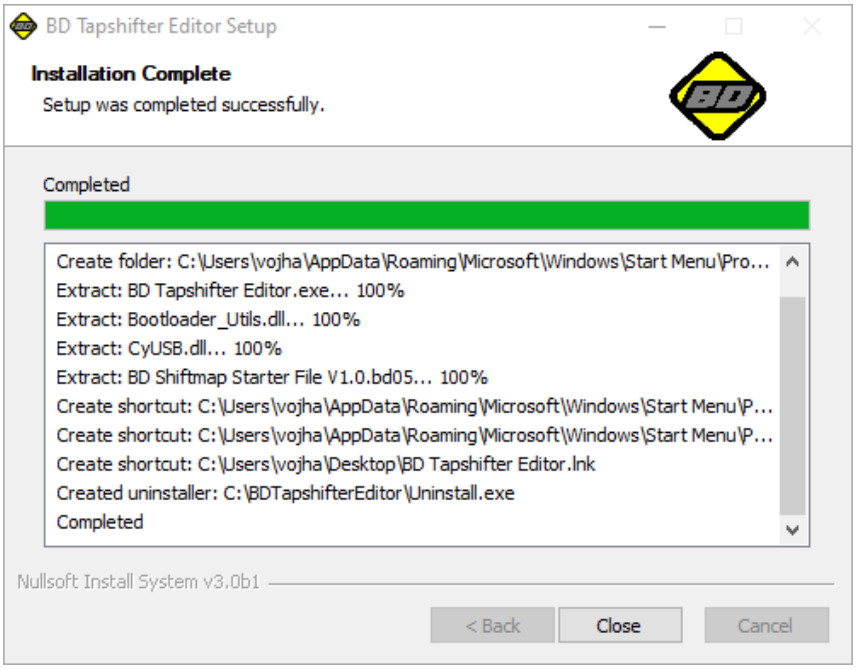


Choose a location where you want to save the software and make note of this file location.

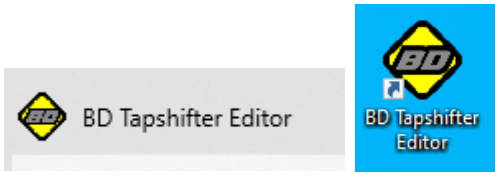


Click install and close the installer once the installation is complete



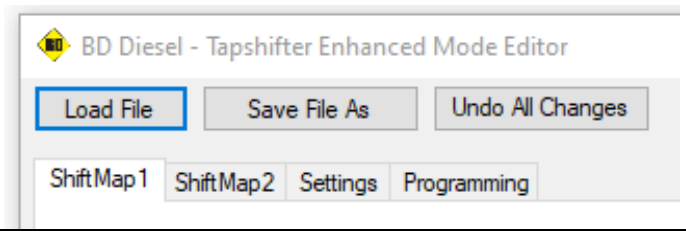


Use the shortcut in the Start menu or use the Desktop shortcut to launch the software.

