Auxiliary Transmission Filter Kit Dodge 94-07 (I-00224)

Auxiliary Transmission Filter Kit

Part #	Vehicle	Application
1064017	Dodge	1994-2007

The BD Transmission Filter Kit will provide added security for your performance transmission. Oil normally flowing from the torque converter through the cooler and back to the pan will be filtered thru the LFP5570/ transmission filter that is rated at 98% efficient at 25 micron for extra protection and allow for easy filter replacements.

READ ALL INSTRUCTIONS CAREFULLY BEFORE INSTALLATION

Kit Contents

1604120	1604125	1604008	1604046
Filter Head	Filter Head Mounting Bracket	Oil Filter	½" NPT x #8 ORB 90° Fitting
			
Qty: 1	**Qty: 1**	**Qty: 1**	**Qty: 2**

1604048M	1604049	1604038	1604039
#8 JIC x ¼" NPT Straight Fitting	#8 JIC-F x ½" Barb – 45°	#8 Versaflare Tube Ferrule	#8 Versaflare Tube Nut
			
Qty: 1	**Qty: 1**	**Qty: 1**	**Qty: 1**

1604041	1452821	1604124	1300130
#8 JIC Adapter Union	Hose Clamp	Filter Head Bolt	Long Tie Wrap
			
Qty: 1	**Qty: 4**	**Qty: 2**	**Qty: 2**

1100111	1100112	1604047	1604054
¼" Flat Washer	¼" Lock Washer	#8 JIC x ½" Hose	1/2" Transmission Hose
			
Qty: 2	**Qty: 2**	**Qty: 3**	**Qty: 1 x 74"**

1500359	1200105	1120031	1120033
3/8" Thread Cutting Bolt	Flat Washer	3/8" Lock Washer	3/8" Nut
			
Qty: 2	**Qty: 2**	**Qty: 2**	**Qty: 2**

Tools Required

- Set of combination wrenches
- Power drill with 1/8”, 1/4” & 3/8” bits
- Hammer
- Center punch
- Drain pan
- Pipe cutter
- Thread sealant (liquid, paste or tape)

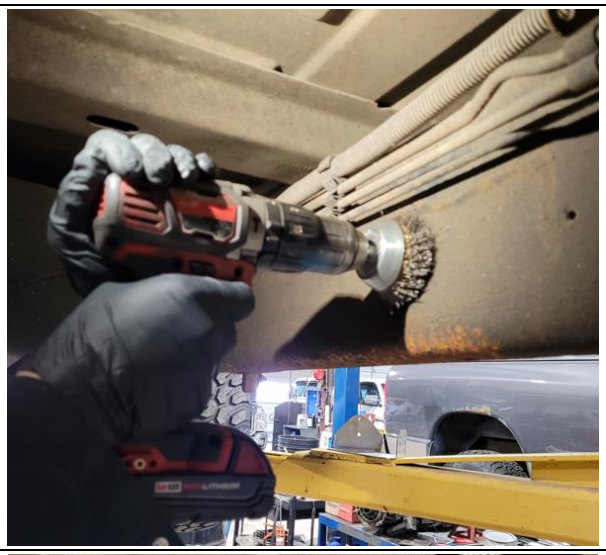
Oil Filter Cross Reference

HASTINGS	BALDWIN	DONALDSON	FLEETGUARD	FRAM	LUBER-FINER	WIX
LF364	BT230	P555570	LF3342	PH3519	LFP5570	51268

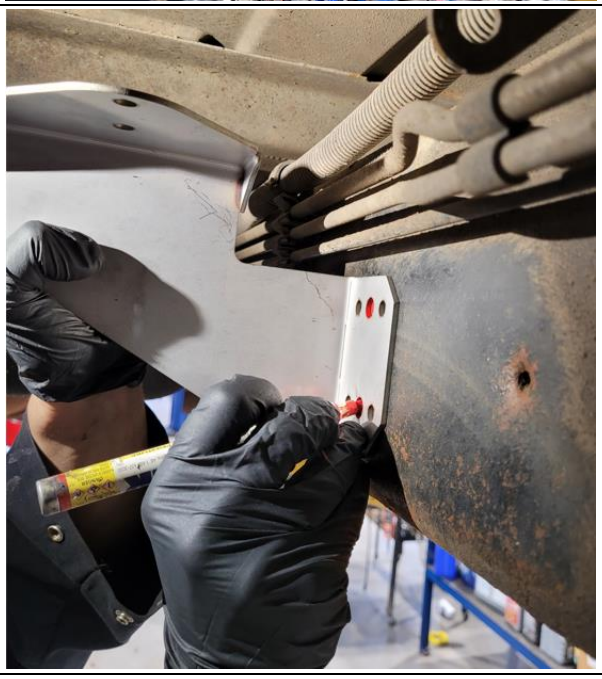
Installation

Raise the vehicle on a hoist or safety stands to gain access to the driver's side of the transmission area.

Locate and clean a spot to mount the filter housing along the left hand (driver side) frame rail.

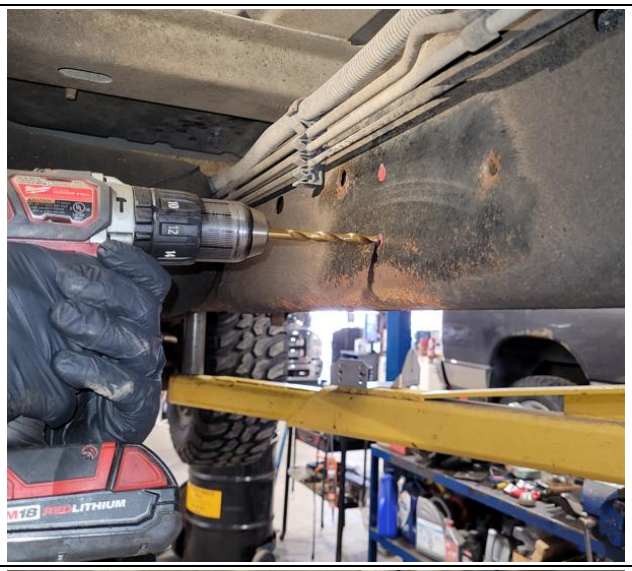


Using the filter mounting bracket as a guide, mark the 2 spots for the mounting bolts. The bracket will be positioned so that the filter will be pointing downward when installed as shown.

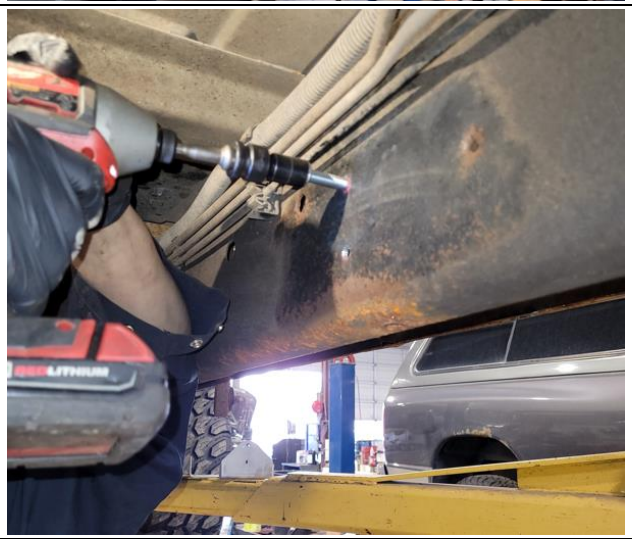


To allow for easier drilling, center-punch the two marked spots for the mounting bolts.

Using a 5/16” drill bit, drill pilot holes for thread cutting mounting bolts.

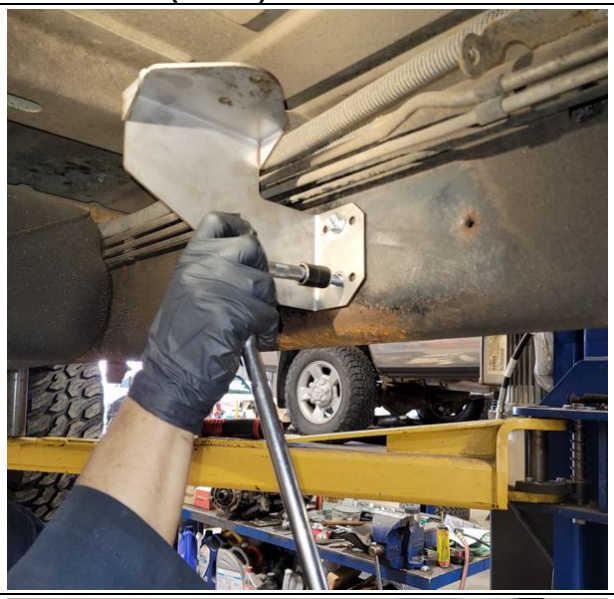


Make pilot thread using supplied thread cutting bolt on the two holes as shown.



Place the trans filter bracket and tighten the two bolts using breaker bar as shown

Nuts and lock washers are supplied for applications where access to the back of the bolts is available.



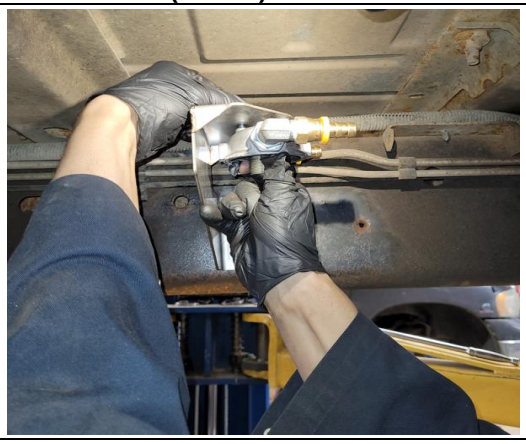
Install the two **90° ORB fittings** (1604046) into the filter head (do not use pipe sealant). When installed, the fittings need to point toward the front of the vehicle. For ease of installation, we recommend assembling the fittings on the filter head on a workbench before installing it onto the vehicle as shown.

Twist the fitting in until the O-ring gets as close as possible to the filter head, then by holding the fitting, tighten the jam nut as shown.

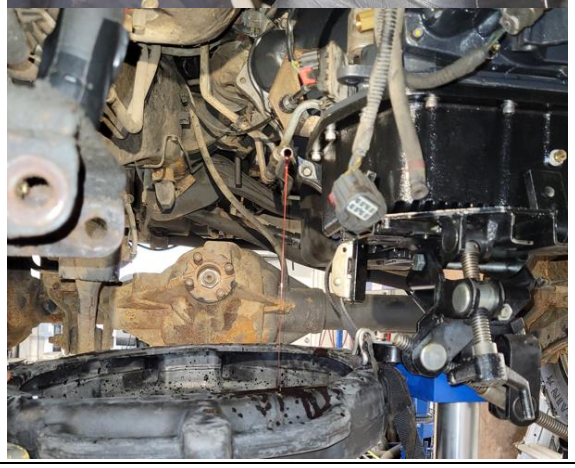
Install the **#8 JIC female fitting x ½" hose** barbed fitting (1604047) into the **90° ORB fitting** (1604046) as shown.

After assembling the fittings on the inlet and outlet ports of the filter head, It is ready to mount on the filter mounting bracket.

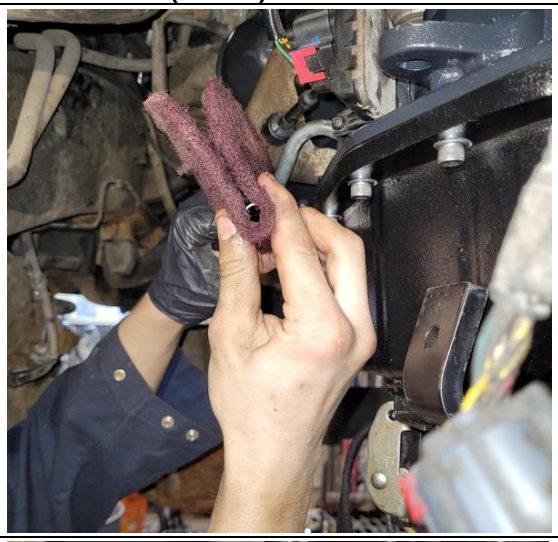
Position the filter head on the filter mounting bracket and install the 2 bolts using the flat washers supplied.



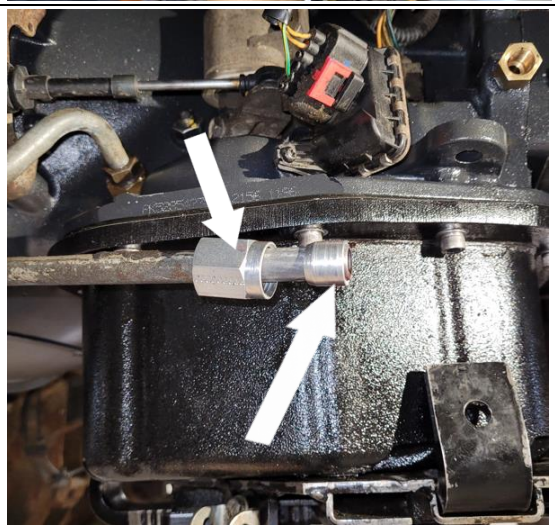
Locate the oil cooler line towards the rear of the transmission.
Using a small pipe cutter, cut the line approximately 6” from the bend.
NOTE: You may want to use the drain pan to capture any spilled fluid as shown.



Clean the ends of the cut pipe and then discard the short portion and fitting from the transmission side.

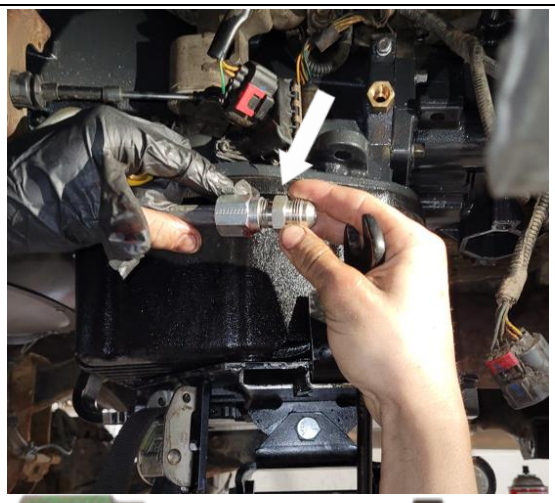


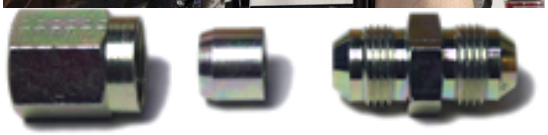
Insert the supplied fitting components as shown

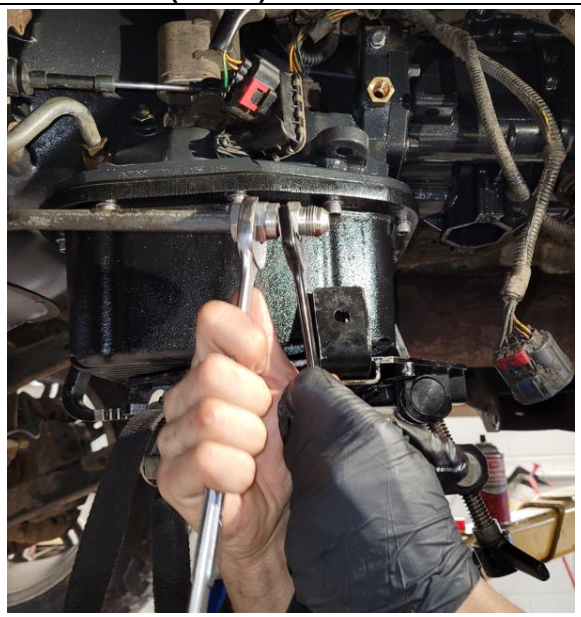


Insert the compression nut, compression ferrule and the JIC fitting (1604041) over the forward portion of the transmission line and tighten.

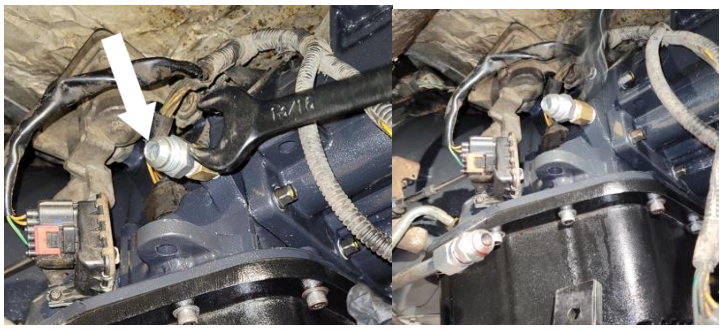
These are pressure fittings so do not over-tighten.







Install the straight 1/4NPT-JIC (1604048M) fitting into the open port on the transmission using pipe sealant on the threads. Thread the fitting in finger tight, and then turn once more with a wrench. Do not over torque as you will damage the case.

