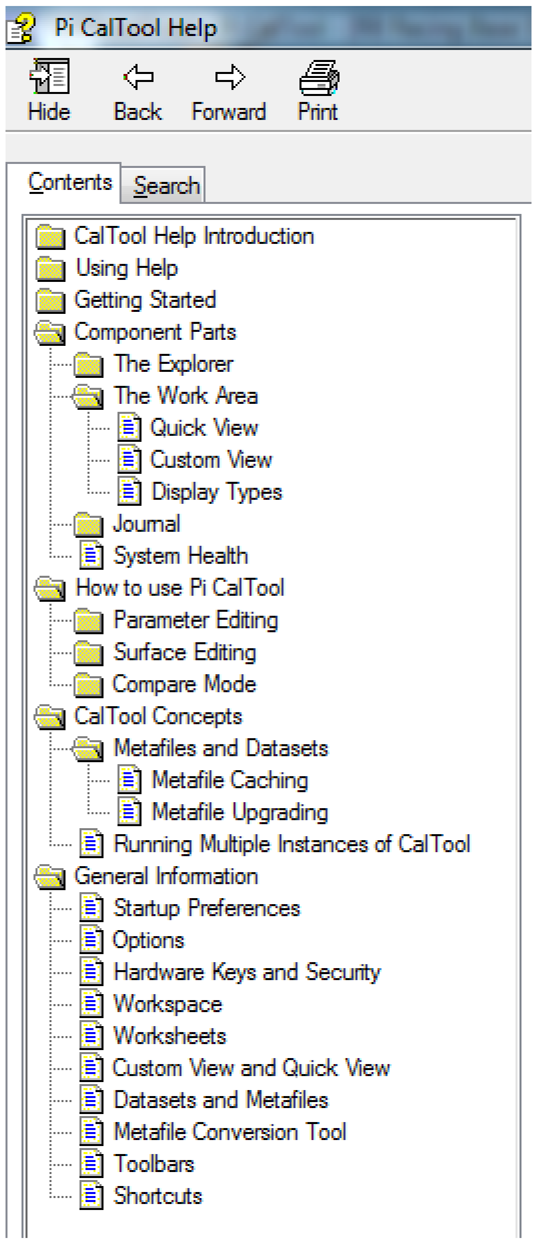
# Caltool 3.6 Pectel SQ6 / SQ6M rbracing-rsr.com

Cosworth Pectel SQ6, SQ6M, SQ6M12 and MQ12 engine management controllers are the gold standard in high end motorsports…Moto GP, World Rally, Offshore Race Boats, open wheel, Le Mans Prototypes and GT race cars. They are also the engine controllers of choice on factory OEM Nissan, Aston Martin, and BMW race engines. A multi-decade heritage victories in Formula 1, Indianapolis 500, and on racetracks around the world guarantees they are both competition and mission-critical proven.

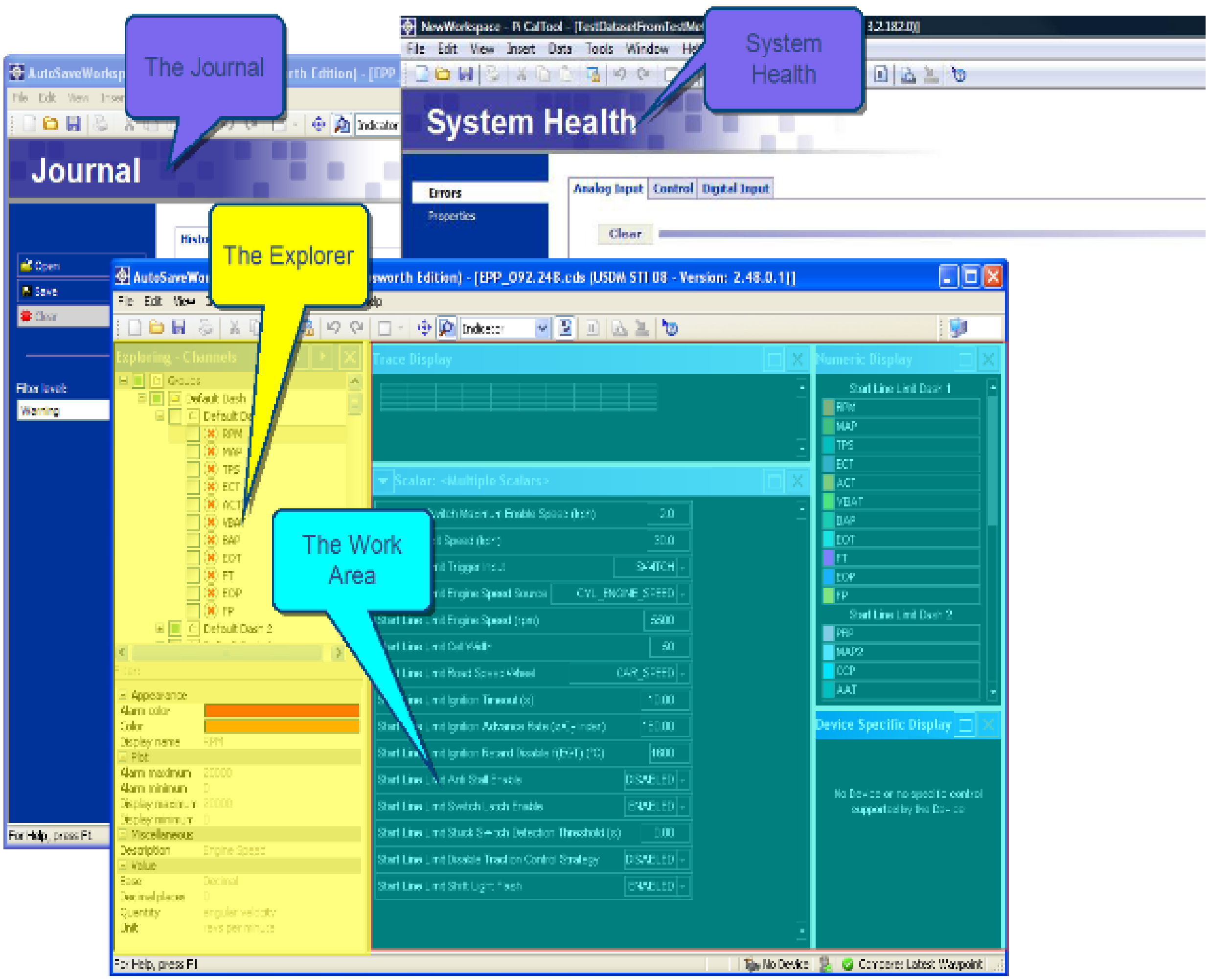

Given the breadth of motorsport activities Pectel engine controllers are designed for ultimate flexibility and are not hard-wired for specific sensors. Hugely flexible, the controllers can have two or three functions on many of their pins. Unused injector and IGBT ignition outputs can be used as digital outputs and unused digital inputs can be used as 10 bit analog inputs. All features are enabled in software. There are no hardware build options. Flexibility is the key.

Caltool, Pi Toolbox, and the Pectel ECU Offload Tool combine to provide the software solution to control any situation. Caltool is where we specify our ECU inputs and outputs, define our wiring harness interface and set our operational strategy.

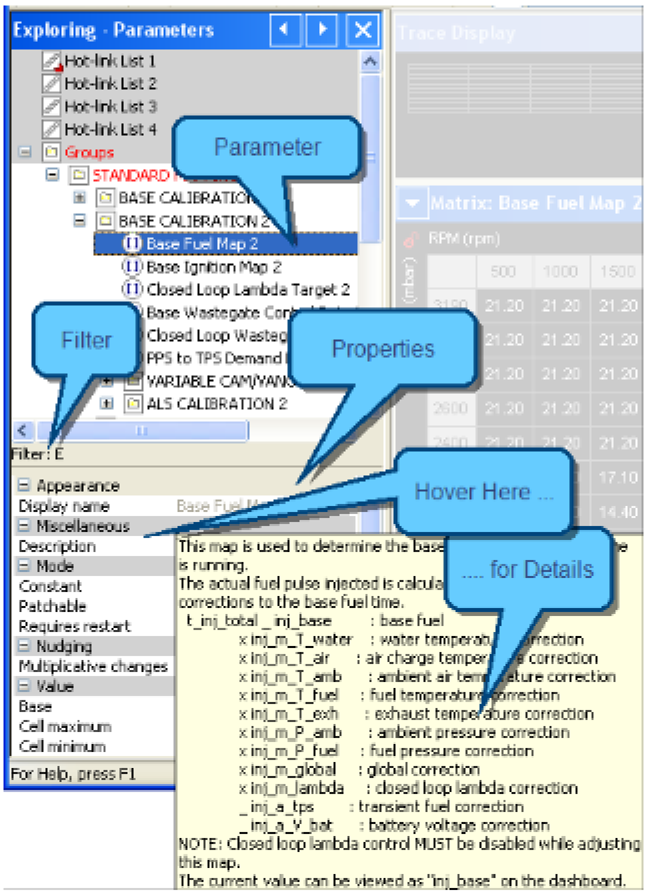
In-Program Help



# Component Parts



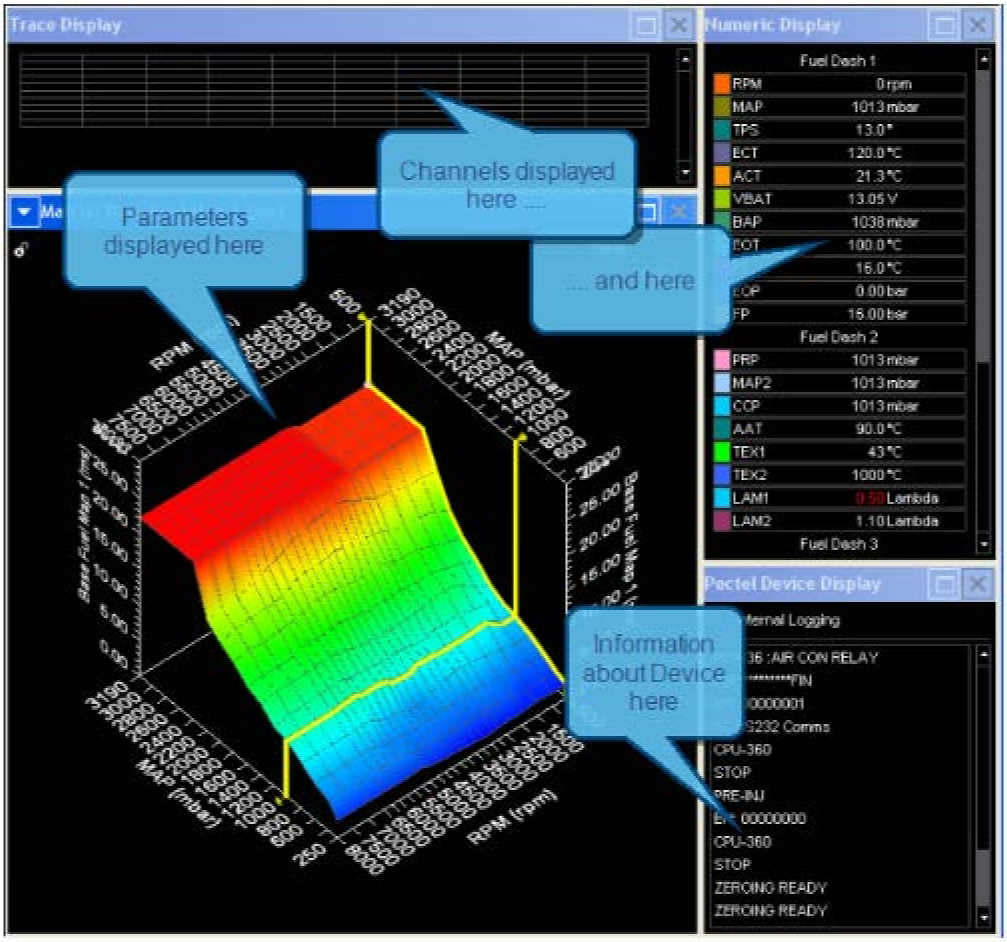
# About the Explorer




The Pi CalTool Explorer allows the user to browse the contents of a dataset.
It can be displayed on the left or the right of the main window.
It has two windows:

- For browsing and selecting Parameters for editing,
- For browsing and selecting Channels to display.

# About the Work Area




The Pi CalTool window consists of two main areas, the explorer and the work area.
The work area is where the information contained within the parameters and channels is viewed and edited.There are three general types of display available for viewing/editing data. These are:

**Parameter Editor** - for viewing and editing the currently selected parameter.
**Trace View** - for viewing channel traces.
**Numeric view** - for viewing channel data values.

**Quick View:** A pre-defined single worksheet with one chart, one numeric display, one parameter editor.

**Custom View:** Worksheets and displays can be added to create a customized layout.

## About the Journal

Pi CalTool opens at the Journal, which has two main functions:

- To provide a complete record of all user activity during an editing session (**History Page**)
- To provide a managed undo/Redo of operations applied to a dataset (**Undo/Redo Page**).


The Journal defaults to the History page.
The Undo/Redo Pages are opened by clicking the Undo/Redo tabs in the main window.
The page which has focus is highlighted with a white background.

The options available in the command bar depend upon which page is selected.
In the example shown here **History** currently has focus, making the Open, Save and Clear. buttons visible.

Records can be filtered in History mode to show all activity, errors only or warnings only.

**Note**: The Journal does not have an explorer bar associated with it.

Pi CalTool opens at the Journal, which has two main functions:

- To provide a complete record of all user activity during an editing session (**History Page**)
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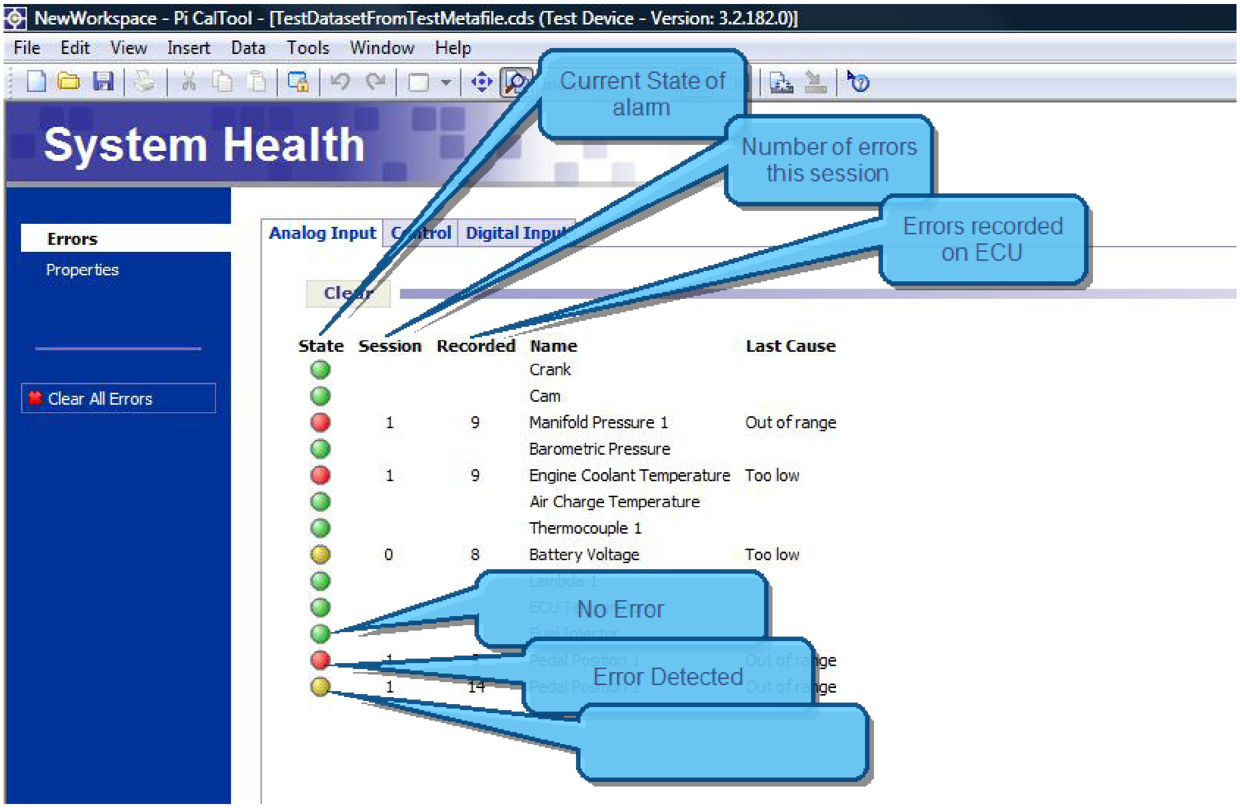
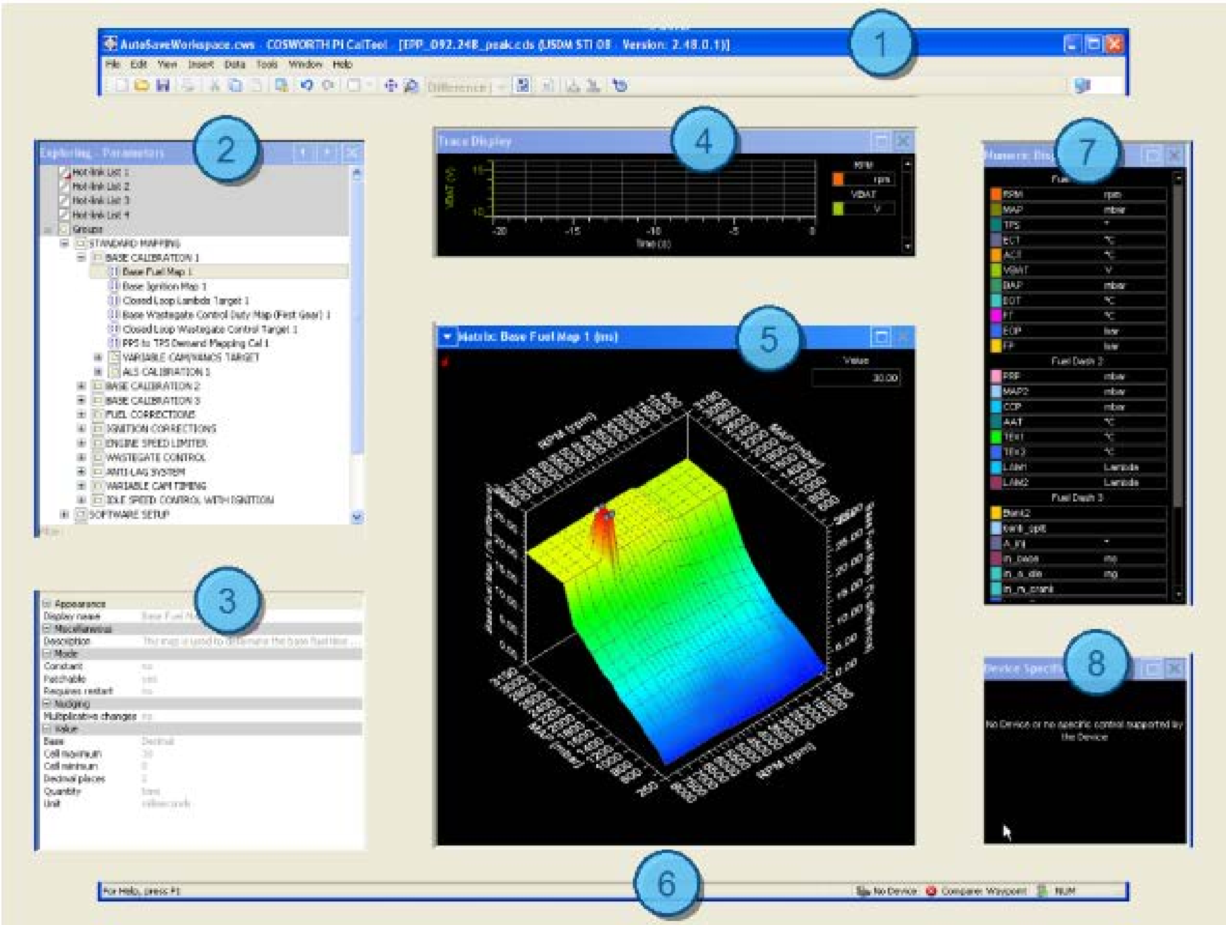
-

- The Journal defaults to the History page.
  The Undo/Redo Pages are opened by clicking the Undo/Redo tabs in the main window.
  The page which has focus is highlighted with a white background.
- The options available in the command bar depend upon which page is selected.
  In the example shown here **History** currently has focus, making the Open, Save and Clear. buttons visible.
- Records can be filtered in History mode to show all activity, errors only or warnings only.

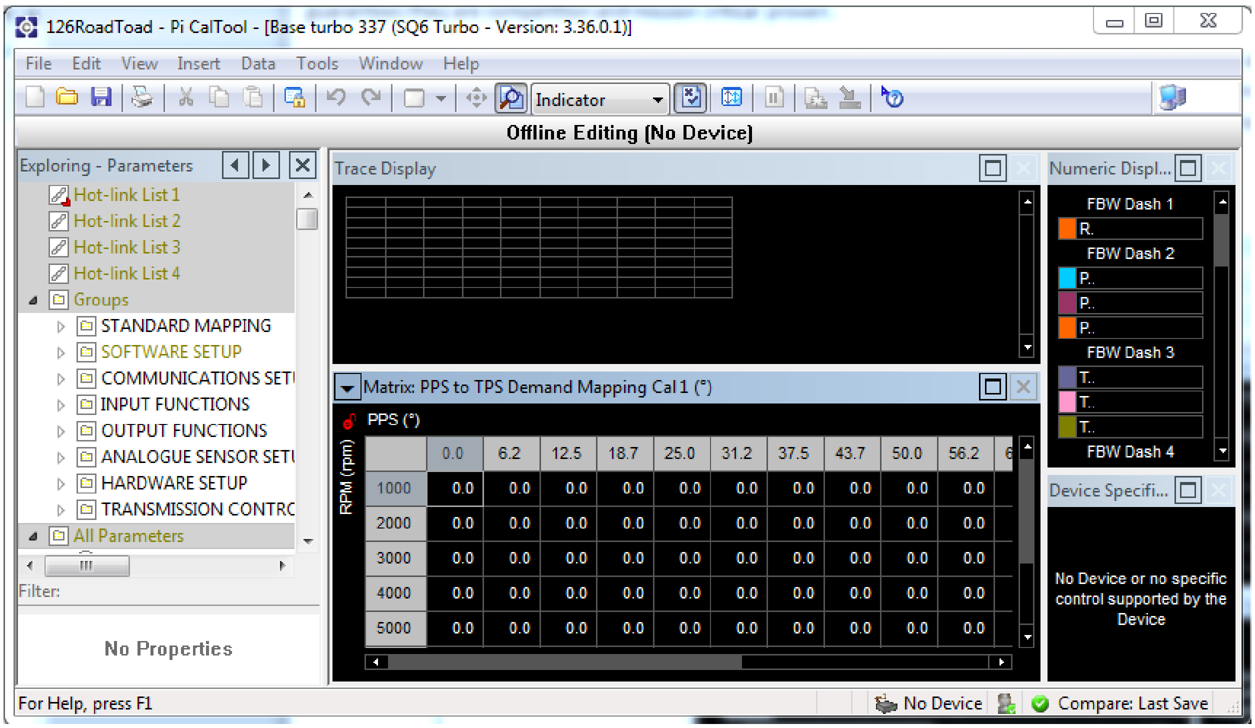



Diagnosing issues and monitoring complex motorsports electronics is made a lot easier by monitoring System Health. Analog and digital inputs




1. Toolbar
2. Explorer
3. Properties
4. Trace Display
5. Parameter Display
6. Status Bar
7. Numeric Display
8. Device Specific Display

Caltool 3.6 Workspace

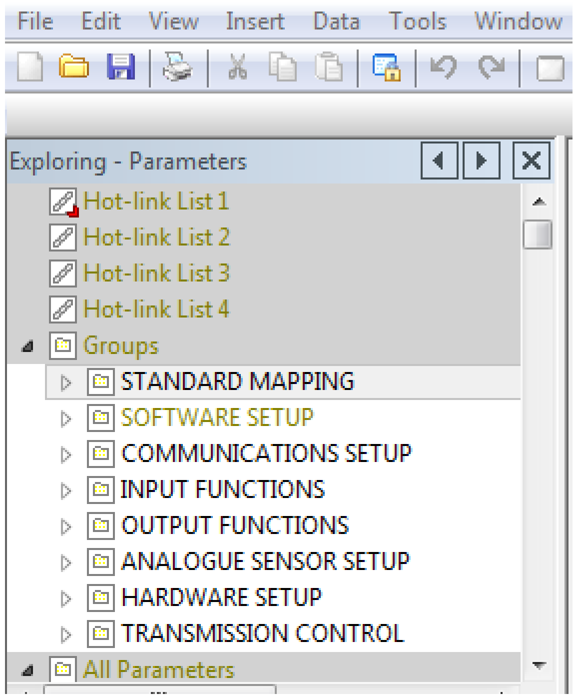



Caltool is a Windows program and all the conventions like cut and paste, minimize and maximize apply. Too bad it's not a Mac program, but then it's a tool and not a single button mouse dedication to elegance. Being able to cut and paste from Excel is a deal you make with the Redmond Devil. Find your elegance and style in the superb Pectel traction control software exiting turn 9.

We generally pre-write our Fuel Maps (4) in Excel and copy/paste them into Caltool. Being able to copy and paste data from other calibrations can save a lot of time, especially if you have written hundreds of formulas to speed the process. This beats the hell out of manually entering a potential of 5,000 four digit numbers.

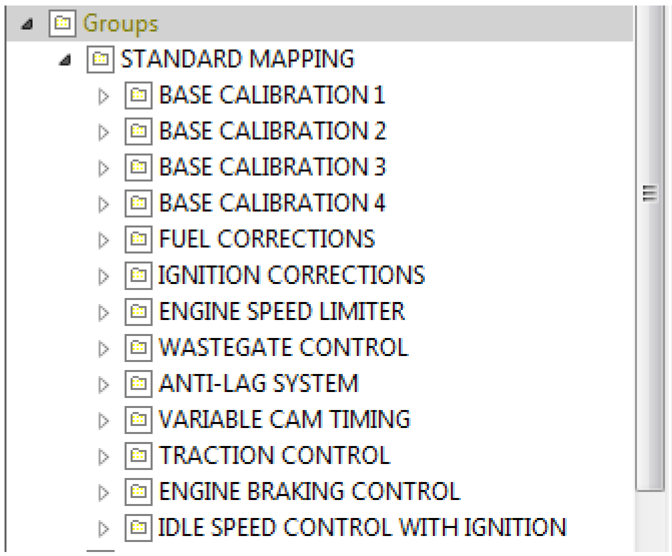
Once you setup your workspace you can save it.  Windows can be maximized and restored to their original size and position.

Exploring Parameters: Groups. This is where you begin

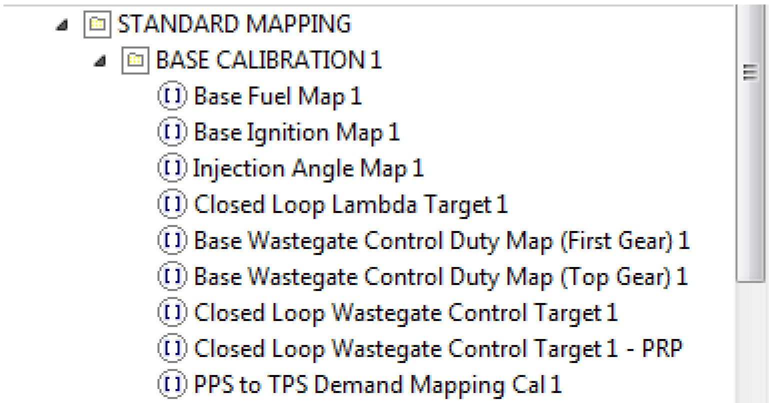


STANDARD MAPPING

There are eight categories in the "Groups" drop-down menu. This is where we start our entries. We begin with Standard Mapping. Standard Mapping, in turn, has 14 categories. There are four (4) Base Calibrations, switchable "on the fly". It does get complex, but then, winning hasn't gotten any easier. You do want to win don't you?



The four BASE CALIBRATIONS each have nine (9) categories. You set these up based on your strategy which may involve driver rotary switch selection or pre-planned triggering events based on sensor inputs…EGT, Lambda, Temperatures, Pressures etc.




There are four (4) Base Fuel Maps. These can be configured up to 50 rpm x 25 load sites i.e. a matrix of up to 1250 entries in milliseconds with a resolution of .01 milliseconds. That is .00001 second resolution. The rpm breakpoints can be equally spaced or you can, for example, set the breakpoints closer together for higher resolution in a particular rpm band. We write our initial fuel maps in Excel, with custom formulas, and paste the values into Caltool.

```
This map is used to determine the base fuel time when the engine
is running.

The actual fuel pulse injected is calculated by applying various
corrections to the base fuel time.

  t_inj_total = inj_base          : base fuel
              x inj_m_T_water     : water temperature correction
              x inj_m_T_air       : air charge temperature correction
              x inj_m_T_amb       : ambient air temperature correction
              x inj_m_T_fuel      : fuel temperature correction
              x inj_m_T_exh       : exhaust temperature correction
              x inj_m_P_amb       : ambient pressure correction
              x inj_m_P_fuel      : fuel pressure correction
              x inj_m_global      : global correction
              x inj_m_lambda      : closed loop lambda correction
              + inj_a_tps         : transient fuel correction
              + inj_a_V_bat       : battery voltage correction

NOTE: Closed loop lambda control MUST be disabled while adjusting
this map.

The current value can be viewed as "inj_base" on the dashboard.
```

There are eleven (11) modifiers to base injection matrix values for the four Base Fuel Maps. These are shown in the list above.

Matrix Editor (below):

Matrix: Base Fuel Map 1 (ms)

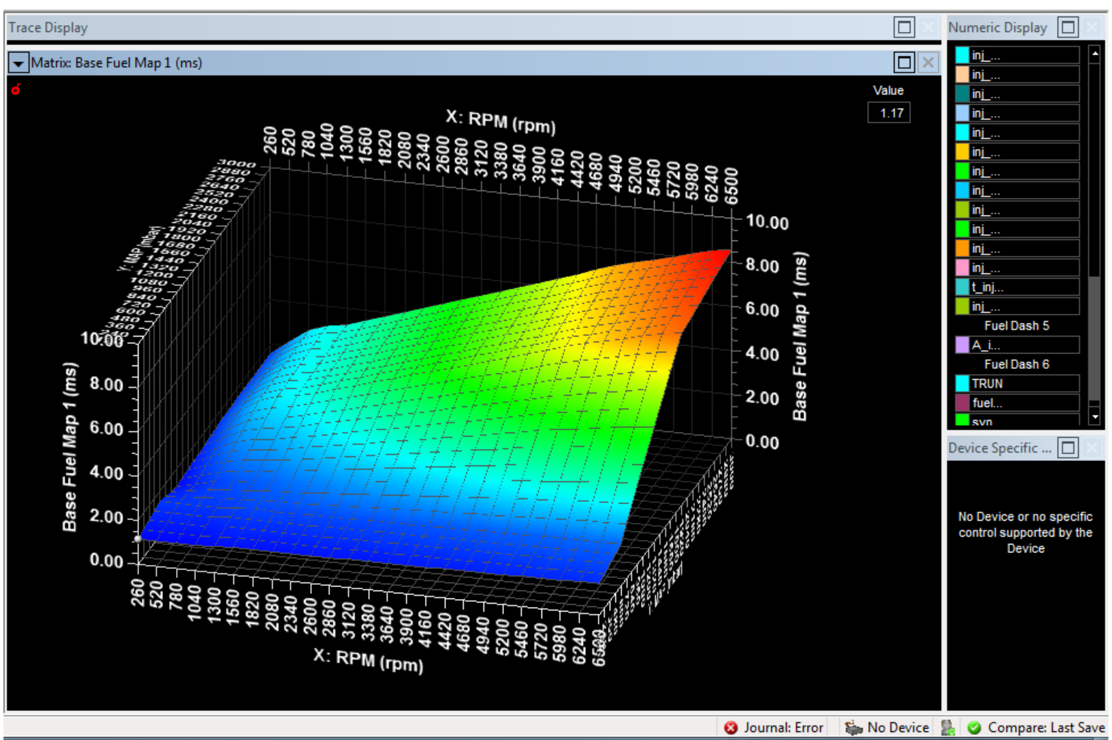
RPM (rpm) / MAP (mbar)

| MAP (mbar) | 260 | 520 | 780 | 1040 | 1300 | 1560 | 1820 | 2080 | 2340 | 2600 | 2860 | 3120 | 3380 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2520 | 1.58 | 2.16 | 2.74 | 3.03 | 3.18 | 3.43 | 3.70 | 3.98 | 4.25 | 4.52 | 4.79 | 5.07 | 5.34 |
| 2400 | 1.57 | 2.15 | 2.72 | 3.01 | 3.15 | 3.40 | 3.67 | 3.94 | 4.21 | 4.48 | 4.75 | 5.02 | 5.29 |
| 2280 | 1.57 | 2.13 | 2.70 | 2.98 | 3.12 | 3.37 | 3.64 | 3.90 | 4.18 | 4.44 | 4.70 | 4.97 | 5.23 |
| 2160 | 1.56 | 2.12 | 2.68 | 2.96 | 3.10 | 3.34 | 3.61 | 3.87 | 4.14 | 4.39 | 4.66 | 4.92 | 5.18 |
| 2040 | 1.55 | 2.10 | 2.66 | 2.93 | 3.07 | 3.31 | 3.57 | 3.83 | 4.10 | 4.35 | 4.61 | 4.87 | 5.13 |
| 1920 | 1.55 | 2.09 | 2.64 | 2.91 | 3.05 | 3.28 | 3.54 | 3.80 | 4.06 | 4.31 | 4.57 | 4.82 | 5.08 |
| 1800 | 1.50 | 2.01 | 2.51 | 2.76 | 2.89 | 3.11 | 3.35 | 3.58 | 3.82 | 4.06 | 4.29 | 4.53 | 4.77 |
| 1680 | 1.46 | 1.92 | 2.39 | 2.62 | 2.73 | 2.93 | 3.15 | 3.37 | 3.59 | 3.80 | 4.02 | 4.24 | 4.45 |
| 1560 | 1.42 | 1.84 | 2.26 | 2.47 | 2.58 | 2.76 | 2.96 | 3.15 | 3.36 | 3.55 | 3.75 | 3.94 | 4.14 |
| 1440 | 1.38 | 1.76 | 2.13 | 2.32 | 2.42 | 2.58 | 2.76 | 2.94 | 3.12 | 3.30 | 3.47 | 3.65 | 3.83 |
| 1320 | 1.34 | 1.67 | 2.01 | 2.18 | 2.26 | 2.41 | 2.57 | 2.73 | 2.89 | 3.04 | 3.20 | 3.36 | 3.52 |
| 1200 | 1.29 | 1.59 | 1.88 | 2.03 | 2.11 | 2.23 | 2.37 | 2.51 | 2.65 | 2.79 | 2.93 | 3.06 | 3.20 |
| 1080 | 1.25 | 1.51 | 1.76 | 1.89 | 1.95 | 2.06 | 2.18 | 2.30 | 2.42 | 2.53 | 2.65 | 2.77 | 2.89 |
| 960 | 1.21 | 1.42 | 1.63 | 1.74 | 1.79 | 1.88 | 1.98 | 2.08 | 2.18 | 2.28 | 2.38 | 2.48 | 2.58 |
| 840 | 1.33 | 1.47 | 1.61 | 1.68 | 1.74 | 1.81 | 1.88 | 1.94 | 2.01 | 2.08 | 2.15 | 2.22 | 2.30 |
| 720 | 1.44 | 1.51 | 1.58 | 1.62 | 1.69 | 1.74 | 1.77 | 1.80 | 1.84 | 1.88 | 1.93 | 1.97 | 2.01 |
| 600 | 1.56 | 1.56 | 1.56 | 1.56 | 1.64 | 1.67 | 1.66 | 1.65 | 1.67 | 1.68 | 1.70 | 1.72 | 1.73 |
| 480 | 1.46 | 1.46 | 1.46 | 1.46 | 1.54 | 1.56 | 1.56 | 1.55 | 1.56 | 1.58 | 1.59 | 1.61 | 1.62 |
| 360 | 1.37 | 1.37 | 1.37 | 1.37 | 1.43 | 1.46 | 1.45 | 1.45 | 1.46 | 1.47 | 1.49 | 1.50 | 1.52 |
| 240 | 1.27 | 1.27 | 1.27 | 1.27 | 1.33 | 1.36 | 1.35 | 1.34 | 1.36 | 1.37 | 1.38 | 1.39 | 1.41 |
| 120 | 1.17 | 1.17 | 1.17 | 1.17 | 1.23 | 1.25 | 1.25 | 1.24 | 1.25 | 1.26 | 1.28 | 1.29 | 1.30 |

| MAP (mbar) | 3640 | 3900 | 4160 | 4420 | 4680 | 4940 | 5200 | 5460 | 5720 | 5980 | 6240 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2520 | 5.61 | 5.88 | 6.15 | 6.43 | 6.72 | 7.02 | 7.24 | 7.45 | 7.67 | 7.89 | 8.11 | 8.25 |
| 2400 | 5.55 | 5.82 | 6.09 | 6.36 | 6.65 | 6.95 | 7.16 | 7.38 | 7.59 | 7.81 | 8.02 | 8.17 |
| 2280 | 5.50 | 5.77 | 6.03 | 6.30 | 6.59 | 6.88 | 7.09 | 7.30 | 7.51 | 7.72 | 7.94 | 8.08 |
| 2160 | 5.44 | 5.71 | 5.97 | 6.23 | 6.52 | 6.80 | 7.01 | 7.22 | 7.43 | 7.64 | 7.85 | 7.99 |
| 2040 | 5.39 | 5.65 | 5.91 | 6.17 | 6.45 | 6.73 | 6.94 | 7.15 | 7.35 | 7.56 | 7.77 | 7.90 |
| 1920 | 5.33 | 5.59 | 5.85 | 6.10 | 6.38 | 6.66 | 6.86 | 7.07 | 7.27 | 7.48 | 7.68 | 7.82 |
| 1800 | 5.00 | 5.24 | 5.47 | 5.71 | 5.97 | 6.23 | 6.41 | 6.60 | 6.79 | 6.98 | 7.17 | 7.30 |
| 1680 | 4.67 | 4.89 | 5.10 | 5.32 | 5.56 | 5.79 | 5.96 | 6.14 | 6.31 | 6.48 | 6.66 | 6.77 |
| 1560 | 4.34 | 4.53 | 4.73 | 4.93 | 5.14 | 5.36 | 5.52 | 5.67 | 5.83 | 5.99 | 6.15 | 6.25 |
| 1440 | 4.01 | 4.18 | 4.36 | 4.54 | 4.73 | 4.92 | 5.07 | 5.21 | 5.35 | 5.49 | 5.63 | 5.73 |
| 1320 | 3.67 | 3.83 | 3.99 | 4.15 | 4.32 | 4.49 | 4.62 | 4.74 | 4.87 | 5.00 | 5.12 | 5.21 |
| 1200 | 3.34 | 3.48 | 3.62 | 3.76 | 3.91 | 4.06 | 4.17 | 4.28 | 4.39 | 4.50 | 4.61 | 4.68 |
| 1080 | 3.01 | 3.13 | 3.25 | 3.37 | 3.49 | 3.62 | 3.72 | 3.81 | 3.91 | 4.00 | 4.10 | 4.16 |
| 960 | 2.68 | 2.78 | 2.88 | 2.97 | 3.08 | 3.19 | 3.27 | 3.35 | 3.43 | 3.51 | 3.59 | 3.64 |
| 840 | 2.37 | 2.44 | 2.51 | 2.58 | 2.66 | 2.74 | 2.79 | 2.85 | 2.91 | 2.97 | 3.02 | 3.07 |
| 720 | 2.06 | 2.10 | 2.14 | 2.19 | 2.23 | 2.28 | 2.32 | 2.35 | 2.39 | 2.43 | 2.46 | 2.49 |
| 600 | 1.75 | 1.76 | 1.78 | 1.79 | 1.81 | 1.83 | 1.84 | 1.86 | 1.87 | 1.89 | 1.90 | 1.92 |
| 480 | 1.64 | 1.65 | 1.67 | 1.68 | 1.70 | 1.71 | 1.73 | 1.74 | 1.76 | 1.77 | 1.78 | 1.80 |
| 360 | 1.53 | 1.54 | 1.56 | 1.57 | 1.58 | 1.60 | 1.61 | 1.62 | 1.64 | 1.65 | 1.67 | 1.68 |
| 240 | 1.42 | 1.43 | 1.44 | 1.46 | 1.47 | 1.48 | 1.50 | 1.51 | 1.52 | 1.53 | 1.55 | 1.56 |
| 120 | 1.31 | 1.32 | 1.33 | 1.35 | 1.36 | 1.37 | 1.38 | 1.39 | 1.40 | 1.42 | 1.43 | 1.44 |

ess F1 Journal: Error No Device Compare: Last Save

Matrix Surface Editor (below): Use cntrl Key and Arrow Keys to rotate or flip the display.

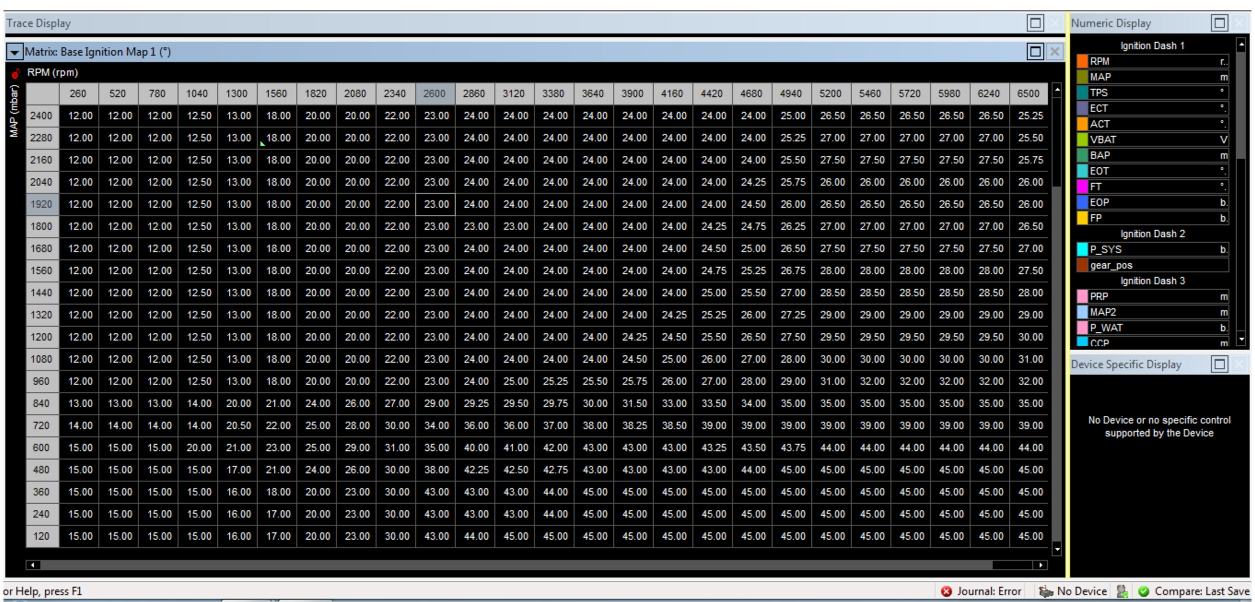


There are four (4) Base Ignition Maps. These can be configured up to 50 rpm x 25 load sites i.e. a matrix of up to 1250 entries with a resolution of .01 degrees in a range of -10.00 degrees to 50.00 degrees. The rpm breakpoints can be equally spaced or you can, for example, set the breakpoints closer together for higher resolution in a particular rpm band. We write our initial ignition maps in Excel, with custom formulas, and paste the values into Caltool.

There are nine (9) modifiers to the matrix values for the four Base Ignition Maps. These are listed below.

```
This map is used to determine the base ignition angle when the
engine is running.

The actual ignition angle used is calculated by applying various
corrections to the base ignition angle.

  A_ign_total = A_ign_base        : base ignition angle
              + ign_a_T_water     : water temperature correction
              + ign_a_T_air       : air charge temperature correction
              + ign_a_T_amb       : ambient air temperature correction
              + ign_a_T_oil       : engine oil temperature correction
              + ign_a_P_amb       : ambient pressure correction
              + ign_a_abv         : idle speed control correction
              + ign_a_det         : detonation correction
              + ign_a_sec_load    : secondary load correction
              + ign_a_global      : global correction

The current value can be viewed as "A_ign_base" on the dashboard.
```

Matrix Editor (below).




Matrix: Base Ignition Map 1 (°)

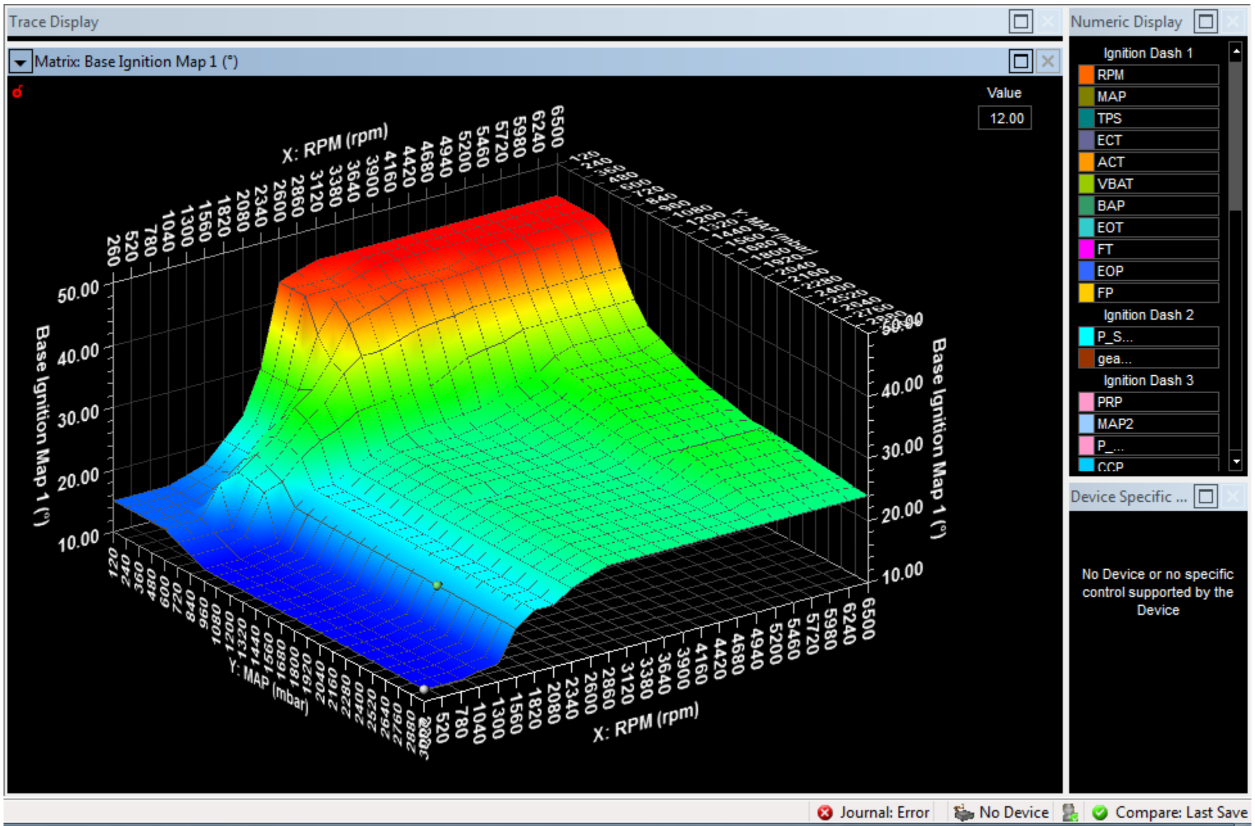
RPM (rpm) / MAP (mbar)

| MAP (mbar) | 260 | 520 | 780 | 1040 | 1300 | 1560 | 1820 | 2080 | 2340 | 2600 | 2860 | 3120 | 3380 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2400 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 2280 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 2160 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 2040 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 1920 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 1800 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 23.00 | 23.00 | 24.00 |
| 1680 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 1560 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 1440 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 1320 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 1200 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 1080 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 24.00 | 24.00 |
| 960 | 12.00 | 12.00 | 12.00 | 12.50 | 13.00 | 18.00 | 20.00 | 20.00 | 22.00 | 23.00 | 24.00 | 25.00 | 25.25 |
| 840 | 13.00 | 13.00 | 13.00 | 14.00 | 20.00 | 21.00 | 24.00 | 26.00 | 27.00 | 29.00 | 29.25 | 29.50 | 29.75 |
| 720 | 14.00 | 14.00 | 14.00 | 14.00 | 20.50 | 22.00 | 25.00 | 28.00 | 30.00 | 34.00 | 36.00 | 36.00 | 37.00 |
| 600 | 15.00 | 15.00 | 15.00 | 20.00 | 21.00 | 23.00 | 25.00 | 29.00 | 31.00 | 35.00 | 40.00 | 41.00 | 42.00 |
| 480 | 15.00 | 15.00 | 15.00 | 15.00 | 17.00 | 21.00 | 24.00 | 26.00 | 30.00 | 38.00 | 42.25 | 42.50 | 42.75 |
| 360 | 15.00 | 15.00 | 15.00 | 15.00 | 16.00 | 18.00 | 20.00 | 23.00 | 30.00 | 43.00 | 43.00 | 43.00 | 44.00 |
| 240 | 15.00 | 15.00 | 15.00 | 15.00 | 16.00 | 17.00 | 20.00 | 23.00 | 30.00 | 43.00 | 43.00 | 43.00 | 44.00 |
| 120 | 15.00 | 15.00 | 15.00 | 15.00 | 16.00 | 17.00 | 20.00 | 23.00 | 30.00 | 43.00 | 44.00 | 45.00 | 45.00 |

| MAP (mbar) | 3640 | 3900 | 4160 | 4420 | 4680 | 4940 | 5200 | 5460 | 5720 | 5980 | 6240 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2400 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 25.00 | 26.50 | 26.50 | 26.50 | 26.50 | 26.50 | 25.25 |
| 2280 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 25.25 | 27.00 | 27.00 | 27.00 | 27.00 | 27.00 | 25.50 |
| 2160 | 24.00 | 24.00 | 24.00 | 24.00 | 24.00 | 25.50 | 27.50 | 27.50 | 27.50 | 27.50 | 27.50 | 25.75 |
| 2040 | 24.00 | 24.00 | 24.00 | 24.00 | 24.25 | 25.75 | 26.00 | 26.00 | 26.00 | 26.00 | 26.00 | 26.00 |
| 1920 | 24.00 | 24.00 | 24.00 | 24.00 | 24.50 | 26.00 | 26.50 | 26.50 | 26.50 | 26.50 | 26.50 | 26.00 |
| 1800 | 24.00 | 24.00 | 24.00 | 24.25 | 24.75 | 26.25 | 27.00 | 27.00 | 27.00 | 27.00 | 27.00 | 26.50 |
| 1680 | 24.00 | 24.00 | 24.00 | 24.50 | 25.00 | 26.50 | 27.50 | 27.50 | 27.50 | 27.50 | 27.50 | 27.00 |
| 1560 | 24.00 | 24.00 | 24.00 | 24.75 | 25.25 | 26.75 | 28.00 | 28.00 | 28.00 | 28.00 | 28.00 | 27.50 |
| 1440 | 24.00 | 24.00 | 24.00 | 25.00 | 25.50 | 27.00 | 28.50 | 28.50 | 28.50 | 28.50 | 28.50 | 28.00 |
| 1320 | 24.00 | 24.00 | 24.25 | 25.25 | 26.00 | 27.25 | 29.00 | 29.00 | 29.00 | 29.00 | 29.00 | 29.00 |
| 1200 | 24.00 | 24.25 | 24.50 | 25.50 | 26.50 | 27.50 | 29.50 | 29.50 | 29.50 | 29.50 | 29.50 | 30.00 |
| 1080 | 24.00 | 24.50 | 25.00 | 26.00 | 27.00 | 28.00 | 30.00 | 30.00 | 30.00 | 30.00 | 30.00 | 31.00 |
| 960 | 25.50 | 25.75 | 26.00 | 27.00 | 28.00 | 29.00 | 31.00 | 32.00 | 32.00 | 32.00 | 32.00 | 32.00 |
| 840 | 30.00 | 31.50 | 33.00 | 33.50 | 34.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 | 35.00 |
| 720 | 38.00 | 38.25 | 38.50 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 | 39.00 |
| 600 | 43.00 | 43.00 | 43.00 | 43.25 | 43.50 | 43.75 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 | 44.00 |
| 480 | 43.00 | 43.00 | 43.00 | 43.00 | 44.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |
| 360 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |
| 240 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |
| 120 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 | 45.00 |

Matrix of ignition timing for Map1. Manifold Pressure in millibar on Y Axis and RPM on the X Axis. Up to 25 load and 50 rpm sites can be specified. Here we have a 3 Bar application set in a 25 x 25 matrix. You scroll up to get the rest of the matrix. Values are in degrees before TDC.

Matrix Surface Editor (below): Use cntrl Key and Arrow Keys to rotate or flip the display.