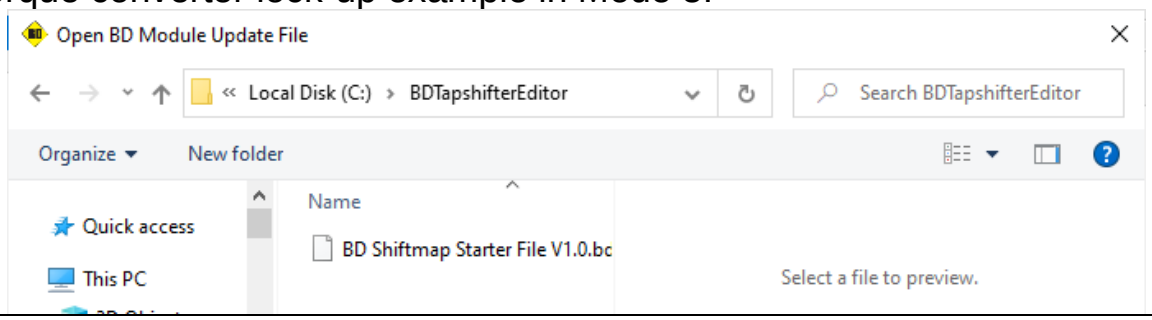


Using the Software

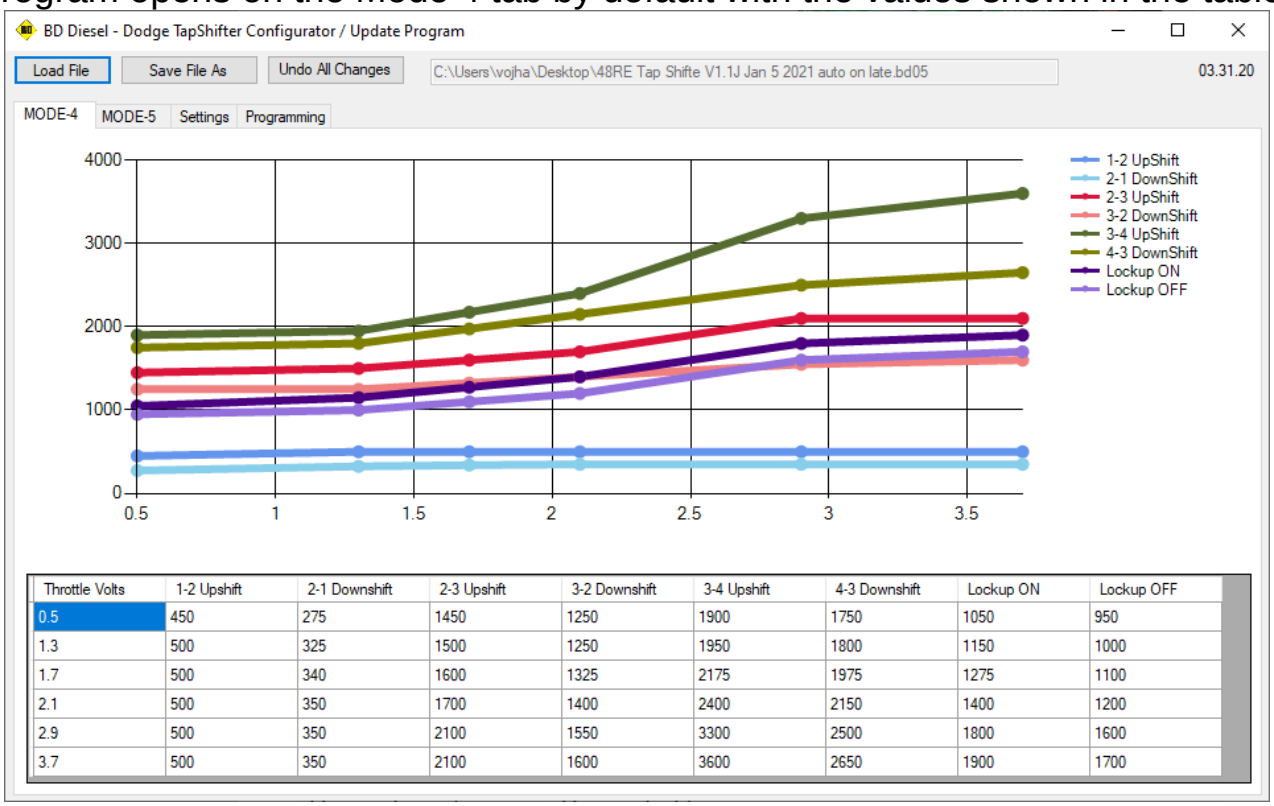
Launch the configurator and click on the “Load file” button to open a file. Select the file from the browser to open it.



Navigate to the location where the program was saved to find the Shift map starter file. This file can be saved by a different name after being modified. Ensure the file extension remains “.bd05” after being renamed.
The shiftmap starter file contains a stock-like shift schedule in Mode 4 and second gear torque converter lock-up example in Mode 5.



The program will load the file and display the values on the graph as shown. The program opens on the Mode 4 tab by default with the values shown in the table.