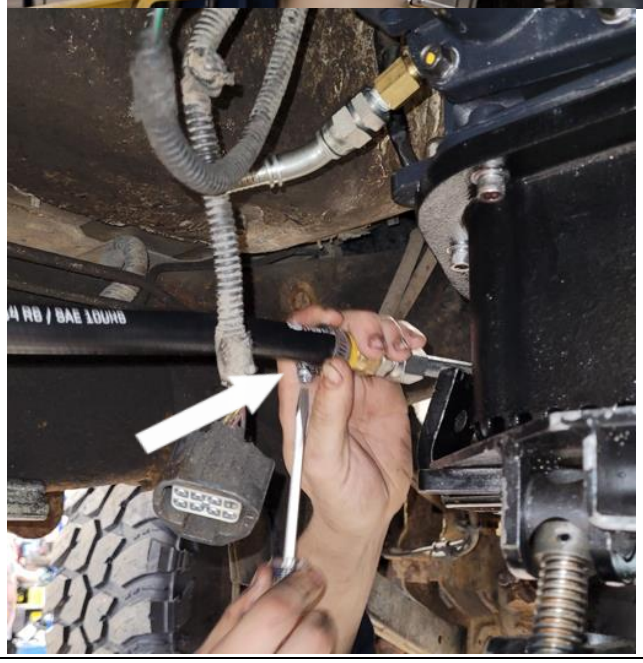


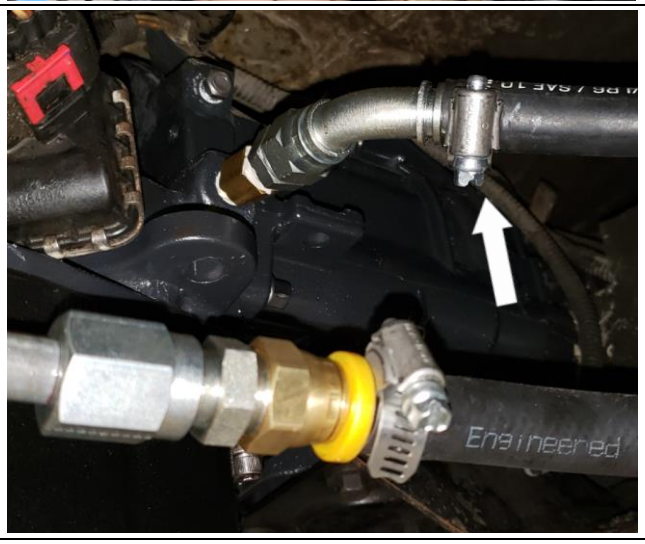
Thread the strait JICF to ½ Hose barb fitting (1604047) on strait JICM in place. Use a second wrench to hold the JIC fitting as shown.
Thread sealant is not needed.

Thread the 45° JICF to ½ Hose barb fitting (1604049) in place. Align the hose inlet correctly and tighten with a wrench, use a second wrench to hold the NPT(1604048M) fitting.

Thread sealant is not needed.

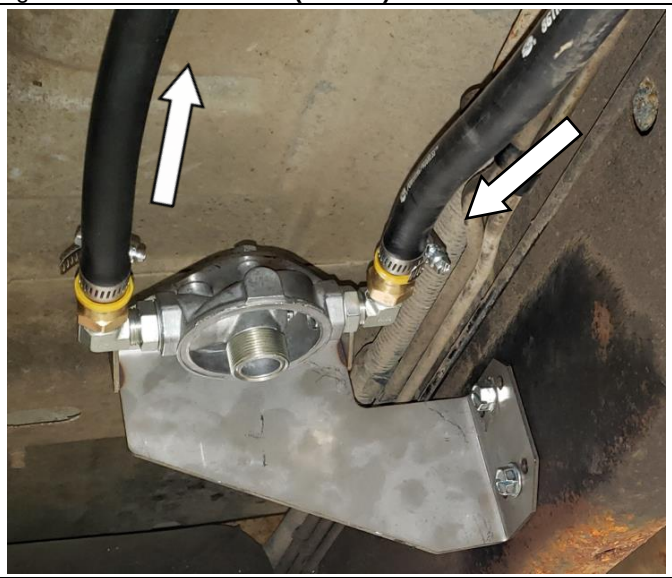
Measure and cut a section of the transmission filter hose supplied and install onto the barb fitting at the “IN” port of the filter head and secure it tightly with hose clamps. Install the other end of the hose onto the barb fitting attached to the return line from the cooler and secure tightly with hose clamps as shown.





Measure and cut a section of the transmission filter hose supplied and install onto the barb fitting at the “Outlet” port of the filter head and secure it tightly with hose clamps. Install the other end of the hose onto the 45° barb fitting placed on the transmission secure tightly with hose clamps as shown.

Flow direction from cooler to the filter and from the filter to the transmission case.



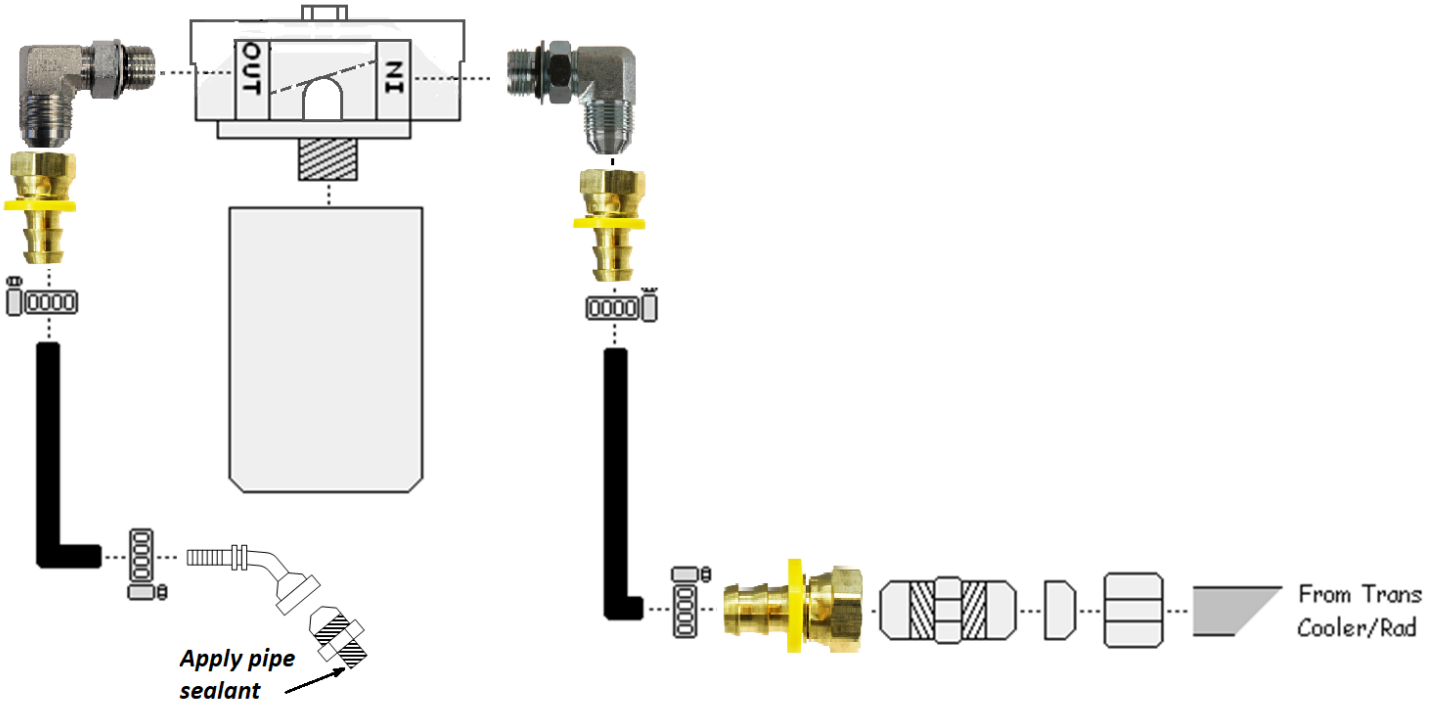
Note:
When routing hoses, make sure that they are not rubbing against anything that will cause them to wear. Secure the hoses using tie wraps, but leave enough slack for flex movement.

Add fresh transmission fluid into the oil filter (check with transmission specifications for proper fluid type or confirm with vehicle owner as which fluid he may be using) and lubricate the oil filter seal with some fresh transmission fluid.
Screw the filter onto the threads of the filter head and once the rubber seal has contacted the mating surface of the filter head, tighten the oil filter an additional ¼ to ½ turn.

Note:
Do not use a filter wrench to tighten the filter element and do not over tighten the filter.

After installation is completed, take the vehicle on a short road test, check for any leaks and top up the fluid level.

Filter Flow Layout



If you experience any problems or difficulties with the installation of this kit, please contact the BD Technical Department at (800) 887-5030 or fax at 1-604-853-8749, between 8:00am and 4:30pm Pacific Standard Time.

DOWNLOAD COLOUR INSTALL MANUALS AT www.bddiesel.com

DO NOT USE WATER-BASED TRANSMISSION FLUSHING FLUID – THE CONVERTER LOCKUP CLUTCH LINING WILL DISINTIGRATE, AND *WARRANTY WILL BE VOIDED.*

Dodge 47/48RE PRO FORCE PRO FORCE 3D Torque Converter

Installation Instructions

1060210X	**518/618 Non L/U**	**1988-1993**
*** 1070247X, -LX, -X-HS**	**47RH & 47/48RE**	**1994-2007**
† 1071217X, -LX		
^ 1071218X, -LX		

PART NUMBERS WITH "**X**" FEATURE ENHANCED STALL, "**LX**" LOW STALL, AND "**X-HS**" HIGH STALL

** Features single lock-up clutch*

† Features triple lock-up clutches

^ Features triple lock-up clutches and BigShaft turbine hub

PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLING THIS PRODUCT.

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

Important Tips Before You Start

Always service the transmission when installing a torque convertor. This will ensure that both the torque converter and transmission will be operating with fresh clean transmission fluid.

Please be aware that engine horsepower increase modifications may require an increase in transmission mainline pressure, to prevent transmission or converter clutches from slipping. Contact a BD service representative for more vehicle-specific details.

Preparing the Crankshaft and Convertor for Installation

- Always check crankshaft pilot for burrs and out-of-round.
- Remove any rust with fine emery paper, and lightly grease pocket receiving torque convertor pilot hub.
- Remove any paint from torque convertor's crank pilot hub with fine emery paper.
- Before installation, pre-fit torque convertor to flex plate, and into back of the crankshaft. It should be a snug, even fit (neither loose nor binding).
- Slowly pour two quarts of automatic transmission fluid into convertor.
- Check flex plate for cracks or worn teeth.
- If replacing the torque converter only, replace the transmission front seal.

Convertor Installation

Support and rotate torque converter back and forth while installing it into transmission. You will feel it seat 3 times for the input shaft, stator support, and oil pump notches. Use care to not damage the front seal. Make sure that the convertor is fully installed– do not assume that it is in place when you receive the transmission. After you are sure it is in place, always keep the tail end of the transmission low so that it cannot slip out.

Checking Convertor-to-Flex Plate Alignment

- Bolt the transmission to the engine with two bell housing bolts (hand tight), and check the convertor for free movement.
- After the bell housing bolts are tightened, the convertor should have 1/16"-1/8" of clearance between the pads on the convertor and the flex plate. If there is not enough clearance, remove the transmission and double-check if the convertor is seated properly in the front of the transmission.
- Add Loctite® to the torque convertor nuts and/or bolts before installation.
- Draw the convertor bolts up evenly, so as not to bind the convertor, which can cause vibration and pump bushing failure.
- If there is a vibration after installation, you could try marking the convertor to the flex plate, then rotating it one bolt at a time.

NOTE: The #1 cause of vibration is the failure to prepare the crankshaft for installation. Each time the convertor is installed without polishing off the crankshaft rust, removing the paint from the convertor pilot, and adding a little grease, the convertor may be drawn up crooked with the first bolt. This condition may cause convertor run-out and will usually ruin the pump bushing. The second most common complaint on convertors is a whine after installation. This usually means that there is too much clearance between the convertor pads and the flex plate. This draws the convertor hub too far out of the pump drive gear, causing the gear to "rock".

Reusing Convertor When Replacing the Transmission

We strongly recommend replacing the convertor with every rebuilt transmission because of the difficulty of thoroughly cleaning it on the inside. If you choose not to replace it, the convertor must be removed and thoroughly flushed. Make the following inspections: internal thrust washers and bearings for misalignment, condition of the inner sprag, inner turbine hub splines, inner lockup seal (on lockup convertors), hub condition for wear/scoring, the drain plug, pilot and mounting devices to ensure proper alignment and overall good condition.

Cooler & Cooler Lines

The cooler and cooler lines ***MUST*** be flushed to remove all metal particles and oil. ***DO NOT BLOW THEM OUT WITH AIR.*** Use a solvent that will flush out old oil and metal particles. This is particularly important if the transmission you have removed has metal in the fluid. ***DO NOT USE WATER BASED TRANSMISSION FLUSHING FLUID!***

Flex Plate Inspection

Inspect for cracks where the plate bolts to the engine, and out of round holes where the convertor bolts to the flex plate. Check for warping. Inspect the ring gear teeth for excessive wear or missing teeth.

Manual Control Linkage (if applicable)

The manual control linkage must be re-adjusted according to the repair manual, to assure proper setting for the unit being installed. Adjust the linkage with the vehicle in actual road operation.

Shift Linkage

Excessive shift linkage wear (including slop at the steering column) may cause shifting malfunctions such as improper throw, dragging into or out of gears, or jumping out of gear.

Motor & Transmission Mounts

The condition of the motor mounts & transmission mounts can affect linkage adjustments. Worn mounts can create in-vehicle noises, and can cause excessive wear to internal transmission parts. Broken or oil-soaked mounts must be replaced.

U-Joints and Driveshaft Yoke

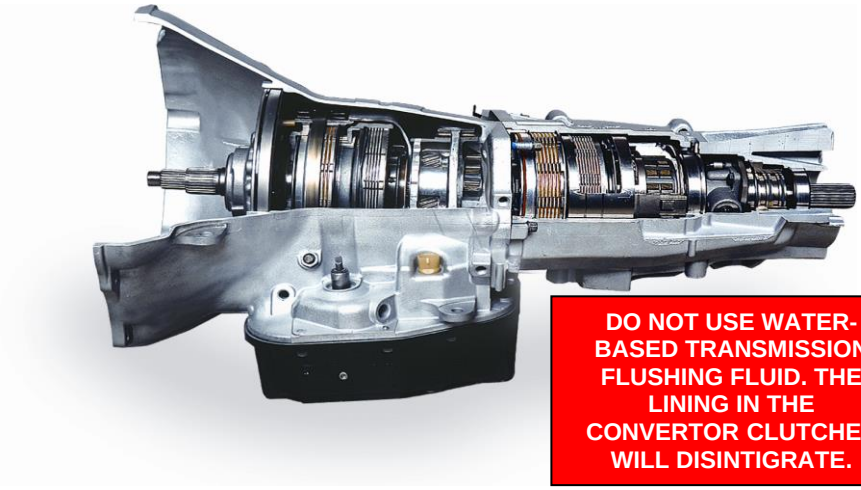
Tight or worn U-Joints may cause vibration in the driveline, as well as premature failure of bushings and seals in the tail casting. A tight or worn (tapered) front yoke will quickly damage the rear seal and bushings, causing loss of lubricant, which in turn can lead to transmission failure.

Important Engine/Transmission Notes

Before operating an electronic transmission after re-installing it, connect a scan tool to record and clear any transmission trouble codes. The TPS and temperature sensor play a critical role in the operation of electronic transmissions. The convertor clutch will not operate until the transmission reaches a certain temperature. Be sure these sensors are working properly, and replace faulty units. Fill the transmission with the correct amount of the specified transmission fluid. Test drive the vehicle to check transmission operation, and to complete any relearn procedures. Refer to the service manual for the detailed relearn procedure.

***DO NOT:** Check the operation of the transmission with the drive wheels off the ground.	***DO NOT:** Re-use old oil. Dirty oil causes valves to stick and may clog the lines if contaminated. Both may lead to premature failure of the transmission or torque convertor!

DOWNLOAD COLOUR INSTALL MANUALS AT www.bddiesel.com



DO NOT USE WATER-BASED TRANSMISSION FLUSHING FLUID. THE LINING IN THE CONVERTOR CLUTCHES WILL DISINTIGRATE.

BD Dodge 4-Speed Transmission

Installation Instructions

	Year	Model	2WD	4WD
TORQUEMASTER TRANSMISSION (500HP)	94-95	47RH	1064152B	1064154B
	96-98	47RE	1064162B	1064164B
	98-99	47RE	1064172B	1064174B
	00-02	47RE	1064182B	1064184B
	03-04	48RE	1064192B	1064194B
	04.5-07	48RE	1064232B	1064234B
TOWMASTER TRANSMISSION (400HP)	91-93	518	1030310	1030311
	94-95	47RH	1064152	1064154
	96-98	47RE	1064162	1064164
	98-99	47RE	1064172	1064174
	00-02	47RE	1064182	1064184
	03-04	48RE	1064192	1064194
	04.5-07	48RE	1064232	1064234
ROADMASTER TRANSMISSION (350HP)	03-04	48RE	1064142	1064144
	04.5-07	48RE	1064202	1064204

Transmission packages with converters are also available

BD Engine Brake Inc.
Plant Address: #A10 – 33733 King Road, Abbotsford, BC, Canada V2S 7M9
US Shipping: #88 – 446 Harrison St., Sumas, WA, USA 98295 | US Mailing Address: P.O. Box 231, Sumas, WA, USA, 98295
Phone#: (604) 853-6096 | Fax: (604) 853-8749 | Web: www.bddiesel.com

Table of Contents

Introduction

BD's RoadMaster transmission is a stock clutch count transmission. It comes with a BD Valve Body for increased line pressures and improved shifting, a BD Deep Sump Pan for increased fluid capacity, and a billet band strut.

BD's TowMaster transmission adds to the RoadMaster by increasing transmission clutch count in critical areas. The TowMaster also replaces all thrust washers with Torrington roller bearings and adds a billet band lever.

BD's TorqueMaster transmission boasts the same increased clutch count and pressure increase as in the TowMaster transmission but also includes a billet input shaft. The TorqueMaster transmission is designed to withstand rapid acceleration and high torque is the perfect combination for the 3-disc ProForce 3D converter.

