

TranZformer 2nd Gen Shift Kit Installation

For Firmware Version 2.2.0-110915

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.
- Can unlock factory Sport Mode*, SRT performance pages* on 8.4 touch screen and EVIC display
- Can enable support of added factory paddle shifters*
- Can enable the addition of factory fog lights
- Can enable the addition of factory backup camera
- Can disable in-motion lockout of navigation address entry (2014)
- Fully disable/re-enable ESP by pressing ESP button for 5 seconds
- Force AWD mode – for AWD cars, can keep in AWD or RWD, or return to normal automatic operation
- Line Lock – Uses ABS solenoids to lock the front wheels for burnouts at the track or just for fun
- 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
- Light Show mode – 6 Light shows that flashes all the exterior lights, perfect for car shows.
- Clear CELs – reset that pesky check engine light. Good when you have mods that set the light and you know exactly why.

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

*Autoupshift requires the use of Sport Mode – which is built into 2012-2014 models only. Sport Mode, SRT pages and paddle shifters may not work on 2011 models.

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 2 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 anything. 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.

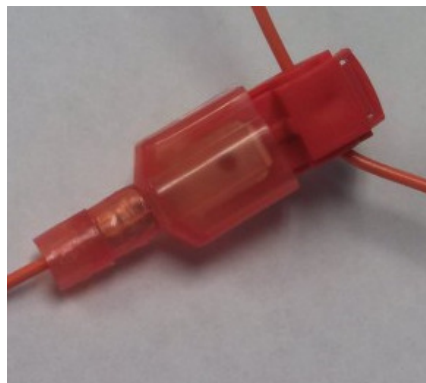
Step 2: Wiring to TCM Harness

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 (pin 30).

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 36 and 37. Locate the OBD2 Diagnostic port harness, remove some of the tape around it, and add a T-tap to the red wire with dark green stripe. 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.



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



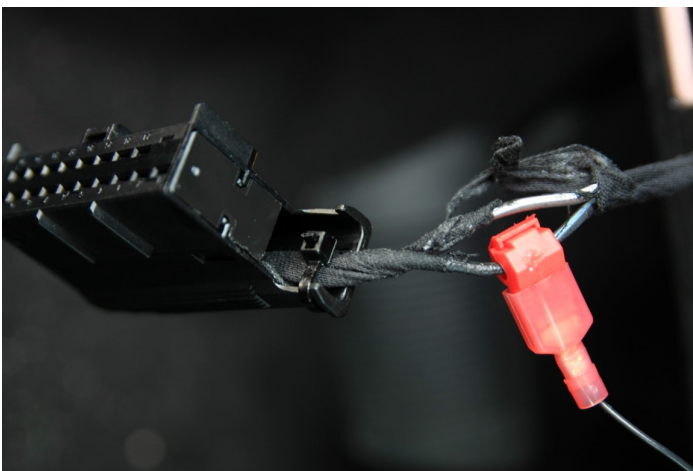
Incorrectly seated plug in t-tap – blade should not be seen.



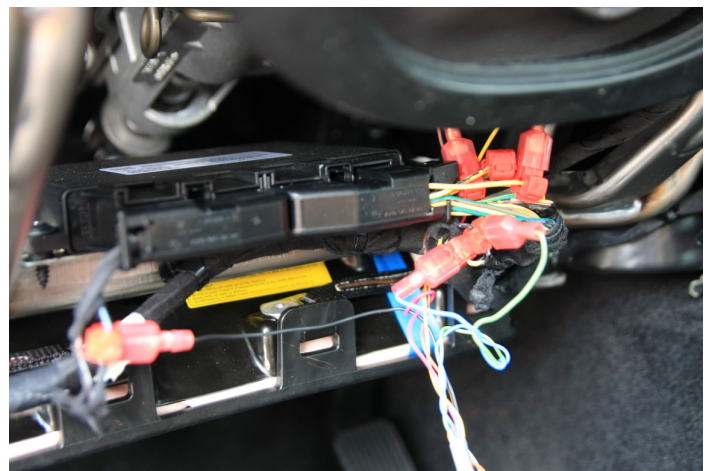
TCM located under steering column.



Right connector shown with 2 pin subconnector separated



Left connector pin 30 black/blue stripe.



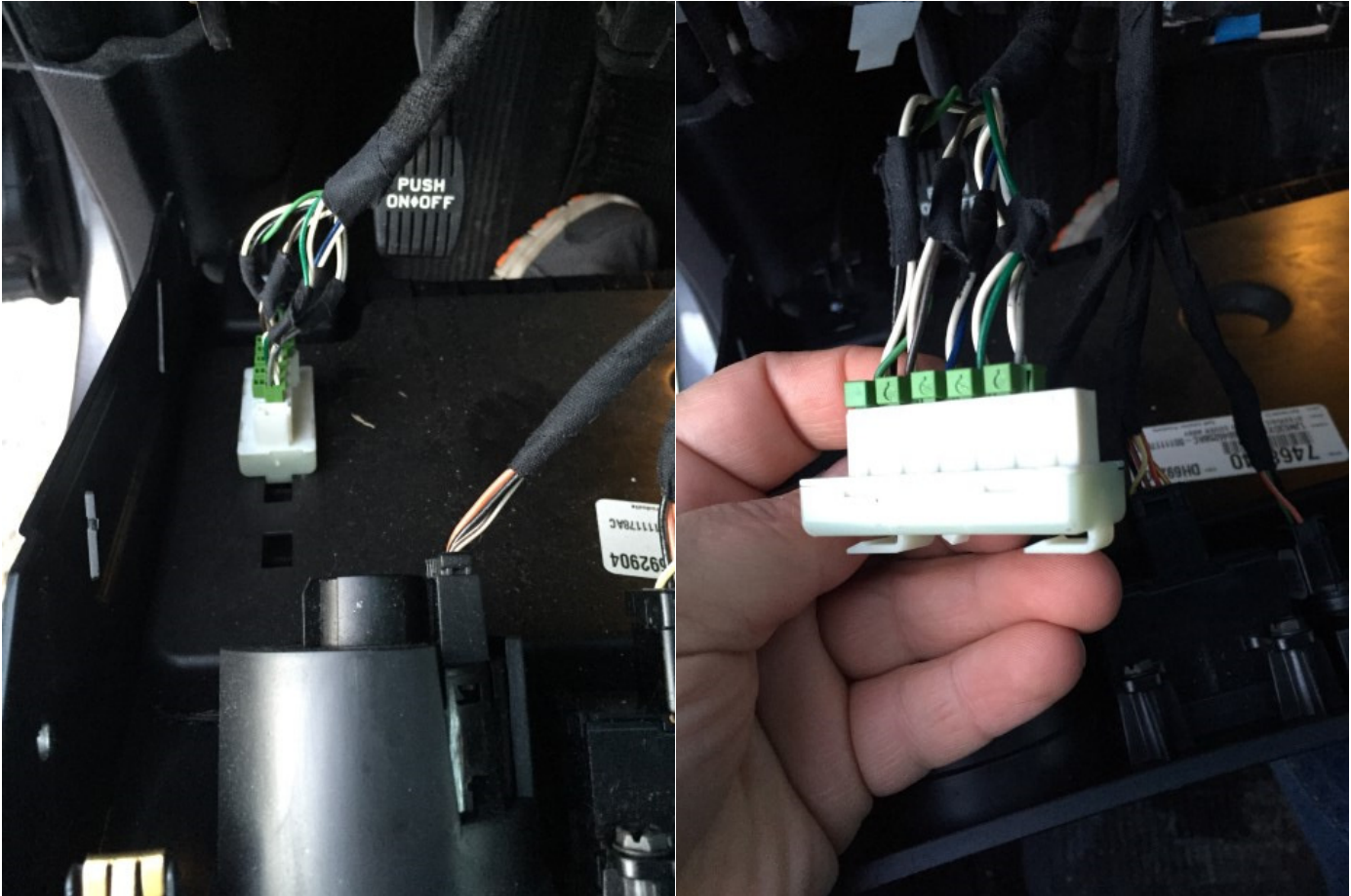
All wires tapped and connected.



Power wire tapped and connected to OBD2 harness.

Step 3: Wiring to CAN-IHS bus

This step is only required if you need to use the tranzformer to enable Sport Mode and/or SRT performance pages (2012-2014 only) On the far left of the knee plate, is the CAN-HIS junction block. Slide the block off its mount so it's free to move closer to the Tranzformer. Connect the tranzformer orange and white wires as shown in Table 1.



Step 4: 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 5: 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, WITH THE CRUISE CONTROL ON, 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 4th 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, and WITH THE CRUISE CONTROL ON, 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 put the vehicle in "sport mode" or have a custom TCM with autoupshift disabled.

Line Lock: * The TranZformer will use the ABS solenoids to lock the front wheels for burnout purposes. To use this feature, you must stop the car, WITH THE CRUISE CONTROL OFF, then press the steering wheel "back" button and hold it while pressing the cruise + button. Continue to hold the "back" button, but the cruise button does not need to be held. Once the ABS light on the dash comes on (and EVIC message "Line Lock ON"), pump then release the brake pedal. Releasing the "back" button will release Line Lock. Press the gas pedal, and the rear wheels will break traction. Brakes release when the "back" button is released.

Full ESP Disable/Enable: Stop the car. Press and hold the ESP button for 5-7 seconds and the ESP lights, BRAKE light, ABS lights will illuminate indicating that ESP and ABS are shut off. With the car stopped press and hold again for 5-7 seconds and the ESP system will turn back on.

Clear CELs: With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button. “Clear CELs?” will display in EVIC. Continue to press BACK and press cruise “ON/OFF”. CELs will clear.

Changing Settings:

NOTE: WRITE DOWN THE SETTINGS - BEFORE AND AFTER - SO THAT YOU CAN CHANGE THEM BACK IF BRINGING THE CAR IN FOR SERVICE.

Set Sport Mode for 5 speed: With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “Sport5sp”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. Radio will reset each time this is changed. This adds sport mode option to the radio for 5 speed vehicles.

Set Sport Mode for 8 speed: Do not enable this option in a 5 speed car, or the PRND display on the dash may disappear!

Set SRT Mode : With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “SRT Set”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. EVIC and cluster will reset each time this is changed. This adds the SRT splash screen and SRT menu items to the EVIC display.

Set Performance Pages : With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “PerfSet”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. Radio will reset each time this is changed. This adds the SRT performance pages to the radio.

Set Paddle Shifters : With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “Paddles”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. This adds the ability for factory paddle shifters to be supported.

Set Backup camera : With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “Cam En”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. This adds the ability for factory backup camera to be supported.

Set Fog lights Enable: With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “Fogs En”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. This adds the ability for factory fog lights to be supported.

Set In Motion Nav : With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “InMoNav”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. This adds the ability for address info to be entered while vehicle is moving. This is for the PASSENGER to use. It may be illegal for the driver to use the navigation system to enter street information while the vehicle is in motion.

Set DRL Dropout: With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “DRLDrop:”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. This is enabled by default, making the DRL turn off when using a turn signal. Turning this OFF will keep the DRL on even when a turn signal is in use.

Set Fog Dropout: With the ignition on but engine NOT running, press and hold the “BACK” button, and press the cruise “Cancel” button, no faster than once per second, to advance to “FogDrop:”. Continue to press BACK and press cruise “ON/OFF” to toggle this on/off. This is enabled by default, making the Fogs turn off when using high beams. Turning this OFF will keep the fogs on even when high beams are in use.

Light Show: Press Unlock-Unlock-lock-Unlock on the keyfob to start Light Show 1. Press Unlock again to advance to the next Light Show. Press Lock to turn it off. To use the steering wheel buttons: With the ignition on (running or not), press and hold the “BACK” button, and press the cruise “Cancel” button. “LightShow?” will display in EVIC. Continue to press BACK and press cruise “ON/OFF”. Lightshow will start, “LightShow 1” will display in EVIC. . Continue to press BACK and press cruise “ON/OFF” again to advance to Lightshow 2, etc. There are 6 light shows. Show will continue until tuned off (BACK + ON/OFF), or if the vehicle is driven.

Peak RPM Display: With the engine running, 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!

Force AWD: (AWD models only) With the engine running, press and hold the “BACK” button, and press the cruise “Cancel” button. Scroll to “AWD: Normal ”. Continue to hold “BACK” and press cruise “ON/OFF” to toggle between “AWD:Force RWD”, “AWD:Force AWD”, and “AWD: Normal”. You can change the setting at any time, but the change will only occur when the car is not in motion.

0-30 Timer: (2011 only) With the engine running, 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: (2011 only) With the engine running, 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:2.1.8”)

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	OBD2 harness	Red/ Dark Green Stripe
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	CAN-IHS(-)	White	CAN connector	White
10	CAN-IHS(+)	Orange	CAN connector	Gray

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 OBD2 Red/green wire.
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.
Performance pages were commanded to set, but the radio did not reset and	Bad or incorrect CAN-IHS connection	The CAN-IHS bus is connected solely for the purpose of resetting the radio after enabling performance pages and

the pages aren't there		sport mode. If not connected, these modes can still be enabled by letting the car sit off for a while after commanding it to enable.
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"
Line Lock won't hold the car	Didn't provide adequate brake pressure	Invoke Line Lock by pressing "back" and tapping "cruise +", and while continuing to hold "back", press the brake pedal FIRMLY twice and release.
No PRNDL display in EVIC	Changed Sport 8 Speed setting incorrectly.	Change the Sport 8 Speed setting back to its original state.

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. **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. USING THE LIGHT SHOW FEATURE ON PUBLIC ROADS, IMPERSONATING A POLICE OFFICER IS A FELONY. LIGHT SHOW IS INTENDED FOR CAR SHOW/TRACK/OFF ROAD USE ONLY.**