GEN4 PRO XTREME BigComm Pro Transmission Menu User Manual

www.**BigStuff3**.com

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HOW TO USE THE BIGCOMM PRO CONFIGURATION & CALIBRATION TOOL BAR TRANSMISSION CONTROL MENU AND SUBMENU

The GEN4 ECU's transmission control feature will allow you to control either a General Motors 4L60E or 4L80E transmission. The first true GM electronic transmission was the 4L80E, introduced in 1991 and the 4L60E followed the 4L80E in 1993.

Computer-controlled transmissions have changed automatics forever. Just as fuel injection has made the engine more powerful, functional, and reliable, the electronic transmission outperforms and outlasts any of its predecessors.

This is an optional feature to the GEN4 and must be enabled in order to use this functionality. If in your current project the Transmission Icon is not available the ECU does not currently support it. Contact BigStuff for more details on how to enable this feature.

Transmission Control – System Contents

The transmission control option is sold with this user's manual and the standalone transmission wire harness, shown below.

The remaining transmission control functionality is contained within the GEN4 ECU when it is ordered with the transmission control option.

GEN4 ECUs sold with the transmission control option will have two (2) header connectors one at each end of the ECU (vs. one header connector for the fuel and spark only ECUs).

It is essential that the transmission wire harness main connector be installed in the correct header connector location on the ECU!

Installing the transmission Harness Main Connector **to the incorrect header location on the GEN3 ECU will damage the ECU and void the warranty!!**

The header connector at one end of the GEN4 ECU will be marked **"Transmission"** to indicate the header location where the transmission wire harness must be connected to.

• SYSTEM INSTALLATION OVERVIEW

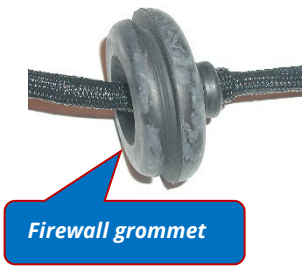
The BigStuff3 transmission control wire harness was designed to connect directly to the stock GM input and output shaft speed sensors and the stock 20-pin header connector on the transmission.

The steps required to configure the GEN4's transmission control feature are described in detail in this manual. A brief overview of the installation and configuration process is described below.

1. **Install the BigStuff3 Transmission Wire Harness** - Install the transmission wire harness between the GEN4 ECU and the transmission. The wire harness installation process is very straightforward. There are a total of 5 connections that need to be made, as outline below:
   - Two (2) connections to the **Transmission Input (TISS)** and **Output (TOSS) Sensors**. These connections are made directly with the stock sensors on the transmission.
     i. *Note: 4L60E transmissions only have a TOSS sensor.*
   - One (1) connection to the stock 20-pin connector on the transmission.
   - The transmission wire harness header connector to the GEN4 ECU header connector marked "Transmission".
   - The +12v Switched wire connection.
2. **Configure the ECU** for the transmission being used.
3. **Configure the Operating Tables** – Specifically, the **Shift**, **Torque Converter Clutch (TCC)** and **Line Pressure (LP)** tables.

• *TRANSMISSION WIRE HARNESS INSTALLATION*

To improve the overall wire harness installation process, the transmission wire harness was manufactured with identification labels at the end of each wire or connector to ensure that connections are properly made.



The transmission wire harness has two halves; one half is intended to be located inside the vehicle, with the ECU, the other half connects to the sensors on the transmission.

The two halves of the harness are separated by a firewall grommet (see photo) designed to fit snuggly in a 2-1/8" hole, which needs to be located in the firewall.

The best location for the firewall hole is in an unobstructed location, on the side of the passenger compartment closest to where the ECU will be mounted.

Care should be taken not to locate the grommet hole too far from the transmission. Doing so may affect the wire lengths that connect to the sensors on the transmission.

Some initial layout investigations should be made before the grommet hole is made in the vehicle sheet metal.

The paragraphs below describe how and where each connection should be made.

Hyperlinks (underlined, re wording) in the column titled "Further Details" were included to further assist with the transmission wire harness installation. Left clicking the PC's mouse on the hyperlink will immediately link to a photo of the connector along with additional installation information.

Harness Label	Wire Color / Connector Type	Label Definition	Connect To	Further Details
TISS	Black 2-way Packard Connector with blue Seal	Transmission Input (shaft) Speed Sensor	See TISS Sensor Connection	See TISS Sensor. **Only 4L80E transmissions have TISS sensors!**
TOSS	Black 2-way Packard Connector with blue Seal	Transmission Output (shaft) Speed Sensor	See TOSS Sensor Connection	See TOSS Sensor
+12V Switch	Single pink wire	Switched 12V supply input	Connect to a 12V source that is "live" when the ignition key is in the "start" position	See Twelve Volt Switched
4L60E/4L80E Trans	Gray 20-Pin Connector	Main harness side connector to the transmission	See Twenty Pin Connector Connection	Directly below this table
Wire Harness Main Connector	Black 30-Way Connector	N/A	GEN3 ECU Header Connector Marked "**Transmission**"	See Harness Main Connector
Harness Label	**Wire Color / Connector Type**	**Label Definition**	**Connect To**	**Further Details**
Transmission Valve Body Fuse	N/A	N/A	N/A	Valve Body Fuse

20-Pin Transmission Header Connector

Connect the harness side 20-Pin connector to the stock 20-Pin header connector on the transmission.

The location on the transmission where this termination should be made can be seen by clicking on Twenty Pin Connector Connection.

INPUT AND OUTPUT SHAFT SENSORS

The **Trans Input** (shaft) **Speed Sensor (TISS)** and **Trans Output** (shaft) **Speed Sensor (TOSS)** measure the input and output speeds of the transmission so the GEN4 ECU can determine when to lock the converter, how much slip to allow with an unlocked converter, the vehicle load, the shift pressure, and the vehicle speed. The TISS and TOSS sensor connectors are identical in shape and color. It is important to make sure these connections are made to the correct speed sensor on the transmission. Terminating these connectors to the wrong transmission sensor will impact transmission operation and could damage the ECU, thus voiding the warranty.

TISS Sensor

Terminate this connector to the stock (TISS) speed sensor on the 4L80E transmission.
Note: The 4L60E transmission does not have a TISS sensor!

The location on the transmission where this termination should be made can be seen by clicking on TISS Sensor Connection.

BACK TO TISS SENSOR

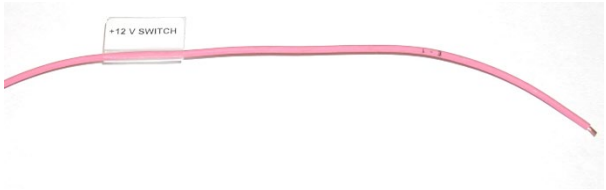
TOSS Sensor

Terminate this connector to the stock speed (TOSS) sensor on the transmission. The location on the transmission where this termination should be made can be seen by clicking on TOSS Sensor Connection.

BACK TO TOSS SENSOR

12V Switched (single pink wire)

A secure connection must be made to a switched 12V supply. The best and in most cases the only source of a switched 12V supply is at the vehicle fuse block. The ECU must have a "live" 12V supply during cranking. If the 12V supply does not stay live, during cranking, the ECU will not function.



A simple way to determine if a live 12V supply exists during cranking is to check it with an inexpensive voltmeter. Securely fasten the voltmeter's red (+ positive) wire to the ignition input on the fuse block. Secure the voltmeter's black wire (- negative) to a ground location on the fuse block or another adequate location. Once the voltmeter connections are made, crank the engine. The voltage meter should indicate an output voltage of between 8V to 14 volts. If the output voltage is below 8 volts, check to make sure the battery is fully charged and all the cells of the battery are functioning properly.

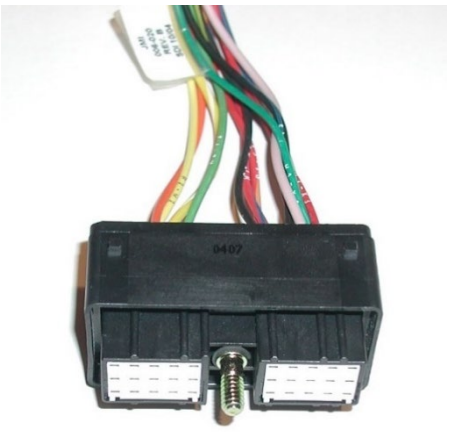
Note: *If a battery with both 12V and 16V cells is being used, the switched ignition (Vsw) must be tied to the same voltage rail as the main battery connections are connected to. Do not connect the ECU main cables to the 16V rail and have Vsw connected to +12V. This will damage the ECU and void the warranty!*

Wire Harness Main Connector

The 30-way harness side main connector mates with the GEN4 ECU header connector marked with "**Transmission**".

This connector will only fit in one direction, but must be mated with the ECU header connector marked "**Transmission**".

Note: *It is essential that the transmission wire harness main connector be installed in the correct header connector location on the ECU! Installing the transmission harness main connector to the incorrect header location on the GEN4 ECU will damage the ECU and void the warranty!*

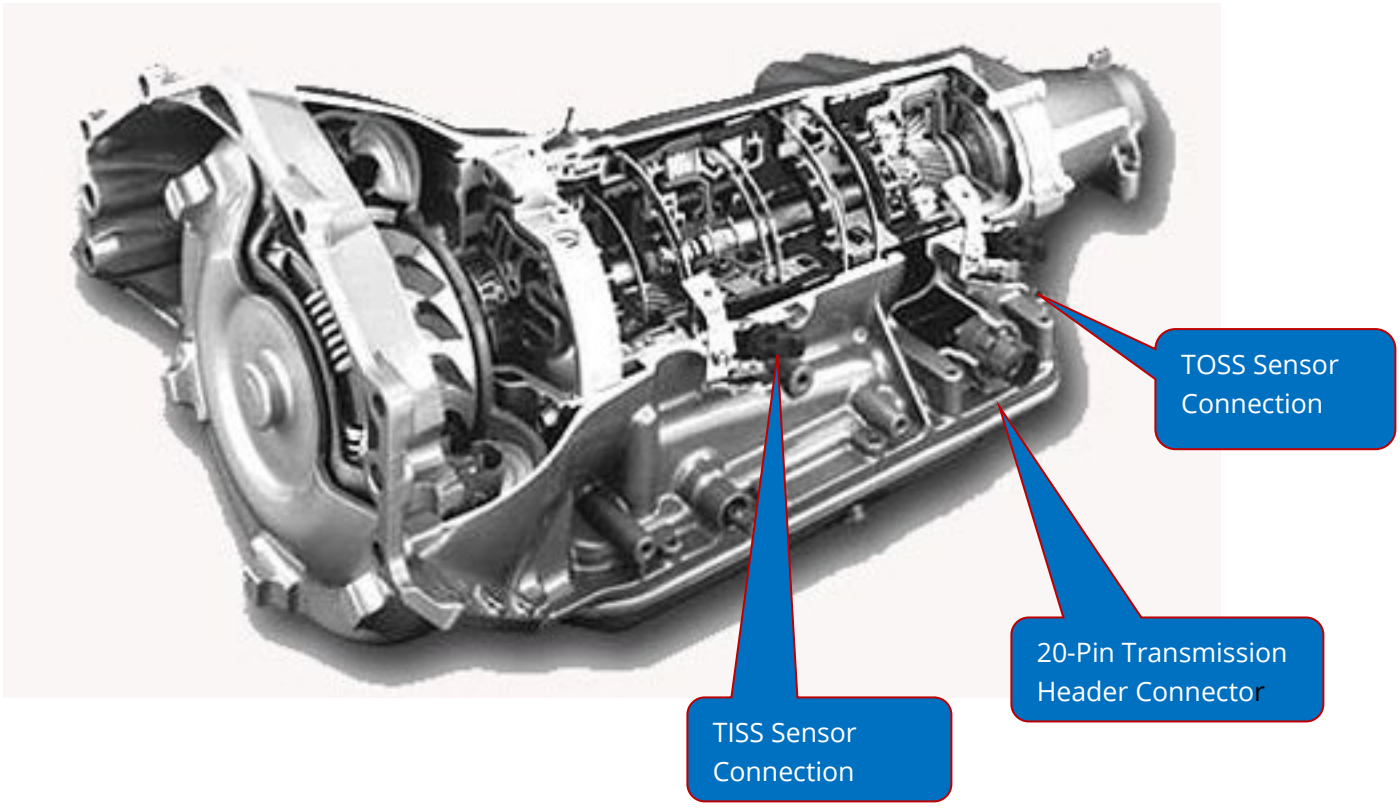


Valve Body 15-Amp Fuse

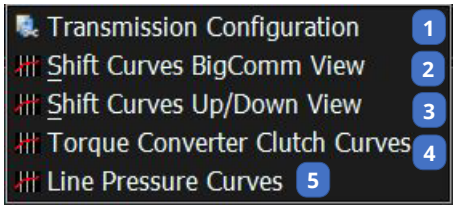
This fuse protects the transmission valve body.

BACK TO VALVE BODY FUSE

4L80E Transmission Wire Harness Connection Points Illustration



• TRANSMISSION SOFTWARE CONFIGURATION



The transmission pulldown menu is where the transmission tables are stored to configure and program the 4L60E/4L80E transmission.

(1) Transmission Configuration – This section is where the base transmission settings are programmed.

(2) Shift Curves Bigcomm View – The shift tables used to configure the gear up and down shifts.

(3) Shift Curves Up/Down View – Optional table used to configure the shift tables. We recommend using the Bigcomm view shift curve tables.

(4) Torque Converter Clutch Curves – The TCC curves is used to configure when the torque converter locks and unlocks in third and fourth gear.

(5) Line Pressure Curves – The curves used to establish how hard the transmission upshifts

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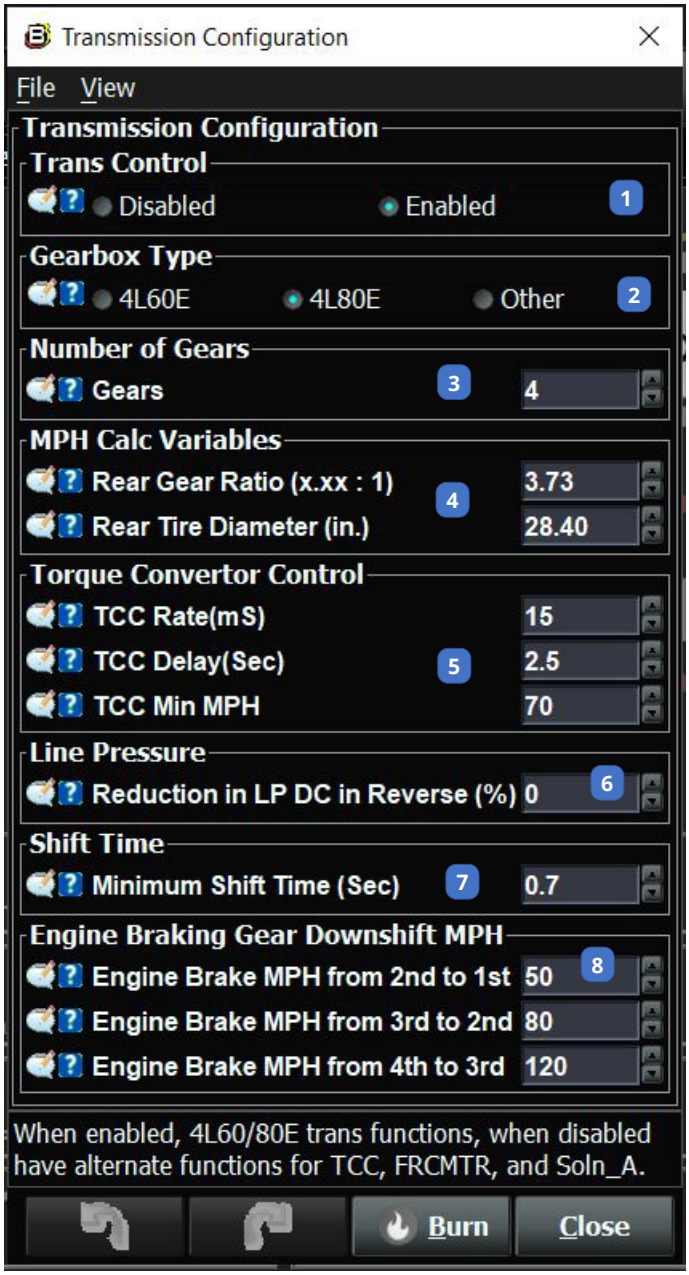
• TRANSMISSION CONFIGURATION



(1) Trans Control - When enabled, 4L60/80E trans functions, when disabled have alternate functions for TCC, FRCMTR, and Soln_A.

(2) Gearbox Type - Choose which automatic transmission you will be using.

(3) Number of gears - Enter how many total gears the transmission will be using.

(4) MPH Calc Variables – Enter the rear gear ratio and rear tire diameter in inches.

(5) Torque Converter Control – More Info below this section.

a. TCC Rate (mS) – Rate of TC Lockup
b. TCC Delay (Sec) – TC Lockup Delay
c. TCC Min MPH – TC Min MPH to lockup.

(6) Line Pressure – More info below in this section.

a. Reduction in LP DC in Reverse – The amount of line pressure reduction when going into Reverse.

(7) Shift Time – The value used by the ECU to determine the minimum time between successive up-shifts and down-shifts.

(8) Engine Braking Gear Downshift MPH – The values used by the ECU to determine when to downshift gears to assist in slowing vehicle down.

• TORQUE CONVERTER CONTROL

Section 5 above in the transmission configuration section is used to adjust how the torque converter operates while the transmission is in use.

TCC Rate (mS) – TCC Rate is the rate at which the torque converter lockup is applied. The larger the number inputted, the quicker the converter clutch will be "locked". A number like 255 will lock the converter very quickly. A number like 128 will lock the converter at a much slower rate. It is better to start with a lower value, gradually increasing the number until the desired clutch lock rate is achieved.

TCC Delay (Sec) – The TCC Delay is the time between when the following criteria are met and

