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# FORD TAP SHIFTER

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|---|---|
| **1031370** | 2008-2010 6.4L Ford (F250-F350) |

**PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION**

## Compatibility and Notes

- Disconnect the Tap Shifter OBD connector when flash programming the ECM or TCM.
- *Compatible With*: H&S MiniMaxx Gauge Display, SCT GTX, SCT LiveWire and SCT Power Flash X4 Gauges, DashDAQ Gauge Display and EDGE Insight CS, CTS.
- Customers have reported success using this kit on trucks with engine conversions that still have original transmission and controller.

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

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

| 1607236 | 1607239 | 1607237 |
|---|---|---|
|  |  |  |
| *Control Module* | *Display Module* | *Wiring Harness* |
| **Qty: 1** | **Qty: 1** | **Qty: 1** |

| BC3Z-7210-BA |
|---|
|  |
| *Ford Shift Lever* |
| **Qty: 1** |

| 1300131 | 1330054 | 1210365 |
|---|---|---|
|  |  |  |
| Wire Ties | *Tape; DS* | *(18-22) Sealed Butt Connector* |
| **Qty: 12** | **Qty: 1** | **Qty: 2** |

## Introduction

BD's Ford Tap Shifter kit allows the driver to select a gear with the touch of a button, just like late model trucks.

2008-2010 Ford 6.4 vehicles with a 5R110 transmission have only one automatic drive mode and three manual modes from factory. This does not allow the driver to disable overdrive nor does it allow for convenient engine braking.

The BD Ford Tap Shifter kit comes with a new Ford shift lever which installs in the stock location for a sleek install. In addition, it comes with a small display module which installs on the dash to show the selected gear. The kit is mostly plug-and-play with only one wire splice to be made under the vehicle.

This kit is a perfect complement to the BD Ford 6.4 Variable Vane Exhaust Brake (VVB) PN 2001100 as together they offer optimal engine retarding.

## Operation

Shift the vehicle into drive (D). Press the down '-' button on the shift lever. The BD display will now light up with the current gear the vehicle is in. The driver can now press up '+' and down '-' to increase and decrease the maximum gear.

The truck will now shift automatically through the gears, stopping at the selected gear.

This works just like most late model vehicles.

To disable the tap shifter just press the '+' button until the display turns off. Otherwise, the tap shifter system will automatically turn off any time the shift lever is moved out of the drive position.

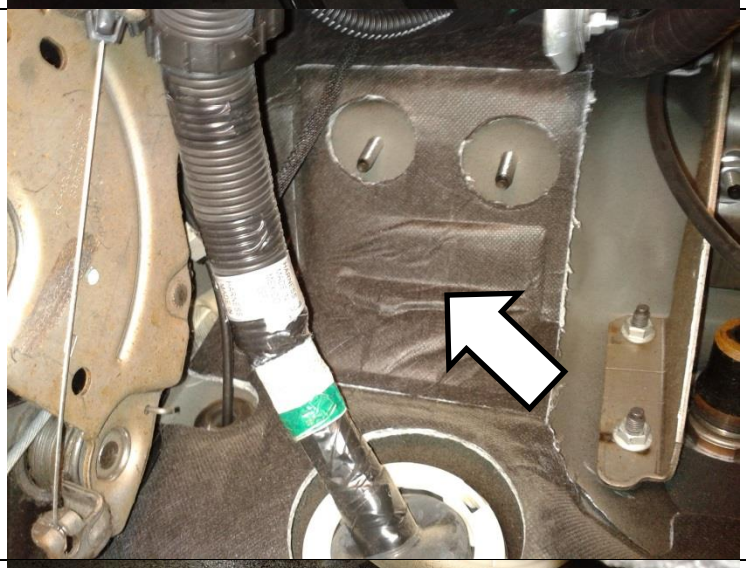
Alternate operational modes are available. See "User Adjustments" at the end of this manual.