Throttle Volts	1-2 Upshift	2-1 Downshift	2-3 Upshift	3-2 Downshift	3-4 Upshift	4-3 Downshift	Lockup ON	Lockup OFF
0.5	450	275	1450	1250	1900	1750	1050	950
1.3	500	325	1500	1250	1950	1800	1150	1000
1.7	500	340	1600	1325	2175	1975	1275	1100
2.1	500	350	1700	1400	2400	2150	1400	1200
2.9	500	350	2100	1550	3300	2500	1800	1600
3.7	500	350	2100	1600	3600	2650	1900	1700

The table contains the throttle position sensor voltage and the corresponding output wheel RPM at each shift point. The throttle voltage dictates the throttle percentage as shown in the table below:

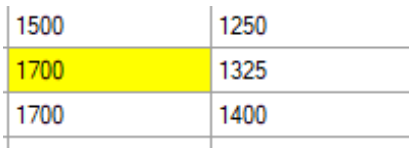
Volts to throttle percent conversion:

2003-04		2005-07	
Volts	Percent	Volts	Percent
0.7	0%	0.5	0%
1.3	20%	1.3	20%
1.7	33%	1.7	30%
2.1	47%	2.1	40%
2.9	73%	2.9	60%
3.7	100%	3.7	80%

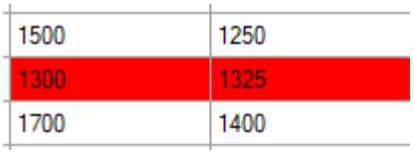
In order to change the value select the box and type in the desired value.

Throttle Volts	1-2 Upshift	2-1 Downshift	2-3 Upshift	3-2 Downshift	3-4 Upshift	4-3 Downshift	Lockup ON	Lockup OFF
0.5	450	275	1450	1250	1900	1750	1050	950
1.3	500	325	1500	1250	1950	1800	1150	1000
1.7	500	340	1600	1325	2175	1975	1275	1100
2.1	500	350	1700	1400	2400	2150	1400	1200
2.9	500	350	2100	1550	3300	2500	1800	1600
3.7	500	350	2100	1600	3600	2650	1900	1700

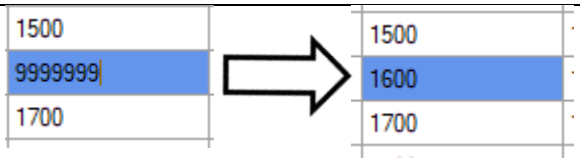
If the value is valid*, the changed value is shown in yellow.



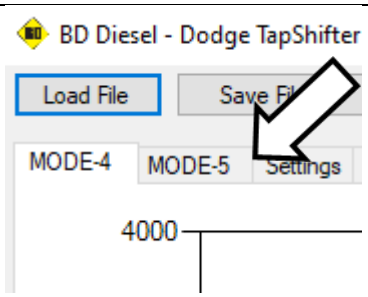
If the value is invalid* then the value is marked in red and the conflicting value is also marked in red.

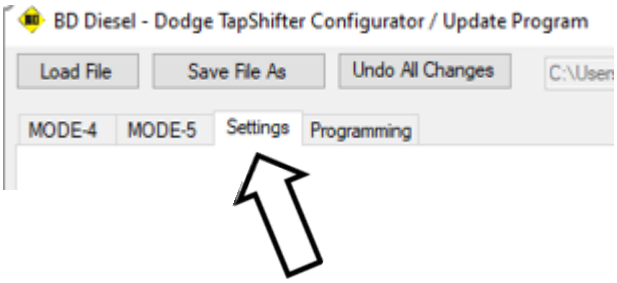
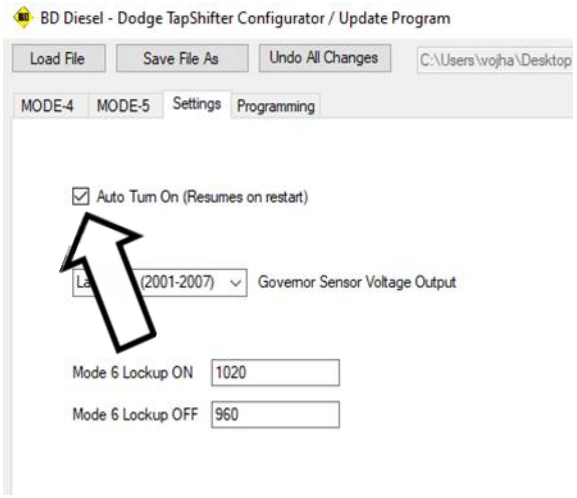
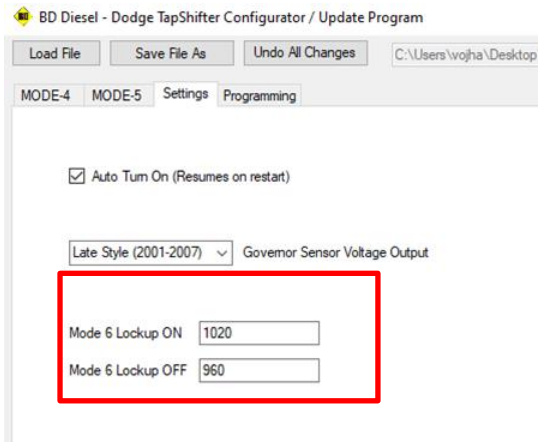


If the value entered is too large then the value defaults to the last entered value.



Use the tabs on the top to set the values for Mode 5. Follow the previous steps to change the values for Mode 5.

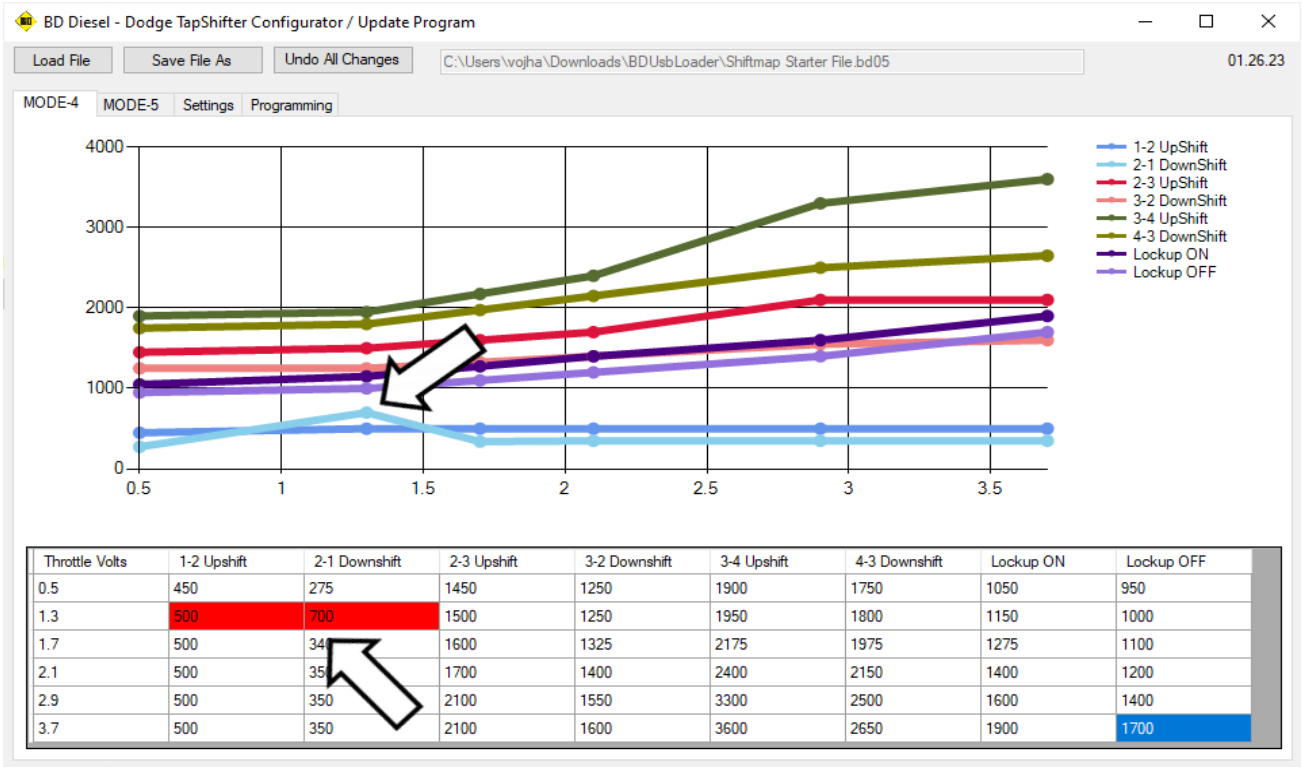


Using the settings tab to set additional options.	
Use the Auto turn on check box if you want the tapshifter to remember its last set state and turn on automatically when the vehicle is started up. Ie: If the Tapshifter was last set to 3rd gear in mode 3 it will return to that state when the vehicle is restarted.	
Mode 6: Use the two boxes to set the output shaft RPM at which the torque converter lock-up turns on and off.	

NOTE: The option to choose between early and late styles is not supported at this time.

Valid and Invalid Shift points

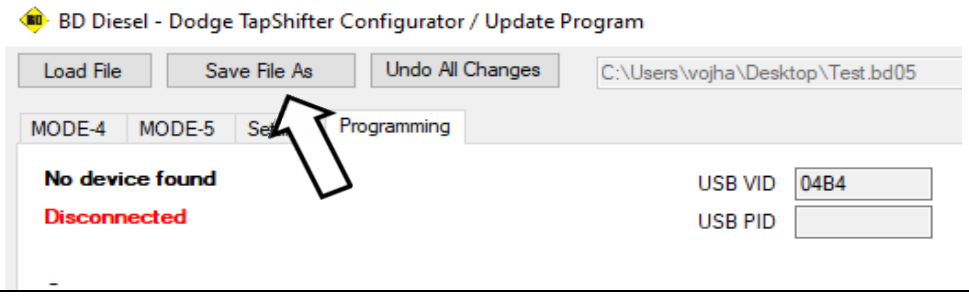
The shift points control when the transmission shifts up or down based on throttle position and wheel speed. An acceptable/valid value would be when the upshift value is at least 50 RPM higher than the downshift value to prevent gear hunting. The upshift value must also be at least 50 RPM lower than the downshift value for the next gear. An invalid pair of shift points is one where lines of the graph overlap as shown below:



Throttle Volts	1-2 Upshift	2-1 Downshift	2-3 Upshift	3-2 Downshift	3-4 Upshift	4-3 Downshift	Lockup ON	Lockup OFF
0.5	450	275	1450	1250	1900	1750	1050	950
1.3	500	700	1500	1250	1950	1800	1150	1000
1.7	500	34	1600	1325	2175	1975	1275	1100
2.1	500	35	1700	1400	2400	2150	1400	1200
2.9	500	350	2100	1550	3300	2500	1600	1400
3.7	500	350	2100	1600	3600	2650	1900	1700

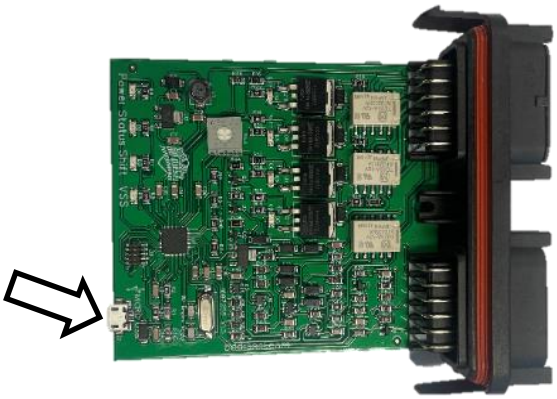
Save and Program the New Shiftpoints

Use the “Save File As” button to save the new map as a new file or to overwrite the previous file on your computer.