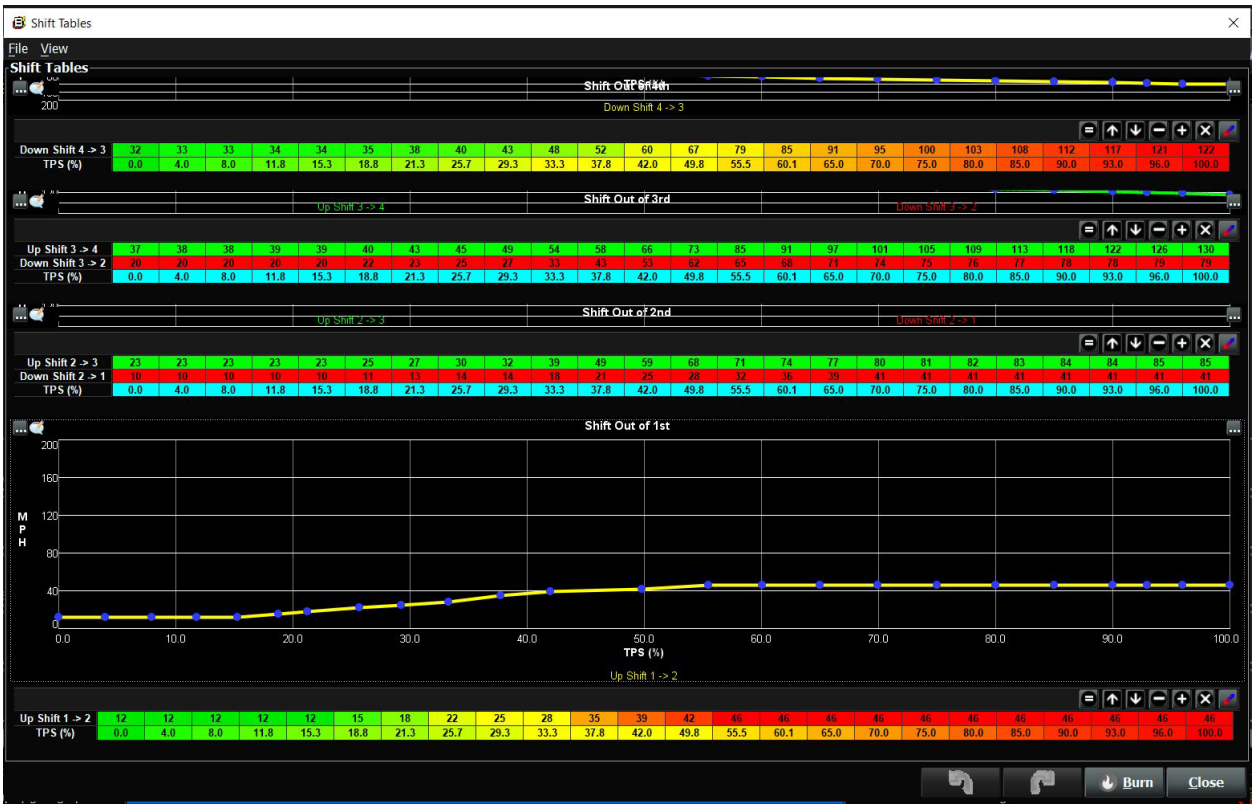
when the torque converter begins to lockup. Delay Criteria = Minimum throttle position (for idle) is exceeded by the TPS%. Note: the torque converter is unlocked if the throttle is closed. Vehicle Speed = Vehicle speed has to exceed the value set in the TCC table. Transmission Fluid Temperature = This variable is "hard coded" at the factory.

TCC Min MPH – Below this MPH, Torque Converter Clutch will unlock when throttle is below Max TPS for Idle calibration.

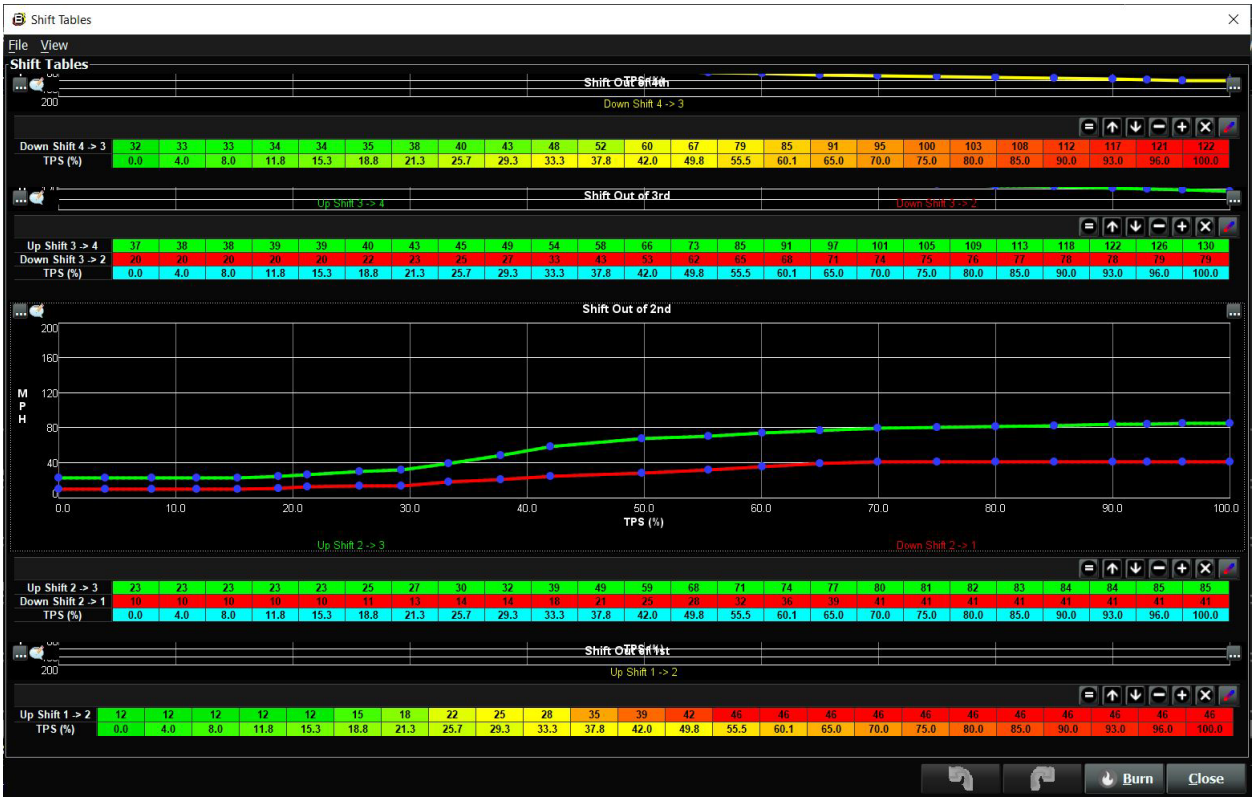
Shift Curves Bigcomm View

The shift table is used to configure transmission up-shifts and down-shifts for each gear as a function of vehicle speed (MPH) and percent (%) throttle opening. The **green** lines in the windows above represent transmission up-shift points and the **red** lines represent the down-shift points. The area between the red and green lines is the hysterisis needed to keep the transmission from continually up-shifting or down-shifting. The below pictures are examples of shift curves for gears 1-4. Click on each gear curve to expose the shift table to adjust.

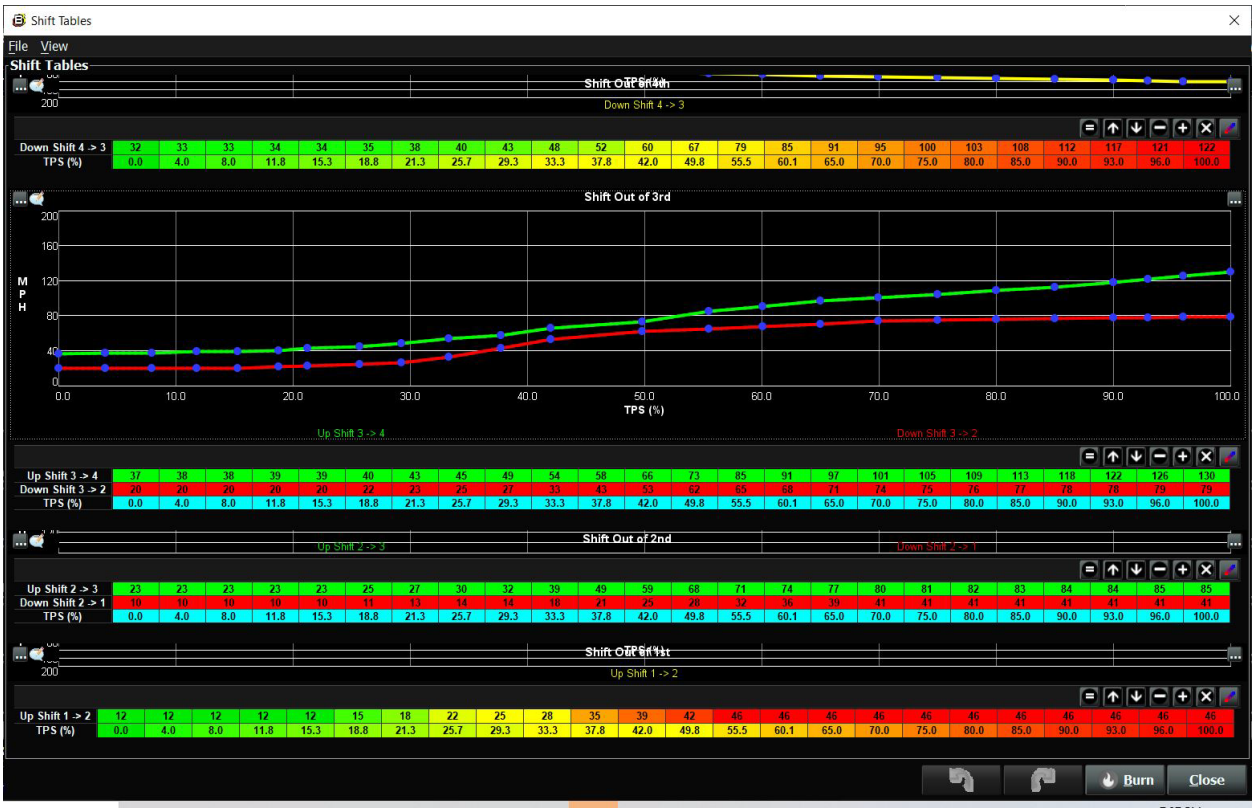
1st Gear Curve



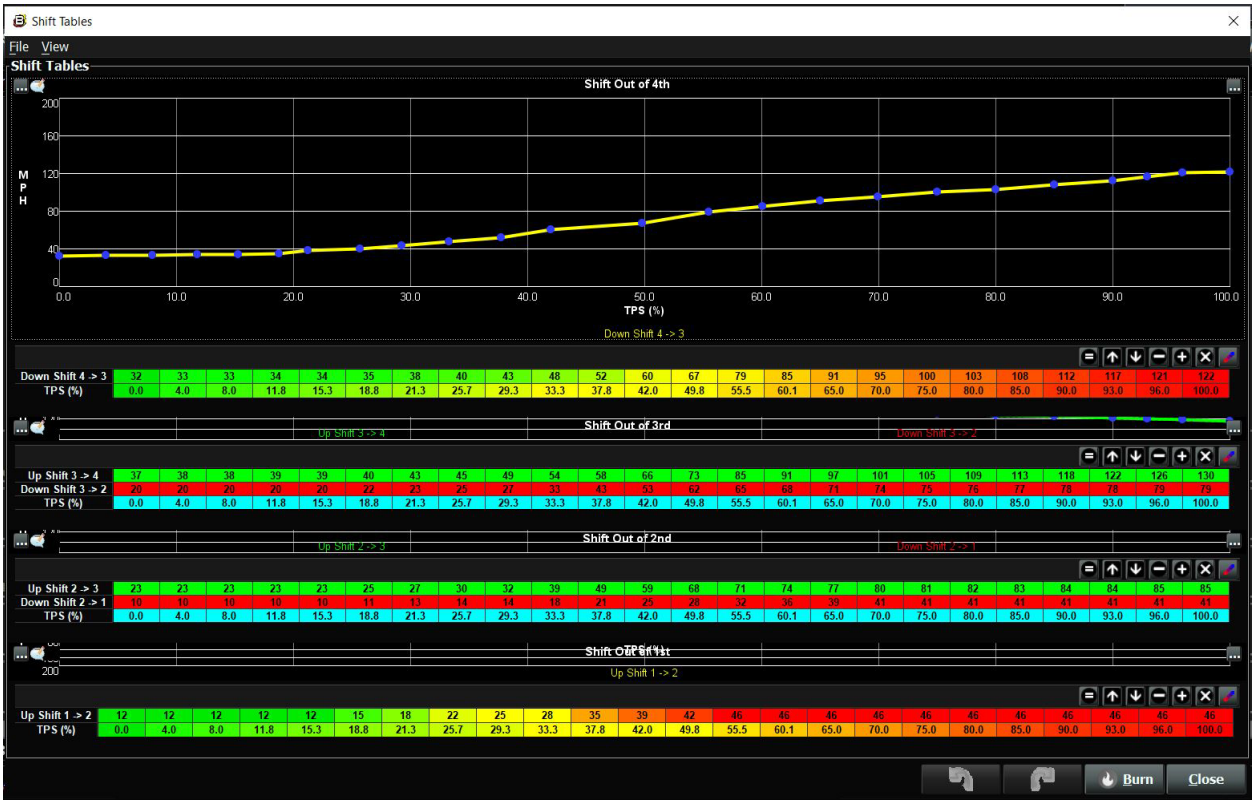
2nd Gear Curve



3rd Gear Curve



4th Gear Curve



• *TORQUE CONVERTER CLUTCH CURVES*

As you will notice, there are only two windows in the **Torque Converter Clutch (TCC)** table. This is because the converter is only allowed to "Lock-up" in third and fourth gear (with a 4-speed transmission) and fourth and fifth gear (with a 5-speed transmission).

The TCC table is used to configure when the torque converter locks and unlocks in third and fourth gear (with a 4-speed transmission) as a function of vehicle speed (MPH) and percent (%) throttle opening.

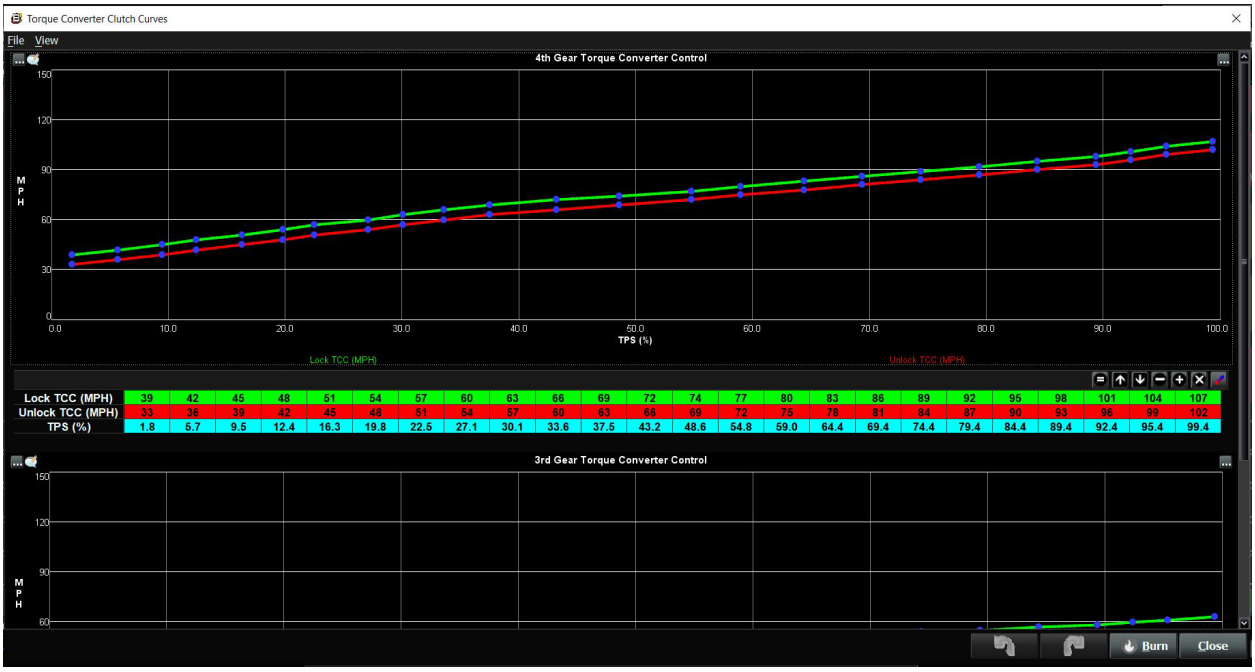
The **green** line in the windows above represents the points when the torque converter begins to lockup, based on settings in the Torque Converter Control section of the Transmission Configuration table. The **red** line represents the points when the torque converter unlocks.

The area between the red and green lines is the hysteresis needed to keep the transmission from continually locking and unlocking.

When the ECU is powered and the wheels are moving, an ellipse will appear in the "active" window representing the current vehicle speed and throttle position. When the ellipse moves above the **green** line, the torque converter begins to lock, and when the ellipse moves below the **red** line the torque converter will unlock.

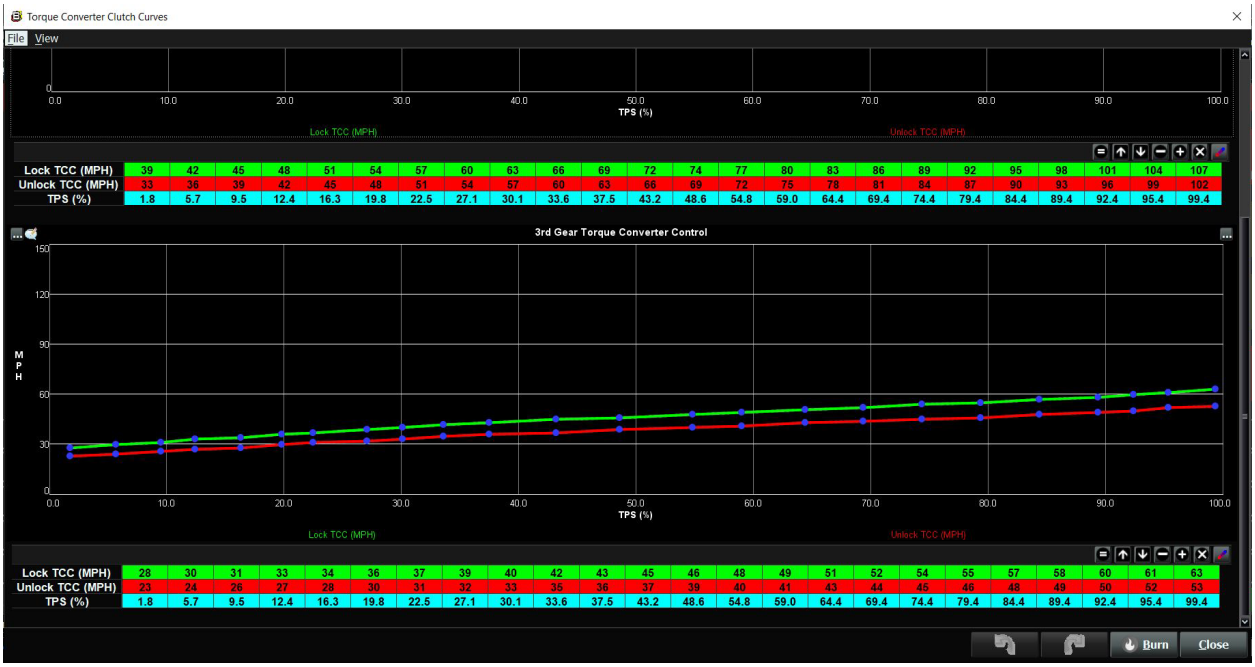
The ECU does not allow the converter to remain locked during a gear shift.

4th Gear Torque Converter Clutch Curve



Lock TCC (MPH)	39	42	45	48	51	54	57	60	63	66	69	72	74	77	80	83	86	89	92	95	98	101	104	107
Unlock TCC (MPH)	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102
TPS (%)	1.8	5.7	9.5	12.4	16.3	19.8	22.5	27.1	30.1	33.6	37.5	43.2	48.6	54.8	59.0	64.4	69.4	74.4	79.4	84.4	89.4	92.4	95.4	99.4

3rd Torque Converter Clutch Curve



Lock TCC (MPH)	39	42	45	48	51	54	57	60	63	66	69	72	74	77	80	83	86	89	92	95	98	101	104	107
Unlock TCC (MPH)	33	36	39	42	45	48	51	54	57	60	63	66	69	72	75	78	81	84	87	90	93	96	99	102
TPS (%)	1.8	5.7	9.5	12.4	16.3	19.8	22.5	27.1	30.1	33.6	37.5	43.2	48.6	54.8	59.0	64.4	69.4	74.4	79.4	84.4	89.4	92.4	95.4	99.4

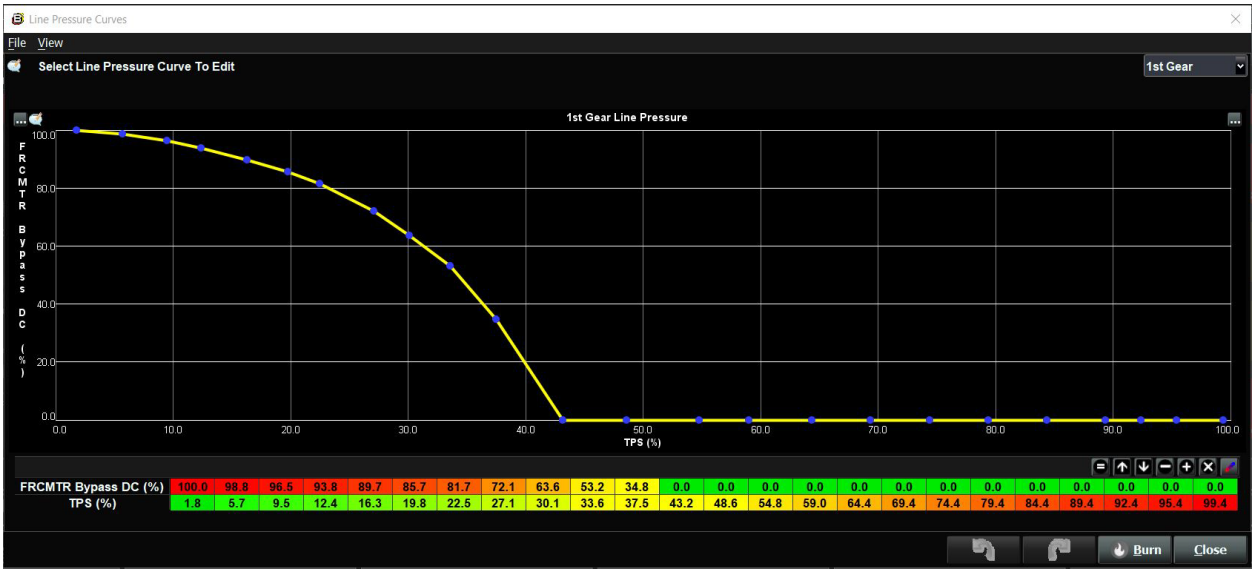
Lock TCC (MPH)	28	30	31	33	34	36	37	39	40	42	43	45	46	48	49	51	52	54	55	57	58	60	61	63
Unlock TCC (MPH)	23	24	26	27	28	30	31	32	33	35	36	37	39	40	41	43	44	45	46	48	49	50	52	53
TPS (%)	1.8	5.7	9.5	12.4	16.3	19.8	22.5	27.1	30.1	33.6	37.5	43.2	48.6	54.8	59.0	64.4	69.4	74.4	79.4	84.4	89.4	92.4	95.4	99.4

• LINE PRESSURE CURVES

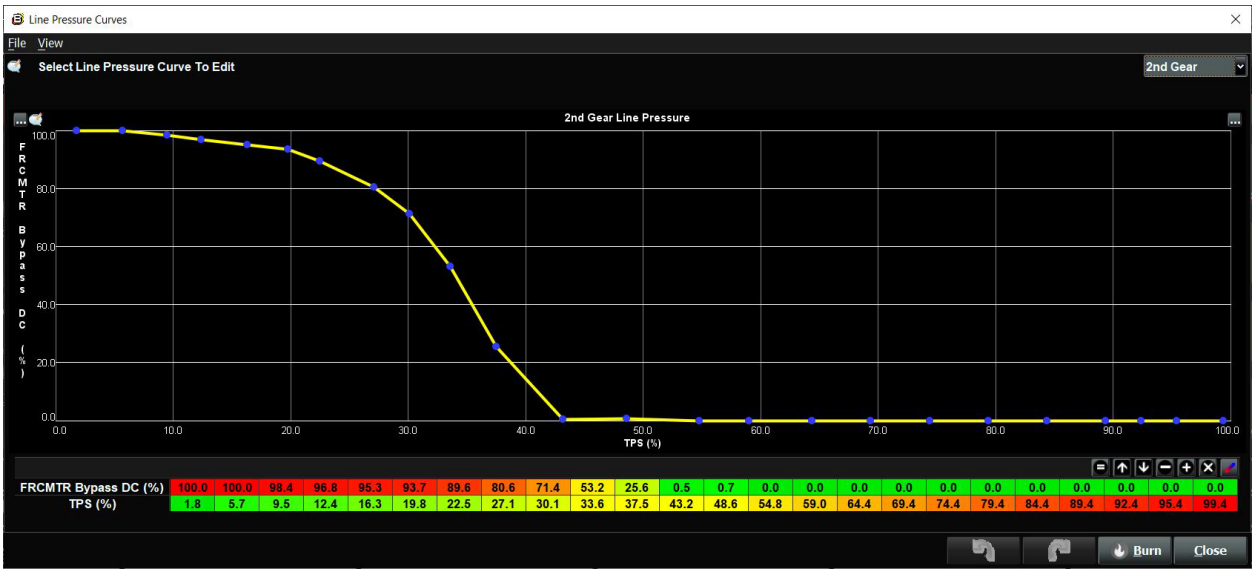
The **Line Pressure (LP)** table is used to configure transmission line pressure (up-shift firmness) for each gear as a function of percent (%) throttle opening.

There is an inverse relationship between the force motor duty cycle % and line pressure. In other words, the lower the percent (%) duty cycle, the higher the line pressure and the higher the percent (%) duty cycle value the lower the line pressure, and the less firm the gear shift will be. See the example line pressure curves for each gear below.

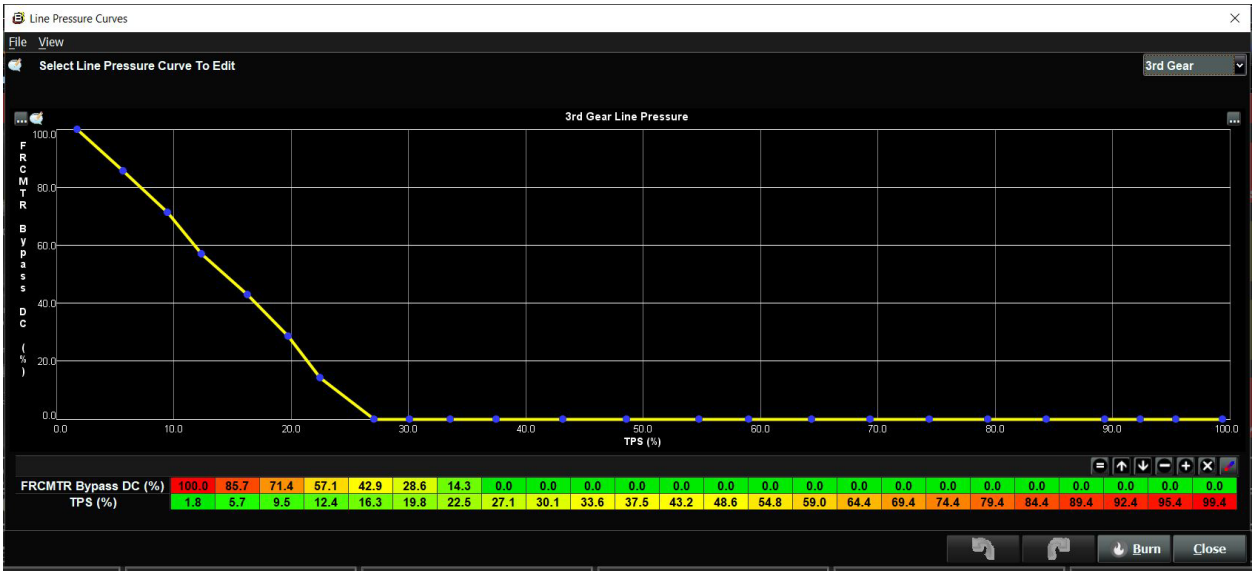
1st Gear Line Pressure Curve



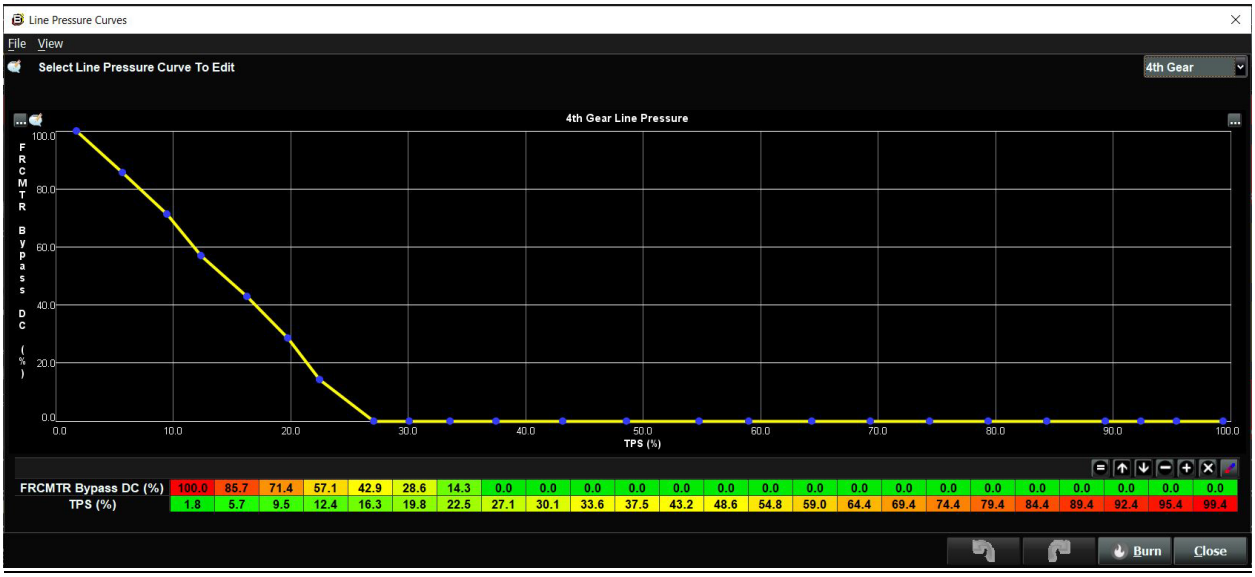
2nd Gear Line Pressure Curve



3rd Gear Line Pressure Curve

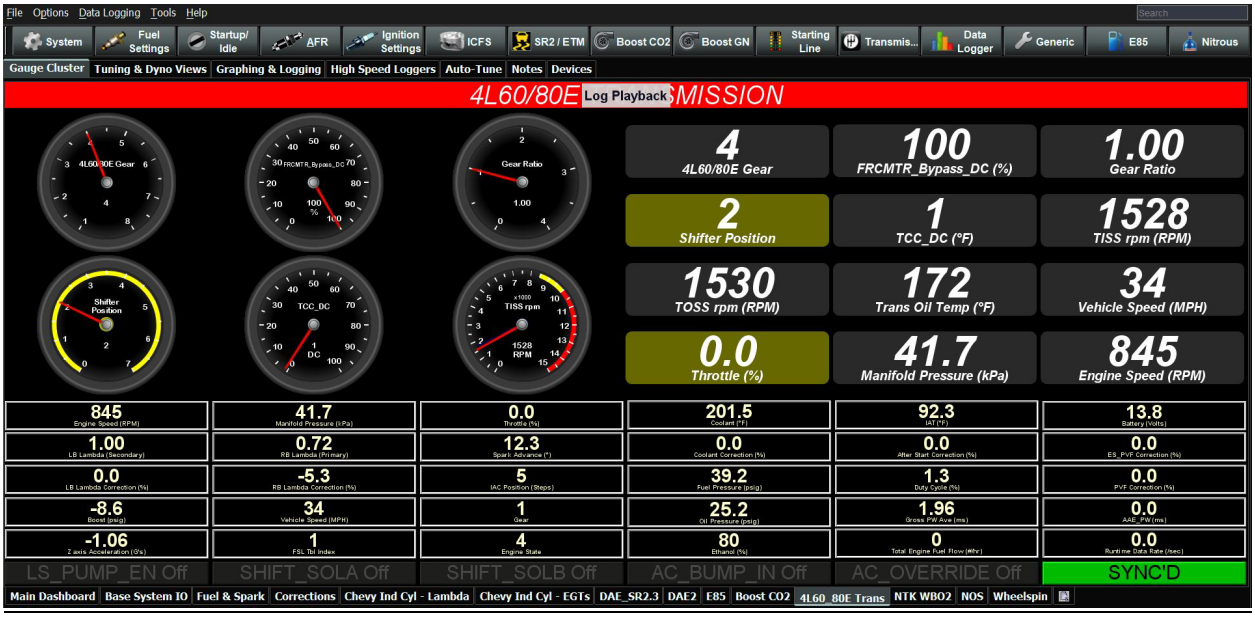


4th Gear Line Pressure Curve



• *SOFTWARE VIEWING*

In the Bigcommpro software navigate to the Gauge Cluster tab beneath the System Menu Icon. In the lower right-hand corner click on the 4L60_80E_Trans tab. This tab will display the current automatic transmission information and is useful for watching all data pertaining to the automatic transmission controls.



FREQUENTLY ASKED QUESTIONS

• What does working "On line" vs. "Off line" mean?

-Working "Off-line" = The BigStuff3 ECU is not powered up (PC Only). Working "On-line" = The BigStuff3 ECU is powered on, the communication is connected between the GEN4 ECU and a PC, and the two are communicating with each other

• Should I use the camshaft position input (cam sync) with my distributor based GEN4 system?

-Without the camshaft position input (cam input connector in the main wire harness) hooked up, the GEN4 system still provides sequential fuel injection and individual fuel control per cylinder, but injector phasing (where the fuel is injected) and individual spark control will not function.

• How can the GEN4 system provide sequential fuel injection and individual fuel control per cylinder without the cam camshaft position input hooked up?

-When the engine starts cranking over, the GEN4 ECU begins firing the injector drivers, assigned to each injector, in the firing order inputted into the software. What the GEN3 system cannot do without the cam camshaft position input hooked up is to determine where to inject fuel (the position in crankshaft degrees, relative to TDC, for each cylinder).

The Base Spark Table(‘s) are edited as soon in the Bigstuff3 GEN4 ECU Full Software Manual

located on our website. Click on this link to navigate and download.

• At what injector duty cycle % are my injectors considered out of control, or static?
-Loss of injector control does not occur at 100% duty cycle, but at approximately 85% duty cycle. At 85% duty cycle the injectors are most likely not opening and closing in a controlled fashion.

-This condition is termed "static" (vs. dynamic) control. An example why this condition is undesirable is if the GEN4 ECU demands more fuel (demanding a larger pulse width) and the injector is already static. The only way to move more fuel through the injector would be to increase the fuel pressure. Increasing the fuel pressure at the 1/8th mile marker is not possible, so things go bad quickly.

-Also, teetering on and off at the static point is also undesirable. Lastly, running the injectors drivers static for long periods of time can damage them.

• How do I set up my ignition system with the GEN4 system?
-For more information on ignition system setups, beyond what is available in this manual, go to the How To/Help section on the BigStuff3 website, and then Ignition System Setup Tutorial. The link is: http://bigstuff3.com/pdf/Ignition%20Guide%20rev%201.2.pdf. There are nine (9) ignition system setups outlined. There is also information on the setting up the Ford TFI, GM HEI, GM Opti-spark & MSD8 ignition systems in the How To/Help section of the website.

• Where can I find wiring harness information on the BS3 power-train system and optional systems?
-Information on most of our wiring harnesses is available on our website at www.bigstuff3.com.
-Go to the GEN4 section on the website and under the GEN4 PRO XTREME menu will be more information. The link is: http://bigstuff3.com/gen4/

• My engine will not start. What should I check?
-Make sure the harness side header connectors, interfacing with the GEN4 ECU, are attached and tightened to no more than 15 – 20 inch lbs.
-Make sure the battery voltage is at, or above, 12V during cranking. Low battery voltage conditions must be fixed before trying to start the engine. Battery voltage (especially during cranking) is even more important with coil-on-plug applications.

-Make sure you can see an RPM signal in the software or dash. While turning the engine over, you should see at least 100 – 150 RPM. If no RPM signal is present, check that the crank input (crank trigger or distributor) signal wire is connected to the red wire in the BS3 "Crank" connector. Swap the 2 wires and try again.

-For distributor ignition based applications, make sure the BS3 points wire is connected to the ignition system points input terminal/wire. Applying 12V directly to the BS3 points wire will immediately damage the GEN4 ECU!!
-For COP engines (LSx and other standalone COP engine) the cam input cannot occur at the

same time as the crank input!!! If this is the case, the engine will not start. The cam synch pulse must occur before a crank pulse. Ideally, 10* before the crank pulse.
-For more information on ignition system setups, go to the How To/Help section on the BS3 website, then to Ignition System Setup Tutorial.
-With all coil-on-plug engines, make sure the coil ground eyelet is securely fastened to the cylinder head or engine block. No other grounds locations should be used.
-The ECU may be in Clear flood Mode. Make sure the TPS sensor reads near 1-2% when the throttle is closed and near 100% when fully opened. If it reads near 100% when closed, the ECU is in clear flood mode and is not injecting fuel. Swap TPS pins A & C in the TPS connector.
Make sure the crank sensor is connected.
-The LS1 Cam sensor connections are: **• A – Signal • B – Ground • C – 12V •**
The LS2 cam sensor connections must be (terminals A & C are swapped): **• A – 12V • B – Ground • C – Signal**

• My engine timing does seem right, what should I check.
-Make sure the firing order is correct.
-Both the BS3 GEN4 main wiring harness and the MSD ignition system must be connected directly to the battery!! If not, ground loop issues are likely to occur.
-Make sure your pulses per rev in the Operating Configuration table is correct for your application. For example, a four (4) magnet MSD crank trigger setup should have a value of 4.

• I can't get my LSx engine started.
-I'm using an LS2 sensor in the front of the engine.
-Swap pins A & C in the cam input connector around. My TPS sensor reads 100% when the throttle is closed and 0% when the throttle is fully opened. Swap the wires A & C in the TPS connector. The engine may not start since the ECU senses that the Clear flood Mode has been invoked

• If I am tuning in Alpha/N mode (Hardware Configuration, then Control Algorithm) can I use my 1 Bar MAP sensor for barometric compensation?
-Yes, the automatic barometric compensation is hard-coded in the ECU. Leave the MAP sensor vacuum port exposed to the atmosphere. Do not plug the MAP vacuum port to the intake manifold.

• What do I need to do to make sure my 3 step works correctly?
-A clean 12VDC must be applied to Header 2 W1 meaning a relay with only 12vdc. Do not use the same 12VDC feeding the transbrake solenoid as flyback voltage from the transbrake releasing can damage the ECU!
-Confirm the 3 Step settings in the System Menu / RevLimiters are configured correctly. The TPS% On threshold must be higher than the Off threshold.

• I do not think my injectors are pulsing. What can I check?
-Make sure the BS3 and MSD systems are grounded directly to the battery.

-Plug a “noid” light into each injector position in the injector wire harness. Turn the engine over and see if the light pulses for each injector location.

• I do not think my COP coils are firing. What can I check?
-Make sure the BS3 main wire harness ground is wired directly to the battery.
-Make sure the coil ground wire is grounded to the engine block or cylinder head. No other ground location will work!

• Can I use a 5 Bar MAP sensor?
-Yes, choose 5 Bar MAP sensor in the System Menu / Pressure and Sensor Configuration section.
-Be sure to cycle the 12VDC ignition on the ECU and you will need to recalibrate the fuel/afr/spark tables on this or any MAP sensor change.
- Note: The 4 BAR MAP sensor sold by BigStuff3 is good to 52 PSI.

• How do I know if my Bosch LSU4.9 WBO2 sensor is bad?
-First make sure the sensor to main wire harness connection is good.

• How can I check if my NTK WBO2 Methanol sensor is working?
-First check the control circuitry by disconnecting the sensor from the harness. Turn the ignition to the BS3 ECU on. With the engine off its best to move the O2 sensor out of the exhaust and have it hang in the air. Go online with the ECU and navigate to the Gauge Cluster tab and go to the NTKWBO2 tab on the bottom the screen. In the upper right hand corner of the page will be LB%O2 and RB%O2 readings. Go to the AFR Menu and click on the O2 and EGT Parameters section. In the lower right hand corner turn the “Perform NTKO2 WBO2 Air Cal” to “Yes”. **WARNING**! Do not hold the O2 sensor as it will start to heat up and you can get severely burned. You will see the O2% readings start to update and after about 5 minutes you should be reading about 18%-22% on either sensor. If you do not read that more than likely the sensor is defective and needs to be replaced. Contact Bigstuff3 for more details at this point. If the sensor reads fine turn the Air Cal to “Off” and turn the ignition off. Wait for the sensor to cool down and reinstall in the exhaust and you are ready to go.

• What caused my O2 sensor to fail?
-Being dropped
-Running leaded fuel
-Running rich at idle

• Does the GEN4 ECU offer an auto-shift feature?
Yes, BigStuff3 offers an optional transmission auto-shift feature. The system will shift up to five (5) speeds with independent shift RPM and Hysteresis points. Once the system is configured for the auto-shift feature, a wire from ECU Header 2 location, P2 must be run to the ground side of the relay.

• What dwell times should be used with the LS1 coils sold with my system?

With a 12V charging system from idle to approximately 4,000 RPM use about 3.0 milliseconds near idle and no more than about 4.0 milliseconds at approximately 4,000 RPM. From approximately 4,100 - Max RPM use no more than about 6 milliseconds of total dwell time at max RPM. With a 16V charging system from idle to approximately 4,000 RPM use about 2.0 milliseconds near idle and no more than about 3.0 milliseconds at approximately 4,000 RPM. From approximately 4,100 - Max RPM use no more than about 4.5 milliseconds of total dwell time at max RPM.

Datalogger acronyms

Point Definitions are displayed in alphabetical order and are the same for either laptop based datalogging or pulling the data from the on board SD card.

A

AC_BUMP_ON – Air Conditioning Engine RPM increase active condition
ACCEL_X – Accelerometer X Axis
ACCEL_Y – Accelerometer Y Axis
ACCEL_Z – Accelerometer Z Axis
ACCEL_ENG – Acceleration Engine value
ACT_IAC_POS – Current Idle Air Control Motor Position
AFR_TARGET – Air Fuel Ratio Target
AFR_L_BANK – Air Fuel Ratio Left Bank
AFR_R_BANK – Air Fuel Ratio Right Bank
AFR_CYL_1 – Air Fuel Ratio Cylinder 1
AFR_CYL_2 – Air Fuel Ratio Cylinder 2
AFR_CYL_3 – Air Fuel Ratio Cylinder 3
AFR_CYL_4 – Air Fuel Ratio Cylinder 4
AFR_CYL_5 – Air Fuel Ratio Cylinder 5
AFR_CYL_6 – Air Fuel Ratio Cylinder 6
AFR_CYL_7 – Air Fuel Ratio Cylinder 7
AFR_CYL_8 – Air Fuel Ratio Cylinder 8

B

BARO – Outside Barometric Pressure
BATTERY_VOLTAGE – Battery voltage
BC_SENSOR_ERROR – Boost Controller Sensor Input Error
BOOST_PSI – Intake Manifold Pressure
BOOST_CL_DC – GN Boost Controller Duty Cycle Output %
Boost_Inc PIDTerm – GN Boost Controller PID Increase %

C

CLT – Coolant Temperature
CORR_AIR – Fuel Percentage Air Temperature Correction
CORR_AFTST – Afterstart Fuel Percentage Correction
CORR_BARO – Barometric Fuel Percentage Correction
CORR_CLT – Coolant Warm Up Temperature Fuel Percentage Correction
CORR_E85 – E85 Fuel Percentage Correction
CORR_ES_PVFC – Extended Source Power Valve Fuel Correction Percentage
CORR_FP_COMP – Fuel Pressure Correction
CORR_PVF – Power Valve Fuel Correction
CORR_SLT – Start Line Fuel Percentage Correction

D

DAE_INPUT – DAE 12vdc Input true or false
DSRD_BOOST_MAP – Desired Boost Map
DSRD_SR2_MAP – Desired SR2 Map
DUTY_CYCLE_BOOST_INC – Boost Controller Duty Cycle Output Increase %
DUTY_CYCLE_BOOST_DEC – Boost Controller Duty Cycle Output Decrease %
DUTY_CYCLE_PWM07 – Duty Cycle Output Pulse Width Modulation 07
DUTY_CYCLE_PWM08 – Duty Cycle Output Pulse Width Modulation 08
DUTY_CYCLE_PWM09 – Duty Cycle Output Pulse Width Modulation 09
DUTY_CYCLE_NOS_PRG – Progressive Nitrous Duty Cycle Control Output Percentage
DUTY_CYCLE_CYL1 – Fuel Injector Duty Cycle Percentage Cylinder 1
DUTY_CYCLE_CYL2 – Fuel Injector Duty Cycle Percentage Cylinder 2
DUTY_CYCLE_CYL3 – Fuel Injector Duty Cycle Percentage Cylinder 3
DUTY_CYCLE_CYL4 – Fuel Injector Duty Cycle Percentage Cylinder 4
DUTY_CYCLE_CYL5 – Fuel Injector Duty Cycle Percentage Cylinder 5
DUTY_CYCLE_CYL6 – Fuel Injector Duty Cycle Percentage Cylinder 6
DUTY_CYCLE_CYL7 – Fuel Injector Duty Cycle Percentage Cylinder 7
DUTY_CYCLE_CYL8 – Fuel Injector Duty Cycle Percentage Cylinder 8
DUTY_CYCLE_FRCMTR – Duty Cycle Force Motor Output Percentage (Used with 4L60E/80E)
DUTY_CYCLE_TCC – Duty Cycle Torque Converter Clutch Output (Used with 4L60E/80E)
DWELL_TIME – Ignition Coil Dwell Time

E

E85_SPARK_OFFSET – E85 Spark Offset
ECM_RB_EC – NTK O2 Sensor Right Bank Error Code
ECU_SYNC – Current ECU Synchronization Status
EGT_CYL1 – Exhaust Gas Temperature Cylinder 1
EGT_CYL2 – Exhaust Gas Temperature Cylinder 2

EGT_CYL3 – Exhaust Gas Temperature Cylinder 3
EGT_CYL4 – Exhaust Gas Temperature Cylinder 4
EGT_CYL5 – Exhaust Gas Temperature Cylinder 5
EGT_CYL6 – Exhaust Gas Temperature Cylinder 6
EGT_CYL7 – Exhaust Gas Temperature Cylinder 7
EGT_CYL8 – Exhaust Gas Temperature Cylinder 8
ENG_STATE – Engine State (1-Engine Cranking, 4-Engine Running Steady, 5-Engine Accelerating, 6-Engine Decelerating, 7-Deceleration Fuel Cutoff)
EGT_SHUTDOWN_ACTIVE – Exhaust Gas Temperature Shutdown Active Condition
ETM_TORQ_STG – Engine Torque Management Torque Stage Current Value
ETM_DS_ENG_ERROR – ETM Driveshaft or Engine RPM Error
ETM_DS_ENG_DSRD – ETM Driveshaft or Engine RPM Desired

F

FP_SENSOR_ERROR – Fuel Pressure Sensor Input Error
FP_WARNING_ACTIVE – Fuel Pressure Warning Active Condition
FSL_TBL_INDEX – Fuel Spark Lambda current map enabled
FUEL_FLOW_CYL1 – Calculated Fuel flow in lbs/hr for Cylinder 1
FUEL_FLOW_CYL2 – Calculated Fuel flow in lbs/hr for Cylinder 2
FUEL_FLOW_CYL3 – Calculated Fuel flow in lbs/hr for Cylinder 3
FUEL_FLOW_CYL4 – Calculated Fuel flow in lbs/hr for Cylinder 4
FUEL_FLOW_CYL5 – Calculated Fuel flow in lbs/hr for Cylinder 5
FUEL_FLOW_CYL6 – Calculated Fuel flow in lbs/hr for Cylinder 6
FUEL_FLOW_CYL7 – Calculated Fuel flow in lbs/hr for Cylinder 7
FUEL_FLOW_CYL8 – Calculated Fuel flow in lbs/hr for Cylinder 8
FUEL_FLOW_TOTAL – Total Calculated Fuel Flow of cylinders 1-8 in lbs/hr

G

GEAR – Current Gear position calculated by engine rpm drop
GEN_BOOST_ADD – Generic Boost Tables Additional Boost Pressure
GEN_FUEL_LBSHR_ADD – Generic Fuel Lbs/hr adder
GEN_FUEL_MULT – Generic Fuel Multiplier Percentage Adder
GEN_LAMBDA_ADD – Generic Lambda Fuel Adder
GEN_LAMBDA_MULT – Generic Lambda Fuel Multiplier
GEN_SPK_ADV_ADD – Generic Spark Advance Adder
GS_ACCEL – Gear Speed Acceleration
GYRO_X – Gyrometer X Axis
GYRO_Y – Gyrometer Y Axis
GYRO_Z – Gyrometer Z Axis

H

HEAD_TEMP_RB – Head Temperature Right Bank. When in Pro Mod Mode located in the System->Hardware Configuration section this sensor is enabled for use. Pro Mod Mode sets the water and air sensors to 100* in the software so that they have no bearing on the overall VE fuel calculation. This is the GM Water Temperature Sensor.
HEAD_TEMP_LB – Head Temperature Left Bank. When in Pro Mod Mode located in the System->Hardware Configuration section this sensor is enabled for use. Pro Mod Mode sets the water and air sensors to 100* in the software so that they have no bearing on the overall VE fuel calculation. This is the GM Air Temperature Sensor.

I

IAT – Intake Air Temperature
ICF_CORR_CYL1 – Individual Cylinder Fuel Percentage Correction Cylinder 1
ICF_CORR_CYL2 – Individual Cylinder Fuel Percentage Correction Cylinder 2
ICF_CORR_CYL3 – Individual Cylinder Fuel Percentage Correction Cylinder 3
ICF_CORR_CYL4 – Individual Cylinder Fuel Percentage Correction Cylinder 4
ICF_CORR_CYL5 – Individual Cylinder Fuel Percentage Correction Cylinder 5
ICF_CORR_CYL6 – Individual Cylinder Fuel Percentage Correction Cylinder 6
ICF_CORR_CYL7 – Individual Cylinder Fuel Percentage Correction Cylinder 7
ICF_CORR_CYL8 – Individual Cylinder Fuel Percentage Correction Cylinder 8
ICS_CORR_CYL1 – Individual Cylinder Spark Correction Cylinder 1
ICS_CORR_CYL2 – Individual Cylinder Spark Correction Cylinder 2
ICS_CORR_CYL3 – Individual Cylinder Spark Correction Cylinder 3
ICS_CORR_CYL4 – Individual Cylinder Spark Correction Cylinder 4
ICS_CORR_CYL5 – Individual Cylinder Spark Correction Cylinder 5
ICS_CORR_CYL6 – Individual Cylinder Spark Correction Cylinder 6
ICS_CORR_CYL7 – Individual Cylinder Spark Correction Cylinder 7
ICS_CORR_CYL8 – Individual Cylinder Spark Correction Cylinder 8
INJ_GPW_AVE – Fuel Injector Gross Pulse Width Average
INJ_PHASE_ANGLE – Fuel Injector Injection Event Phase Angle
IOT – Fuel Injector Opening Tim

L

LAMBDA_CYL1 – Lambda Value Cylinder 1
LAMBDA_CYL2 – Lambda Value Cylinder 2
LAMBDA_CYL3 – Lambda Value Cylinder 3
LAMBDA_CYL4 – Lambda Value Cylinder 4
LAMBDA_CYL5 – Lambda Value Cylinder 5
LAMBDA_CYL6 – Lambda Value Cylinder 6
LAMBDA_CYL7 – Lambda Value Cylinder 7

LAMBDA_CYL8 – Lambda Value Cylinder 8
LAMBDA_L_BANK – Lambda Reading Left Bank
LAMBDA_R_BANK – Lambda Reading Right Bank
LAMBDA_TARGET – Lambda Reading Left Bank
LAMBDA_RB_UA – Lambda Right Bank NTK O2 Error Code
LASER_HEIGHT__AD5 – Laser Height Sensor Reading

M

MAP – Engine Intake Manifold Pressure
MPH – Miles Per Hour

N

NERNST_CYL1 – Resistance value of the Cylinder 1 Bosch O2 sensor. Normal value is around 300. **NERNST_CYL2** – Resistance value of the Cylinder 2 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL3 – Resistance value of the Cylinder 3 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL4 – Resistance value of the Cylinder 4 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL5 – Resistance value of the Cylinder 5 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL6 – Resistance value of the Cylinder 6 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL7 – Resistance value of the Cylinder 7 Bosch O2 sensor. Normal value is around 300.
NERNST_CYL8 – Resistance value of the Cylinder 8 Bosch O2 sensor. Normal value is around 300.
NOS_STAGE – Current NOS Stage
NOS_BOOST_ENABLE – Nitrous or Boost Enable Arm Switch
NOS_TIMER – When activated is the Nitrous Run Time
NOS_ICS_CORR_CYL1 – Nitrous Individual Cylinder Spark Correction Cylinder 1
NOS_ICS_CORR_CYL2 – Nitrous Individual Cylinder Spark Correction Cylinder 2
NOS_ICS_CORR_CYL3 – Nitrous Individual Cylinder Spark Correction Cylinder 3
NOS_ICS_CORR_CYL4 – Nitrous Individual Cylinder Spark Correction Cylinder 4
NOS_ICS_CORR_CYL5 – Nitrous Individual Cylinder Spark Correction Cylinder 5
NOS_ICS_CORR_CYL6 – Nitrous Individual Cylinder Spark Correction Cylinder 6
NOS_ICS_CORR_CYL7 – Nitrous Individual Cylinder Spark Correction Cylinder 7
NOS_ICS_CORR_CYL8 – Nitrous Individual Cylinder Spark Correction Cylinder 8

O

O2_CORR_CYL1 – Closed Loop O2 AFR Fuel Correction Cylinder 1
O2_CORR_CYL2 – Closed Loop O2 AFR Fuel Correction Cylinder 2
O2_CORR_CYL3 – Closed Loop O2 AFR Fuel Correction Cylinder 3
O2_CORR_CYL4 – Closed Loop O2 AFR Fuel Correction Cylinder 4
O2_CORR_CYL5 – Closed Loop O2 AFR Fuel Correction Cylinder 5
O2_CORR_CYL6 – Closed Loop O2 AFR Fuel Correction Cylinder 6
O2_CORR_CYL7 – Closed Loop O2 AFR Fuel Correction Cylinder 7
O2_CORR_CYL8 – Closed Loop O2 AFR Fuel Correction Cylinder 8
O2_CORR_L_BANK – Closed Loop O2 AFR Fuel Correction Left Bank
O2_CORR_R_BANK – Closed Loop O2 AFR Fuel Correction Right Bank

P

PCT_ETHANOL – Percentage of Ethanol in fuel (Need sensor to read properly)
PEDAL_BIT_MODE – Pedal Bit Mode Current Condition
PCT_TCC_SLIP – Percentage of Torque Converter Clutch Slippage (Used with 4L60E/80E)
PRESS_FUEL – Fuel Pressure Reading
PRESS_OIL – Oil Pressure Reading
PRESS_TURBO – Turbocharger Pressure Reading
PRESS_WG – Wastegate Pressure Reading
PRESS_NOS – Nitrous Pressure Reading
PRESS_PV – Pan Vacuum Reading
PRESS_TL – Transmission Line Pressure Reading
PRESS_DSRD_WG – CO2 Desired Wastegate
PRNDL – Park / Reverse / Neutral / Drive / Low (Used with 4L60E/80E)

R

RACE_FUEL_LBS_HR – NOS Mode Race Fuel Lbs/hr fuel adder
REV_LIMITER – Current condition of any active rev limiters
RPM_ENGINE – Engine RPM
RPM_TSS1_LB – Turbocharger Shaft Speed RPM Left Bank
RPM_TSS2_RB – Turbocharger Shaft Speed RPM Right Bank
RPM_ABS_FW – RPM Front Wheel Speed Sensor
RPM_ABS_RW – RPM Rear Wheel Speed Sensor
RPM_TOSS – RPM Transmission Output Speed Sensor or Driveshaft Sensor
RPM_TISS – RPM Transmission Input Speed Sensor

S

SLT_MODE – Start Line Timing Mode Current Condition

SHOCK_RF__AD7 – Right Front Shock Reading
SHOCK_LF__AD8 – Left Front Shock Reading
SHOCK_RR__AD9 – Right Rear Shock Reading
SHOCK_LR__AD10 – Left Rear Shock Reading
SPK_ADV_BCP – Base Spark Advance
SPK_ADV_CYL1 – Spark Advance Cylinder 1
SPK_ADV_CYL2 – Spark Advance Cylinder 2
SPK_ADV_CYL3 – Spark Advance Cylinder 3
SPK_ADV_CYL4 – Spark Advance Cylinder 4
SPK_ADV_CYL5 – Spark Advance Cylinder 5
SPK_ADV_CYL6 – Spark Advance Cylinder 6
SPK_ADV_CYL7 – Spark Advance Cylinder 7
SPK_ADV_CYL8 – Spark Advance Cylinder 8
SR2_TIMER – Current Race time after the release of the three step
SR2_GEAR1_SPK_OFFSET – SR2 Gear 1 Spark Offset
SR2_DS_SPK_OFFSET – SR2 Driveshaft or Engine Spark Offset
SR2_DS_ERROR – SR2 Driveshaft or Engine RPM Error
SR2_DS_DSRD – SR2 Driveshaft or Engine RPM Desired
SS_SPK_NOS_RTD – Street Strip Nitrous Spark Retard
SS_NOS_FUEL_ADD – Street Strip Nitrous Fuel Adder
SS_NOS_LAMBDA_OFFSET – Street Strip Nitrous Lambda Target Offset

T

TPS – Throttle Position Sensor Percentage
TOT – Transmission Oil Temperature Reading
THREE_STEP_INPUT – Three Step Input 12vdc true or false
THREE_STEP_MODE – Three Step Active Condition
TRANS_GEAR_RATIO – Current Transmission Gear Ratio (Used with 4L60E/80E)
TSD_GEAR1_OFFSET – Touch Screen Dash Gear 1 Offset
TSD_SR2_DS_OFFSET – Touchscreen Dash SR2 Driveshaft or Engine RPM Offset
TSD_ETM_DS_OFFSET – Touchscreen Dash ETM Driveshaft or Engine RPM Offset
TWO_STEP_INPUT – Two Step Input 12vdc true or false
TWO_STEP_ACTIVE – Two Step Active Condition
TWO_STEP_MODE – Two Step Active Condition

V

VE -Volumetric Efficiency number calculated from the base fuel map

W

WHEEL SPIN – Calculated wheel speed based off differential from either the rear wheel speed sensor or driveshaft sensor compared to the front wheel speed sensor.