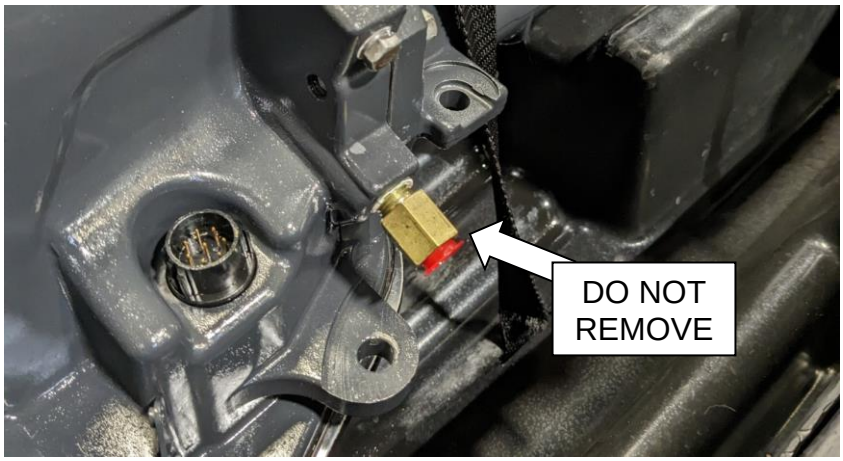
Pre-Installation (TowMaster & TorqueMaster Only)

Ensure the vehicle has a BD Filter Kit (PN # 1064017) for the BD Transmission you are about to install. A replacement filter can be ordered through BD using part number 1604008. A cross-reference table has been provided below.

HASTINGS	BALDWIN	DONALDSON	FLEETGUARD	FRAM	LUBER-FINER	WIX
LF364	BT230	P555570	LF3342	PH3519	LFP5570	51268

Important Note – Case Saver

Your transmission will be equipped with a coolant line adapter known as a case saver. The case saver prevents the coolant line from overtightening and causing a case fracture. DO NOT REMOVE this adapter. Instead, screw the OE coolant line fitting directly into the case saver.



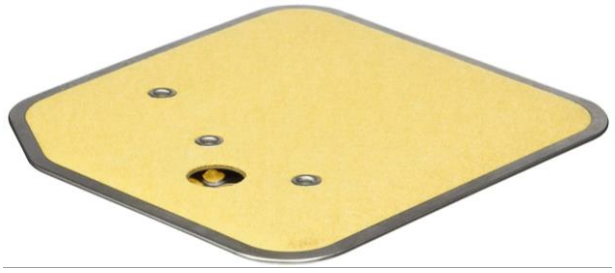
Maintenance

BD recommends the first transmission oil and filter change to occur at the 3-month or 5,000 miles/8,000 km interval. This quick interval will not only give you peace of mind but will also rid the transmission of any prior debris. After this OE service intervals are acceptable.

On all Dodge 47/48 transmissions, you will need to do a band adjustment at each service interval. The first interval is the most important. The procedure is located at the end of this manual.

WARNING

It is imperative that the internal BD filter be replaced with the same type. The proper filter is dependent on the year & model of the transmission as seen in the table below. The correct filter will ensure the modified valve body does not leak past the filter seal.

	
CHRYSLER OEM# 3515996 ‘91-’98 518/47RH/47RE	CHRYSLER OEM# 52118789 ’98-‘07 47RE/48RE

BD Engine Brake Inc.
Plant Address: #A10 – 33733 King Road, Abbotsford, BC, Canada V2S 7M9
US Shipping: #88 – 446 Harrison St., Sumas, WA, USA 98295 | US Mailing Address: P.O. Box 231, Sumas, WA, USA, 98295
Phone#: (604) 853-6096 | Fax: (604) 853-8749 | Web: www.bddiesel.com

Transmission Removal

1. Disconnect the negative battery cable(s).

2. Remove the torque converter access cover and inspection plate.

3. Remove the transmission pan, drain the fluid, and re-install the pan.

4. Remove the fill tube bracket bolt and pull the tube out of the transmission. Retain the fill tube seal. On 4WD models, it will also be necessary to remove the bolt attached to the transfer case vent tube to the converter housing.

5. Rotate the crankshaft with a pry bar from under the vehicle until the converter bolts are accessible.

6. Mark the drive shaft and pinion yokes for assembly alignment. Disconnect and remove the drive shaft. On 4WD models, remove both drive shafts.

7. Disconnect the electrical wiring from the park/neutral position switch, transmission solenoid, and speed sensor.

8. Disconnect the gearshift rod and shifter shaft assembly from the transmission.

9. Disconnect the TV (throttle valve) cable from the transmission bracket.

10. On 4WD models, disconnect the shifter rod from the transfer case shift lever. For 04.5-07 48RE transmissions, the TTVA motor will need to be removed.

11. Raise the transmission slightly by using a service jack to relieve the load on the cross-member and supports.

12. Remove the bolts securing the rear support and cushion to the transmission and cross-member.

13. Disconnect the vacuum lines and remove the steel line from the cross-member and frame.

14. Remove the bolts attaching the cross-member to the frame. Spread the frame with a Port-A-Power to remove the cross-member.

15. On 4WD models, remove the transfer case with a transmission jack or with the aid of a helper.

16. Disconnect the fluid cooler lines at the transmission.

17. Remove all bell housing bolts.

18. Carefully work the transmission and torque converter assembly rearward off the engine block dowels.

19. Lower the transmission and remove the assembly from under the vehicle.

20. Carefully slide the torque converter out of the transmission.

Transmission Cooler Flush

Before installing the transmission, the transmission cooler must be flushed and the filter be changed. After flushing, check the transmission cooler flow at engine idle. This can be accomplished by running the transmission cooler outlet into a bucket. There should be a minimum of 1 GPM of flow.

DO NOT USE WATER-BASED TRANSMISSION FLUSHING FLUID – THE LINING IN THE CONVERTOR CLUTCHES WILL DISINTIGRATE, RENDERING THE CONVERTOR USELESS AND *WARRANTY WILL BE VOIDED.*

Also, if the transmission being replaced failed or there was excessive debris in the pan, the transmission cooler and check valve assembly will need to be replaced.
Failure to follow these procedures may void your warranty.

Upon installation ensure the plug is in the torque converter and preload the torque converter with 2 quarts of Mopar ATF +4 or aftermarket ATF +4.

Transmission Installation

1. ***NOTE: If new bolts are supplied with the converter, be sure to remove the bolts before installing the transmission.

2. Lubricate the converter drive hub and oil pump seal lip with petroleum jelly.

3. Lubricate the converter pilot hub with transmission fluid.

4. Align and install the torque converter into the oil pump.

5. Carefully insert the converter into the oil pump. Rotate the converter back and forth until it's fully seated in the pump gears. Two loud "clunks" should be heard to ensure it is seated properly.

6. Position the transmission on a service jack and secure it with chains.

7. Check the condition of the converter drive plate. If the plate is cracked, distorted, or damaged, it must be replaced before installation can continue. **Also, be sure the transmission dowel pins are seated in the engine block and protrude far enough to hold the transmission in alignment.**

8. Raise the transmission and align the torque converter with the drive plate, and the bell housing with the engine block.

9. Move the transmission forward. Raise, lower, or tilt the transmission to align the bell housing with the engine block dowels.

10. Carefully work the transmission forward and over the engine block dowels until the converter hub is seated in the crankshaft.

11. Install the bolts attaching the bell housing to the engine.

12. Tighten the bolts and check the torque converter rotation.

13. Install the rear support. Lower the transmission onto the cross-member and install the bolts attaching the transmission mount to the cross-member.

14. Reconnect the vacuum lines and re-install the steel line to the cross-member and frame.

15. Reconnect the shift linkages.

16. Connect the gearshift and throttle cable to the transmission.
    a. For 2004.5 –2007 48RE transmissions reinstall the TTVA motor.

17. Connect the electrical wires to the park/neutral position switch and transmission solenoid(s). Be sure the transmission harnesses are properly routed.

    CAUTION: It is essential that correct length bolts be used to attach the converter to the drive plate. Bolts that are too long will damage the clutch surface inside the converter.

18. Install the torque converter to drive plate bolts using Loctite. On models with a 12.2” converter, tighten bolts to 47 Nm (35 ft. lbs.).

19. Install the torque converter housing access covers.

20. Install the cooler line bracket.

21. Connect the cooler lines to the transmission.

22. Install the transmission fill tube. Install a new seal on the tube before installation.

23. Align and connect the drive shaft.

24. Adjust the gearshift linkage and throttle valve cable if necessary.

25. Lower the vehicle.

26. Reconnect the negative ground cable(s) to your battery(s).

27. Fill the transmission with vehicle manufacturer's suggested fluid.
    a. ***NOTE:*** *Fill capacities listed only as a guide.* ***Correct fluid level should always be determined by marks on the dipstick****. Capacities listed are total system capacity including torque converter* and BD pan.

Application	***First Fill Quarts (Liters)***	***Secondary Fill Quarts (Liters) (Includes TC Preload)***	***Total Capacity (Liters)***
1988-2007	10 (9.5)	Approx 7 (6.6)	Approx 17 (16.1)

Mainline Pressures				
	At Idle	***Wide Open Throttle***	***In Reverse (Idle)***	***In Reverse (WOT)***
Dodge 47RH	90-100 psi	170-180 psi	250 psi	350 psi
Dodge 47RE	90-100 psi	170-180 psi	250 psi	350 psi
Dodge 48RE	90-100 psi	170-180 psi	250 psi	350 psi

Kick-down Cable Adjustment

Kick-down cable adjustment is one of the most critical adjustments that affect the operation of the transmission.

The BD Performance Valve Body is a performance product and not stock, therefore the factory specifications for this adjustment are used only as a guide.

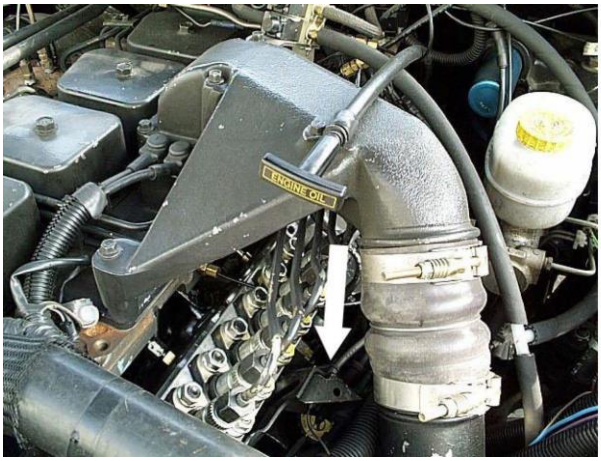
Your drivability and performance demands will determine your shift points and pressure adjustments.

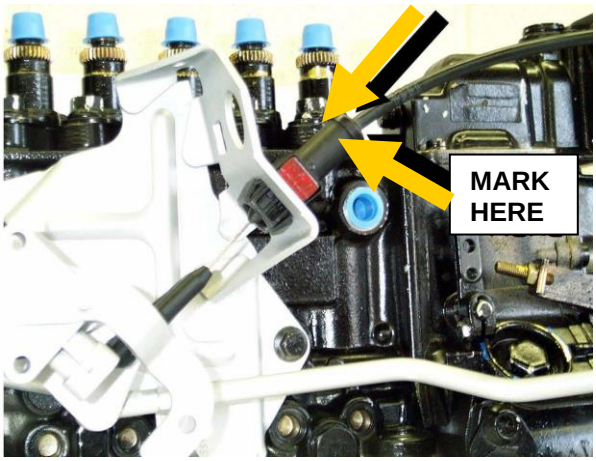
Kick-down cable adjustments are for full-throttle shift points & passing gear only. Light Throttle shift points should be adjusted on the valve body throttle valve stop.

12 VALVE ADJUSTMENTS

On trucks equipped with the **12-valve 5.9 6BTA**, full throttle shift between second and third should occur between 2400 – 2500RPM (OEM) with the transmission at operating temperature.

IMPORTANT - Locate the kick-down cable and **MARK THE CABLE** at the original setting before any adjustments are made.





NOTE: Disconnecting the cable from the support bracket and the throttle lever is a difficult task; it may be easier to adjust without removing the cable.

BD Engine Brake Inc.
Plant Address: #A10 – 33733 King Road, Abbotsford, BC, Canada V2S 7M9
US Shipping: #88 – 446 Harrison St., Sumas, WA, USA 98295 | US Mailing Address: P.O. Box 231, Sumas, WA, USA, 98295
Phone#: (604) 853-6096 | Fax: (604) 853-8749 | Web: www.bddiesel.com

24 VALVE ADJUSTMENTS

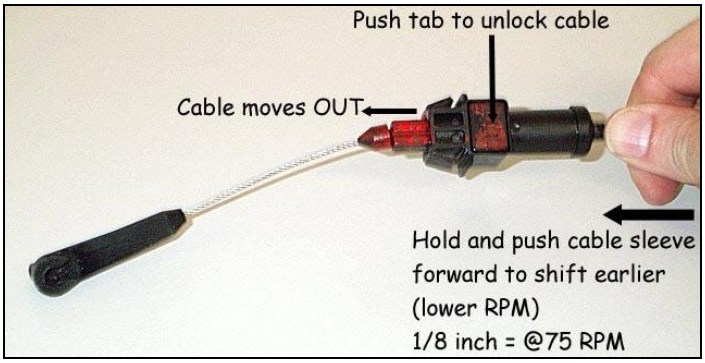
On trucks equipped with Cummins ISB engines, full throttle shift between second and third should occur between 2800 – 3000 rpm (OEM) with transmission at operating temp. The kick-down cable will be located underneath the plastic cover as indicated below.

The plastic cover is held in place by 2 plastic Phillips head screws, only light pressure is required to remove them. Do not lose the screws or washers when you remove them. Remove the cable from the throttle linkage and support bracket.

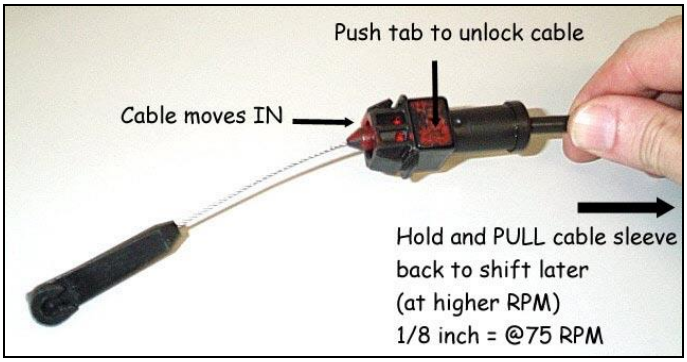
*****IMPORTANT:*** **MARK THE CABLE** at the original setting before any adjustments are made.

Remove the white-colored locking clip from the cable.

Press the lock tab (this will take considerable force) to release the locking mechanism.



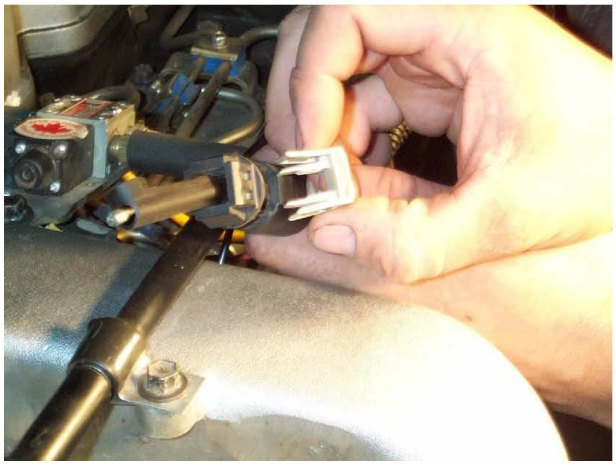
Adjusting the cable forward, towards the radiator, will make the transmission shift sooner.

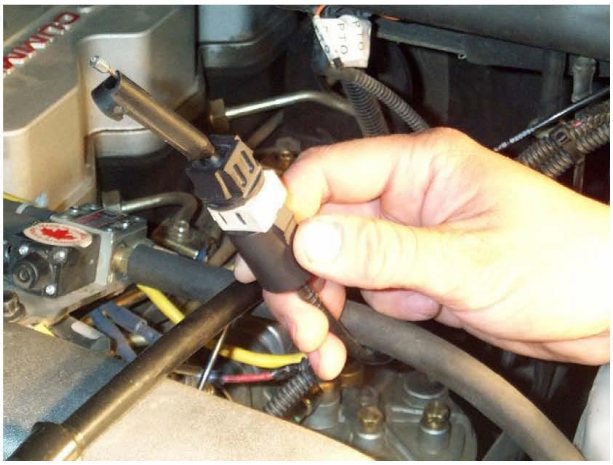


Adjusting the cable rearward, towards the firewall, will make the transmission shift later.

****CAUTION** DO NOT USE A SCREWDRIVER TO REMOVE THE CLIP, IF THE CLIP BREAKS THE CABLE WILL HAVE TO BE REPLACED!**

(Adjustment spec - 1/8 inch movement = ~75 rpm)





Install the white locking clip and then re-install the cable through the support bracket and then onto the throttle lever. Install plastic cover when the job is complete.

BD Engine Brake Inc.
Plant Address: #A10 – 33733 King Road, Abbotsford, BC, Canada V2S 7M9
US Shipping: #88 – 446 Harrison St., Sumas, WA, USA 98295 | US Mailing Address: P.O. Box 231, Sumas, WA, USA, 98295
Phone#: (604) 853-6096 | Fax: (604) 853-8749 | Web: www.bddiesel.com

Gearshift Cable Adjustment – 48RE

Do not take this adjustment lightly -- it is very important. Failure to perform the adjustment can void your warranty.

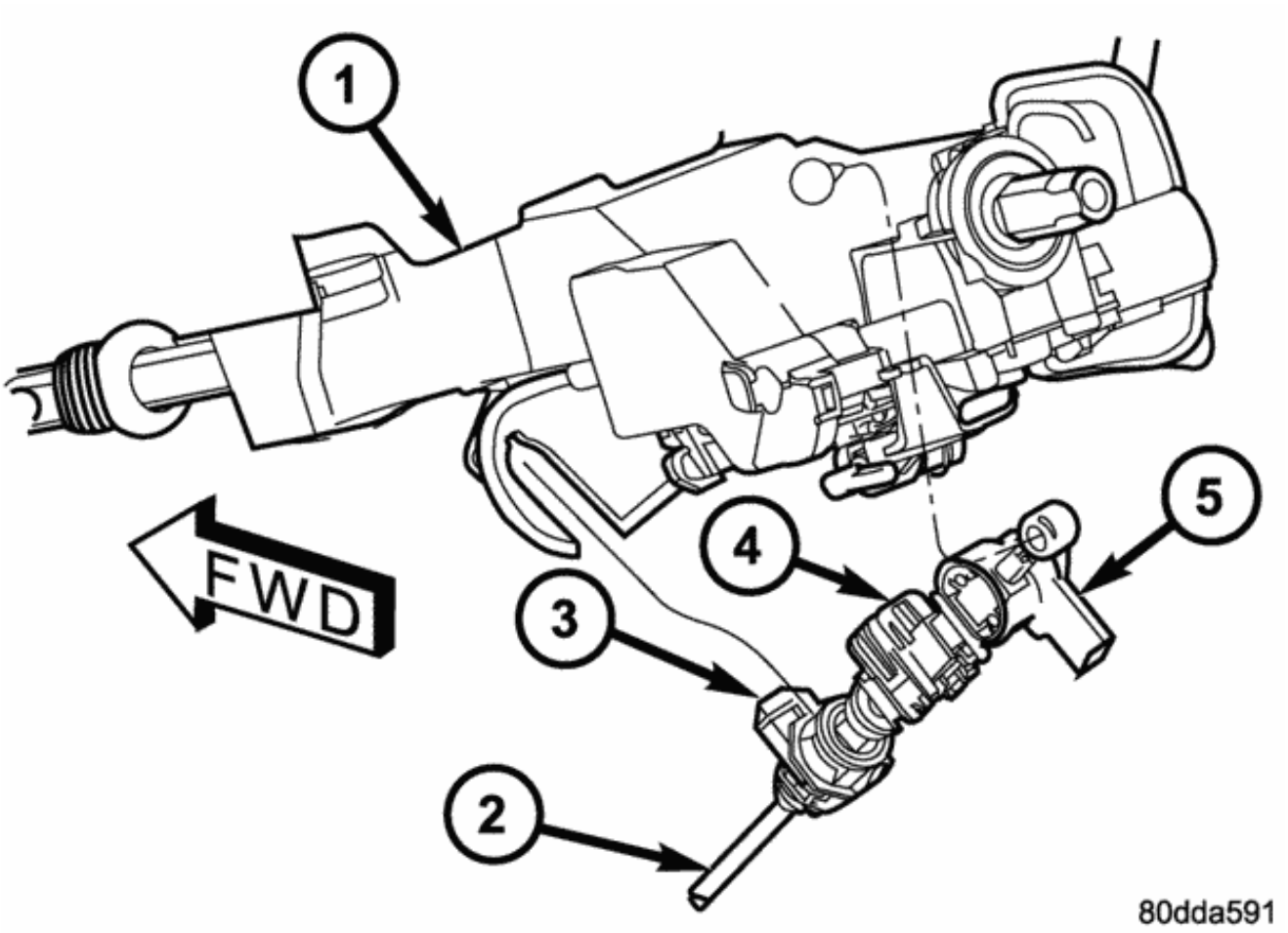
Check adjustment by starting the engine in PARK and NEUTRAL. Adjustment is CORRECT if the engine starts only in these positions. Adjustment is INCORRECT if the engine starts in one but not both positions. If the engine starts in any position other than PARK or NEUTRAL, or if the engine will not start at all, the transmission range sensor may be faulty.

Procedure:

1. Shift the transmission into PARK.
2. Release the cable adjuster lock tab (3) (underneath the steering column) to unlock the cable.
3. Raise vehicle.
4. Disengage the cable eyelet from the transmission manual shift lever.
5. Verify transmission shift lever is in PARK detent by moving the lever fully rearward. Last rearward detent is PARK position.
6. Verify positive engagement of the transmission park lock by attempting to rotate the propeller shaft. The shaft will not rotate when the park lock is engaged.
7. Snap the cable eyelet onto the transmission manual shift lever.
8. Lower vehicle.
9. Lock the shift cable by pressing the cable adjuster lock tab (3) downward until it snaps into place.
10. Check engine starting. The engine should start only in PARK and NEUTRAL.

NOTICE

The Transmission Throttle Valve Actuator (TTVA) does not require any mechanical adjustments. All changes in throttle valve position are controlled by the Engine Control Module (ECM). The TTVA does require an initialization period after the actuator has been removed or replaced. After the actuator has been removed or replaced, move the ignition to the ON position for thirty (30) seconds. This will allow the ECM sufficient time to perform the internal calibration procedures to learn the TTVA's current "zero" position. Once this is done, check the ECM for diagnostic trouble codes (DTCs). If no DTCs are set relating to the TTVA, the TTVA is fully calibrated and ready for use.



1 - STEERING COLUMN
2 - GEARSHIFT CABLE
3 - GEARSHIFT CABLE LOCK TAB
4 - BTSI SOLENOID LOCK TAB
5 - BTSI CONNECTOR

Transmission Tuning

Once the installation is completed you can now check the main line pressure. This is accomplished by inserting a fitting and hose assembly with a good quality gauge into the center 1/8” port on the passenger side of the transmission.

47RE 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	170-180psi		

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 AND/OR SHIFT POINTS ARE NOT TO SPECS, THE TRANSMISSION MUST BE REPAIRED OR SERVICED BEFORE MODIFICATIONS.**

CAUTION – PRESSURE SETTINGS THAT ARE TOO HIGH CAN RESULT IN SEVERE SHIFTS, LIMP MODE, or 2ND OR 3RD GEAR STARTS.

Transmission / Converter failures require that the remote filter be returned for inspection before any claim is considered, as well you will be required to submit the cooler flow rate in GPM measured at the outlet of the Oil/Air transmission cooler.

Before you call BD Tech Support

Please ensure you have the following information completed for your specific transmission issue, as the results may be required during the tech call.

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)

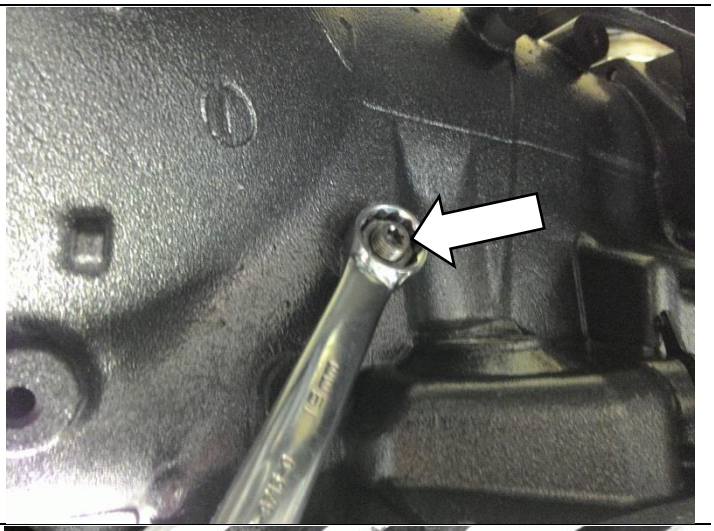
Questions?

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

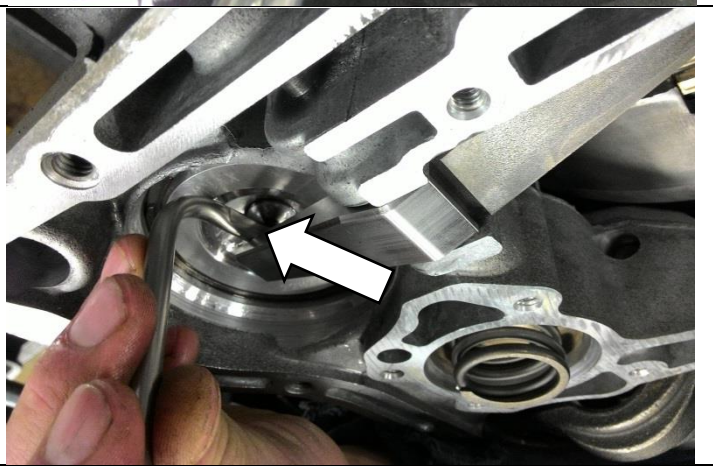
BD Engine Brake Inc.
Plant Address: #A10 – 33733 King Road, Abbotsford, BC, Canada V2S 7M9
US Shipping: #88 – 446 Harrison St., Sumas, WA, USA 98295 | US Mailing Address: P.O. Box 231, Sumas, WA, USA, 98295
Phone#: (604) 853-6096 | Fax: (604) 853-8749 | Web: www.bddiesel.com

Band Adjustments

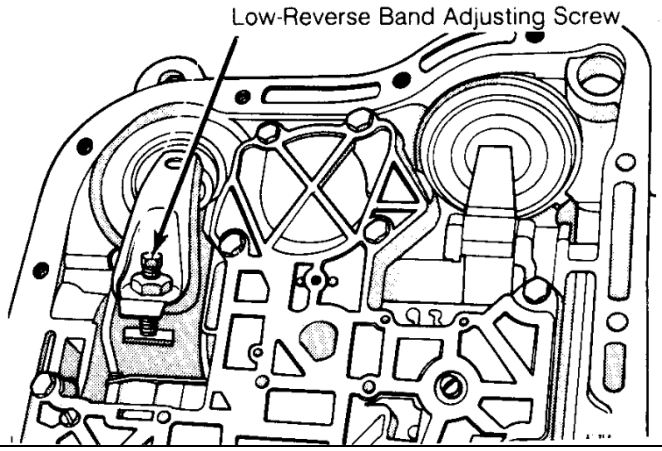
Set the 2nd gear band adjustment. Torque the T40 band adjuster screw to 72in-lb, then back out 2-1/4 turns. Tighten the lock nut while keeping the adjuster screw from turning.



To confirm adjustment, pull the servo lever outwards. The air gap 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 the nut with a 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 the jam nut.



BD Engine Brake Inc.
Plant Address: #A10 – 33733 King Road, Abbotsford, BC, Canada V2S 7M9
US Shipping: #88 – 446 Harrison St., Sumas, WA, USA 98295 | US Mailing Address: P.O. Box 231, Sumas, WA, USA, 98295
Phone#: (604) 853-6096 | Fax: (604) 853-8749 | Web: www.bddiesel.com

DOWNLOAD COLOUR INSTALL MANUALS AT www.bddiesel.com

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

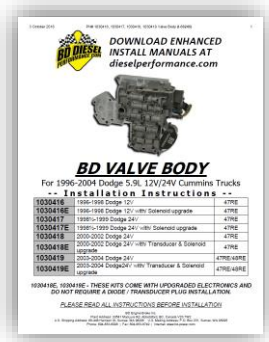
Additional tools required for valve body/transmission install. Refer to the manual included with the valve body or transmission for more information.

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.

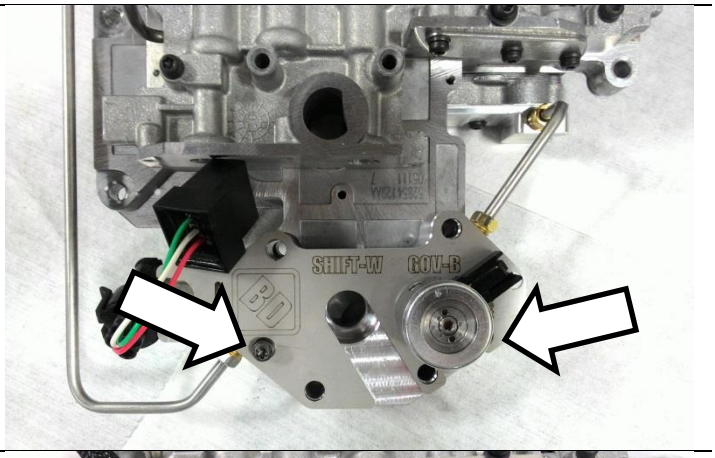
If installing a TapShift Ready transmission, skip the next section as it is for valve body installations only.

Solenoid Installation – Valve Body Installation

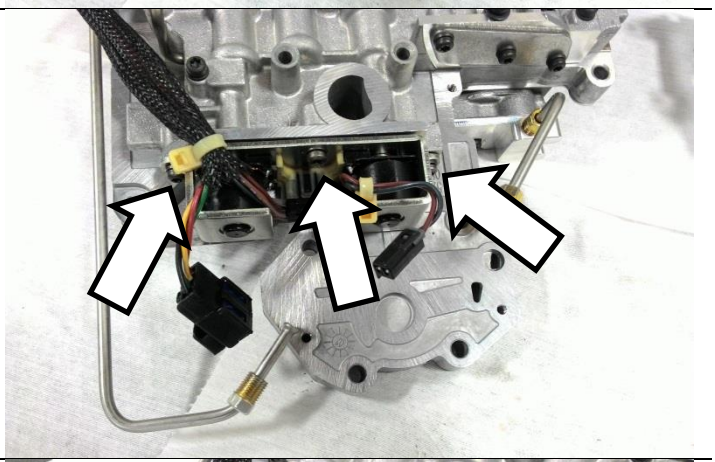
Refer to the instruction manual included with your valve body for detailed installation steps. What follows is only the steps related to the TapShifter kit.

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.

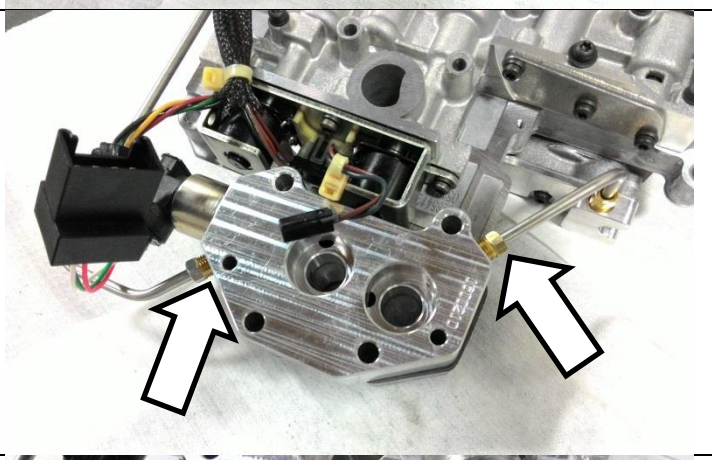


Install your harness and solenoids using the three small T25 screws from the old valve body.

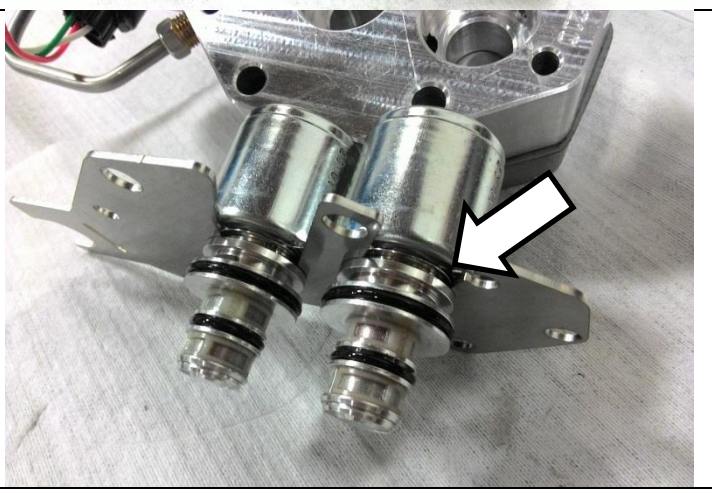


Place the aluminum solenoid block in place with the gasket below it.

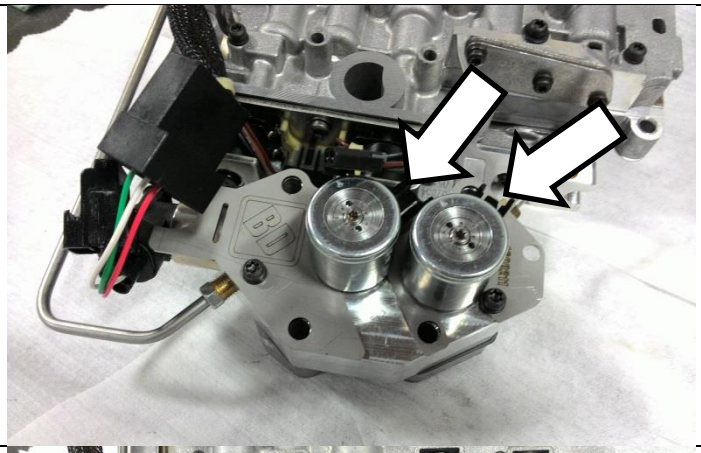
Start the two tube nuts by hand, do not tighten yet.



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.

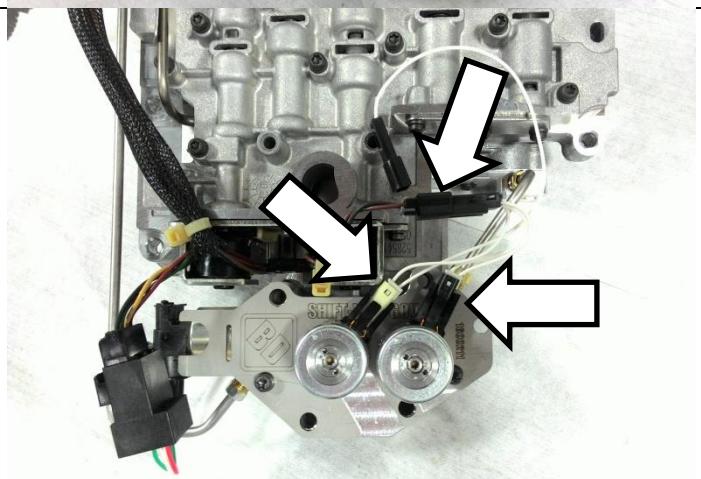


Push the solenoids back down into the governor solenoid housing with the plugs in the orientation shown. Reinstall the two Torx fasteners. Now tighten the two tube nuts with a 3/8 wrench. Do not over torque, they thread into aluminum.



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.


DOWNLOAD ENHANCED INSTALL MANUALS AT dieselperformance.com

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

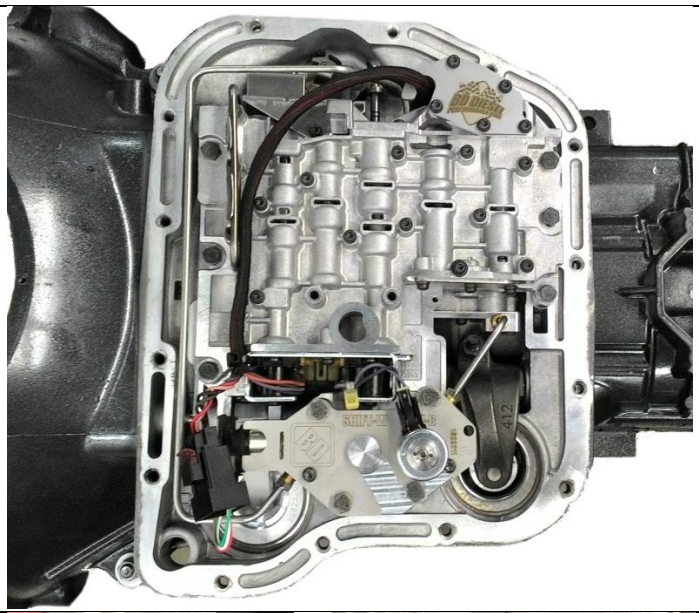
Solenoid Installation – TapShift Ready Transmission

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

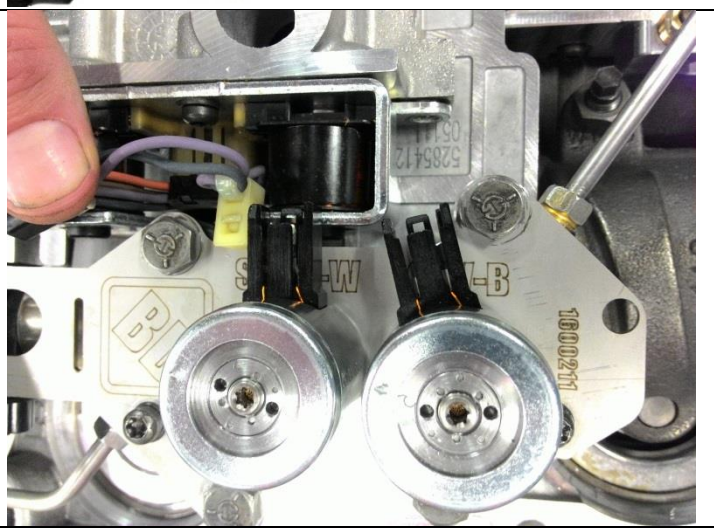
This process is best done once the transmission is installed in the vehicle so that the pan can easily be removed.

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.

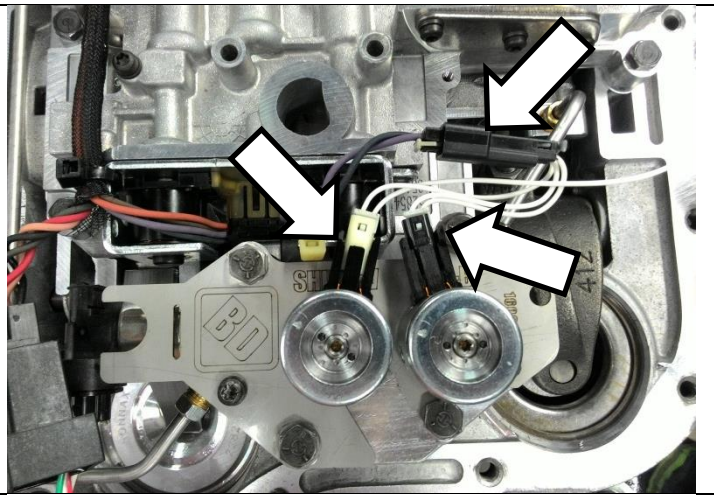


Unplug the transmission wiring harness from the governor solenoid by releasing the tab on the bottom side.



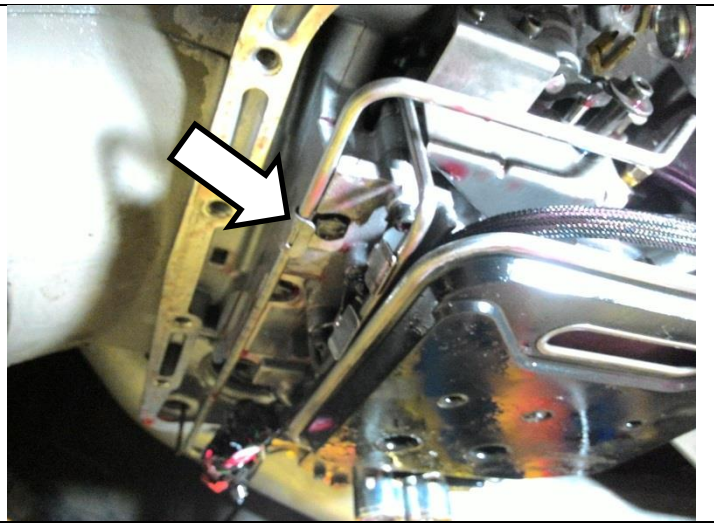
Connect the 1607254 solenoid harness (supplied with valve body) with the white plug going to the solenoid labelled SHIFT-W and the black plug going to GOV-B.

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.



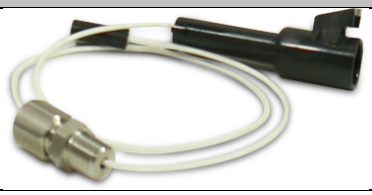
When you are finished this section, the transmission should have both solenoids connected. The loose single wire will be connected when the pan is reinstalled.

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.



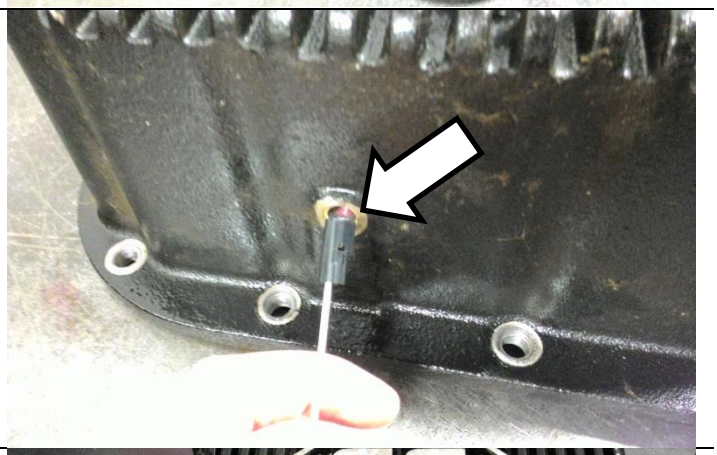
Through-Pan Wiring

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



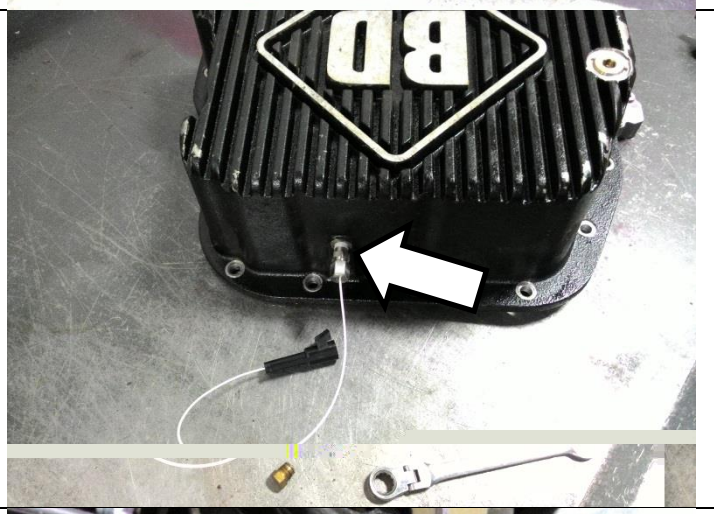
The TapShifter requires a wire run through the transmission pan to control the additional solenoid installed. A BD Transmission will come with an oil pan that has a 1/8”NPT threaded port that can be used for this. Many aftermarket pans will also have a port available. If using a cast aluminum pan with 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.

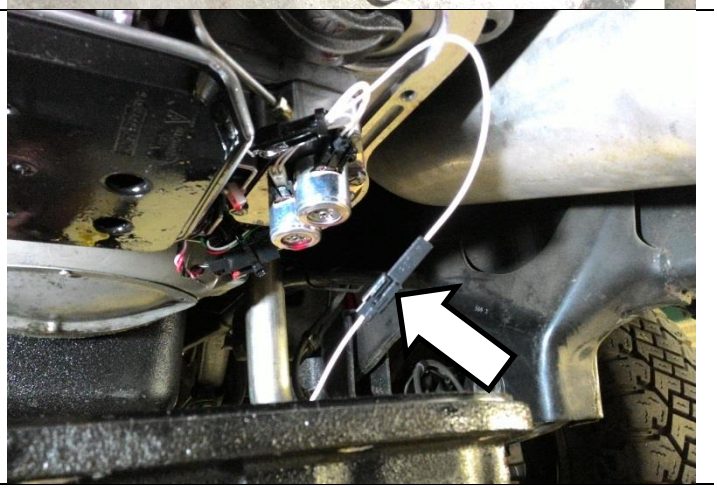


Apply thread sealant to the threads of the supplied harness/fitting and tighten it into the transmission pan.

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.



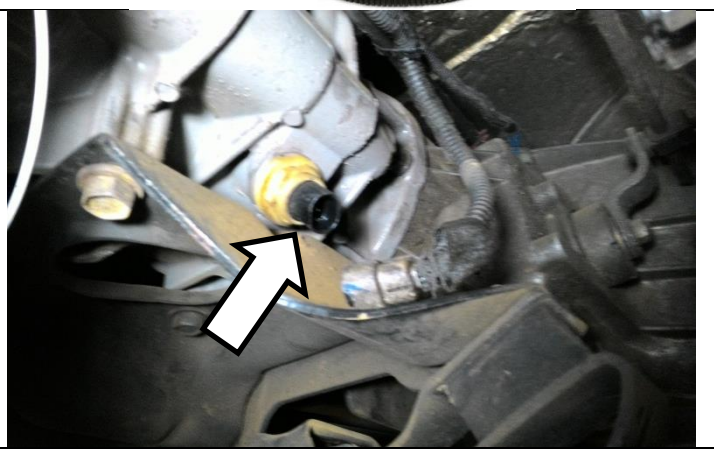
Ensure when the pan is raised the wire slack will be away from moving parts (like the band struts, etc.) and proceed to raise the transmission pan. Install the pan fasteners.

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.

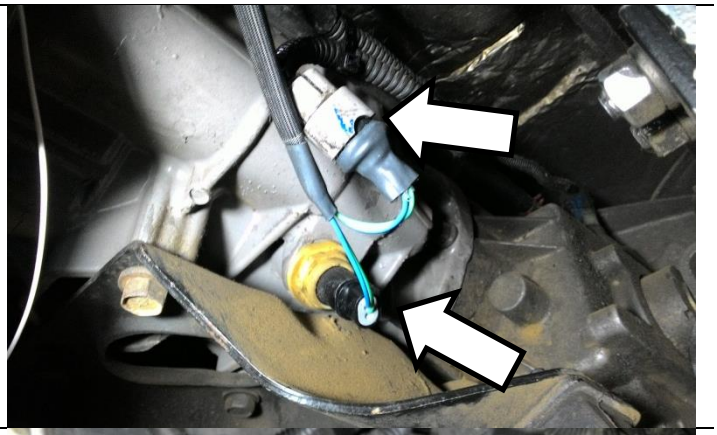
Transmission Wiring Harness

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

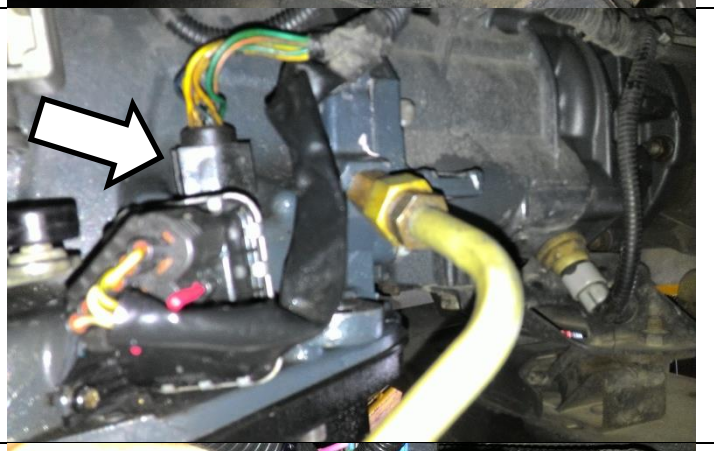
Locate the transmission output speed sensor at the rear driver side of the transmission. Unplug the connector.



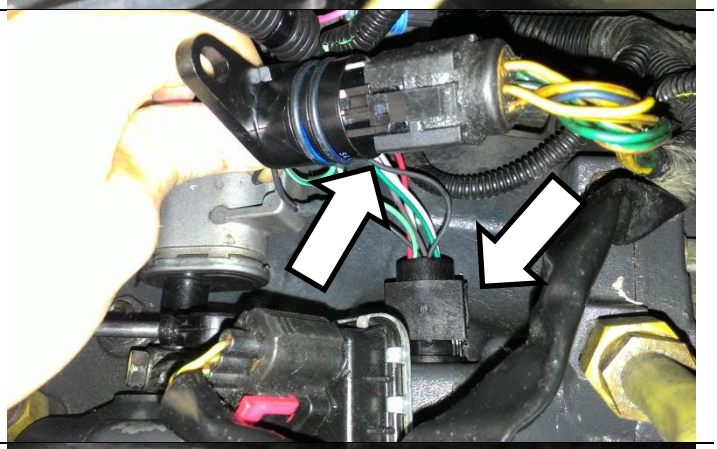
Connect the BD harness to the speed sensor and plug the stock wiring into the BD harness.



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



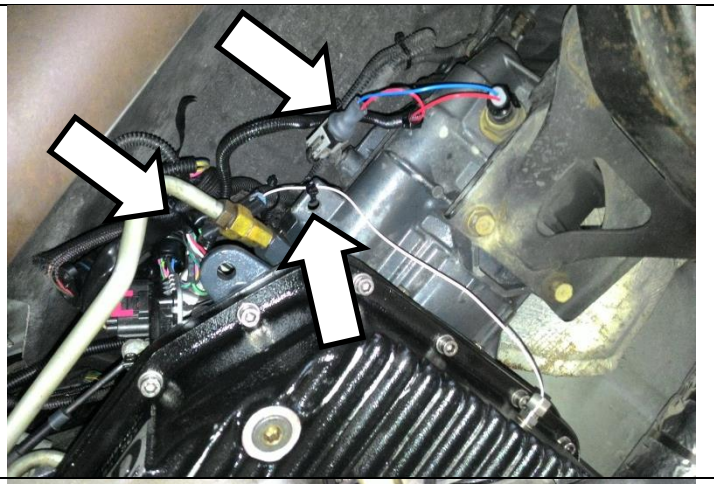
Connect the BD harness to the transmission connector and plug the stock wiring back into the BD harness.



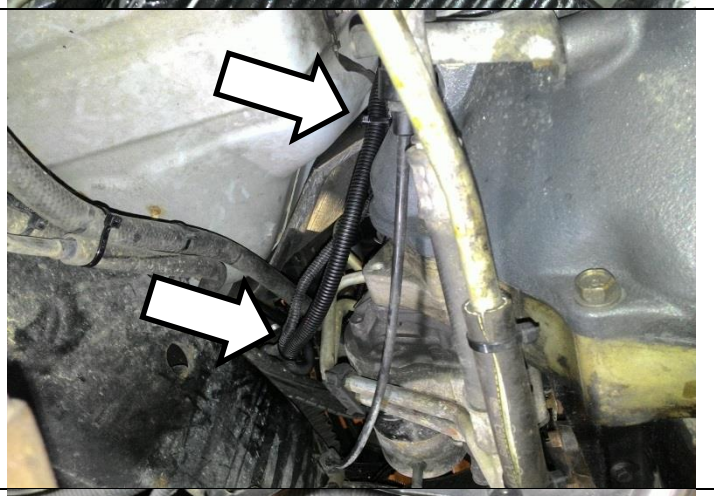
Connect the single pin connector from the BD harness to the wire previously run through the transmission pan. Ensure the small white wire is not strained and is supported.

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.

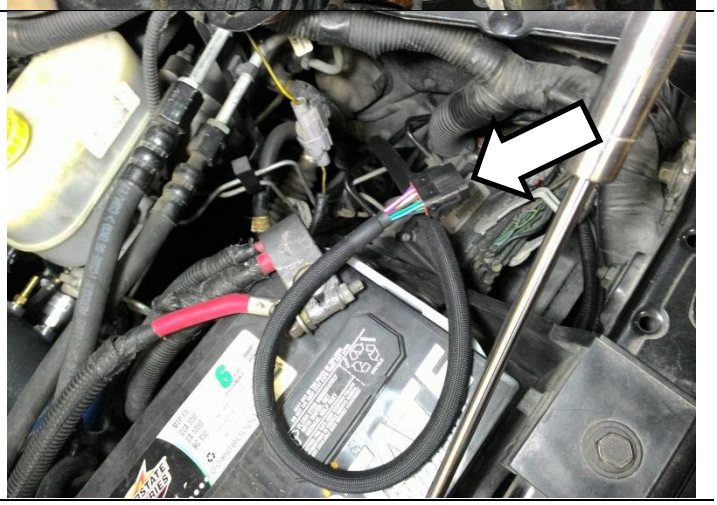
Note Pay attention that the thin white wire is supported and will not be broken.



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.

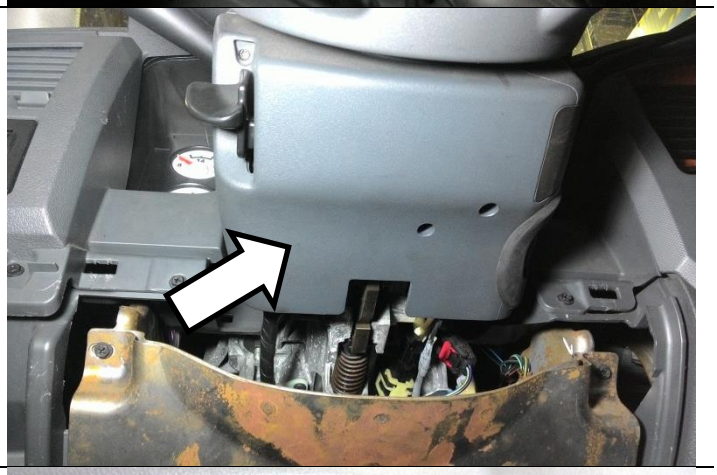


Shift Lever Installation

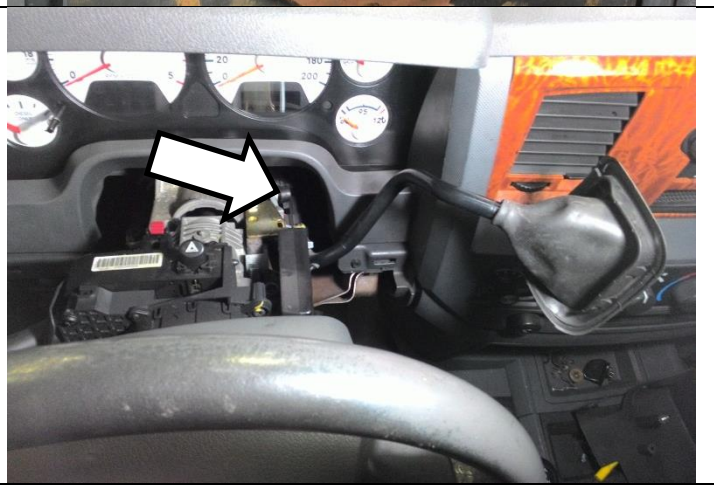
Inside the truck, remove the driver's side knee bolster below the steering column.

Remove the steering wheel tilt lever using a T20 screwdriver.

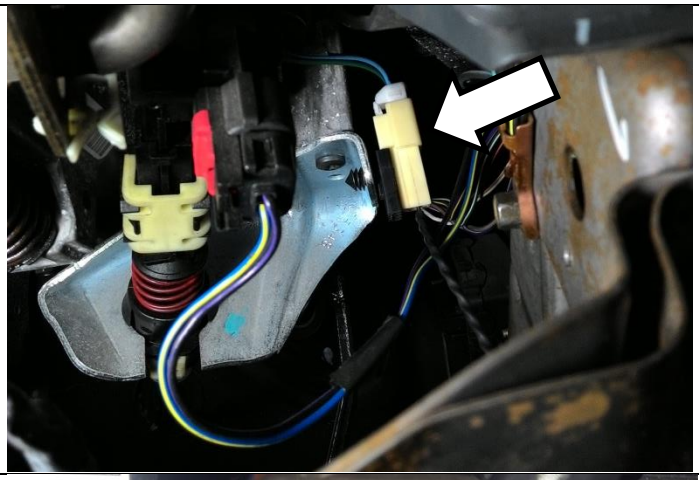
Remove the screws from the bottom of the steering column covers and remove the plastic covers.



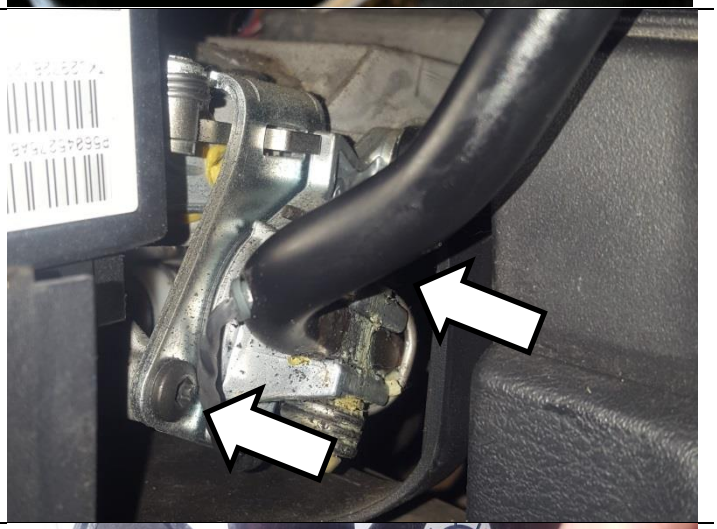
Using a trim removal tool, pop off the transmission shift cable from the shift lever.



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.

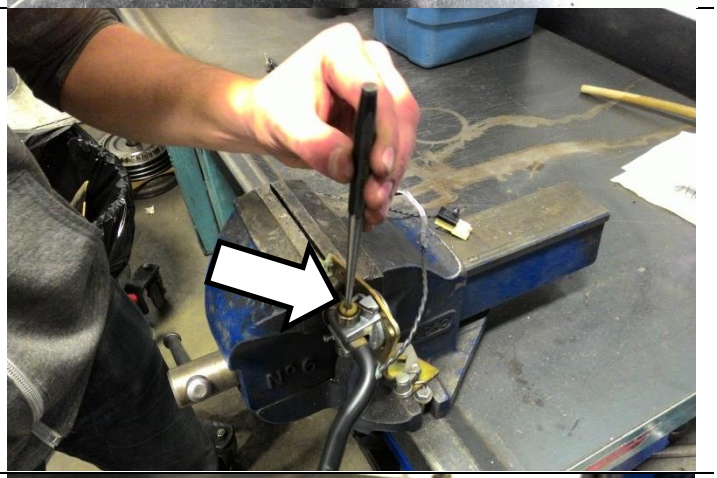
Note You may need to move the lever to various positions until it will come out. Do not pry on it or break the linkage.

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.

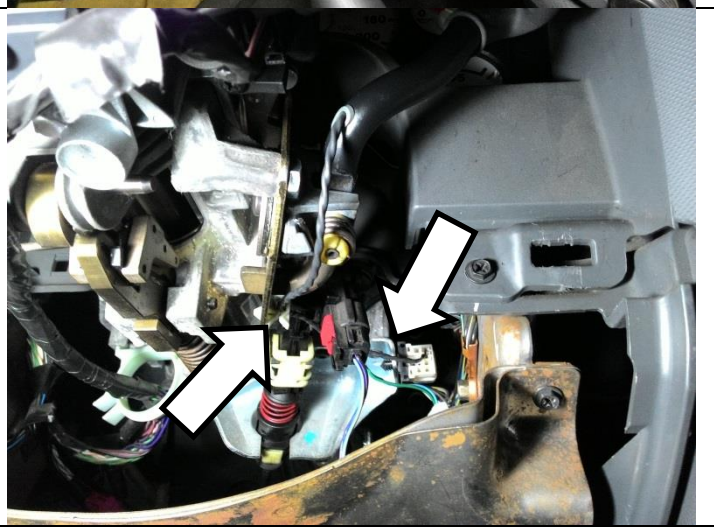
To start the pin you must squeeze the spring, moving the bushing into alignment.

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.

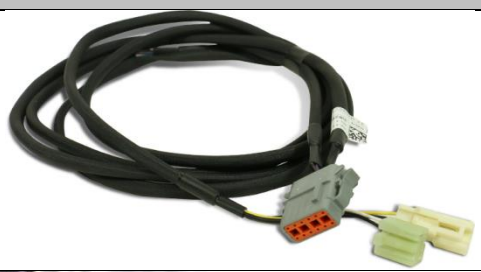
Connect the shifter linkage by pushing the socket back onto the ball.

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.

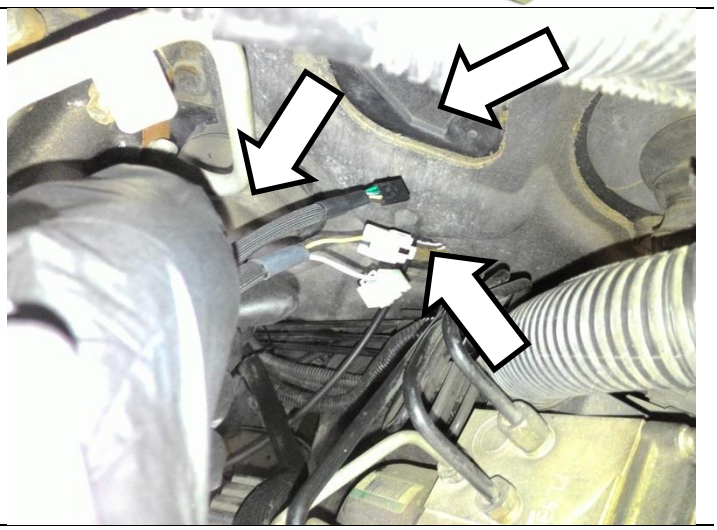


Shifter/Display Wiring Harness

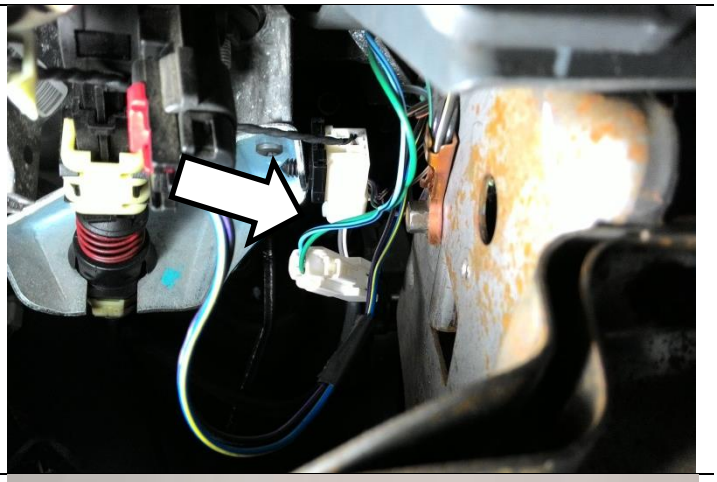
Locate the remaining wiring harness supplied in the kit (1607257). This harness will connect to the shift lever and the gear indicator display.



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.

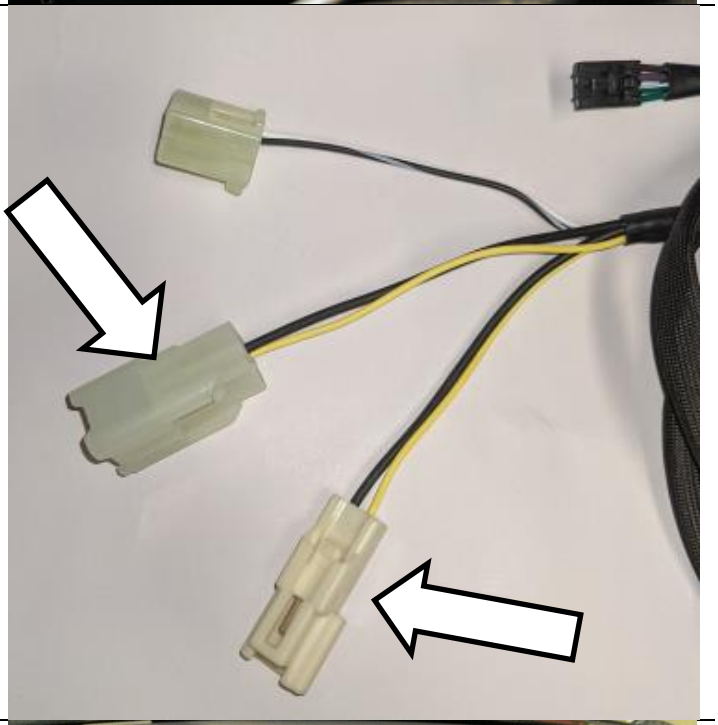


Route the two white plugs behind the dash to the shift lever connectors. Connect the harness to the shift lever and to the trucks stock wiring harness.



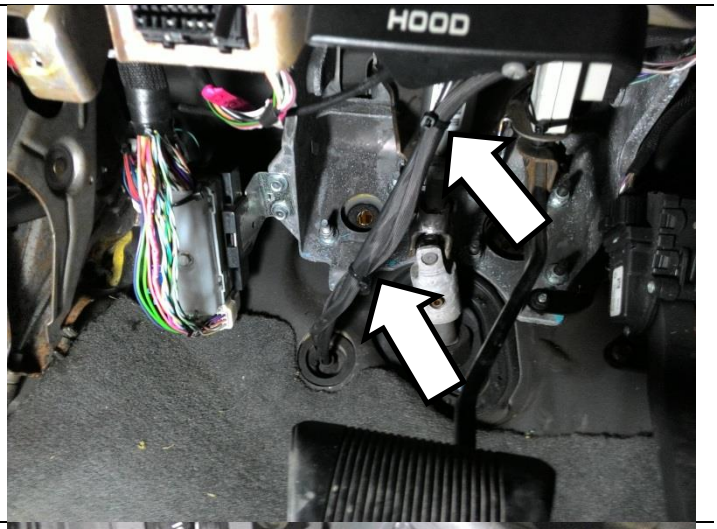
NOTE
2003-2006 trucks have a factory 2 pin shifter connector. For these vehicles, use the 2 pin connector, and the 6 pin connector will be left unused.

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

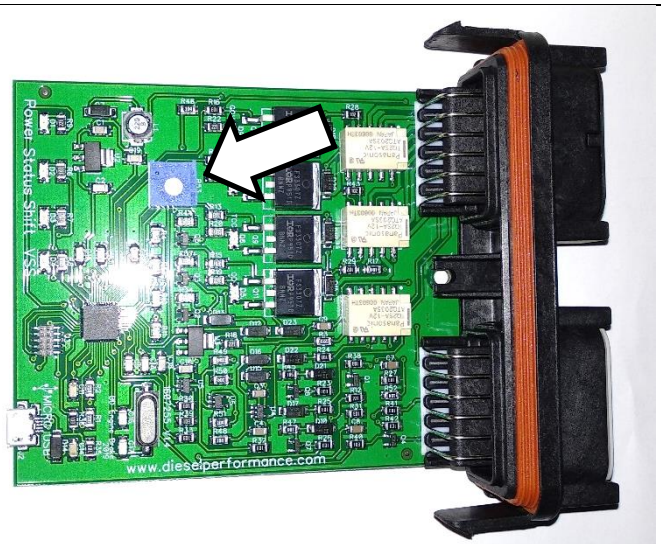
Locate the gear display (1607253) and double sided mounting tape (1330054) supplied in this kit.

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.

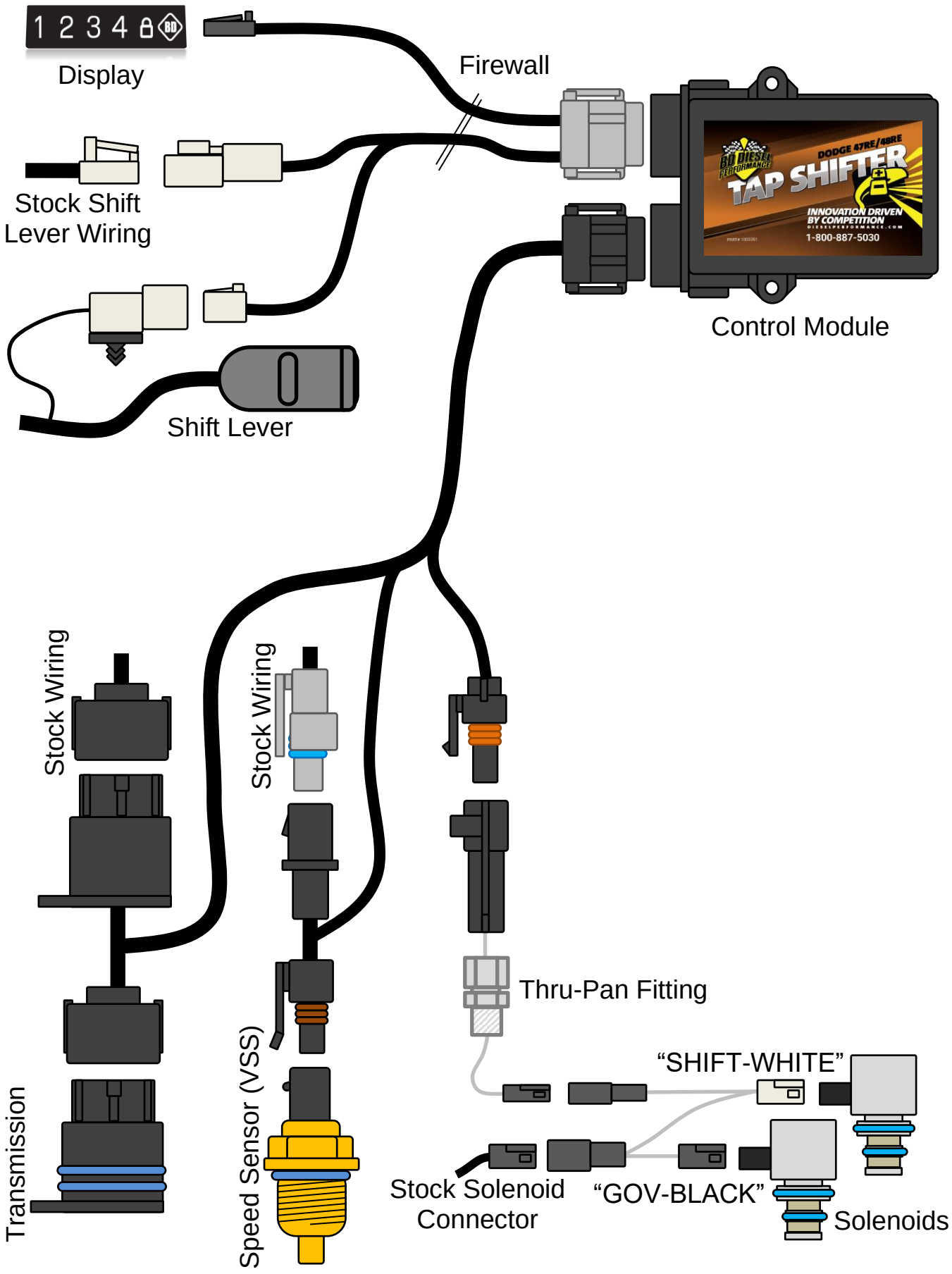
POWER Lit when the module is powered. The module power comes from the transmission power only when the engine is running and not in limp mode.
STATUS Will be illuminated solid when the shifter is turned on and controlling the transmission. It will flash if the module detects an error in vehicle speed 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

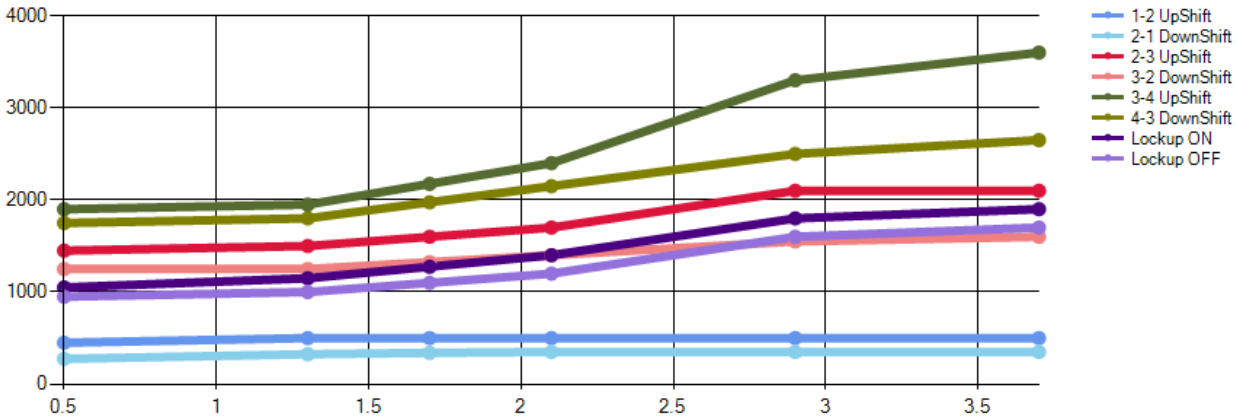
Model	Deduction	No Credit
Transmissions	• Cracked Overdrive housings ($100 Deduction) • 68rfe Cracked Case (25% Deduction) • Part disassembled (50% Deduction) • Missing Transmission Shipping Crate ($200 Deduction) • Missing TC/Transmission bracket ($50 Deduction)	• Cracked Case (Except 68rfe)
Torque 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

DOWNLOAD COLOUR INSTALL MANUALS AT www.bddiesel.com



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

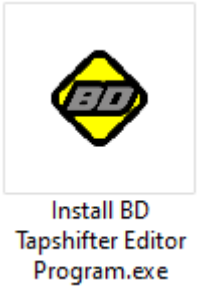
To change a mode, turn the TapShifter off (if not already). Press and hold the **+** button on the shifter for a few seconds until the display lights up with a number. This number refers to the mode the TapShifter is set to. For mode 7 it will show a **3**+**4**. To change the mode, keep tapping the **+** 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	

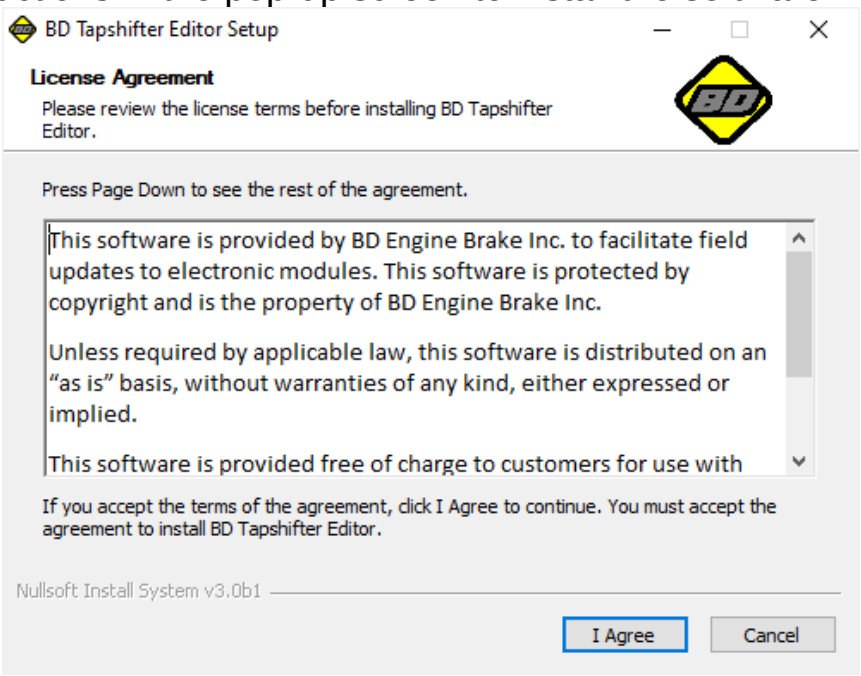
Instructions

Software Installation

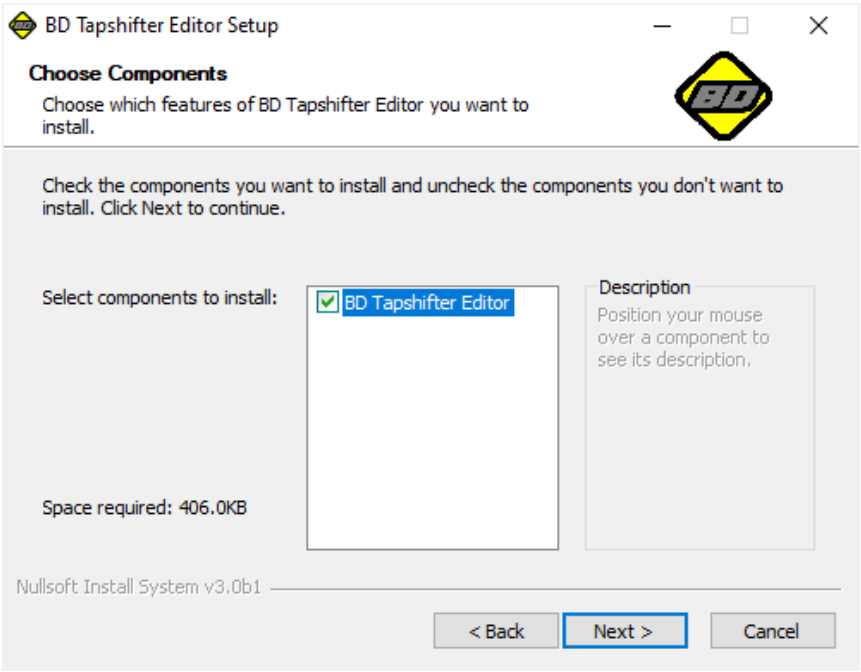
Download the Tapshifter enhanced mode software from the resources tab on the BD Diesel website.



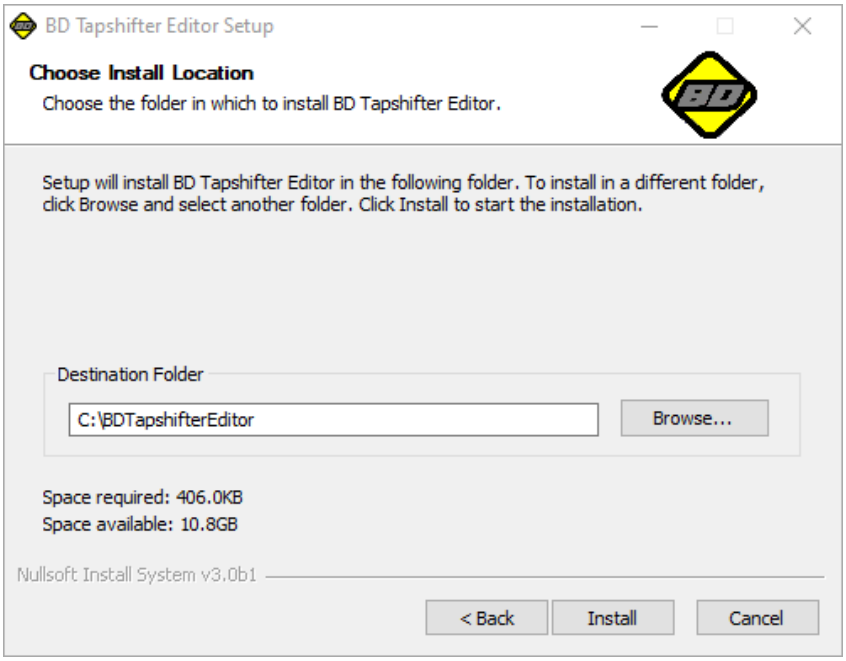
Follow the instructions in the pop-up screen to install the software

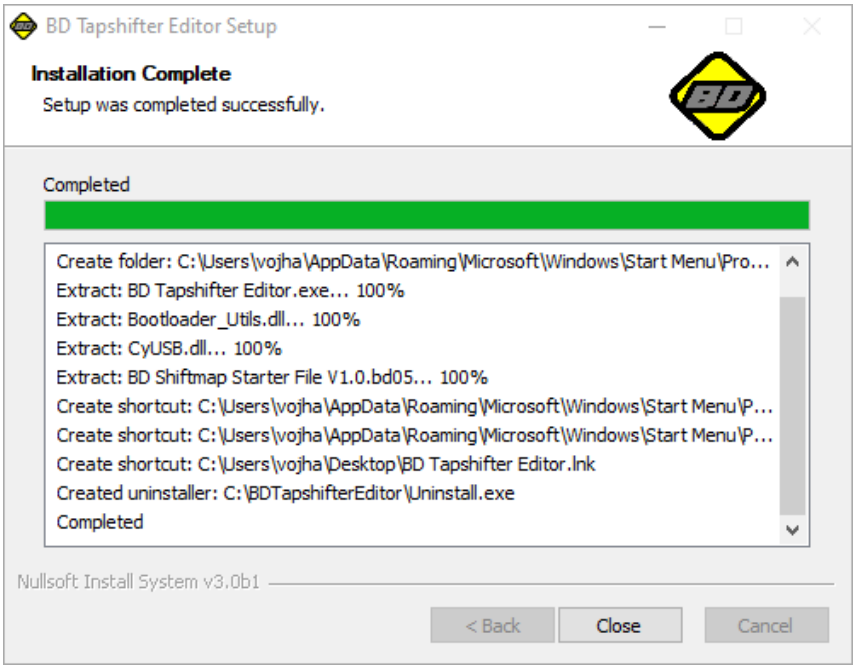


Choose a location where you want to save the software and make note of this file location.

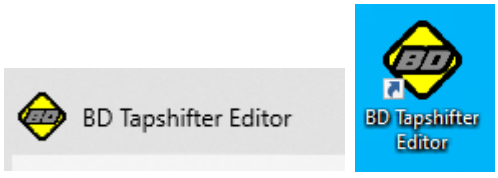


Click install and close the installer once the installation is complete



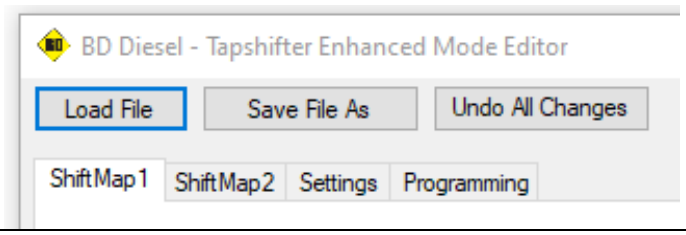


Use the shortcut in the Start menu or use the Desktop shortcut to launch the software.

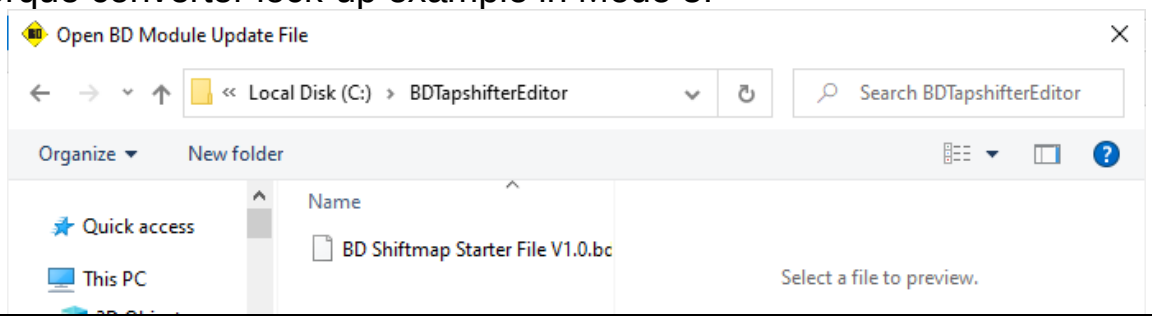


Using the Software

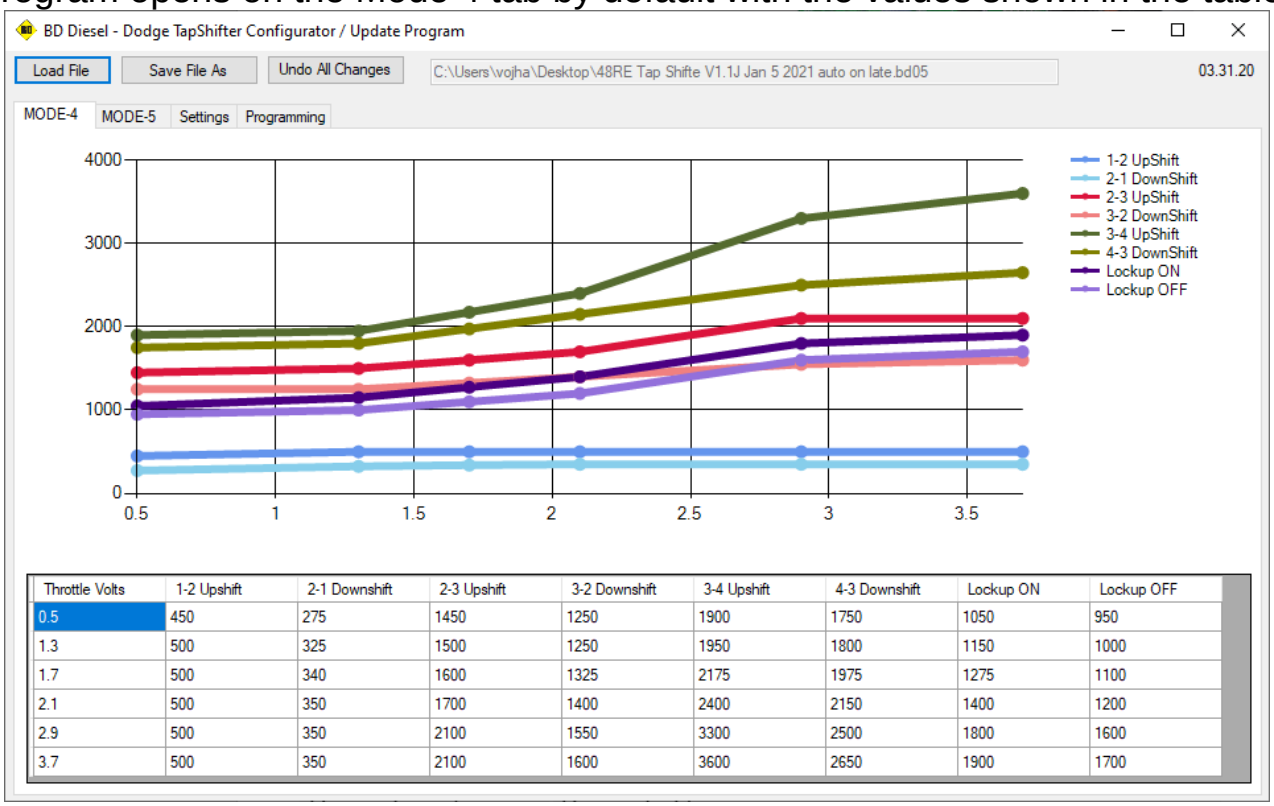
Launch the configurator and click on the “Load file” button to open a file. Select the file from the browser to open it.



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:

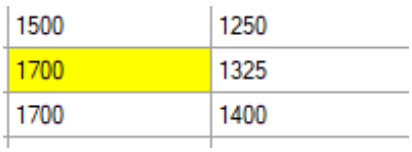
Volts to throttle percent conversion:

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%

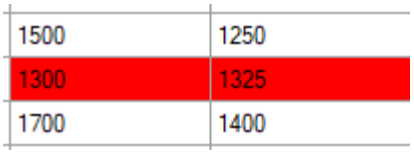
In order to change the value select the box and type in the desired value.

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

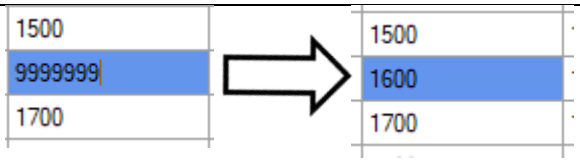
If the value is valid*, the changed value is shown in yellow.



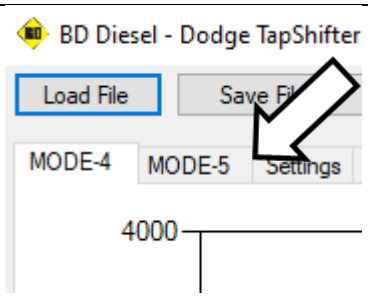
If the value is invalid* then the value is marked in red and the conflicting value is also marked in red.