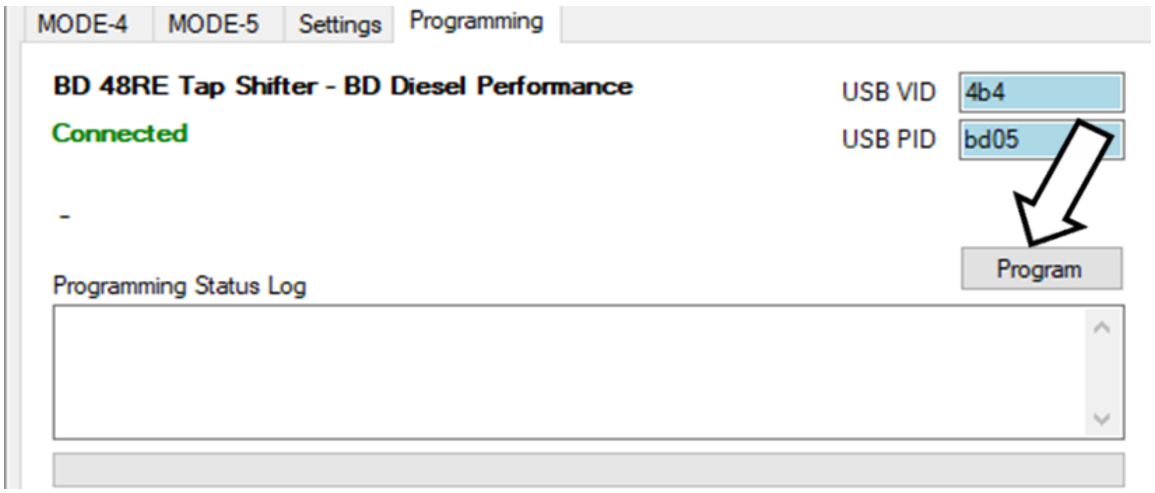


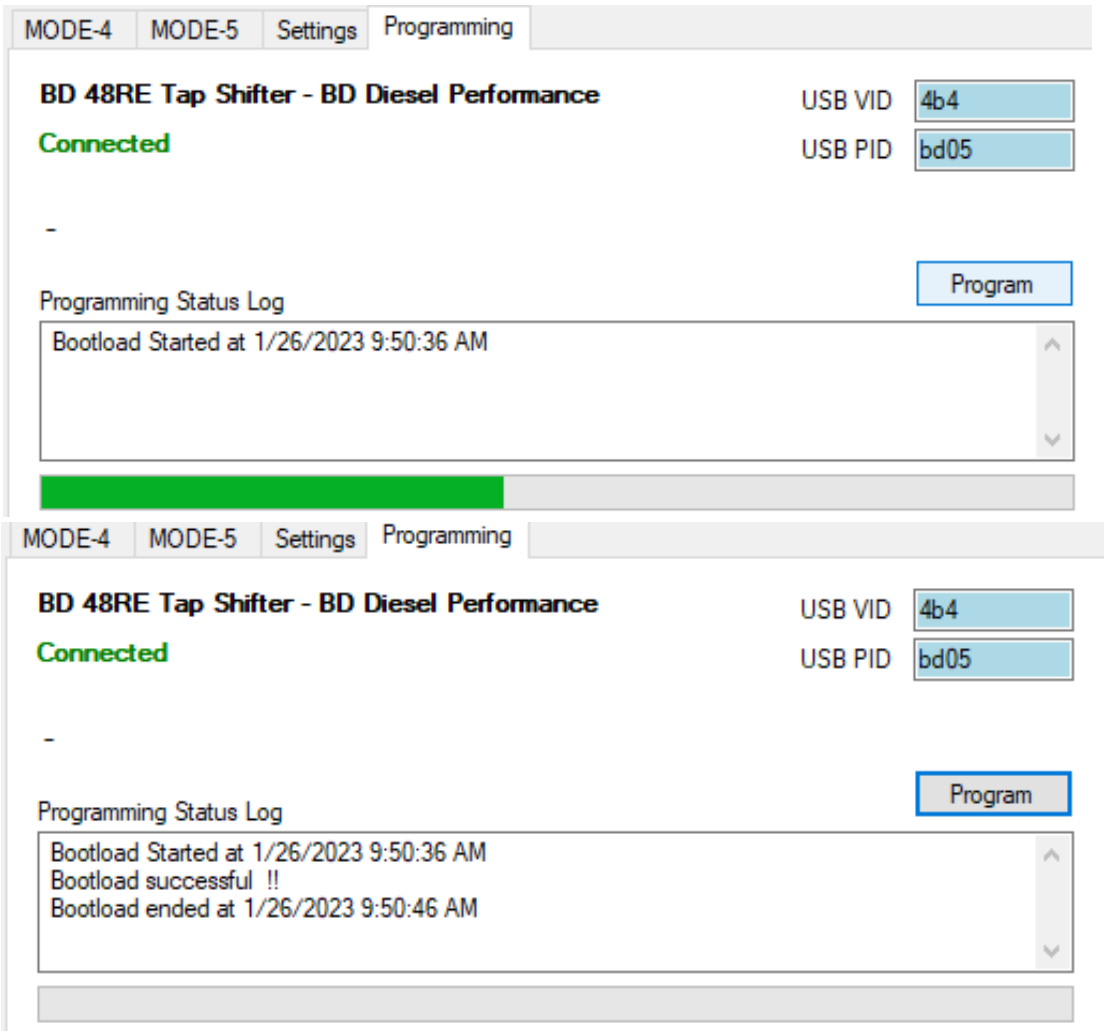
Unplug the control module from the harnesses. Use a screwdriver to press down on the two tabs to open the enclosure.