## Tools Required

- 5.5mm and 7mm socket and ratchet
- T20 and T30 Torx sockets or screwdrivers
- Wire stripper, cutter, crimper
- Heat gun
- Drill and bits or punch
- Utility Knife

## INSTALLATION

**VEHICLE SHOULD BE SAFELY SECURED BEFORE INSTALLATION.**

| | |
|---|---|
| ***1.*** Disconnect vehicle batteries for safety.<br><br>***2.*** Remove knee bolster by pulling it rearward. |  |
| ***3.*** Below the dash on the left side of the firewall, locate the spare firewall opening used for manual transmission trucks. This will be covered by sound deadening material. |  |
| ***4.*** Behind the sound deadening material, there is an opening blocked off with heat shield tape. Using either a drill or a punch, create a hole to pass the blue and yellow wires of the BD harness through the firewall and pull into engine bay. |  |

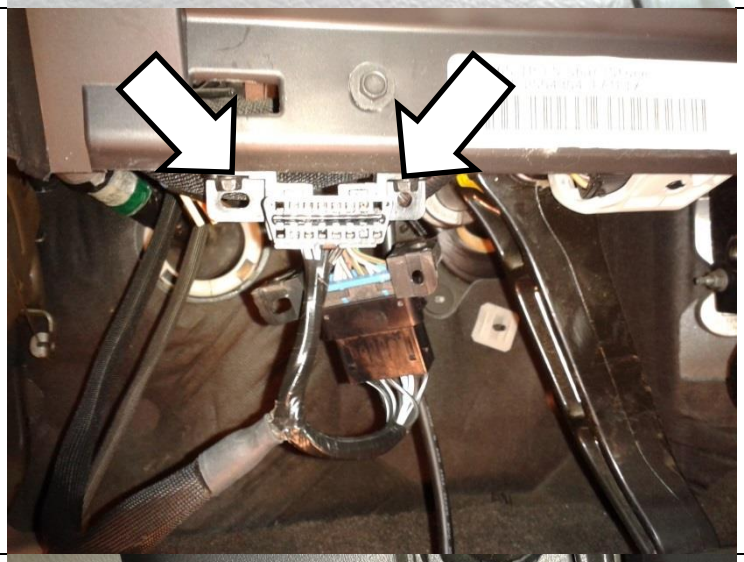
***5.*** Install module below the dashboard, securing it with zip ties, connect it to the harness.

***6.*** Route the small four pin electrical connector on the BD harness up between the instrument cluster and the bezel. Zip tie in place below.


***7.*** Plug in the tap shifter display module to the BD harness and adhere it to the instrument cluster bezel using the supplied double sided tape.

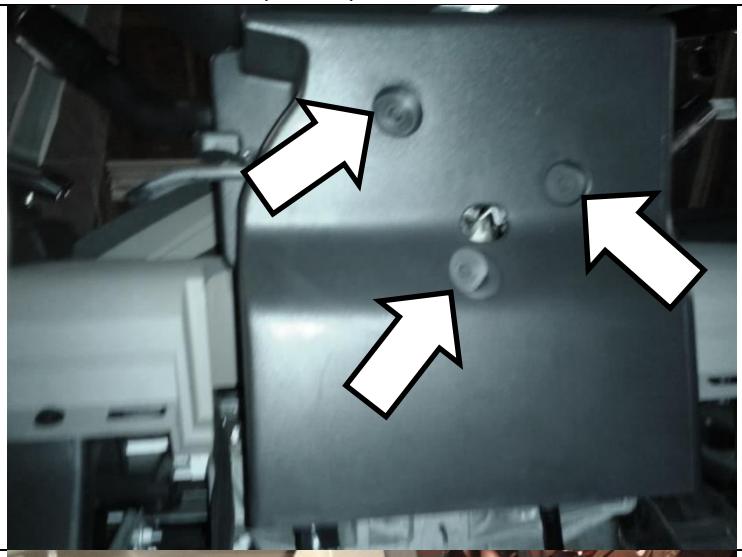
***8.*** **NOTE** On models without a mileage reset button in the instrument cluster, it is possible to install the display above the shift lever on the right side of the instrument cluster instead of the left. *This is left to the customer's preference.*

***9.*** Unscrew the OBD connector from the bottom of the dash by removing the two 7mm screws. Connect the OBD connector from the BD harness inline and reaffix the BD connector to the bottom of the dash. Secure wire using zip ties.



***10.*** Remove the steering column tilt handle rubber grommet and remove handle by removing the T20 screw securing it.

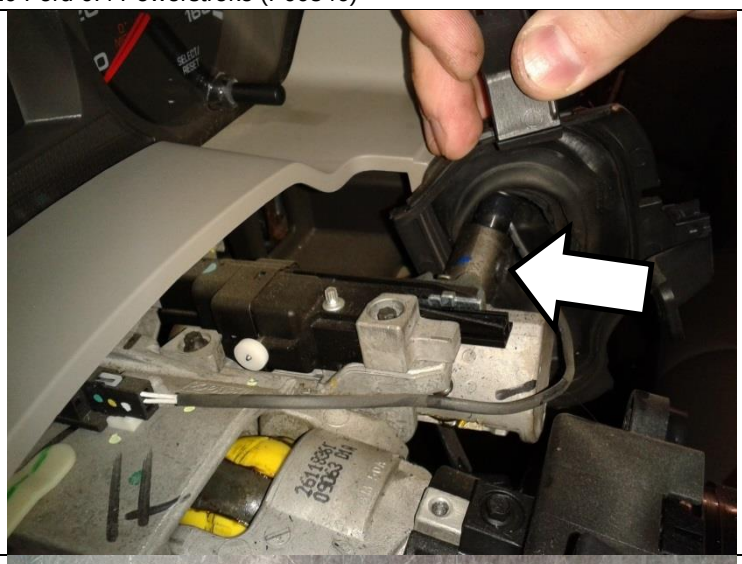
***11.*** Remove the 5.5mm screws securing the bottom of the steering column cover. Separate column covers using trim removal tool or other suitable tool. The two halves snap together and must be pried apart. This may be easier if the shift lever is moved out of Park.



***12.*** Pop the electrical connector for the shift lever out of the mounting location on the top of the steering column. Disconnect the shift lever wire from the vehicle.

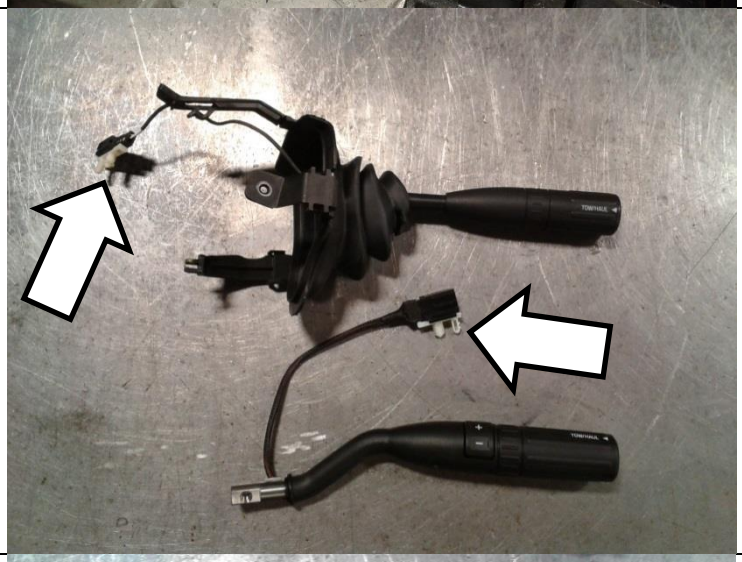
***13.*** Remove the two 5.5mm screws holding the shift lever boot in place. This may be made easier by turning the steering wheel to better access the lower screw.

***14.*** Pull back the shift lever boot to reveal the shift handle securing bolt. Remove this T30 screw and remove the shift lever.



***15.*** Remove and discard the white plastic securing clip from both the old and new shift lever electrical connectors to make boot transfer easier.

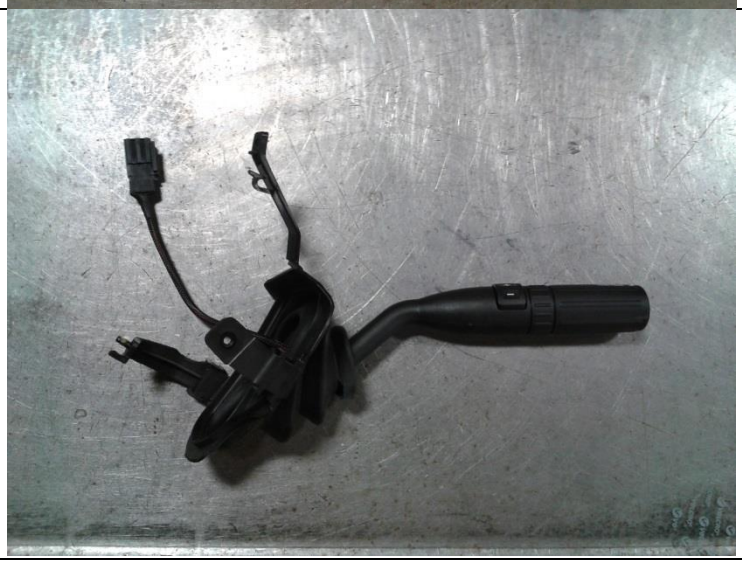
**NOTE** If the new shift lever comes with a boot, please remove and discard.



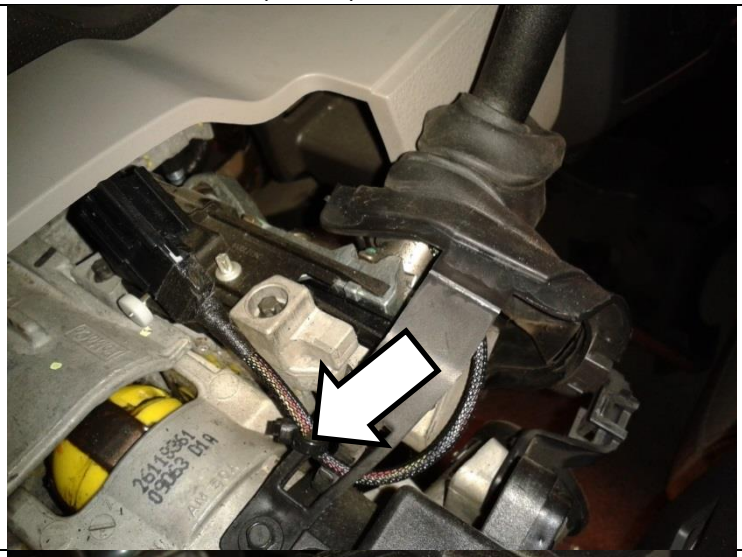
***16.*** Remove the boot from the old shift lever and transfer to the new one. The boot will have to be stretched to fit over the electrical connector.

**NOTE** If the stock shift lever boot is torn or worn out now would be a good time to replace it.

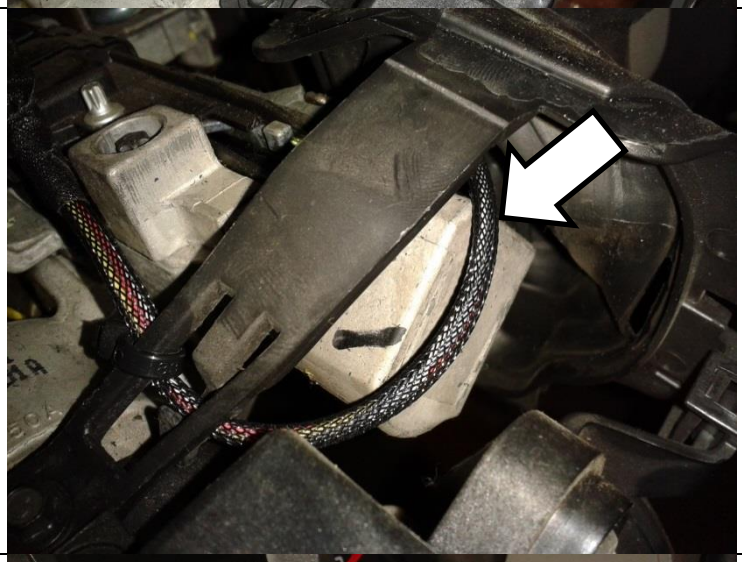
**Ford 6.4 Shift Lever Boot**
**Ford PN: 7C3Z-3513-A**



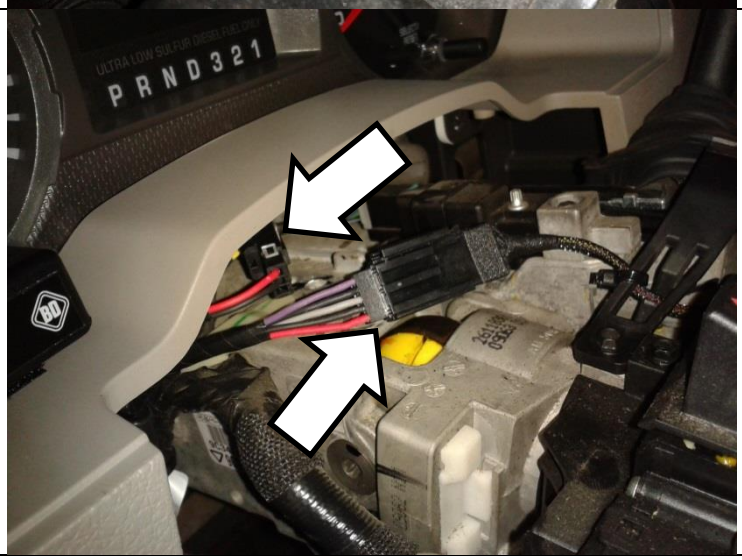
***17.*** Install new shift lever by re-installing T30 securing screw and the two 5.5mm boot attaching screws. Secure the wire with a wire tie to the plastic wire clip such that the wire will not rub or chafe during use.



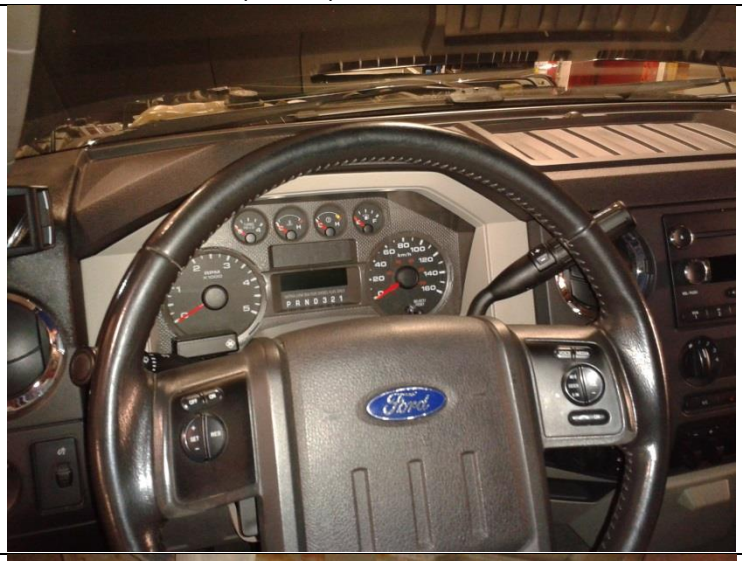
***18.*** **IMPORTANT** Make sure the shift lever wire does not get pinched, snag or rub on any sharp surfaces. Otherwise this wire will eventually wear through causing loss of operation of the Tow/Haul or shifter buttons or intermittent operation.



***19.*** Connect the shift lever electrical connector to the BD wiring harness and connect the other side to the vehicles original connector. Secure this wire using wire ties.



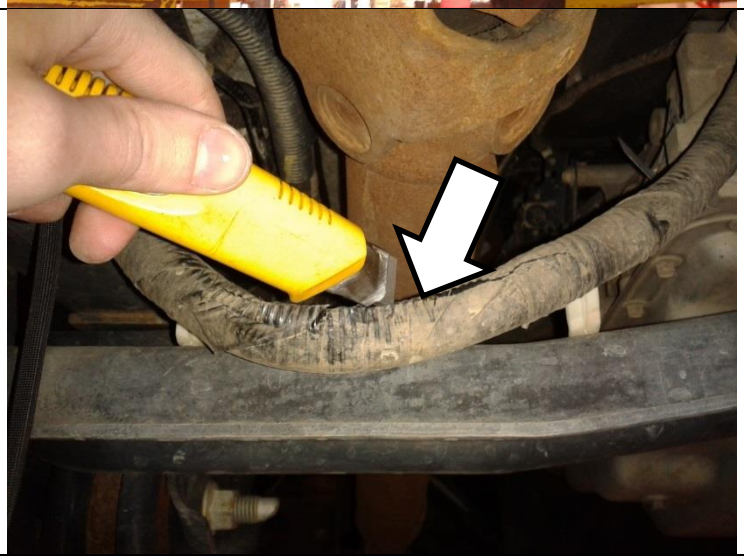
***20.*** Reinstall the lower column cover by installing the three 5.5mm screws. Snap upper half to lower half. Reinstall knee bolster. In-cab portion of the installation should now be complete.



***21.*** Raise vehicle on hoist or using jack stands and locate the transmission wiring harness as it traverses the transmission cross member.

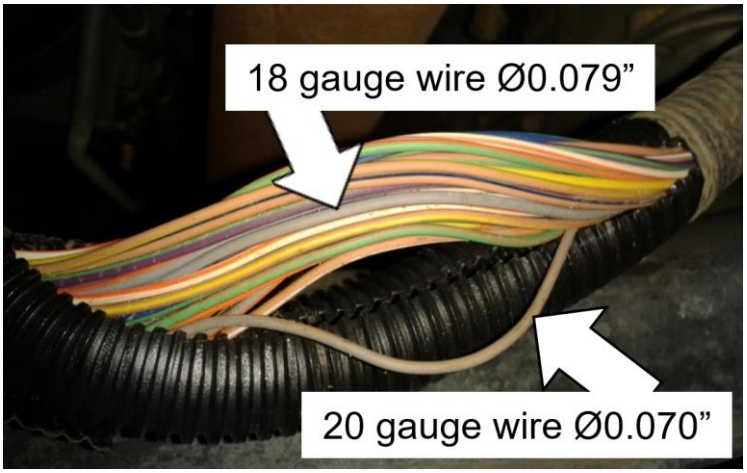
***22.*** Route the yellow and blue wires of the BD wiring harness from the engine bay firewall, along the frame rail to the transmission wiring harness. Secure with wire ties.

***23.*** Using a utility knife, cut a section of the electrical harness wrap.



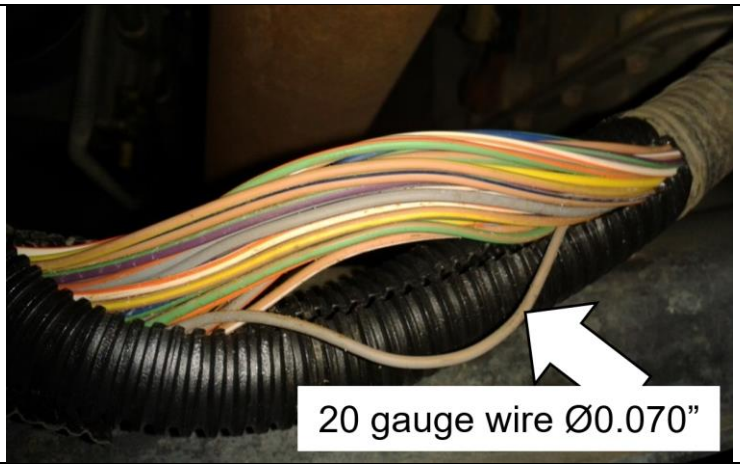
***24.*** Pull wires out of the harness and locate the 20 gauge gray wire with a brown tracer. Use care when locating the wire as there is an 18 gauge wire of the same color for the ISS in this harness.
Use your caliper to differentiate the wire diameter. The thinner one is the 20 gauge (Ø0.070).

**Circuit #CTE22**
**GY/BN 20AWG**
**TR-P Sensor**



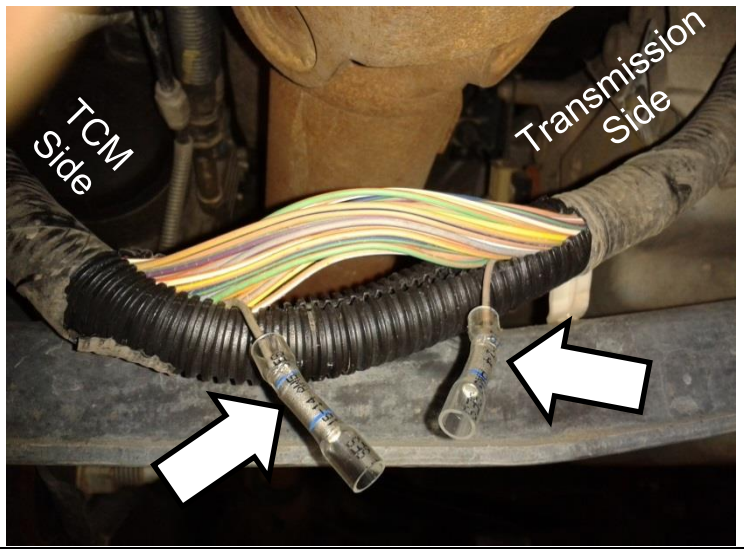

***25.*** Pull wire out of the harness and make it ready to cut

**Circuit #CTE22**
**GY/BN 20AWG**
**TR-P Sensor**



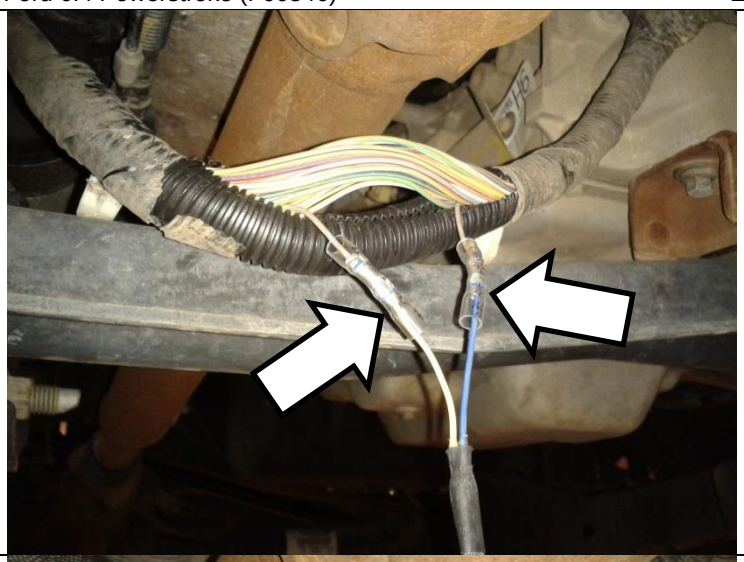

***26.*** Cut this wire and strip the ends. Crimp on the supplied heat shrinkable butt connectors.

**NOTE:** Ensure batteries are disconnected or ignition is turned off before cutting this wire or a transmission fault code may be set.

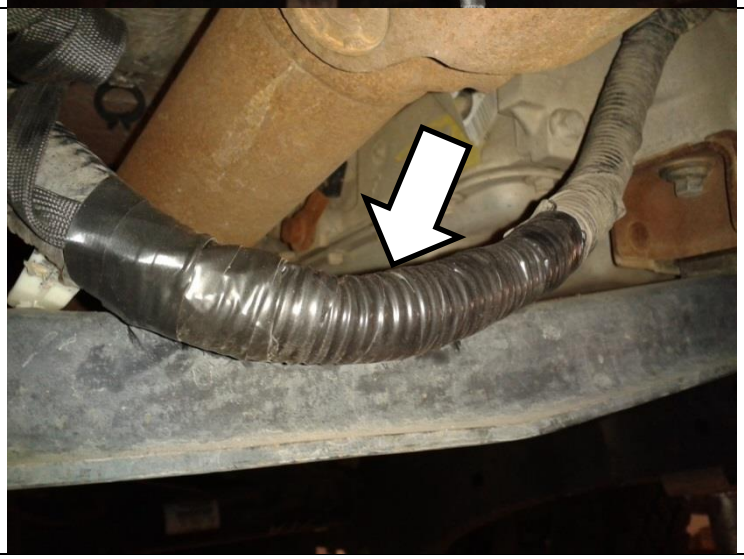


***27.*** Strip the yellow and blue wires from the BD harness and crimp the blue wire into the side that goes to the transmission and the yellow wire into the transmission controller side (frame rail side).

**Blue Wire = Transmission Side**
**Yellow Wire = TCM Side**



***28.*** Seal the heat shrink connectors using a heat gun or suitable heat source. Put the wires back into the wire loom and wrap the section with electrical tape. Double check that the wiring is well clear of the forward drive shaft (if equipped).



***29.*** Lower vehicle and test for correct operation. See operation section above.
***30.*** Installation is now complete.

## User Adjustments

The BD Tap Shifter is designed to work out of the box with no configuration needed, but for some applications it may be desirable to adjust the shift settings. To adjust the shift pattern, turn the ignition on and put the shift lever in P. Then, press and hold the up shift + button until the BD gear display illuminates (about five seconds). The number indicated is the shift strategy selected, the display will show 1+5 and 2+5 for mode 6 and 7 respectively. To change the setting, press the up shift + button to cycle through the modes available. The new setting will be stored in the modules memory. The shift strategies are listed below.

| | |
|---|---|
| ***1* – Default** | This is the normal mode the module is set to when it leaves the factory. Normal upshifts, downshifts and kick-downs are active. Intended for most vehicle installations. |
| ***2* – Lower shift points 10%** | Same as mode 1, but shifts occur sooner. |
| ***3* – Raise shift points 10%** | Same as mode 1, but shifts occur later. |
| ***4* – Raise shift points 20%** | Same as mode 1, but shifts occur later. |
| ***5* – Raise shift points 30%** | Same as mode 1, but shifts occur later. |
| ***6* – Semi-manual mode** | Upshifts allowed at very low speeds, no kick-downs. Only downshifts when slowing to a stop. |
| **7 – Manual/Race mode** | This mode allows the operator to manually control all shifts and converter lockup in $4^{th}$ and $5^{th}$ by using the tow/haul switch. Note $4^{th}$ and $5^{th}$ cannot be selected until the vehicle reaches certain minimum speeds. Contact BD for more information on this mode. |

*NOTE:* Modules Version 1.x had an internal switch on the circuit board and were numbered 0-6. Version 2.x modules can be changed using the procedure above and have the same shift patterns, just numbered 1-7 instead of 0-6.

## *Troubleshooting*

| | |
|---|---|
| **Upon pressing '-', the display momentarily lights up but goes out immediately** | Blue and Yellow wires connection is reversed on transmission wire below vehicle. |
| **Tap Shifter does not control 4th and 5th correctly** | Check for transmission fault codes. The Tap Shifter may not operate correctly when some transmission fault codes are present in the TCM |
| **Tap Shifter not operational** | Open control module and check for the following: |
| | □ Ignition LED when key turned to run. |
| | □ Drive LED when shift lever in drive position. |
| | □ Shift LED when down button pressed. |
| | □ CAN LED flickering indicating bus data. |
| **Downshifts to 1st-3rd delayed**<br>**Pressing '-' with engine off has no effect**<br>**Tap shifter can be engaged in Park** | Blue and Yellow wires tapped onto speed sensor (18 gauge GY/BN) rather than range sensor (20 gauge GY/BN) wire. |

## *Module Version History*

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|---|
| V2.0 - Improved device compatibility, Shift strategy changed by shift buttons rather than internal circuit board switch. |
| V1.3 – Add compatibility for 4x4 low range. |
| V1.2 – Reference rear wheel speed instead of front wheel speed. |
| V1.1 – Improved device compatibility with gauge displays. |
| V1.0 – Shift strategy changed by internal switch on circuit board. |

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