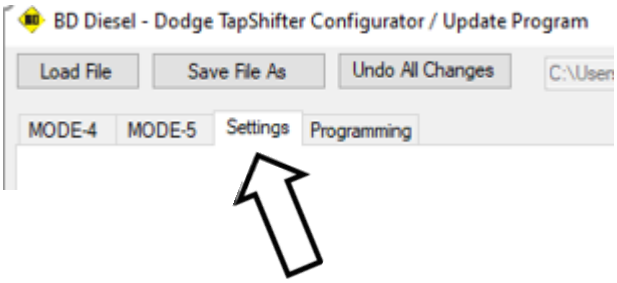
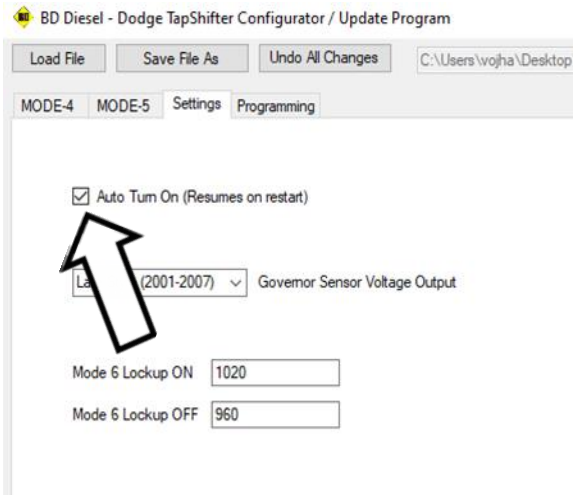
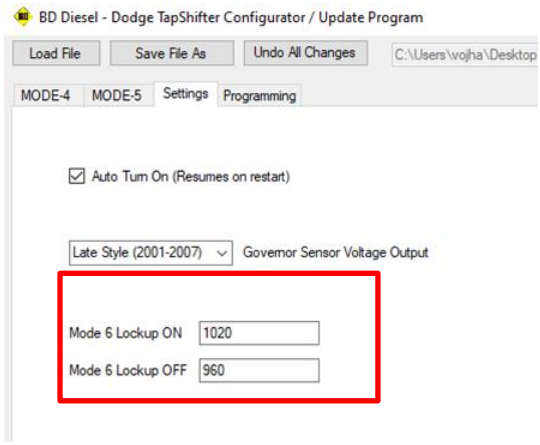


If the value entered is too large then the value defaults to the last entered value.



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

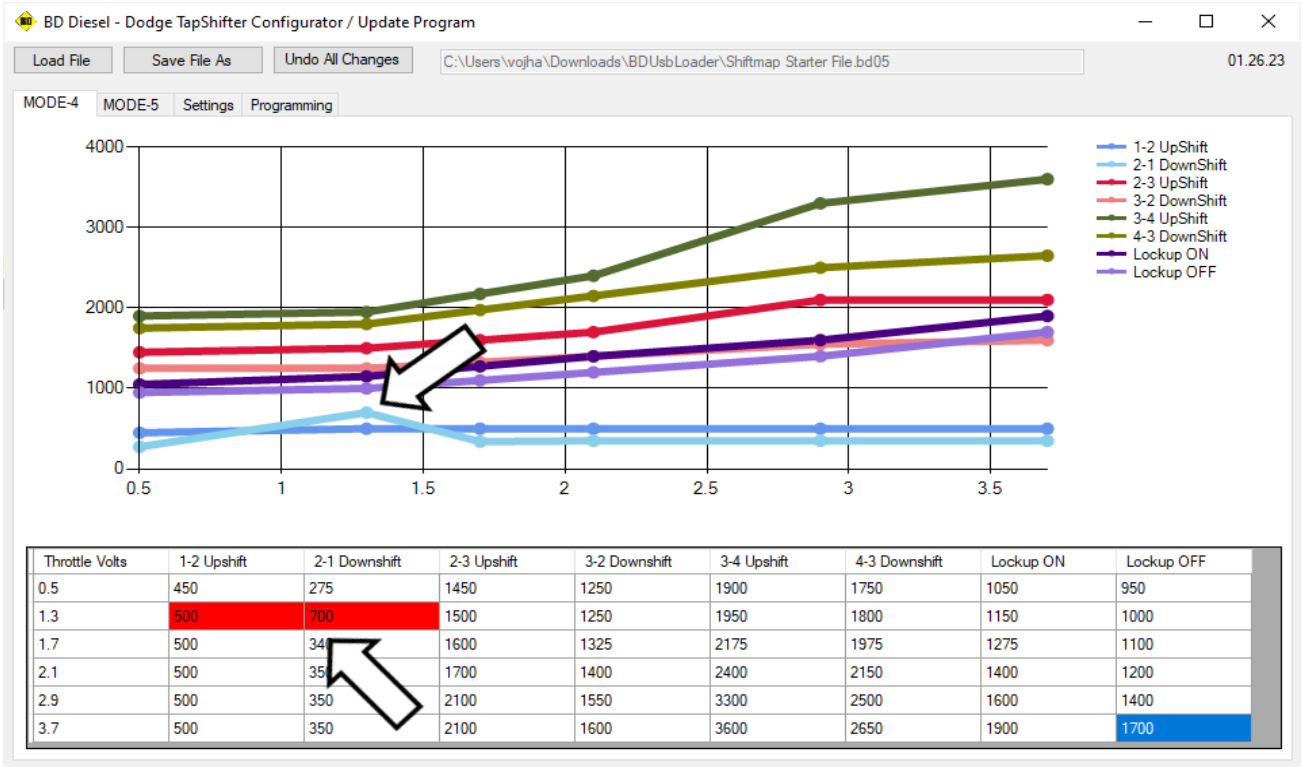


Using the settings tab to set additional options.	
Use the Auto turn on check box if you want the tapshifter to remember its last set state and turn on automatically when the vehicle is started up. Ie: If the Tapshifter was last set to 3rd gear in mode 3 it will return to that state when the vehicle 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

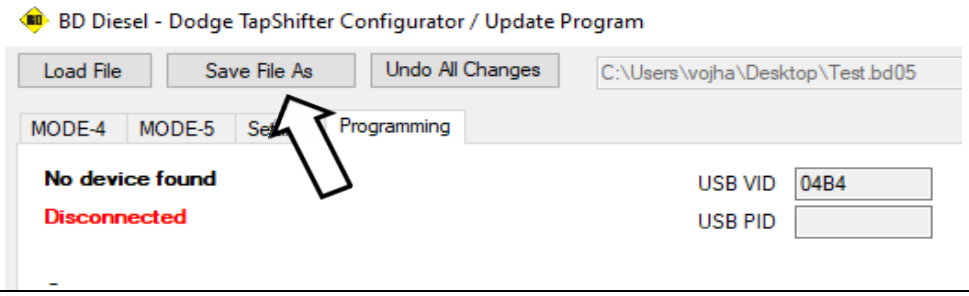
The shift points control when the transmission shifts up or down based on throttle position and wheel speed. An acceptable/valid value would be when the upshift value is at least 50 RPM higher than the downshift value to prevent gear hunting. The upshift value must also be at least 50 RPM lower than 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

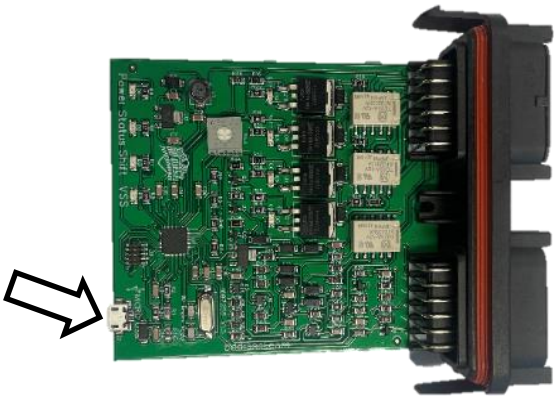
Save and Program the New Shiftpoints

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

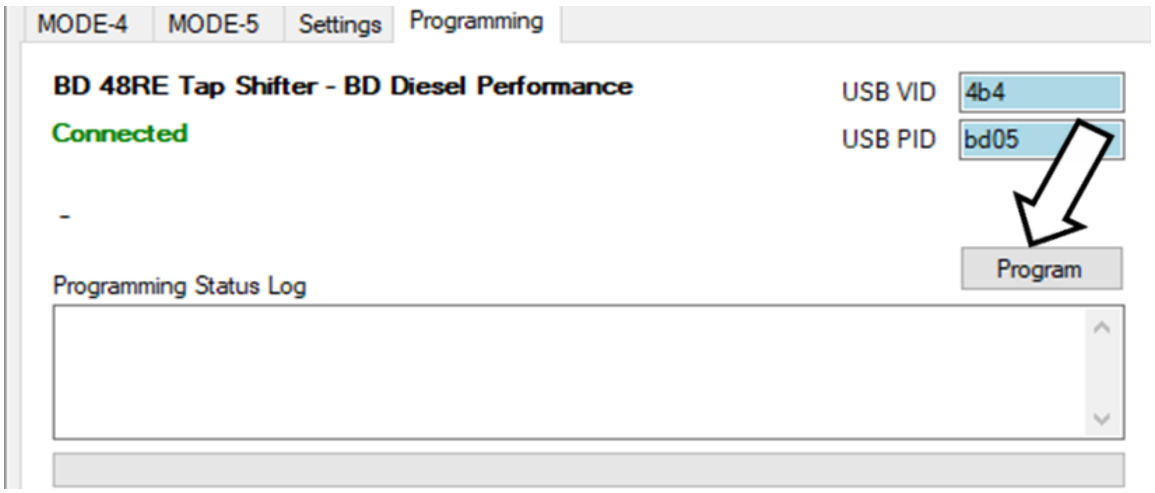


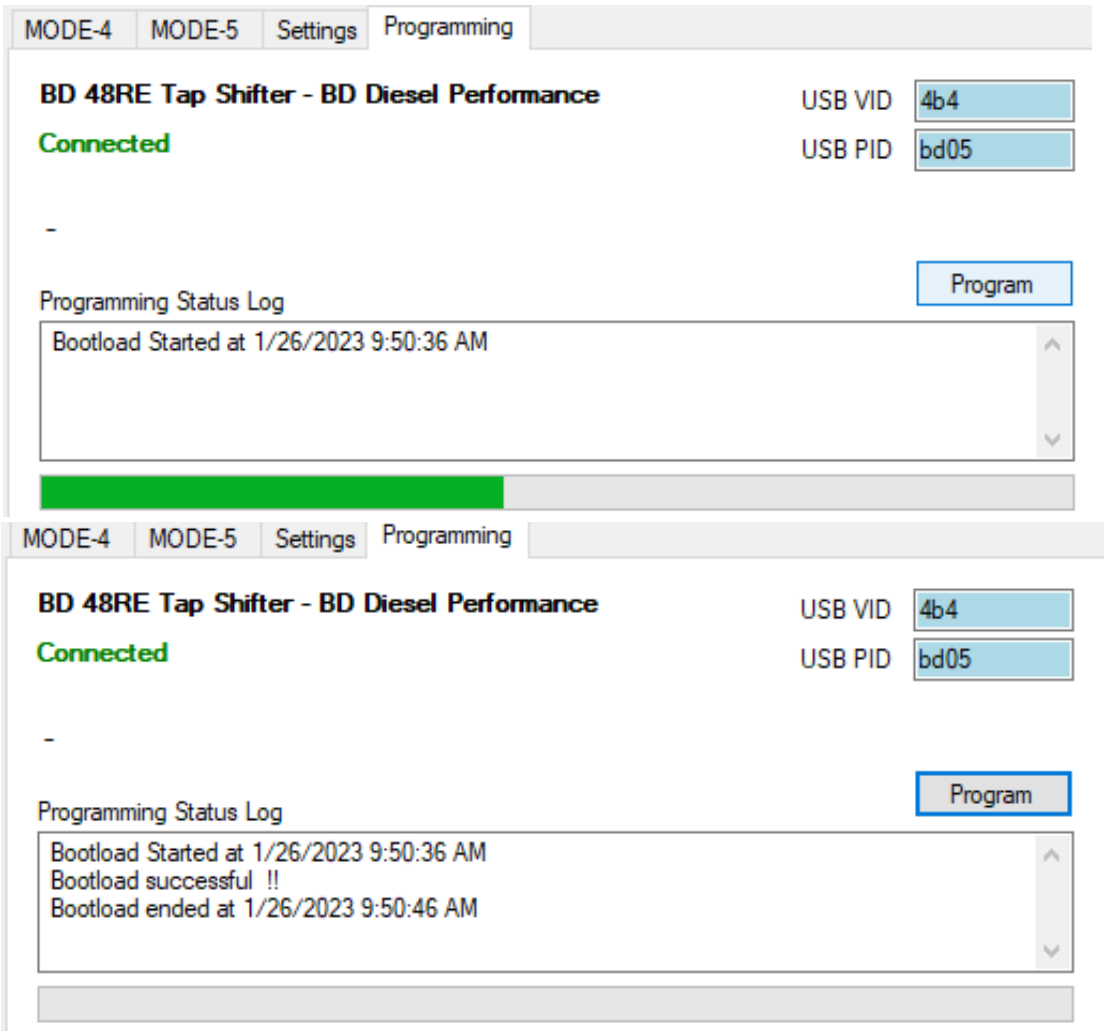
Unplug the control module from the harnesses. Use a screwdriver to press down on the two tabs to open the enclosure.

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.

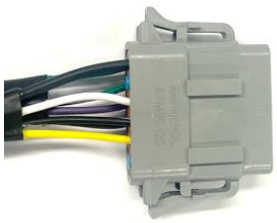
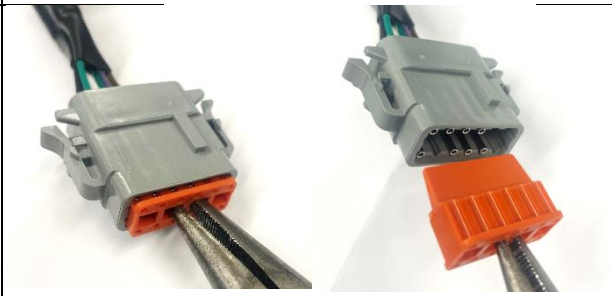
Appendix I

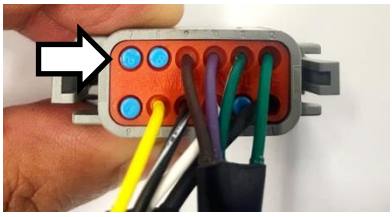
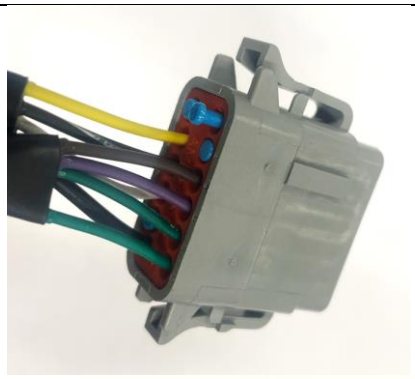
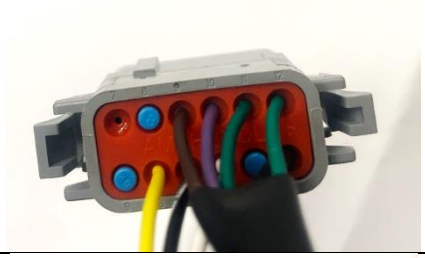
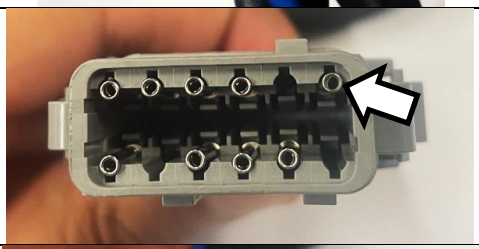
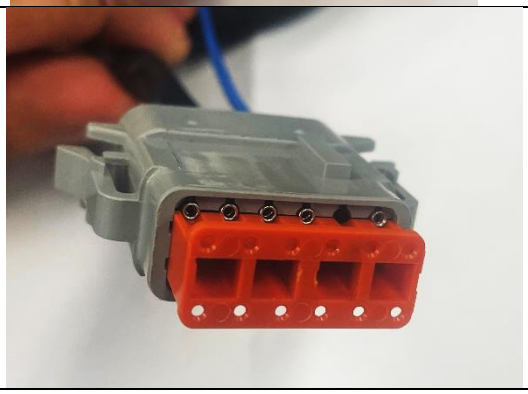
Module Version Number

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

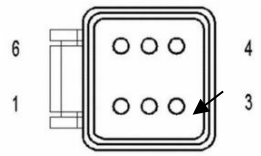
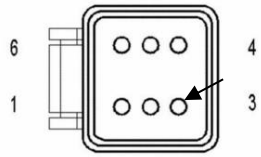
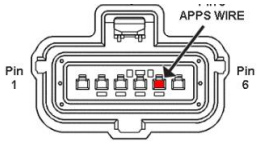
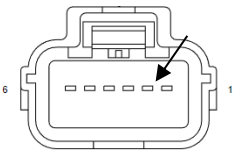
Ensure the module being used is PCB hardware V1.5 or newer. Older versions do not prevent programming but will exhibit inconsistent shifting. Only modules with the version number V1.5 or newer should be programmed using this software. Find the hardware version number as shown below:

Appendix II-Throttle Sensor Wire Installation

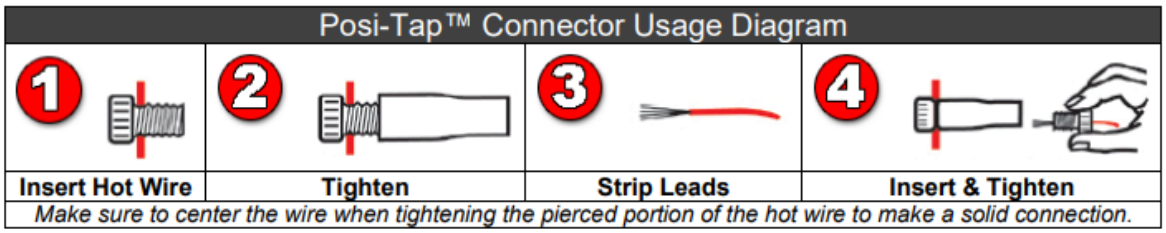
Disconnect the grey connector from the module.	
Remove the orange wedge-lock with a pair of pliers.	

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: