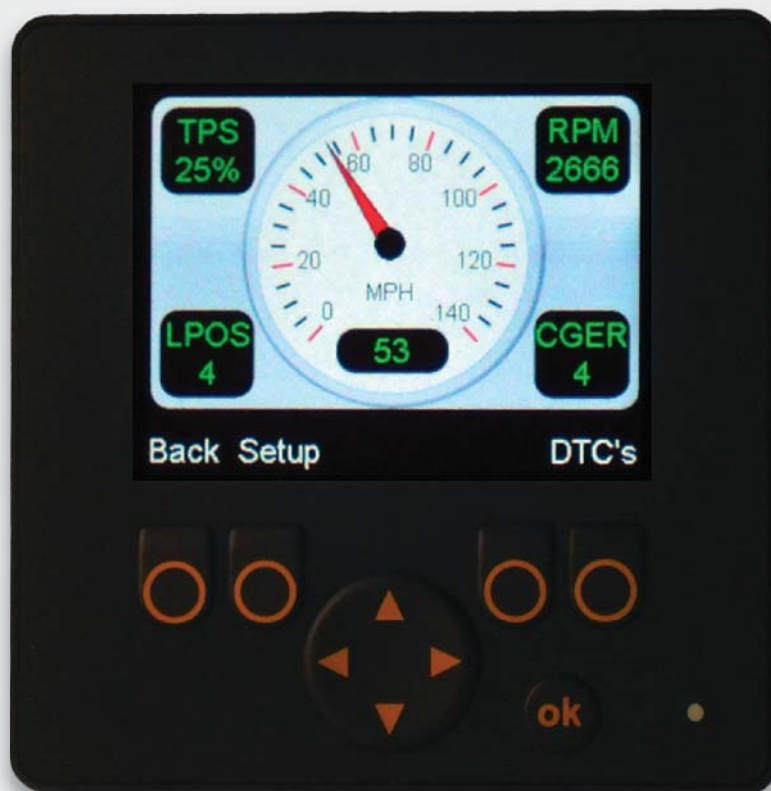




POWERTRAIN CONTROL SOLUTIONS
Engineering the future of driveline control.

PCS SIMPLE SHIFT TUNER USER GUIDE v2.0



PCS Simple Shift Tuner User Guide

IMPORTANT USER INFORMATION

The modification of table data (Shift Tables, Pressure Tables, etc.) using the Simple Shift Tuner only changes the values of the table in use by the Simple Shift transmission controller (“**Calibration A**” or “**Calibration B**”). The Tuner will not change the “**BASE CALIBRATION**” information that can be loaded at any time in case the user wants to start over with a clean calibration.

Shift Point Low and High knobs, Shift Firmness Low and High knobs, Converter Lock Low and High knobs, although operational, should be set to “0” so that the information in the tables will not be offset by the knob settings. The table information will not increase or decrease in the tuner display when the knobs set to a position other than “0”.

1 Simple Shift Tuner Connection

The most common connection to the Simple Shift harness is shown below (Figure 1).

1. Locate the TCU harness Option connector and connect the tuner harness.
2. Be sure that the Terminator Plug is connected to the CAN BUS Connector.

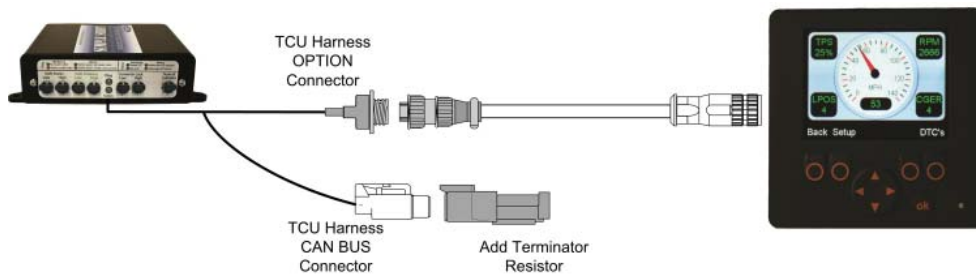


Figure 1

If once powered on, the screen indicates that “No Simple Shift Detected” or the screen is blank, the Terminator resistor is not connected or the ignition is not on, respectively.

1. To connect the Simple Shift Tuner in the case that other devices are used on the CAN BUS, obtain a BUS “Y” connector add-on. In this configuration the Tuner may be left in circuit indefinitely (Figure 2).

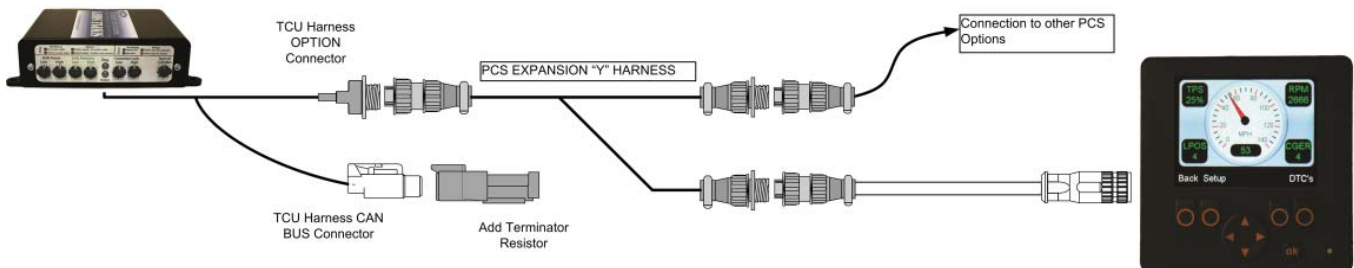


Figure 2

2 Powering On the Simple Shift Tuner

On power-up, the Simple Shift Tuner displays the PCS Logo and informs the user that the calibration is loading (**Figure 1**) or that the Simple Shift TCU cannot be found (**Figure 2**). If the TCU cannot be found, look for improper connection to the Option connector or the lack of a CAN BUS termination resistor.



Figure 1



Figure 2

After the power up screen, the Tuner will display available functions of the Simple Shift Tuner (**Figure 3**).

Function selection is accomplished by using the “UP” and “DOWN” arrow buttons.

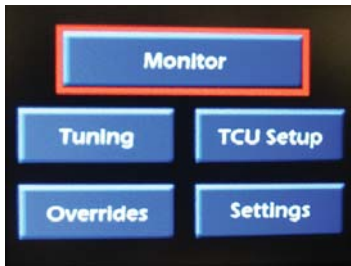


Figure 3

3 Monitor

From this screen you have the ability to monitor speed and four user specified readouts. This screen also warns the user of any diagnostic codes.

Change Readouts

1. To alter, select “MONITOR” using the “UP” and “DOWN” arrow buttons and press the “OK” button (**Figure 3**).
2. Press the “SETUP” button to enter “MONITOR SETUP” mode.
3. Highlight the desired parameter using the “UP” and “DOWN” arrow buttons.
4. To set the parameter to a readout, press the button that corresponds to the readout you wish to replace (**Figure 5**).
5. To exit, press the “BACK” button.



Figure 4

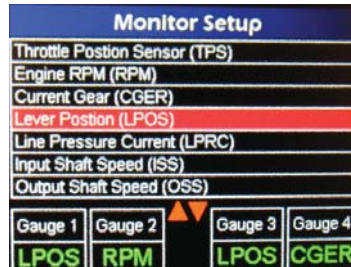


Figure 5

4 View/Clear DTC's

The DTC's can be found in the lower right hand corner of the "MONITOR" screen.

If the letters "DTC's" are blinking red, the TCU is indicating that there are trouble codes present.

1. To view/clear the codes press the "DTC's" button.
2. The following screen, "DIAGNOSTIC CODES", will indicate what codes are present (**Figure 6**).

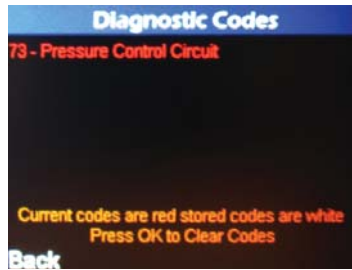


Figure 6

3. Codes listed in white indicate previous codes that no longer exist. Red codes indicate currently active codes.
4. To clear all codes, press the "OK" button.
5. To exit, press the "BACK" button twice.

5 Tuning

The "TUNING" calibration screen allows the user to modify shift points for both available calibrations in the Simple Shift ("CALIBRATION A" and "CALIBRATION B") as well as saving "CALIBRATION A" to "CALIBRATION B" and vice versa. Either calibration may be selected for transmission operation using the "OVERRIDE".

1. To alter, select "TUNING" using the "UP" and "DOWN" arrow buttons and press the "OK" button (**Figure 7**).

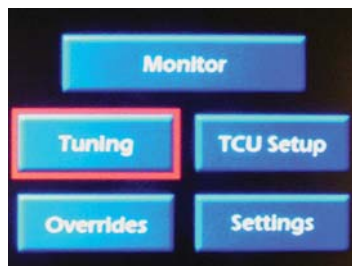


Figure 7

- From the "TUNING" screen, use the "UP" and "DOWN" arrow buttons to select "EDIT CALIBRATION A" or "EDIT CALIBRATION B" and press the "OK" button (Figure 8).

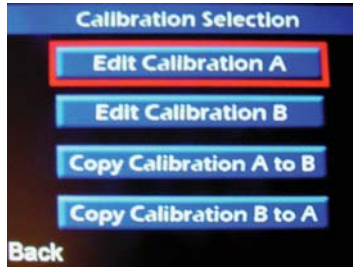


Figure 8

SHIFT TABLES

At the top of the table the individual shift tables (1&2, 2&3, 3&4) may be selected by pressing the "TABLE" button.

Shift points are represented in the table as MPH to TPS%.

- To alter, select "SHIFT TABLES" using the "UP" and "DOWN" arrow buttons and press the "OK" button (Figure 9).

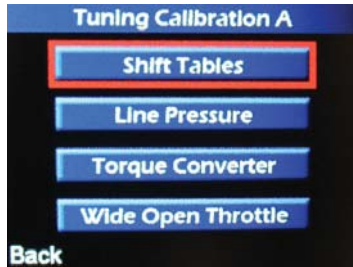


Figure 9

Changing Shift Points - METHOD 1

- To change the shift up or down, highlight the MPH cell and press the "OK" button (Figure 10).



Figure 10

- To increase/decrease the MPH use the "UP" and "DOWN" arrow buttons. Once complete press the "OK" button.
- To exit, press the "BACK" button.

NOTE: Data changes will not be made unless the "SAVE" button is pressed. Pressing the "UNDO" button will reset table to its original settings.

Changing Shift Points - METHOD 2

1. To change the shift point up or down, highlight the MPH box and press the “LEFT” or “RIGHT” arrow until the complete MPH line is highlighted then press the “OK” button.
2. Select “LINEARIZE”, “INCREASE”, “DECREASE”, or “SET TO” method (Figure 11) using the arrow buttons and press the “OK” button.



Figure 11

Linearize: Linearize the MPH in each cell from least to greatest.

Increase: Increase all cell values by a specific value.

Decrease: Decrease all cell values by a specific value.

Set to: Set the same value to all highlighted cells.

3. To increase/decrease the MPH use the “UP” and “DOWN” arrow buttons when applicable.
4. Once complete, press the “OK” button.
5. To exit, press the “BACK” button.

NOTE: Data changes will not be made unless the “SAVE” button is pressed. Pressing the “UNDO” button will reset table to its original settings.

Line Pressure

The line pressure is represented in the tables as Amps to TPS%.

For example: “0.45” represents 450 milliamps, or .45 amps to the line pressure solenoid.

The range for the numeric entry is 1.00 amps to 0.01 amps.

For example: 0.05 would be .050 amps or 50 milliamperes, the higher the current the lower the hydraulic pressure to the valve body hydraulic circuit. All tables from this point forward will be displayed in this manner.

1. To alter, select “LINE PRESSURE” using the “UP” and “DOWN” arrow buttons and press the “OK” button (Figure 12).

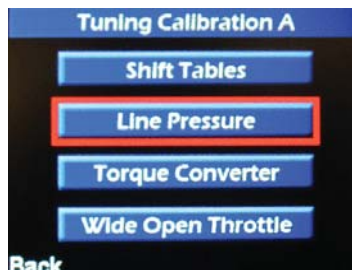


Figure 12

- At the top of the table three individual tables (Steady State, Shifting, Manual Range) may be selected by pressing the “TABLE” button (Figure 13).

Line Pressure Calibration A										
Table	Steady State	Shifting	Manual Range							
TPS %	0	13	27	40	53	67	80	93		
R	0.89	0.81	0.43	0.31	0.22	0.14	0.08	0.05		
N	0.89	0.81	0.43	0.31	0.22	0.14	0.08	0.05		
D	0.78	0.77	0.76	0.72	0.67	0.58	0.44	0.31		
3	0.80	0.79	0.67	0.53	0.47	0.42	0.36	0.32		
2	0.84	0.82	0.78	0.43	0.37	0.32	0.30	0.30		
1	0.90	0.82	0.78	0.68	0.58	0.47	0.38	0.33		

Figure 13

Steady State: Line pressure for each gear select while normal driving.

Shifting: Line pressure for each shift while in process. Once the shift is complete the **Steady State** table is utilized.

Manual Range: Line pressure for manual gear select lever selection. This line pressure table is utilized only when the manual lever is selecting the desired gear.

- To alter a cell value follow the same methods described on page 3, “Changing the shift points, Method 1” & “Changing the shift points, Method 2.”
- Once complete press the “BACK” button.

TORQUE CONVERTER

- To alter, select “TORQUE CONVERTER” using the “UP” and “DOWN” arrow buttons and press the “OK” button (Figure 14).

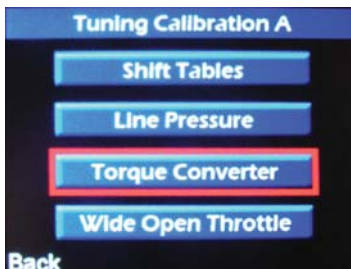


Figure 14

- At the top of the table three individual tables (Lock/Unlock, TCC Settings, & Pressure.) may be selected by pressing the “TABLE” button (Figure 15).

Lock/Unlock: The lock/unlock points are represented in the table as MPH to TPS% .

To alter table cells follow the same methods described on page 4, “Changing the shift points, Method 1” & “Changing the shift points, Method 2.”

TCC Settings: Select the appropriate setting to change and press the “OK” button (Figure 16).

Torque Converter Calibration A										
Table	Lock/Unlock	TCC Settings	Pressure							
TPS %	0	13	27	40	53	67	80	93		
Lockup	37	37	37	39	44	50	57	88		
Unlock	34	34	34	35	40	45	50	58		

Figure 15

Torque Converter Calibration A	
Table	Lock/Unlock TCC Settings Pressure
Lowest gear to allow TCC Lockup	2
Don't lock TCC below this trans temp	230
Keep TCC locked above this trans temp	70

Figure 16

3. To increase/decrease the setting use the “UP” and “DOWN” arrow buttons.
4. Once complete press the “OK” button.
5. To exit, press the “BACK” button.

NOTE: Data changes will not be made unless the “SAVE” button is pressed. Pressing the “UNDO” button will reset table to its original settings.

PRESSURE

Torque Converter Calibration should be changed by a qualified transmission specialist only. Each transmission control unit sold at PCS and its dealers provide the TCU with the calibration pre loaded for the transmission specified at time of sale with the data for a stock transmission setup including TORQUE CONVERTER. If a high performance TORQUE Converter has been installed the parameters for the torque converter will have to be obtained from the manufacturer of the converter. This screen is self explanatory to the converter specialist. Do not change this information if not necessary.

WIDE OPEN THROTTLE

These parameters determine where your vehicle will upshift and downshift when the Throttle Position Sensor (TPS) reaches a value high enough to trigger WOT mode.

1. To alter, select “WIDE OPEN THROTTLE” using the “UP” and “DOWN” arrow buttons and press the “OK” button (Figure 17).

NOTE: WOT has to be enabled before it can be altered/used. See Figure 25 on pg 9.

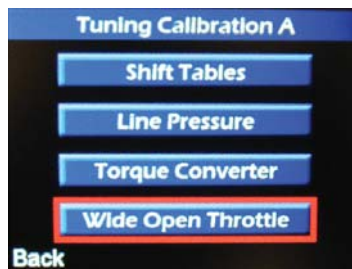


Figure 17

2. To change a value, highlight the cell and press the “OK” button (Figure 18).



Figure 18

3. To increase/decrease the RPM/MPH use the “UP” and “DOWN” arrow buttons (Figure 19).



Figure 19

4. Once complete press the “OK” button.

5. To exit, press the “BACK” button three times.

NOTE: Data changes will not be made unless the “SAVE” button is pressed. Pressing the “UNDO” button will reset table to its original settings.

6 TCU Setup

“TCU SETUP” mode allows entry of the necessary information to generate vehicle shift points based on vehicle speed.

SPEED SETTINGS

1. To alter, select “SPEED SETTINGS” using the “UP” and “DOWN” arrow buttons and press the “OK” button (Figure 21).

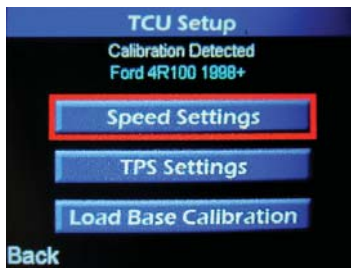


Figure 21

2. To change a value, highlight the cell and press the “OK” button (Figure 22).

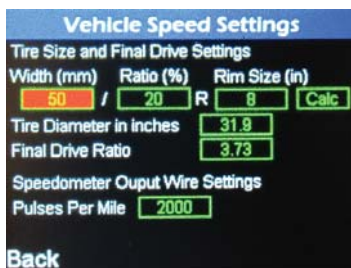


Figure 22

3. To increase/decrease the value use the “UP” and “DOWN” arrow buttons (Figure 23) .

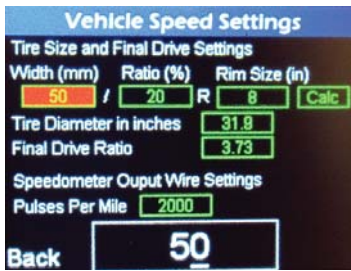


Figure 23

NOTE: Data changes will not be made unless the “SAVE” button is pressed. Pressing the “UNDO” button will reset table to its original settings.

TPS SETTINGS

1. To alter, select “TPS SETTINGS” using the “UP” and “DOWN” arrow buttons and press the “OK” button (Figure 24).

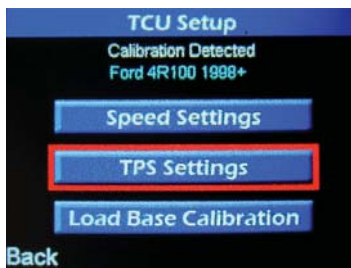


Figure 24

2. To change a value, highlight the cell and press the “OK” button (Figure 25).

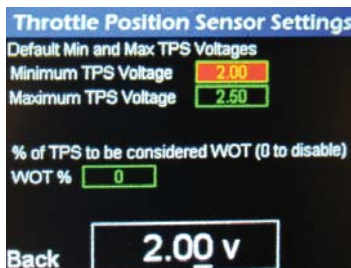


Figure 25

3. To increase/decrease the value use the “UP” and “DOWN” arrow buttons .

4. To exit, press the “BACK” button.

NOTE: Data changes will not be made unless the “SAVE” button is pressed. Pressing the “UNDO” button will reset table to its original settings.

LOAD BASE CALIBRATION

This feature allows the user to load the base calibration that was present at the time of purchase. **This will overwrite any changes to the current calibration as well as both Calibration “A” and “B.”**

1. To alter, select “**LOAD BASE CALIBRATION**” using the “**UP**” and “**DOWN**” arrow buttons and press the “**OK**” button (Figure 26).

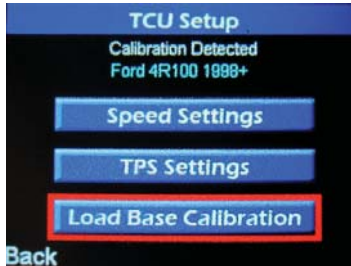


Figure 26

2. Select “**YES**” to reload the base calibration or “**NO**” to cancel (Figure 27).

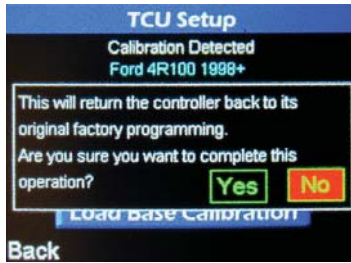


Figure 27

3. To exit, press the “**BACK**” button.

7 Overrides

“**OVERRIDES**” mode allows you to override Simple Shift features.

1. To alter, select “**OVERRIDES**” using the “**UP**” and “**DOWN**” arrow buttons and press the “**OK**” button. (Figure 27).

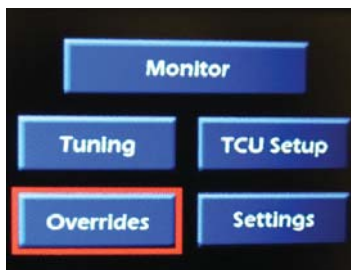


Figure 27

2. The **OVERRIDE MODE** column: Using the “UP” and “DOWN” arrows select the function to be changed (**Figure 28**).

Overrides		
Override Mode	Status	Current Setting
Torque Converter	Disabled	<input type="radio"/> Lock <input checked="" type="radio"/> Unlock
Overdrive	Disabled	<input type="radio"/> Cancel <input checked="" type="radio"/> Allow
Dyno Mode	Disabled	<input type="radio"/> On <input checked="" type="radio"/> Off
True Manual	Disabled	<input type="radio"/> On <input checked="" type="radio"/> Off
Simple Manual	Disabled	<input type="radio"/> On <input checked="" type="radio"/> Off
Snow Mode	Disabled	<input type="radio"/> On <input checked="" type="radio"/> Off
Calibration	Disabled	<input type="radio"/> B <input checked="" type="radio"/> A
Back	Status	

Figure 28

Torque Converter: This selection cancels the torque converter locking or commands the converter to lock indefinitely. This cancellation occurs regardless of other parameters.

Overdrive: This selection cancels the highest gear. This cancellation occurs regardless of other parameters.

Dyno Mode: Dyno mode is provided to allow use on a chassis dynamometer. Upshifts will occur until 1:1 ratio is reached.
NOTE: A paddle shifter is required for this mode.