Connect a micro USB cable to the port at the opposite end of the connectors



Use the Program button to upload the new shiftpoints and settings to the module.





Troubleshooting

Cannot install the software	This software can be used only on windows XP, Windows 7, Windows 10 and Windows 11 devices.
Cannot find the shift map file.	The shift map starter file is available in the same install folder as the program.
The module does not get programmed	If the module does not get programmed then check for any invalid shift points. Ensure that the file is saved in the same location as the program. Check that the file extension is a '.bd05' otherwise the module will not get programmed.
Shift points shown in red	Check any cells marked in red with its corresponding red cell to select values that are incorrect.
File does not save	Check that the shift points are valid and the file name and location chosen do not conflict with existing files.
Module is not recognized by the program	Ensure the module is powered by checking the power LED on the module. Try using a different USB cable or port on the computer.

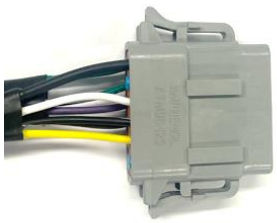
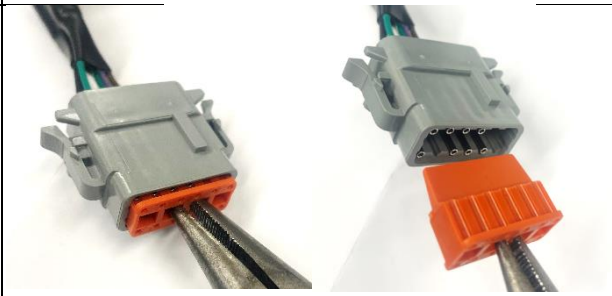
Appendix I

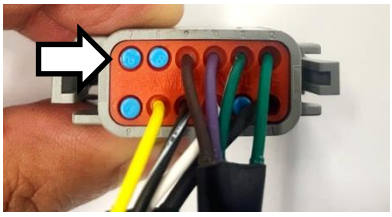
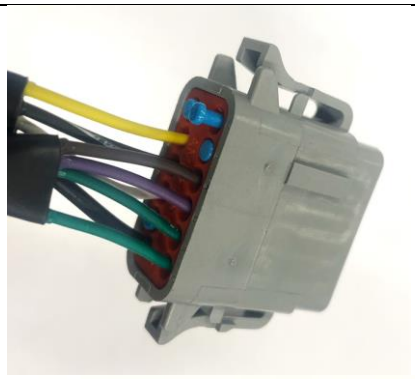
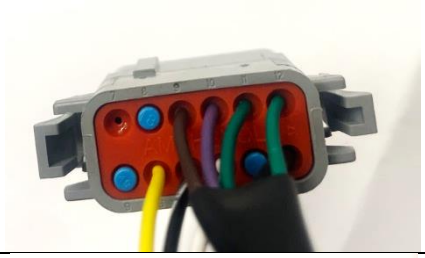
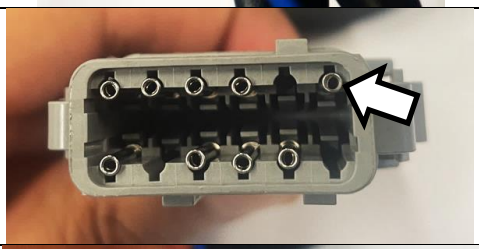
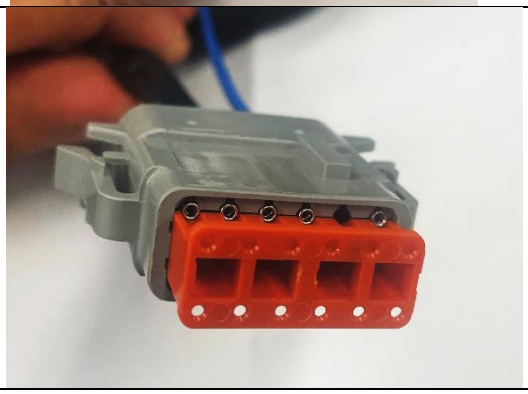
Module Version Number

Use a screwdriver to press down on the two tabs to open the enclosure.

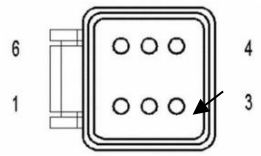
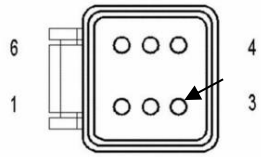
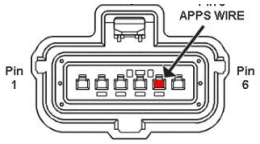
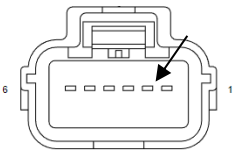
Ensure the module being used is PCB hardware V1.5 or newer. Older versions do not prevent programming but will exhibit inconsistent shifting. Only modules with the version number V1.5 or newer should be programmed using this software. Find the hardware version number as shown below:

Appendix II-Throttle Sensor Wire Installation

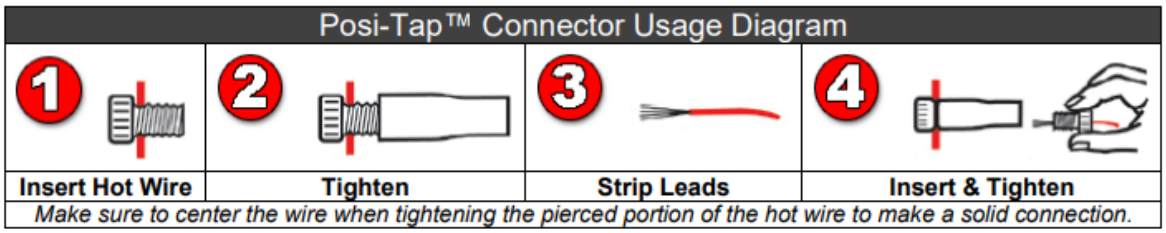
Disconnect the grey connector from the module.	
Remove the orange wedge-lock with a pair of pliers.	

Find Pin 7 on the back of the connector. The pin numbers are embossed in the grey plastic.	
Remove the plug covering Pin 7.	 
Insert the provided blue wire into the hole in the orange seal. Make sure feel a click to show the wire has been locked in place.	
Make sure the pins sits correctly and is locked in place as shown from the front of the connector	
Once the pin is in place, insert the wedge-lock with the pins in the notches and press the wedge-lock in till it clicks.	

The blue should be routed in the cab of the truck on the driver side. Based on the model year, find the accelerator position sensor connector and the particular pin and wire for the signal as shown below:

Application	Sensor location	Sensor Wire
2003	Engine	APPS Pin 3- YL 
2004	Engine	APPS Pin 3- BR/WT 
2005-2006	Accelerator Pedal	APPS Pin5- 20BR/WT 
2007	Accelerator Pedal	APPS Pin2 - 20BR/WT 

After finding the throttle position wire for the model year of the vehicle feed the wire from the grey connector to the point where you want to connect to the wire.
Use the provided posi-tap to tap into that wire.



The ground terminals of the vehicle's batteries should be disconnected before performing any piercing/posi-tapping onto any ECM/PCM wire.

Following the steps connect the stripped end of the blue wire to the throttle position sensor wire as shown: