

## Tranzformer 2<sup>nd</sup> Gen Shift Kit Installation

For Firmware Version 2.0.0-061214

The Tranzformer Shift Kit is an electronic shift enhancer for 2011-2014 Dodge Charger and Chrysler 300 vehicles. The Tranzformer serves several functions:

- User adjustable shift firmness for each gear in Drive and AutoStick independently, a user adjustable throttle-based scaling function. Adjustments can be made using Z Automotive Programming Utility (ZPU) for Windows PCs, connected to the Tranzformer via USB. Upshift pressures can also be set using steering wheel buttons on-the-fly.
- AutoUpshift\* – Tranzformer will Upshift vehicle in AutoStick at a user-defined RPM trip point. Can be set using ZPU or via steering wheel buttons on-the-fly.
- Steering Wheel Shifting – Driver can manually shift through gears using steering wheel cruise +/- buttons.
- Burnout Mode – Uses ABS solenoids to lock the front wheels for quick burn-n-go burnouts
- Peak RPM Display – Displays actual peak recorded actual shift RPM at every shift when in this mode
- 0 to 30 and 0 to 60 Timers – Displays 0-30 or 0-60 times on EVIC display
- Reset Adaptives – Reset TCM learned shift adaptives on-the-fly

This document describes how to install a Tranzformer into a 2011-2014 Charger or 300

\*This feature is limited to the TCM's configuration; if Autoupshift is enabled in stock TCM, then the tranzformer is limited to the ability to shift at lower RPMs than stock TCM's shift point. If TCM autoupshift is disabled, then tranzformer can be set to shift at any RPM. As of this writing, there is no known way to disable Autoupshift, save for custom TCM programming.

## Step 1: Removing lower Steering Panel:

Remove the trim panel under the steering column. To do this, pull off the left dash end cap. There are screws located underneath.... Once the screws are removed, the panel pulls straight rearward, with several wires still attached. The panel can hang down without having to disconnect these. The TCM is the black box located underneath the steering column with two right-angle plugs connected to it.



Removal of side panel; pulls off.



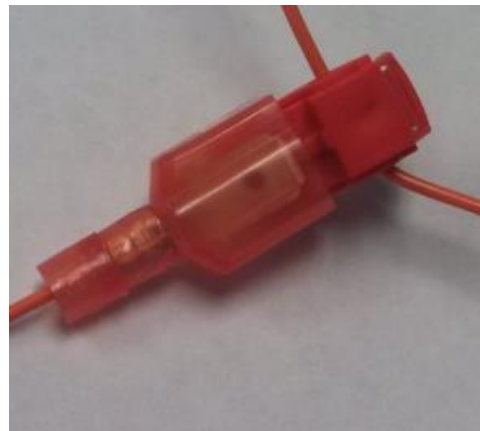
Remove 2 screws; pull lower cover straight back.

## Step 2: Wiring to TCM Harness

Unplug both connectors from the TCM (squeeze tab on right side of connector). The left-hand connector has only two wires; add a red T-tap to the Black wire with blue stripe from this connector.

The right-hand connector contains many wires that are difficult to tell apart in stripe color. Slide off the connector shield to expose the pin numbers so you can easily tell which wire goes to each pin. Add T-taps to the wires from pins 30 (right connector) and 36, 37, and 38 (left connector) as shown in Table 1. Plug the TranZformer wires into the T-taps as per Table 1. Double check pin numbers and wire colors. Be sure that the connector is secure and centered in the T-tap. Replace the TCM plug shield, and plug the TCM back in. There is a 2-pin subconnector housed within this larger plug. These are the CAN-C bus wires. Peel back the tape, and add t-taps to both of these wires, per the table in Figure 1.

**Note: The white and orange wires from the TranZformer harness are not used in the TranZformer 2<sup>nd</sup> gen installation.**

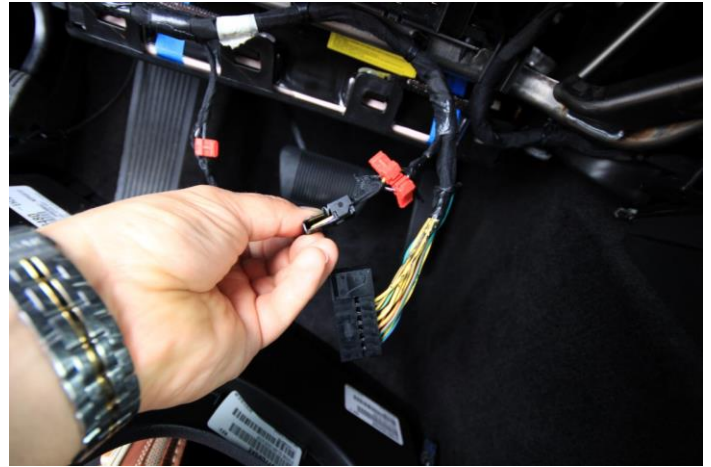


Correct application of t-tap on wire to be tapped.

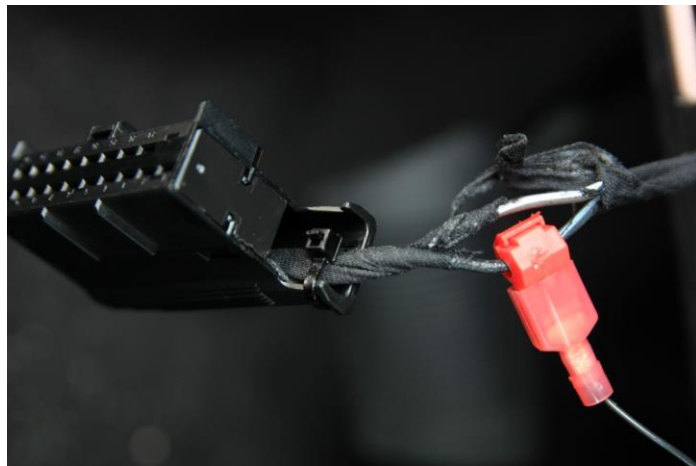


TCM located under steering column.

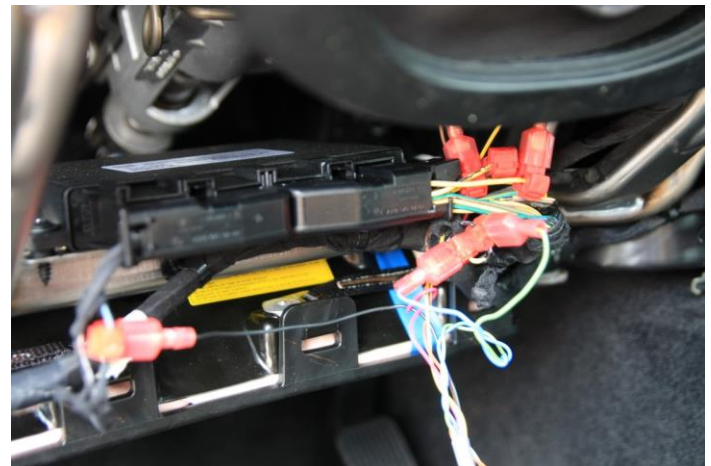
Correctly seated plug in t-tap.



Right connector shown with 2 pin subconnector separated



Left connector pin 30 black/blue stripe tapped.



All wires tapped and connected.

### Step 3: Test for operation

Start the car and see that the TranZformer LED blinks red/green for 5 seconds, then blinks green. If it blinks red 4 times then off for 4 seconds (repeats) then the CAN-C connections are not good. Place the car in Drive and the LED should blink RED steadily.

### Step 4: Finalize and Replace Panels

The TranZformer can be located adjacent to the TCM. It would be beneficial to connect the supplied USB cable to the TranZformer and leave the PC end of the cable accessible for changing parameters or updating firmware without having to pull the lower steering panel off. Replace the lower panel.

## Operation:

The TranZformer monitors the shifter position and is only active in Reverse, Drive and Manual (AutoStick) modes. See the ZPU user's guide for information on configuring the TranZformer's settings. Factory default settings are mild, so it is safe to road test the vehicle before changing parameters. AutoUpshift defaults at 6000 RPM trip point.

**Shift Kit Enable/Disable:** To disable the Shift Kit feature at any time, press the ESP button twice within two seconds. EVIC will display "ShiftKit OFF" on the EVIC screen. To re-enable, press the ESP button twice again. When enabled, the EVIC will display "ShiftKit ON". The TranZformer will remember the last state when you turn the car on the next time. If pressing the ESP button twice causes the ESP system to end up in an undesired state (ie turned ESP off) you can press the ESP button again.

**Setting Shift Parameters:** This can be done via ZPU utility, allowing you to independently select shift strength, scaling, and Autoupshift RPMs. You can also set shift strength on-the-fly using steering wheel buttons. To set DRIVE shift settings, press and hold the "BACK" button, and push cruise +/- buttons to adjust firmness. The EVIC screen will display "Drv Press xx" will be displayed, where xx is the set strength. This setting will be applied to all accelerating shifts in the Drive range. To set AutoStick strength, place the vehicle in Autostick using the console shifter, and use the same procedure with the "BACK" and cruise +/- buttons. "Man Press xx" will display on EVIC screen.

**Steering Wheel Shifting:** (SWS) is active even if the Shift Kit function is disabled. The cruise(+) button on the steering wheel can be used for upshifts, while the cruise(-) button will downshift. They will be active only when in AutoStick mode as long as SWS is enabled, and only if the cruise control system is turned off. Use the console shifter to enter AutoStick mode. You will not re-enter DRIVE mode when pressing cruise + and in gear 5, as you would using the console shifter. To re-enter drive mode, double click the cruise + button while in 4<sup>th</sup> gear, or use the console shifter.

To disable SWS, press the page down and cruise (-) buttons at the same time. To enable SWS, press page up and cruise (+) at the same time. "SWS on" or "SWS off" will display in EVIC.

**AutoUpshift:** The TranZformer will automatically upshift for you at a programmable RPM when in AutoStick mode. The TranZformer is factory preset to request a shift for you at 6000RPM, but this can be set to any value by using the ZPU utility, although the TCM will cause a "limp home" mode if RPMs exceed 7000. Keep in mind that this is the RPM at which a shift will be requested; there is delay in the TCM and hydraulic circuits that cause the shift to actually take place later, as the RPMs continue to rise. This can be anywhere from 200-600RPM higher (depending on HP, valve body modifications, clutch wear, etc) so it's best to set the RPM shift point lower, and use the PeakRPM function to test your car's delay and adjust accordingly. You can also set Autoupshift RPMs on the fly using steering wheel buttons. With the car in either Park, Reverse or Neutral, hold the "BACK" button and push cruise +/- to adjust. EVIC display will show "Upshift xxxx" where xxxx is the new set RPM. This RPM will be used for all upshifts. Use ZPU if you would like to set the RPMs differently for each gear. This function is usable only if you used a Diablo tuner to disable the factory TCM's Autoupshift feature, or are using a Mopar Performance TCM (MTCM).

**Burnout Mode:** The TranZformer will use the ABS solenoids to lock the front wheels for burnout purposes. To use this feature, you must stop the car, place transmission in AutoStick 1st, then press the cruise cancel button and hold it. Once the ABS light on the dash comes on, pump then release the brake pedal. Releasing the cruise cancel button will cancel Burnout mode. Nail the gas pedal, and the rear wheels will instantly break traction. "Burnout" will display in EVIC screen. The brakes will release on its own once the rear wheels exceed 5mph. Autoupshift is disabled in this mode, so make sure your rev limiter is not set too high, as you may bounce off the rev limiter.

**Peak RPM Display:** Press and hold the “BACK” button, and press the cruise “Cancel” button. “PeakRPM” will display in EVIC. Every time the transmission shifts, whether in Drive or Autostick, Upshift or down, the peak RPM for that shift will be displayed on EVIC screen. Note that this actual shift RPM is where the transmission actually shifted, not when it was told to shift!

**0-30 Timer:** Press and hold the “BACK” button, and press the cruise “Cancel” button. Scroll to “0-30: ”. When the vehicle is stopped, this display will change to “start 30. As soon as the vehicle starts moving, the display will change to “go to 30” and the timer starts. When the vehicle reaches 30MPH, the time will be displayed.

**0-60 Timer:** Press and hold the “BACK” button, and press the cruise “Cancel” button. Scroll to “0-60: ”. When the vehicle is stopped, this display will change to “start 60. As soon as the vehicle starts moving, the display will change to “go to 60” and the timer starts. When the vehicle reaches 60MPH, the time will be displayed.

**Reset Adaptives:** Reset TCM adaptives at any time by pressing “BACK” and Cruise on/off. “Adapt Reset” will show on the EVIC screen.

**Display TranZformer Firmware Revision:** Press and hold the “BACK” button, and press the cruise “Cancel” button. Scroll to “TZ2G: x.x.x.”. The “x.x.x” will be the current revision number (ie “TZ2G:2.0.0”)

**Table 1: Wiring**

TranZformer pin	Signal	Wire color to use	Connects to...	Vehicle wire color
1	Ground	Black	TCM pin 30	Black, with Blue stripe
2	Power	Red	TCM pin 38	Yellow
3	Line Pressure Solenoid	Yellow	TCM pin 36	Yellow/Tan stripe
4	Shift Solenoid	Brown	TCM pin 37	Yellow/Brown stripe
5	NC			
6	NC			
7	CAN-C (-)	Blue	TCM pin L2	Yellow
8	CAN-C (+)	Green	TCM pin H1	Purple/ White stripe
9	NC	White		
10	NC	Orange		

## Troubleshooting Guide:

Symptom	Likely Cause	Action
Unit dead – no LED flashing on power up, no LED after 5 second initialization	Power not connected or ignition not on.	Check power wires – pins 1 and 2 of TranZformer to TCM pin 30 and 38.
Not feeling shift firmness increase, or shifts “flare”	Bad connection to one or both solenoids	Check wires to solenoids – Pins 3 and 4 of tranZformer to pins 36 and 37 on TCM. Having one wire disconnected can cause shift flare or jumpy shifts.
LED blinks RED only after the 5 second initialization. Functions do not work.	Bad CAN connection	If CAN-C is not seen, unit goes to “sleep.” Check CAN wiring.
No increase in shift firmness	Shift Kit function turned off, or parameters set too low	Press ESP twice to turn back on; check settings.
No Burnout Mode, Autoupshift and steering wheel shifting not working.	One CAN-C wire disconnected	If both CAN-C wires are disconnected, these functions will not operate and shifts will revert to stock. If one wire is disconnected, shifts firmness function will work, but these functions will not. Check both CAN-C connections.
No EVIC message displays	Incorrect EVIC mode	In order to see any EVIC messages that the TranZformer sends out EVIC needs to be in a radio display mode. Press the up/down button to get to radio EVIC mode. This is the line of text above “Fuel Economy”

Please be sure to check your wiring for correct pinout, loose or shorted connections, overstripped wires, etc. Z Automotive cannot be held responsible for incorrect wiring, misuse or poor installation. If you are in doubt, email [techsupport@zautotech.com](mailto:techsupport@zautotech.com). **Please be aware that modifying your vehicle in any way can affect your vehicle’s warranty, longevity, handling, etc. Please use caution when driving with the shift kit enabled in inclement weather. The firm shifts and especially aggressive kickdowns can cause wheelspin at highway speeds and cause you to lose control. Please use with caution, and AT YOUR OWN RISK.**