



## Software User Manual

### Downloading and Installing

1. Visit <http://www.dscsport.com/software> to register and download the software and follow instructions for downloading and installing
2. Download the silabs USB driver:  
<https://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx>

### Reading, Opening, and Writing PDS Files

**Read** – Reading refers to reading the file currently on the DSC Sport controller. With the DSC Sport controller connected to your laptop/PC, open the tuning software and select *Tools > Read All*

**Open** – You can also open and edit PDS files already saved to your computer.

1. Select *File > Open*
2. Select desired PDS file

**Write** – You can write one mode at a time, or the entire .pds file (all modes) to the DSC Sport controller.

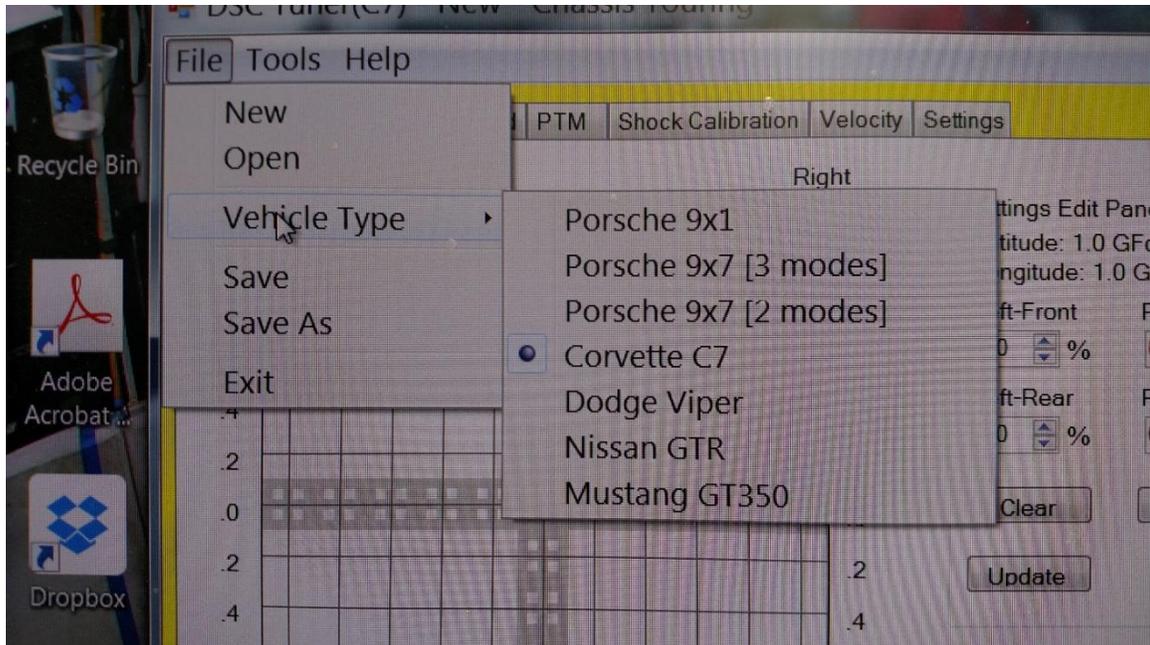
**Write All** – Select *Tools > Write All*

**Write Specific Maps** –

- i. Navigate to the *Settings* table
- ii. Under “Show/Edit Tables For:” select the map that you would like to write.
- iii. Press the **Read From DSC** button if you would like to write the map currently on the DSC controller. Skip this step if you have been editing the table and wish to write the current configuration.
- iv. Under “Write Tables To:” select the mode (Normal, Sport, etc.) to which you would like to write the map.

### File Tab

The *File* tab is where you will add new data for the program, open a new file, change the vehicle type, and save your work.



**File** - The file tab is where you would add new data for the program, open a new file, change the vehicle type and save your work.

*New* - This option opens a new window.

*Open* - This option opens new data to be used by the program (See **Reading, Opening, and Writing PDTS files**).

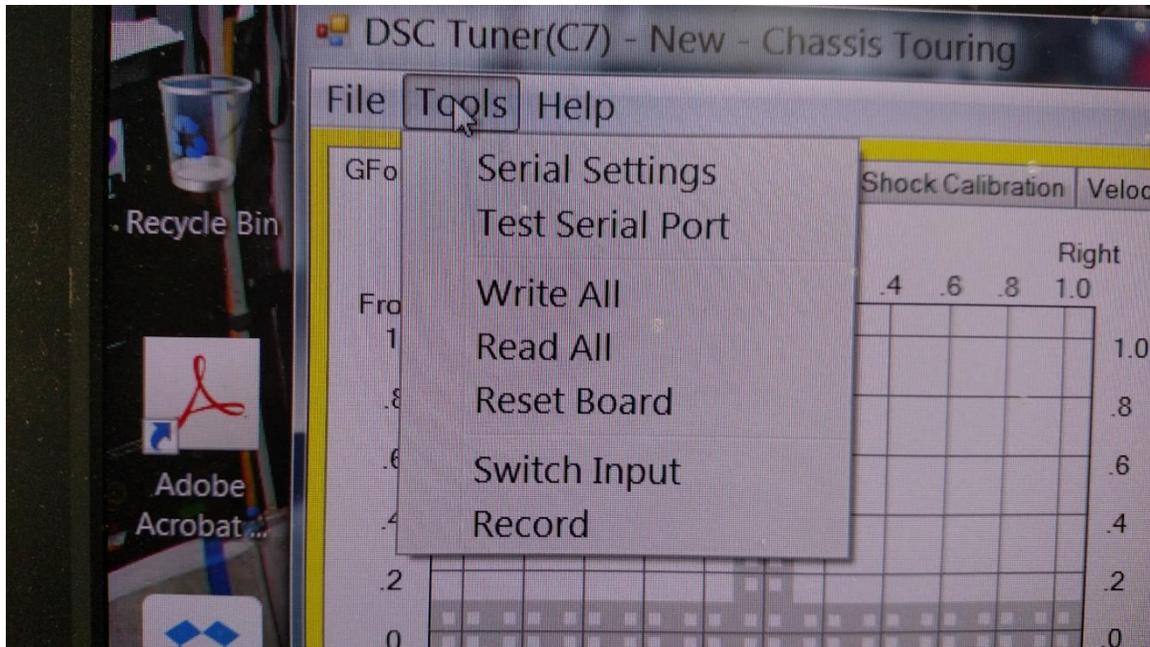
*Vehicle Type* – Use this option to select current vehicle. **Note: this must be set before using software!!!!!!!!!!**

*Save/Save As* - This option allows you to save your work. *Save* saves your work to the last save location, while *Save As* allows you to select manually where your work is saved.

*Exit* - This option closes the program without saving any changes or data.

## Tools Tab

The tools tab allows you to make modifications to the data, change how the data is received or test the receivers to make sure they are working properly.



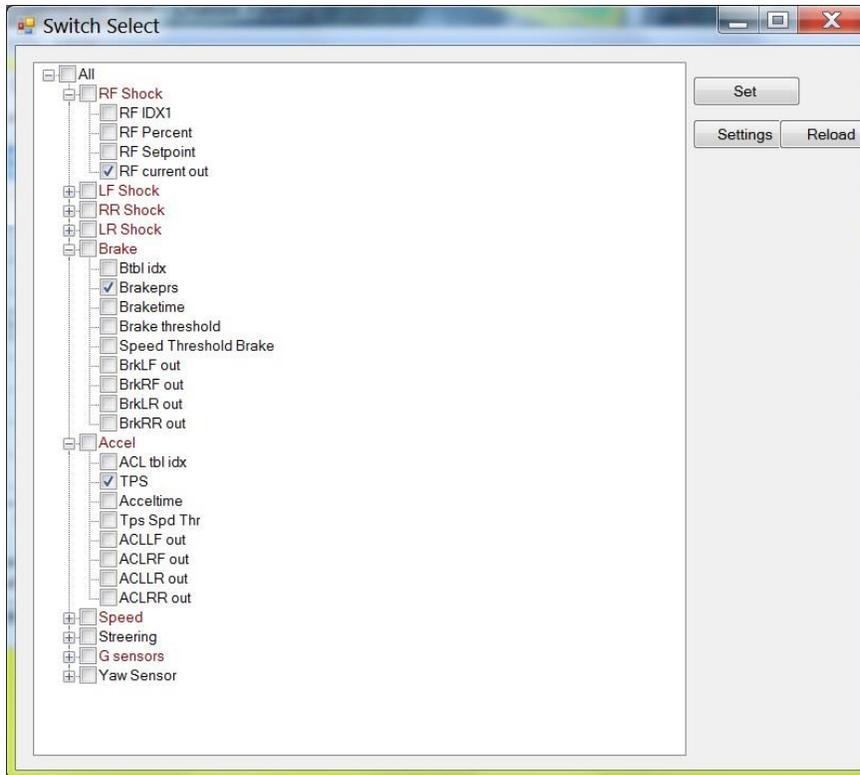
*Serial Settings* - This tool allows you to access the settings your serial ports are on.

*Test Serial Port* - This tool allows you to run fault codes, check your firmware version, and test your serial ports to confirm their functionality.

*Write All* - This tool allows you to write to all modes on the controller.

*Read All* - This tool allows you to read data currently on the controller from all modes.

*Reset Board* - This tool resets the tab you are on to the data from the last save or record. **This is required in between writing and reading; it reboots the processor!**

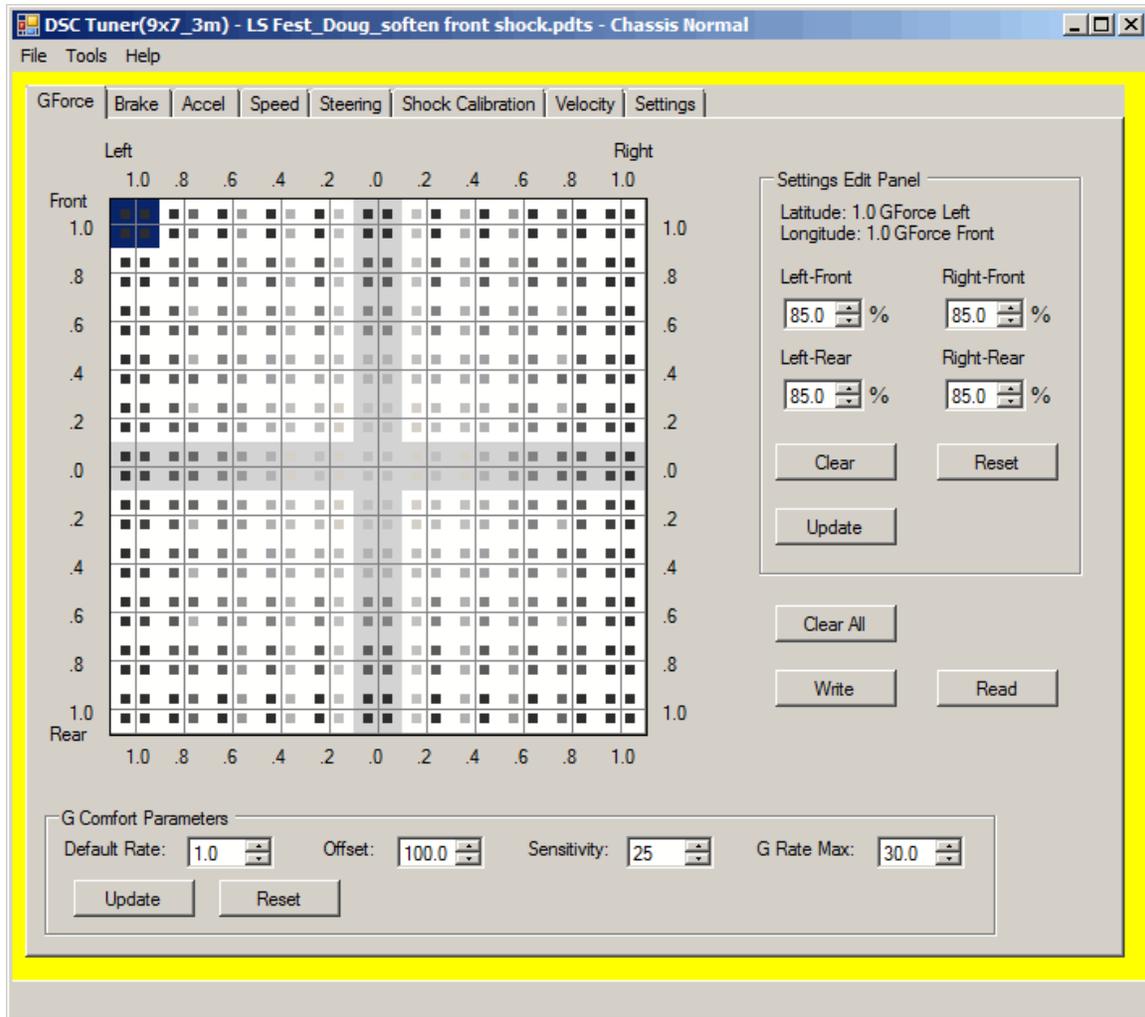


*Switch Input* - This tool allows you to switch the data gathered while using the *Record* function. You can vary the data gathered to examine a wide variety of driving aspects. By selecting an overall input, such as *Brake*, you automatically select all of the inputs in the overall input, and you can specifically select an input by opening the tab and manually selecting the inputs you want. All selected inputs will be displayed when you use the *record* function.

*Record* - Live data acquisition tool that graphically records and plots the input signals and output commands of your DSC Sport controller for all tables or selected inputs (See **Data Logging**).

## G-Force Table

The G-Force Tab is where one sets the main damping force for each damper for any given G-Force, as well as where one sets the G Comfort Parameters for ride quality.



*G-Force Table* - The G-Force Table represents the physical G-Forces imparted on the vehicle. As such the upper portion of the table represents the vehicle during braking; the lower portion of the table represents the vehicle under acceleration; the right side of the table represents the vehicle turning left (G-Force applied to right side of vehicle); and the left side of the table represents the vehicle turning right (G-Force applied to left side of vehicle). The percentage selected here represents the overall percentage of available damping force as set in the "Shock Calibration Table".

*Settings Edit Panel* - Each selectable box inside the G-Force Table contains four smaller boxes representing each corner of the vehicle. The cells are arranged to match each wheel; the top-left cell is the front-left wheel, the right-top cell is the front-right wheel, the bottom-left cell is the rear-left wheel, and the bottom-right cell is the rear-right wheel. The dampers are set in each box by changing the percentage in the Settings Edit Panel. The percentage selected here represents the overall percentage of available damping force as set in the "Shock Calibration Table". Shades of grey directly correlate to the shock calibration table. Always remember to hit update to save in the cell you are editing.

*G Comfort Parameters Box* - The G Comfort Parameters Box determines ride quality when there is little to no G Force. The G Comfort Parameters Box can be set to any G-Force value, thereby influencing ride quality from 0G's to 0.4G's in any direction, for example.

**Default Rate** - This is the “Default” soft shock setting when operating inside the “G patch” or “box”. This number is the % from the shock calibration table. So if a 1 or 15 is present, 1% or 15% of the shock calibration will be applied.

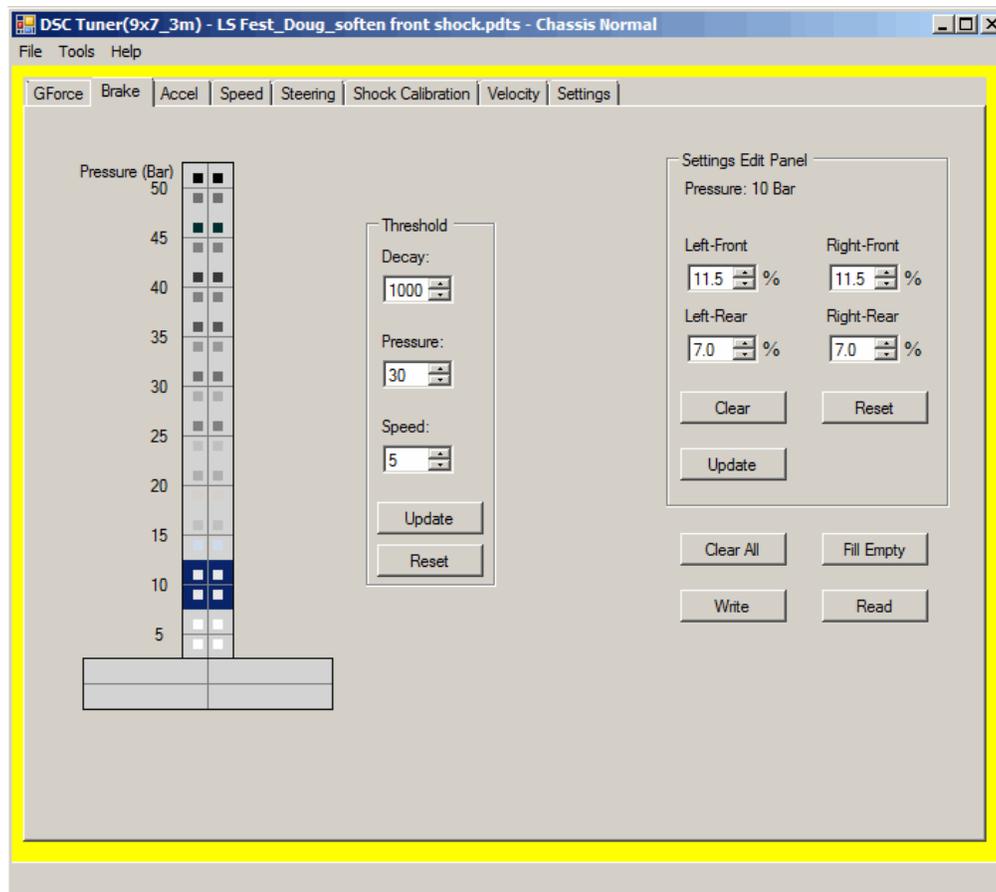
**Offset** - This is a calculated value and is always set to 100 on the new units.

**Rate of Change (Sensitivity)** - This is the rate of change within the box, or G Patch. The greater the number, the higher the sensitivity. This means the you will not deviate from the Default rate (Lng rate) as quickly. The smaller the number, the lower the sensitivity. This means you will deviate from the Default rate (Lng rate) more quickly. Therefore this is why we have a lower number in “sport” mode (10) compared to “normal” mode (15).

**G Rate Max** - This number defines the box, or G Patch. You need to move the decimal to the left 2 places, then you view this number as a G force value. For example, the number 20 represents .2G. Within this .2G box, the Default rate (Lng Rate) applies. The size of the box can be from .3G to .1G, anything outside of this can have some un-desirable effects.

## Brake Table

The Brake Table is where one sets the damping force modifier for each damper for any given brake pressure input force. By utilizing brake pressure the damper force can be increased before the vehicle begins diving under braking or waiting for the G sensor. This is a predictive strategy.



*Brake Pressure Table* - Just as with the G-Force Table, each box of the Brake Table contains four smaller boxes representing each corner of the vehicle. The percentage selected here represents the overall percentage of available damping force as set in the “Settings Edit Panel”. The damper percentage is

applied when the brake is pressed, and remains applied for the amount of time selected in the “Decay” portion of the “Threshold Box”. After this time has elapsed, the G-Force table is applied.

The brake table is used to slow the weight transfer to the front tires, provide more front grip and help reduce ABS intervention (when equipped). The rear dampers are stiffened to prevent (slow) the weight transfer to the front tires and increase rear grip. This also helps reduce the load on the front tires and unwanted ABS intervention.

*Settings Edit Panel* - Each selectable box inside the G-Force Table contains four smaller boxes representing each corner of the vehicle. The cells are arranged to match each wheel; the top-left cell is the front-left wheel, the right-top cell is the front-right wheel, the bottom-left cell is the rear-left wheel, and the bottom-right cell is the rear-right wheel. The dampers are set in each box by changing the percentage in the Settings Edit Panel. The percentage selected here represents the overall percentage of available damping force as set in the “Shock Calibration Table”. Shades of grey directly correlate to the shock calibration table. Always remember to hit update to save in the cell you are editing.

*Threshold Box* - The Threshold Box allows one to set the amount of time the damper force is applied once a set brake pressure has been exceeded and the vehicle is over a set minimum speed.

**Decay** - The Brake Pressure Table is applied before the G-Force Table is referenced. It is only active for the specified “decay” value. This is usually set to 1000. 1000 = 1.0sec; 0500 = 0.5sec; etc.

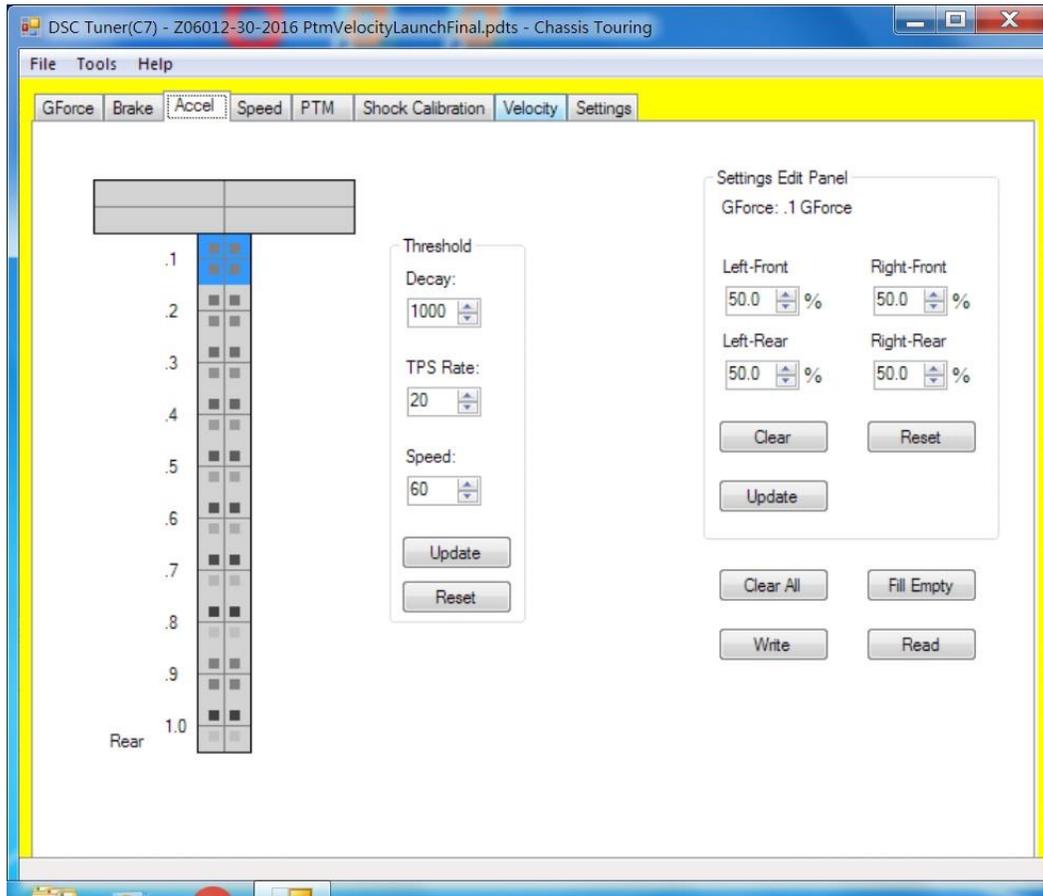
**Pressure** - This table is only active when you reach the set brake pressure setting, and is calculated as BAR per millisecond.

**Speed** - This table is only active once you exceed the minimum speed. It is typically set to 5mph.

## Accel Table

The Accel Table is where one sets the damping force modifier for each damper for the given throttle position. By utilizing throttle position the damper force can be increased or decreased as needed to allow

the vehicle to put power down on corner exit or squat on straight line launches. It can also be utilized to predict higher speeds and increase damping as needed. This is a predictive strategy.



*Accel Percentage Table* - Just as with the G-Force Table, each box of the Accel Table contains four smaller boxes representing each corner of the vehicle. The percentage selected here represents the overall percentage of available damping force as set in the “Settings Edit Panel”. The damper percentage is applied when the throttle is pressed, and remains applied for the amount of time selected in the “Decay” portion of the “Threshold Box”. After this time has elapsed, the G-Force table is applied.

NOTE: The units on the graph are units of G-force, and can be easily compared to other values in other tabs and on the G-force table

*Settings Edit Panel* - Each selectable box inside the G-Force Table contains four smaller boxes representing each corner of the vehicle. The cells are arranged to match each wheel; the top-left cell is the front-left wheel, the right-top cell is the front-right wheel, the bottom-left cell is the rear-left wheel, and the bottom-right cell is the rear-right wheel. The dampers are set in each box by changing the percentage in the Settings Edit Panel. The percentage selected here represents the overall percentage of available damping force as set in the “Shock Calibration Table”. Shades of grey directly correlate to the shock calibration table. Always remember to hit update to save in the cell you are editing.

*Threshold Box* - The Threshold Box allows one to set the amount of time the damper force is applied once a set throttle position has been exceeded and the vehicle is over a set minimum speed.

**Decay** - The Accel Percentage Table is applied before the G-Force Table is referenced. It is only active for the specified “decay” value. This is usually set to 1000. 1000 = 1.0sec; 0500 = 0.5sec; etc

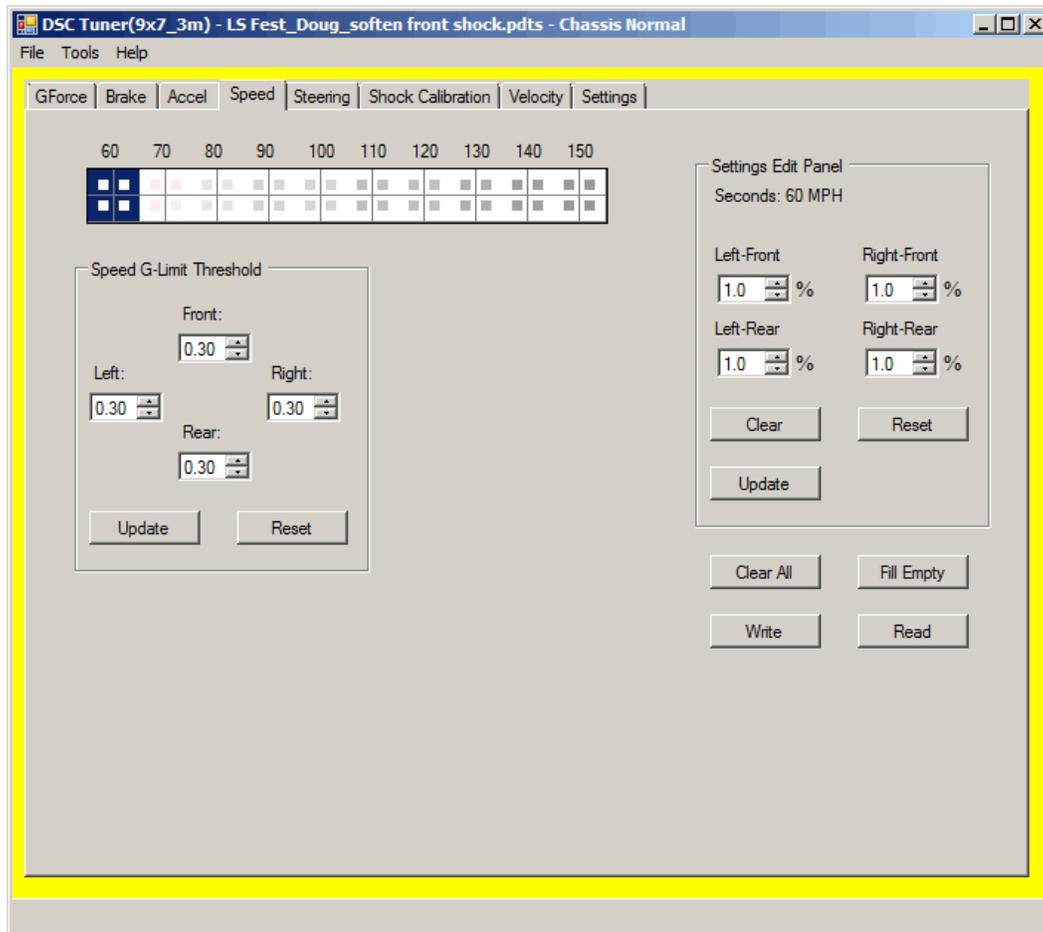
**TPS** - This table is only active when you reach the set throttle position rate setting, and is calculated as a percentage of maximum throttle.

**Speed** - This table is only active up to the target speed. It is typically set to 60mph.

### Speed Table

The Speed Tab is where one sets the speed at which the system does or does not influence overall damper force. The settings on this tab are used to provide stability as the vehicle speed increases from 60 to 150mph. Over 150mph, the last group of cells extrapolates out.

NOTE: The percentages selected in the Settings Edit Panel for each speed are added to the percentages in the G-Force table when the vehicle is at or above the set speed and below the G-Force setting in the Speed G-Limit Threshold.



*Speed Table* - The Speed Table has 60mph on the left, and 150mph on the right. The calibration can be changed the same way the shock calibration can be changed. Clear all values, input your 60mph values and your 150mph values, then click "fill empty" and the system will interpolate the rest.

#### *Settings Edit Panel*

•Each selectable box inside the G-Force Table contains four smaller boxes representing each corner of the vehicle. The cells are arranged to match each wheel; the top-left cell is the front-left wheel, the right-top cell is the front-right wheel, the bottom-left cell is the rear-left wheel, and the bottom-right cell is the rear-right wheel. The dampers are set in each box by changing the percentage in the Settings Edit Panel.

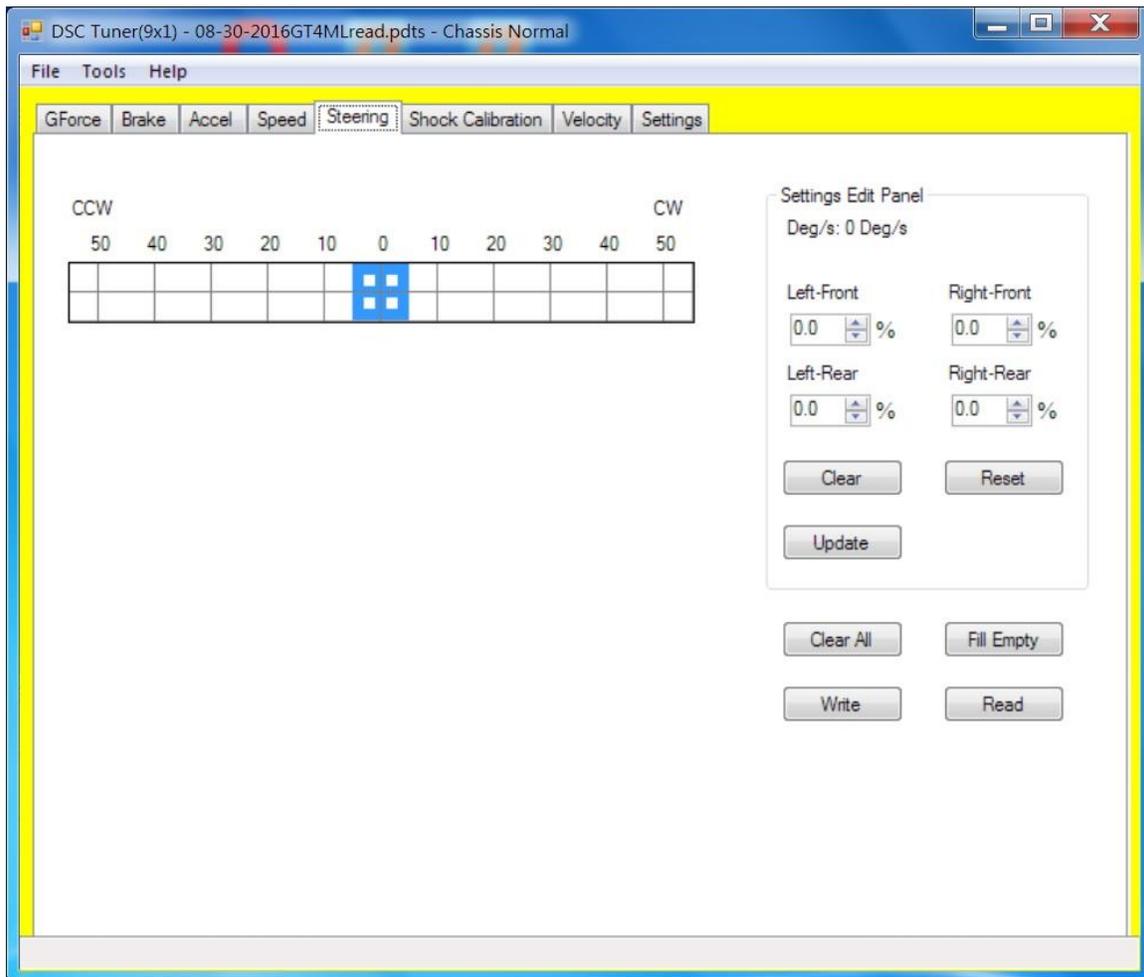
The percentage selected here represents the overall percentage of available damping force as set in the “Shock Calibration Table”. Shades of grey directly correlate to the shock calibration table. Always remember to hit update to save in the cell you are editing.

### Speed G-Limit Threshold Box

- This setting controls when the speed table is actively influencing the force of the dampers.
- Units are usually setup with .30G per second in all 4 values. This means when the car exceeds .3G per second in any direction, the speed table will no longer be applied in addition to the G-Force table.

## Speed Table

This table is used to predict the rate of change in wheel angle as you turn the steering wheel. This table is not used in the core tuning program, but is an additional option for tuning if you want to use it. We use this table in some applications for ten position global offset for racing and tuning.

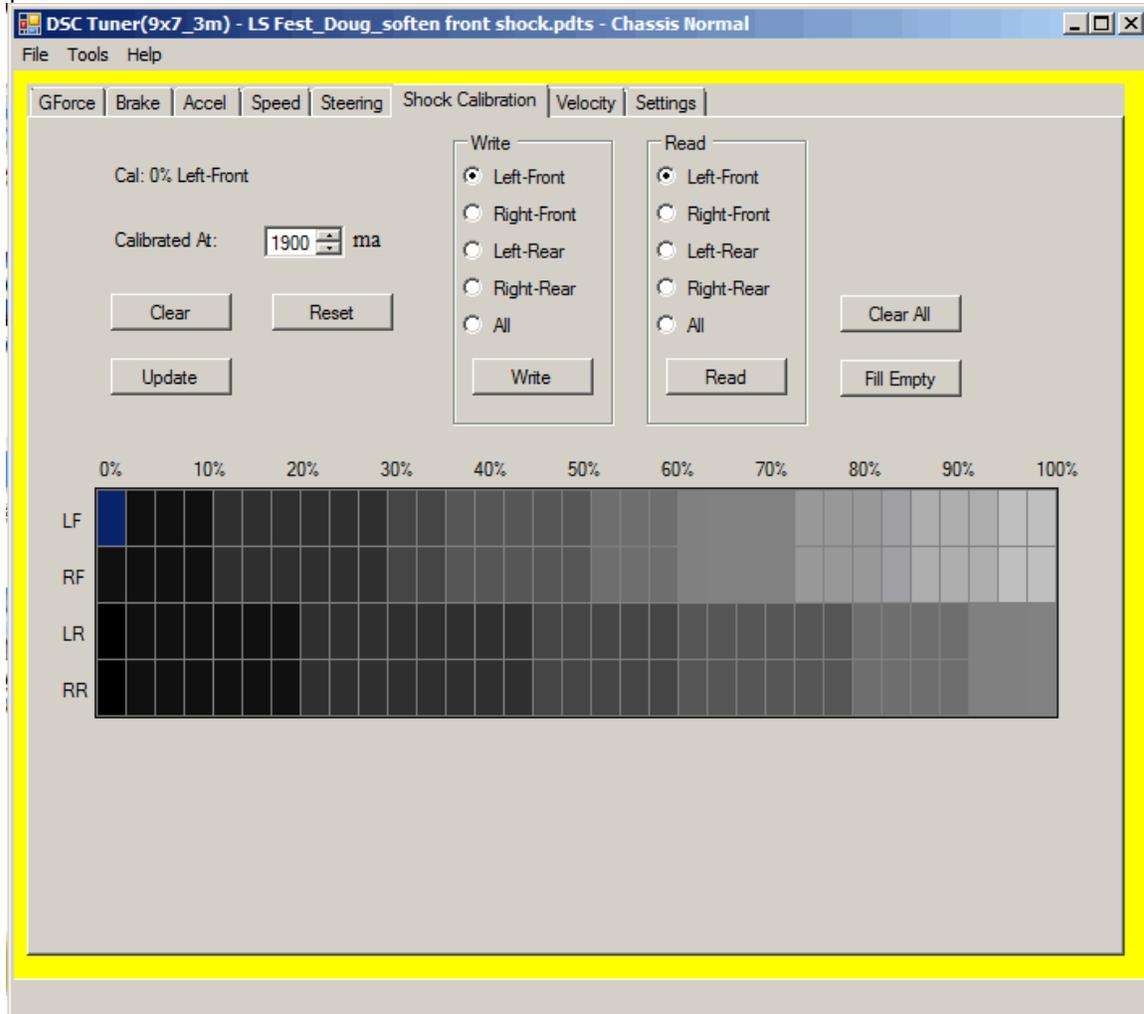


*Settings Edit Panel* - Each selectable box inside the G-Force Table contains four smaller boxes representing each corner of the vehicle. The cells are arranged to match each wheel; the top-left cell is the front-left wheel, the right-top cell is the front-right wheel, the bottom-left cell is the rear-left wheel, and the bottom-right cell is the rear-right wheel. The dampers are set in each box by changing the percentage in the Settings Edit Panel. The percentage selected here represents the overall percentage of available damping force as set in the “Shock Calibration Table”. Always remember to hit update to save in the cell you are editing.

*Steering Angle (Rate of Change) Table* - A predictive way to determine weight transfer based on steering. Shades of grey directly correlate to the shock calibration table. The CCW (Counter-clockwise) end of the table refers to the rate of wheel angle change caused by turning the wheel counterclockwise and the CW (Clockwise) end of the table refers to the rate of wheel angle change caused by turning the wheel clockwise.

## Shock Calibration Table

The Shock Calibration Table is the most important and influential table, as all other tables reference it. The Shock Calibration Table has 0% of current being used on the left, and 100% of current being used on the right. The Shock Calibration Tab is where one sets the allowable range in current sent to the dampers.



### Damper operating range

- OEM dampers** – 1500mA is full soft and 500mA is full stiff.
- Tractive dampers** – 1900mA is full soft and 500mA is full stiff.
- MagneRide shocks** – 0mA is full soft and 1000mA is full stiff (shock calibration table is reversed from that of Tractive and other OEM dampers).

To build a linear shock calibration table proceed as follows

- Click the “clear all” button.
- Input the desired 0% values. To do this, click on the respective cell and input the desired mA in the “calibrated at” box. Then click the “update” box. Do this for all 4 of the 0% cells.

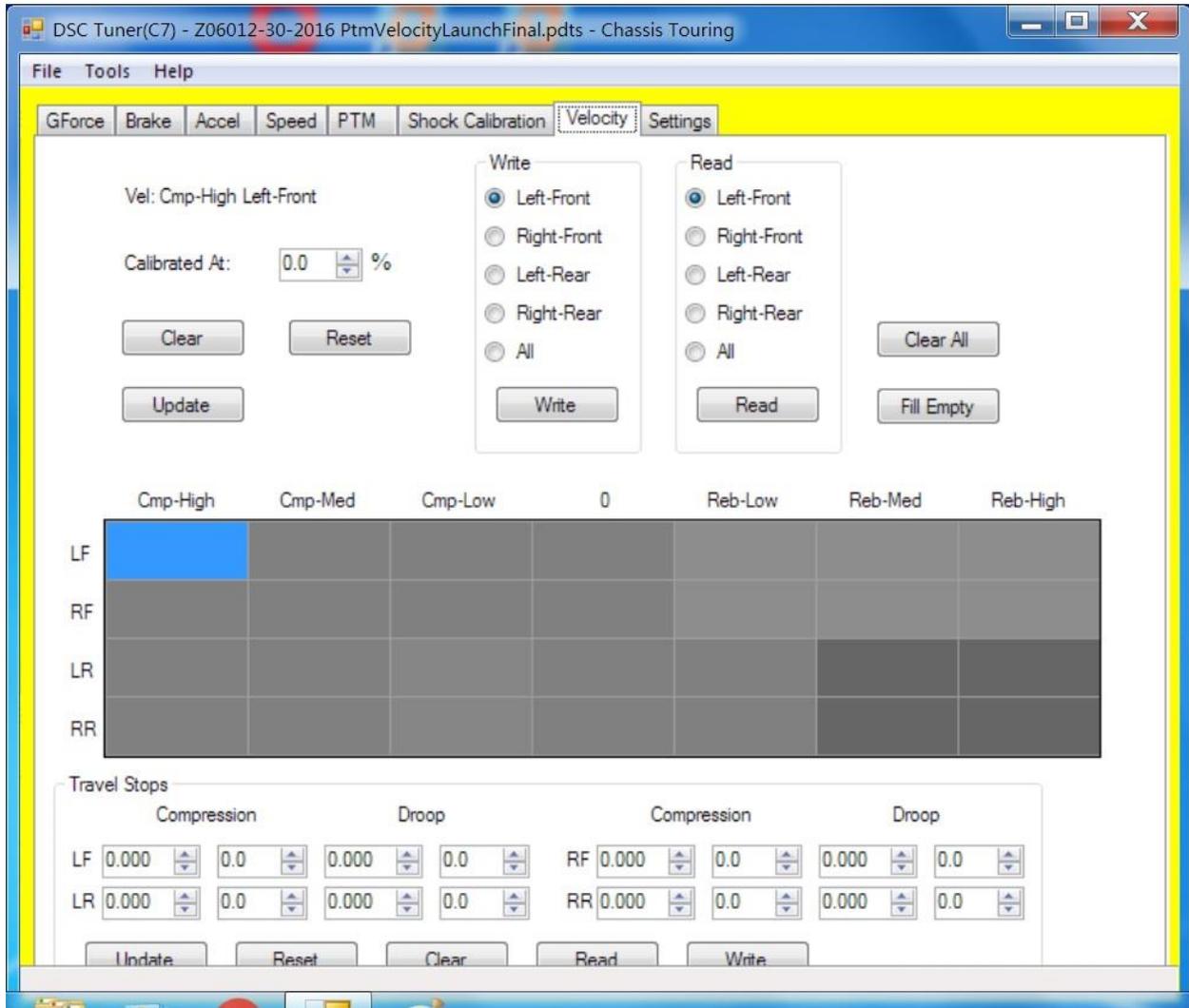
- c. Set your 100% cells in the same manner.
- d. Click the “fill empty” button and the software will interpolate the remaining cells.

*Writing the new shock calibration*

- a. Make sure that under the read and write boxes that “all” is selected. Then double check what mode you will be writing this calibration to. To do this, click on the settings tab, take note what mode you are altering, i.e. “normal” or “sport” and then confirm what mode you will be writing to, “normal” or “sport”.
- b. Go back to the shock calibration tab and click the “write” button.
- c. It is then a good idea to reset the board. Click the tools menu, select “reset board”.

**Velocity Table (applicable models – C7 shown)**

Velocity tuning is available for all cars that are ride-height equipped (most V2 controller-based cars).



*Compression and Rebound table* - Representation of low (0-3 IN/sec), medium (3-5 IN/sec), high (5-8 IN/sec) speed compression and rebound based on the travel speed of the shocks. Darker shades indicate a positive percentage change (more damping) from what the shocks were calibrated at while lighter shades indicate a negative percentage change (less damping) from what the shocks were calibrated at.

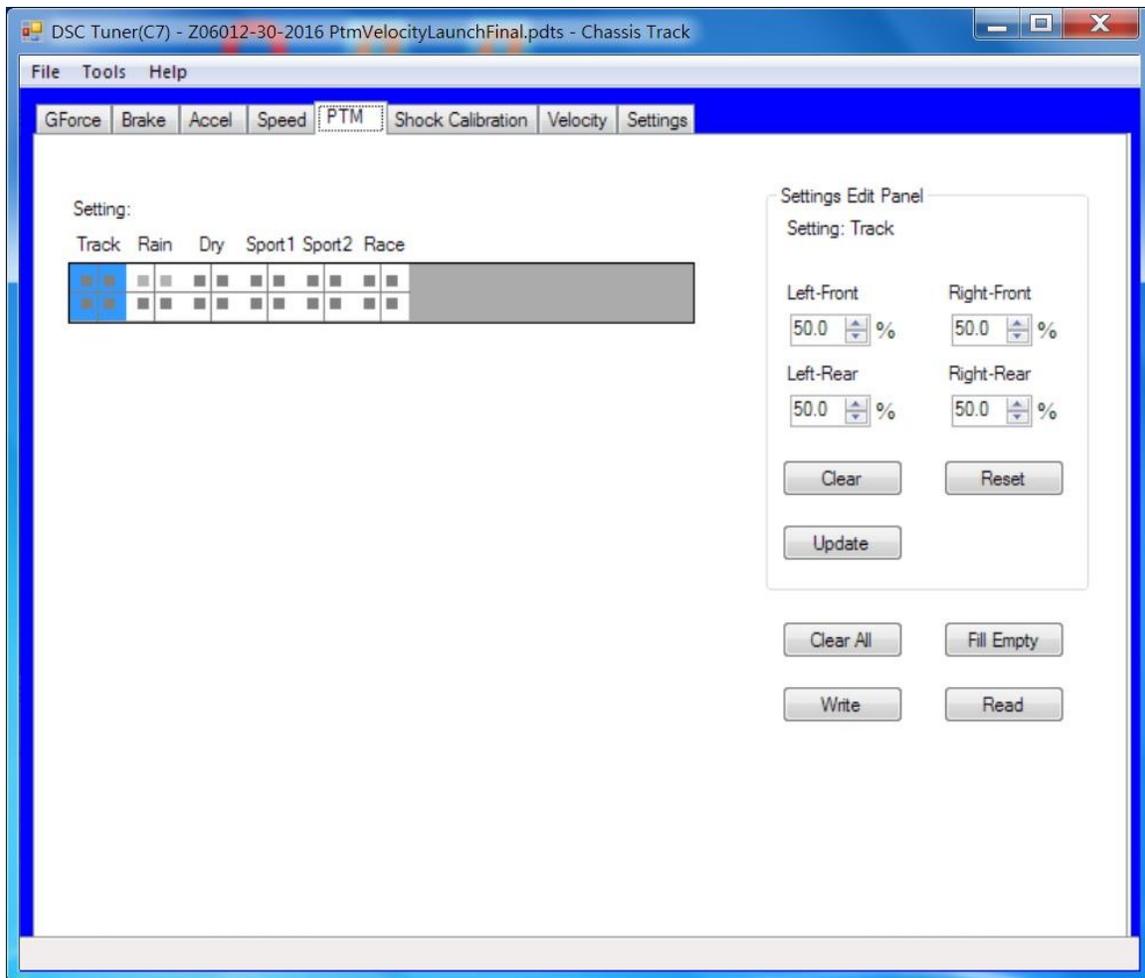
- When looking at the table, “0” is static ride height, at the current time you will use 3 cells to left and 3 cell to the right of zero. The table will be from zero to 8” per second for compression and rebound. Compression is the Negative values, left side of the table; Rebound is the Positive values, right side of table.
- Please note cars should be zero travelled at ride height with driver on set-up table (see setting tab).

*Travel Stops* - The values for the maximum compression and drop for each of the shocks, which influences the values in the compression and rebound table.

**Note:** In order for Velocity tuning to be functional, you *must* zero your vehicle’s ride height (see **Zero Travel** instructions in **Settings Table**).

### PTM Table (applicable models – C7 shown)

The PTM table allows you to edit the characteristics of your Performance Traction Management (PTM).



*Setting Table* – This table indicates what percentage will be sent offset globally to the different settings; darker shades indicating higher percentage is sent while lighter shades indicate less percentage.

*Settings Edit Panel* – Each selectable box inside the G-Force Table contains four smaller boxes representing each corner of the vehicle. The cells are arranged to match each wheel; the top-left cell is

the front-left wheel, the right-top cell is the front-right wheel, the bottom-left cell is the rear-left wheel, and the bottom-right cell is the rear-right wheel. The current is set in each box by changing the percentage in the Settings Edit Panel. The percentage selected here represents the overall percentage of available current set in the "Shock Calibration Table". Shades of grey directly correlate to the shock calibration table. Always remember to hit update to save in the cell you are editing.

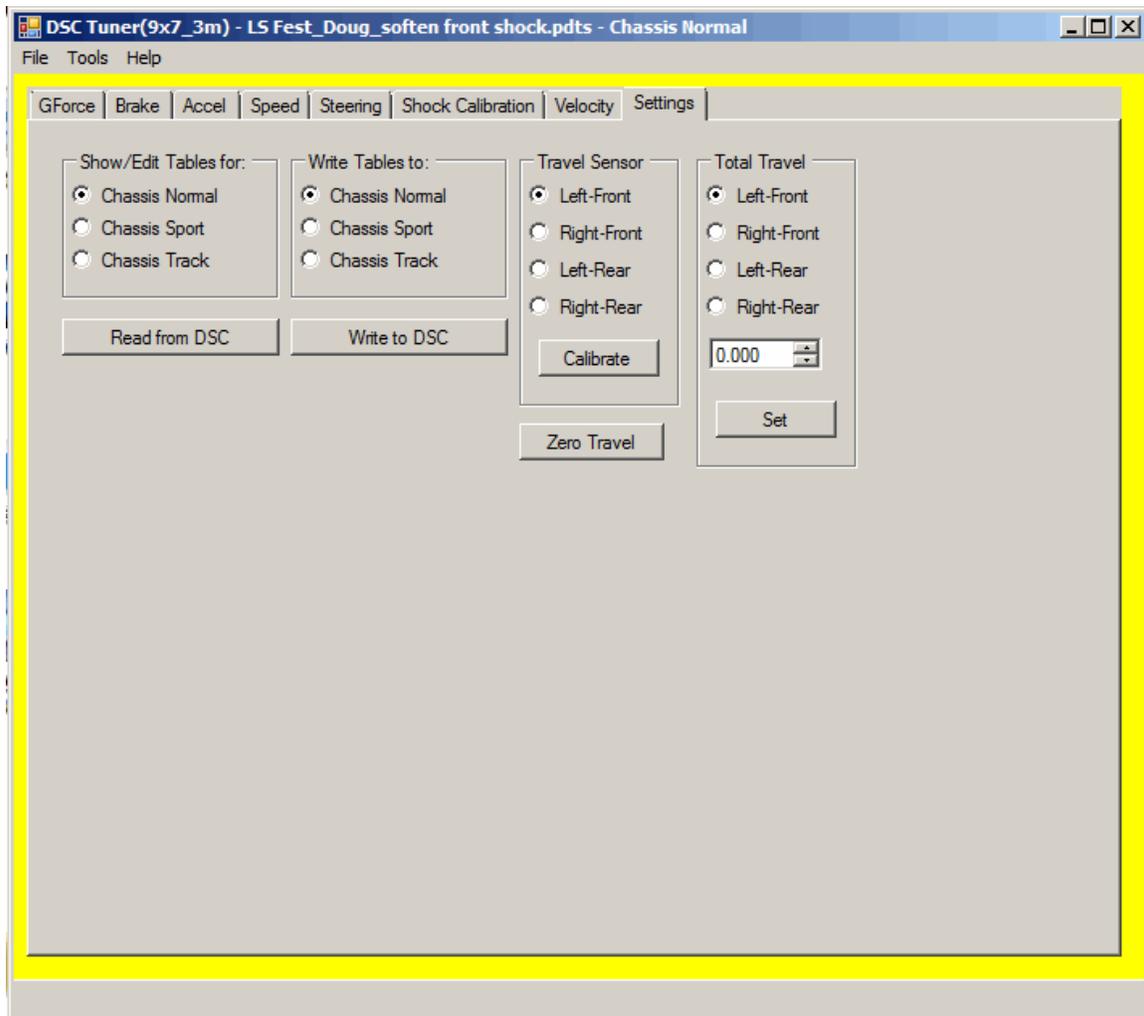
## Settings Table

The Settings Tab is where the selection for reading and writing to and from the ECU, Mode to edit (Normal, Sport, Track) and which mode to write to the ECU after editing is complete. Each Mode is easily identified by the color of the outline on all Tabs: (this is not to be confused with overall reading and writing; the read all and write all is done under the tools drop down)

Normal: Yellow

Sport: Red

Track: Blue



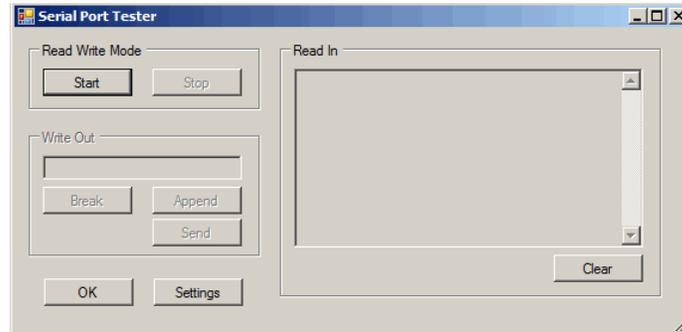
*Read from DSC* - Select the Mode which you wish to read from

*Write to DSC* - Select the Mode which you wish to write to

**ZERO TRAVEL** (critical for velocity table to be fully functional)

Zero Travel is used on all cars with ride height sensors or travel sensors. This is primarily used in all V2 DSC controllers. It is imperative for peak performance of the velocity table to Zero Travel. Follow the prompt.

Note: car must be on level surface or setup table with driver tires set to operating pressure



## Fault Codes & Firmware Version (Serial Port Tester)

Command Line Interface. This interface is used primarily for reading fault codes, checking your firmware version, and testing serial ports to confirm their functionality.

**A command** – This command is used to set the dampers to full soft. You can use this function when doing a setup or to test the shocks, wiring, connections etc. Enter A in the write out box and hit enter. It will then prompt you to enter Y or N to confirm your selection.

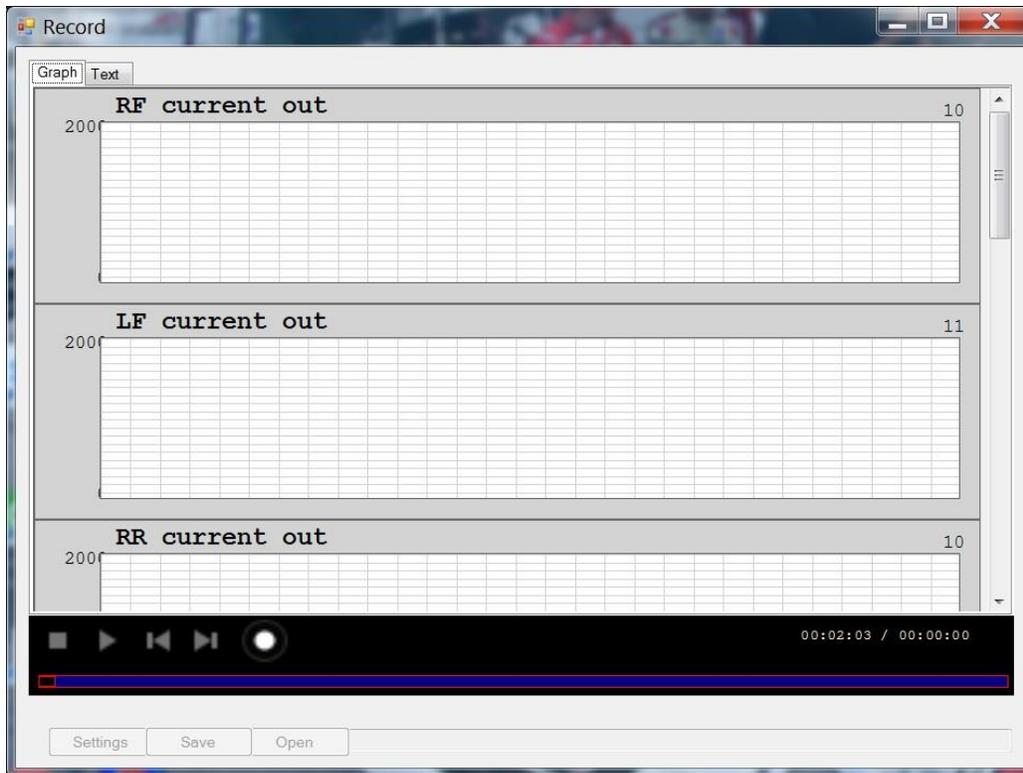
**I command** – Use this command to read out fault codes. Codes are displayed numerically 1-14. Use this command as a diagnostic tool.

**V command** – Use this command to confirm your current firmware version.

**X command** – Use this command to clear fault codes.

## Data Logging

Data acquisition can be a very useful tool to ensure the system is working as intended, diagnosing faults, and custom tuning. The DSC Sport tuning software features a live data acquisition tool that graphically records and plots the output commands of your DSC Sport controller for all tables. You can view data as text or as a graph.



To record data:

1. Start the vehicle.
2. Connect the DSC controller to the laptop (always connect the DSC controller to the laptop *after* starting the vehicle).
3. Under the *Tools* menu, select *Switch Input*. This is where you will select which inputs you which to record.
4. Under the tools menu, select *Record*. On the display menu, click the circle to start recording. The laptop must be in the car and connected to record.
5. As you drive, the software will record the input data, as well as the mA signal sent to the shocks. Each unit in the display represents 1/10<sup>th</sup> of a second. This is the time domain.
6. When finished driving, simply press the stop button.
7. You can now save your .pmed file and review it at any time.