True Mode: When in true mode, the transmission controller will only upshift or downshift when issued a command to do so. So if the driver has selected first gear, the engine will rev up to the rev-limiter and continue at this rpm until the driver issues an upshift command. If the driver has selected fourth gear and slows down to the programmed 4-3 shift point, the transmission will remain in fourth gear. Similarly, if the driver has selected fourth gear and comes to a stoplight, the transmission will remain in fourth gear. The WOT upshift RPM points will act as downshift rpm limiters to prevent accidental downshifting that would otherwise over-rev the engine.

NOTE: A paddle shifter is required for this mode.

Simple Mode: When in smart mode, the transmission controller will still use your programmed shift tables. However, you will be able to choose the maximum gear to shift into. So if the driver has selected first gear, the engine will rev up to the rev limiter and continue at this rpm until the driver issues an upshift command, If the driver has selected fourth gear and slows down to the programmed 4-3 shift point, the transmission will downshift to third gear. Similarly, if the driver has selected fourth gear and comes to a stoplight, the transmission will downshift to first gear automatically.

NOTE: A paddle shifter is required for this mode.

Snow Mode: When enabled, this digital input will provide first gear lockout. The transmission will start in 2nd gear to assist in poor weather driving.

Calibration Select Calibration select allows the user to select the “B” calibration for normal operation, If the feature is not ENABLED, the Simple Shift defaults to the “A” calibration.

3. The **STATUS** column allows a simple and quick method to start and stop the function as needed. Press the “**STATUS**” button to toggle between “**ENABLED**” and “**DISABLED**”.

4. To toggle the **CURRENT SETTING** column options, press the “**OK**” button.

5. To exit, press the “**BACK**” button.

8 SETTINGS

“**SETTINGS**” mode allows you to control speed units and temperature units as well as screen and button backlight (Figure 29).



Figure 29

1. To alter, select “**SETTINGS**” using the “**UP**” and “**DOWN**” arrow buttons and press the “**OK**” button. (Figure 30).

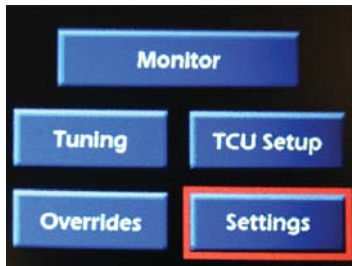


Figure 30

2. **Speed:** Press the “**OK**” button to toggle between “**KPH**” and “**MPH**.”
3. **Temperature:** Press the “**OK**” button to toggle between “**°C**” and “**°F**.”
4. **Screen Backlight:** Select by pressing the “**OK**” button and use the “**UP**” and “**DOWN**” arrows to increase/decrease the value.
5. **Button Backlight:** Select by pressing the “**OK**” button and use the “**UP**” and “**DOWN**” arrows to increase/decrease the value.
6. To exit, press the “**BACK**” button.

LIMITED WARRANTY STATEMENT. Powertrain Control Solutions, LLC. Warrants all merchandise against defects in factory workmanship and materials for a period of 12 months after purchase. This warranty applies to the first retail purchaser and covers only those products exposed to normal use or service. Provisions of this warranty shall not apply to Powertrain Control Solutions, LLC. Product used for a purpose for which it is not designed, or which has been altered in any way that would be detrimental to the performance or life of the product, or misapplication, misuse, negligence or accident. On any part or product found to be defective after examination by Powertrain Control Solutions, LLC., Powertrain Control Solutions, LLC. will only repair or replace the merchandise through the original selling dealer or on a direct basis. Powertrain Control Solutions, LLC. assumes no responsibility for diagnosis, removal and/or installation labor, loss of vehicle use, loss of time, inconvenience or any other consequential expenses. The warranties herein are in lieu of any other expressed or implied warranties, including any implied warranty of merchantability or fitness, and any other obligation on the part of Powertrain Control Solutions, LLC., or selling dealer.