Injection Angle (Maps 1-4): Expressed in degrees in two decimal places in .25 degree increments. Range .25 to 720 degrees.

```
The "Injection Angle" is used to set the engine angle at which the fuel
injection pulse will start/end. The correct setting of this angle is important
as it will affect the mixture preparation (and so engine power). This map is
usually adjusted once a satisfactory base fuel calibration has been established.
Changes to this map will affect the air fuel ratio, so the base fuel map may
have to be adjusted as the optimum angles are found.

The current value can be viewed as "A_inj" on the dashboard.
```

```
This map sets the Closed Loop Lambda target value for Base Fuel Map 1.
If a lambda target of 0 is selected closed loop control will disabled
at that point.

The current value can be viewed as "lambda_target" on the dashboard.
```

Entries in the Closed Loop Lambda are between 0.00 and 1.30 to two decimal places. A 14.68:1 Air/Fuel Ratio is Lambda 1.00. An Air/Fuel Ratio of 13.2:1 equates to Lambda .90

Base Wastegate Control Duty Map **First Gear** (Maps 1-4):

Matrix: Base Wastegate Control Duty Map (First Gear) 1 (%)

RPM (rpm) / wg_demand (°)

| | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 70.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 60.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 50.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 40.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| 30.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |

```
This map is used to detrmine the base duty cycle for the wastegate control
valve. A value of 100 in this map should give maximum boost and a value of
0 minimum. If this is reversed, the "Wastegate Control Valve Configuration"
should be checked, as closed loop operation will not function correctly.

The final duty cylce applied to the valve is subject to correction:

  D_wg_total = D_wg_base          : base duty
             + wg_a_T_air         : air charge temperature correction
             + wg_a_T_amb         : ambient air temperature correction
             + wg_a_P_amb         : ambient pressure correction
             + wg_a_base_T        : adder based on current target
             + wg_a_global        : global correction
             + I_term             : closed loop integral term
             + P_term             : closed loop proportional term
             + D_term             : closed loop derivative term

The closed loop terms are only applied if closed loop control is enabled.

NOTE: Closed loop operation MUST be disabled when adjusting this map

The current value can be viewed as "D_wg_base" on the dashboard.

If using gear based wastegate control, this map is for the specified gear.
If not using gear based control then only the first gear map is used.
See the map "Wastegate Gear Based Duty Ratio" for more information on
gear based control.
```

Base Wastegate Control Duty Map **Top Gear** (Maps 1-4): same as above:

Closed Loop Wastegate Control Target1:

Matrix: Closed Loop Wastegate Control Target 1 (Target)

RPM (rpm) / wg_demand (°)

| | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80.0 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 0 |
| 70.0 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 0 |
| 60.0 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 0 |
| 50.0 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 0 |
| 40.0 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 0 |
| 30.0 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 1400 | 0 |

```
This map sets the closed loop target for the wastegate control system. The
target type (MANIFOLD_PRESSURE, RESTRICTOR_PRESSURE, TURBO_SPEED or
MANIFOLD_PRESSURE_2, P_WASTEGATE, DUAL_MAP_AND_PRP) should first be set in the
"Closed Loop Wastegate Control Target Type".

Closed loop control is only enabled if the throttle angle is greater than or
equal to the angle at the top row of the base duty map.

The target is subject to correction:

  wg_target_total = ( wg_target_base      : base target
                    + wg_target_a_T_air    : air charge temperature correction
                    + wg_target_a_T_amb    : ambient air temperature correction
                    + wg_target_a_P_amb )  : ambient pressure correction
                    x wg_target_m_torque   : strain gauge torque correction

The current value can be viewed as "wg_target_base" on the dashboard.

For a turbo speed target the units are 100 RPM/bit
For pressure targets the units are always 1 mbar/bit
```

Closed Loop Wastegate Control Target1-PRP(below): Cell values 0 to 4000

Matrix: Closed Loop Wastegate Control Target 1 - PRP (Target)

RPM (rpm) / wg_demand (°)

| | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 70.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 60.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
PRP target used when dual control (MAP and PRP) is selected
```

PPS to TPD Demand Mapping Cal 1: TPS Demand is looked up from this map.

Matrix: PPS to TPS Demand Mapping Cal 1 (°)

PPS (°) / RPM (rpm)

| RPM (rpm) | 12.5 | 18.7 | 25.0 | 31.2 | 37.5 | 43.7 | 50.0 | 56.2 | 62.5 | 68.7 | 75.0 | 81.2 | 87.5 | 93.7 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 3000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 4000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 5000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 7000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Variable Cam VANOS Target: For variable inlet and exhaust camshafts.

Inlet Cam Timing Target Angle (Maps 1- 4) below:

Matrix: Inlet Cam Timing Target Angle 1 (°)

RPM (rpm) / MAP (mbar)

| MAP (mbar) | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 | 7000 | 7500 | 8000 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 |
| 400 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 |
| 300 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 |
| 200 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 |
| 105 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 | 400.00 |

This map is used to select the desired camshaft position when closed loop control is enabled for inlet camshafts.

This map is used when Cal 1 is active.

The current value can be viewed as "inVCamTarget" on the dashboard.

Exhaust Cam Timing Target Angle (Maps 1-4) below:

Matrix: Exhaust Cam Timing Target Angle 1 (°)

RPM (rpm)

| MAP (mbar) | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 | 7000 | 7500 | 8000 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 500 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 |
| 400 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 |
| 300 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 |
| 200 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 |
| 105 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 | 140.00 |

This map is used to select the desired camshaft position when closed loop control is enabled for exhaust camshafts.

This map is used when Cal 1 is active.

The current value can be viewed as "exVCamTarget" on the dashboard.

ALS Calibration (Anti-Lag System): For turbocharged applications.

Matrix: ALS Fuel Cut 1 (%)

RPM (rpm)

| TPS (°) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15.0 | 0.0 | 48.5 | 79.0 | 82.0 | 81.5 | 64.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 | 59.0 |
| 9.0 | 10.0 | 47.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 |
| 6.0 | 10.0 | 45.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 | 64.0 |

ALS Fuel Cut: % TPS versus RPM (above)

Matrix: ALS Fuel Multiplier 1 (%)

| TPS (°) \ RPM (rpm) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 41.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 32.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 22.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 15.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 9.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 6.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

ALS Fuel Multiplier Maps 1-4 (above): When ALS is active and the engine is running, the base fuel time will be multiplied by the value in this map.

Matrix: ALS Ignition Angle 1 (°)

| TPS (°) \ RPM (rpm) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

ALS Ignition Angle Maps 1-4 (above): TPS degrees versus RPM

Matrix: Recovery Fuel Cut 1 (%)

| TPS (°) \ RPM (rpm) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 |
| 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 | 90.0 |

Recovery Fuel Cut Maps 1-4 (above): TPS degrees versus RPM

Matrix: Recovery Ignition Angle 1 (°)

RPM (rpm)

| TPS (°) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 59.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 41.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 32.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 22.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 15.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 9.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 6.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

Recovery Ignition Angle Maps 1-4 (above): TPS degrees versus RPM

Matrix: ALS Valve Duty 1 (%)

RPM (rpm)

| | 4200 | 4600 | 5000 | 5400 | 5800 | 6200 | 6600 | 7000 | 7400 | 7800 | 8200 | 8600 | 9000 | 9400 | 9800 | 10200 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

ALS Valve Duty Maps 1-4 (above): Duty cycle versus RPM

Matrix: ALS Injector Fuel Map 1 (ms)

RPM (rpm)

| PCP (mbar) | 433 | 867 | 1300 | 1733 | 2167 | 2600 | 3033 | 3467 | 3900 | 4333 | 4767 | 5200 | 5633 | 6067 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1800 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1600 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1400 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1200 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

ALS Injector Fuel Maps 1-4 (above):

Scalar: ALS Injector Frequency 1 (Hz)

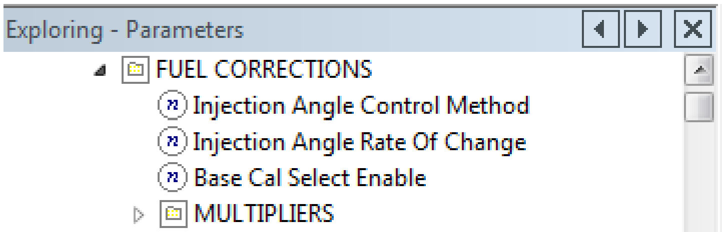
| | |
|---|---|
| ALS Injector Frequency 1 (Hz) | 100 |

ALS Injector Frequency Maps 1-4: Value in Hertz (cycles per second). Values 25 to 200

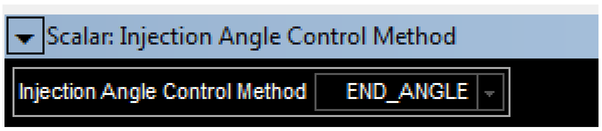
This ends the entries for the Four (4) BASE CALIBRATIONS

---

FUEL CORRECTIONS (3):

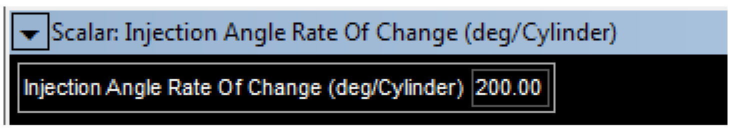



Injection Angle Control Method (below): END_ANGLE or START_ANGLE

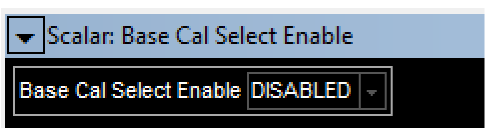



Injection pulses can be controlled to either begin or end at the point specified by the various Injection Angle maps. This map determines which method is used, and applies to both CRANK and RUN modes. Injection Angle Movement Limiting is active in either circumstance.

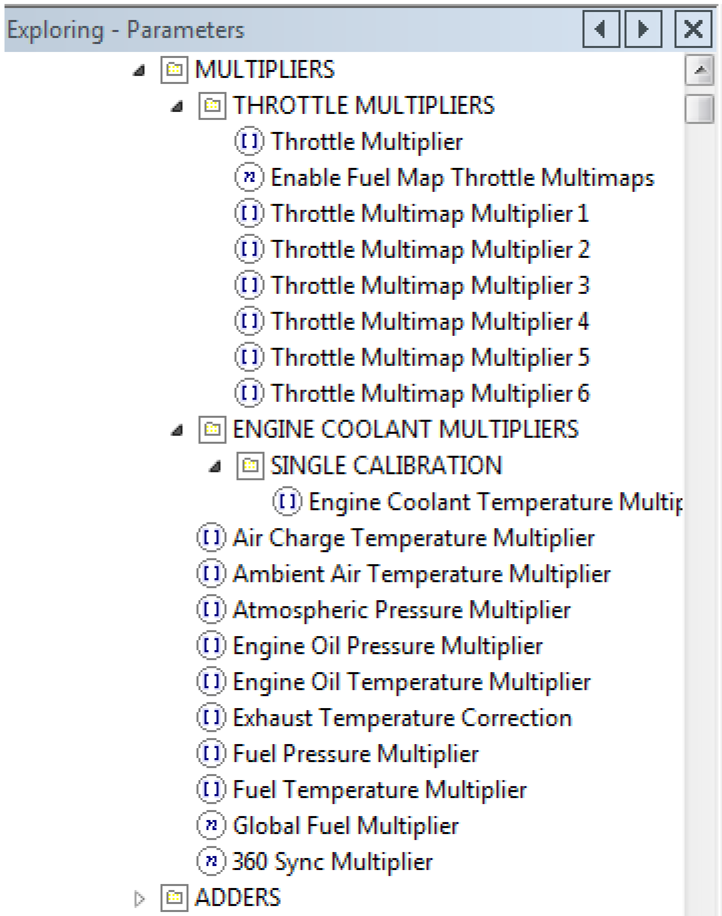
Injection Angle Rate of Change (below): .25 degrees to 719.75 degrees in .25 degree increments.




Base Cal Select Enable/Disable (below):



MULTIPLIERS: A total of 19 multipliers



Throttle Multiplier: Entries are to three decimal places 0.000 to 3.000 ; TPS angle v. RPM.

Matrix: Throttle Multiplier

RPM (rpm)

| TPS (°) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 85.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 80.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 75.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 70.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 65.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 60.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 55.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 50.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 45.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 40.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 30.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 25.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 20.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 0.0 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Enable Fuel Map Throttle Multimaps (below): ENABLE or DISABLE

Scalar: Enable Fuel Map Throttle Multimaps

| | |
|---|---|
| Enable Fuel Map Throttle Multimaps | DISABLED |

Throttle Multimap Multipler (below): A total of six maps. Manifold Absolute Pressure (MAP) v. RPM

Matrix: Throttle Multimap Multiplier 1

RPM (rpm)

| MAP (mbar) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2812 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2625 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2438 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2250 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2062 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1875 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1688 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1500 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1312 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1125 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 938 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 750 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 562 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 375 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 188 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Engine Coolant Multipliers: Ten multipliers (below)

Exploring - Parameters

- ENGINE COOLANT MULTIPLIERS
  - Air Charge Temperature Multiplier
  - Ambient Air Temperature Multiplier
  - Atmospheric Pressure Multiplier
  - Engine Oil Pressure Multiplier
  - Engine Oil Temperature Multiplier
  - Exhaust Temperature Correction
  - Fuel Pressure Multiplier
  - Fuel Temperature Multiplier
  - Global Fuel Multiplier
  - 360 Sync Multiplier
- ADDERS

Air Charge Temperature Multiplier (below): Decimal to three places 0.000 to 2.000; MAP v. Air Charge Temperature. If intercooled post intercooler.

Matrix: Air Charge Temperature Multiplier

ACT (°C) / MAP (mbar)

| MAP (mbar) \ ACT (°C) | -30.0 | -20.0 | -10.0 | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 | 110.0 | 120.0 | 130.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1000 | 1.159 | 1.145 | 1.128 | 1.106 | 1.076 | 1.052 | 1.029 | 1.000 | 0.976 | 0.953 | 0.953 | 0.940 | 0.927 | 0.915 | 0.903 | 0.891 | 0.879 |
| 1100 | 1.159 | 1.145 | 1.128 | 1.106 | 1.076 | 1.052 | 1.029 | 1.000 | 0.976 | 0.953 | 0.953 | 0.940 | 0.927 | 0.915 | 0.903 | 0.891 | 0.879 |
| 1200 | 1.159 | 1.145 | 1.128 | 1.106 | 1.076 | 1.052 | 1.029 | 1.000 | 0.976 | 0.953 | 0.953 | 0.940 | 0.927 | 0.915 | 0.903 | 0.891 | 0.879 |
| 1300 | 1.159 | 1.145 | 1.128 | 1.106 | 1.076 | 1.052 | 1.029 | 1.000 | 0.976 | 0.953 | 0.953 | 0.940 | 0.927 | 0.915 | 0.903 | 0.891 | 0.879 |
| 1400 | 1.159 | 1.145 | 1.128 | 1.106 | 1.076 | 1.052 | 1.029 | 1.000 | 0.976 | 0.953 | 0.953 | 0.940 | 0.927 | 0.915 | 0.903 | 0.891 | 0.879 |

```
This multiplier is used to correct the base fuel time for
changes in air charge temperature.

Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_T_air" on the dashboard.
```

Ambient Air Temperature Multiplier (below): Decimal to three places 0.000 to 2.000

Matrix: Ambient Air Temperature Multiplier

| AAT (°C) | -30.0 | -20.0 | -10.0 | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 | 110.0 | 120.0 | 130.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to correct the base fuel time for
changes in ambient air temperature.

Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_T_amb" on the dashboard.
```

Atmospheric Pressure Multiplier (below): Decimal to three places 0.600 to 1.200

Matrix: Atmospheric Pressure Multiplier

BAP (mbar)

| | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to correct the base fuel time for
changes in atmospheric pressure.

Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_P_amb" on the dashboard.
```

Engine Oil Pressure Multiplier (below): Decimal to three places 0.000 to 1.000

Matrix: Engine Oil Pressure Multiplier

EOP (bar)

| | 0.60 | 0.65 | 0.70 | 0.75 | 0.80 | 0.85 | 0.90 | 0.95 | 1.00 | 1.05 | 1.10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to correct the base fuel for
changes in Engine Oil Pressure.

Example values:   1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_EOP" on the dashboard.
```

Engine Oil Temperature Multiplier (below): Decimal to three places 0.000 to 1.000

Matrix: Engine Oil Temperature Multiplier

EOT (°C)

| | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to correct the base fuel for
changes in Engine Oil Temperature.

Example values:   1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_EOT" on the dashboard.
```

Exhaust Temperature Correction % (below): Decimal to three places 0.000 to 1.992

Matrix: Exhaust Temperature Correction (%)

Exhaust Temperature Correction Breakpoints (°C)

| -100 | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This map is used to apply a correction to the fuel pulse as the
exhaust temperature changes. It is usually used to make the engine
run richer when the exhaust temperature is high.

NOTE: If closed loop lambda control is enabled the closed loop target
      must also be corrected as a function of exhaust temperature

The current value can be viewed as "inj_m_T_exh" on the dashboard.
```

Fuel Pressure Multiplier (below): Decimal to three places 0.000 to 2.000

Matrix: Fuel Pressure Multiplier

FP (bar)

| 7.00 | 7.20 | 7.40 | 7.60 | 7.80 | 8.00 | 8.20 | 8.40 | 8.60 | 8.80 | 9.00 | 9.20 | 9.40 | 9.60 | 9.80 | 10.00 | 10.20 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to correct the base fuel time for
changes in fuel pressure.

Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_P_fuel" on the dashboard.
```

Fuel Temperature Multiplier (below): Decimal to three places 0.000 to 2.000

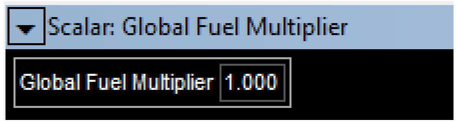
Matrix: Fuel Temperature Multiplier

FT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to correct the base fuel time for
changes in fuel temperature.

Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_T_fuel" on the dashboard.
```

Global Fuel Multiplier (below): Decimal to three places 0.000 to 2.000




```
This multiplier is used to enable a user correction to the ENTIRE
Base Fuel Map.

Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease

The current value can be viewed as "inj_m_global" on the dashboard.
```

360 Sync Multiplier (below): Decimal to three places 0.000 to 1.000


```
When the ECU has a valid cam sensor signal it will be in 720 sync
mode and will inject a fuel pulse on each cylinder every 2 engine
revolutions.

This multiplier is used to correct the base fuel time whilst the
ECU is running in 360 synchronization mode (no valid signal from
the camshaft sensor). In this mode the ECU injects fuel every rev
rather every two revs. A typical value for this multiplier is 0.56
which gives 56% of the normal fuel pulse injected every rev.

The current ECU operating mode can be viewed as "sync_mode" on the
dashboard.
```

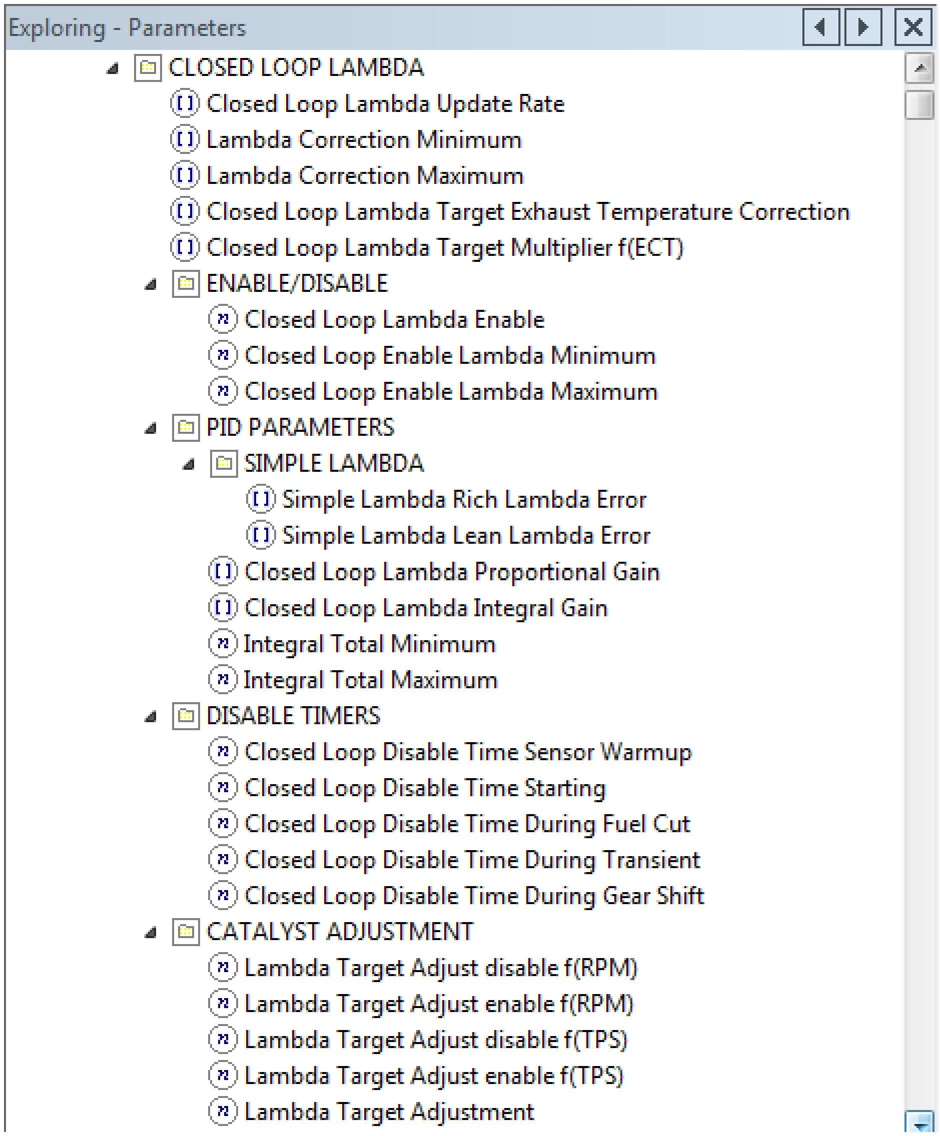
ADDERS: Battery Adder: Decimal to three places 0.000 to 2.500

Matrix: Battery Adder (ms)

| VBAT (V) | 8.00 | 8.50 | 9.00 | 9.50 | 10.00 | 10.50 | 11.00 | 11.50 | 12.00 | 12.50 | 13.00 | 13.50 | 14.00 | 14.50 | 15.00 | 15.50 | 16.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2.500 | 2.300 | 2.100 | 1.904 | 1.704 | 1.604 | 1.500 | 1.400 | 1.296 | 1.224 | 1.148 | 1.076 | 1.000 | 0.952 | 0.904 | 0.860 | 0.812 |

```
This adder is used to correct the base fuel time for changes
in battery voltage. This is needed as the opening speed of a fuel
injector varies with voltage.

The current value can be viewed as "inj_a_V_bat" on the dashboard.
```

Closed Loop Lambda



Closed Loop Lambda Update Rate (below): Value in Milliseconds 10 to 1000

Matrix: Closed Loop Lambda Update Rate (ms)

RPM (rpm)

| | 2000 | 4000 | 8000 | 10000 |
|---|---|---|---|---|
| | 100 | 80 | 60 | 40 |

```
Specifies the rate at which proportional and integral terms are calculated
and the lambda multiplier (inj_m_lambda) is calculated for each sensor.

Note that the integral term is scaled by this map so that the integrator
has the same effect on the output irrespective of the update rate.
```

Lambda Correction Minimum (below): Three decimal places 0.000 to 1.000

Matrix: Lambda Correction Minimum

ECT (°C)

| | -20 | 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 |
|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.950 | 0.950 | 0.950 | 0.950 |

```
The closed loop lambda injection multiplier is clipped if its value
is less than the LAMBDA CORRECTION MINIMUM. This allows the amount
of enleanment to be limited as a function of water temperature.

NOTE: Closed loop enleanment can be disabled at low water temperatures
      by setting the LAMBDA CORRECTION MINIMUM to 1.0 at these points
```

Lambda Correction Maximum (below): Decimal three places 1.000 to 2.000

Matrix: Lambda Correction Maximum

ECT (°C)

| | -20 | 0 | 20 | 40 | 60 | 80 | 100 | 120 | 140 |
|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.050 | 1.050 | 1.050 | 1.050 |

```
The closed loop lambda injection multiplier is clipped if its value
is greater than the LAMBDA CORRECTION MAXIMUM. This allows the amount
of enrichment to be limited as a function of water temperature.

NOTE: Closed loop enrichment can be disabled at low water temperatures
      by setting the LAMBDA CORRECTION MAXIMUM to 1.0 at these points
```

Closed Loop Lambda Target Exhaust Temperature Correction (below):

Matrix: Closed Loop Lambda Target Exhaust Temperature Correction (%)

Exhaust Temperature Correction Breakpoints (°C)

| | -100 | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 | 1100 | 1200 | 1300 | 1400 | 1500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This map is used to apply a correction to the closed loop lambda
target as the exhaust temperature changes. It is usually used to
make the engine run richer when the exhaust temperature is high.

The current value can be viewed as "lambda_a_T_exh" on the dashboard.
```

Closed Loop Lambda Target Multiplier f(ECT) (below): Decimal to two places 0.80 to 1.20

Matrix: Closed Loop Lambda Target Multiplier f(ECT)

ECT (°C)

| | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

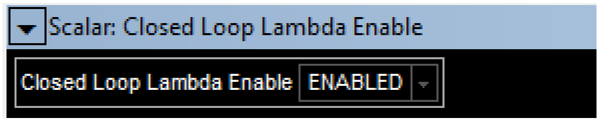
```
This map is used to apply a correction to the closed loop lambda
target as the water temperature changes.

The current value can be viewed as "lam_target_ECT" on the dashboard.
```

Closed Loop Lambda: ENABLED/DISABLED; Three categories

Exploring - Parameters

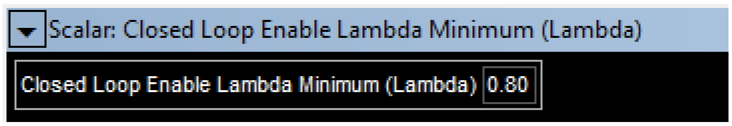
- CLOSED LOOP LAMBDA
  - Closed Loop Lambda Update Rate
  - Lambda Correction Minimum
  - Lambda Correction Maximum
  - Closed Loop Lambda Target Exhaust Temperature Correction
  - Closed Loop Lambda Target Multiplier f(ECT)
  - ENABLE/DISABLE
    - Closed Loop Lambda Enable
    - Closed Loop Enable Lambda Minimum
    - Closed Loop Enable Lambda Maximum

Closed Loop Lambda Enable (below): ENABLED/DISABLED




Closed loop lambda control can be enabled/disabled using this map.
Closed loop control MUST be disabled when adjusting the Base Fuel Map.

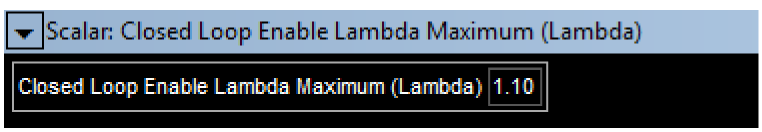
Closed Loop Enable Lambda Minimum (below): Decimal to two places 0.00 to 3.00




Closed loop lambda operation is only be enabled when the wideband lambda reading is greater than this value.

This map is not checked for simple lambda readings.

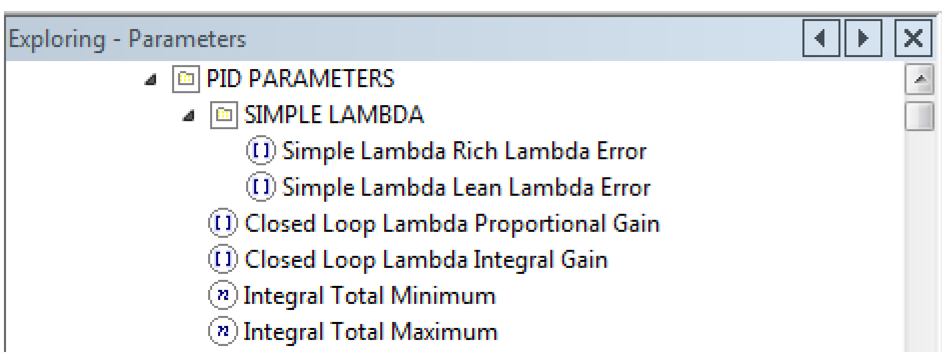
Closed Loop Enable Lambda Maximum (below): Decimal to two places 0.00 to 3.00




Closed loop lambda operation is only be enabled when the wideband lambda reading is less than this value.

This map is not checked for simple lambda readings.

Closed Loop Lambda: PID Parameters (below): Proportional-Integral-Derivative control loop feedback mechanism (controller)



Simple Lambda Rich Lambda Error (below): Decimal to three places 0.000 to 0.250

Matrix: Simple Lambda Rich Lambda Error (Lambda)

Time_since_last_switch (s)

| | 0.00 | 0.25 | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.25 | 2.50 | 2.75 | 3.00 | 3.25 | 3.50 | 3.75 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |

Simple Lambda Lean Error (below): Decimal to three places 0.000 to 0.250

Matrix: Simple Lambda Lean Lambda Error (Lambda)

Time_since_last_switch (s)

| | 0.00 | 0.25 | 0.50 | 0.75 | 1.00 | 1.25 | 1.50 | 1.75 | 2.00 | 2.25 | 2.50 | 2.75 | 3.00 | 3.25 | 3.50 | 3.75 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 | 0.010 |

Closed Loop Lambda Proportional Gain (below): Decimal ti three places 0.000 to 63.999

Matrix: Closed Loop Lambda Proportional Gain

RPM (rpm)

| MAP (mbar) | 2000 | 4000 | 8000 | 10000 |
|---|---|---|---|---|
| 800 | 6.145 | 6.145 | 6.145 | 6.145 |
| 600 | 5.072 | 5.072 | 5.251 | 5.251 |
| 400 | 4.000 | 4.000 | 4.357 | 4.357 |
| 320 | 4.000 | 4.000 | 4.000 | 4.000 |

This map controls the gain for the proportional term in the PID controller

Closed Loop Lambda Integral Gain (below): Decimal to three places 0.000 to 16.000

Matrix: Closed Loop Lambda Integral Gain

RPM (rpm)

| MAP (mbar) | 2000 | 4000 | 8000 | 10000 |
|---|---|---|---|---|
| 800 | 0.375 | 0.375 | 0.375 | 0.375 |
| 600 | 0.379 | 0.379 | 0.375 | 0.375 |
| 400 | 0.383 | 0.383 | 0.375 | 0.375 |
| 320 | 0.385 | 0.385 | 0.375 | 0.375 |

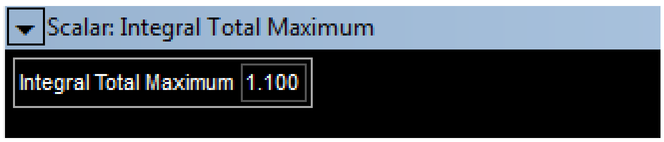
This map controls the gain for the integral term in the PID controller

Integral Total Minimum (below): Decimal to three places 0.000 to 1.000


The effect of the integral controller during lean operation can be limited using this map

This point sets the minimum value of the integral muliplier

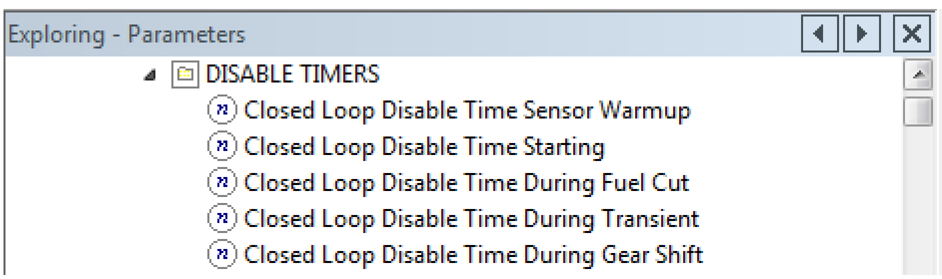
Integral Total Maximum (below): Decimal to three places 0.000 to 1.000



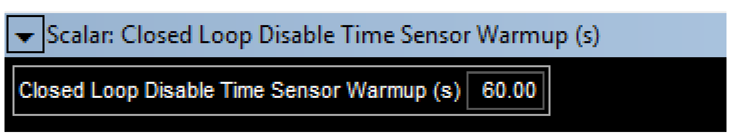

The effect of the integral controller during rich operation can be limited using this map

This point sets the maximum value of the integral muliplier

Closed Loop Lambda: Disable Timers

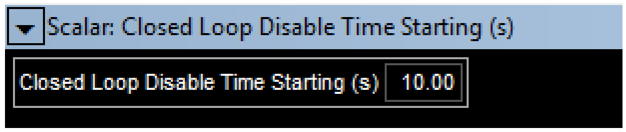



Closed Loop Disable Time Sensor Warmup(s) (below): Time, decimal, two places 0.00 to 655.35 in seconds



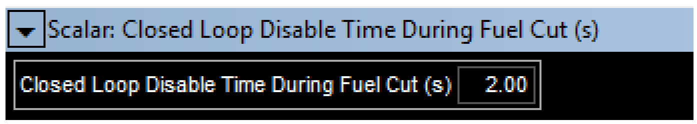

This point sets the time after power-on before closed loop lambda operation may be enabled

Closed Loop Disable Time Starting (below): Time, decimal, two places 0.00 to 655.35 in seconds




This point sets the time after engine start before closed loop lambda operation may be enabled

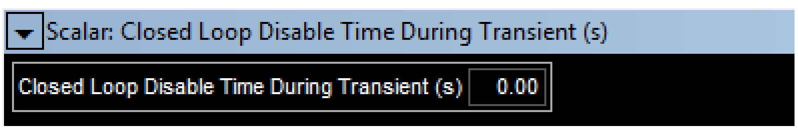
Closed Loop Disable Time During Fuel Cut (s) (below): Time, decimal, two places 0.00 to 655.35 in seconds




This point sets the time after a fuel cut before closed loop lambda operation may be enabled again.

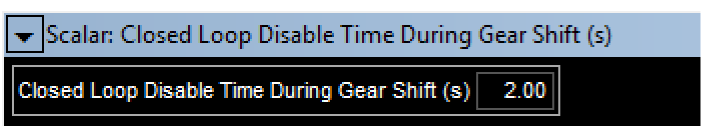
Fuel cut occurs during engine speed limiting and ORFC

Closed Loop Disable Time During Transient (s) (below): Time, decimal, two places 0.00 to 655.35 in seconds



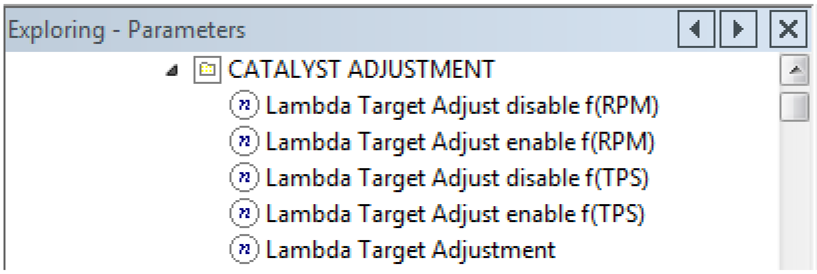

This point sets the time after a throttle transient before closed loop lambda operation may be enabled again.

Closed Loop Disable Time During Gear Shift (s) (below): Time, decimal, two places 0.00 to 655.35 in seconds

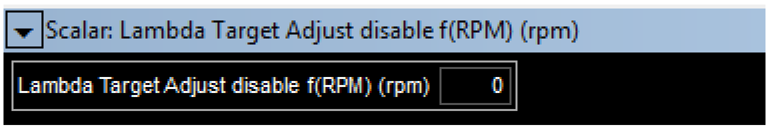



This point sets the time after a gear cut/shift is started before closed loop lambda operation may be enabled again.

Closed Loop Lambda: Catalyst Adjustment; Five parameters (below):

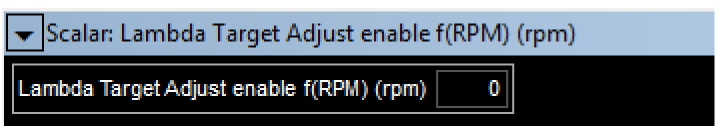



Lambda Target Adjust disable f(RPM) (rpm) (below): No decimal places, values 0 to 20000 (Angular Velocity)



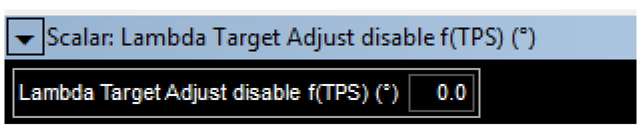

If the engine speed increases above this value the lambda target adjustment will be disabled.

Lambda Target Adjust enable f(RPM) (rpm) (below): No decimal places, values 0 to 20000 (Angular Velocity)



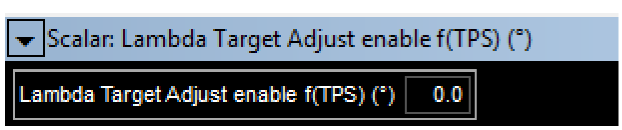

If the engine speed decreases below this value and the TPS enable threshold value is satisfied, the lambda target adjustment will be enabled.

Lambda Target Adjust disable f(TPS) degrees (below): Decimal one place 0.0 to 200.0 angle in degrees



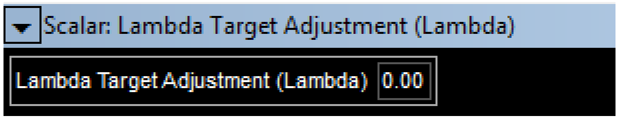

If the throttle angle increases above this value the lambda target adjustment will be disabled.

Lambda Target Adjust enable f(TPS) degrees (below): Decimal one place 0.0 to 200.0 angle in degrees



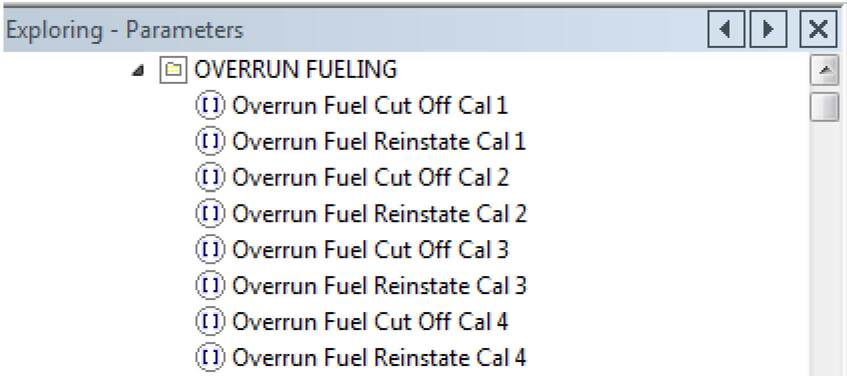

If the throttle angle decreases below this value and the RPM threshold has been satisfied, the lambda target adjustment will be enabled.

Lambda Target Adjustment (Lambda) (below): Decimal, two places, 0.00 to 0.30

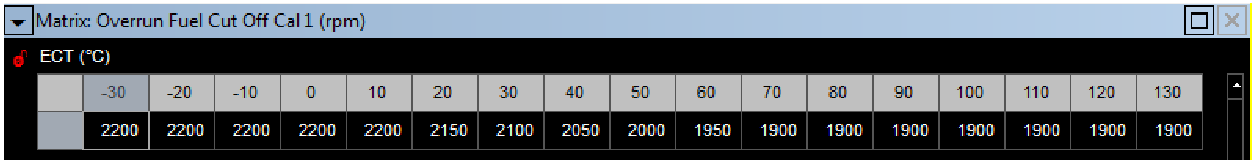



The lambda target will fluctuate either side of the closed loop lambda target by this amount if the TPS and RPM criteria have been met. Once the lambda target at one end of the fluctuation has been reached the target will be adjusted to the other extreme. This is so the fuelling will switch between runnig slightly rich and slightly lean around the target. This is primarily for lambda control at low rpms when using a catalyst.

OVERRUN FUELING: Eight Parameters; Four pairs of Cut Off/ Reinstate




Overrun Fuel Cut Off Cal (1-4) (rpm): There are four Overrun Fuel Cut Off matrices. Values 0 to 20000 (Angular Velocity)


Matrix: Overrun Fuel Cut Off Cal 1 (rpm)

ECT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2200 | 2200 | 2200 | 2200 | 2200 | 2150 | 2100 | 2050 | 2000 | 1950 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 |

This map is used to give an overrun fuel cut off threshold. If the throttle is closed and the engine speed is above this threshold, the fuel will be cut. Fuelling is reinstated if the throttle is pressed or the engine speed drops below the overrun fuel reinstate threshold.

Overrun Fuel Reinstate Cal (1-4) (rpm) (below): There are four Overrun Fuel Cut Off matrices. Values 0 to 20000 (Angular Velocity)

Matrix: Overrun Fuel Reinstate Cal 1 (rpm)

ECT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 1940 | 1880 | 1820 | 1760 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 | 1700 |

This map is used to give a reinstatement threshold for the overrun fuel cut off. If the fuel is being cut and the engine speed drops below this threshold, the fuel will be reinstated.

FUELING DURING STARTING (below):

Exploring - Parameters

- FUELLING DURING STARTING
  - Injection Start Angle in Crank
  - SINGLE CALIBRATIONS
    - Preliminary Injection
    - Base Fuel in Crank
    - Cranking Multiplier

Injection Start Angle in Crank Degrees (below): Angle in degrees, two decimal places, 0.25 increments, .25 to 720.00

Scalar: Injection Start Angle in Crank (°)

Injection Start Angle in Crank (°) 300.00

During cranking, injection pulses are timed to start at a fixed engine angle

SINGLE CALIBRATIONS: Preliminary Injection (ms) (below): Decimal, three places, milliseconds, values 0.000 to 262.140

Matrix: Preliminary Injection (ms)

ECT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 35.000 | 32.252 | 29.500 | 26.752 | 24.000 | 22.000 | 18.500 | 15.000 | 11.500 | 8.000 | 4.500 | 1.000 | 1.000 | 1.000 |

The "Preliminary Injection" is a single fuel pulse that is injected by all primary injectors as the engine start to turn. It is used to wet the inlet manifold walls.

SINGLE CALIBRATIONS: Base Fuel in Crank (ms) (below): Decimal, two places, 0.00 to 30.00 miliseconds

Matrix: Base Fuel in Crank (ms)

TPS (°)

| | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 4.50 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 4.00 | 0.00 | 0.00 | 0.00 | 0.00 |

This map is used to determine the base fuel time when the engine is cranking. Once the engine speed exceeds the "Crank Exit Speed" the ECU switches to RUN mode and obtains its fuelling from the "Base Fuel Map".

The current value can be viewed as "inj_base" on the dashboard.

SINGLE CALIBRATIONS: Cranking Multiplier (below): Decimal, two places, values 0.00 to 16.00

Matrix: Cranking Multiplier

Cylinder Count Breakpoints

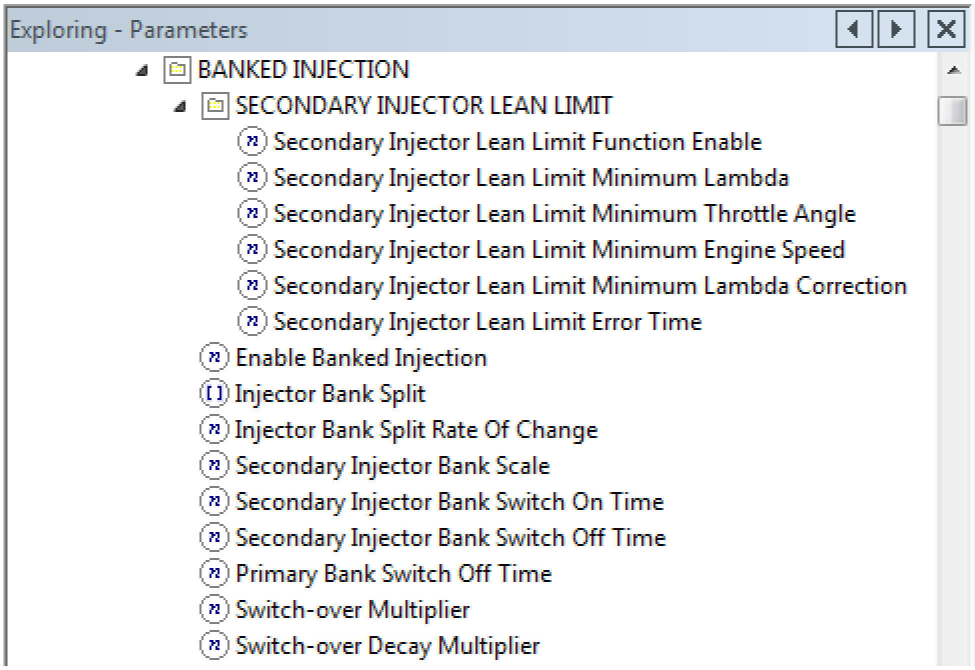
| ECT (°C) | 10 | 210 |
|---|---|---|
| 100.0 | 1.05 | 1.04 |
| 80.0 | 1.05 | 1.04 |
| 60.0 | 1.09 | 1.05 |
| 40.0 | 1.21 | 1.13 |
| 30.0 | 1.27 | 1.17 |
| 20.0 | 1.33 | 1.20 |
| 10.0 | 1.39 | 1.24 |
| 0.0 | 1.45 | 1.28 |

This multiplier is used to correct the base fuel time whilst the engine is cranking. The Cylinder Count axis on the map is used to give a bigger correction when the engine initial starts to turn and to enable this correction to decay away as the inlet becomes wet.

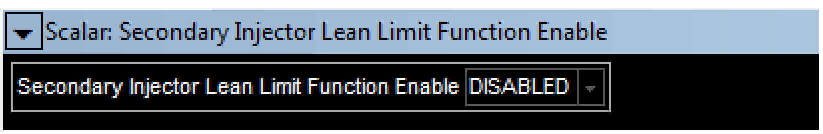
```
Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease
```

The current value can be viewed as "inj_m_crank" on the dashboard.

BANKED INJECTION (below): 15 categories of data entry if banked injection (primary/secondary) used




SECONDARY INJECTOR LEAN LIMIT (below): Function ENABLED/DISABLED




This map enables/disables the secondary injector lean limit strategy which disables the secondary injector bank and services all fuelling requirements via the primary injectors if all four of the following conditions are met:

1. The air/fuel mixture is leaner than the lambda value in "Secondary Injector Lean Limit Minimum Lambda", OR the lambda correction multiplier is more than the value in "Secondary Injector Lean Limit Minimum Lambda Correction".

2. Throttle angle is greater than "Secondary Injector Lean Limit Minimum Engine Throttle Angle".

3. Engine speed is greater than "Secondary Injector Lean Limit Minimum Engine Speed".

4. Conditions 1-3 all persist for longer than "Secondary Injector Lean Limit Error Time".

SECONDARY INJECTOR LEAN LIMIT (below): Minimum Lambda: Decimal, two places, 0.00 to 3.00

Scalar: Secondary Injector Lean Limit Minimum Lambda (Lambda)

Secondary Injector Lean Limit Minimum Lambda (Lambda) 3.00

```
The lambda reading must be higher (leaner) than the value in this map for
one of the conditions to be met.

If the full test is satisfied then the secondary injector bank will be
disabled and all fuelling requirements will be serviced by the primary
injectors. See the "Secondary Injector Lean Limit Function Enable"
help window for the full test used.
```

SECONDARY INJECTOR LEAN LIMIT (below): Minimum Throttle Angle in Degrees. Decimal, one place, 0.0 to 200.0 degrees

Scalar: Secondary Injector Lean Limit Minimum Throttle Angle (°)

Secondary Injector Lean Limit Minimum Throttle Angle (°) 120.0

```
The throttle angle must be greater than the value in this map for
one of the conditions to be met.

If the full test is satisfied then the secondary injector bank will be
disabled and all fuelling requirements will be serviced by the primary
injectors. See the "Secondary Injector Lean Limit Function Enable"
help window for the full test used.
```

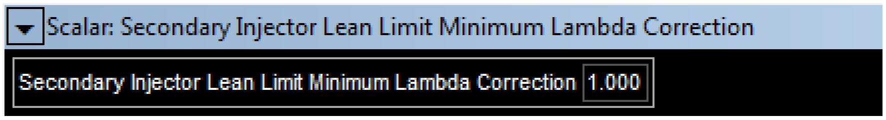
SECONDARY INJECTOR LEAN LIMIT (below): Minimum Engine Speed (rpm): Decimal 0 to 20000 (Angular Velocity)

Scalar: Secondary Injector Lean Limit Minimum Engine Speed (rpm)

Secondary Injector Lean Limit Minimum Engine Speed (rpm) 432

```
The engine speed must be greater than the value in this map for
one of the conditions to be met.

If the full test is satisfied then the secondary injector bank will be
disabled and all fuelling requirements will be serviced by the primary
injectors. See the "Secondary Injector Lean Limit Function Enable"
help window for the full test used.
```

SECONDARY INJECTOR LEAN LIMIT (below): Decimal, 3 places, values 0.000 to 3.000



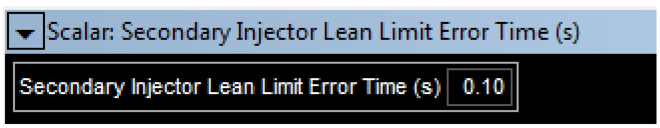

The fuel pulse multiplier calculated by closed loop lambda must be greater than the value in this map for one of the conditions to be met.

If the full test is satisfied then the secondary injector bank will be disabled and all fuelling requirements will be serviced by the primary injectors. See the "Secondary Injector Lean Limit Function Enable" help window for the full test used.

Note that the map "Lambda Correction Maximum" clips the closed loop lambda injection multiplier, therefore it must be set higher than the value in this map.

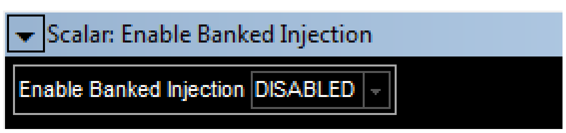
Also be aware that Closed Loop Lambda must be enabled for the closed loop lambda injection multiplier to be calculated.

SECONDARY INJECTOR LEAN LIMIT (below): Lean Limit Error Time (s): Decimal, two places 0.10 to 20.00 seconds




The first three conditions described in the Secondary Injector Lean Limit Function Enable help window must be met for at least the length of time specified in this map, in order for the secondary injector bank to be disabled and the primary injectors to service all fuelling requirements.

Enable Banked Injection (below): ENABLE/DISABLE




This map enables/disables the secondary injector function on an engine with two injectors per cylinder.

Injector Bank Split (below): Same matrix dimensions as Base Fuel Maps, up to 50 RPM x 25 Load (MAP) sites. Values in each cell of the matrix are proportional (percentage), to one decimal place, with values from 0.0 to 100.0

```
This curve gives the fuel percentage to the secondary injector bank

    0% - all fuel to primary injector bank
  100% - all fuel to secondary injector bank

NOTE: the secondary bank of injectors will only switch on if their
calculated pulse width is greater than the Secondary Injector
Bank Switch On Time

The current value can be viewed as "bank_split" on the dashboard.
```

Injector Bank Split Rate Of Change (%/Cylinder) (below): Decimal, one place, percent, values 0.0 to 100.0

Scalar: Injector Bank Split Rate Of Change (%/Cylinder)

Injector Bank Split Rate Of Change (%/Cylinder) 100.0

| | |
|---|---|
| Description | Rate of change of bank split |
| Unit | %/Cylinder |

Secondary Injector Bank Scale (below): Decimal, three places, 0.000 to 4.000

Scalar: Secondary Injector Bank Scale

Secondary Injector Bank Scale 1.000

```
This map is used to scale the fuel pulse to the secondary injectors on
engines with two injectors per cylinder. If both injectors have the
same fuel flow, this map should be set to 1. When injectors with different
flow rates are used, this map should be adjusted so that the same air-fuel
ratio is achieved regardless of the "Injector Bank Split".
```

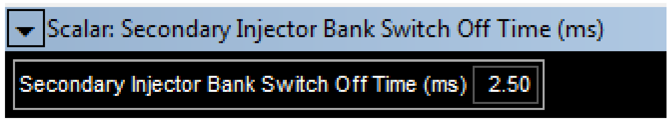
Secondary Injector Bank Switch On Time (ms) (below): Decimal, two places, 0.00 to 30.00 milliseconds

Scalar: Secondary Injector Bank Switch On Time (ms)

Secondary Injector Bank Switch On Time (ms) 3.00

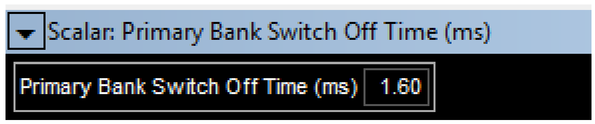
```
If the calculated fuel pulse for the secondary injectors is greater than
the "Secondary Injector Bank Switch On Time", the secondary injectors will
be enabled. If the pulse is less than this time, the secondary injectors
will not be enabled and all of the fuel will be injected with the primary
injectors.
```

Secondary Injector Bank Switch Off Time (ms) (below): Decimal, two places, 0.00 to 30.00 milliseconds



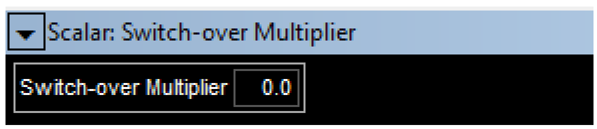

If the secondary injector bank is enabled, and its calculated fuel pulse drops below the "Secondary Injector Bank Switch Off Time", it will be disabled and all of the fuel will be injected with the primary injectors.

Primary Bank Switch Off Time (ms) (below): Decimal, two places, 0.00 to 30.00 milliseconds



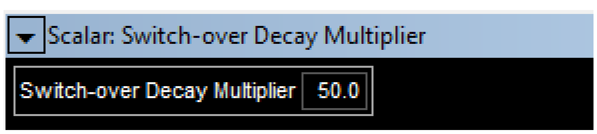

If the secondary injector bank is enabled, and the calculated fuel pulse for the primary bank drops below the "Primary Bank Switch Off Time", the primary injectors will be disabled and all of the fuel will be injected with the secondary injectors.

Switch-over Multiplier (below): Decimal, one place, 0.0 to 100.0



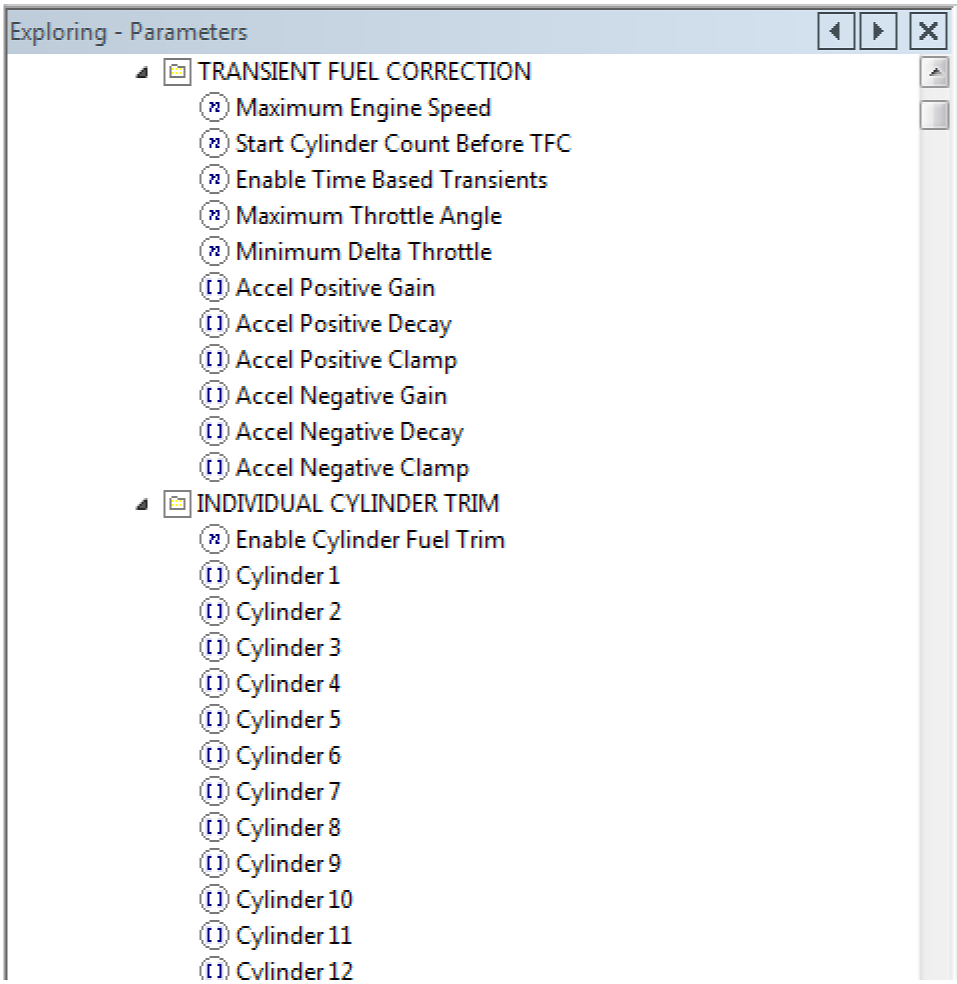

As the secondary injector bank is enabled, a fuel time t_inj_switch is calculated to compensate for a dry manifold between the primary and secondary injectors. This addition fuel time is added to the secondary injector fuel pulse. This multiplier is important when primary and secondary injectors are at different distances from the inlet valves.

Switch-over Decay Multiplier (below): Decimal, one place, 0.0 to 100.0

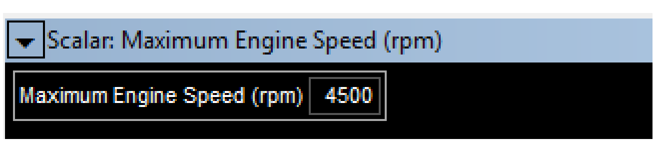



This multiplier affects the rate at which the additional fuel injected when the secondary injectors are enabled, decays away. This decay is important when primary and secondary injectors are at different distances from the inlet valves.

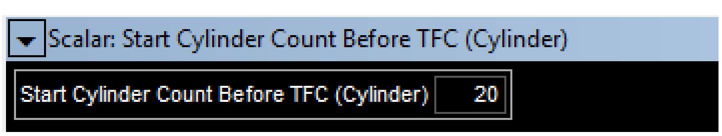
FUEL CORRECTIONS: TRANSIENT FUEL CORRECTION (below): Eleven categories and up to 12 cylinders individual trim



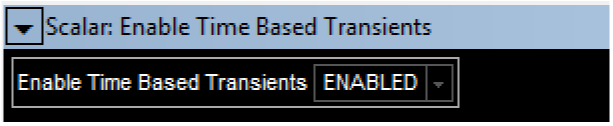

TRANSIENT FUEL CORRECTION: Maximum Engine Speed (rpm) (below): No decimal places, values 0 to 20000 (Angular Velocity)




TRANSIENT FUEL CORRECTION: Start Cylinder Count Before TFC (Cylinder) (below): Decimal, values 0 to 65535. This disables Transient Fuel Correction for startup to prevent over fuelling.



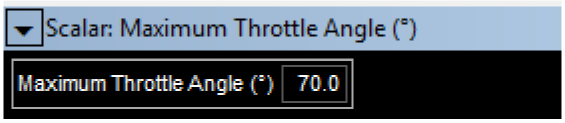
TRANSIENT FUEL CORRECTION: Enable Time Based Transients (below): ENABLED/DISABLED




This map enables/disables transient fuel corrections. These are triggered when the rate of change of throttle angle exceeds a predefined threshold.

The current transient fuel value can be viewed as "inj_a_tps" on the dashboard.

TRANSIENT FUEL CORRECTION: Maximum Throttle Angle (Degrees) (below): Decimal, one place, 0.0 to 200.0 degrees




The transient fuel calculations are only updated if the throttle angle is below this upper threshold.

TRANSIENT FUEL CORRECTION: Minimum Delta Throttle (Degrees) (below): Decimal, one place, 0.0 to 90.0 degrees


This is the minimum rate of change of throttle needed to trigger the transient fuel strategy.

TRANSIENT FUEL CORRECTION: Accel Positive Gain (below): Decimal, three places, 0.000 to 16.000

Matrix: Accel Positive Gain

RPM (rpm)

| | 900 | 1700 | 2500 | 3300 | 4100 | 4900 | 5700 | 6500 |
|---|---|---|---|---|---|---|---|---|
| | 6.000 | 3.206 | 3.122 | 3.037 | 2.953 | 2.869 | 2.784 | 2.700 |

```
This map is used to give the gain value for positive (throttle opening)
transients. As the throttle opens, a correction is added to the base fuel
quantity to compensate for manifold effects. The INITIAL size of this
correction depends on the rate of change of throttle and the gain value.
A larger gain will give a bigger correction.

  transient correction = rate of change of throttle x gain

         *
         **    gain = 2
         * *
 0********  ************************* TRANSIENT CORRECTION (ms)

         *
         **
         * *
         *  *  gain = 3
         *   *
 0********    *********************** TRANSIENT CORRECTION (ms)

30       **************************** THROTTLE (degrees)
         *
         *
 0********

 0----1----2----3----4----5----6----7----8----9->TIME

The current value can be viewed as "acc_gain_pos" on the dashboard.
The current transient fuel value can be viewed as "inj_a_tps" on the dashboard.
```

TRANSIENT FUEL CORRECTION: Accel Positive Decay (below): Decimal, three places, 0.000 to 1.000

Matrix: Accel Positive Decay

RPM (rpm)

| ECT (°C) | 900 | 1700 | 2500 | 3300 | 4100 | 4900 | 5700 | 6500 |
|---|---|---|---|---|---|---|---|---|
| 80.0 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| 50.0 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| 20.0 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |
| -20.0 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 | 0.500 |

```
This map is used to give the decay value for positive (throttle opening)
transients. The decay value is a multiplier that reduces the transient
correction each time it is updated. A decay value of 0.90 would reduce the
correction by 10% each update. A smaller decay value gives a faster decay.

  transient correction = transient correction x decay

 5        ***
          *  *
          *   *     decay = 0.90 - 10%
          *    *
 0********     ********************** TRANSIENT CORRECTION (ms)

 5        ***
          *   *
          *     *   decay = 0.95 - 5%
          *       *
 0********         ****************** TRANSIENT CORRECTION (ms)

 0----1----2----3----4----5----6----7----8----9->TIME

The current value can be viewed as "acc_decay_pos" on the dashboard.
The current transient fuel value can be viewed as "inj_a_tps" on the dashboard.
```

TRANSIENT FUEL CORRECTION: Accel Positive Clamp (ms) (below): Decimal, two places, 0.00 to 30.00 milliseconds

Matrix: Accel Positive Clamp (ms)

RPM (rpm)

| | 900 | 1700 | 2500 | 3300 | 4100 | 4900 | 5700 | 6500 |
|---|---|---|---|---|---|---|---|---|
| | 5.00 | 4.43 | 3.86 | 3.28 | 2.72 | 2.14 | 1.57 | 1.00 |

```
This map is used to give the clamp value for positive (throttle opening)
transients. The clamp value is used as an upper limit on the correction.

 5       *
         **
         * *
         *  *     clamp = 5.0 (ms)
         *   *
 0********    ********************** TRANSIENT CORRECTION (ms)

         .
         ..
         . .
 2       ****     clamp = 2.0 (ms)
         *   *
 0********    ********************** TRANSIENT CORRECTION (ms)

The current value can be viewed as "acc_clamp_pos" on the dashboard.
The current transient fuel value can be viewed as "inj_a_tps" on the dashboard.
```

TRANSIENT FUEL CORRECTION: Accel Negative Gain (below): Decimal, three places, 0.000 to 16.000

Matrix: Accel Negative Gain

RPM (rpm)

| | 900 | 1700 | 2500 | 3300 | 4100 | 4900 | 5700 | 6500 |
|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This map is used to give the gain value for negative (throttle closing)
transients. As the throttle closes, a correction is subtracted from the
base fuel time to compensate for manifold effects. The INITIAL size
of this correction depends on the rate of change of throttle and the gain
value. A larger gain will give a bigger correction.

  transient correction = rate of change of throttle x gain

 0*********  ************************* TRANSIENT CORRECTION (ms)
         * *
         **    gain = 2
         *

 0*********    *********************** TRANSIENT CORRECTION (ms)
         *   *
         *  *  gain = 3
         * *
         **
         *

30*********
         *
         *
 0       ***************************** THROTTLE (degrees)

 0----1----2----3----4----5----6----7----8----9->TIME

The current value can be viewed as "acc_gain_neg" on the dashboard.
The current transient fuel value can be viewed as "inj_a_tps" on the dashboard.
```

TRANSIENT FUEL CORRECTION: Accel Negative Decay (below): Decimal, three places, 0.000 to 1.000

Matrix: Accel Negative Decay

RPM (rpm)

| ECT (°C) | 900 | 1700 | 2500 | 3300 | 4100 | 4900 | 5700 | 6500 |
|---|---|---|---|---|---|---|---|---|
| 80.0 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 50.0 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| 20.0 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |
| -20.0 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 | 0.100 |

```
This map is used to give the decay value for negative (throttle closing)
transients. The decay value is a multiplier that reduces the transient
correction each time it is updated. A decay value of 0.90 would reduce the
correction by 10% each update. A smaller decay value gives a faster decay.

  transient correction = transient correction x decay

 0*********     ********************** TRANSIENT CORRECTION (ms)
         *    *
         *   *      decay = 0.90 - 10%
         *  *
-5       ***

 0*********         ****************** TRANSIENT CORRECTION (ms)
         *       *
         *     *    decay = 0.95 - 5%
         *    *
-5       ***

 0----1----2----3----4----5----6----7----8----9->TIME

The current value can be viewed as "acc_decay_neg" on the dashboard.
The current transient fuel value can be viewed as "inj_a_tps" on the dashboard.
```

TRANSIENT FUEL CORRECTION: Accel Negative Clamp (ms) (below): Decimal, two places, 0.00 to 10.00 milliseconds

Matrix: Accel Negative Clamp (ms)

RPM (rpm)

| | 900 | 1700 | 2500 | 3300 | 4100 | 4900 | 5700 | 6500 |
|---|---|---|---|---|---|---|---|---|
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

```
This map is used to give the clamp value for positive (throttle closing)
transients. The clamp value is used as an upper limit on the correction.

 0********     ********************** TRANSIENT CORRECTION (ms)
         *   *
         *  *
         * *       clamp = -5.0 (ms)
         **
-5       *

 0********     ********************** TRANSIENT CORRECTION (ms)
         *   *
-2       ****      clamp = -2.0 (ms)
         . .
         ..
         .

The current value can be viewed as "acc_clamp_neg" on the dashboard.
The current transient fuel value can be viewed as "inj_a_tps" on the dashboard.
```

FUEL CORRECTIONS: INDIVIDUAL CYLINDER TRIM (below): Up to twelve cylinders

Exploring - Parameters

- INDIVIDUAL CYLINDER TRIM
  - Enable Cylinder Fuel Trim
  - Cylinder 1
  - Cylinder 2
  - Cylinder 3
  - Cylinder 4
  - Cylinder 5
  - Cylinder 6
  - Cylinder 7
  - Cylinder 8
  - Cylinder 9
  - Cylinder 10
  - Cylinder 11
  - Cylinder 12

FUEL CORRECTIONS: INDIVIDUAL CYLINDER TRIM: Enable Cylinder Trim (below): ENABLED/DISABLED

Scalar: Enable Cylinder Fuel Trim

Enable Cylinder Fuel Trim DISABLED

This maps enables/disables the individual cylinder trim functions for fuel. Individual cylinder trims should only be used to make MINOR changes to the base fuel time to compensate for differences in air intake distribution etc.

The current value can be viewed as "cyl_fuel" on the dashboard.

FUEL CORRECTIONS: INDIVIDUAL CYLINDER TRIM (below): Twelve matrices for twelve cylinders. Decimal, three places, 0.750 to 1.248

Matrix: Cylinder 1

RPM (rpm)

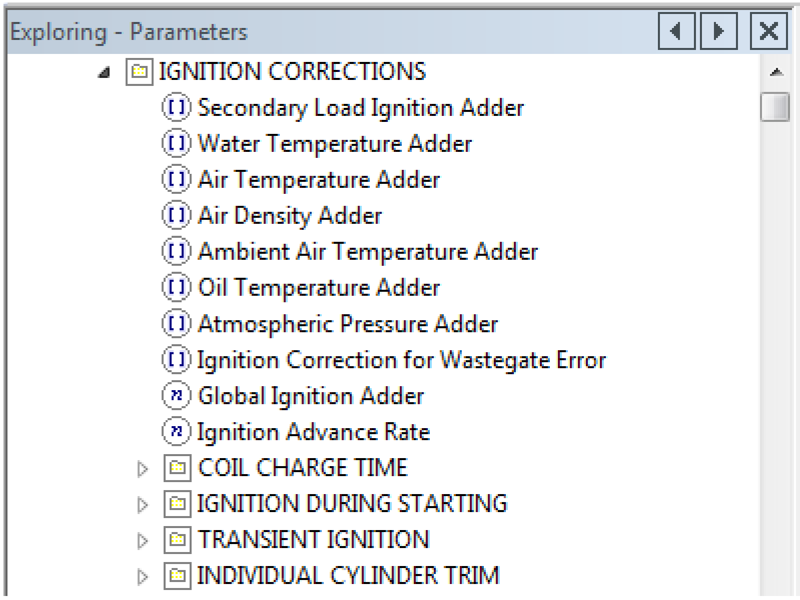
| MAP (mbar) | 812 | 1625 | 2438 | 3250 | 4062 | 4875 | 5868 | 6500 |
|---|---|---|---|---|---|---|---|---|
| 3000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2500 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 2000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 1500 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 800 | 1.029 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 250 | 1.029 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

This multiplier is used to correct the base fuel time for cylinder 1.

Example values: 1.020 - gives 2% increase
1.000 - gives no change
0.970 - gives 3% decrease

The current value can be viewed as "cyl1_fuel" on the dashboard.

IGNITION CORRECTIONS: Five categories, each with additional sub categories




IGNITION CORRECTION: Secondary Load Ignition Adder (degrees) (below): This adder is applied to the ignition to compensate for the additional load. Decimal, two place, -90.00 to 90.00 degrees

Matrix: Secondary Load Ignition Adder (°)

RPM (rpm)

| TPS (°) | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 90.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 85.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 80.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 75.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 70.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 65.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 60.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 55.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 45.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 40.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 30.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 25.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

IGNITION CORRECTIONS: Water Temperature Adder (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

Matrix: Water Temperature Adder (°)

ECT (°C)

| TRUN (s) | -20.0 | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 100.0 | 120.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 12.00 | 10.75 | 8.50 | 6.00 | 3.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | 12.00 | 10.75 | 8.50 | 6.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 12.00 | 10.75 | 8.50 | 6.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 12.00 | 10.75 | 8.50 | 6.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 12 | 12.00 | 10.75 | 8.50 | 6.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 12.00 | 10.75 | 8.50 | 6.00 | 2.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This adder is used to correct the base ignition angle for
changes in water temperature. The value from this map is added
to the base ignition time to give a corrected ignition angle.

The current value can be viewed as "ign_a_T_water" on the dashboard.
```

IGNITION CORRECTIONS: Air Temperature Adder (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

Matrix: Air Temperature Adder (°)

ACT (°C)

| RPM (rpm) | -20.0 | 0.0 | 20.0 | 40.0 | 50.0 | 60.0 | 80.0 | 100.0 |
|---|---|---|---|---|---|---|---|---|
| 2000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 8000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This adder is used to correct the base ignition angle for
changes in air temperature. The value from this map is added
to the base ignition time to give a corrected ignition angle.

The current value can be viewed as "ign_a_T_air" on the dashboard.
```

IGNITION CORRECTIONS: Air Density Adder (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

Matrix: Air Density Adder (°)

ACT (°C)

| MAP (mbar) | -20.0 | 0.0 | 20.0 | 40.0 | 50.0 | 60.0 | 80.0 | 100.0 |
|---|---|---|---|---|---|---|---|---|
| 1000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1100 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1200 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1300 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1400 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This adder is used to correct the base ignition angle for
changes in air temperature and manifold absolute pressure.
The value from this map is added to the base ignition time
to give a corrected ignition angle.

The current value can be viewed as "ign_a_D_air" on the dashboard.
```

IGNITION CORRECTIONS: Ambient Air Temperature Adder (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

Matrix: Ambient Air Temperature Adder (°)

AAT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

This adder is used to correct the base ignition angle for changes in ambient air temperature. The value from this map is added to the base ignition time to give a corrected ignition angle.

The current value can be viewed as "ign_a_T_amb" on the dashboard.

IGNITION CORRECTIONS: Oil Temperature Adder (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

Matrix: Oil Temperature Adder (°)

EOT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

This adder is used to correct the base ignition angle for changes in oil temperature. The value from this map is added to the base ignition time to give a corrected ignition angle.

The current value can be viewed as "ign_a_T_oil" on the dashboard.

IGNITION CORRECTIONS: Atmospheric Pressure Adder (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

Matrix: Atmospheric Pressure Adder (°)

BAP (mbar)

| 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

This adder is used to correct the base ignition angle for changes in atmospheric pressure. The value from this map is added to the base ignition time to give a corrected ignition angle.

The current value can be viewed as "ign_a_P_amb" on the dashboard.

IGNITION CORRECTIONS: Ignition Correction for Wastegate Error (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

Matrix: Ignition Correction for Wastegate Error (°)

RPM (rpm)

| wg_error (Error) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 8 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 7 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 6 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 5 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 3 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

IGNITION CORRECTIONS: Global Ignition Adder (degrees) (below): Decimal, two places, .25 degree increments, -32.00 to 31.75

Scalar: Global Ignition Adder (°)

Global Ignition Adder (°) 0.00

```
This adder is used to enable a user correction to the ENTIRE Base
Ignition Map

The current value can be viewed as "ign_a_global" on the dashboard.
```

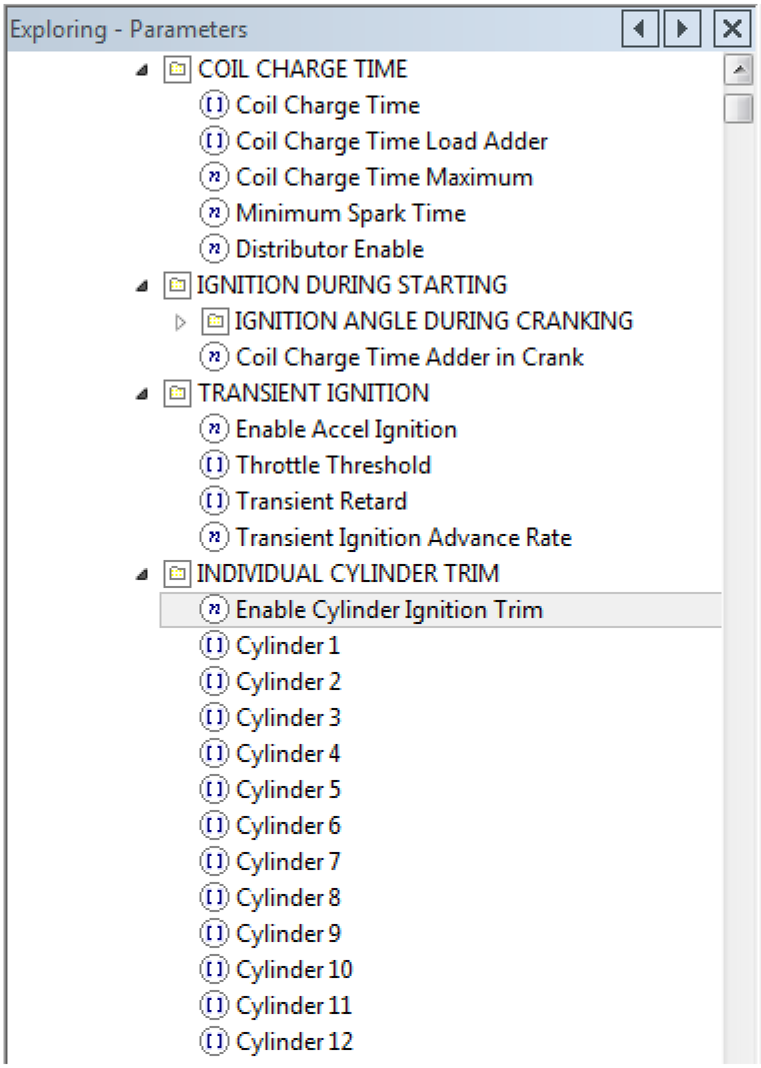
IGNITION CORRECTIONS: Ignition Advance Rate (deg/Cylinder) (below): Decimal, two places, 0.00 to 180.00

Scalar: Ignition Advance Rate (deg/Cylinder)

Ignition Advance Rate (deg/Cylinder) 25.00

```
The rate of change of ignition angle is limited to this upper threshold
when the ignition angle is advancing.
```

IGNITION CORRECTIONS: Additional Four Categories (below)




IGNITION CORRECTIONS: Coil Charge Time (Ms) (below): Decimal, three places, 0.000 to 10.000 milliseconds

Matrix: Coil Charge Time (ms)

VBAT (V)

| 8.00 | 8.50 | 9.00 | 9.50 | 10.00 | 10.50 | 11.00 | 11.50 | 12.00 | 12.50 | 13.00 | 13.50 | 14.00 | 14.50 | 15.00 | 15.50 | 16.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.000 | 5.000 | 5.000 | 5.000 | 4.929 | 4.857 | 4.786 | 4.714 | 4.643 | 4.571 | 4.500 | 4.333 | 4.167 | 4.000 | 3.833 | 3.667 | 3.500 |

The "Coil Charge Time" sets the time an ignition coil is charged for as a function of battery voltage. Correct coil charge time settings are important as too little will lead to a weak spark and engine misfire, too much could cause coils to overheat and become damaged.

The current value can be viewed as "t_charge" on the dashboard.

IGNITION CORRECTIONS: Coil Charge Time Load Adder (ms) (below): Decimal, three places, -2.000 to 2.000 milliseconds

Matrix: Coil Charge Time Load Adder (ms)

MAP (mbar)

| | 188 | 375 | 562 | 750 | 938 | 1125 | 1312 | 1500 | 1688 | 1875 | 2062 | 2250 | 2438 | 2625 | 2812 | 3000 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 |

This maps is used to provide an additive corection to the base coil charge time as a function of engine load.

The current correction can be viewed as "charge_a_load" on the dashboard.

IGNITION CORRECTIONS: Coil Charge Time Maximum (ms) (below): Decimal, three places, 0.000 to 10.000 milliseconds

Scalar: Coil Charge Time Maximum (ms)

Coil Charge Time Maximum (ms) 7.000

This map sets the maximum value of the coil charge time.

The current coil charge time can be viewed as "t_charge" on the dashboard.

IGNITION CORRECTIONS: Minimum Spark Time (ms) (below): Decimal, three places, 0.000 to 10.000 milliseconds

Scalar: Minimum Spark Time (ms)

Minimum Spark Time (ms) 0.000

This map sets the minimum spark time for ignition outputs. It is provided to aid configuration of distributor based ignition systems, but can also affect conventional systems where engine speeds are high and dwell is relatively long.

With these systems it may be necessary to use a relatively long dwell time at lower speeds, but these durations give problems at higher engine speeds. At the higher engine speed, the spark time for the previous ignition may become reduced, by starting the dwell time for the next ignition output too early. This is a side effect of providing a constant energy spark duration.

This map allows the minimum duration of the spark to be specified, as a result, the start of dwell for the next ignition output will always be delayed by a minimum of this duration, this may reduce the energy available for the spark as the engine speed increases.

A channel is available "dwellLimit" indicating when this action is being performed. The maximum dwell duration available at any time is displayed by the channel "max_t_charge".

A value of ZERO in this map, turns this functionality off.

IGNITION CORRECTIONS: Distributor Enable (below): ENABLED/DISABLED

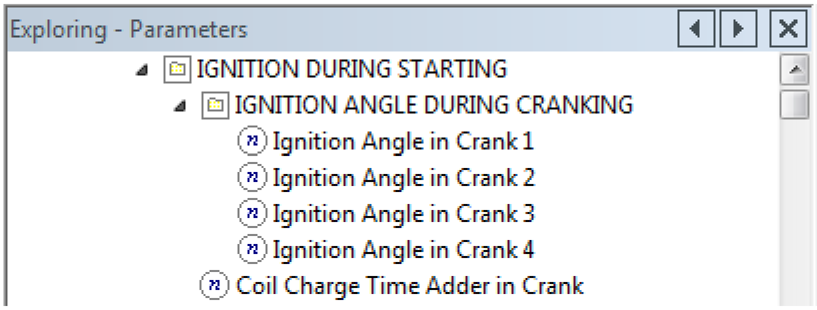

Where a distributor based ignition system is being used, the coil may be driven by multiple ignition driver outputs of the ECU, in order to spread the power dissipation across multiple devices.

The map "Minimum Spark Time" relies on the same ignition output being used for more than one cylinder, for it to provide the minimum spark duration being configured by the user. This map overrides this constraint and allows the user to indicate that any outputs configured still require the application of the minimum spark time, because they are driving the same coil.

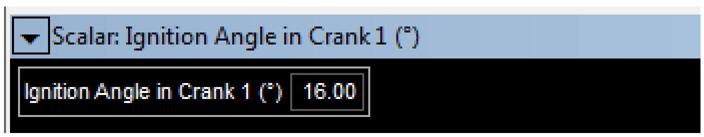
In order to indicate that all outputs must provide the minimum spark time separation between them, this map should be set to ENABLED.

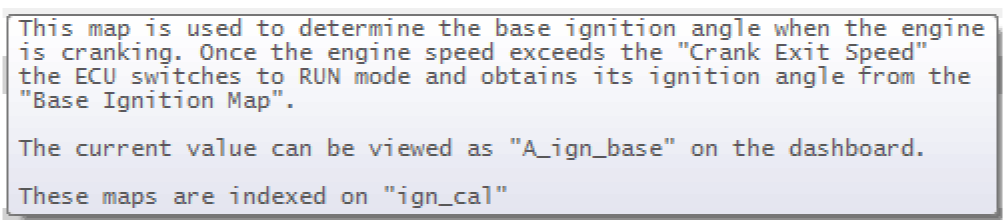
If only those cylinders using common ignition outputs are to be tested, this map should be set to DISABLED.

IGNITION CORRECTIONS: IGNITION ANGLE DURING CRANKING: Up to four Crankshaft map entries




IGNITION CORRECTIONS: IGNITION ANGLE DURING CRANKING (1-4 maps) (below): Decimal, two places, -20.00 to 50.00 degrees

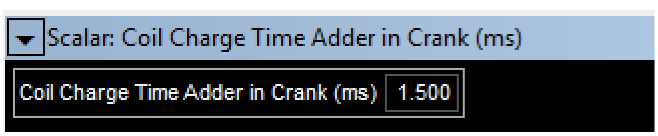




This map is used to determine the base ignition angle when the engine is cranking. Once the engine speed exceeds the "Crank Exit Speed" the ECU switches to RUN mode and obtains its ignition angle from the "Base Ignition Map".

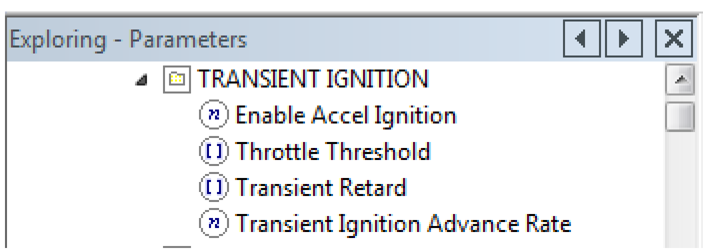
The current value can be viewed as "A_ign_base" on the dashboard.

These maps are indexed on "ign_cal"

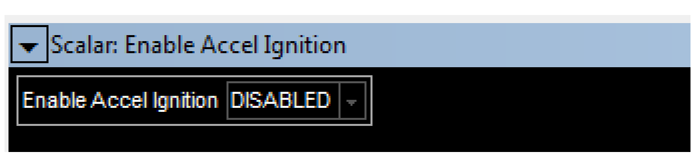
IGNITION CORRECTIONS: Coil Charge Time Adder in Crank (ms) (below): Decimal, three places, -2.000 to 2.000 milliseconds



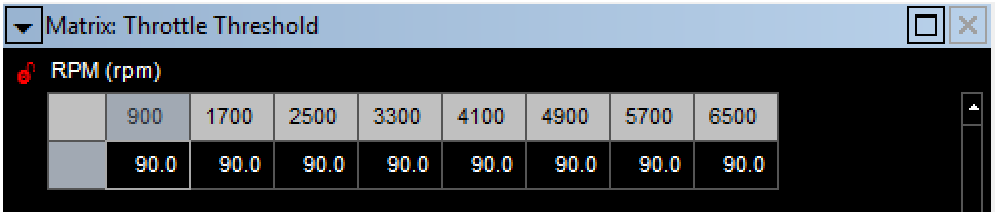

IGNITION CORRECTIONS: TRANSIENT IGNITION: Four categories (below):



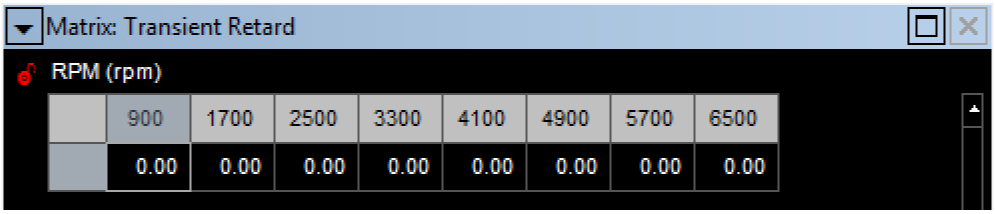

TRANSIENT IGNITION: Enable Accel Ignition (below): ENABLED/DISABLED



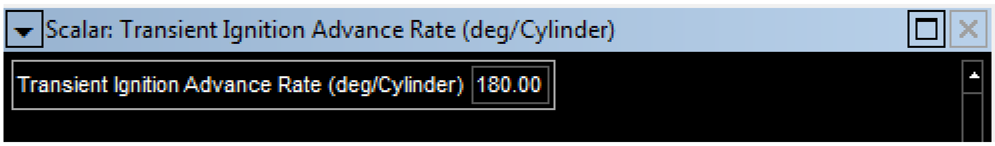
TRANSIENT IGNITION: Throttle Threshold (below): Decimal, one place, 0.0 to 100.0



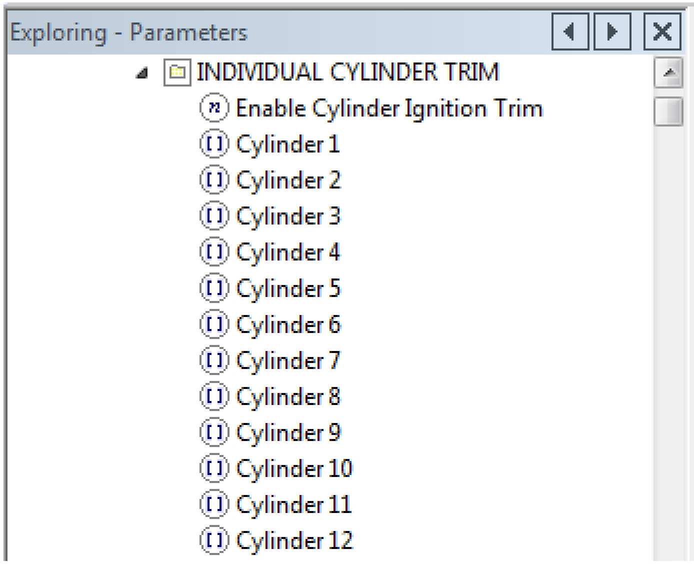

TRANSIENT IGNITION: Transient Retard (below): Decimal, two places, 0.00 to 20.00




TRANSIENT IGNITION: Transient Ignition Advance Rate (deg/Cylinder) (below): Decimal, two place, 0.00 to 180.00 deg/Cylinder




IGNITION CORRECTRIONS: INDIVIDUAL CYLINDER TRIM (below):



INDIVIDUAL CYLINDER TRIM: Enable Cylinder Ignition Trim (below): ENABLED/DISABLED

Scalar: Enable Cylinder Ignition Trim

Enable Cylinder Ignition Trim ENABLED

```
This maps enables/disables the individual cylinder trim functions
for ignition.

The current value can be viewed as "cyl_ign" on the dashboard.
```

INDIVIDUAL CYLINDER TRIM: Up to 12 cylinders (below): Decimal, two places, -10.00 to 10.00 degrees

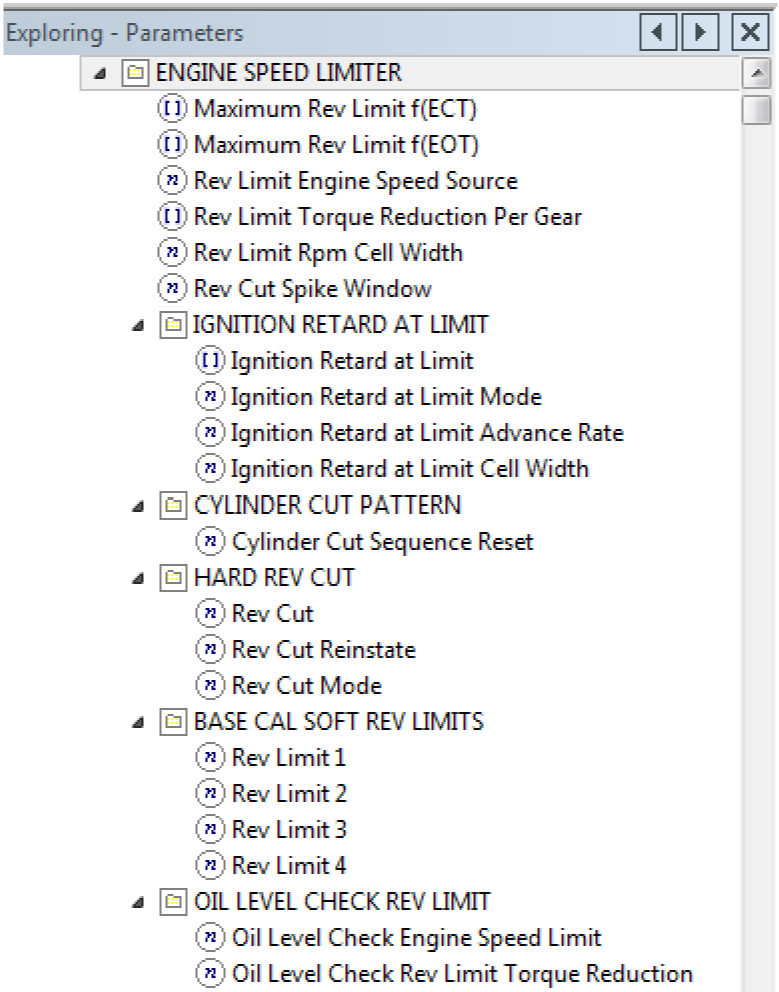
Matrix: Cylinder 1 (°)

RPM (rpm)

| MAP (mbar) | 812 | 1625 | 2438 | 3250 | 4062 | 4875 | 5868 | 6500 |
|---|---|---|---|---|---|---|---|---|
| 3000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2500 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 1500 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 800 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 250 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This adder is used to correct the base ignition angle
for cylinder 1.

The current value can be viewed as "cyl1_ign" on the dashboard.
```

ENGINE SPEED LIMITER (below): Not exactly your simple rev limiter.




Maximum Rev Limit f (ECT) (below): Engine Coolant Temperature. Decimal 0 to 20000, Angular Velocity, Revs/Minute

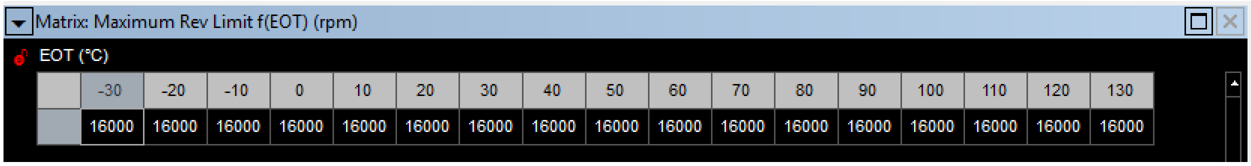
Matrix: Maximum Rev Limit f(ECT) (rpm)

ECT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4000 | 4000 | 4000 | 4000 | 4000 | 4300 | 4600 | 4900 | 5200 | 5500 | 5800 | 6200 | 6200 | 6200 | 6200 | 4500 | 3500 |

```
This map is used to limit the engine speed as the engine coolant warms up
and also if it gets too hot. The map "Maximum Rev Limit f(EOT)" is also read
and the lowest rev limit taken.

The current rev limit value can be viewed as "activeRevLimit" on the dashboard.
```

Maximum Rev Limit (EOT) (below): Engine Oil Temperature. . Decimal 0 to 20000, Angular Velocity, Revs/Minute

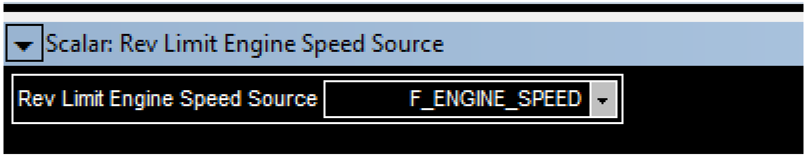



| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 | 16000 |

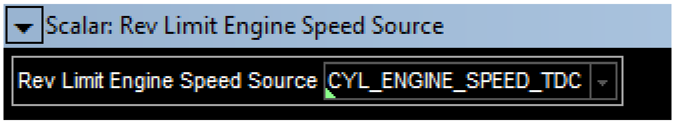
This map is used to limit the engine speed as the engine oil warms up and also if it gets too hot. The map "Maximum Rev Limit f(ECT)" is also read and the lower rev limit taken.

The current rev limit value can be viewed as "activeRevLimit" on the dashboard.

ENGINE SPEED LIMITER: Rev Limit Engine Speed Source (below):








ENGINE SPEED LIMITER: Rev Limit Torque Reduction Per Gear (%) (below): Decimal, one place, 0.0 to 100.0, percent

Matrix: Rev Limit Torque Reduction Per Gear (%)

RPM_Over_Rev_Limit (rpm)

| gear_pos | 0 | 100 | 200 | 300 | 400 | 500 | 600 | 700 | 800 | 900 | 1000 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| REVERSE | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| NEUTRAL | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| FIRST | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| SECOND | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| THIRD | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| FOURTH | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| FIFTH | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| SIXTH | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| SEVENTH | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |
| EIGHTH | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 | 60.0 |

This map is used to set the severity of the limit used in each gear when the engine speed exceeds the rev limit by an amount.

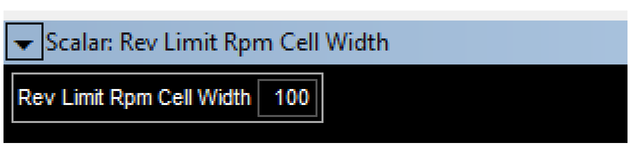
The rpm is not interpolated between the rpm points they are used a rpm bands.

The rpm band size can be configured by changing the "Rev Limit rpm Cell Width"

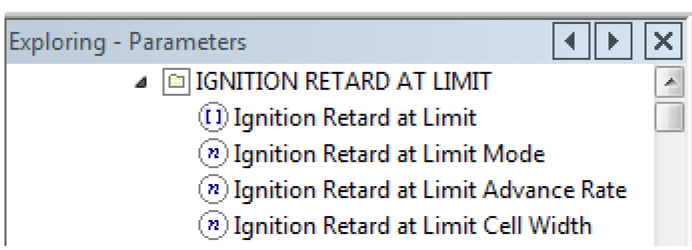
If the gear position is not supplied by either a sensor or a CAN stream, the strategy defaults to using the value entered into the NEUTRAL gear position always

A value of 0 gives no limit.
A value of 100 gives a complete cut
Values between 1-100 give a limit varying in severity.

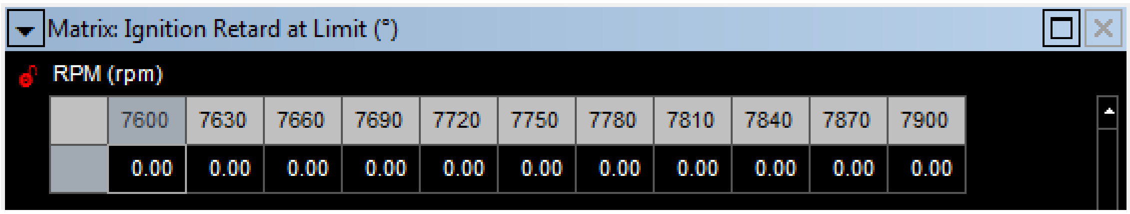
ENGINE SPEED LIMITER: Rev Limit Rpm Cell Width (rpm) (below): Decimal 1 to 2000 Rpm




ENGINE SPEED LIMITER: IGNITION RETARD AT LIMIT (below): Four categories

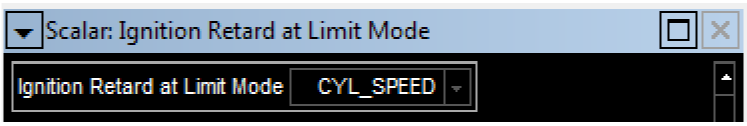


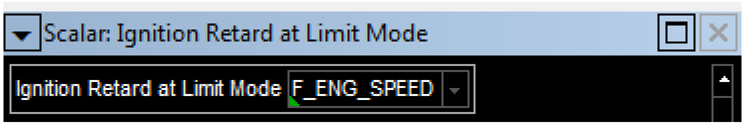
ENGINE SPEED LIMITER: Ignition Retard at Limit (degrees) (below): Decimal, two places, 0.00 to 30.00 degrees



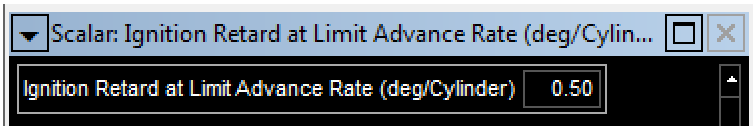

This map is used to retard the ignition as the engine speed approaches the "Rev Limit".

ENGINE SPEED LIMITER: Ignition Retard at Limit Mode (below):



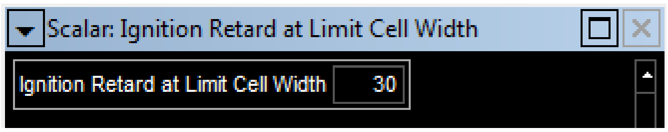




ENGINE SPEED LIMITER: Ignition Retard at Limit Advance Rate (deg/Cyl) (below): Decimal, two places 0.00 to 180.00 degrees

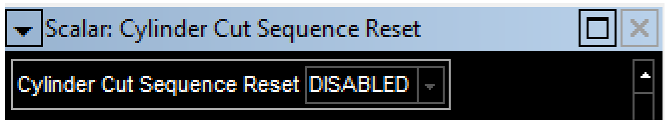



If ignition retard is used during a gear cut, the rate at which the ignition returns to normal is limited by the "Gear Upshift Ignition Advance Rate". This can be used "soften" the reintroduction of the engine power.

ENGINE SPEED LIMITER: Ignition Retard at Limit Cell Width (below): Decimal 1 to 65535



ENGINE SPEED LIMITER: CYLINDER CUT PATTERN: Cylinder Cut Sequence Reset (below): ENABLED/DISABELED



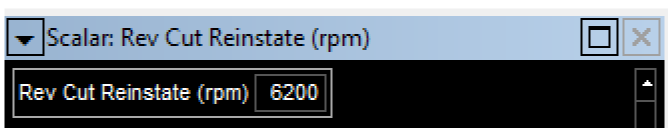

If ENABLED, the built-in cylinder cut table will be reset back to the beginning whenever the required torque reduction falls back to zero.

This ensures that a cut will happen on the next cylinder event if a torque reduction is required.

ENGINE SPEED LIMITER: HARD REV CUT: Rev Cut (rpm) (below): Decimal 0 to 20000, Angular Velocity, Revs per Minute


When the engine speed exceeds this threshold a complete cylinder cut is applied. Once the rev cut has been initiated, normal operation will not resume until the engine speed has fallen below the "Rev Cut Reinstate"

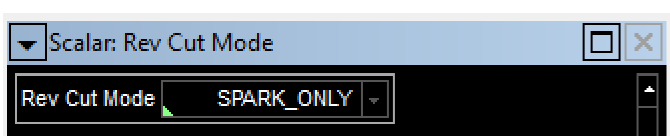
ENGINE SPEED LIMITER: HARD REV CUT: Rev Cut Reinstate (rpm) (below): Decimal 0 to 20000, Angular Velocity, Revs per Minute



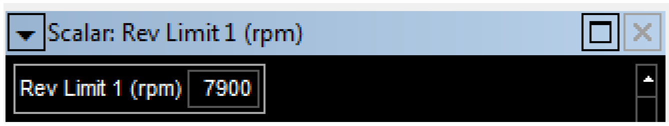

Once the rev cut has been initiated, normal operation will not resume until the engine speed has fallen below this threshold

ENGINE SPEED LIMITER: HARD REV CUT:



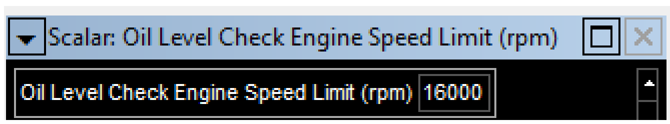


ENGINE SPEED LIMITER: BASE CAL SOFT REV LIMITS: Four Rev Limits: 1 to 4




If the engine speed exceeds this threshold, a soft limit is applied which randomly cuts cylinders. The method of limit (fuel or ignition) is selected by the "Rev Limit Torque Reduction Mode". The severity of the limit is set in the "Rev Limit Torque Reduction". The "Rev Cut" is a complete cylinder cut and is normally set above the Rev Limit to prevent a driver going through the soft limit.

ENGINE SPEED LIMITER: OIL LEVEL CHECK REV LIMIT: Oil Level Check Engine Speed Limit (rpm) (below): Decimal 0 to 20000 Rpm

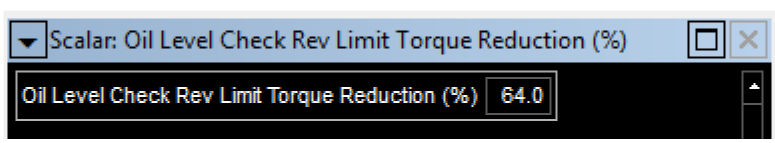



This rev limit is used for dry sump engines that require a set engine speed to dip the oil
it is activated by
1. car being in neutral gear
2. push to pass button being active
3. pit lane speed limit button being active

Note: in stage 3 if using the pit lane speed latch feature it will need to be off before stage 2

this should be used as a method for the mechanics to trigger this lower engine rpm limit

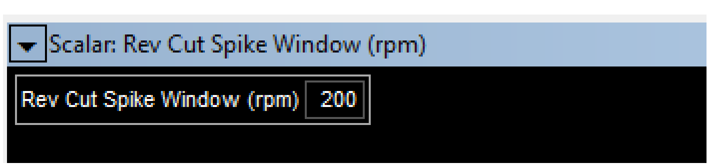
ENGINE SPEED LIMITER: OIL LEVEL CHECK REV LIMIT: Oil Level Check Rev Limit Torque Reduction (%)(below): Decimal 0 to 20000 Rpm




The "Rev Limit Torque Reduction" is used to set the severity of the limit used when the engine speed exceeds the oil check rev limit.

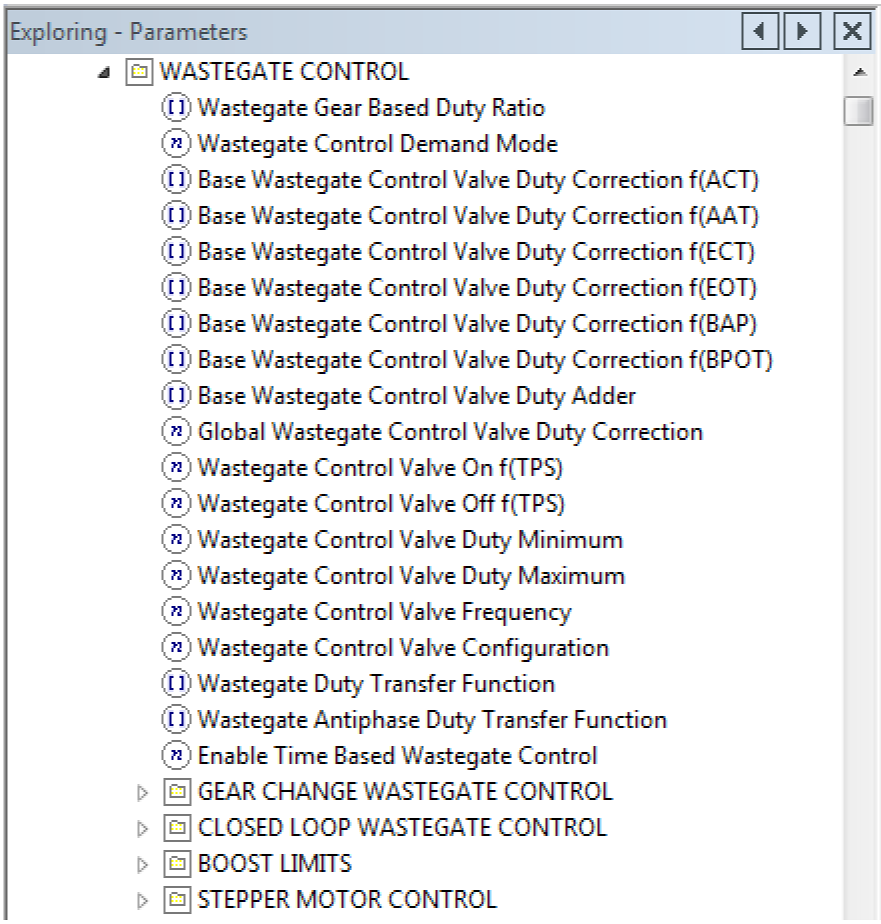
A value of 0 gives no limit.
A value of 100 gives a complete cut
Values between 1-100 give a limit varying in severity.

ENGINE SPEED LIMITER: Rev Cut Spike Window (rpm) (below): Decimal 0 to 1000, Angular Velocity, Revs per Minute

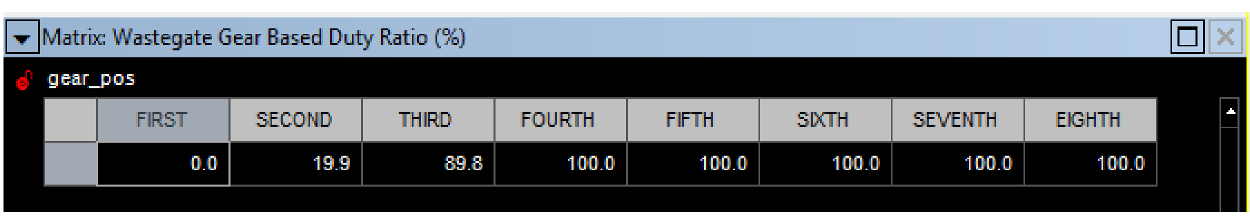



Provides a small window over the rev cut. This is to allow very brief engine speed spikes (up to the rpm given in this map) over the rev cut to be filtered out.

WASTEGATE CONTROL (below):




Wastegate Gear Based Duty Ratio (%) (below): Decimal, one place, 0.0 to 100.0 percent



Matrix: Wastegate Gear Based Duty Ratio (%)

gear_pos

| FIRST | SECOND | THIRD | FOURTH | FIFTH | SIXTH | SEVENTH | EIGHTH |
|---|---|---|---|---|---|---|---|
| 0.0 | 19.9 | 89.8 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

```
The ratio entered here determines the interpolation between the
first gear and top gear wastegate base duty maps.
A value of 0% uses the first gear map directly.
A value of 100% uses the top gear map directly.
A value between 0-100% is a linear interpolation between the
first gear and top gear map values.

If gear based control is not required, this map should be set to
all 0%, then the duty in the first gear map will always be used.
```

Wastegate Control Demand Mode (below): TPS or PPS

Scalar: Wastegate Control Demand Mode

Wastegate Control Demand Mode WG_DEMAND_TPS

This parameter allows the user to decide on the source channel for Y axis lookups for a number of wastegate control maps.

Scalar: Wastegate Control Demand Mode

Wastegate Control Demand Mode WG_DEMAND_PPS

This parameter allows the user to decide on the source channel for Y axis lookups for a number of wastegate control maps.

Base Wastegate Control Valve Duty Correction f(ACT) (%) (below): Decimal, one place, -100.0 to 100.0 percent

Matrix: Base Wastegate Control Valve Duty Correction f(ACT) (%)

ACT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| -10.0 | -10.0 | -10.0 | -5.0 | -2.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | -2.0 |

This map is used to apply a correction to the wastegate duty cycle as the air charge temperature changes. It is normally used to help prevent engine damage by reducing the boost when intake temperatures get too high.

NOTE: If closed loop wastegate control is enabled the target should have a similar correction applied.

The current value can be viewed as "wg_a_T_air" on the dashboard.

Base Wastegate Control Valve Duty Correction f(AAT) (%) (below): Decimal, one place, -100.0 to 100.0 percent

Matrix: Base Wastegate Control Valve Duty Correction f(AAT) (%)

AAT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

This map is used to apply a correction to the wastegate duty cycle as the ambient air temperature changes.

NOTE: If closed loop wastegate control is enabled the target should have a similar correction applied.

The current value can be viewed as "wg_a_T_amb" on the dashboard.

Base Wastegate Control Valve Duty Correction f(ECT) (%) (below): Decimal, one place, -100.0 to 100.0 percent

Matrix: Base Wastegate Control Valve Duty Correction f(ECT) (%)

ECT (°C)

| | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to apply a correction to the wastegate duty cycle as the engine coolant temperature changes. It is normally used to help prevent engine damage by reducing the boost when temperatures get too high.

NOTE: If closed loop wastegate control is enabled the target should have a similar correction applied.

The current value can be viewed as "wg_a_T_water" on the dashboard.

Base Wastegate Control Valve Duty Correction f(EOT) (%) (below): Decimal, one place, -100.0 to 100.0 percent

Matrix: Base Wastegate Control Valve Duty Correction f(EOT) (%)

EOT (°C)

| | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to apply a correction to the wastegate duty cycle as the engine oil temperature changes. It is normally used to help prevent engine damage by reducing the boost when temperatures get too high.

NOTE: If closed loop wastegate control is enabled the target should have a similar correction applied.

The current value can be viewed as "wg_a_T_oil" on the dashboard.

Base Wastegate Control Valve Duty Correction f(BAP) (%) (below): Decimal, one place, -100.0 to 100.0 percent

Matrix: Base Wastegate Control Valve Duty Correction f(BAP) (%)

BAP (mbar)

| | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 | 1000 | 1050 | 1100 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

This map is used to apply a correction to the wastegate duty cycle as the ambient pressure changes. It is normally used to help prevent engine damage by reducing the boost as the atmospheric pressure drops.

NOTE: If closed loop wastegate control is enabled the target should have a similar correction applied.

The current value can be viewed as "wg_a_P_amb" on the dashboard.

Base Wastegate Control Valve Duty Correction f(BPOT) (%) (below): Decimal, one place, -100.0 to 100.0 percent

Matrix: Base Wastegate Control Valve Duty Correction f(BPOT) (%)

RPM (rpm)

| BPOT | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to allow a driver adjustment of the boost control system.

NOTE: If closed loop wastegate control is enabled the target should have an appropriate correction applied.

The current value can be viewed as "wg_a_bpot" on the dashboard.

Base Wastegate Control Valve Duty Adder (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Base Wastegate Control Valve Duty Adder (%)

RPM (rpm)

| wg_target_total | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2250 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1750 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1250 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 750 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 250 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

This map allows an adder to the wastegate base duty to be applied based on the current total wastegate target 'wg_target_total' and engine speed.

NOTE: This parameter does not contribute to the total base duty when the 'Closed Loop Wastegate Control Target Type' is set to DUAL_MAP_AND_PRP.

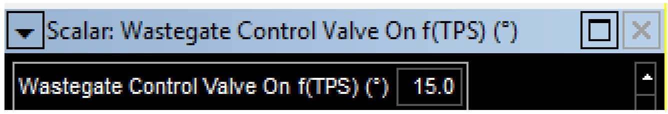
Global Wastegate Control Valve Duty Correction (%) (below): Decimal, one place, -100.0 to 100.0 percent

Scalar: Global Wastegate Control Valve Duty Correction (%)

| | |
|---|---|
| Global Wastegate Control Valve Duty Correction (%) | 0.0 |

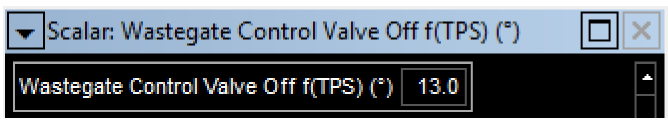
This map is used to apply a global correction to the wastegate control valve duty.

Wastegate Control Valve On f(TPS) degrees (below): Decimal, one place, 0.0 to 200.0 degrees



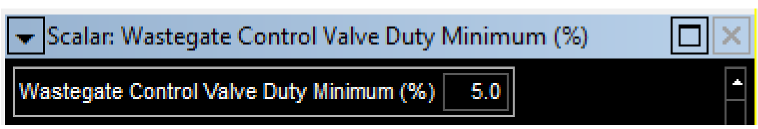

The wastegate control valve is enabled when the throttle position is greater than this threshold.

Wastegate Control Valve Off f(TPS) degrees (below): Decimal, one place, 0.0 to 200.0 degrees



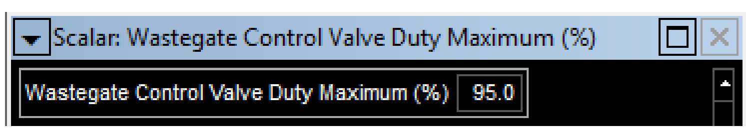

The wastegate control valve is disabled when the throttle position is less than this threshold.

Wastegate Control Valve Duty Minimum (%) (below): Decimal, one place, 0.0 to 100.0 percent



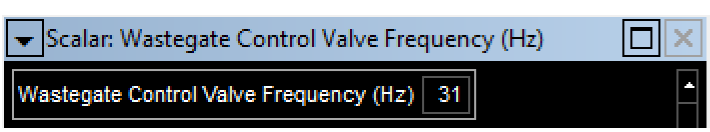

If the wastegate control valve duty is below this threshold the valve is turned fully on/off depending on the "Wastegate Control Valve Configuration".

Wastegate Control Valve Duty Maximum (%) (below): Decimal, one place, 0.0 to 100.0 percent



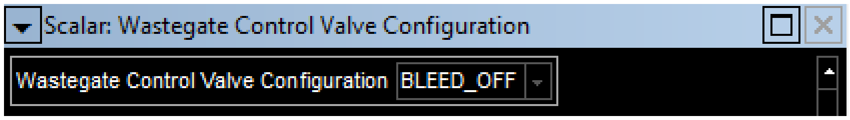

If the wastegate control valve duty is above this threshold the valve is turned fully on/off depending on the "Wastegate Control Valve Configuration".

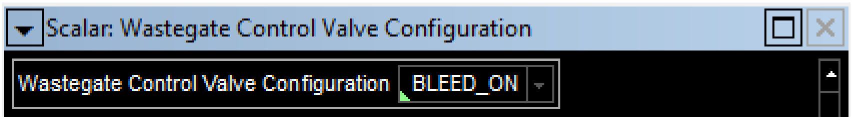
Wastegate Control Valve Frequency (Hz) (below): Decimal, whole numbers 13 to 300 Hertz (cycles per second)




This map selects the frequency at which the wastegate control valve will oscillate when enabled. Air flow is regulated to the wastegate by varying the MARK/SPACE ratio of the valve.

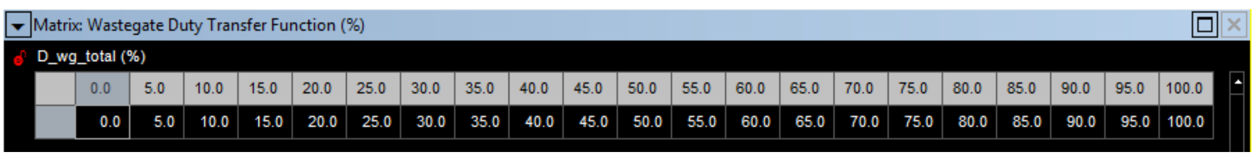
Wastegate Control Valve Configuration (below): BLEED_OFF / BLEED_ON



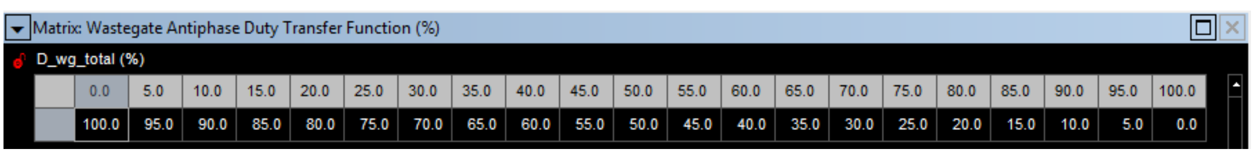

```
The "Wastegate Control Valve Configuration" is used to select the
logic used to drive the wastegate control valve. This map should be
set to BLEED_ON/BLEED_OFF depending on whether air is bled onto/off
of the wastegate when the valve is turned on. When this map is set
correctly 100% in the base duty map will give maximum boost, and 0%
minimum.

NOTE: Closed loop wastegate control will not operate correctly if
this is not set corretly.
```

Wastegate Duty Transfer Function (%) (below): Decimal, one place, 0.0 to 100.0 percent



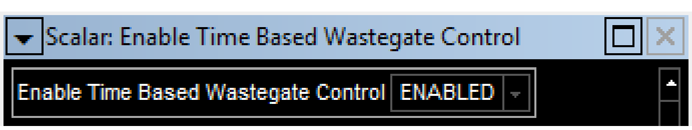

Transfer function to calculate D_wg_applied based on D_wg_total

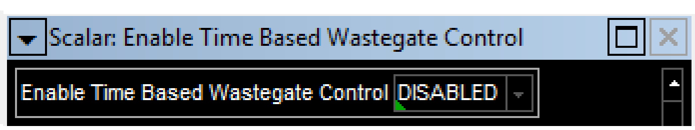
Wastegate Antiphase Duty Transfer Function (%) (below): Decimal, one place, 0.0 to 100.0 percent




Transfer function to calculate D_wg_AP_applied based on D_wg_total

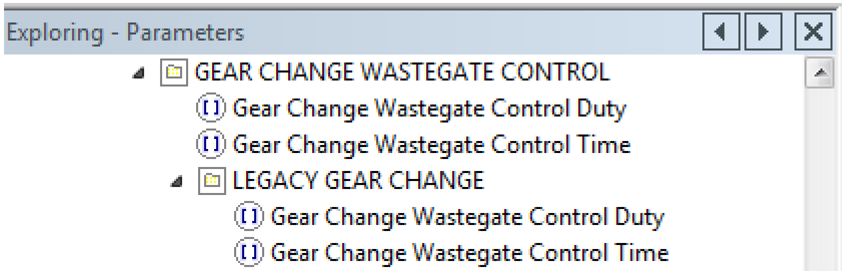
Enable Time Based Wastegate Control (below): ENABLED / DISABLED



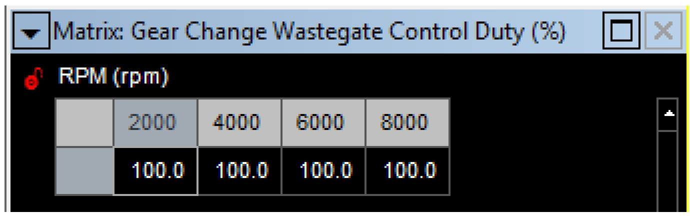




This map enables time based rather than event based wastegate control.

Gear Based Wastegate Control Parameters:



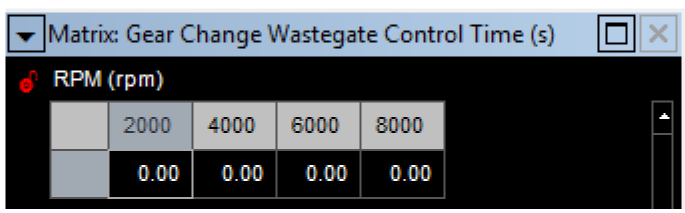

Gear Change Wastegate Control Duty (%) (below): Decimal, one place, 0.0 to 100.0 percent


Matrix: Gear Change Wastegate Control Duty (%)

RPM (rpm)

| | 2000 | 4000 | 6000 | 8000 |
|---|---|---|---|---|
| | 100.0 | 100.0 | 100.0 | 100.0 |

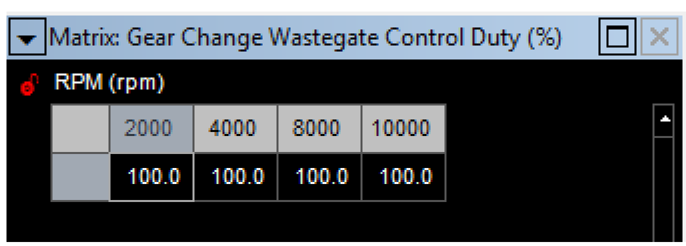
Gear Change Wastegate Control Time (s) (below): Decimal, two places, 0.00 to 2.00 seconds


Matrix: Gear Change Wastegate Control Time (s)

RPM (rpm)

| | 2000 | 4000 | 6000 | 8000 |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 0.00 |

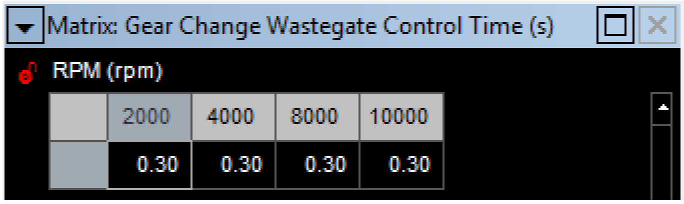
LEGACY GEAR CHANGE: Gear Change Wastegate Control Duty (%) (below): Decimal, one place, 0.0 to 100.0 percent


Matrix: Gear Change Wastegate Control Duty (%)

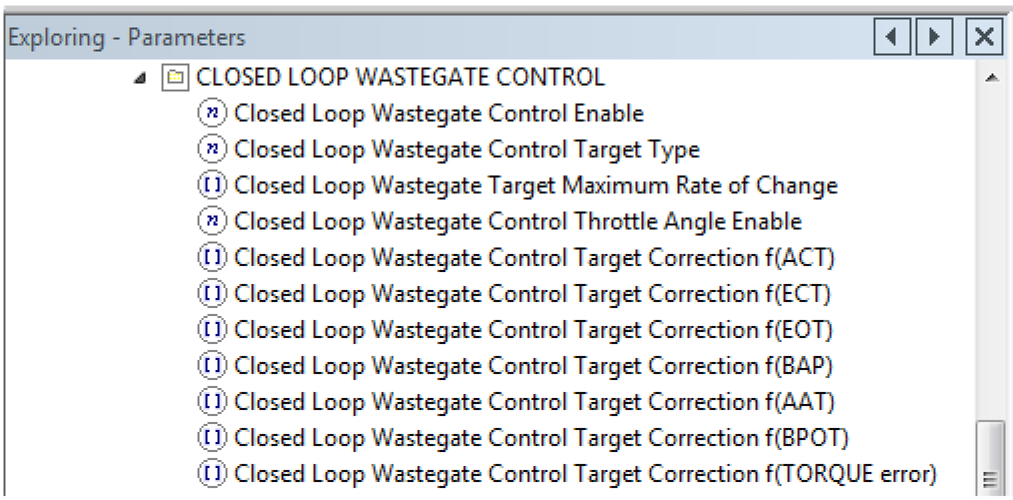
RPM (rpm)

| | 2000 | 4000 | 8000 | 10000 |
|---|---|---|---|---|
| | 100.0 | 100.0 | 100.0 | 100.0 |

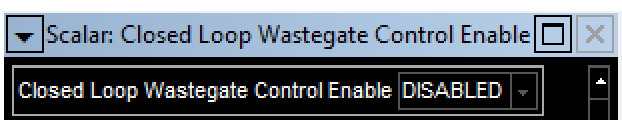
LEGACY GEAR CHANGE: Gear Change Wastegate Control Time (s) (below): Decimal, two places, 0.00 to 2.00 seconds

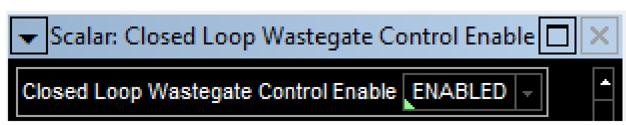


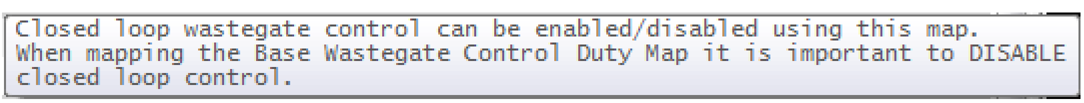

CLOSED LOOP WASTEGATE CONTROL:



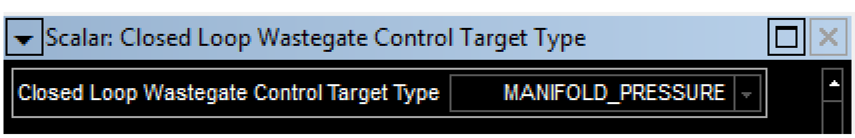

Closed Loop Wastegate Control: ENABLED / DISABLED




Closed Loop Wastegate Control Target Type (below):



This map selects which input signal (manifold pressure, restricter pressure, turbo speed, manifold pressure 2 or dual manifold and restrictor pressure ) is used as the target for the closed loop wastegate control system.

Note that each reading of the manifold pressure sensor is always at the same engine position (angle-based). All other signals (restricter pressure, turbo speed or manifold pressure 2) will be read at a fixed rate as specified in the "Sample Rate" map for each analog channel configuration.

Closed Loop Wastegate Maximum Rate of Change (Target/s) (below): Decimal 100 to 500000

Matrix: Closed Loop Wastegate Target Maximum Rate of Change (Target/s)

PPS (°)

| gear_pos | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|
| EIGHTH | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| SEVENTH | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| SIXTH | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| FIFTH | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| FOURTH | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| THIRD | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| SECOND | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| FIRST | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| NEUTRAL | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |
| REVERSE | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 | 500000 |

This parameter can be used to limit the maximum rate of change of the calculated 'wg_target_total' channel, used for determining the target level of engine boost.

The ability to limit the rate of change of 'wg_target_total' is intended for transient conditions so they do not drastically affect the level of boost, such conditions exist when a vehicle goes over a jump for instance.

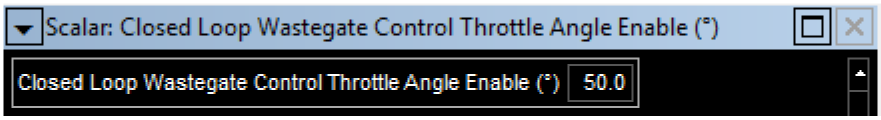
In all other circumstances, when there is a change actioned that may be calibrated with significantly different target levels, this rate of change will not be applied.

These circumstances include: change of Base Calibration, entering Start Line mode, Gear Shifts and finally when the DUAL target option is selected, each time there is a change in target.

Since the target is a generic target type, suitable for turbo speed in 100 RPM/bit or a pressure targeted in 1 mbar/bit, depending on the 'Closed Loop Wastegate Control

Target Type', the units of this parameter are (100 RPM)/sec or mbar/sec.

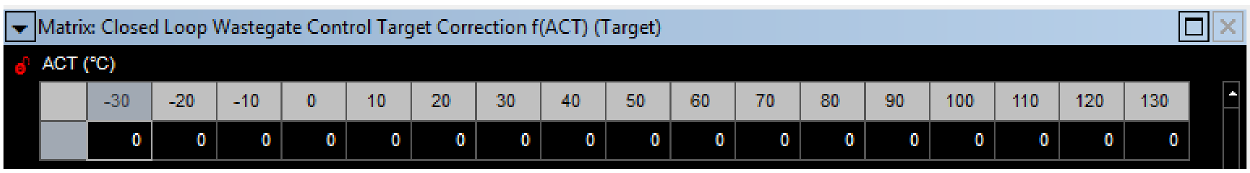
Closed Loop Wastegate Control Throttle Angle Enable (degrees) (below): Decimal, one place, 0.0 to 200.0 degrees




Closed loop wastegate control will only be enabled when the throttle angle is geater than this threshold.

The current state of the closed loop control system can be viewed as "en_wg_closed_loop" on the dashboard.

Closed Loop Wastegate Target Correction f(ACT) (Target) (below): Decimal -3000 to 3000




| | -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to correct the closed loop wastegate control target for changes in air charge temperature. It is normally used to lower the closed loop target when intake temperatures become too high.

The current value can be viewed as "wg_target_a_T_air" on the dashboard.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map, this map will be used when MAP is the current target.

Closed Loop Wastegate Control Target Correction f(ECT) (Target) (below): Decimal -1200 to 1200

Matrix: Closed Loop Wastegate Control Target Correction f(ECT) (Target)

ECT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
This map is used to correct the closed loop wastegate control target for
changes in engine coolant temperature. It is normally used to lower the closed
loop target when temperatures become too high.

The current value can be viewed as "wg_target_a_T_water" on the dashboard.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

Closed Loop Wastegate Control Target Correction f(EOT) (Target) (below): Decimal -1200 to 1200

Matrix: Closed Loop Wastegate Control Target Correction f(EOT) (Target)

EOT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
This map is used to correct the closed loop wastegate control target for
changes in engine oil temperature. It is normally used to lower the closed
loop target when temperatures become too high.

The current value can be viewed as "wg_target_a_T_oil" on the dashboard.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

Closed Loop Wastegate Control Target Correction f(BAP) (Target) (below): Decimal -1280 to 1270

Matrix: Closed Loop Wastegate Control Target Correction f(BAP) (Target)

RPM (rpm)

| BAP (mbar) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
This map is used to correct the closed loop wastegate control target for
changes in ambient air pressure. It is normally used to lower the closed
loop target when the ambient pressure drops to prevent turbo over-speed
in less dense air.

The current value can be viewed as "wg_target_a_P_amb" on the dashboard.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

Closed Loop Wstegate Control Target Correction f(AAT) (Target) (below): Decimal -1280 to 1270

Matrix: Closed Loop Wastegate Control Target Correction f(AAT) (Target)

RPM (rpm)

| AAT (°C) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -10.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
This map is used to correct the closed loop wastegate control target for
changes in ambient air temperature. It is normally used to lower the closed
loop target as the ambient temperature rises to prevent turbo over-speed in
less dense air.

The current value can be viewed as "wg_target_a_T_amb" on the dashboard.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

Closed Loop Wastegate Target Correction f(BPOT) (%) (below): Decimal -1250 to 1250

Matrix: Closed Loop Wastegate Control Target Correction f(BPOT) (%)

RPM (rpm)

| BPOT | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
This map is used to allow a driver adjustment of the boost control system.

The current value can be viewed as "wg_target_a_bpot" on the dashboard.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

Closed Loop Wastegate Control Target Correction f(TORQUE error) (below): Decimal, two places, 0.00 to 1.00

Matrix: Closed Loop Wastegate Control Target Correction f(TORQUE error)

TORQUE error (Nm)

| 1.00 | 2.00 | 3.00 | 4.00 | 5.00 | 6.00 | 7.00 | 8.00 | 9.00 | 10.00 | 11.00 | 12.00 | 13.00 | 14.00 | 15.00 | 16.00 | 17.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

A series of breakpoints defined in the map "Strain Gauge Torque Error Breakpoints", are provided in this map. The breakpoint value chosen is based on the Torque Error which is calculated in the map "Strain Gauge Maximum Torque Per Gear".

For each breakpoint, a value is set as a multiplier to the target map of the closed loop wastegate strategy. The target map used is Closed Loop Wastegate Control Target 1, unless the second calibration is used, in which case the map used will be "Closed Loop Wastegate Control Target 2".

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map, this map will be used when MAP is the current target.

CLOSED LOOP WASTEGATE CONTROL: Proportional, Integral, Derivative (PID) entries (below): Control loop feedback mechanism

Exploring - Parameters

- INTEGRAL TERM
  - Closed Loop Wastegate Control Integrator Gain (Positive Error)
  - Closed Loop Wastegate Control Integrator Gain (Negative Error)
  - Maximum Integrator (Positive Error)
  - Maximum Integrator (Negative Error)
- PROPORTIONAL TERM
  - Closed Loop Wastegate Control Proportional Gain (Positive Error)
  - Closed Loop Wastegate Control Proportional Gain (Negative Error)
- DERIVATIVE TERM
  - Closed Loop Wastegate Control Derivative Gain
  - Closed Loop Wastegate Control Derivative Decay Positive
  - Closed Loop Wastegate Control Derivative Decay Negative

INTEGRAL TERM: Closed Loop Wastegate Integrator Gain (Positive Error) (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Closed Loop Wastegate Control Integrator Gain (Positive Error) (%)

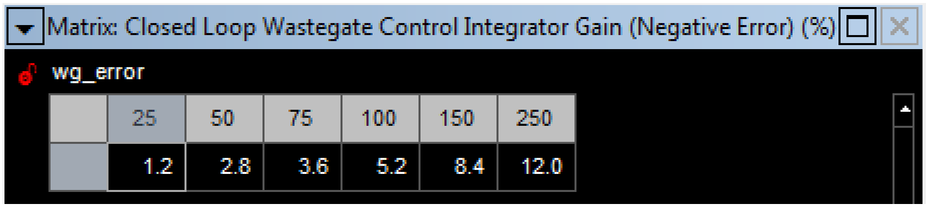
wg_error

| 25 | 50 | 75 | 100 | 150 | 250 |
|---|---|---|---|---|---|
| 1.2 | 3.2 | 4.4 | 6.0 | 8.0 | 12.8 |

This map is used to control the gain of the closed loop integrator when the wastegate error signal is positive. The gain can be set at different errors to enable faster response when errors are large.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map, this map will be used when MAP is the current target.

INTEGRAL TERM: Closed Loop Wastegate Control Integrator Gain (Negative) (%) (below): Decimal, one place, 0.0 to 100.0 percent

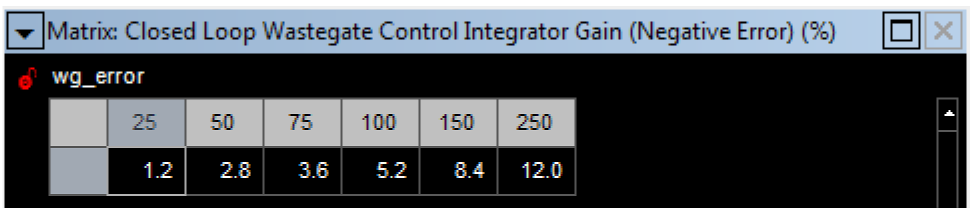



| | 25 | 50 | 75 | 100 | 150 | 250 |
|---|---|---|---|---|---|---|
| | 1.2 | 2.8 | 3.6 | 5.2 | 8.4 | 12.0 |

This map is used to control the gain of the closed loop integrator when the wastegate error signal is negative. The gain can be set at different errors to enable faster response when errors are large.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map, this map will be used when MAP is the current target.

INTEGRAL TERM: Closed Loop Wastegate Control Integrator Gain (Negative Error) (%) (below): Decimal, no places, 0 to 100 percent

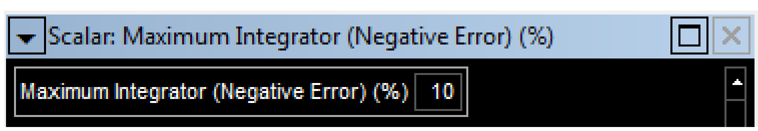



| | 25 | 50 | 75 | 100 | 150 | 250 |
|---|---|---|---|---|---|---|
| | 1.2 | 2.8 | 3.6 | 5.2 | 8.4 | 12.0 |

This map is used to limit the range of the integral control term when the wastegate error signal is positive. If the integral term is allowed too much range, it can cause problems when mechanical failures occur (air leaks etc.) and the system tries to compensate by working the turbo harder.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map, this map will be used when MAP is the current target.

INTEGRAL TERM: Maximum Integrator (Negative Error) (%) (below): Decimal, no places, 0 to 100 percent




This map is used to limit the range of the integral control term when the wastegate error signal is negative. If the integral term is allowed too much range, it can cause problems when mechanical failures occur (air leaks etc.) and the system tries to compensate by working the turbo harder.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map, this map will be used when MAP is the current target.

PROPORTIONAL TERM: Closed Loop Wastegate Control Proportional Gain (Positive Error) (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Closed Loop Wastegate Control Proportional Gain (Positive Error) (%)

wg_error

| | 25 | 50 | 75 | 100 | 150 | 250 |
|---|---|---|---|---|---|---|
| | 0.0 | 4.2 | 7.0 | 9.2 | 12.6 | 14.9 |

```
This map is used to control the gain of the closed loop proportional
term when wastegate error signal is positive. The gain can be set at
different errors to enable faster response when errors are large.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

PROPORTIONAL TERM: Closed Loop Wastegate Control Proportional Gain (Negative Error) (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Closed Loop Wastegate Control Proportional Gain (Negative Error) (%)

wg_error

| | 25 | 50 | 75 | 100 | 150 | 250 |
|---|---|---|---|---|---|---|
| | 0.0 | 4.0 | 7.6 | 9.0 | 13.0 | 15.0 |

```
This map is used to control the gain of the closed loop proportional
term when wastegate error signal is negative. The gain can be set at
different errors to enable faster response when errors are large.

If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

DERIVATIVE TERM: Closed Loop Wastegate Control Derivative Gain (%) (below): Decimal, one place, -100.0 to 100.0 percent

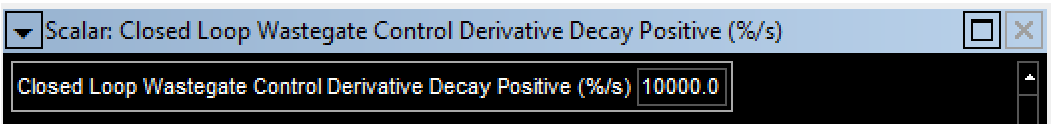
Matrix: Closed Loop Wastegate Control Derivative Gain (%)

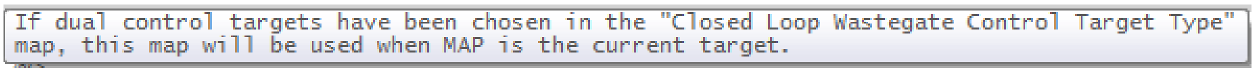
deltaMap (mbar/s)

| | 0 | 250 | 500 | 750 | 1000 | 1250 | 1500 |
|---|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

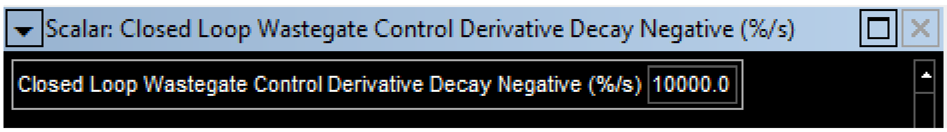
```
If dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type"
map, this map will be used when MAP is the current target.
```

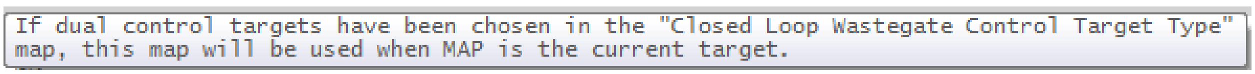
DERIVATIVE TERM: Closed Loop Wastegate Control Derivative Decay Positive (%/s) (below): Decimal, one place, 0.4 to 10000.0



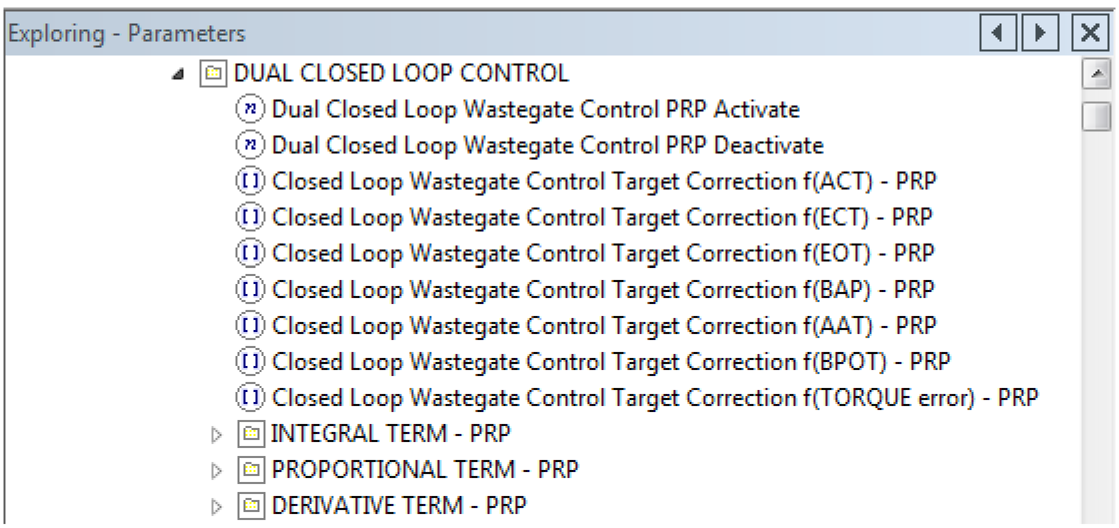




DERIVATIVE TERM: Closed Loop Wastegate Control Derivative Decay Negative (%/s) (below): Decimal, one place, 0.4 to 10000.0

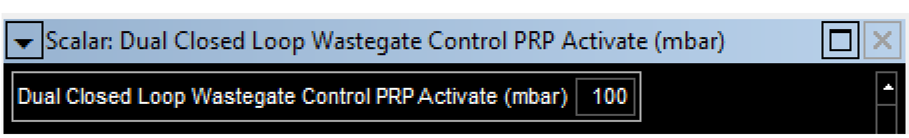


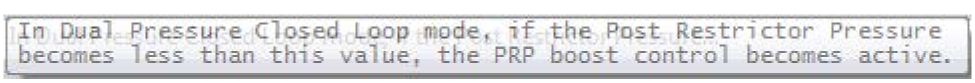




WASTEGATE CONTROL: DUAL CLOSED LOOP CONTROL (below): Activate/Deactivate; Corrections and PID Settings




Dual Closed Loop Control PRP Activate (Mbar) (below): Decimal, no places, 0 to 5000 millibar pressure



Dual Closed Loop Wastegate Control PRP Deactivate (mbar) (below): Decimal, no places, 0 to 5000 millibar pressure

Scalar: Dual Closed Loop Wastegate Control PRP Deactivate (mbar)

| | |
|---|---|
| Dual Closed Loop Wastegate Control PRP Deactivate (mbar) | 80 |

In Dual Pressure Closed Loop mode, if the Post Restrictor Pressure becomes greater than this value, the MAP boost control becomes active.

Dual Closed Loop Wastegate Control Target Correction f (ACT) – PRP (Target) (below): Decimal, no place, -3000 to 3000

Matrix: Closed Loop Wastegate Control Target Correction f(ACT) - PRP (Target)

ACT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to correct the closed loop wastegate control target for changes in air charge temperature. It is normally used to lower the closed loop target when intake temperatures become too high.

The current value can be viewed as "wg_target_a_T_air" on the dashboard.

This map is used when dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map and PRP is the current target.

Dual Closed Loop Wastegate Control Target Correction f(ECT) – PRP (Target) (below): Decimal, no places, -1200 to 1200

Matrix: Closed Loop Wastegate Control Target Correction f(ECT) - PRP (Target)

ECT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to correct the closed loop wastegate control target for changes in engine coolant temperature. It is normally used to lower the closed loop target when temperatures become too high.

The current value can be viewed as "wg_target_a_T_water" on the dashboard.

This map is used when dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map and PRP is the current target.

Dual Closed Loop Wastegate Control Target Correction f(EOT) – PRP (Target) (below): Decimal, no places, -1200 to 1200

Matrix: Closed Loop Wastegate Control Target Correction f(EOT) - PRP (Target)

EOT (°C)

| -30 | -20 | -10 | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 | 130 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to correct the closed loop wastegate control target for changes in engine oil temperature. It is normally used to lower the closed loop target when temperatures become too high.

The current value can be viewed as "wg_target_a_T_oil" on the dashboard.

This map is used when dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map and PRP is the current target.

Dual Closed Loop Wastegate Control Target Correction f(BAP) – PRP (Target) (below): Decimal, no places, -1280 to 1270

Matrix: Closed Loop Wastegate Control Target Correction f(BAP) - PRP (Target)

RPM (rpm)

| BAP (mbar) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1050 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1000 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 950 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 900 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 850 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 800 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 750 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 700 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

This map is used to correct the closed loop wastegate control target for changes in ambient air pressure. It is normally used to lower the closed loop target when the ambient pressure drops to prevent turbo over-speed in less dense air.

The current value can be viewed as "wg_target_a_P_amb" on the dashboard.

This map is used when dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map and PRP is the current target.

Dual Closed Loop Wastegate Control Target Correction f(AAT) – PRP (Target) (below): Decimal, no places, -1280 to 1270

Matrix: Closed Loop Wastegate Control Target Correction f(AAT) - PRP (Target)

RPM (rpm)

| AAT (°C) | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 60.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 50.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 40.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 30.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 20.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 10.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 0.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| -10.0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
This map is used to correct the closed loop wastegate control target for
changes in ambient air temperature. It is normally used to lower the closed
loop target as the ambient temperature rises to prevent turbo over-speed in
less dense air.

The current value can be viewed as "wg_target_a_T_amb" on the dashboard.

This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

Dual Closed Loop Wastegate Control Target Correction f(BPOT) – PRP (%) (below): Decimal, no places, -1250 to 1250

Matrix: Closed Loop Wastegate Control Target Correction f(BPOT) - PRP (%)

RPM (rpm)

| BPOT | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

```
This map is used to allow a driver adjustment of the boost control system.

The current value can be viewed as "wg_target_a_bpot" on the dashboard.

This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

Dual Closed Loop Wastegate Control Target Correction f(TORQUE error) – PRP (below): Decimal, two places, 0.00 to 1.00

Matrix: Closed Loop Wastegate Control Target Correction f(TORQUE error) - PRP

| TORQUE error (Nm) | 1.00 | 2.00 | 3.00 | 4.00 | 5.00 | 6.00 | 7.00 | 8.00 | 9.00 | 10.00 | 11.00 | 12.00 | 13.00 | 14.00 | 15.00 | 16.00 | 17.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

A series of breakpoints defined in the map "Strain Gauge Torque Error Breakpoints", are provided in this map. The breakpoint value chosen is based on the Torque Error which is calculated in the map "Strain Gauge Maximum Torque Per Gear".

For each breakpoint, a value is set as a multiplier to the target map of the closed loop wastegate strategy. The target map used is Closed Loop Wastegate Control Target 1, unless the second calibration is used, in which case the map used will be "Closed Loop Wastegate Control Target 2".

This map is used when dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map and PRP is the current target.

WASTEGATE: DUAL CLOSED LOOP CONTROL: : Proportional, Integral, Derivative (PID) entries (below): Control loop feedback mechanism

Exploring - Parameters

- INTEGRAL TERM - PRP
  - Closed Loop Wastegate Control Integrator Gain - PRP (Positive Error)
  - Closed Loop Wastegate Control Integrator Gain - PRP (Negative Error)
  - Maximum Integrator - PRP (Positive Error)
  - Maximum Integrator - PRP (Negative Error)
- PROPORTIONAL TERM - PRP
  - Closed Loop Wastegate Control Proportional Gain - PRP (Positive Error)
  - Closed Loop Wastegate Control Proportional Gain - PRP (Negative Error)
- DERIVATIVE TERM - PRP
  - Closed Loop Wastegate Control Derivative Gain - PRP
  - Closed Loop Wastegate Control Derivative Decay Positive - PRP
  - Closed Loop Wastegate Control Derivative Decay Negative - PRP

INTEGRAL TERM - PRP: Dual Closed Loop Wastegate Control Integrator Gain – PRP (Positive Error) (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Closed Loop Wastegate Control Integrator Gain - PRP (Positive Error) (%)

wg_error

| | 25 | 50 | 75 | 100 | 150 | 250 |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

```
This map is used to control the gain of the closed loop integrator
when the wastegate error signal is positive. The gain can be set at
different errors to enable faster response when errors are large.

This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

INTEGRAL TERM – PRP: Dual Closed Loop Wastegate Integrator Gain – PRP (Negative Error) (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Closed Loop Wastegate Control Integrator Gain - PRP (Negative Error) (%)

wg_error

| | 25 | 50 | 75 | 100 | 150 | 250 |
|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

```
This map is used to control the gain of the closed loop integrator
when the wastegate error signal is negative. The gain can be set at
different errors to enable faster response when errors are large.

This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

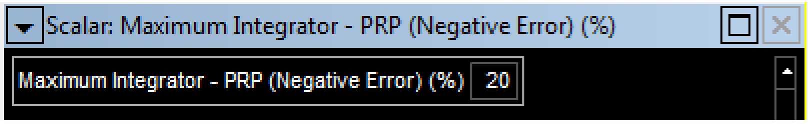
INTEGRAL TERM – PRP: Dual Closed Loop Wastegate Integrator – PRP (Positive Error) (%) (below): Decimal, no places, 0 to 100 percent

Scalar: Maximum Integrator - PRP (Positive Error) (%)

| | |
|---|---|
| Maximum Integrator - PRP (Positive Error) (%) | 20 |

```
This map is used to limit the range of the integral control term
when the wastegate error signal is positive. If the integral term
is allowed too much range, it can cause problems when mechanical
failures occur (air leaks etc.) and the system tries to compensate
by working the turbo harder.

This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

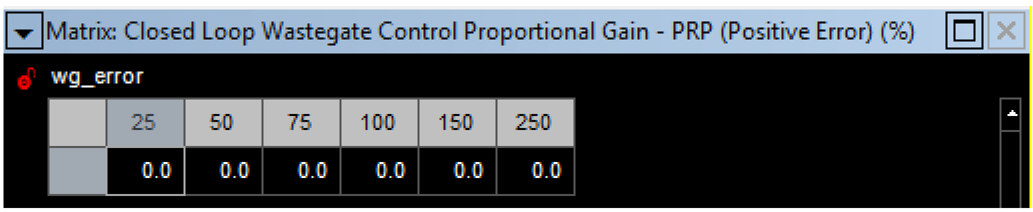
INTEGRAL TERM – PRP: Dual Closed Loop Wastegate Integrator – PRP (Negative Error) (%) (below): Decimal, no places, 0 to 100 percent




This map is used to limit the range of the integral control term when the wastegate error signal is negative. If the integral term is allowed too much range, it can cause problems when mechanical failures occur (air leaks etc.) and the system tries to compensate by working the turbo harder.

This map is used when dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map and PRP is the current target.

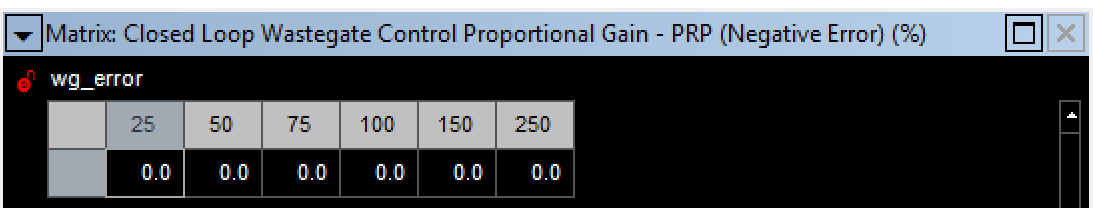
PROPORTIONAL TERM – PRP: Dual Closed Loop Proportional Gain – PRP (Positive Error) (%) (below): Decimal, one place, 0.0 to 100.0 percent




This map is used to control the gain of the closed loop proportional term when wastegate error signal is positive. The gain can be set at different errors to enable faster response when errors are large.

This map is used when dual control targets have been chosen in the "Closed Loop Wastegate Control Target Type" map and PRP is the current target.

PROPORTIONAL TERM – PRP: Dual Closed Loop Proportional Gain – PRP (Negative Error) (%) (below): Decimal, one place, 0.0 to 100.0 percent



```
This map is used to control the gain of the closed loop proportional
term when wastegate error signal is negative. The gain can be set at
different errors to enable faster response when errors are large.

This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

DERIVATIVE TERM-PRP: Dual Closed Loop Control Derivative Gain – PRP (%) (below): Decimal, one place -100.0 to 100.0 percent

Matrix: Closed Loop Wastegate Control Derivative Gain - PRP (%)

deltaMap (mbar/s)

| | 0 | 250 | 500 | 750 | 1000 | 1250 | 1500 |
|---|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

```
This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

DERIVATIVE TERM-PRP: Dual Closed Loop Wastegate Control Derivative Decay Positive – PRP (%) (Below): Decimal, one place, 0.4 to 10000.0

Scalar: Closed Loop Wastegate Control Derivative Decay Positive - PRP (%/s)

Closed Loop Wastegate Control Derivative Decay Positive - PRP (%/s) 0.4

```
This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

DERIVATIVE TERM-PRP: Dual Closed Loop Wastegate Control Derivative Decay Negative – PRP (%) (Below): Decimal, one place, 0.4 to 10000.0

Scalar: Closed Loop Wastegate Control Derivative Decay Negative - PRP (%/s)

Closed Loop Wastegate Control Derivative Decay Negative - PRP (%/s) 0.4

```
This map is used when dual control targets have been chosen in the
"Closed Loop Wastegate Control Target Type" map and PRP is the current target.
```

WASTEGATE CONTROL: BOOST LIMITS: Boost Limit (Mbar) (below): Decimal, no places, 0 to 5000 millibar pressure

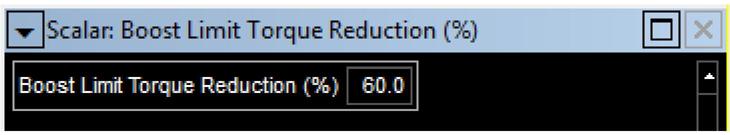
Matrix: Boost Limit (mbar)

RPM (rpm)

| | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 | 3000 |

If the manifold pressure exceeds this threshold, a soft limit is applied which randomly cuts cylinders. The method of cut (fuel or ignition) is selected by the "Boost Limit Torque Reduction Mode". The severity of the limit is set in the "Boost Limit Torque Reduction".

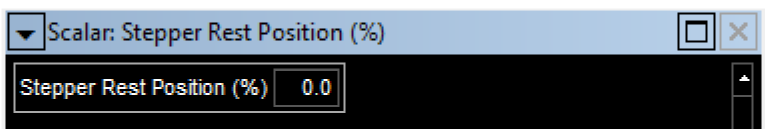
WASTEGATE CONTROL: BOOST LIMITS: Boost Limit Torque Reduction (%) (below): Decimal, one place, 0.0 to 100.0 percent




The "Boost Limit Torque Reduction" is used to set the severity of the limit used when the manifold pressure exceeds the boost limit

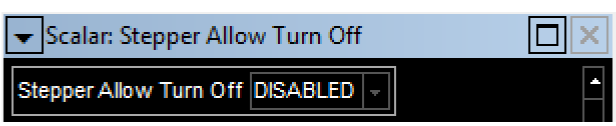
A value of 0 gives no limit.
A value of 100 gives a complete cut
As the value increases from 1-100 the limit increses in severity

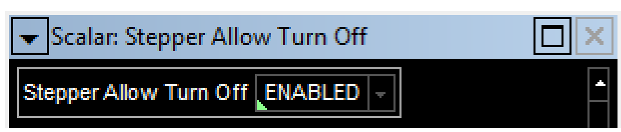
WASTEGATE CONTROL: STEPPER MOTOR: Stepper Rest Position (%) (below): Decimal, one place, 0.0 to 100.0 percent




If the wastegate strategy is controlling a stepper motor, then the motor will be driven to the position in this map at startup and whenever the engine stops.

WASTEGATE CONTROL: STEPPER MOTOR: Stepper Allow Turn Off: ENABLED / DISABLED (below):

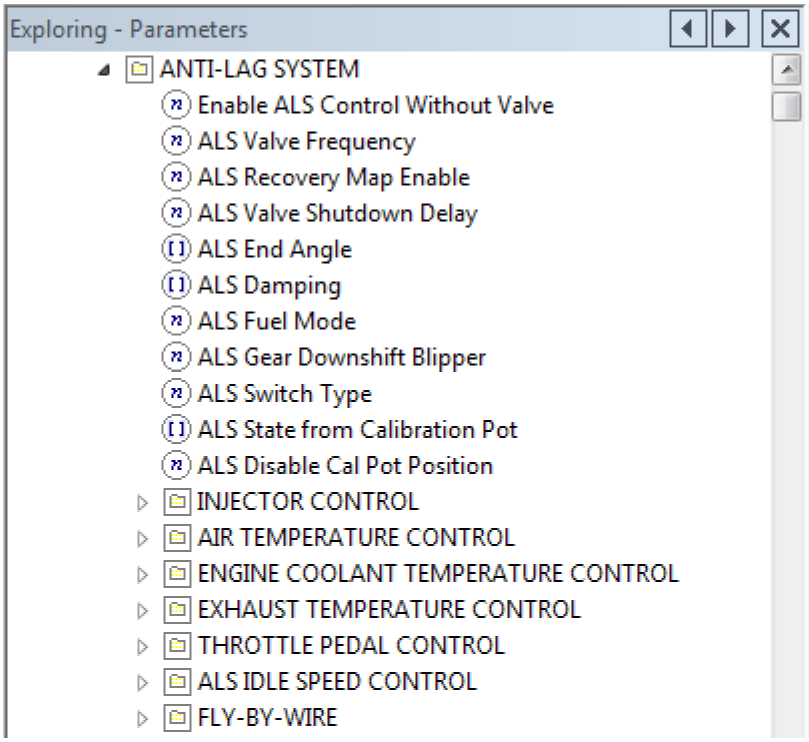


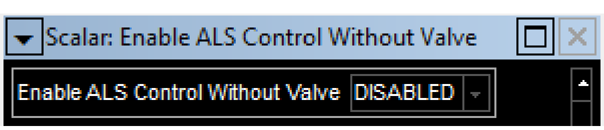

If the wastegate strategy is controlling a stepper motor, then this map allows the stepper motor to be turned off when the wastegate strategy is inactive (when "en_wg_A_throttle" on the dashboard is DISABLED).

Note that stepper motors that may potentially move whilst unpowered should not be turned off as the ECU relies on keeping count of the absolute position of the stepper motor.

STANDARD MAPPING: ANTI-LAG SYSTEM: (below)



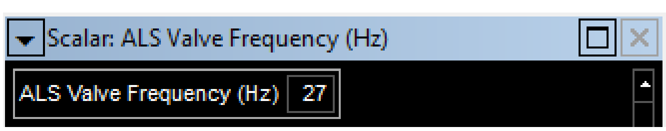

ANTI-LAG SYSTEM: Enable ALS Control Without Valve: ENABLED / DISABLED (below):



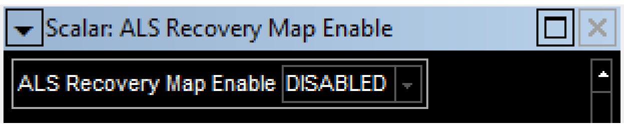


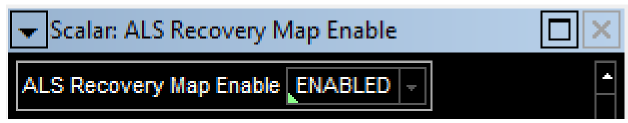
This map enables the use of ALS when an output valve is not configured

ANTI-LAG SYSTEM: ALS Valve Frequency (Hz) (below): Decimal, no places, 13 to 300 Hz (cycles per second)



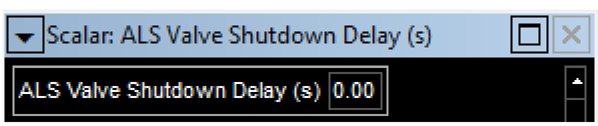
ANTI-LAG SYSTEM: ALS Recovery Map Enable: ENABLED / DISABLED (below):




```
When the ALS software detects an error condition (Air or Exhaust
Temperature too high) it will go into recovery mode to prevent
damage to the turbochanger.

  If the ALS Recovery Map is DISABLED:
  The ALS will switch off and the valve close.

  If the ALS Recovery Map is ENABLED:
  The ALS will switch to using the Recovery Maps. These should
  be calibrated to generate less heat in the turbocharger, allowing
  it to cool off. When the temperatures have dropped, the main ALS
  maps will be enabled again.
}
```

ANTI-LAG SYSTEM: ALS Valve Shutdown Delay (s) (below): Decimal, two places, 0.00 to 2.00 seconds




ANTI-LAG SYSTEM: ALS End Angle (degrees) (below): Decimal, two places, 0.25 increment, 0.25 to 720.00 degrees

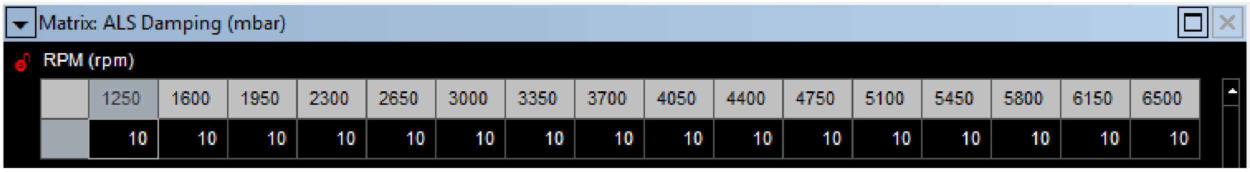
Matrix: ALS End Angle (°)

RPM (rpm)

| 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 | 360.00 |

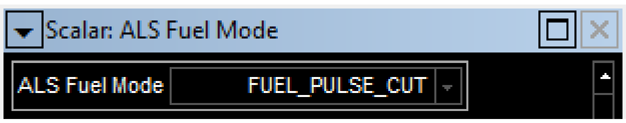
```
NOTE: ALS injection end angle control is only active when the
throttle position is less than the minimum throttle axis entry
in the ALS fuel and ignition maps.
```

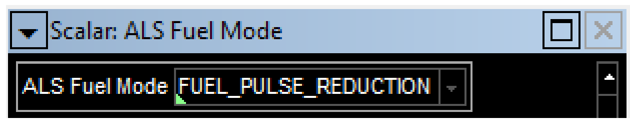
ANTI-LAG SYSTEM: ALS Damping (mbar) (below): Decimal, no places, 0 to 5000 millibar pressure




```
ALS Damping is used to filter out large spikes in the manifold
pressure reading caused by plenum explosions when ALS is active.

NOTE: ALS damping is only active when the throttle position is
less than the minimum throttle axis entry in the ALS fuel and
ignition maps.
```

ANTI-LAG SYSTEM: ALS Fuel Mode (below):

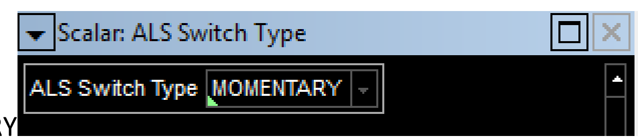


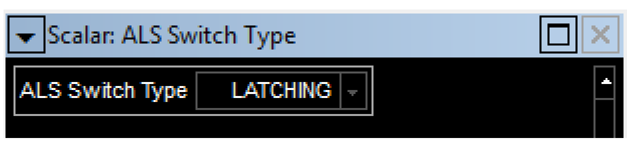

ANTI-LAG SYSTEM: ALS Gear Downshift Blipper (below): ENABLED / DISABLED



If ENABLED, ALS will be disabled for the duration of the gear shift.

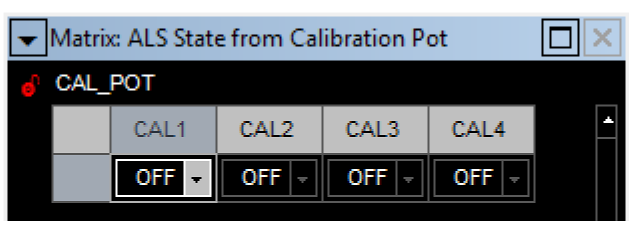



ANTI-LAG SYSTEM: ALS Switch Type (below): LATCHING / MOMENTARY



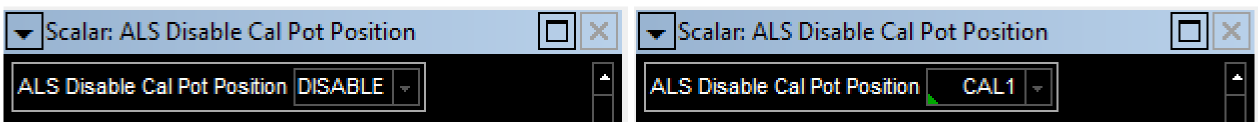

This map defines the physical type of switch used as the ALS activation switch

ANTI-LAG SYSTEM: ALS State from Calibration Pot (below):



This map allows ALS to be enabled as a function of Calibration Pot.
Note that the ALS switch has priority and this map will not be read
if the ALS switch is cofigured.

ANTI-LAG SYSTEM: ALS Disable Cal Pot Position (below): DISABLE or CAL1 to CAL4; Five selections total



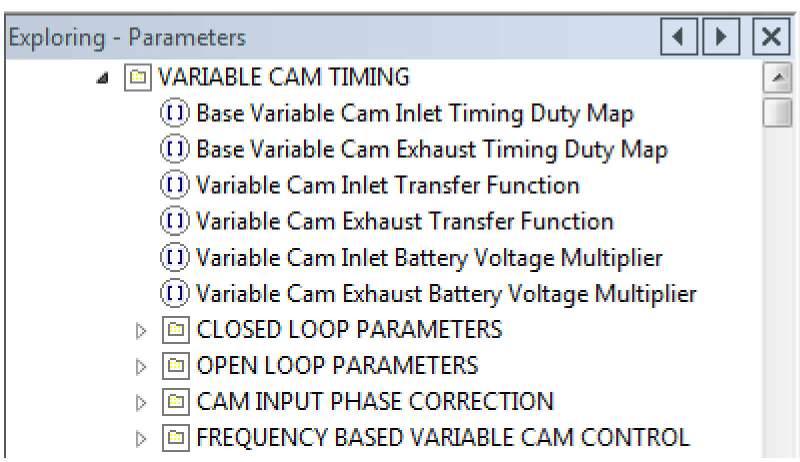

If ALS is disabled (ALS_state on dashboard is OFF), then CAL_POT will be
overridden to be the position in this map. Note that any other strategies
using CAL_POT will also be affected.

To reset CAL_POT, the Calibration Pot position must be moved to the
position in this map.

This functionality will only be enabled if all the following conditions
are met:

- A calibration pot is configured
- This map is set to CAL1-CAL4
- The map "ALS Recovery Map Enable" is DISABLED

STANDARD MAPPING: VARIABLE CAM TIMING (below):



Base Variable Cam Inlet Timing Duty Map (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Base Variable Cam Inlet Timing Duty Map (%)

RPM (rpm)

| MAP (mbar) | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

```
This map is used to derive the base duty cycle applied to the
valve controlling the variable camshaft. This duty may then be
modified if closed loop control is enabed. The actual duty
cycle applied is calculated as follows :

    vcamTotal = inVCamBase          : base duty cycle
              + inVCamProp          : proportional term
              + inVCamInt           : integral term

The current value can be viewed as "inVCamBase" on the dashboard.
```

Base Variable Cam Exhaust Timing Duty Map (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Base Variable Cam Exhaust Timing Duty Map (%)

RPM (rpm)

| MAP (mbar) | 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 2000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1500 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 1000 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

```
This map is used to derive the base duty cycle applied to the
valve controlling the variable camshaft. This duty may then be
modified if closed loop control is enabed. The actual duty
cycle applied is calculated as follows :

    vcamTotal = exVCamBase          : base duty cycle
              + exVCamProp          : proportional term
              + exVCamInt           : integral term

The current value can be viewed as "exVCamBase" on the dashboard.
```

Variable Cam Inlet Transfer Function (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Variable Cam Inlet Transfer Function (%)

inVCam1Total (%)

| 0.0 | 6.3 | 12.5 | 18.8 | 25.0 | 31.3 | 37.5 | 43.8 | 50.0 | 56.3 | 62.5 | 68.8 | 75.0 | 81.3 | 87.5 | 93.8 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 6.3 | 12.5 | 18.8 | 25.0 | 31.3 | 37.5 | 43.8 | 50.0 | 56.3 | 62.5 | 68.8 | 75.0 | 81.3 | 87.5 | 93.8 | 100.0 |

```
This map allows the user to specify the direction in which the valve should be
driven.

NOTE: The output pins associated with the Variable Cam control should have the
"invert select" map set to NORMAL at all times.
```

Variable Cam Exhaust Transfer Function (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Variable Cam Exhaust Transfer Function (%)

exVCam1Total (%)

| 0.0 | 6.3 | 12.5 | 18.8 | 25.0 | 31.3 | 37.5 | 43.8 | 50.0 | 56.3 | 62.5 | 68.8 | 75.0 | 81.3 | 87.5 | 93.8 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 6.3 | 12.5 | 18.8 | 25.0 | 31.3 | 37.5 | 43.8 | 50.0 | 56.3 | 62.5 | 68.8 | 75.0 | 81.3 | 87.5 | 93.8 | 100.0 |

```
This map allows the user to specify the direction in which the valve should be
driven.

NOTE: The output pins associated with the Variable Cam control should have the
"invert select" map set to NORMAL at all times.
```

Variable Cam Inlet Battery Voltage Multiplier (below): Decimal, three places, 0.000 to 2.000

Matrix: Variable Cam Inlet Battery Voltage Multiplier

VBAT (V)

| 8.00 | 8.50 | 9.00 | 9.50 | 10.00 | 10.50 | 11.00 | 11.50 | 12.00 | 12.50 | 13.00 | 13.50 | 14.00 | 14.50 | 15.00 | 15.50 | 16.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

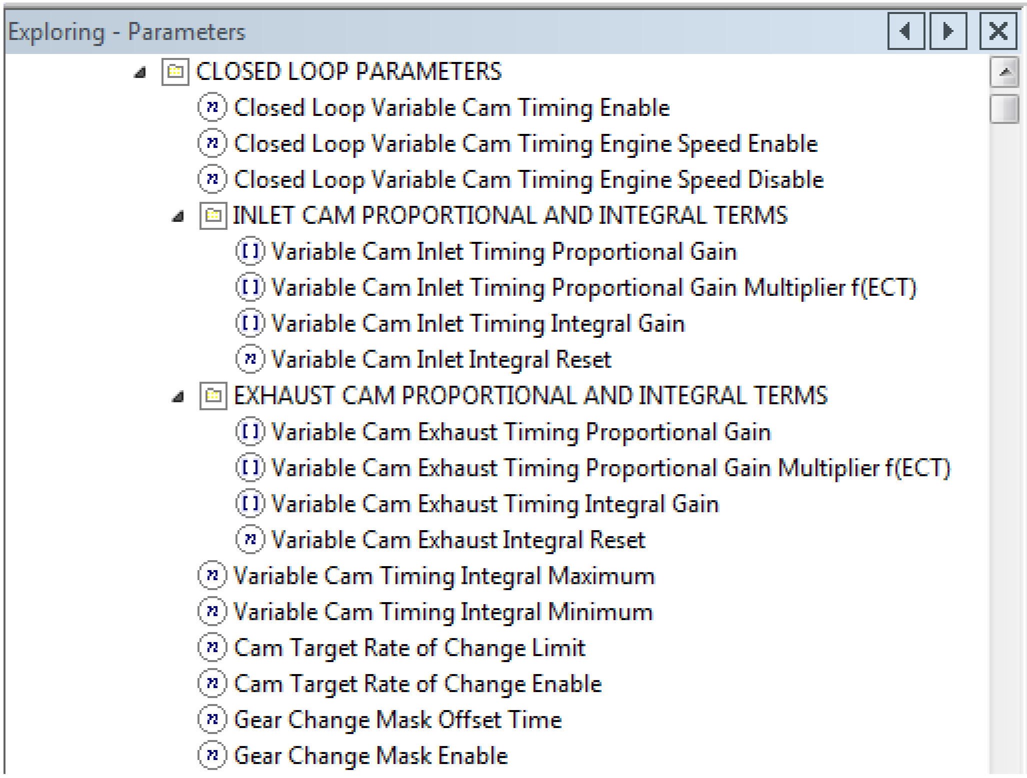
Variable Cam Exhaust Battery Voltage Multiplier (below): Decimal, three places, 0.000 to 2.000

Matrix: Variable Cam Exhaust Battery Voltage Multiplier

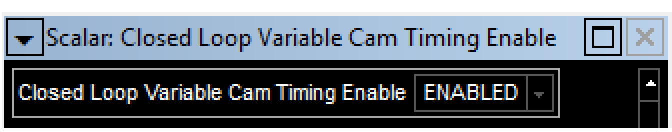
VBAT (V)

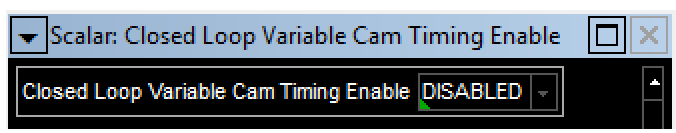
| 8.00 | 8.50 | 9.00 | 9.50 | 10.00 | 10.50 | 11.00 | 11.50 | 12.00 | 12.50 | 13.00 | 13.50 | 14.00 | 14.50 | 15.00 | 15.50 | 16.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

VARIABLE CAM: CLOSED LOOP PARAMETERS (below):

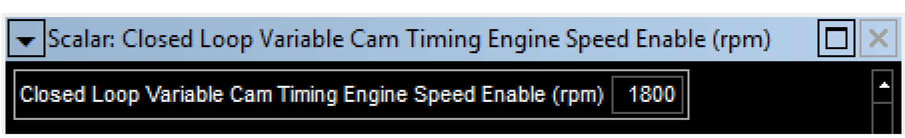


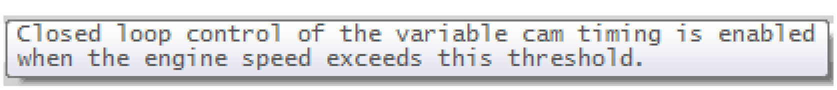

Closed Loop Variable Cam Timing Enable (below): ENABLED / DISABLED




Closed Loop Variable Cam Timing Engine Speed Enable (rpm) (below): Decimal, no places, 0 to 20000 rpm




Closed Loop Variable Cam Timing Engine Speed Disable (rpm) (below): Decimal, no places, 0 to 20000 rpm

Scalar: Closed Loop Variable Cam Timing Engine Speed Disable (rpm)

| | |
|---|---|
| Closed Loop Variable Cam Timing Engine Speed Disable (rpm) | 1600 |

VARIABLE CAM TIMING: PID TERMS (below):

Exploring - Parameters

- INLET CAM PROPORTIONAL AND INTEGRAL TERMS
  - Variable Cam Inlet Timing Proportional Gain
  - Variable Cam Inlet Timing Proportional Gain Multiplier f(ECT)
  - Variable Cam Inlet Timing Integral Gain
  - Variable Cam Inlet Integral Reset
- EXHAUST CAM PROPORTIONAL AND INTEGRAL TERMS
  - Variable Cam Exhaust Timing Proportional Gain
  - Variable Cam Exhaust Timing Proportional Gain Multiplier f(ECT)
  - Variable Cam Exhaust Timing Integral Gain
  - Variable Cam Exhaust Integral Reset
- Variable Cam Timing Integral Maximum
- Variable Cam Timing Integral Minimum
- Cam Target Rate of Change Limit
- Cam Target Rate of Change Enable
- Gear Change Mask Offset Time
- Gear Change Mask Enable

Variable Cam Inlet Timing Proportional Gain (%) (below): Decimal, two places, -100.00 tp 100.00 percent

Matrix: Variable Cam Inlet Timing Proportional Gain (%)

inVCam1Error (°)

| | -25.00 | -15.00 | -10.00 | -5.00 | -2.00 | 0.00 | 2.00 | 5.00 | 10.00 | 15.00 | 25.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This map selects the amount of correction applied by the proportional
term in the closed loop controller. The total duty applied is calculated
as follows :

    vcamTotal = vcamBase          : base duty cycle
              + vcamProp          : proportional term
              + vcamInt           : integral term

The proportional correction can be viewed as "vcamProp" on the dashboard.
```

Variable Cam Inlet Timing Proportional Gain Multiplier f(ECT) (below): Decimal, three places, 0.000 to 2.000

Matrix: Variable Cam Inlet Timing Proportional Gain Multiplier f(ECT)

ECT (°C)

| -30.0 | -20.0 | -10.0 | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 | 110.0 | 120.0 | 130.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to adjust the proportional gain for
changes in water temperature.

Example values:    1.050 - gives 5% increase
                   1.000 - gives no change
                   0.950 - gives 5% decrease

The current value of the proportional correction (including the effect of
this multiplier) can be viewed as "vcamProp" on the dashboard.
```

Variable Cam Inlet Integral Gain (%) (below): Decimal, two places, -100.04 to 99.98 percent

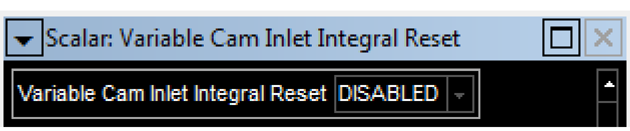
Matrix: Variable Cam Inlet Timing Integral Gain (%)

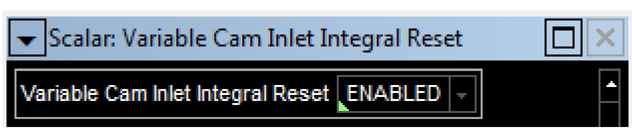
inVCam1Error (°)

| -25.00 | -15.00 | -10.00 | -5.00 | -2.00 | 0.00 | 2.00 | 5.00 | 10.00 | 15.00 | 25.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This map selects the rate at which the integral term changes in the closed
loop controller. The total duty applied is calculated as follows :

    vcamTotal = vcamBase          : base duty cycle
              + vcamProp          : proportional term
              + vcamInt           : integral term

The integral correction can be viewed as "inVCamInt" on the dashboard.
```

Variable Cam Inlet Integral Reset (below): ENABLED / DISABLED




```
This map selects whether to reset the integral term.

If this map is enabled, then whenever the integral gain is exactly
zero the integral term will be reset. if the map is disbled if the integral
gain is exactly zero then the integral term will remain at its current value.
```

Variable Cam Exhaust Timing Proportional Gain (%) (below): Decimal, two places, -100.00 to 100.00 percent

Matrix: Variable Cam Exhaust Timing Proportional Gain (%)

exVCam1Error (°)

| -25.00 | -15.00 | -10.00 | -5.00 | -2.00 | 0.00 | 2.00 | 5.00 | 10.00 | 15.00 | 25.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This map selects the amount of correction applied by the proportional
term in the closed loop controller. The total duty applied is calculated
as follows :

    vcamTotal = vcamBase          : base duty cycle
              + vcamProp          : proportional term
              + vcamInt           : integral term

The proportional correction can be viewed as "vcamProp" on the dashboard.
```

Variable Cam Exhaust Timing Proportional Gain Multiplier f(ECT) (below): Decimal, three places, 0.000 to 2.000

Matrix: Variable Cam Exhaust Timing Proportional Gain Multiplier f(ECT)

ECT (°C)

| -30.0 | -20.0 | -10.0 | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 | 110.0 | 120.0 | 130.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

```
This multiplier is used to adjust the proportional gain for
changes in water temperature.

Example values:   1.050 - gives 5% increase
                  1.000 - gives no change
                  0.950 - gives 5% decrease

The current value of the proportional correction (including the effect of
this multiplier) can be viewed as "vcamProp" on the dashboard.
```

Variable Cam Exhaust Timing Integral Gain (%) (below): Decimal, two plaves, 100.04 to 99.98 percent

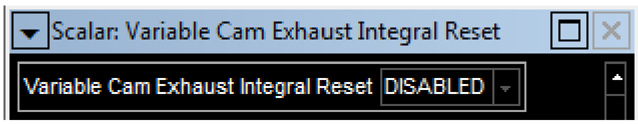
Matrix: Variable Cam Exhaust Timing Integral Gain (%)

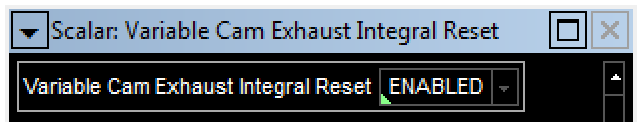
exVCam1Error (°)

| -25.00 | -15.00 | -10.00 | -5.00 | -2.00 | 0.00 | 2.00 | 5.00 | 10.00 | 15.00 | 25.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This map selects the rate at which the integral term changes in the closed
loop controller. The total duty applied is calculated as follows :

    vcamTotal = vcamBase          : base duty cycle
              + vcamProp          : proportional term
              + vcamInt           : integral term

The integral correction can be viewed as "exVCamInt" on the dashboard.
```

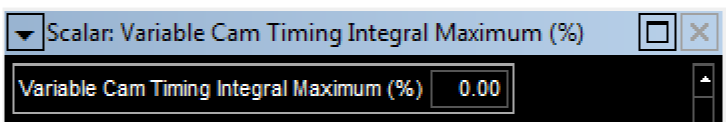
Variable Cam Exhaust Integral Reset (below): ENABLED / DISABLED





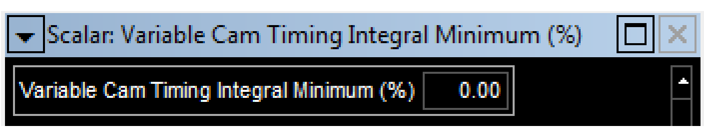

```
This map selects whether to reset the integral term.

If this map is enabled, then whenever the integral gain is exactly
zero the integral term will be reset. if the map is disbled if the integral
gain is exactly zero then the integral term will remain at its current value.
```

Variable Cam Timing Integral Maximum (%) (below): Decimal, two places, 0.00 to 100.00 percent



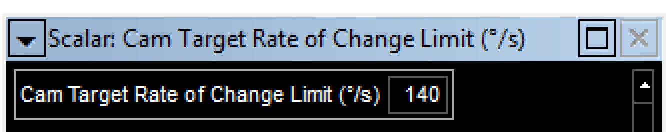

```
This map sets the maximum correction that can be generated by the
integral term of the closed loop controller.

The current integrator value can be viewed as "vcamInt" on the dashboard.
```

Variable Cam Timing Integral Minimum (%) (below): Decimal, two places -100.00 to 0.00 percent



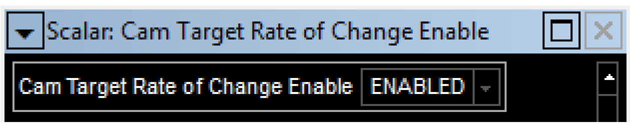

```
This map sets the minimum correction that can be generated by the
integral term of the closed loop controller.

The current integrator value can be viewed as "vcamInt" on the dashboard.
```

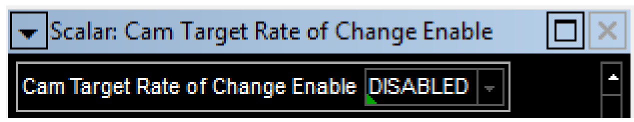
Cam Target Rate of Change Limit (degrees/second) (below): Decimal, no places, 25 to 1000 degrees/second



If the map "Cam Target Rate of Change Enable" is ENABLED, this map specifies a maximum rate of change of the cam target position for all variable cams. If "Cam Target Rate of Change Enable" is DISABLED, a rate of change limit will not be applied.

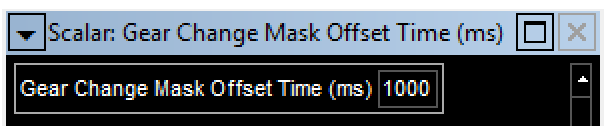
Cam Target Rate of Change Enable (below): ENABLED / DISABLED




If ENABLED, a maximum rate of change limit will be applied to the cam target position for vcamI1, vcamI2 and vcamE1, vcamE2 as specified in the map "Cam Target Rate of Change Limit". If DISABLED, a rate of change limit will not be applied.

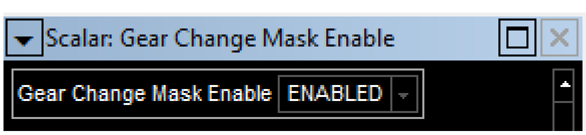
Gear Change Mask Offset Time (ms) (below): Decimal, no places, 0 to 1000 milliseconds

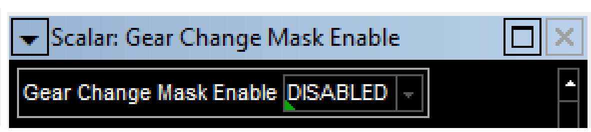



When a gear change is detected, if "Gear Change Mask Enable" is ENABLED, the cam target position and the variable cam output duty will remain unchanged for the following time:

"Gear Change Time" + "Gear Change Mask Offset Time"

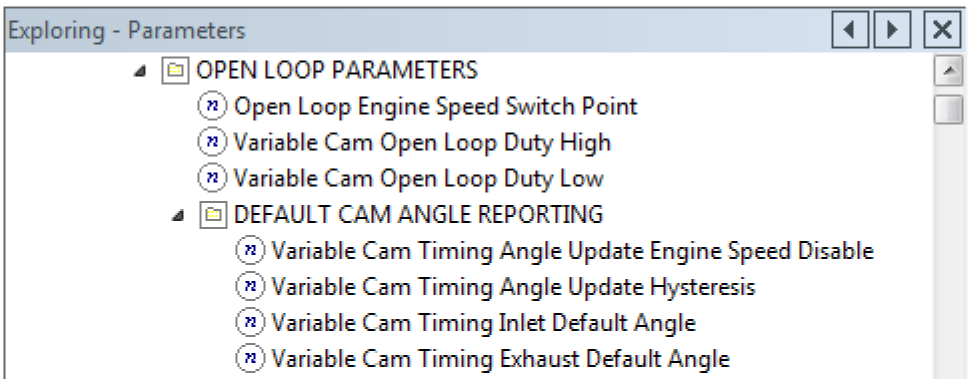
Gear Change Mask Enable (below): ENABLED / DISABLED



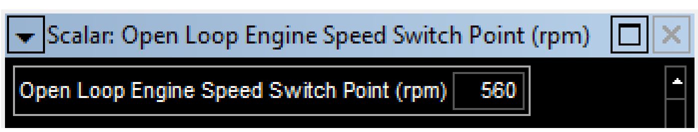




If ENABLED, the cam target position and the variable cam output duty will remain unchanged during a gear change and for a configurable time afterwards as specified in "Gear Change Mask Offset Time".

VARIABLE CAM PARAMETERS: OPEN LOOP PARAMETERS (below):

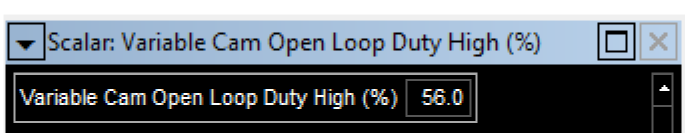



Open Loop Engine Speed Switch Point (rpm) (below): Decimal, no places, 0 to 20000 rpm



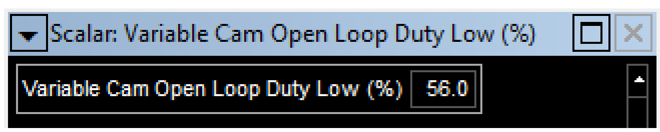

```
When the ECU is in open loop mode, the VCAM duty is fixed depending
on whether the engine speed is above or below this threshold.

   if Open Loop then
       if Engine Speed > "Open Loop Engine Speed Switch Point" then
           VCAM duty = "Variable Cam Open Loop Duty High"
       else
           VCAM duty = "Variable Cam Open Loop Duty Low"
```

Variable Cam Open Loop Duty High (%) (below): Decimal, one place, 0.0 to 100.0 percent



```
When the ECU is in open loop mode, the VCAM duty is fixed depending
on the engine speed.

   if Open Loop then
       if Engine Speed > "Open Loop Engine Speed Switch Point" then
           VCAM duty = "Variable Cam Open Loop Duty High"
       else
           VCAM duty = "Variable Cam Open Loop Duty Low"
```

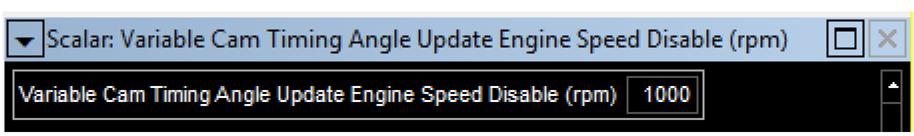
Variable Cam Open Loop Duty Low (%) (below): Decimal, one place, 0.0 to 100.0 percent





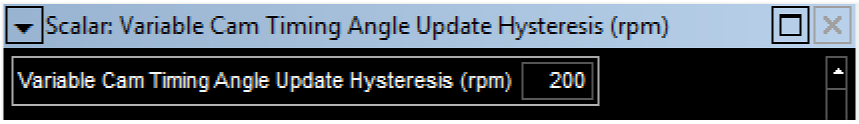
```
When the ECU is in open loop mode, the VCAM duty is fixed depending
on the engine speed.

   if Open Loop then
       if Engine Speed > "Open Loop Engine Speed Switch Point" then
           VCAM duty = "Variable Cam Open Loop Duty High"
       else
           VCAM duty = "Variable Cam Open Loop Duty Low"
```


Variable Cam Timing Amgle Update Engine Speed Disable (rpm) (below): Decimal, no places, 0 to 20000 rpm



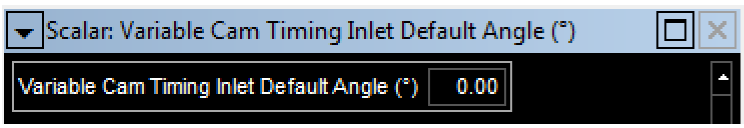

```
The update of the reported variable cam angle is disabled when
the engine speed is below the value of this map and the
variable cam strategy is in open loop mode.

The update of the reported variable cam angle is re-enabled when
the engine speed rises above:

   Variable Cam Timing Angle Update Engine Speed Disable
   + Variable Cam Timing Angle Update Hyteresis

or the variable cam strategy returns to closed loop mode.
```

Variable Cam Timing Angle Update Hysteresis (rpm) (below): Decimal, no places, 0 to 20000 rpm



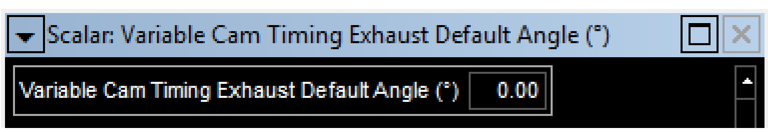

```
The update of the reported variable cam angle is disabled when
the engine speed is below the value of this map and the
variable cam strategy is in open loop mode.

The update of the reported variable cam angle is re-enabled when
the engine speed rises above:

   Variable Cam Timing Angle Update Engine Speed Disable
   + Variable Cam Timing Angle Update Hyteresis

or the variable cam strategy returns to closed loop mode.
```

DEFAULT CAM ANGLE REPORTING: Variable Cam Timing Inlet Default Angle (degrees) (below): Decimal, two places, 0.00 to 719.75 degrees



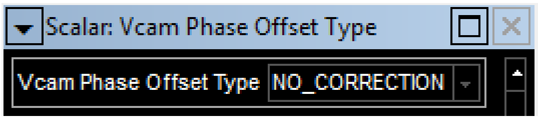

```
When the update of the reported variable cam angle is disabled then the
value of the angle used in the inlet variable cam strategy is the value of this map.
```

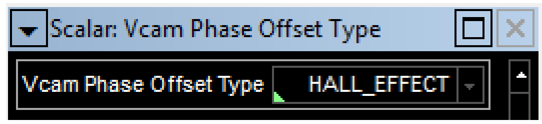
DEFAULT CAM ANGLE REPORTING: Variable Cam Timing Exhaust Default Angle (degres) (below): Decimal, two places, 0.00 tp 719.75 degrees

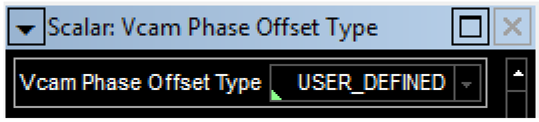



```
When the update of the reported variable cam angle is disabled then the
value of the angle used in the exhaust variable cam strategy is the value of this map.
```

CAM INPUT PHASE CORRECTION: Vcam Phase Offset Type (below): Decimal, two places, 0.00 to 719.75 degrees




```
When using the phasing cam input as a Vcam input the signal is filtered
differently and may require an rpm based phase correction to be added.

This map controls the correction added.

NO CORRECTION - Add no phase offset.
HALL EFFECT   - Use predefined hall effect phase correction.
USER DEFINED  - Correction with RPM defined by the user.
```

CAM INPUT PHASE CORRECTION: User Defined Phase Offset (degrees) (below):

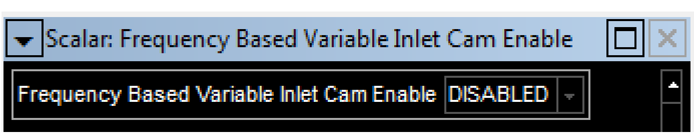
Matrix: User Defined Phase Offset (°)

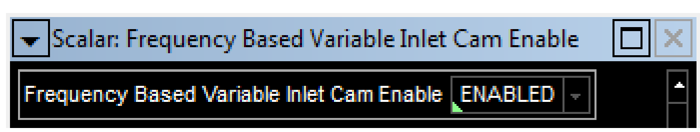
RPM (rpm)

| 1000 | 1500 | 2000 | 2500 | 3000 | 3500 | 4000 | 4500 | 5000 | 5500 | 6000 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

```
This is the map used for correction when USER DEFINED is selected in 'Vcam Phase Offset Type'

Cam angle used for variable cam control = cam angle read using phasing cam - this offset.
```

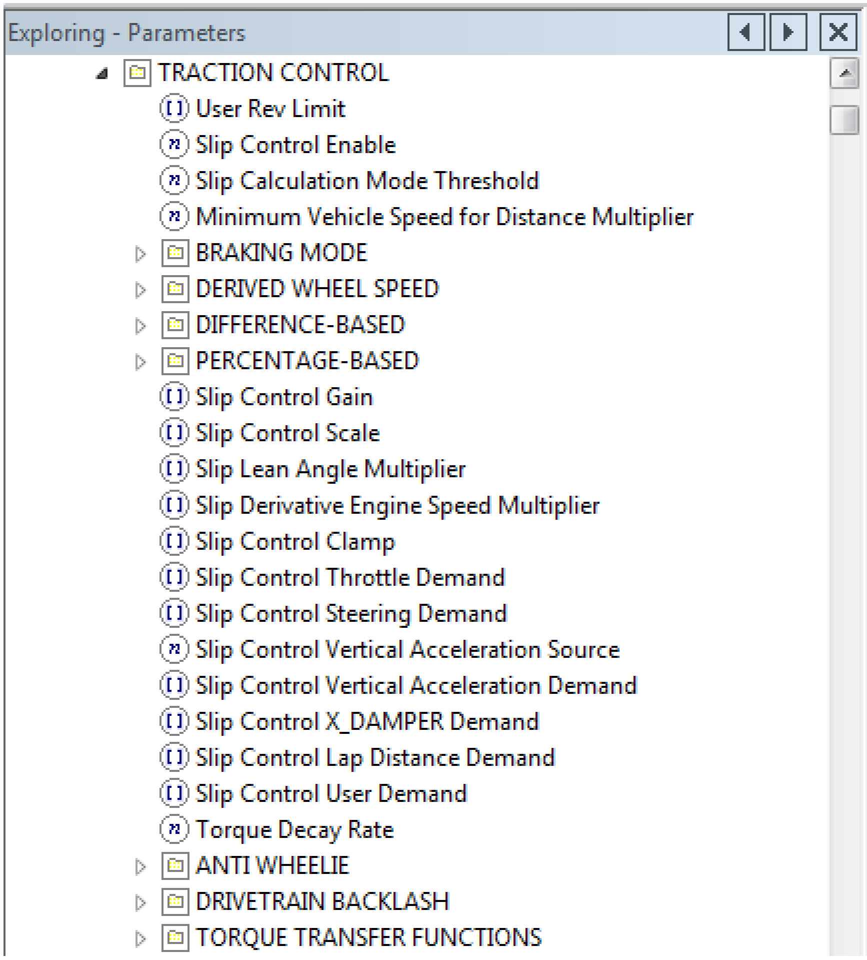
FREQUENCY BASED VARIABLE CAM CONTROL: Frequency Based Inlet Cam Enable (below): ENABLED / DISABLED



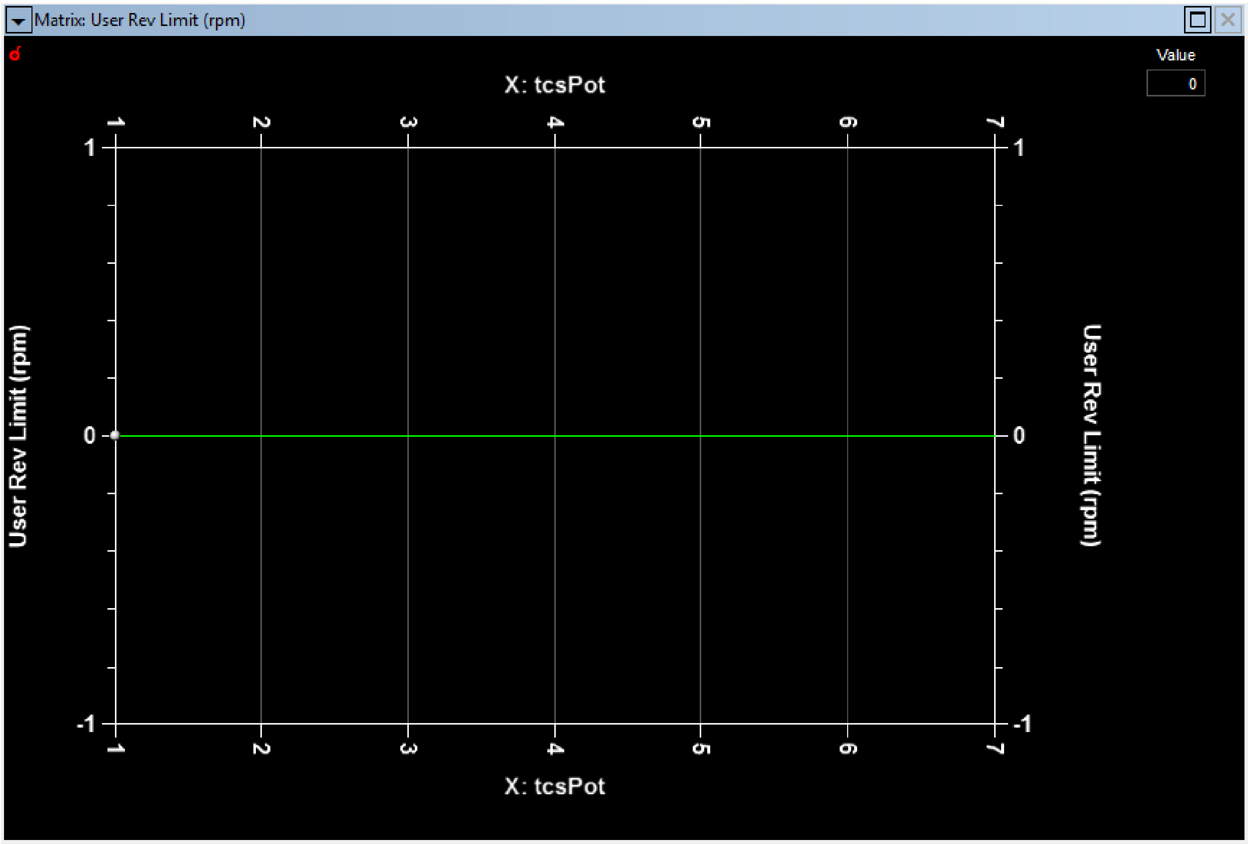




This map enables the frequency controlled mode for inlet cams.

TRACTION CONTROL:

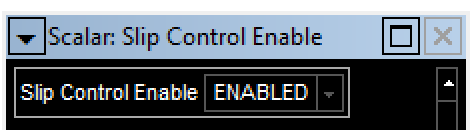


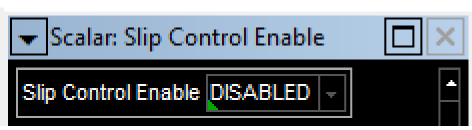
TRACTION CONTROL: User Rev Limit (rpm) (below): Decimal, no places, 0 to 20000 rpm



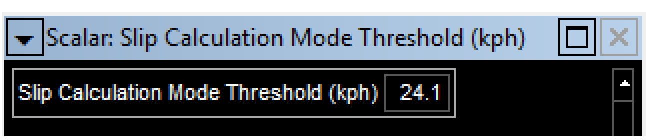

This map is used to select an engine speed limit that depends on the traction control user switch. A value of zero in this map tells the ECU to use the normal Rev Limit.

TRACTION CONTROL: Slip Control Enable (below): ENABLED / DISABLED



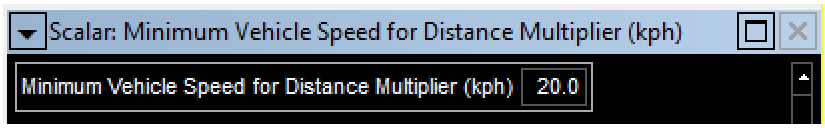

TRACTION CONTROL: Slip Calculation Mode Threshold (kph) (below): Decimal, one place, 0 to 482.8 kph




Above this speed, the Percentage-Based traction control mode will be used.

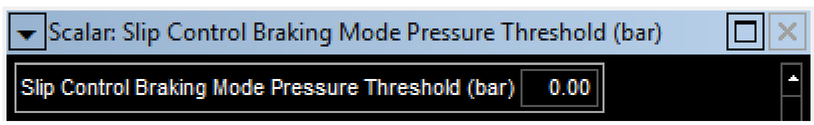
Otherwise the Difference-Based traction control mode will be used.

TRACTION CONTROL: Minimum Vehicle Speed for Distance Multiplier (kph) (below): Decimal, one place, 0 to 402.4 kph



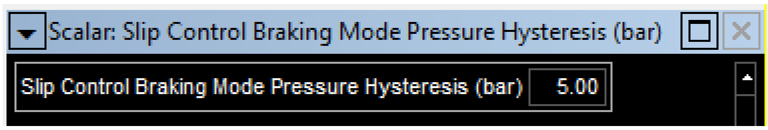

```
If car speed falls below this speed, the Lap Distance multipliers will no
longer affect the Traction Control and Anti-Wheelie strategies until the
next lap beacon is detected.
```

TRACTION CONTROL: BRAKING MODE: Slip Control Braking Mode Pressure Threshold (bar) (below): Decimal, two places, 0.00 to 250.00 bar




```
When the front brake is applied and is above this threshold, tcsBrakingMode is
set to TRUE.  In this state, the Traction Control Strategy calculates a negative
value of slip like normal. If it is not in this state then negitive slip will
always be set to zero.

This is useful for situations where the vehicle is being moved around in
the garage etc. to prevent the TCS strategy from trying to control the slip.

Set a brake threshold above which the TCS strategy will enter braking mode,
and a hysteresis which is subtracted from this threshold and checked to
exit from braking mode.  Hysteresis must be a lower value.

For example:
IF(BrakingMode)
    IF(pressure <= (threshold - hysteresis)
        BrakingMode = FALSE
```

TRACTION CONTROL: BRAKING MODE: Slip Control Braking Mode Pressure Hysteresis (bar) (below): Decimal, two places, 0.00 to 250.00 bar




When the front brake is applied and is above this threshold, tcsBrakingMode is set to TRUE. In this state, the Traction Control Strategy calculates a negative value of slip like normal. If it is not in this state then negitive slip will always be set to zero.

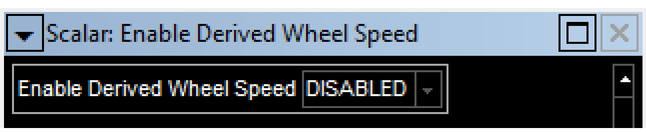
This is useful for situations where the vehicle is being moved around in the garage etc. to prevent the TCS strategy from trying to control the slip.

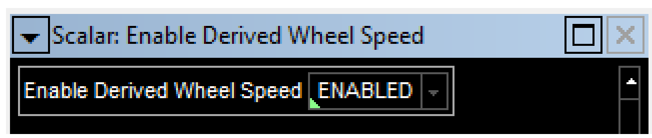
Set a brake threshold above which the TCS strategy will enter braking mode, and a hysteresis which is subtracted from this threshold and checked to exit from braking mode. Hysteresis must be a lower value.

For example:

```
IF(BrakingMode)
    IF(pressure <= (threshold - hysteresis)
        BrakingMode = FALSE
```

TRACTION CONTROL: DERIVED WHEEL SPEED: Enable Derived Wheel Speed (below): ENABLED / DISABLED

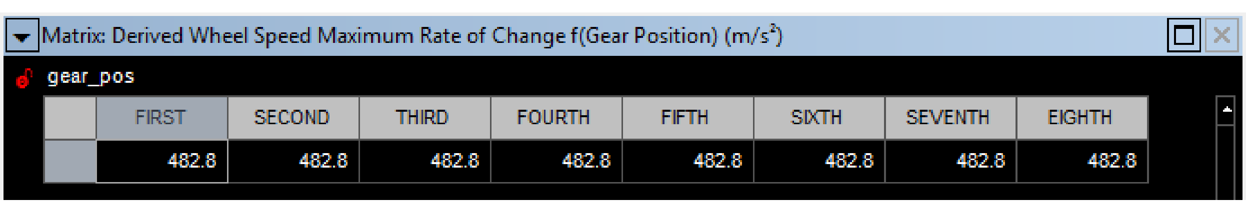



Set this map to ENABLED to allow the traction control strategy to be used without a wheel speed sensor(s) on the undriven wheel(s).

The wheel speed from the undriven wheel will be a copy of the driven wheel speed but with rate of change limiting applied in the position direction (when the driven wheel speed is increasing).

TRACTION CONTROL: DERIVED WHEEL SPEED: Derived Wheel Speed Maximum Rate of Change f(Gear Position) (m/s^2) (below): Decimal, one place, 0.0 to 482.8 meters per second squared.




| | FIRST | SECOND | THIRD | FOURTH | FIFTH | SIXTH | SEVENTH | EIGHTH |
|---|---|---|---|---|---|---|---|---|
| | 482.8 | 482.8 | 482.8 | 482.8 | 482.8 | 482.8 | 482.8 | 482.8 |

If "Enable Derived Wheel Speed" is set to ENABLED, then this map provides a rate of change limit for the undriven wheel speed, which is copied from the driven wheel speed.

Set values for each gear such that slip is measured when the driven wheel rate of change is higher than that possible by vehicle acceleration.

TRACTION CONTROL: DIFFERENCE-BASED: Base Goal Slip Difference (kph) (below): Decimal, one place, 0.0 to 99.0 kph

Matrix: Base Goal Slip Difference (kph)

car_speed (kph)

| TPS (°) | 0.0 | 32.8 | 65.4 | 98.2 | 131.0 | 163.6 | 196.4 | 229.0 | 261.8 | 294.6 | 327.2 | 360.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 80.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |
| 70.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |
| 60.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |
| 50.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |
| 40.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |
| 30.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |
| 20.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |
| 10.0 | 16.1 | 15.2 | 14.5 | 13.7 | 12.8 | 12.0 | 11.3 | 10.4 | 9.6 | 8.9 | 8.0 | 8.0 |

TRACTION CONTROL: DIFFERENCE-BASED: Goal Slip Gear Correction (kph) (below): Decimal, one place, 0.0 to 30.0 kph

Matrix: Goal Slip Gear Correction (kph)

gear_pos

| | REVERSE | NEUTRAL | FIRST | SECOND | THIRD | FOURTH | FIFTH | SIXTH | SEVENTH | EIGHTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

TRACTION CONTROL: DIFFERENCE-BASED: Goal Slip User Correction (kph) (below): Decimal, one place, 0.0 to 30.0 kph

Matrix: Goal Slip User Correction (kph)

tcsPot

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| | 3.2 | 2.8 | 2.2 | 1.7 | 1.1 | 0.6 | 0.0 |

TRANSACTION CONTROL: PERCENTAGE-BASED: Slip Control Gain (below): Decimal, three places, 0.000 to 16.000

Matrix: Slip Control Gain

RPM (rpm)

| | 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 5.000 | 5.000 | 5.000 | 7.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 | 10.000 |

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control Scale (below): Decimal, three places, 0.000 to 16.000

Matrix: Slip Control Scale

gear_pos

| | REVERSE | NEUTRAL | FIRST | SECOND | THIRD | FOURTH | FIFTH | SIXTH | SEVENTH | EIGHTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

TRACTION CONTROL: PERCENTAGE-BASED: Slip Lean Multiplier (%) (below): Decimal, three places, 0.000 to 5.000 percent

Matrix: Slip Lean Angle Multiplier (%)

LEAN_ANGLE (°)

| | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

This multiplier is applied before the clamp.

TRACTION CONTROL: PERCENTAGE-BASED: Slip Derivative Engine Speed Multiplier (below): Decimal, three place, 0.000 to 5.000

Matrix: Slip Derivative Engine Speed Multiplier

TPS (°)

| deltaRpm (rps) | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 19000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 18000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 17000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 16000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 15000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 14000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 13000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 12000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 11000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |
| 10000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

This multiplier is applied before the clamp.

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control Clamp (below): Decimal, one place 0.0 to 100.0

Matrix: Slip Control Clamp

RPM (rpm)

| 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 | 49.8 |

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control Throttle Demand (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Slip Control Throttle Demand (%)

TPS (°)

| 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 |
|---|---|---|---|---|---|---|---|
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control Steering Demand (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Slip Control Steering Demand (%)

STEER (°)

| -8.0 | -5.0 | -3.0 | -2.0 | -1.0 | -0.0 | 1.0 | 2.0 | 3.0 | 5.0 | 8.0 |
|---|---|---|---|---|---|---|---|---|---|---|
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control Vertical Acceleration Source (below):

Scalar: Slip Control Vertical Acceleration Source

Slip Control Vertical Acceleration Source SENSOR

Scalar: Slip Control Vertical Acceleration Sou...

Slip Control Vertical Acceleration Source IMU

This map selects the source of the acceleration used to calculate the vertical acceleration demand modifier.

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control Vertical Acceleration Demand (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Slip Control Vertical Acceleration Demand (%)

Vertical Acceleration Breakpoints (G)

| 0.00 | 0.10 | 0.20 | 0.30 | 0.40 | 0.50 | 0.60 | 0.70 | 0.80 | 0.90 | 1.00 |
|---|---|---|---|---|---|---|---|---|---|---|
| 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control X_DAMPER Demand (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Slip Control X_DAMPER Demand (%)

X_FL_DAMPER (mm)

| | 0.0 | 20.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 140.0 | 160.0 | 180.0 | 200.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

```
If FL damper pot only used, FL Damper is used as the modifier.
If FL and FR damper pots are used, (FL Damper + FR Damper) /2 is used as the modifier.
If F damper pot only used, F Damper is used as the modifier.
```

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control Lap Distance Demand (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Slip Control Lap Distance Demand (%)

lapDistance (m)

| | 0 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

TRACTION CONTROL: PERCENTAGE-BASED: Slip Control User Demand (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Slip Control User Demand (%)

tcsPot

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|
| | 14.1 | 12.2 | 10.2 | 7.8 | 5.9 | 3.9 | 2.0 |

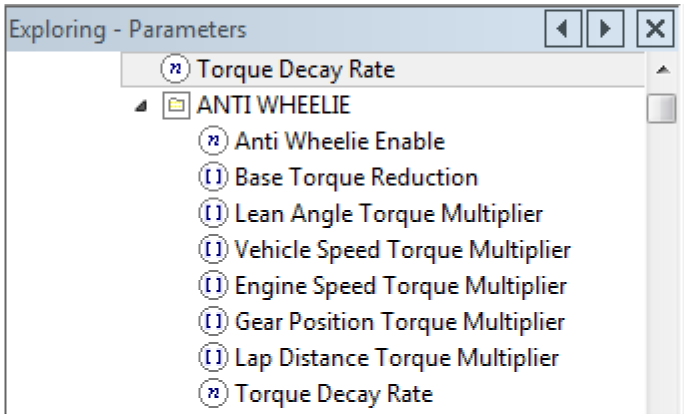
TRACTION CONTROL: PERCENTAGE-BASED: Torque Decay Rate (below): Decimal, no places, 1 to 255

Scalar: Torque Decay Rate

| | |
|---|---|
| Torque Decay Rate | 255 |

```
Determines the maximum rate at which the traction control torque reduction
may decay. Value entered is the number of counts by which the torque may
fall per strategy update (i.e. each 10ms). Note that 1 count = 0.39065%.
```

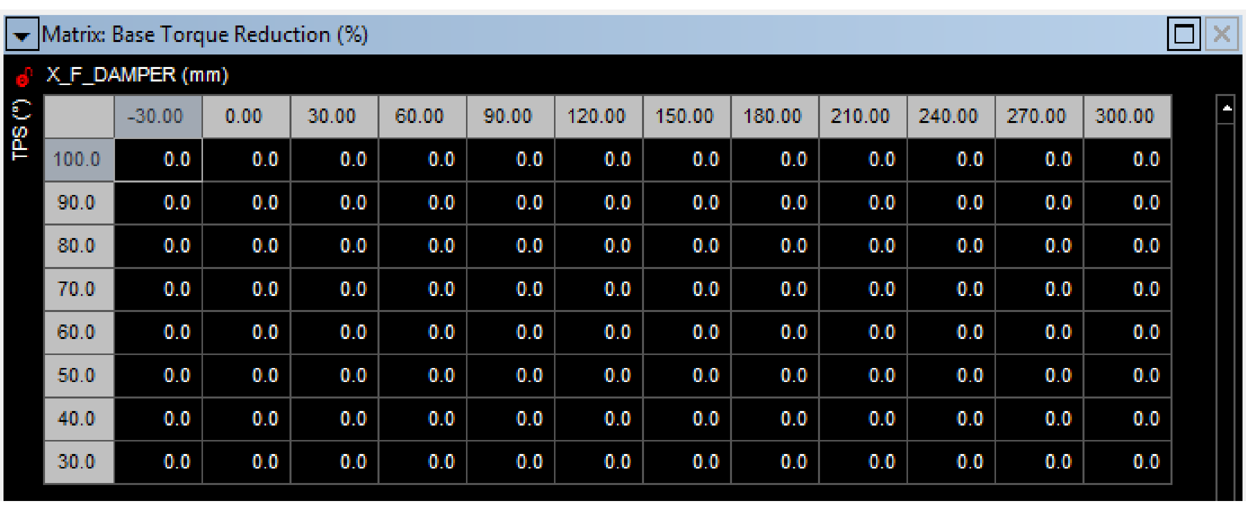
TRACTION CONTROL: ANTI-WHEELIE (below):




TRACTION CONTROL: ANTI-WHEELIE: Anti Wheelie Enable (below): ENABLED / DISABLED


This map enables/disables the Anti Wheelie strategy.

TRACTION CONTROL: ANTI-WHEELIE: Base Torque Reduction (%) (below): Decimal, one place, 0.0 to 100.0 percent




| | -30.00 | 0.00 | 30.00 | 60.00 | 90.00 | 120.00 | 150.00 | 180.00 | 210.00 | 240.00 | 270.00 | 300.00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

This map determines the base torque generated by the anti wheelie strategy.

TRACTION CONTROL: ANTI-WHEELIE: Lean Angle Torque Multiplier (below): Decimal, three places, 0.000 to 5.000

Matrix: Lean Angle Torque Multiplier

LEAN_ANGLE (°)

| | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

A lean angle dependant correction factor applied to the base anti wheelie torque.

TRACTION CONTROL: ANTI-WHEELIE: Vehicle Speed Torque Multipler (below): Decimal, three places, 0.000 to 5.000

Matrix: Vehicle Speed Torque Multiplier

Speed Breakpoints (kph)

| | 0.0 | 36.0 | 72.0 | 108.0 | 144.0 | 180.0 | 216.0 | 252.0 | 288.0 | 324.0 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

A vehicle speed dependant correction factor applied to the base anti wheelie torque.

TRACTION CONTROL: ANTI-WHEELIE: Engine Speed Torque Multiplier (below): Decimal, three places, 0.000 to 5.000

Matrix: Engine Speed Torque Multiplier

RPM (rpm)

| | 0 | 722 | 1444 | 2166 | 2888 | 3611 | 4333 | 5055 | 5777 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

An engine speed dependant correction factor applied to the base anti wheelie torque.

TRACTION CONTROL: ANTI-WHEELIE: Gear Position Torque Multiplier (below): Decimal, three places, 0.000 to 5.000

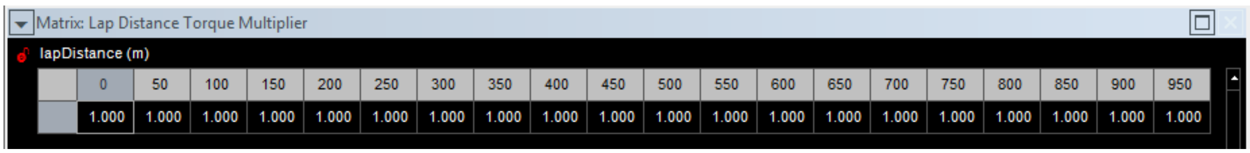
Matrix: Gear Position Torque Multiplier

gear_pos

| | REVERSE | NEUTRAL | FIRST | SECOND | THIRD | FOURTH | FIFTH | SIXTH | SEVENTH | EIGHTH |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

A gear position dependant correction factor applied to the base anti wheelie torque.

TRACTION CONTROL: ANTI-WHEELIE: Lap Distance Torque Multiplier (below): Decimal, three places, 0.000 to 5.000

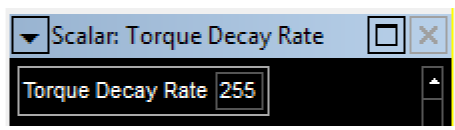

Matrix: Lap Distance Torque Multiplier

lapDistance (m)

| 0 | 50 | 100 | 150 | 200 | 250 | 300 | 350 | 400 | 450 | 500 | 550 | 600 | 650 | 700 | 750 | 800 | 850 | 900 | 950 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

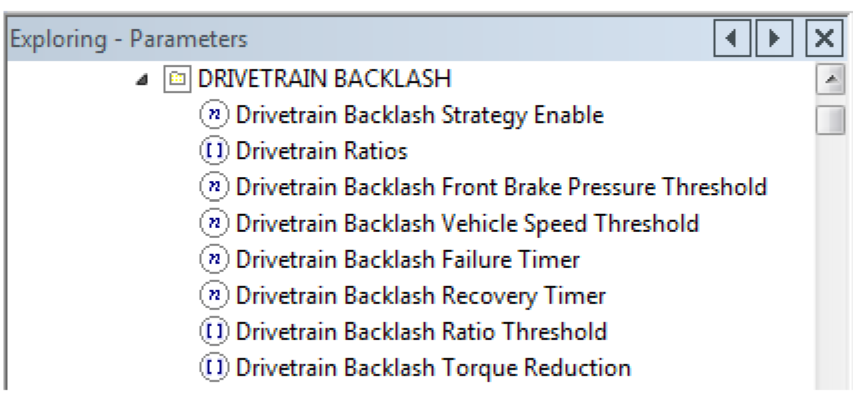
A Lap Distance dependant correction factor applied to the base anti wheelie torque.

TRACTION CONTROL: ANTI-WHEELIE: Torque Decay Rate (below): Decimal, no places, 1 to 255




Determines the maximum rate at which the anti-wheelie torque...

TRACTION CONTROL: DRIVETRAIN BACKLASH (below):



TRACTION CONTROL: Drivetrain Backlash Strategy Enable (below): ENABLED / DISABLED


This strategy allows detection of drivetrain backlash and provides a torque reduction to minimise its effects. Ensure traction control is enabled and set this map to ENABLED to enable the strategy.

- Detection -
Drivetrain ratio ( engine speed(RPM) / wheel speed(metres per minute) ) is displayed in the dashboard channel dtbDrvRatio. This should be recorded in each forward gear and entered into the map "Drivetrain Ratios".

This allows a normalised drivetrain ratio to be calculated that reads the value 1 in each gear (dashboard channel dtbNormDrvRatio). During drivetrain backlash, the value will rise slightly as the engine speed rises until the gears mesh.

Set the map "Drivetrain Backlash Ratio Threshold" so that when dtbNormDrvRatio rises above this value, it is due to drivetrain backlash.

- Applying torque reduction -
The positive error between dtbNormDrvRatio and "Drivetrain Backlash Ratio Threshold" is displayed in the dashboard channel dtbNormDrvRatioError. It is expected that larger errors will require a higher torque reduction to reduce the backlash.

In the map "Drivetrain Backlash Torque Reduction", enter the required level of torque reduction. The value used will be displayed in the dashboard channel dtbTrq.

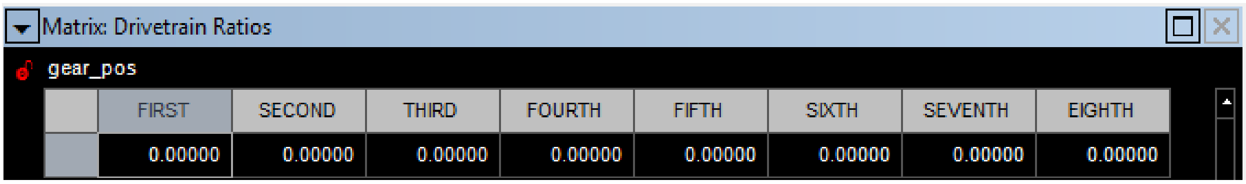
Other strategies (Traction Control and Anti-Wheelie) also produce a torque reduction value. The largest of these will be used and displayed in the dashboard channel TCS_trq.

- Meeting conditions -
The torque reduction for this strategy will only be used if certain conditions are met:

- a gear shift is not in progress
- clutch not pressed (if switch configured)
- front brake pressure not above threshold Drivetrain Backlash Front Brake Pressure Threshold
- Pit Lane mode (see pit_lane_active channel) is not active
- Vehicle speed (see car_speed channel) is above Drivetrain Backlash Vehicle Speed Threshold

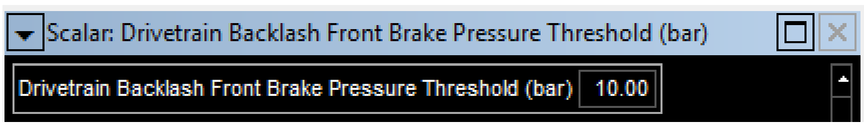
The applied torque reduction is expected to be very short. If the torque reduction lasts for longer than "Drivetrain Backlash Failure Timer" then it will be zeroed. The strategy can not recover until the torque reduction remains at zero for longer than "Drivetrain Backlash Recovery Timer".

TRACTION CONTROL: DRIVETRAIN BACKLASH: Drivetrain Ratios (below): Decimal, five places, 0.00000 to 64.00000



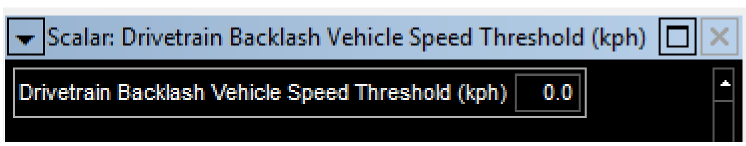

See help for "Drivetrain Backlash Strategy Enable".

TRACTION CONTROL: Drivetrain Backlash Front Brake Pressure Threshold (bar) (below): Decimal, two places, 0.00 to 250.00 bar



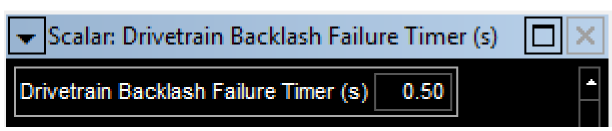

See help for "Drivetrain Backlash Strategy Enable".

TRACTION CONTROL: Drivetrain Backlash Vehicle Speed Threshold (kph) (below): Decimal, one place, 0.0 to 402.4 kph



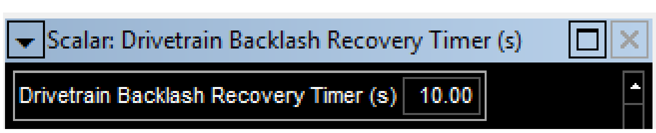

See help for "Drivetrain Backlash Strategy Enable".

TRACTION CONTROL: Drivetrain Backlash Failure Timer (s) (below): Decimal, two places, 0.00 to 600.00 seconds




See help for "Drivetrain Backlash Strategy Enable".

TRACTION CONTROL: Drivetrain Backlash Recovery Timer (s) (below): Decimal, two places, 0.00 to 600.00 seconds




See help for "Drivetrain Backlash Strategy Enable".

TRACTION CONTROL: Drivetrain Backlash Ratio Threshold (below): Decimal, four places, 1.0000 to 3.9999

Matrix: Drivetrain Backlash Ratio Threshold

gear_pos

| | FIRST | SECOND | THIRD | FOURTH | FIFTH | SIXTH | SEVENTH | EIGHTH |
|---|---|---|---|---|---|---|---|---|
| | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 | 1.0000 |

See help for "Drivetrain Backlash Strategy Enable".

TRACTION CONTROL: Drivetrain Backlash Torque Reduction (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Drivetrain Backlash Torque Reduction (%)

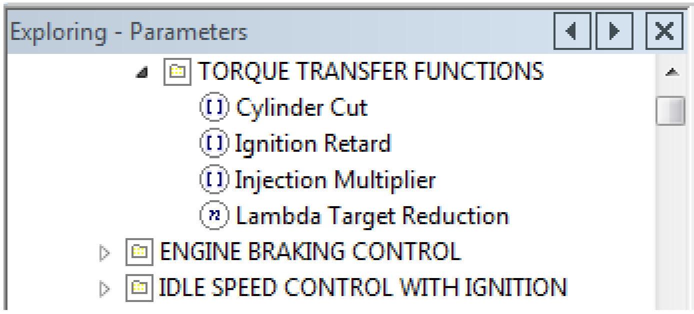
dtbNormDrvRatioError

TPS (°)

| | 0.0001 | 0.0305 | 0.0610 | 0.0916 | 0.1221 | 0.1526 | 0.1831 | 0.2136 | 0.2441 | 0.2747 | 0.3052 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 100.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 90.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 80.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 70.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 60.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 50.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 40.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 30.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 20.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 10.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |

See help for "Drivetrain Backlash Strategy Enable".

TRACTION CONTROL: TORQUE TRANSFER FUNCTIONS (below):




TRACTION CONTROL: TORQUE TRANSFER FUNCTIONS: Cylinder Cut (%) (below): Decimal, one place, 0.0 to 100.0 percent

Matrix: Cylinder Cut (%)

TCS_trq (%)

| 0.0 | 6.7 | 13.3 | 20.0 | 26.7 | 33.3 | 40.0 | 46.7 | 53.3 | 60.0 | 66.7 | 73.3 | 80.0 | 82.4 | 86.7 | 93.3 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 7.5 | 15.5 | 23.0 | 31.0 | 38.5 | 46.0 | 54.0 | 61.5 | 69.0 | 77.0 | 84.5 | 92.5 | 95.0 | 100.0 | 100.0 | 100.0 |

TRACTION CONTROL: TORQUE TRANSFER FUNCTIONS: Ignition Retard (degrees) (below): Decimal, two places, 0.00 to 30.00 degrees

Matrix: Ignition Retard (°)

TCS_trq (%)

| 0.0 | 6.7 | 13.3 | 20.0 | 26.7 | 33.3 | 40.0 | 46.7 | 53.3 | 60.0 | 66.7 | 73.3 | 80.0 | 82.4 | 86.7 | 93.3 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

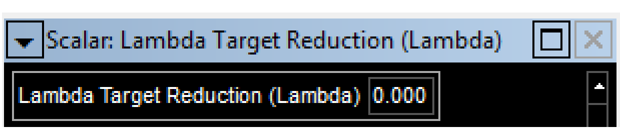
TRACTION CONTROL: TORQUE TRANSFER FUNCTIONS: Injection Multiplier (%) (below): Decimal, two places, 1.00 to 2.00 percent

Matrix: Injection Multiplier (%)

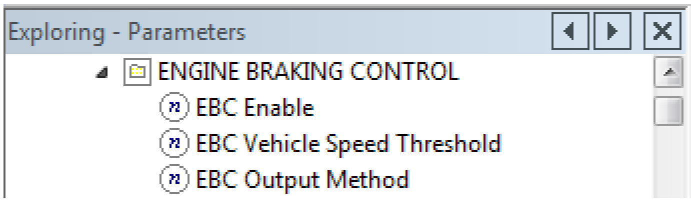
TCS_trq (%)

| 0.0 | 6.7 | 13.3 | 20.0 | 26.7 | 33.3 | 40.0 | 46.7 | 53.3 | 60.0 | 66.7 | 73.3 | 80.0 | 82.4 | 86.7 | 93.3 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

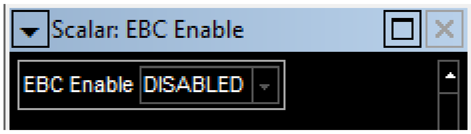
TRACTION CONTROL: TORQUE TRANSFER FUNCTIONS: Lambda Target Reduction (Lambda) (below): Decimal, three places, 0.000 to 0.100

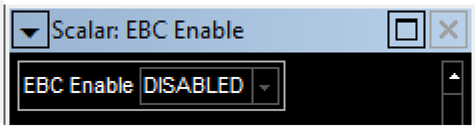


STANDARD MAPPING: ENGINE BRAKING CONTROL (below):



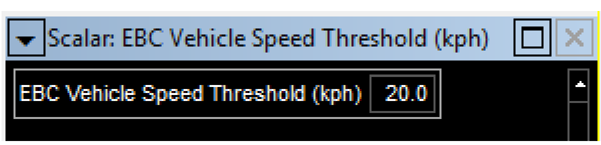

STANDARD MAPPING: ENGINE BRAKING CONTROL: EBC Enable (below): ENABLED / DISABLED



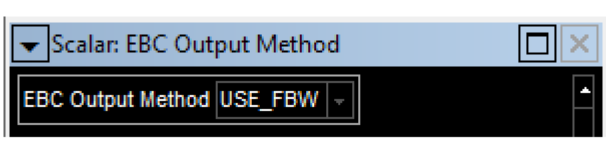
```
Set to ENABLED to enable Engine Braking Control. This strategy aims to improve
stability during braking by increasing engine torque.

For the strategy to be active, the following conditions must all be met:
- No wheel speed sensors are failed
- "carSpeed" channel greater than or equal to "EBC Vehicle Speed Threshold"
- "closed_throttle" channel is TRUE
- If Front Brake Pressure sensor is configured, the front brake pressure
  channel is greater than or equal to "EBC Brake Pressure Threshold"

The strategy becomes inactive if any of the conditions are no longer met.

Note that in FBW applications, closed_throttle is determined by position
of PPS. In non-FBW applications, closed_throttle is determined by position
of TPS.

The strategy provides the ability to change engine torque via the FBW throttle
or the Air Bypass Valve (select with map "EBC Output Method"), for the purpose
of meeting a configurable Negative Slip Percentage target.

Negative Slip Percentage (undriven / driven wheel speed) is measured. This
produces a positive number where large numbers indicate more negative slip
(usually as the driven wheel approaches lock-up).

The Negative Slip Percentage target is calculated as:
  (  EBC Base Target Negative Slip Percentage
   * EBC Rear Damper Displacement Multiplier
   * EBC Front Brake Pressure Multiplier
   * EBC Rear Brake Pressure Multiplier )
   + EBC Rear Brake Pressure Adder

The error between the actual slip and target slip is calculated and a PID
control loop provides a final output percentage 0 - 100%. The output is
calculated as "EBC Base Duty" + P Term + I Term + D Term.

For a FBW application, this 0 - 100% output corresponds to a throttle
opening of 0 - 20 degrees.

The FBW throttle request can be set to not rise above "EBC Maximum FBW TPS Request".

When the strategy exits, the closing rate of the throttle can be specified
in "EBC FBW Exit Rate Limit". The opening rate of the throttle is not limited.
```

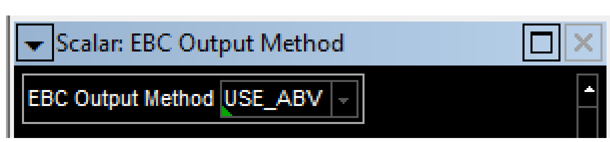
STANDARD MAPPING: ENGINE BRAKING CONTROL: EBC Vehicle Speed Threshold (kph) (below): Decimal, one place 0.0 to 402.4 kph




See help for "EBC Enable".

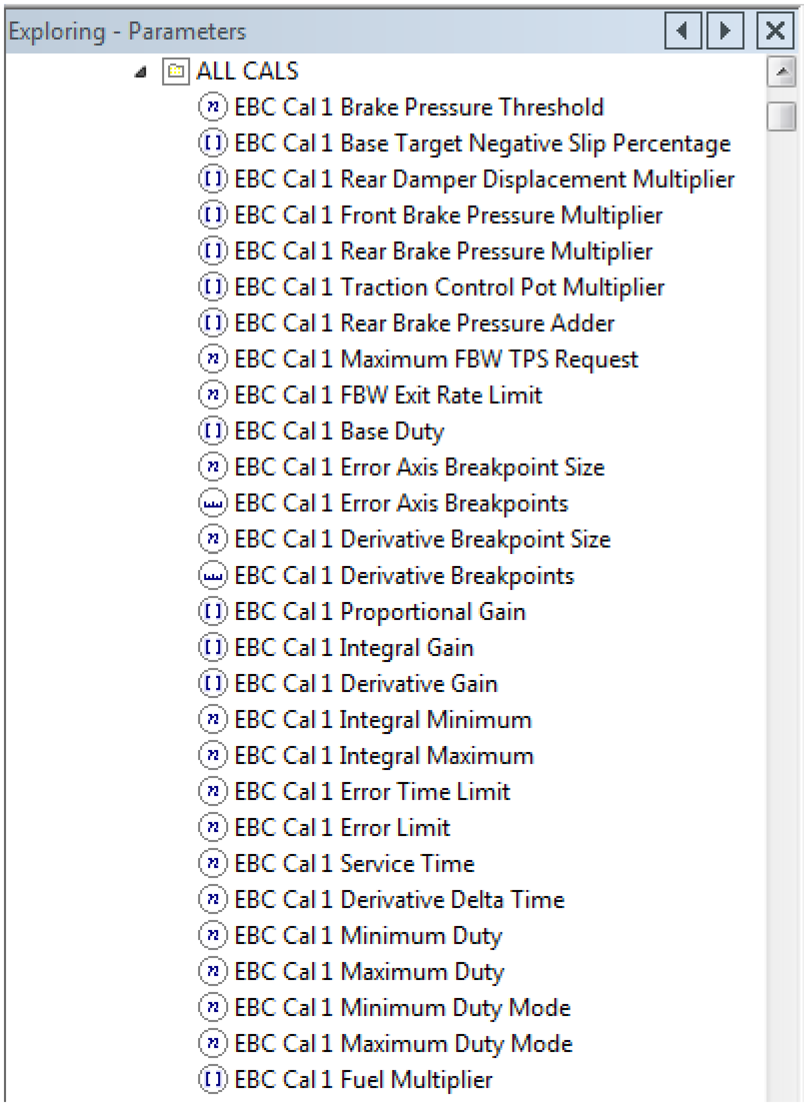
STANDARD MAPPING: ENGINE BRAKING CONTROL: EBC Output Method (below): USE_FBW / USE_ABV



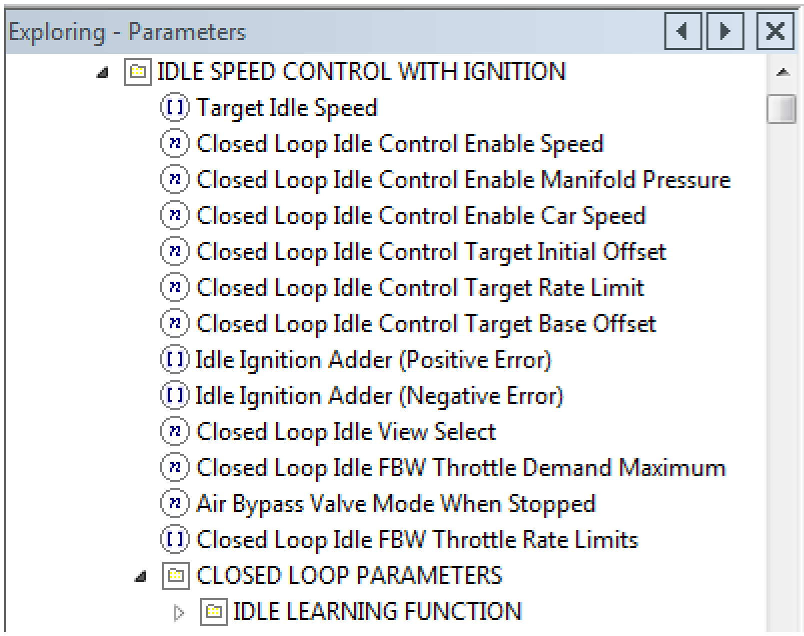



See help for "EBC Enable".

STANDARD MAPPING: ENGINE BRAKING CONTROL: ALL CALS (Below):


Exploring - Parameters
ALL CALS
EBC Cal 1 Brake Pressure Threshold
EBC Cal 1 Base Target Negative Slip Percentage
EBC Cal 1 Rear Damper Displacement Multiplier
EBC Cal 1 Front Brake Pressure Multiplier
EBC Cal 1 Rear Brake Pressure Multiplier
EBC Cal 1 Traction Control Pot Multiplier
EBC Cal 1 Rear Brake Pressure Adder
EBC Cal 1 Maximum FBW TPS Request
EBC Cal 1 FBW Exit Rate Limit
EBC Cal 1 Base Duty
EBC Cal 1 Error Axis Breakpoint Size
EBC Cal 1 Error Axis Breakpoints
EBC Cal 1 Derivative Breakpoint Size
EBC Cal 1 Derivative Breakpoints
EBC Cal 1 Proportional Gain
EBC Cal 1 Integral Gain
EBC Cal 1 Derivative Gain
EBC Cal 1 Integral Minimum
EBC Cal 1 Integral Maximum
EBC Cal 1 Error Time Limit
EBC Cal 1 Error Limit
EBC Cal 1 Service Time
EBC Cal 1 Derivative Delta Time
EBC Cal 1 Minimum Duty
EBC Cal 1 Maximum Duty
EBC Cal 1 Minimum Duty Mode
EBC Cal 1 Maximum Duty Mode
EBC Cal 1 Fuel Multiplier

STANDARD MAPPING: IDLE SPEED CONTROL WITH IGNITION (below):




IDLE SPEED CONTROL WITH IGNITION: Target Idle Speed (below): Decimal, no places, 0 to 2500 rpm

Matrix: Target Idle Speed (rpm)

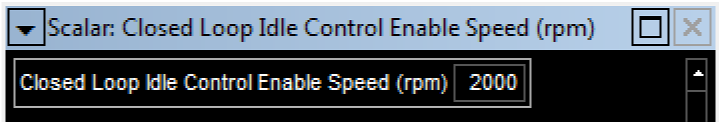
ECT (°C)

| TRUN (s) | -20.0 | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 100.0 | 120.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 1090 | 1090 | 1090 | 990 | 990 | 990 | 970 | 940 | 900 | 900 | 900 | 900 |
| 1 | 1090 | 1090 | 1090 | 990 | 990 | 990 | 970 | 940 | 900 | 900 | 900 | 900 |
| 3 | 1090 | 1090 | 1090 | 990 | 990 | 990 | 970 | 940 | 900 | 900 | 900 | 900 |
| 6 | 1090 | 1090 | 1090 | 990 | 990 | 990 | 970 | 940 | 900 | 900 | 900 | 900 |
| 12 | 1090 | 1090 | 1090 | 990 | 990 | 990 | 970 | 940 | 900 | 900 | 900 | 900 |
| 20 | 1090 | 1090 | 1090 | 990 | 990 | 990 | 970 | 940 | 900 | 900 | 900 | 900 |

This map is used to set the desired idle speed. Idle speed is controlled by ignition angle correction and an air bypass valve (if configured).

The current value can be viewed as "abv_target" on the dashboard.

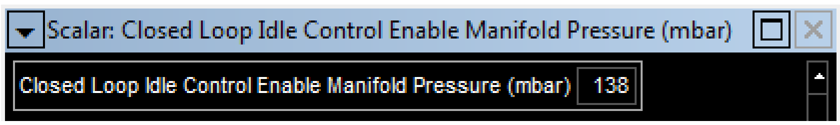
IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle Control Enable Speed (rpm) (below): Decimal, no places, 0 to 20000 rpm




Closed Loop idle speed control is only enabled below this engine speed. This speed threshold is also used to select the rate at which the idle speed control strategy is executed.

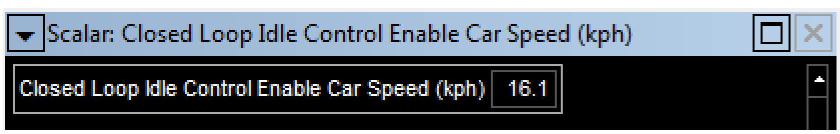
See "Air Bypass Valve Idle Speed Service Time", and "Air Bypass Valve High Speed Service Time".

IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle Control Enable Manifold Pressure (mbar) (below): Decimal, no places, 0 to 5000 mbar




Closed Loop idle speed control is only enabled above this pressure

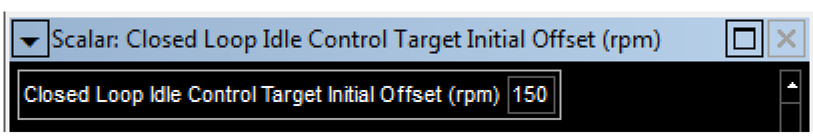
IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle Control Enable Car Speed (kph) (below): Decimal, one place, 0.0 to 482.8 kph




Idle Speed strategy will only be enabled if you are below this speed.

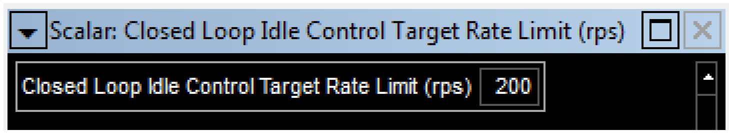
This is intended to stop unintentional triggering of the strategy whilst at high speed.

IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle Control Target Initial Offset (rpm) (below): Decimal, no places, 0 to 600 rpm



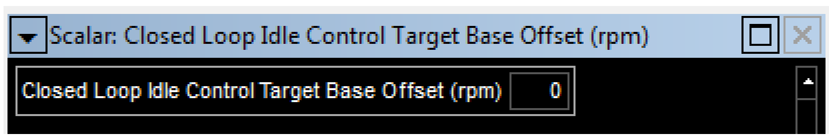

When closed loop idle control is initiated an offset is applied to the target speed. This offset decays to zero at a rate set in the "Closed Loop Idle Control Target Rate Limit". This feature is used to slow the return to the target idle speed.

IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle Control Target Rate Limit (rps) (below): Decimal, no places, 25 to 5000 revs per second



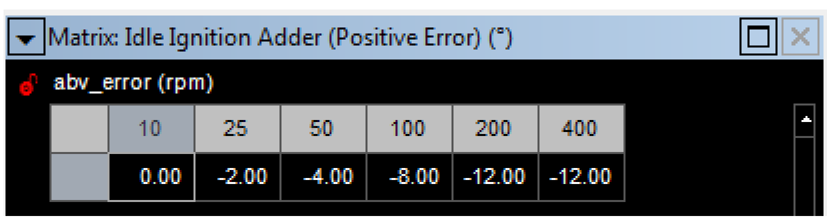

When closed loop idle control is initiated an offset is applied to the target speed. This offset decays to zero at a rate set in the "Closed Loop Idle Control Target Rate Limit". This feature is used to slow the return to the target idle speed.

IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle Control Target Base Offset (rpm) (below):




The engine speed by which the target idle speed is offset.

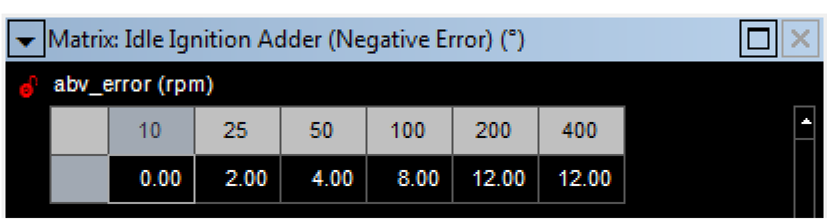
IDLE SPEED CONTROL WITH IGNITION: Idle Ignition Adder (Positive Error) (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees




| | 10 | 25 | 50 | 100 | 200 | 400 |
|---|---|---|---|---|---|---|
| | 0.00 | -2.00 | -4.00 | -8.00 | -12.00 | -12.00 |

Idle Ignition Adder (Positive Error)

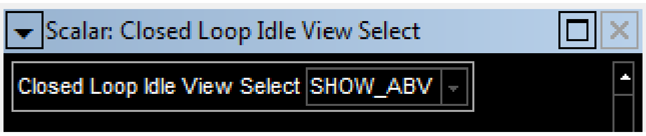
IDLE SPEED CONTROL WITH IGNITION: Idle Ignition Adder (Negative Error) (degrees) (below): Decimal, two places, -20.00 to 20.00 degrees

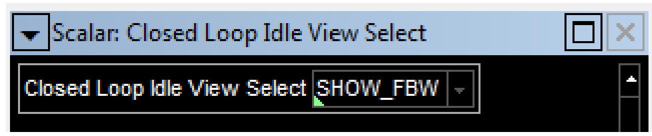



| | 10 | 25 | 50 | 100 | 200 | 400 |
|---|---|---|---|---|---|---|
| | 0.00 | 2.00 | 4.00 | 8.00 | 12.00 | 12.00 |

Idle Ignition Adder (Negative Error)

IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle View Select (below): SHOW_ABV / SHOW_FBW



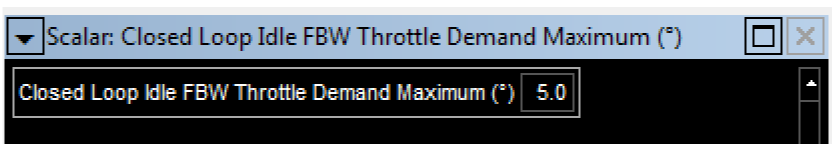




If an Air Bypass Valve digital output is configured, it will always be used for idle speed control.

If an Air Bypass Valve digital output is NOT configured and Fly-by-Wire is enabled, then the Fly-by-Wire throttle will be used for idle speed control.

This map only controls access to ABV maps or FBW maps for closed-loop idle control within CalTool.

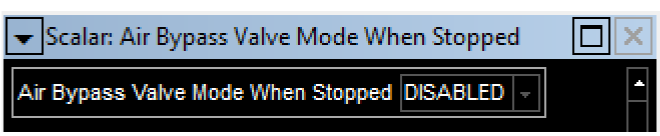
IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle FBW Throttle Demand Maximum (degrees) (below): Decimal, one place, 0 to 30 degrees

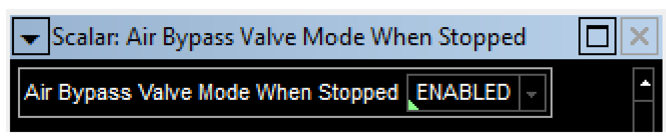



This is the maximum throttle angle demand that is generated by the Closed loop idle.

This angle should be set to the smallest acceptable maximum throttle demand for correct closed-loop idle operation. This will help prevent unanticipated large throttle openings in the event of a poor calibration.

IDLE SPEED CONTROL WITH IGNITION: Air Bypass Valve Mode When Stopped (below): ENABLED / DISABLED

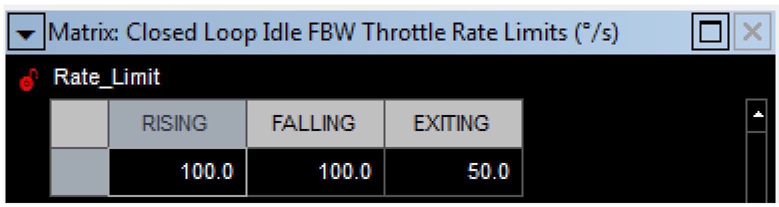



If ENABLED, when the engine is stopped, the output duty used will be the first cell in "Air Bypass Valve Transfer Function".

If DISABLED, when the engine is stopped, the output duty will be zero.

IDLE SPEED CONTROL WITH IGNITION: Closed Loop Idle FBW Throttle Rate Limits (degrees/second) (below): Decimal, one place, 0.0 to 1000.0 degrees/second

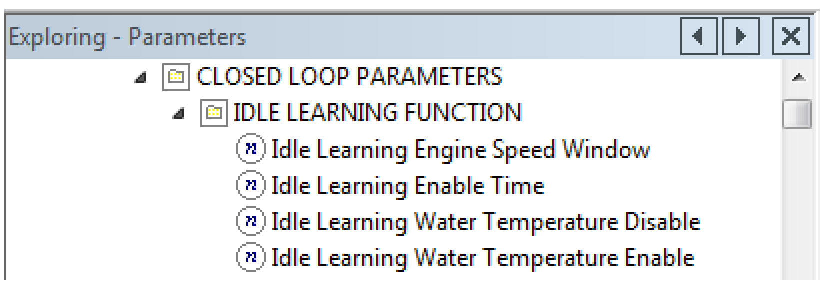



This map allows the selection of the electronic throttle rise, fall and exiting rate limits by the closed loop idle strategy.

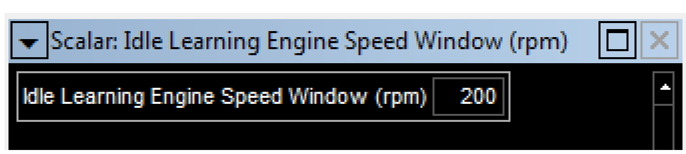
Care must be taken when calibrating these parameters as they affect the performance of the throttle whilst the closed loop idle strategy is active, but also, due to the exiting rate limit, they affect the performance as the current throttle position is blended into the next strategy. Setting this exiting rate too low can result in poor throttle response until the driver's request is matched.

A rate of change value of zero is a request for no rate limiting to be applied.

STANDARD MAPPING: IDLE SPEED CONTROL WITH IGNITION: CLOSED LOOP PARAMETERS (below):

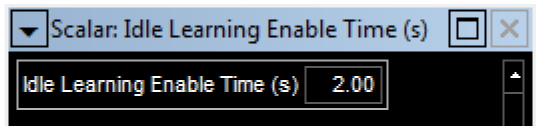



CLOSED LOOP PARAMETERS: Idle Learning Engine Speed Window (rpm) (below): Decimal, no places, 0 to 20000 rpm



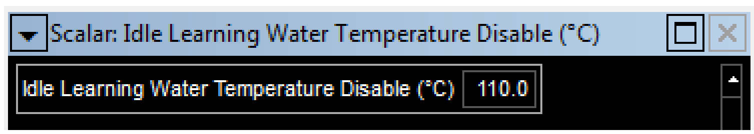

The idle learning function is only enabled when the engine speed is within this distance of the closed loop target.

CLOSED LOOP PARAMETERS: Idle Learning Enable Time (seconds) (below): Decimal, two places, 0.00 to 100.00 seconds



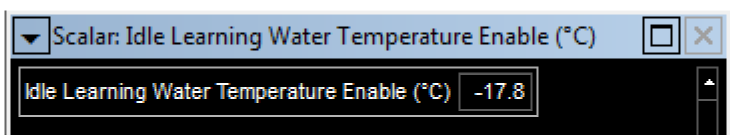

The idle learning function is updated if the idle speed has remained within the "Idle Learning Engine Speed Window" of the closed loop target for this time.

CLOSED LOOP PARAMETERS: Idle Learning Water Temperature Disable (Degrees Centigrade) (below): Decimal, one place -100.0 to 250.00 Degrees Centigrade



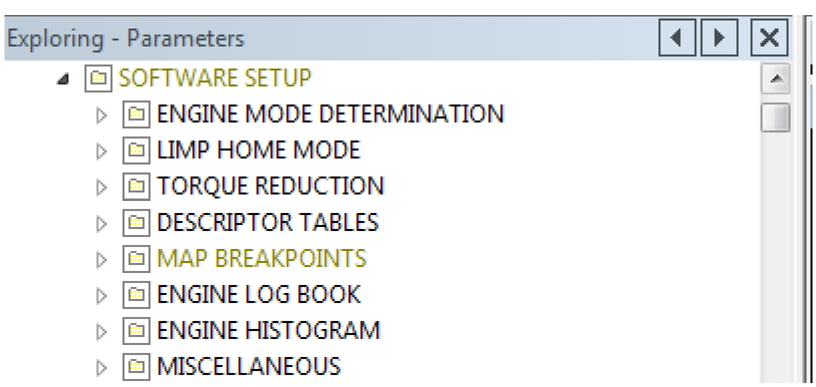

The idle learning function is disabled if the engine coolant temperature exceeds this threshold.

CLOSED LOOP PARAMETERS: Idle Learning WaterTemperature Enable (Degrees Centigrade) (below): Decimal, one place -100.0 to 250.00 Degrees Centigrade

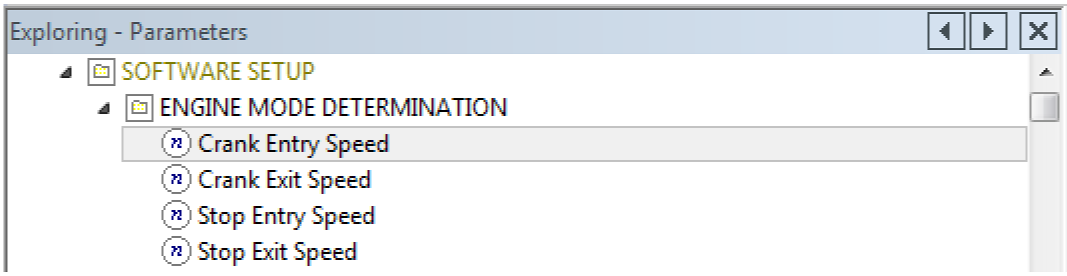



The idle learning function is only enabled if the engine coolant temperature is above this threshold.

SOFTWARE SETUP (below): Descriptions / Values Not Shown, Only Listed



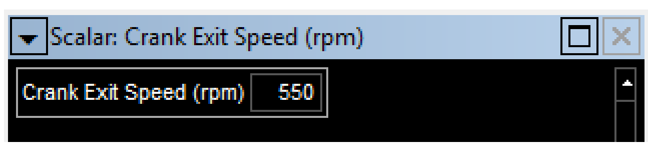
SOFTWARE SETUP: ENGINE MODE DETERMINATION:




Crank Entry Speed: Decimal, no places, 0 to 20000 rpm


Engine operation is divided into 3 modes: STOP, CRANK and RUN. If the engine is into RUN mode and the speed drops below the "Crank Entry Speed", it will switch to CRANK mode.

Crank Exit Speed: Decimal, no places, 0 to 20000 rpm




Engine operation is divided into 3 modes: STOP, CRANK and RUN. If the engine is into CRANK mode and the speed rises above the "Crank Exit Speed", it will switch to RUN mode.

Stop Entry Speed: Decimal, no places, 0 to 20000 rpm


Engine operation is divided into 3 modes: STOP, CRANK and RUN. If the engine is into CRANK or RUN modes and the speed drops below the "Stop Entry Speed", it will switch to STOP mode.

Stop Exit Speed: Decimal, no places, 0 to 20000 rpm

Scalar: Stop Entry Speed (rpm)

| | |
|---|---|
| Stop Entry Speed (rpm) | 10 |

Engine operation is divided into 3 modes: STOP, CRANK and RUN.
If the engine is into CRANK or RUN modes and the speed drops below the "Stop Entry Speed", it will switch to STOP mode.

SOFTWARE SETUP: LIMP HOME MODE

- SOFTWARE SETUP
  - ENGINE MODE DETERMINATION
  - LIMP HOME MODE
    - Limp Home Boost Threshold
    - Limp Home Boost Limit
    - Limp Home Engine Speed Limit
    - Limp Home Over-boost Time

Limp Home Boost Threshold: Decimal, no places, pressure, 0 to 5000 millibar

Matrix: Limp Home Boost Threshold (mbar)

RPM (rpm)

| 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 | 2483 |

If the manifold pressure exceeds this threshold for a time period set by "Limp Home Over-boost Time" the ECU will go into Limp Home mode.
In Limp home mode the boost limit is set in "Limp Home Boost Limit".

Limp Home Boost Limit: Decimal, no places, pressure, 0 to 5000 millibar

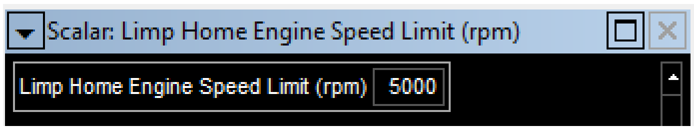
Matrix: Limp Home Boost Limit (mbar)

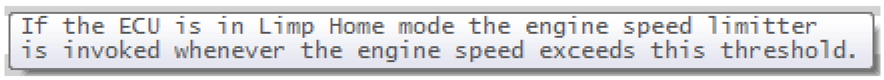
RPM (rpm)

| 1250 | 1600 | 1950 | 2300 | 2650 | 3000 | 3350 | 3700 | 4050 | 4400 | 4750 | 5100 | 5450 | 5800 | 6150 | 6500 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 | 1931 |

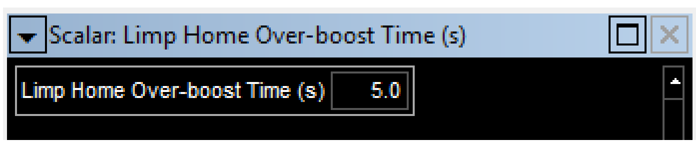
When the ECU is in Limp Home the boost limit is selected by this map.

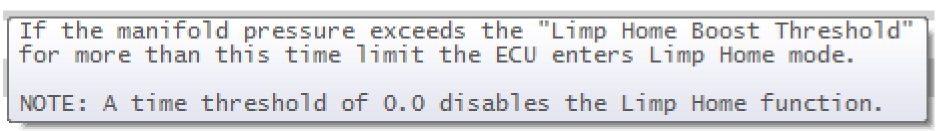
Limp Home Engine Speed Limit: Decimal, no places, 0 to 20000 rpm



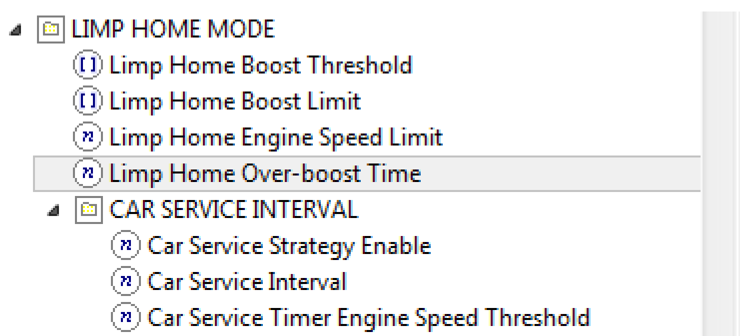




Limp Home Over-boost Time: Decimal, one place, 0 to 6553.5

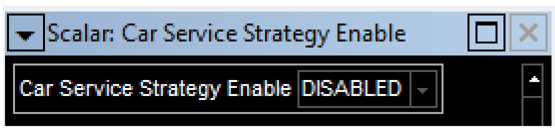


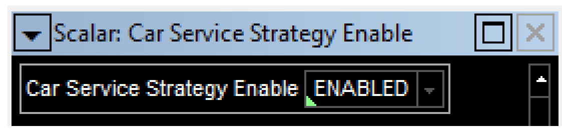




SOFTWARE SETUP: LIMP HOME MODE: CAR SERVICE INTERVAL:



Car Service Strategy Enable: ENABLED / DISABLED



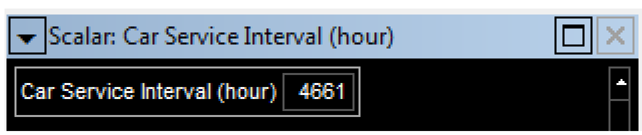




When ENABLED, the Car Service Strategy will be used. A Total Time Racing counter (displayed TT_RACE on the dashboard) counts up in seconds for the duration the engine speed is above "Car Service Timer Engine Speed Threshold".

Each time the engine is started, this counter is compared against "Car Service Interval". If the time has been exceeded, the ECU will remain in Limp Home mode until the counter is reset.

To reset the counter, flash maps into the ECU.

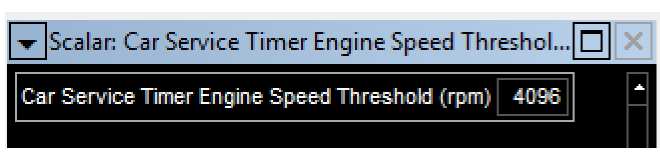
Car Service Interval: Decimal, no places, hours, 1 to 10000




A Total Time Racing counter (displayed TT_RACE on the dashboard) counts up in seconds for the duration the engine speed is above "Car Service Timer Engine Speed Threshold".

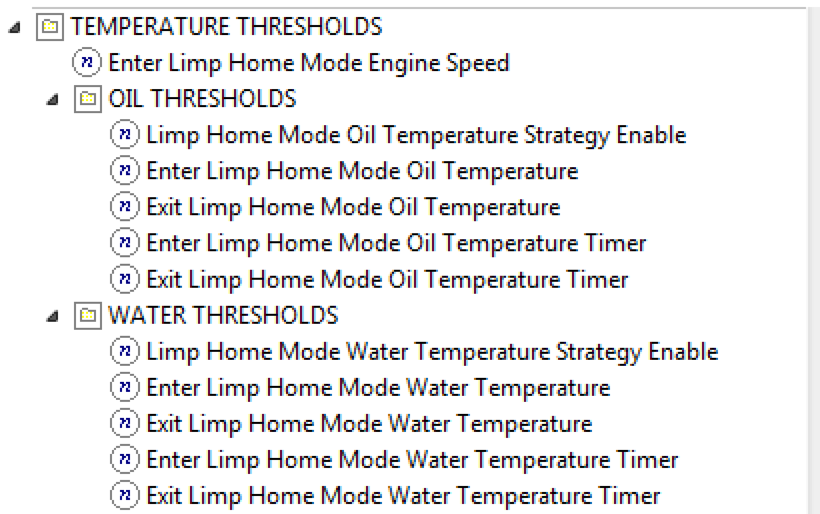
This map specifies the maximum time the Total Time Racing counter can reach before the ECU defaults to Limp Home mode. This value will be checked each time the engine is started.

Car Service Timer Engine Speed Threshold: Decimal, no places, 0 to 20000 rpm

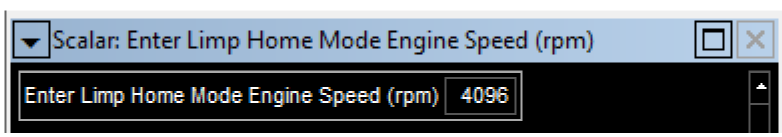


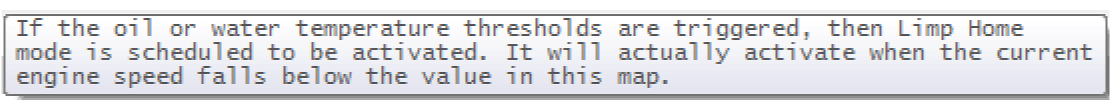

The ECU has a Total Time Racing counter (displayed TT_RACE on the dashboard). This counts up in seconds for the duration the engine speed is above the threshold in this map.

SOFTWARE SETUP: LIMP HOME MODE: TEMPERATURE THRESHOLDS:

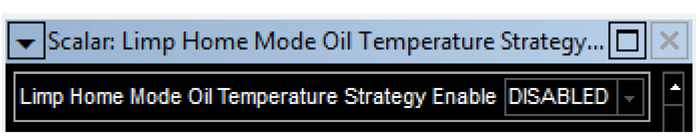


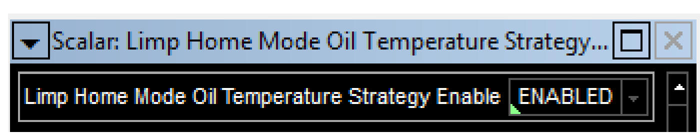

Enter Limp Home Mode Engine Speed: Decimal, no places, 0 to 20000 rpm



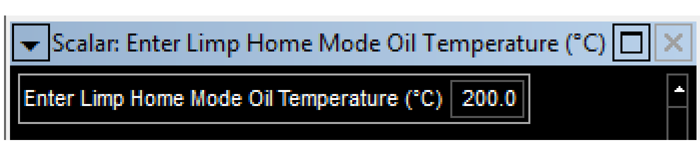

OIL THRESHOLDS: Limp Home Mode Oil Temperature Strategy Enable: ENABLED / DISABLED



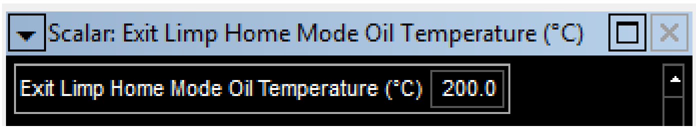


OIL THRESHOLDS: Enter Limp Home Mode Oil Temperature: Decimal, one place, -100.0 to 200.0 degrees centigrade



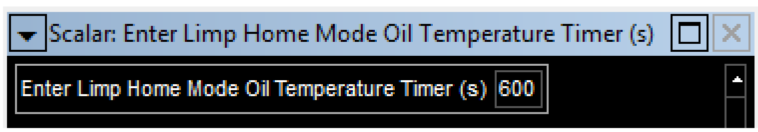
If the current oil temperature is above this value for longer than "Enter Limp Home Mode Oil Temperature Timer", then Limp Home mode will be scheduled to activate as soon as the current engine speed falls below "Enter Limp Home Mode Engine Speed".

OIL THRESHOLDS: Exit Limp Home Mode Oil Temperature: Decimal, one place, -100.0 to 200.0 degrees centigrade



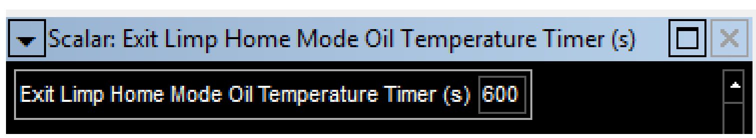

If the current oil temperature is below this value for longer than "Exit Limp Home Mode Oil Temperature Timer", then Limp Home mode will be cleared.

OIL THRESHOLDS: Enter Limp Home Mode Oil Temperature Timer: Decimal, no places, 0 to 600 seconds



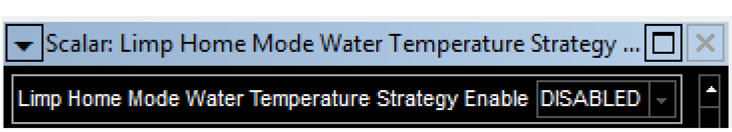

If the current oil temperature is above "Enter Limp Home Mode Oil Temperature" for longer than this value, then Limp Home mode will be scheduled to activate as soon as the current engine speed falls below "Enter Limp Home Mode Engine Speed".

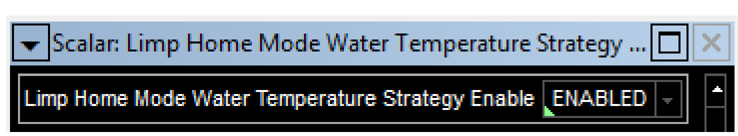
OIL THRESHOLDS: Exit Limp Home Mode Oil Temperature Timer: Decimal, no places, 0 to 600 seconds




If the current oil temperature is below this value for longer than "Exit Limp Home Mode Oil Temperature Timer", then Limp Home mode will be cleared.

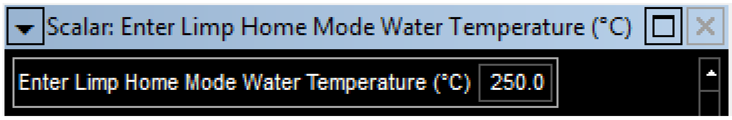
WATER THRESHOLDS: Limp Home Mode Water Temperature Enable: ENABLED / DISABLED



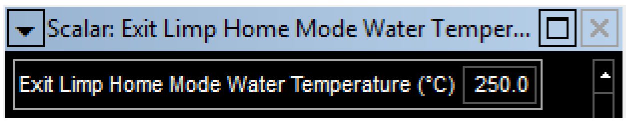

Set to ENABLED to enable the Limp Home Mode Water Temperature strategy.

WATER THRESHOLDS: Enter Limp Home Mode Water Temperature: Decimal, one place 100.0 to 250.0 Centigrade



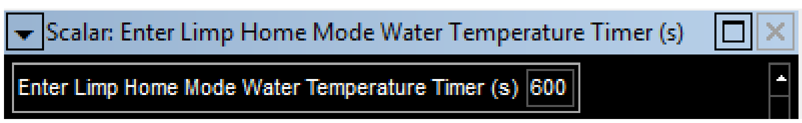

If the current water temperature is above this value for longer than "Enter Limp Home Mode Water Temperature Timer", then Limp Home mode will be scheduled to activate as soon as the current engine speed falls below "Enter Limp Home Mode Engine Speed".

WATER THRESHOLDS: Exit Limp Home Mode Water Temperature: Decimal, one place 100.0 to 250.0 Centigrade



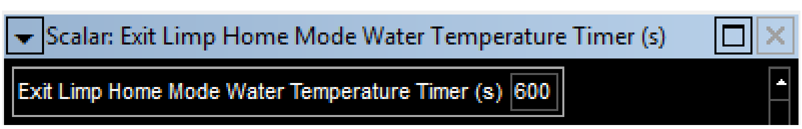

If the current water temperature is below this value for longer than "Exit Limp Home Mode Water Temperature Timer", then Limp Home mode will be cleared.

WATER THRESHOLDS: Enter Limp Home Mode Water Temperature Timer: Decimal, no places, 0 to 600 seconds



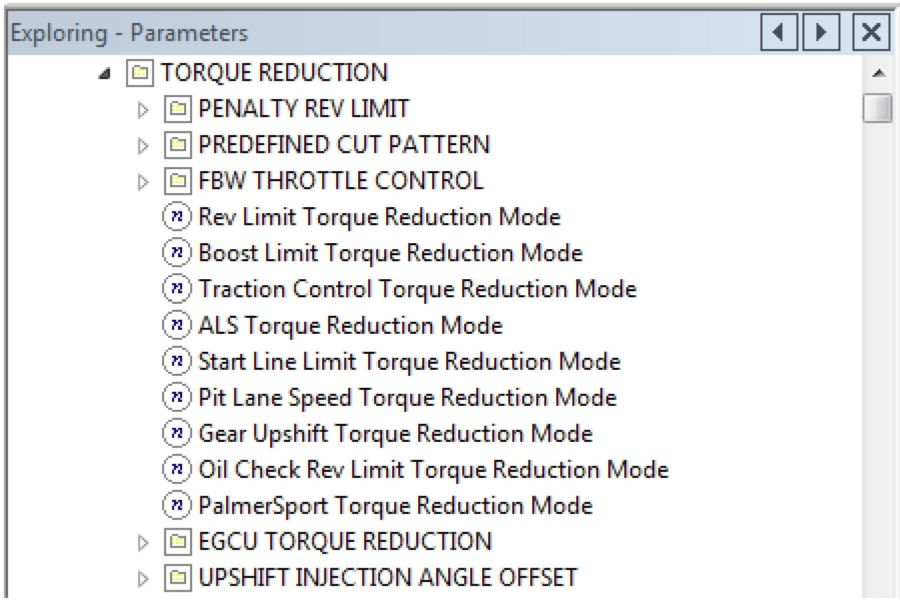

If the current water temperature is above "Enter Limp Home Mode Water Temperature" for longer than this value, then Limp Home mode will be scheduled to activate as soon as the current engine speed falls below "Enter Limp Home Mode Engine Speed".

WATER THRESHOLDS: Exit Limp Home Mode Water Temperature Timer: Decimal, no places, 0 to 600 seconds

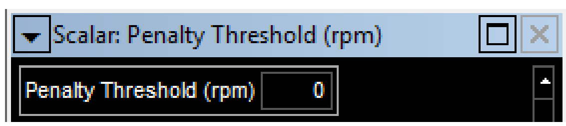



If the current water temperature is below this value for longer than "Exit Limp Home Mode Water Temperature Timer", then Limp Home mode will be cleared.

SOFTWARE SETUP: TORQUE REDUCTION: Extensive entries, defined below

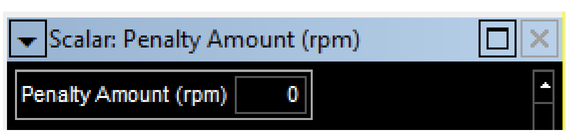



TORQUE REDUCTION: Penalty Rev Limit: Penalty Threshold: Decimal, no places, 0 to 20000 rpm



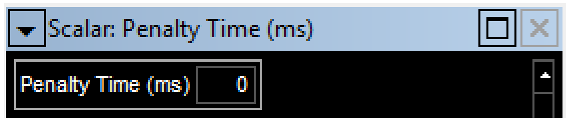

A penalty is incurred when rpm exceeds the normal rev limit by this rpm.
The amount of penalty is specified in "Penalty Amount".
The duration of penalty is specified in "Penalty Time".

TORQUE REDUCTION: Penalty Amount: Decimal, no places, 0 to 20000 rpm



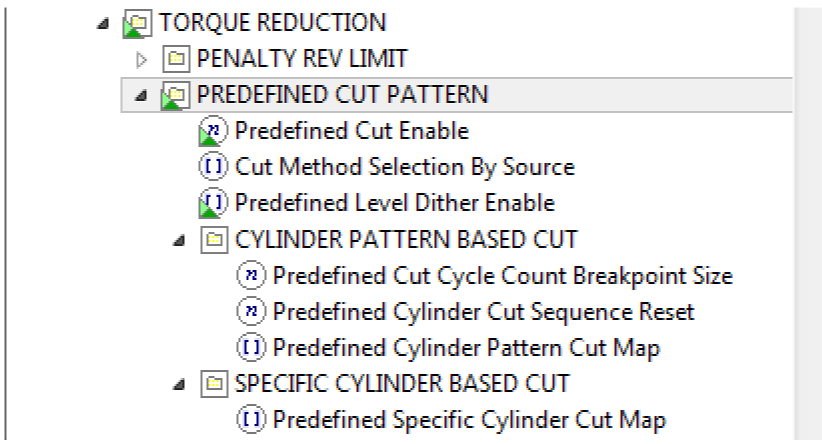

This is the amount by which the normal rev limit is reduced
when a penalty is incurred. The penalty will remain active
for the duration specified in the "Penalty Time" map.

TORQUE REDUCTION: Penalty Time: Decimal, no places, 0 to 1000 milliseconds

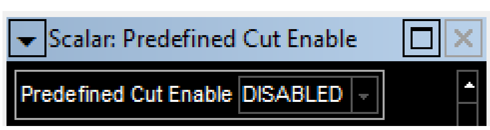


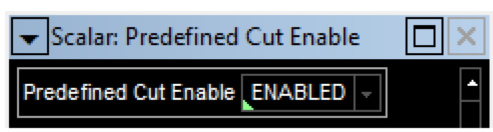

This is how long the penalty is active for. It is in units of milliseconds of penalty per millisecond of infringement. A time of zero disables the penalty strategy.

TORQUE REDUCTION: PREDEFINED CUT PATTERN:




PREDEFINED CUT PATTERN: Predefined Cut Enable: ENABLED / DISABLED

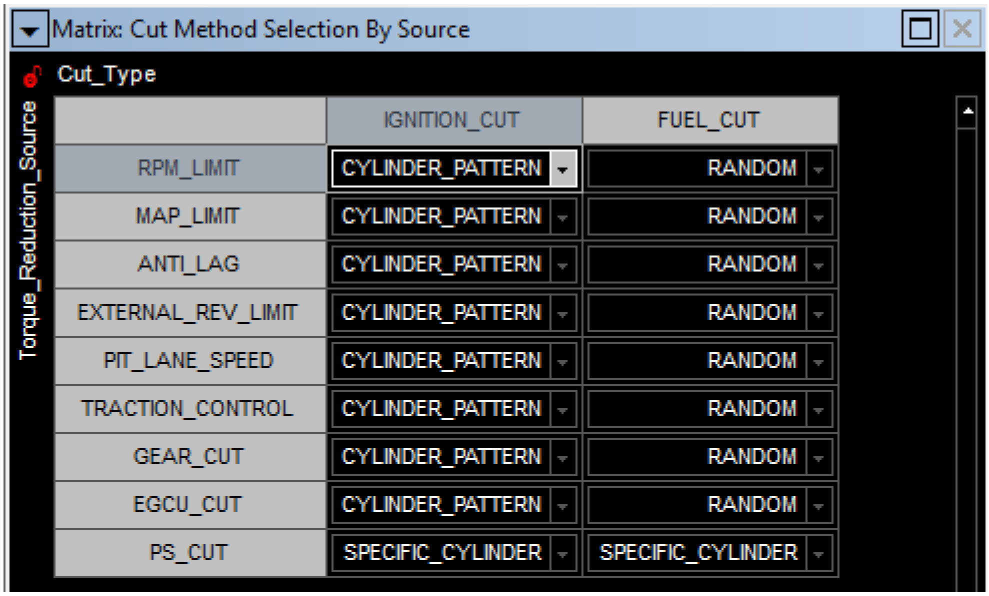



If ENABLED, the cut type will be determined by 'Cut Method Selection By Source' Map

If DISABLED , the cut will always be RANDOM

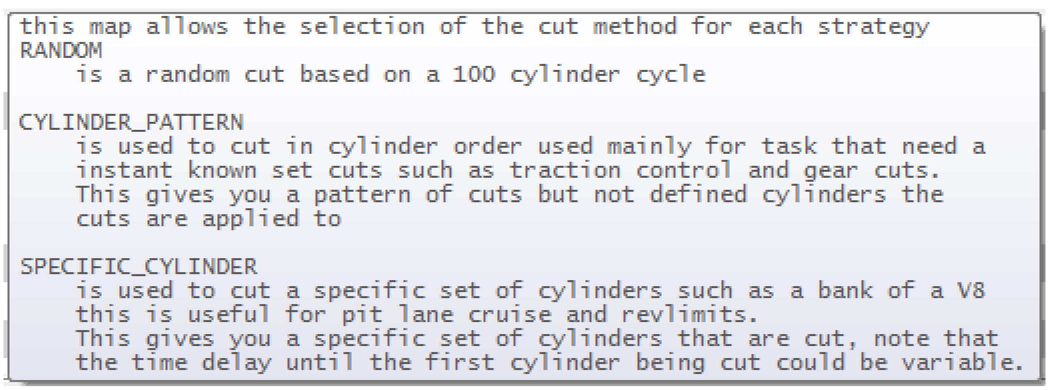
PREDEFINED CUT PATTERN: Cut Method Selection By Source: Decimal, no places, 0 to 2


Matrix: Cut Method Selection By Source

Cut_Type

Torque_Reduction_Source

| | IGNITION_CUT | FUEL_CUT |
|---|---|---|
| RPM_LIMIT | CYLINDER_PATTERN | RANDOM |
| MAP_LIMIT | CYLINDER_PATTERN | RANDOM |
| ANTI_LAG | CYLINDER_PATTERN | RANDOM |
| EXTERNAL_REV_LIMIT | CYLINDER_PATTERN | RANDOM |
| PIT_LANE_SPEED | CYLINDER_PATTERN | RANDOM |
| TRACTION_CONTROL | CYLINDER_PATTERN | RANDOM |
| GEAR_CUT | CYLINDER_PATTERN | RANDOM |
| EGCU_CUT | CYLINDER_PATTERN | RANDOM |
| PS_CUT | SPECIFIC_CYLINDER | SPECIFIC_CYLINDER |

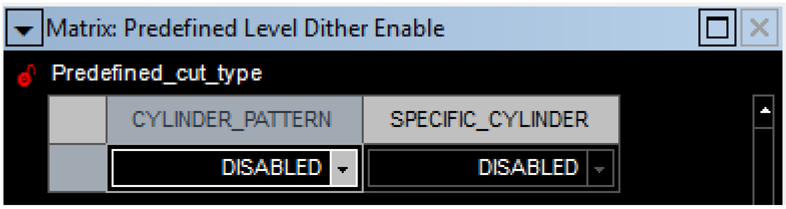

this map allows the selection of the cut method for each strategy
RANDOM
is a random cut based on a 100 cylinder cycle

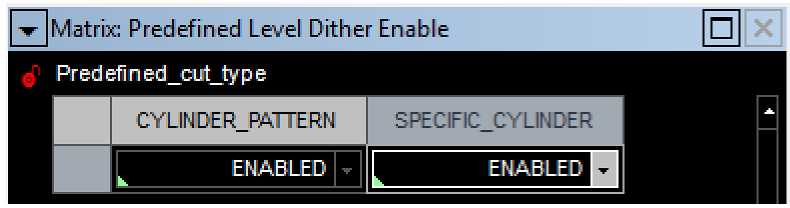
CYLINDER_PATTERN
is used to cut in cylinder order used mainly for task that need a instant known set cuts such as traction control and gear cuts.
This gives you a pattern of cuts but not defined cylinders the cuts are applied to

SPECIFIC_CYLINDER
is used to cut a specific set of cylinders such as a bank of a V8 this is useful for pit lane cruise and revlimits.
This gives you a specific set of cylinders that are cut, note that the time delay until the first cylinder being cut could be variable.

PREDEFINED CUT PATTERN: Predefined Level Dither Enable:

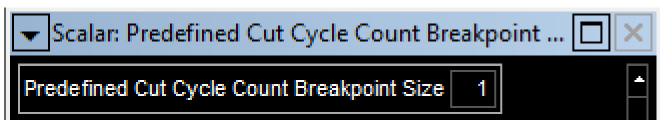
CYLINDER PATTERN: ENABLED / DISABLED; SPECIFIC CYLINDER: ENABLED / DISABLED



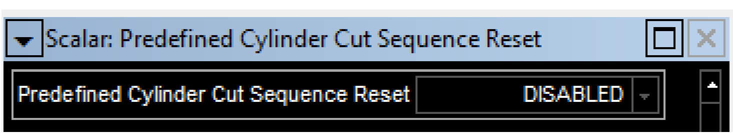

Enables the dithering between cut levels to allow the use trq reduction with a resolution of higher than 5%

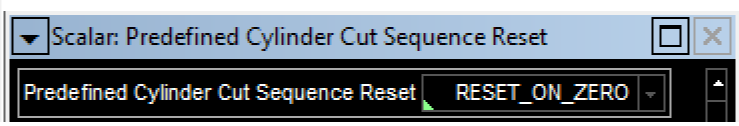
CYLINDER PATTERN BASED CUT: Predefined Cut Cycle Count Breakpoint Size: Decimal , no places, 1 to 50

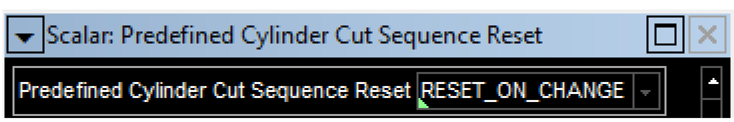



This map selects the number of cylinders used before the cylinder cut pattern is repeated.

CYLINDER PATTERN BASED CUT: Predefined Cylinder Cut Sequence Reset: Decimal, no places, 0 to 2



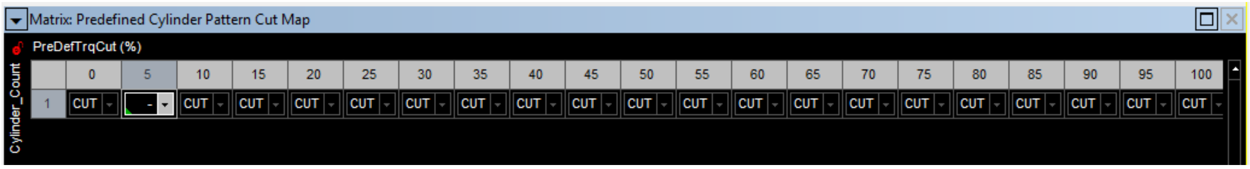

This map sets whether and how the predefined cylinder cut table will be reset back to the beginning. In all cases, when the end of the sequence is reached, it wraps back to the beginning.

Resetting the pattern back to the beginning ensures that the cut sequence will be identical every time, as it will start in the same position.

```
DISABLED        - Never reset back to beginning.
RESET_ON_ZERO   - Reset when torque reduction falls back to zero
RESET_ON_CHANGE - Reset whenever torque reduction changes (including falling
                  back to zero).
```

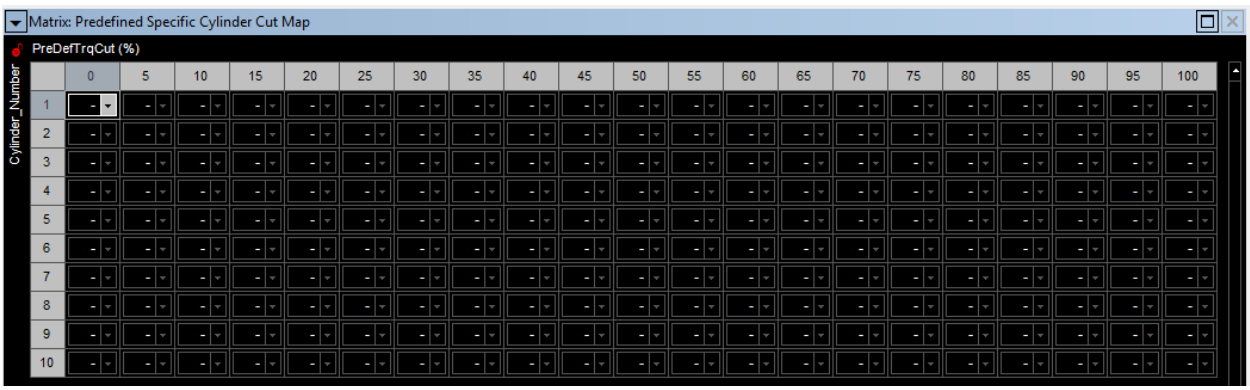
If RESET_ON_CHANGE is selected, it is not appropriate to dither between cut patterns as the sequence would constantly be reset. In this case, dithering is disabled and the value in "Predefined Level Dither Enable" is ignored.

CYLINDER PATTERN BASED CUT: Predefined Cylinder Pattern Cut Map: Decimal, no places, 0 to 1



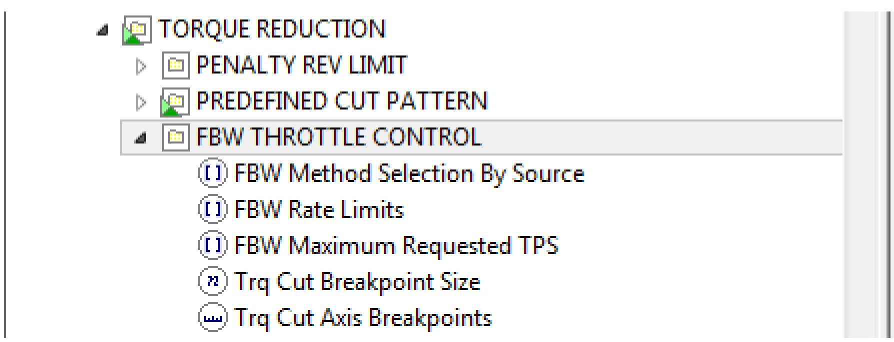

this describes the predefined translation between the cut % and the pattern of cylinders cut.

SPECIFIC CYLINDER BASED CUT: Predefined Specific Cylinder Cut Map: Decimal, no places, 0 to 1




this describes the predefined translation between the cut % and the actual cylinders cut.

TORQUE REDUCTION: FBW THROTTLE CONTROL:



FBW THROTTLE CONTROL: FBW Method Selection By Source: DISABLED / ABSOLUTE_ANG / PROPORTIONAL ANG

Matrix: FBW Method Selection By Source

trq_src

| | RPM_LIMIT | MAP_LIMIT | ANTI_LAG | EXTERNAL_REV_LIMIT | PIT_LANE_SPEED | TRACTION_CONTROL | GEAR_CUT | EGCU_CUT |
|---|---|---|---|---|---|---|---|---|
| | DISABLED | DISABLED | DISABLED | DISABLED | DISABLED | DISABLED | DISABLED | DISABLED |

```
This map allows the user to select how the electronic throttle will be used
by each torque reduction strategy.

DISABLED         - No request will be made
ABSOLUTE_ANG     - Absolute angle will be requested
PROPORTIONAL_ANG - Angle proportional to the current driver demanded tps will be requested
```

FBW THROTTLE CONTROL: FBW RATE LIMITS: Decimal, one place, 0.0 to 1000.0 degrees per second

Matrix: FBW Rate Limits (°/s)

Rate_Limit

| fbw_trq_src | RISING | FALLING | EXITING |
|---|---|---|---|
| RPM_LIMIT | 100.0 | 100.0 | 100.0 |
| MAP_LIMIT | 100.0 | 100.0 | 100.0 |
| ANTI_LAG | 100.0 | 100.0 | 100.0 |
| EXTERNAL_REV_LIMIT | 100.0 | 100.0 | 100.0 |
| PIT_LANE_SPEED | 100.0 | 100.0 | 100.0 |
| TRACTION_CONTROL | 100.0 | 100.0 | 100.0 |
| GEAR_CUT | 100.0 | 100.0 | 100.0 |
| EGCU_CUT | 100.0 | 100.0 | 100.0 |
| PS_CUT | 100.0 | 100.0 | 100.0 |

```
This map allows the selection of the electronic throttle rise, fall and exiting
rate limits for each torque reduction strategy, which has been calibrated to
use the electronic throttle in map 'FBW Method Selection By Source'

Care must be taken when calibrating these parameters as they affect the
performance of the throttle whilst the individual strategy is active, but also,
due to the exiting rate limit, they affect the performance as the current
throttle position is blended into the next strategy. Setting this rate too low
can result in poor throttle response until the driver's request is matched.


A rate of change value of zero is a request for no rate limiting to be applied.
```

FBW THROTTLE CONTROL: FBW Maximum Requested TPS: Decimal, one place, 0.0 to 100.0

Matrix: FBW Maximum Requested TPS

cut_trq (%)

fbw_trq_src

| | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| RPM_LIMIT | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| MAP_LIMIT | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| ANTI_LAG | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| EXTERNAL_REV_LIMIT | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| PIT_LANE_SPEED | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| TRACTION_CONTROL | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| GEAR_CUT | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| EGCU_CUT | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| PS_CUT | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

This map defines the requested electronic throttle position for each strategy based on the torque reduction being requested.

FBW THROTTLE CONTROL: Trq Cut Breakpoint Size: Decimal, no places, 1 to 21

Scalar: Trq Cut Breakpoint Size

Trq Cut Breakpoint Size 11

This map selects the number of break points for the torque reduction electronic throttle control interface.

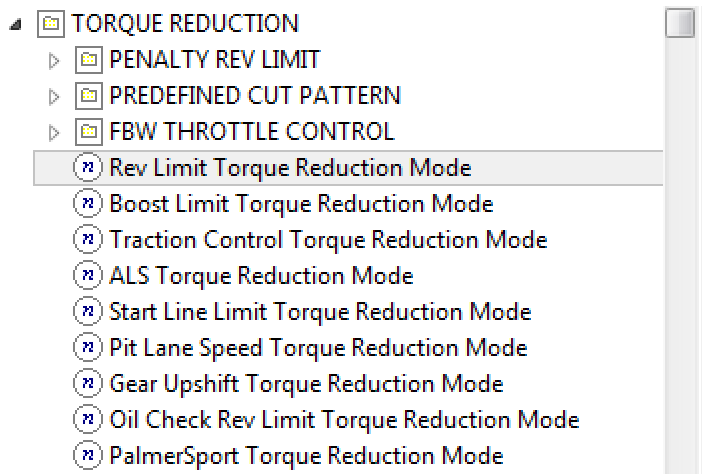
FBW THROTTLE CONTROL: Trq Cut Axis Breakpoints: Decimal, one place, 0.0 to 203.0 percent,

Axis: Trq Cut Axis Breakpoints (%)

Index

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.0 | 10.0 | 20.0 | 30.0 | 40.0 | 50.0 | 60.0 | 70.0 | 80.0 | 90.0 | 100.0 |

TORQUE REDUCTION (Continued)




Rev Limit Torque Reduction Mode (below):


This map selects which technique (fuel or ignition) is used to cut cylinders during Rev limit if the "Rev Limit Torque Reduction" is non zero.

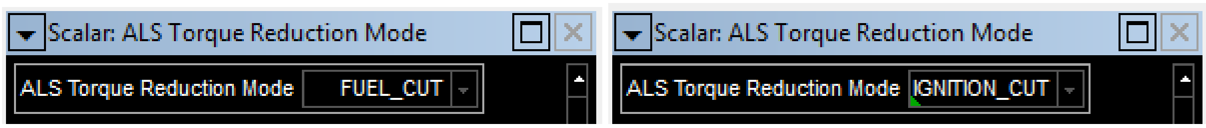
Boost Limit Torque Reduction Mode (below):

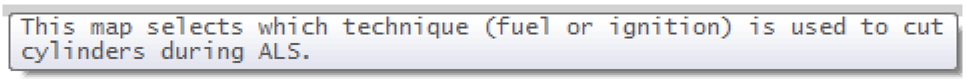

This map selects which technique (fuel or ignition) is used to cut cylinders during Rev limit if the "Rev Limit Torque Reduction" is non zero.

Traction Control Torque Reduction Mode (below):

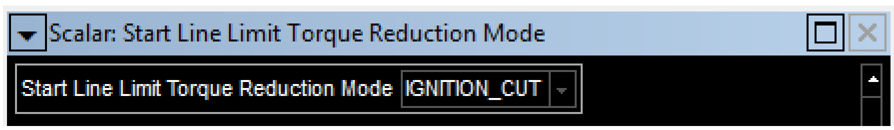

This map selects which technique (fuel or ignition) is used to cut cylinders during traction control.

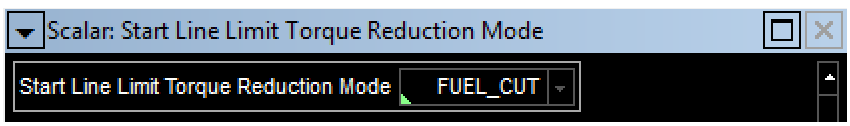
ALS Torque Reduction Mode (below):

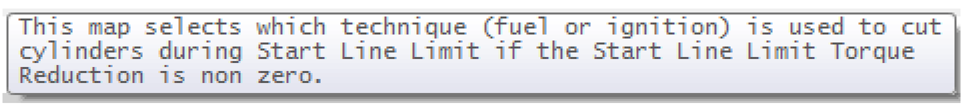


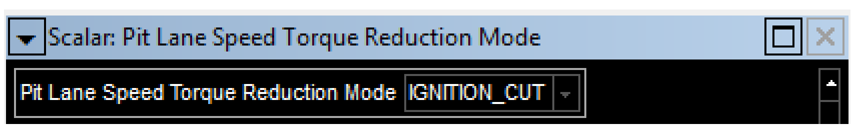

Start Line Limit Torque Reduction Mode(below):

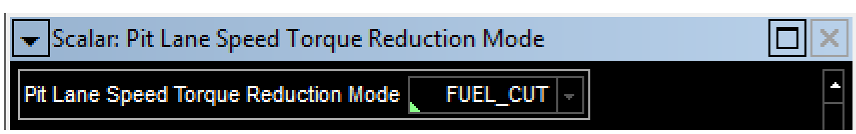


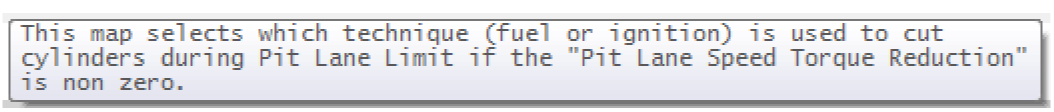



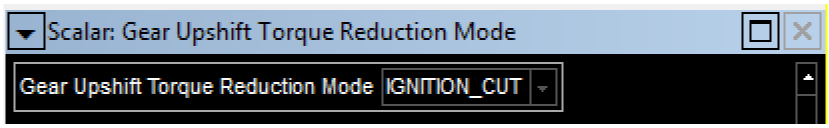

Pit Lane Speed Torque Reduction Mode(below):

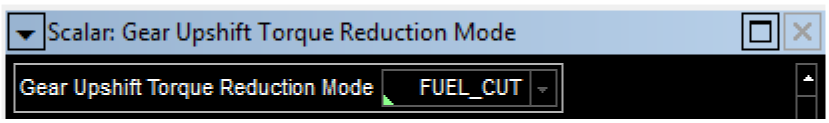


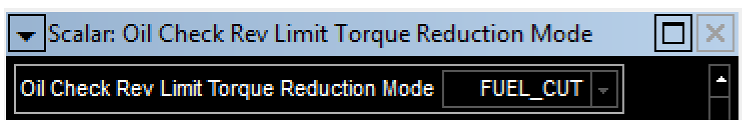
Gear Upshift Torque Reduction Mode(below):

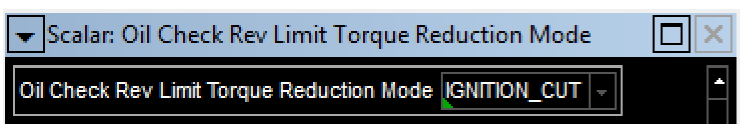



This map selects which technique (fuel or ignition) is used to cut cylinders during a gear upshift if the "Gear Upshift Torque Reduction" is non zero.

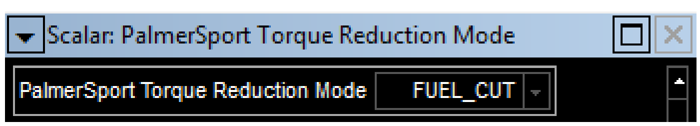
Oil Check Rev Limit Torque Reduction Mode (below):

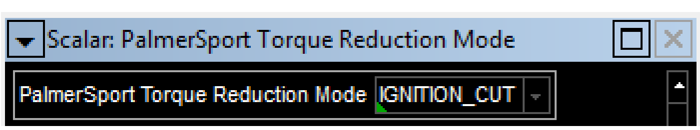


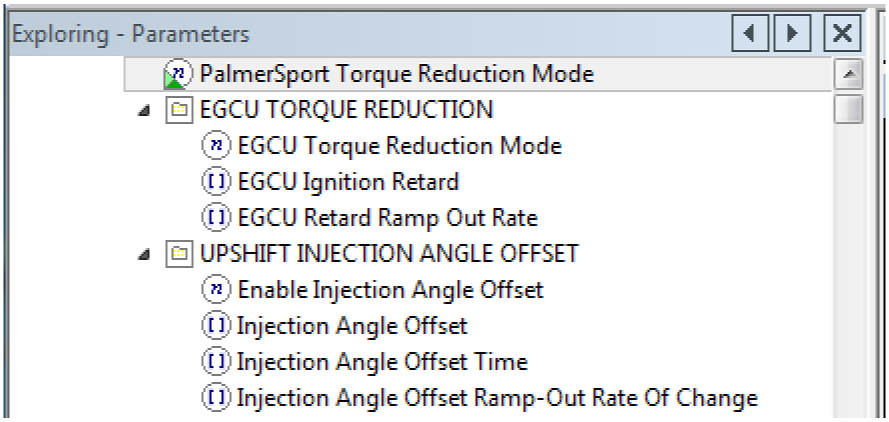

This map selects which technique (fuel or ignition) is used to cut cylinders during Oil Check Rev limit if the "Rev Limit Torque Reduction" is non zero.

PalmerSport Torque Reduction Mode (below):

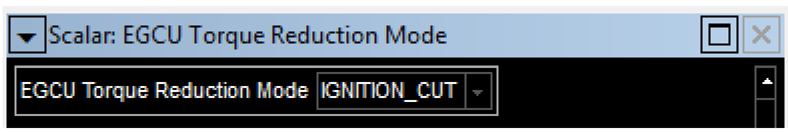


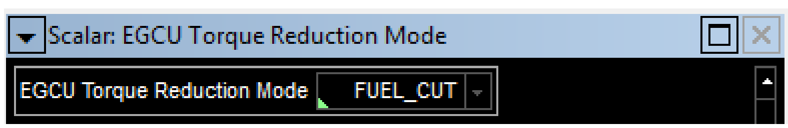




This map selects which technique (fuel or ignition) is used to cut cylinders during Pit Lane Limit if the "PalmerSport Torque Reduction" is non zero.

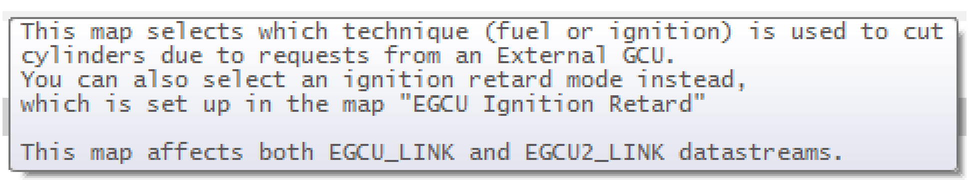



EGCU Torque Reduction Mode (below):







EGCU Ignition Retard (below): Decimal 2 places 0.00 to 180.00 Degrees

Matrix: EGCU Ignition Retard (°)

egcuRetardIdx (%)

| RPM (rpm) | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3000 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

When "IGN_RETARD" is selected in the "EGCU Torque Reduction Mode" map, an ignition retard is read from this map and applied whenever the EGCU requests a "Cut" level. Note that this specifies a retard value rather than a cylinder cut in this case.

Index 0 is a special case where the specified retard value is not used and the strategy enters ramp out mode.

This retard is ramped out at a rate specified in "EGCU Retard Ramp Out Rate" when the request is removed.

Note that X-axis EGCU Retard Index breakpoints are not interpolated, whereas Y-axis Engine Speed breakpoints are.

EGCU Retard Ramp-Out Rate of Change (below): Decimal 2 places 0.00 to 180.00 Degrees

Matrix: EGCU Retard Ramp Out Rate (°)

egcuRetardIdx (%)

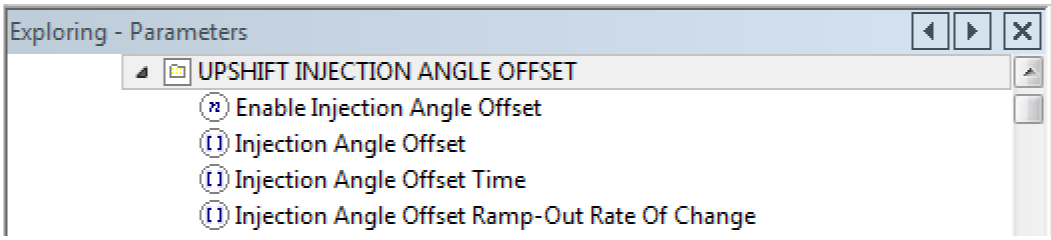
| | 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

This is the rate at which an EGCU ignition retard is reduced by per cylinder when the request is removed.

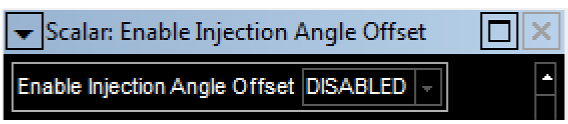
The value in this map is latched at the start of each shift. Even if the EGCU Retard Index changes during the shift, a new value will not be looked up until the start of the next shift.

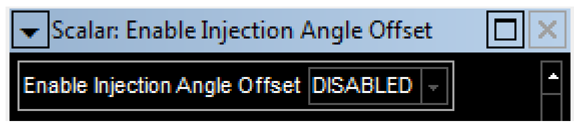
A value of zero disables ramp out, so a step change will occur.

Upshift Injection Angle Offset (below):




Enable Injection Angle Offset (below):



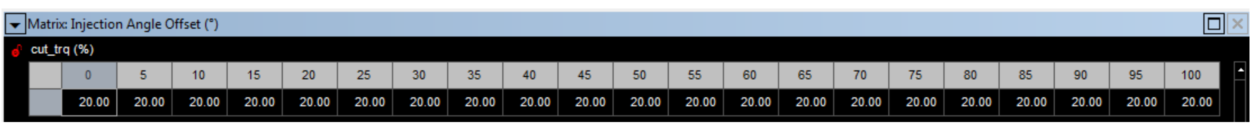




Enables strategy to apply an offset to Injection Angle when a gear upshift has been accepted, the parameters are indexed by the requested cut severity.

The offset "Injection Angle Offset" will be applied immediately and persists for "Injection Angle Offset Time".

Once this time has elapsed, the offset will be ramped out at the rate specified in "Injection Angle Offset Ramp-Out Rate Of Change".

Injection Angle Offset (below): Cut Torque%



Matrix: Injection Angle Offset (°)

cut_trq (%)

| 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 | 20.00 |

Enables strategy to apply an offset to Injection Angle when a gear upshift has been accepted, the parameters are indexed by the requested cut severity.

The offset "Injection Angle Offset" will be applied immediately and persists for "Injection Angle Offset Time".

Once this time has elapsed, the offset will be ramped out at the rate specified in "Injection Angle Offset Ramp-Out Rate Of Change".

Injection Angle Offset Time (below): Cut Torque %

Matrix: Injection Angle Offset Time (ms)

cut_trq (%)

| 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 |

Enables strategy to apply an offset to Injection Angle when a gear upshift has been accepted, the parameters are indexed by the requested cut severity.

The offset "Injection Angle Offset" will be applied immediately and persists for "Injection Angle Offset Time".

Once this time has elapsed, the offset will be ramped out at the rate specified in "Injection Angle Offset Ramp-Out Rate Of Change".

Injection Angle Offset Ramp-Out Rate of Change (below): Cut Severity %; Units: deg/cylinder

Matrix: Injection Angle Offset Ramp-Out Rate Of Change (deg/Cylinder)

Cut_Severity (%)

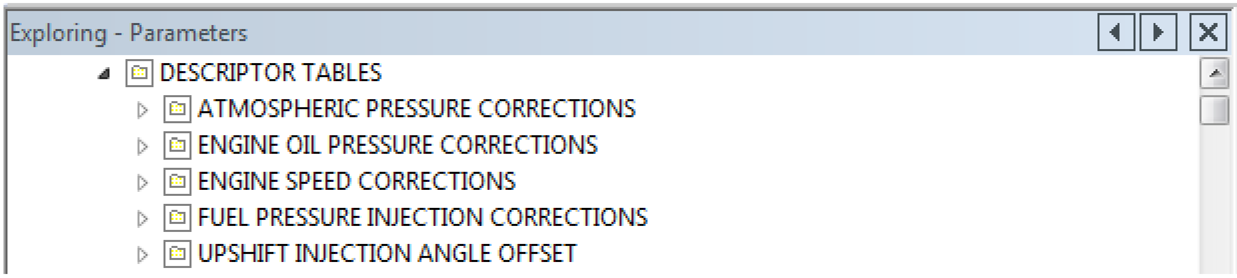
| 0 | 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 | 65 | 70 | 75 | 80 | 85 | 90 | 95 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 | 5.00 |

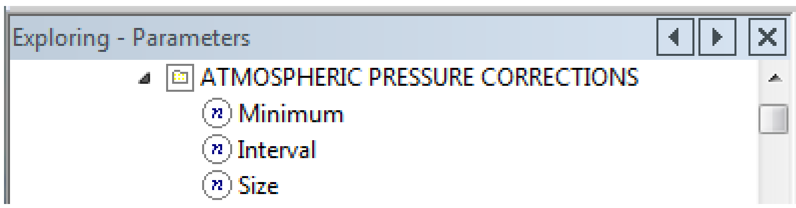
Enables strategy to apply an offset to Injection Angle when a gear upshift has been accepted, the parameters are indexed by the requested cut severity.

The offset "Injection Angle Offset" will be applied immediately and persists for "Injection Angle Offset Time".

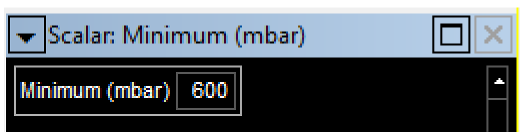
Once this time has elapsed, the offset will be ramped out at the rate specified in "Injection Angle Offset Ramp-Out Rate Of Change".

Descriptor Tables (below):

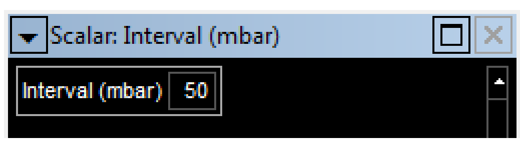


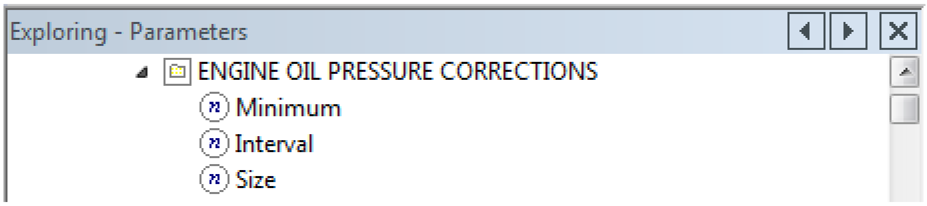

Minimum (below): Decimal 600 to 1200 Millibar



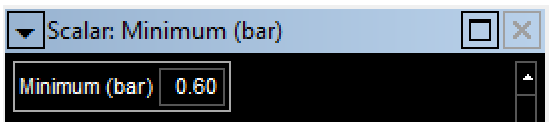

Interval (below): Decimal 0 to 600 Millibar



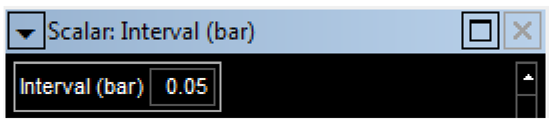

Size (below): Decimal 1 to 11




Minimum (below): Decimal two places, pressure Bar, 0.00 to 65.53

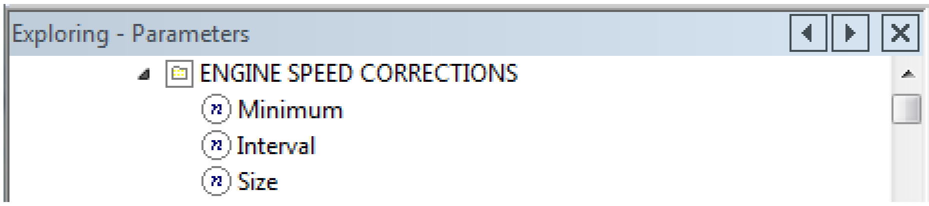



Interval (below): Decimal two places, 0.00 to 65.53, bar pressure

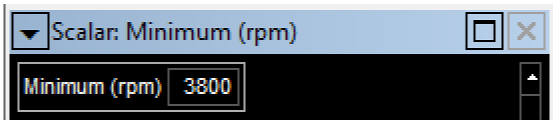



Size (below): Decimal , no places, 1 to 11, user type

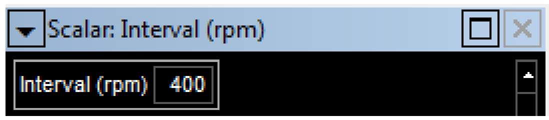
Engine Speed Corrections (below):




Minimum (below): Decimal, no places, 0 to 20000, angular velocity, revs per minute

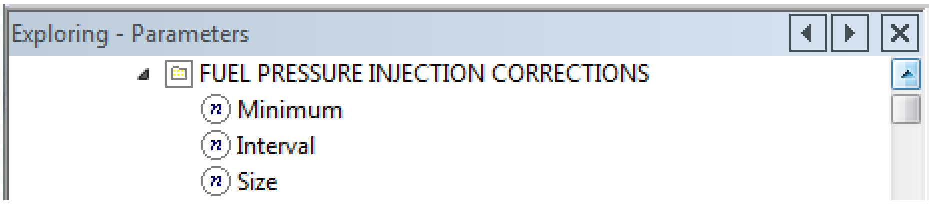



Interval (below): Decimal, no places, 1 to 1000, angular velocity, revs per minute

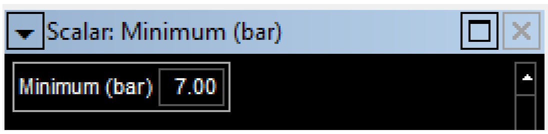



Size (below): Decimal, no places, 1 to 17, user type

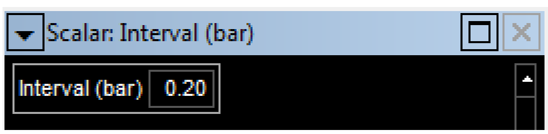
Fuel Pressure Injection Corrections (below)




Minimum (below): Decimal, two places, 0.00 to 65.53, bar pressure

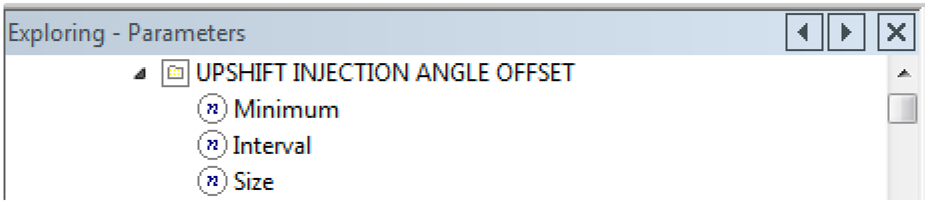



Interval (below): Decimal, two places, 0.00 to 65.53, bar pressure

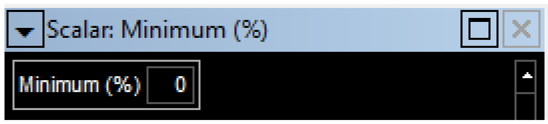



Size (below): Decimal, no places, 1 to 17, user type

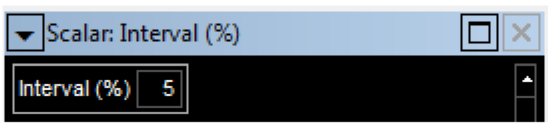
Upshift Injection Angle Offset (below):




Minimum (below): Decimal, no places, 0 to 100%

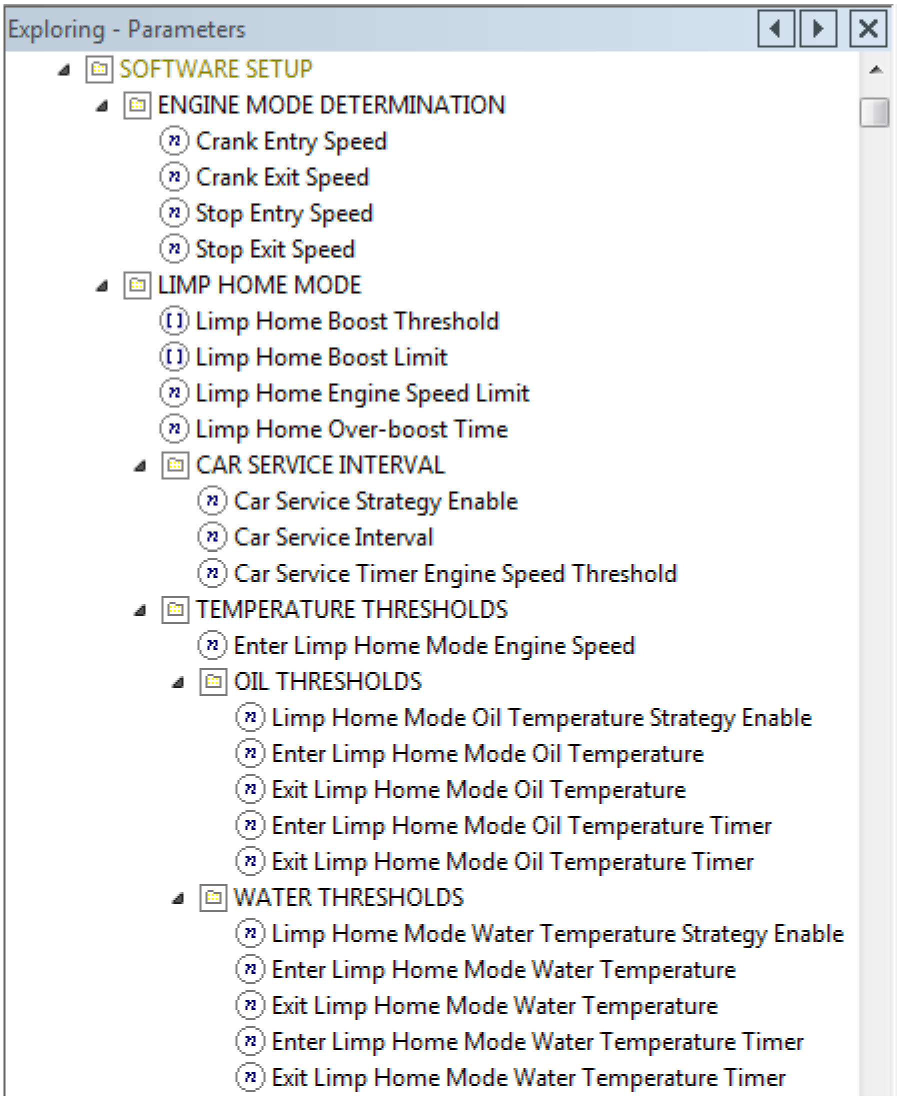



Interval (below): Decimal, no places, 0 to 5%

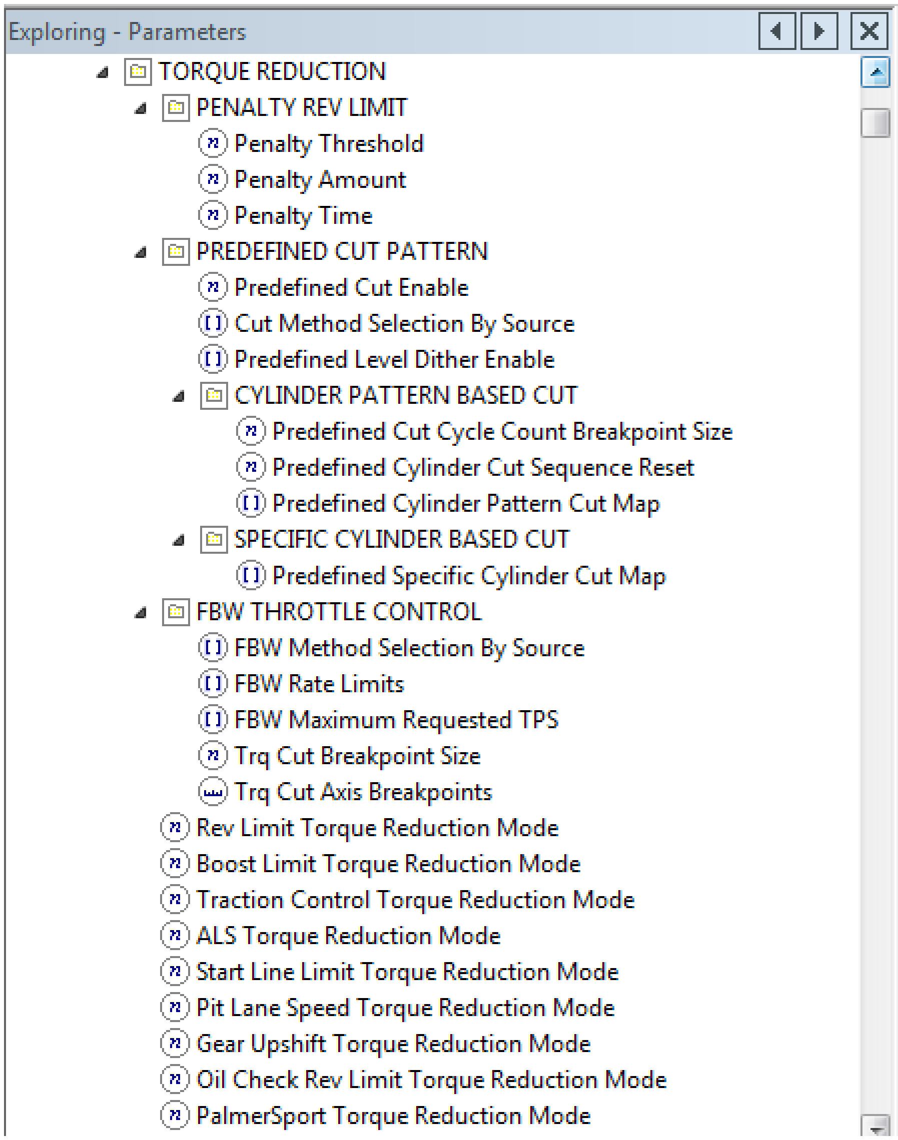



Size (below): Decimal, no places, 1 to 21

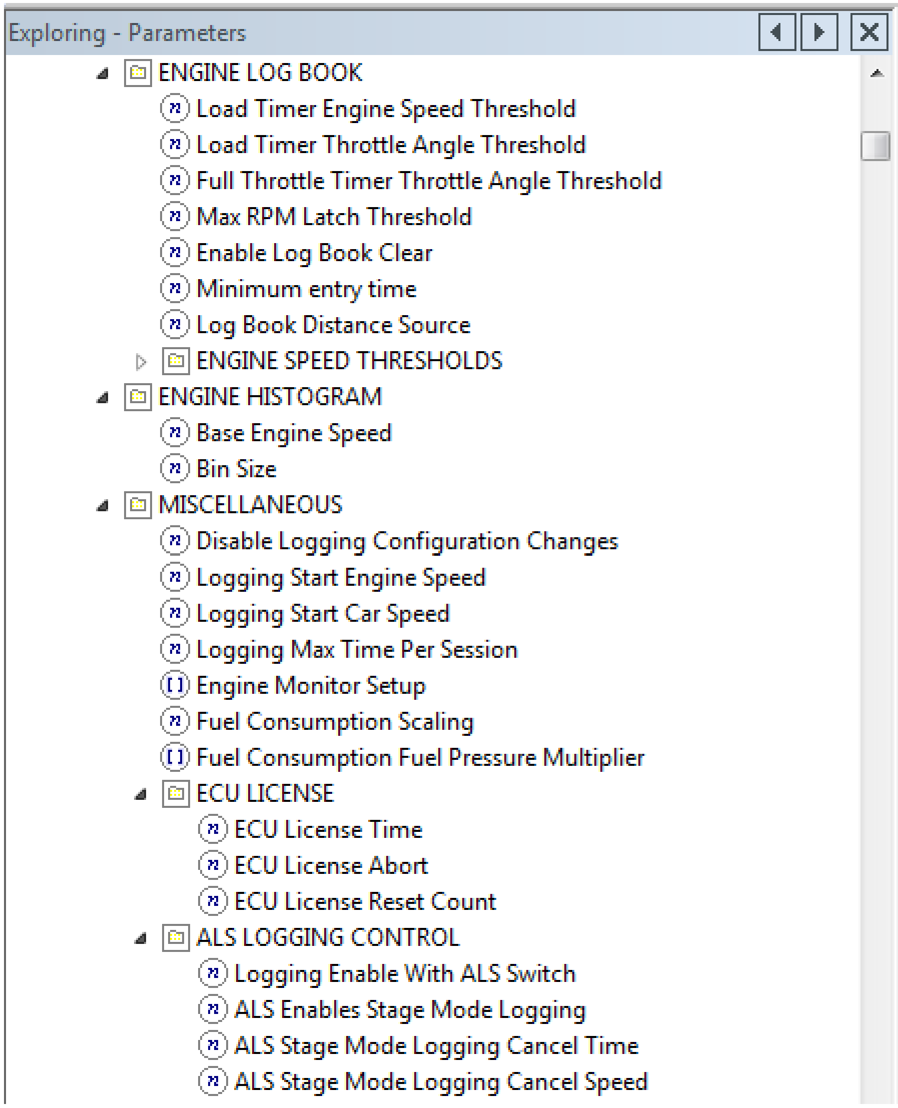
Descriptions / Values Not Shown, Only Listed



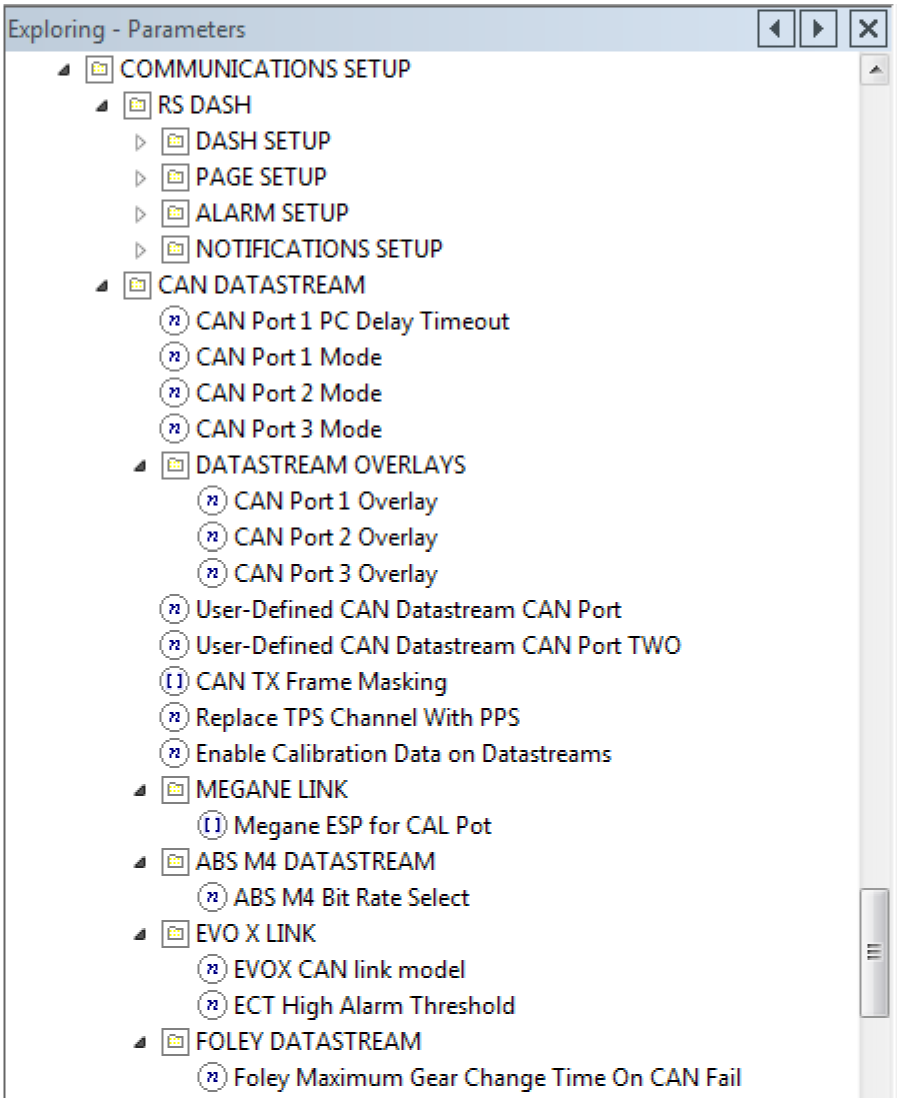
Descriptions / Values Not Shown, Only Listed



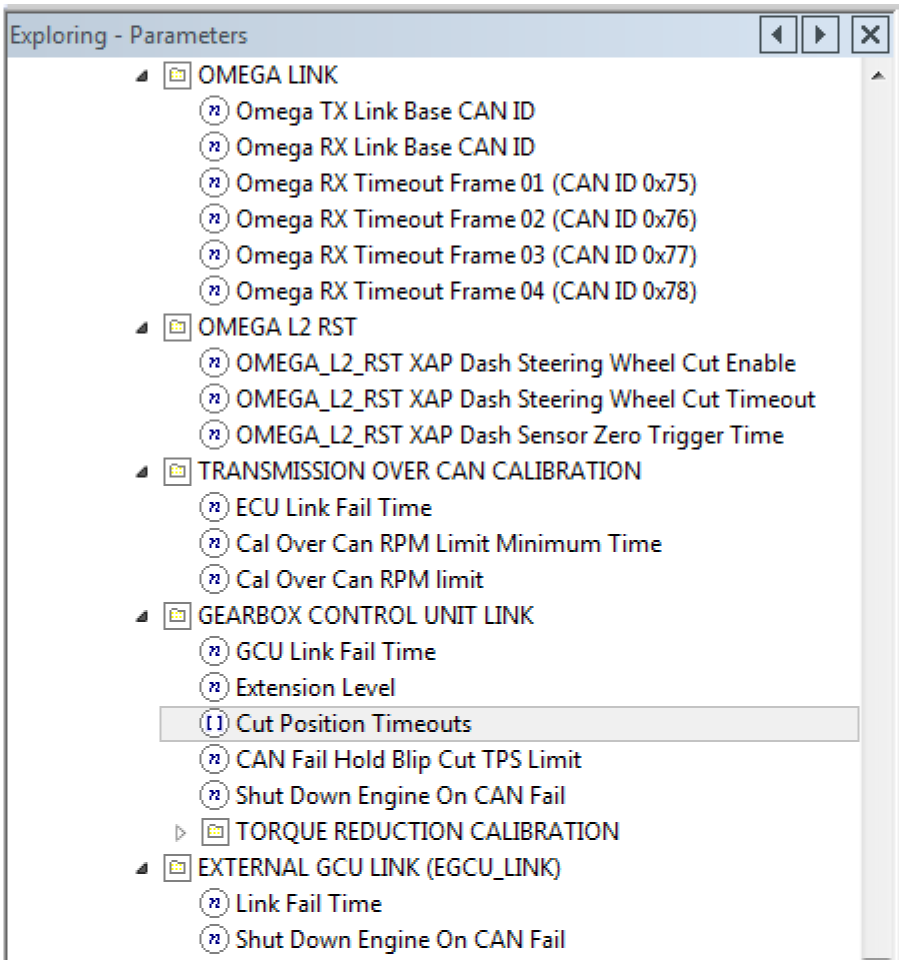
Descriptions / Values Not Shown, Only Listed



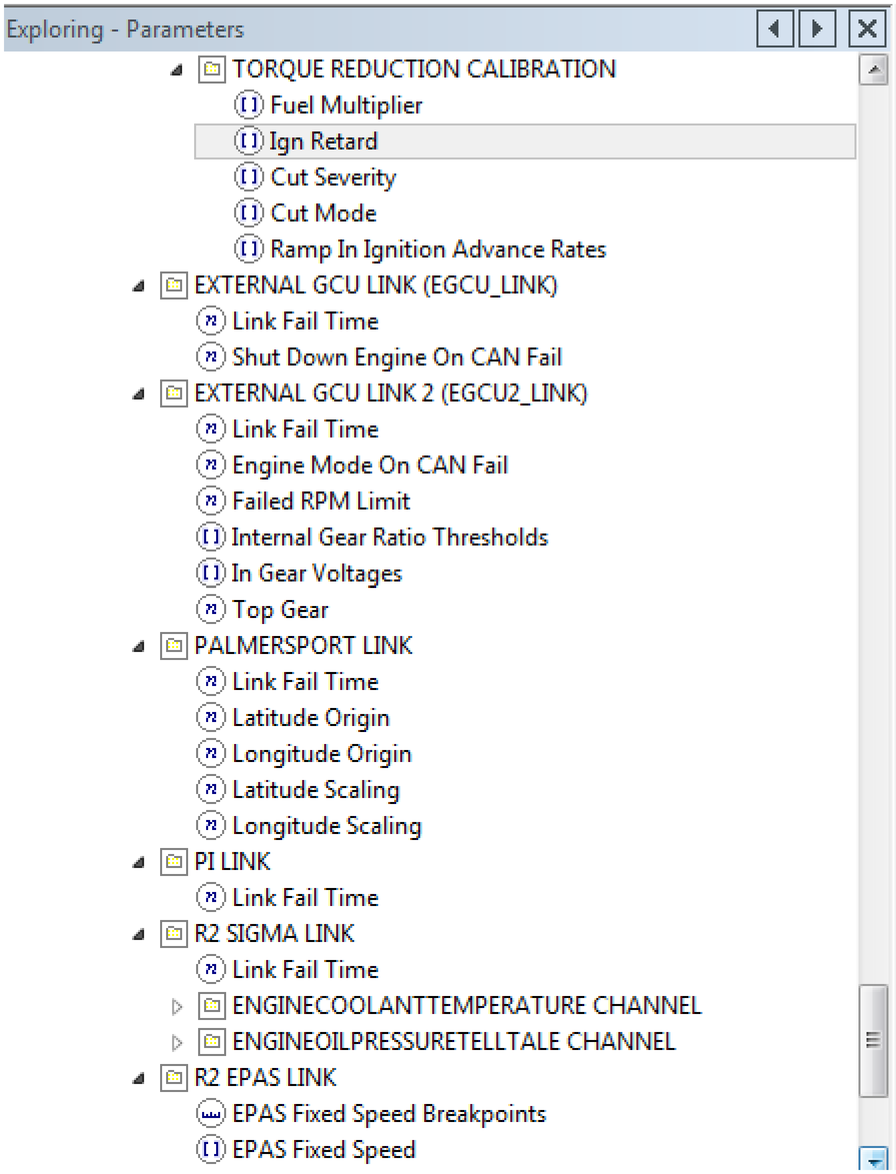
Descriptions / Values Not Shown, Only Listed



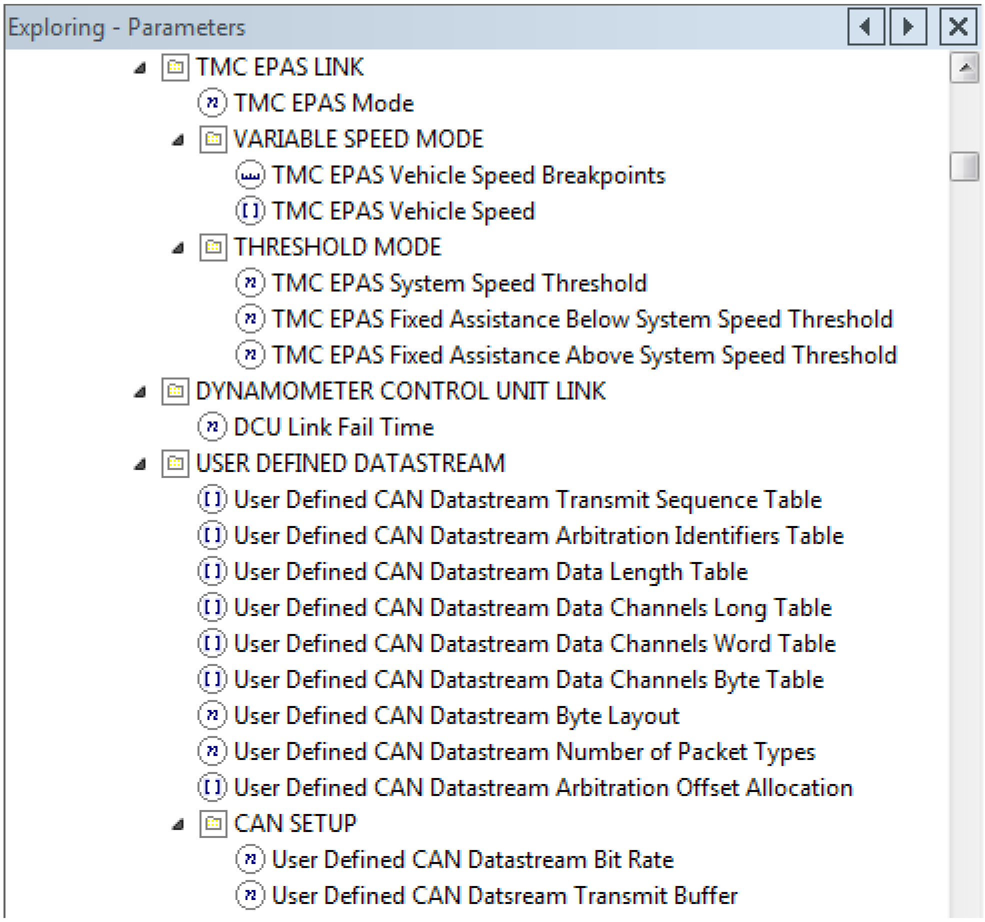
Descriptions / Values Not Shown, Only Listed



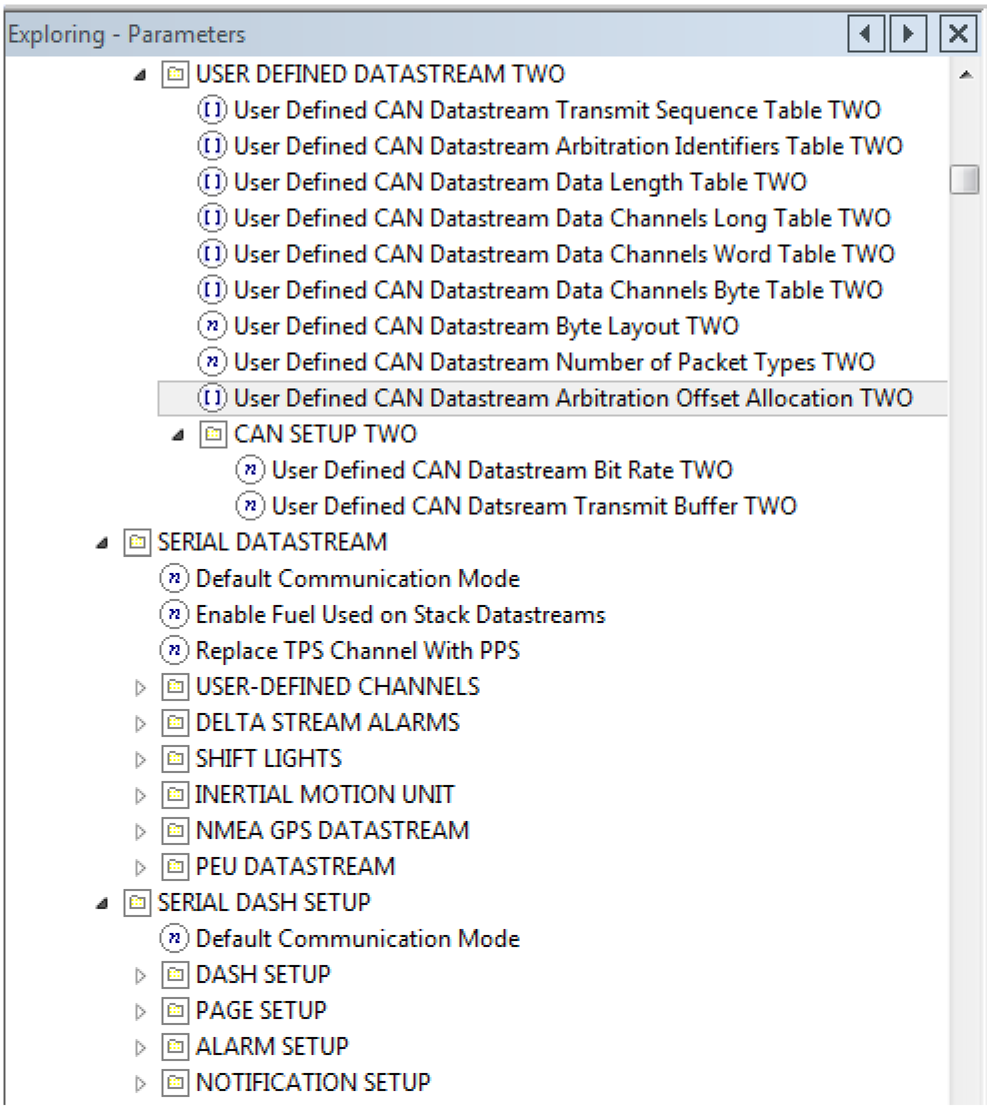
Descriptions / Values Not Shown, Only Listed



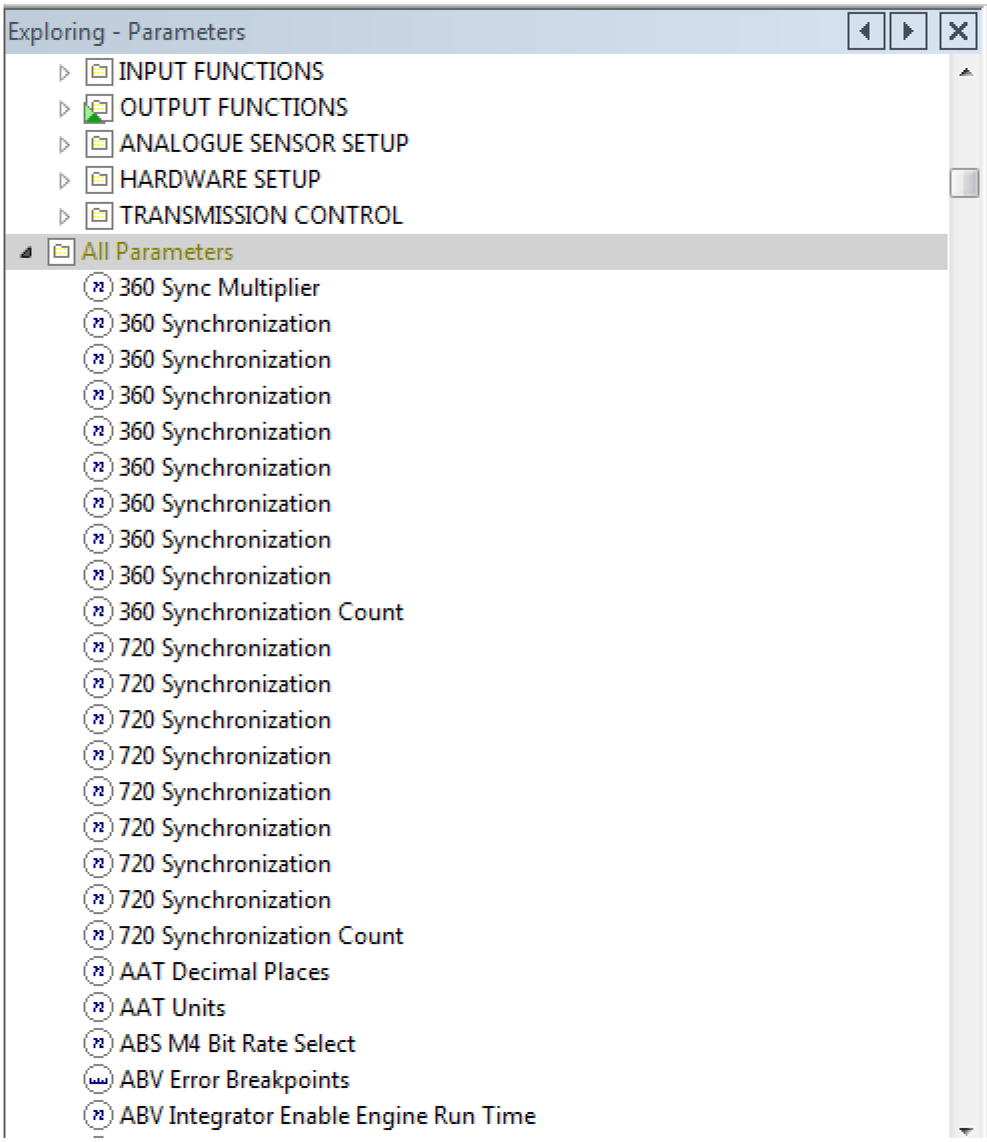
Descriptions / Values Not Shown, Only Listed



Descriptions / Values Not Shown, Only Listed



Descriptions / Values Not Shown, Only Listed

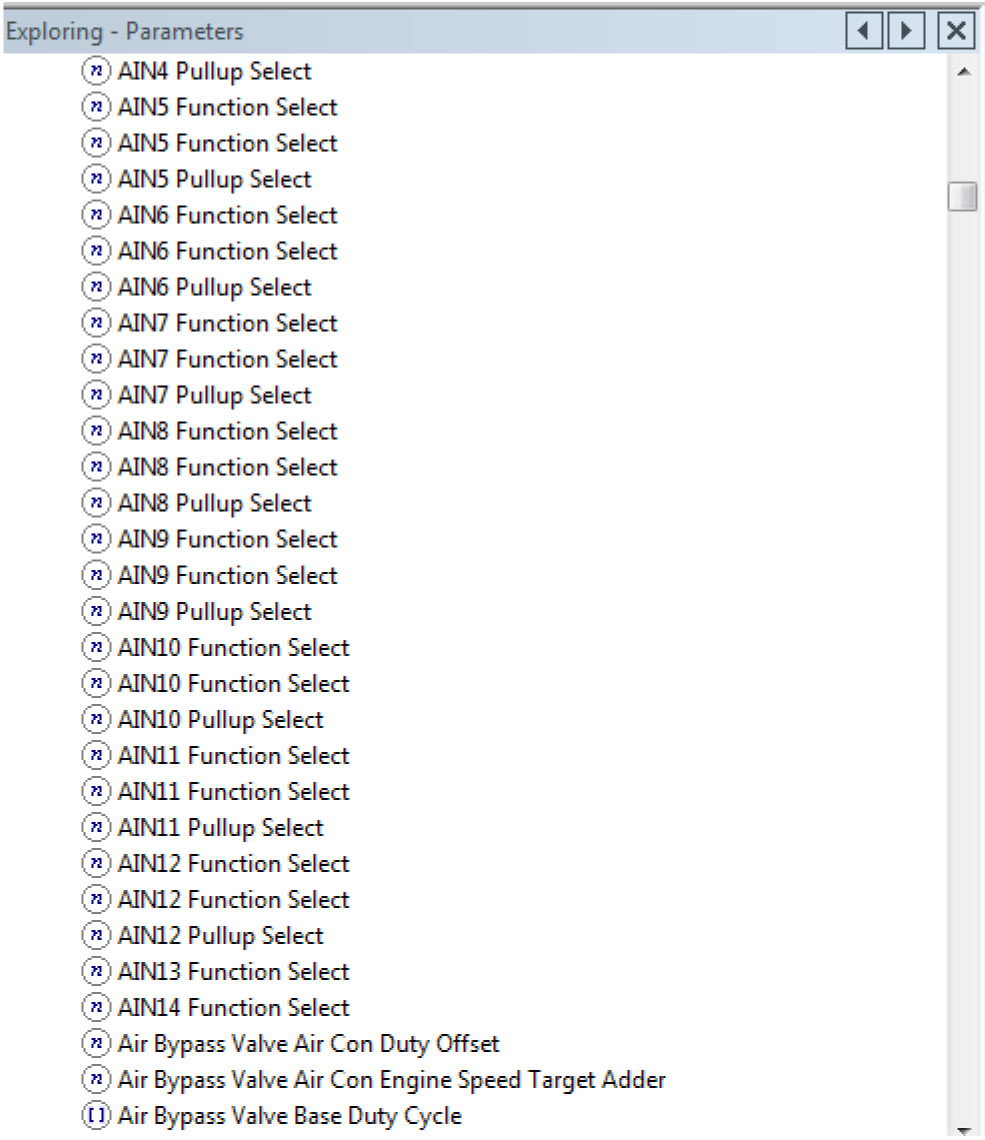


Descriptions / Values Not Shown, Only Listed

Exploring - Parameters

- ABV Integrator Enable Error
- ABV Integrator Gain (Negative Error)
- ABV Integrator Gain (Positive Error)
- ABV Integrator Maximum
- ABV Integrator Minimum
- ABV Proportional Gain (Negative Error)
- ABV Proportional Gain (Positive Error)
- Accel Negative Clamp
- Accel Negative Decay
- Accel Negative Gain
- Accel Positive Clamp
- Accel Positive Decay
- Accel Positive Gain
- Acceleration Ratio Table
- Accident Data Recorder Service Time
- ACT Decimal Places
- ACT Units
- Advanced Startline Enable
- AGS Gearbox Enable
- AIN1 Function Select
- AIN1 Function Select
- AIN1 Pullup Select
- AIN2 Function Select
- AIN2 Function Select
- AIN2 Pullup Select
- AIN3 Function Select
- AIN3 Function Select
- AIN3 Pullup Select
- AIN4 Function Select
- AIN4 Function Select

Descriptions / Values Not Shown, Only Listed

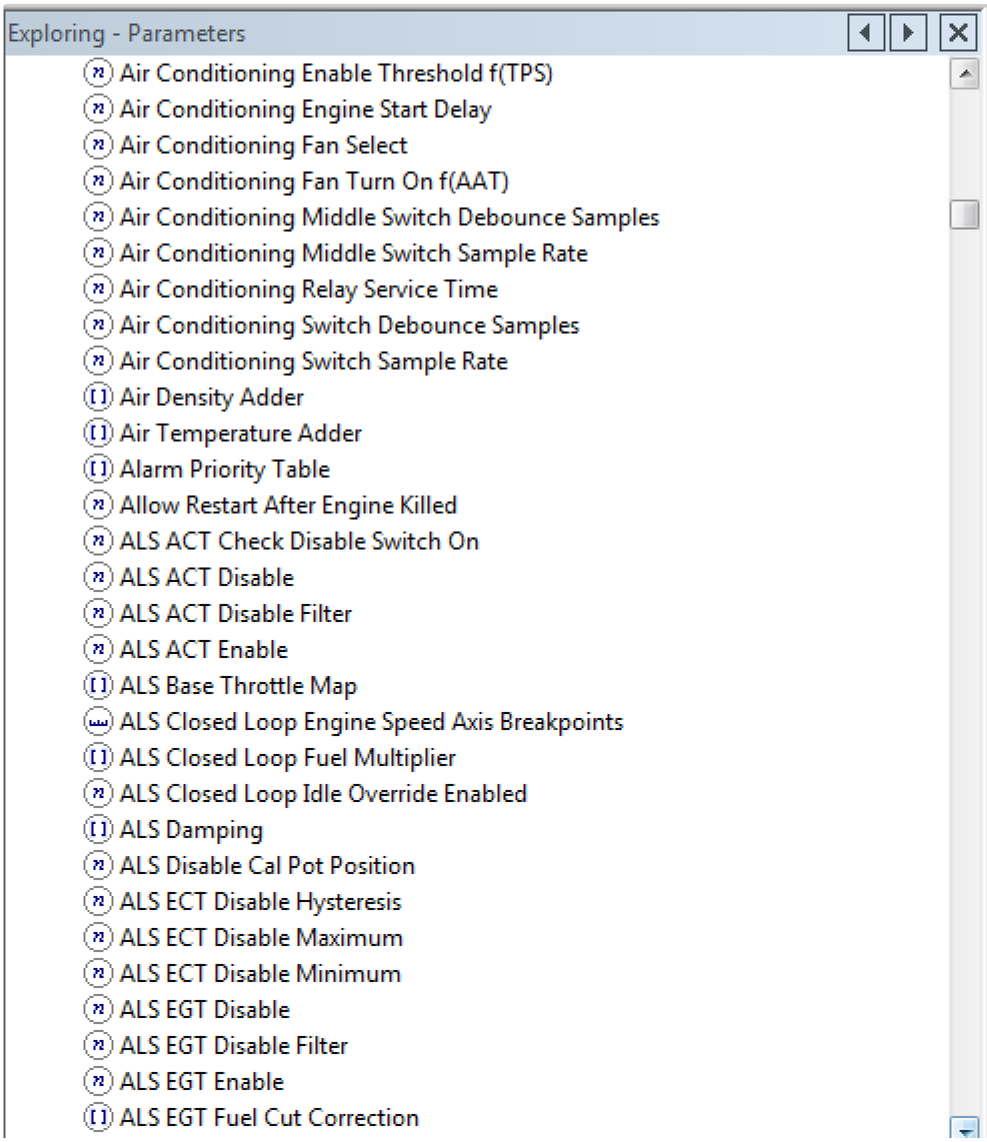


Descriptions / Values Not Shown, Only Listed

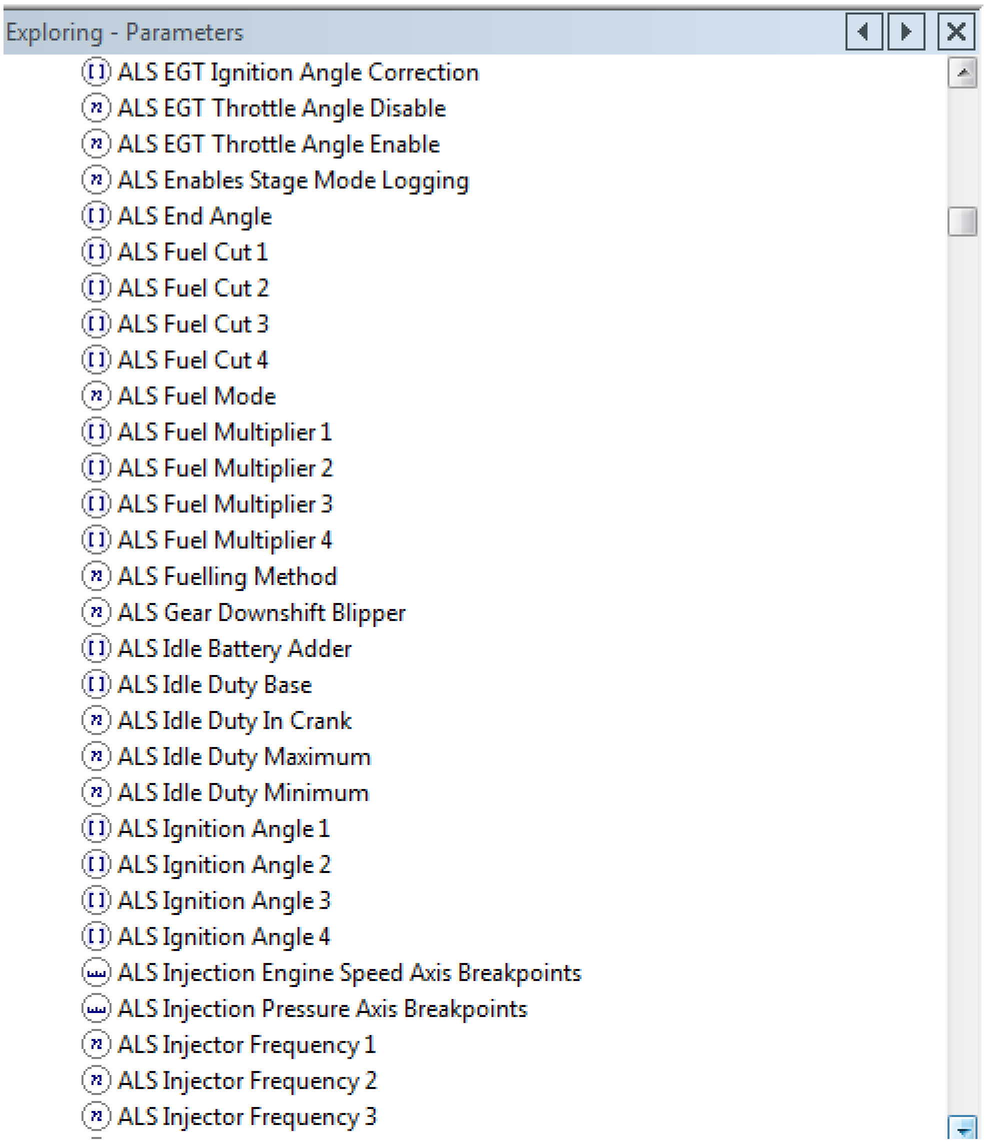
Exploring - Parameters

- Air Bypass Valve Duty Correction f(ACT)
- Air Bypass Valve Duty Correction f(BAP)
- Air Bypass Valve Duty Correction f(VBAT)
- Air Bypass Valve Duty in Crank
- Air Bypass Valve Frequency
- Air Bypass Valve Fuel Adder
- Air Bypass Valve High Speed Service Time
- Air Bypass Valve Idle Speed Service Time
- Air Bypass Valve Mode When Stopped
- Air Bypass Valve Rate of Change of Duty Limit
- Air Bypass Valve Transfer Function
- Air Bypass Valve Warmup Offset
- Air Charge Temperature Disable Threshold
- Air Charge Temperature Electronic Thermostat Override Off Threshold
- Air Charge Temperature Electronic Thermostat Override On Threshold
- Air Charge Temperature Enable Threshold
- Air Charge Temperature Failure Time
- Air Charge Temperature Fan Off Threshold
- Air Charge Temperature Fan On Threshold
- Air Charge Temperature Multiplier
- Air Charge Temperature Pump Off Threshold
- Air Charge Temperature Pump On Threshold
- Air Charge Temperature Recovery Time
- Air Charge Temperature Sample Rate
- Air Charge Temperature Sensor Curve
- Air Charge Temperature Sensor Type
- Air Charge Temperature Software Filter
- Air Charge Temperature Zero Target
- Air Conditioning Disable Threshold f(RPM)
- Air Conditioning Enable Threshold f(RPM)

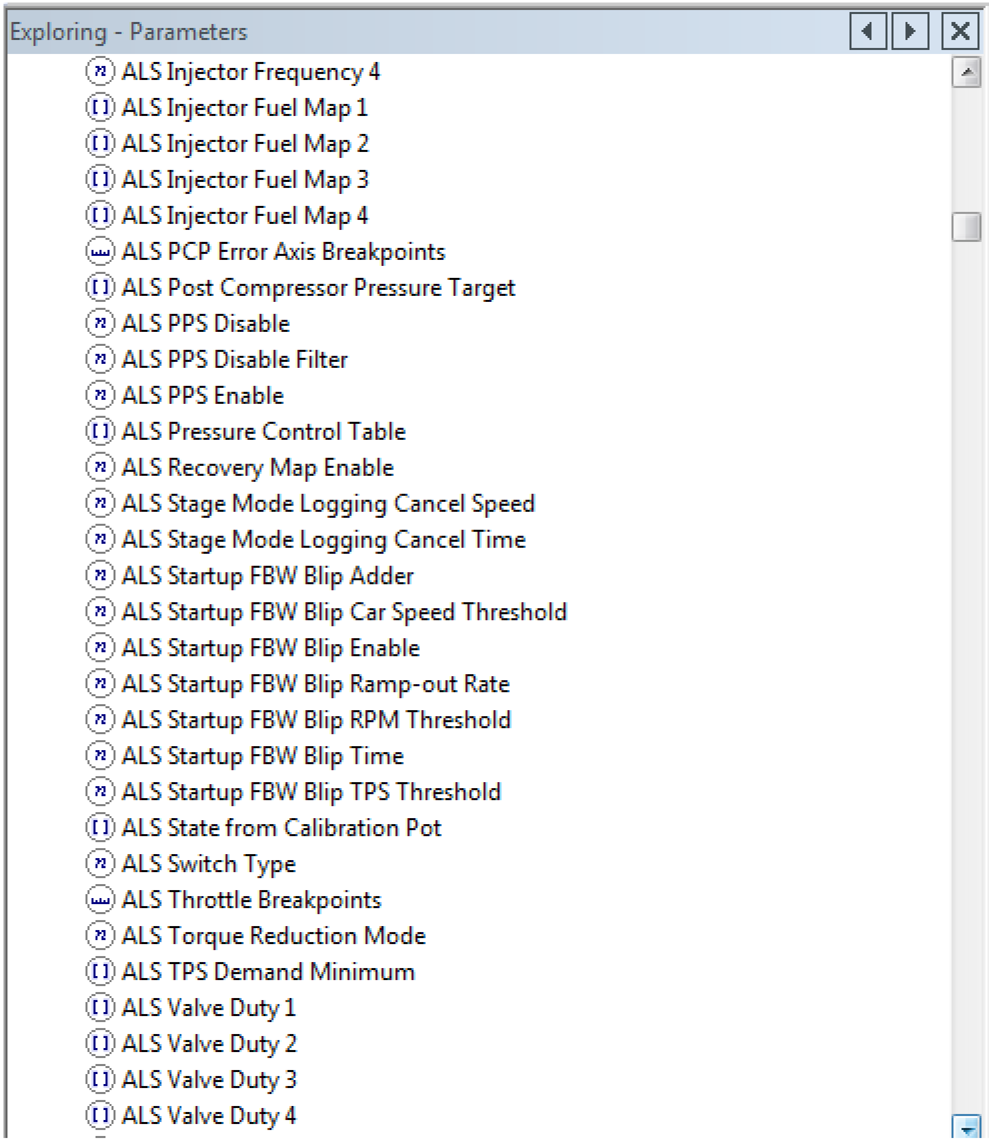
Descriptions / Values Not Shown, Only Listed



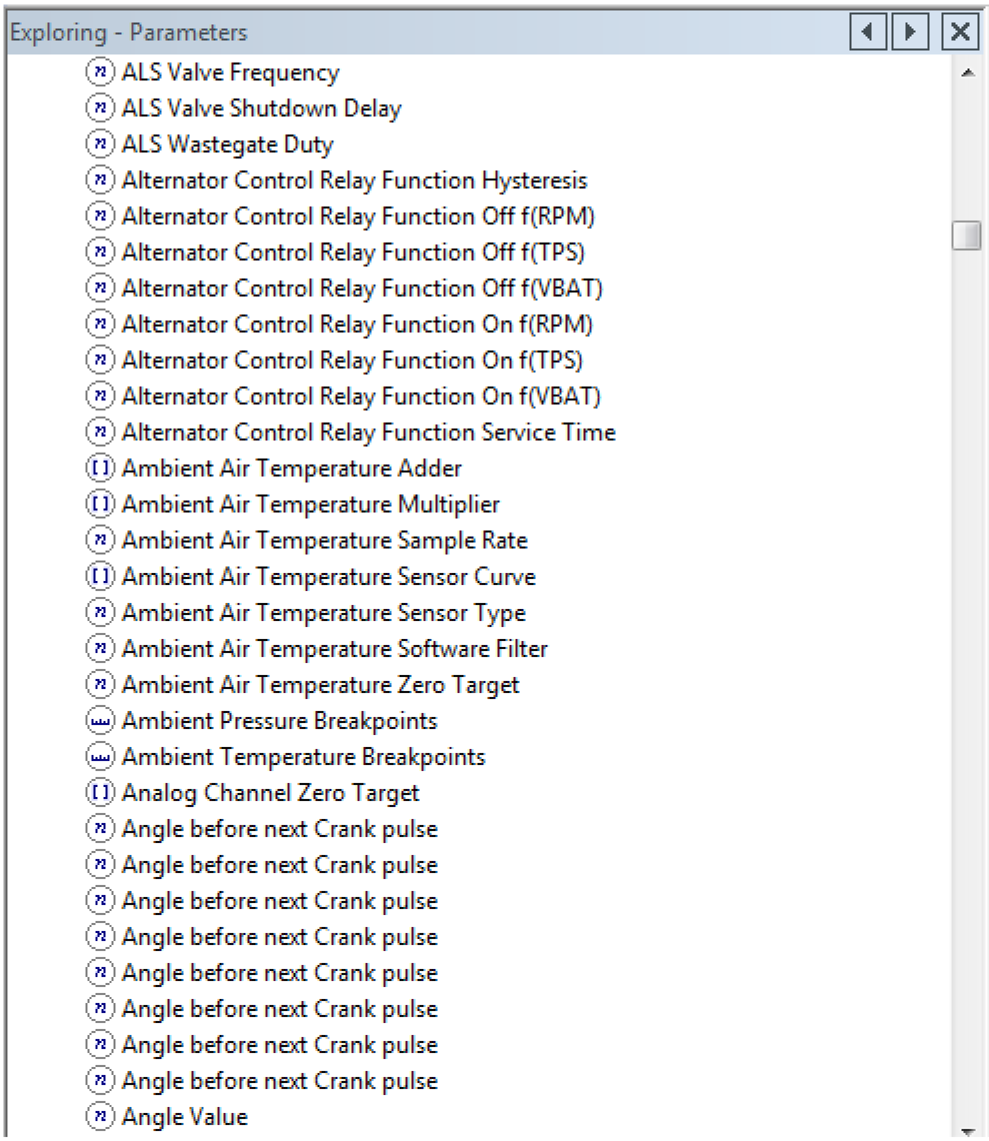
Descriptions / Values Not Shown, Only Listed

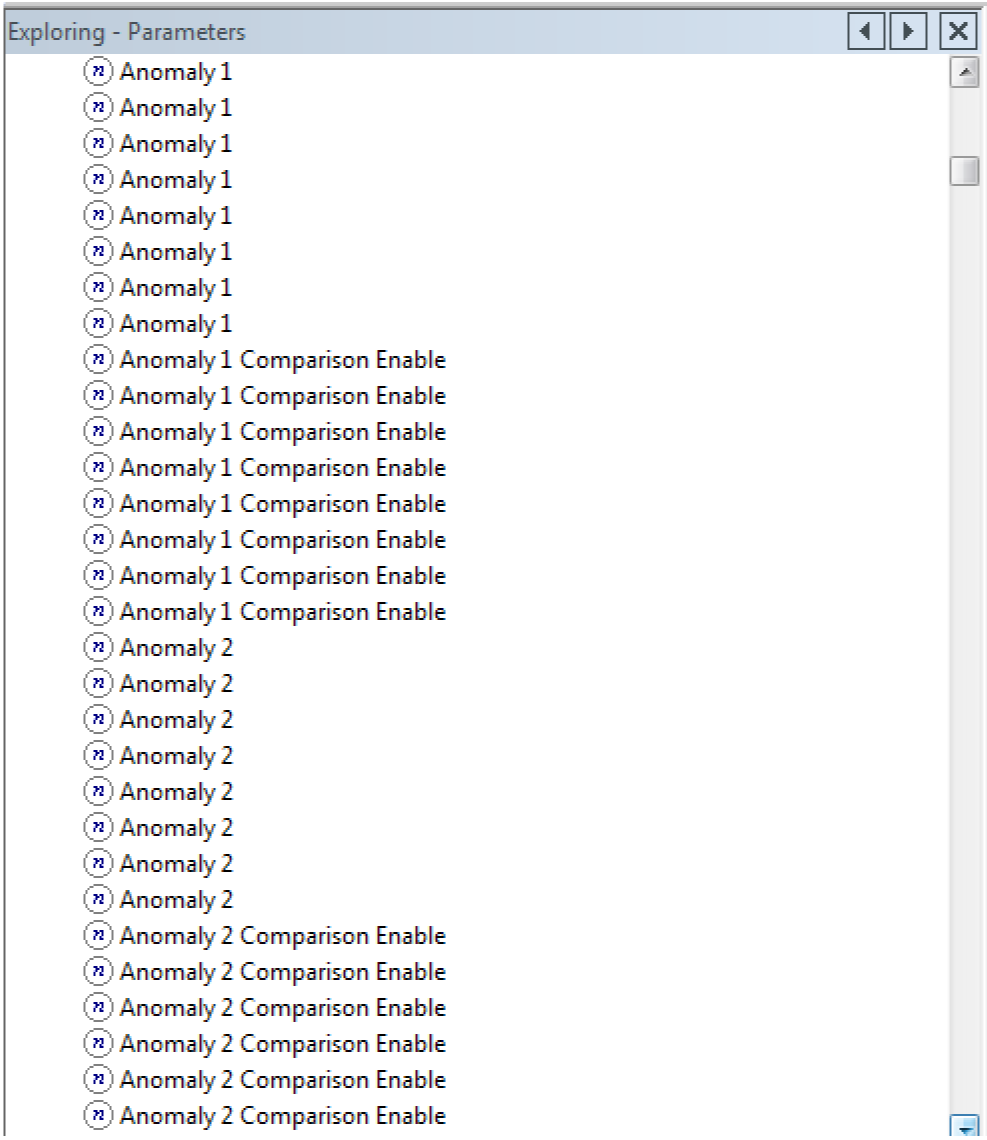


Descriptions / Values Not Shown, Only Listed



Descriptions / Values Not Shown, Only Listed




Exploring - Parameters
Anomaly 1
Anomaly 1
Anomaly 1
Anomaly 1
Anomaly 1
Anomaly 1
Anomaly 1
Anomaly 1
Anomaly 1 Comparison Enable
Anomaly 1 Comparison Enable
Anomaly 1 Comparison Enable
Anomaly 1 Comparison Enable
Anomaly 1 Comparison Enable
Anomaly 1 Comparison Enable
Anomaly 1 Comparison Enable
Anomaly 1 Comparison Enable
Anomaly 2
Anomaly 2
Anomaly 2
Anomaly 2
Anomaly 2
Anomaly 2
Anomaly 2
Anomaly 2
Anomaly 2 Comparison Enable
Anomaly 2 Comparison Enable
Anomaly 2 Comparison Enable
Anomaly 2 Comparison Enable
Anomaly 2 Comparison Enable
Anomaly 2 Comparison Enable

Exploring - Parameters

Anomaly 2 Comparison Enable
Anomaly 2 Comparison Enable
Anomaly 3
Anomaly 3
Anomaly 3
Anomaly 3
Anomaly 3
Anomaly 3
Anomaly 3
Anomaly 3
Anomaly 3 Comparison Enable
Anomaly 3 Comparison Enable
Anomaly 3 Comparison Enable
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Anomaly 3 Comparison Enable
Anomaly 3 Comparison Enable
Anomaly 4
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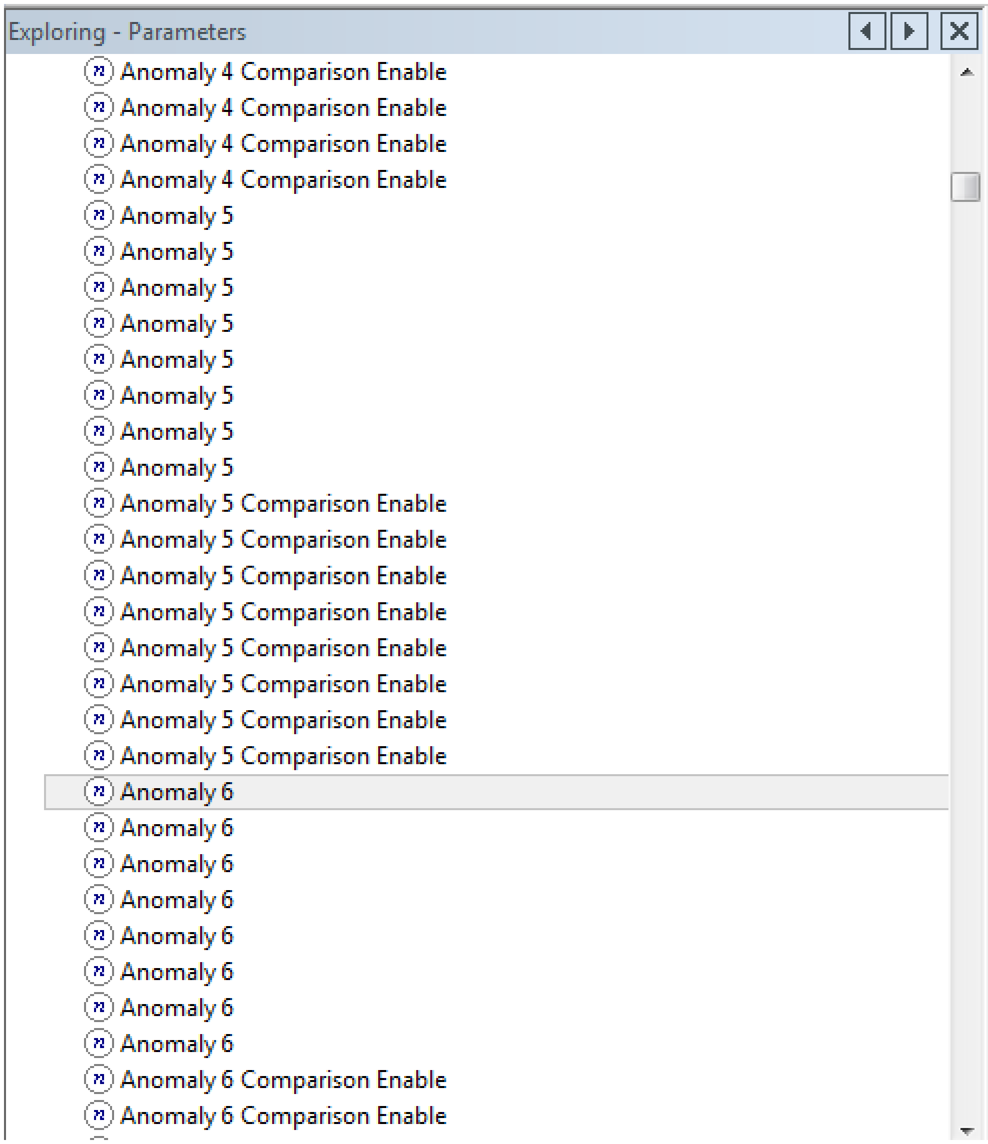
Anomaly 4 Comparison Enable
Anomaly 4 Comparison Enable
Anomaly 4 Comparison Enable


Exploring - Parameters
Anomaly 4 Comparison Enable
Anomaly 4 Comparison Enable
Anomaly 4 Comparison Enable
Anomaly 4 Comparison Enable
Anomaly 5
Anomaly 5
Anomaly 5
Anomaly 5
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Anomaly 5 Comparison Enable
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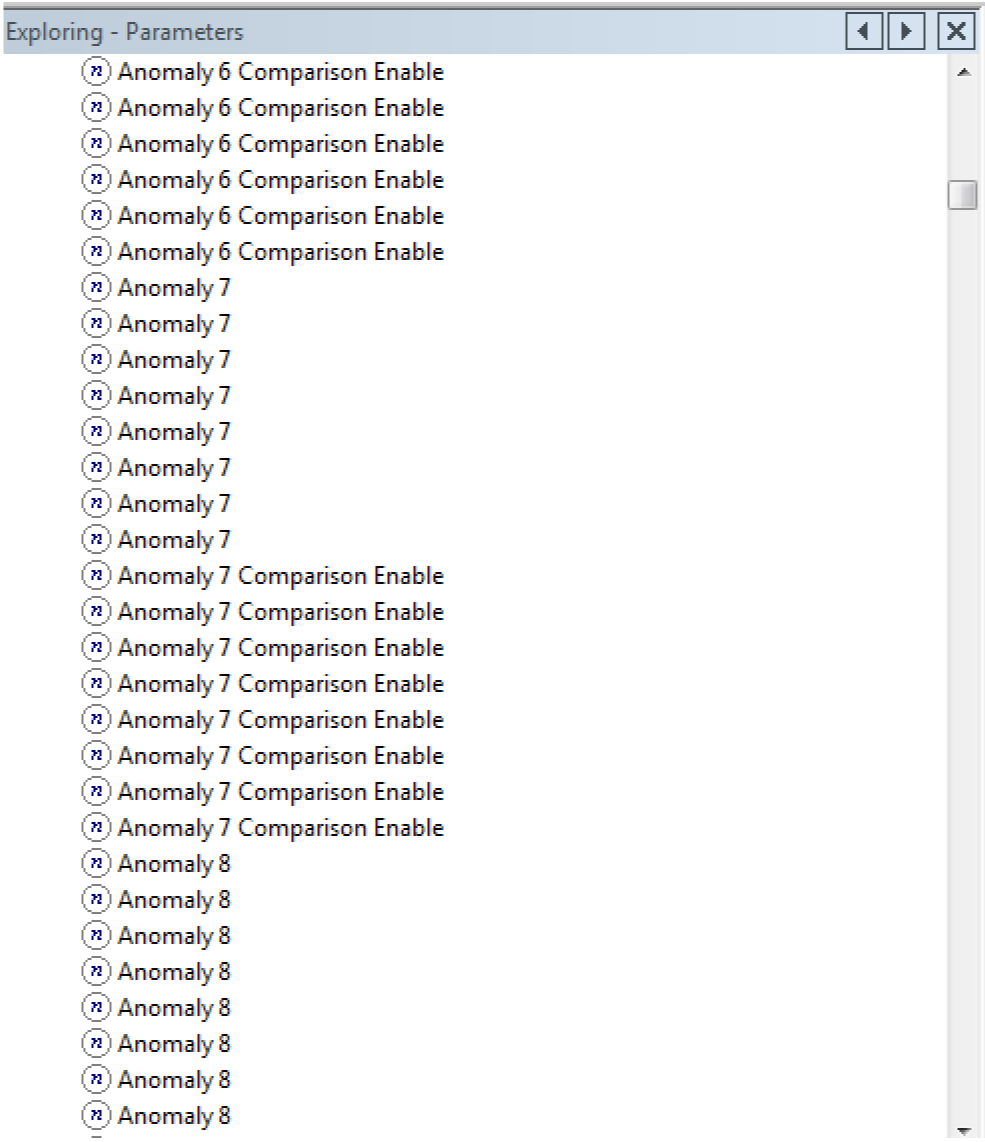
Anomaly 6
Anomaly 6
Anomaly 6 Comparison Enable
Anomaly 6 Comparison Enable


Exploring - Parameters
Anomaly 6 Comparison Enable
Anomaly 6 Comparison Enable
Anomaly 6 Comparison Enable
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Anomaly 6 Comparison Enable
Anomaly 6 Comparison Enable
Anomaly 7
Anomaly 7
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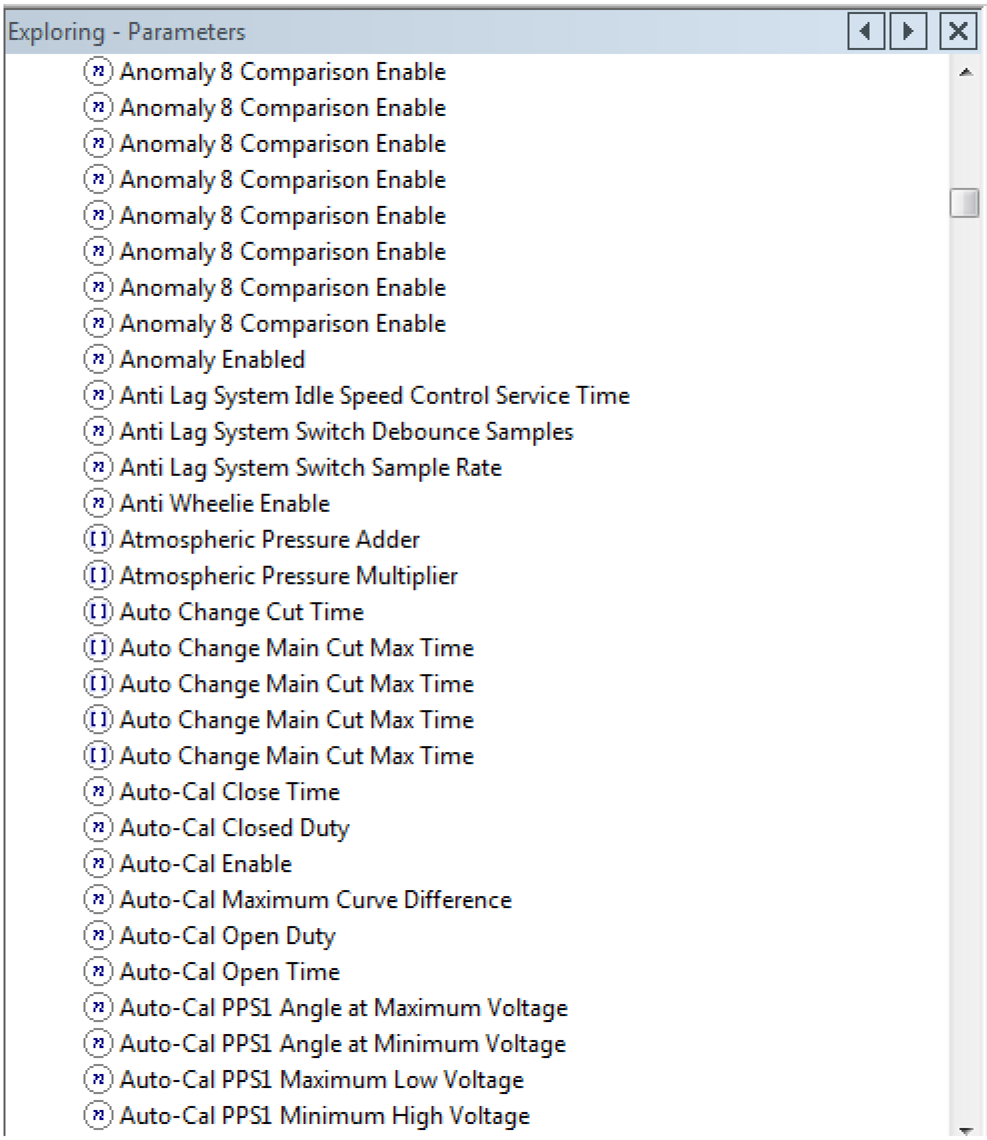
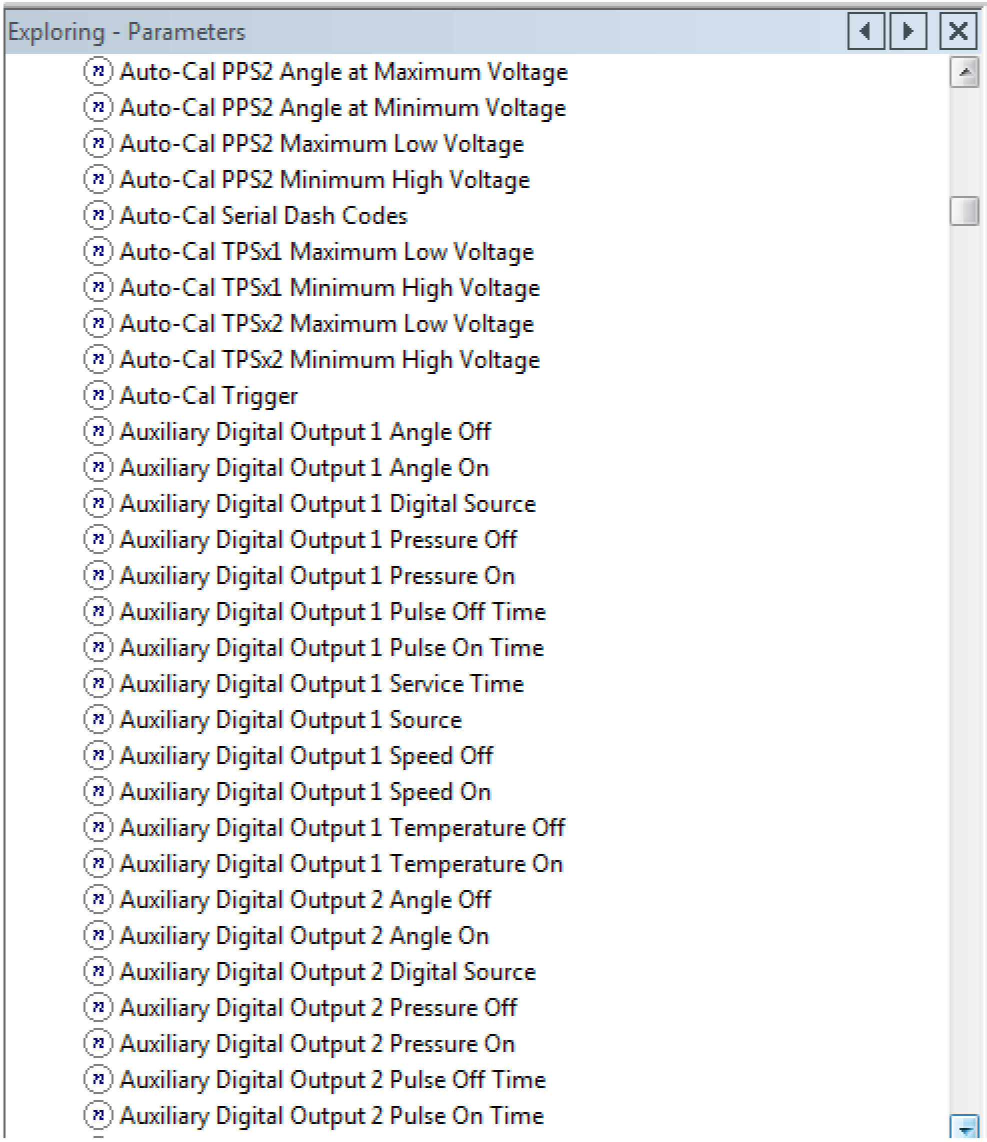
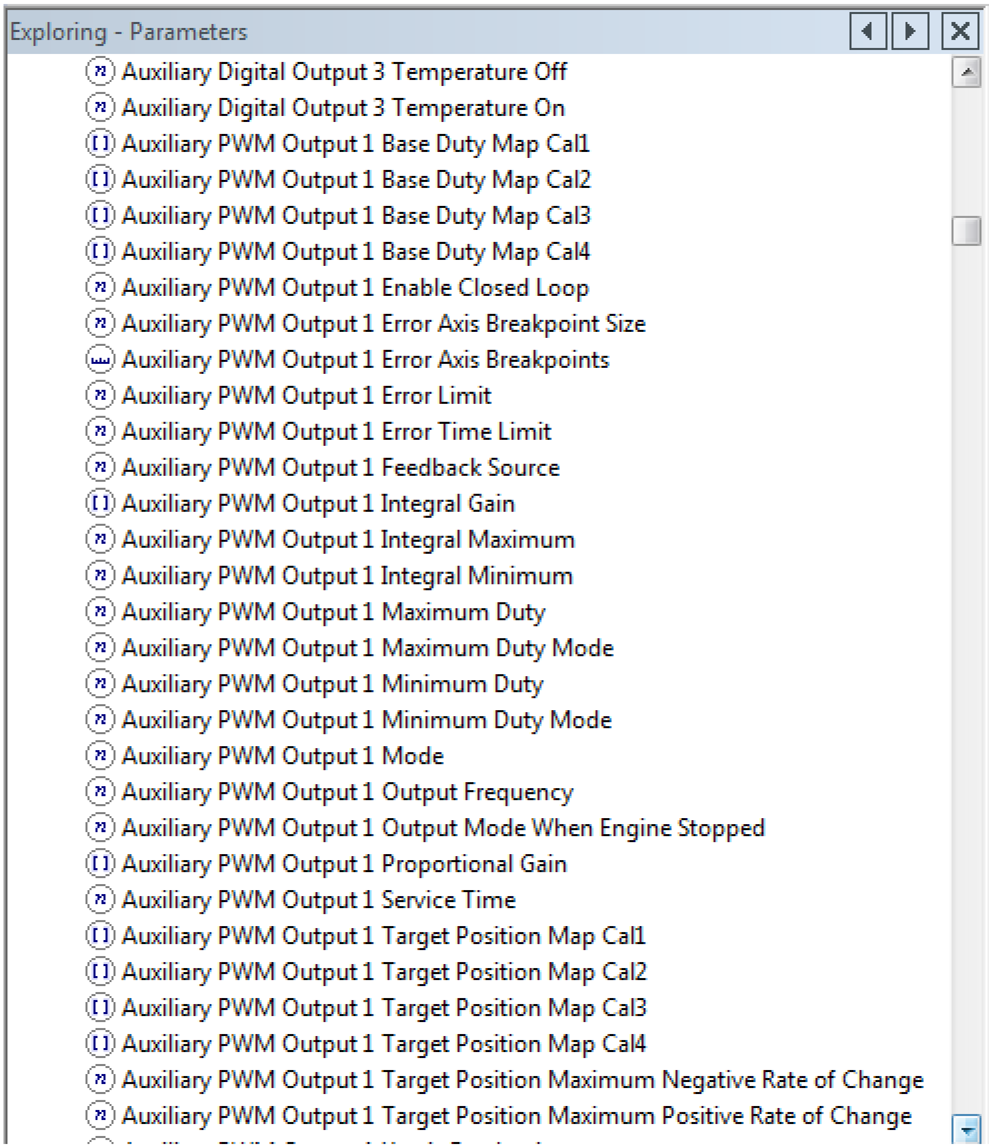
Anomaly 8

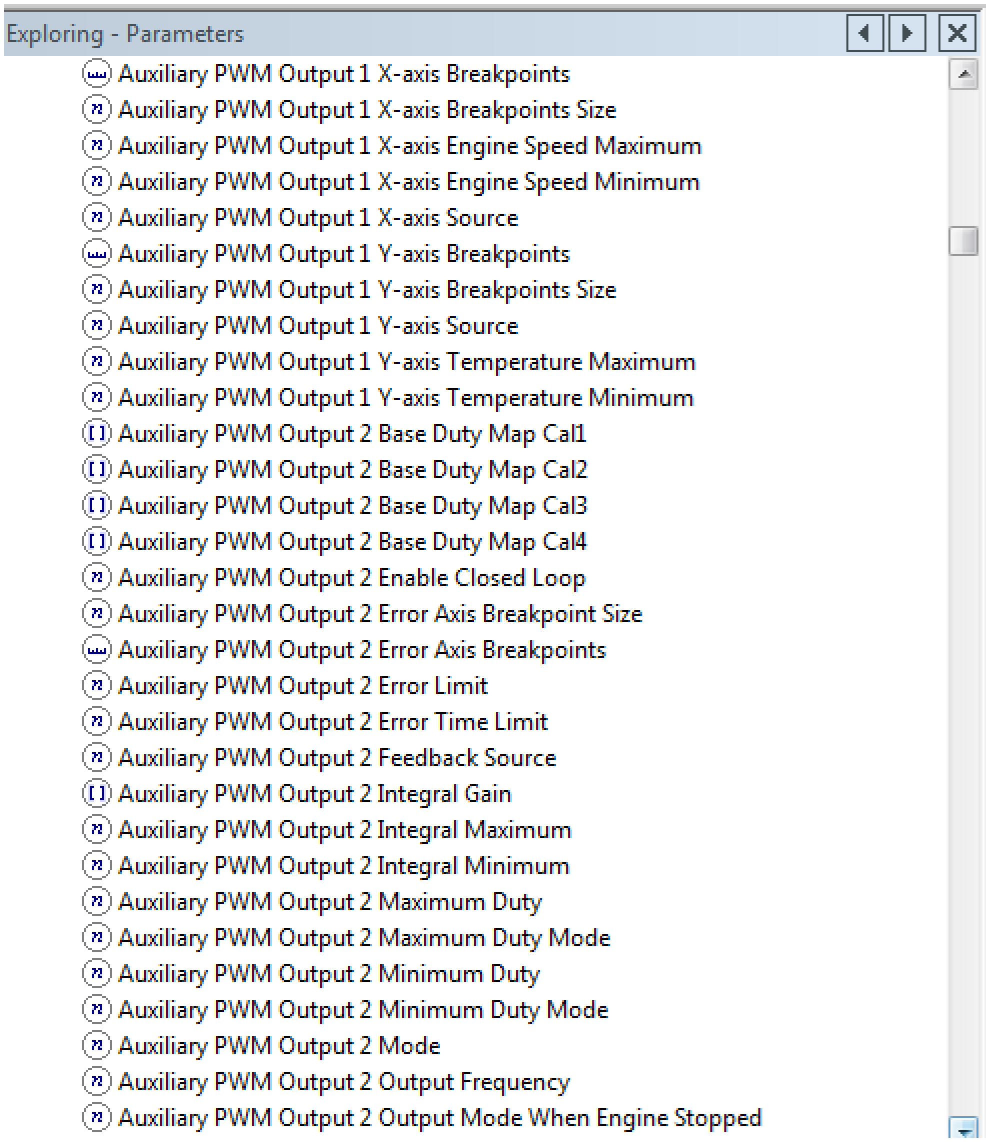

Exploring - Parameters
Anomaly 8 Comparison Enable
Anomaly 8 Comparison Enable
Anomaly 8 Comparison Enable
Anomaly 8 Comparison Enable
Anomaly 8 Comparison Enable
Anomaly 8 Comparison Enable
Anomaly 8 Comparison Enable
Anomaly 8 Comparison Enable
Anomaly Enabled
Anti Lag System Idle Speed Control Service Time
Anti Lag System Switch Debounce Samples
Anti Lag System Switch Sample Rate
Anti Wheelie Enable
Atmospheric Pressure Adder
Atmospheric Pressure Multiplier
Auto Change Cut Time
Auto Change Main Cut Max Time
Auto Change Main Cut Max Time
Auto Change Main Cut Max Time
Auto Change Main Cut Max Time
Auto-Cal Close Time
Auto-Cal Closed Duty
Auto-Cal Enable
Auto-Cal Maximum Curve Difference
Auto-Cal Open Duty
Auto-Cal Open Time
Auto-Cal PPS1 Angle at Maximum Voltage
Auto-Cal PPS1 Angle at Minimum Voltage
Auto-Cal PPS1 Maximum Low Voltage
Auto-Cal PPS1 Minimum High Voltage

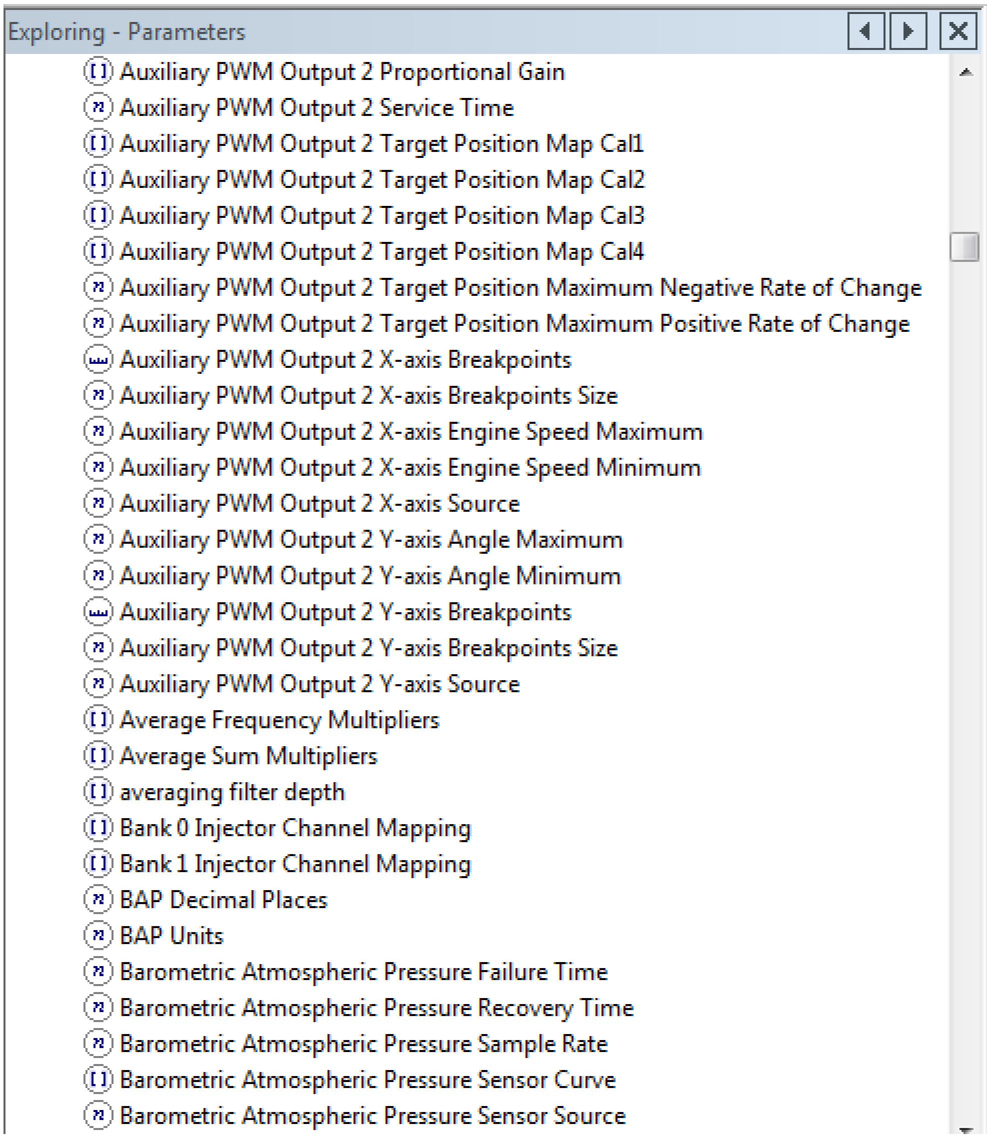

Exploring - Parameters
Auto-Cal PPS2 Angle at Maximum Voltage
Auto-Cal PPS2 Angle at Minimum Voltage
Auto-Cal PPS2 Maximum Low Voltage
Auto-Cal PPS2 Minimum High Voltage
Auto-Cal Serial Dash Codes
Auto-Cal TPSx1 Maximum Low Voltage
Auto-Cal TPSx1 Minimum High Voltage
Auto-Cal TPSx2 Maximum Low Voltage
Auto-Cal TPSx2 Minimum High Voltage
Auto-Cal Trigger
Auxiliary Digital Output 1 Angle Off
Auxiliary Digital Output 1 Angle On
Auxiliary Digital Output 1 Digital Source
Auxiliary Digital Output 1 Pressure Off
Auxiliary Digital Output 1 Pressure On
Auxiliary Digital Output 1 Pulse Off Time
Auxiliary Digital Output 1 Pulse On Time
Auxiliary Digital Output 1 Service Time
Auxiliary Digital Output 1 Source
Auxiliary Digital Output 1 Speed Off
Auxiliary Digital Output 1 Speed On
Auxiliary Digital Output 1 Temperature Off
Auxiliary Digital Output 1 Temperature On
Auxiliary Digital Output 2 Angle Off
Auxiliary Digital Output 2 Angle On
Auxiliary Digital Output 2 Digital Source
Auxiliary Digital Output 2 Pressure Off
Auxiliary Digital Output 2 Pressure On
Auxiliary Digital Output 2 Pulse Off Time
Auxiliary Digital Output 2 Pulse On Time

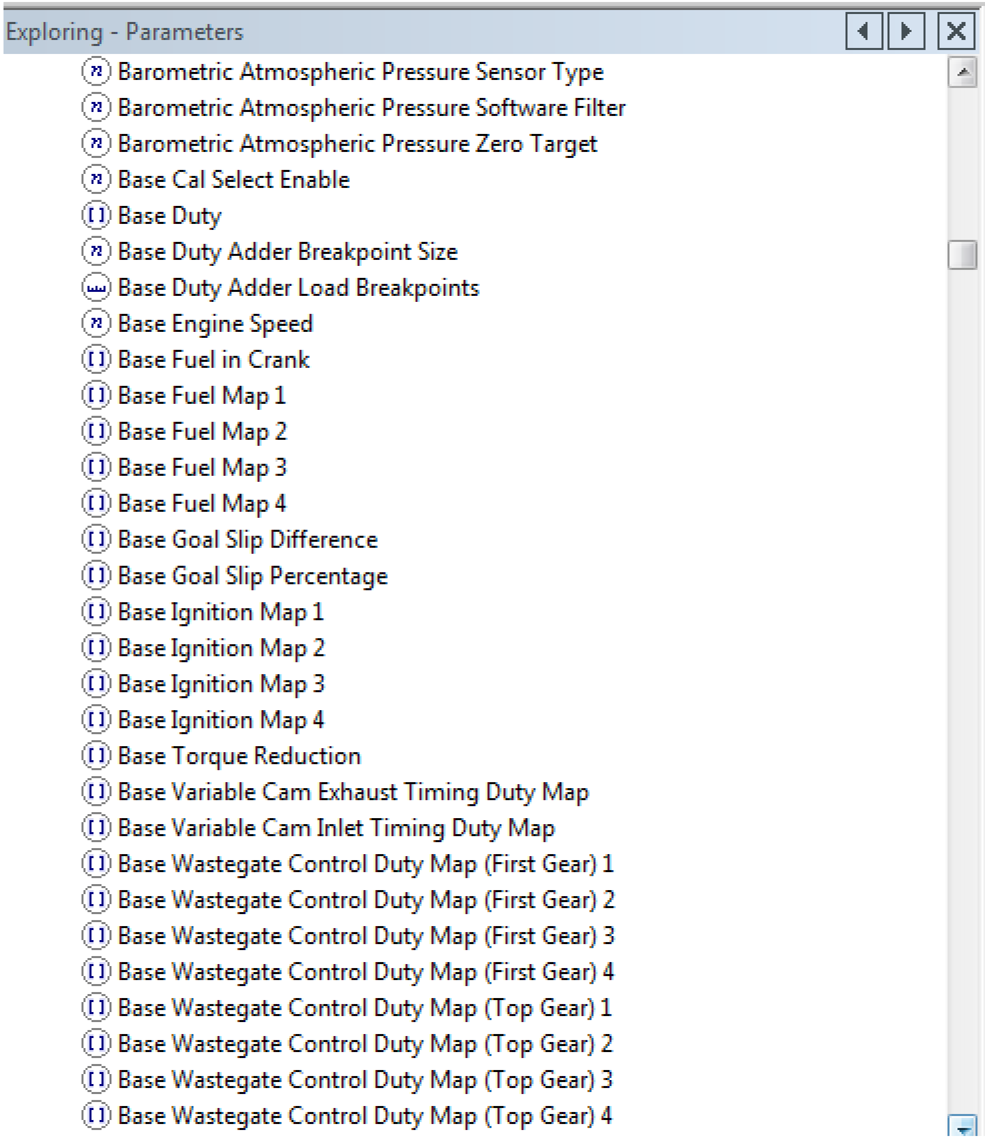
Exploring - Parameters

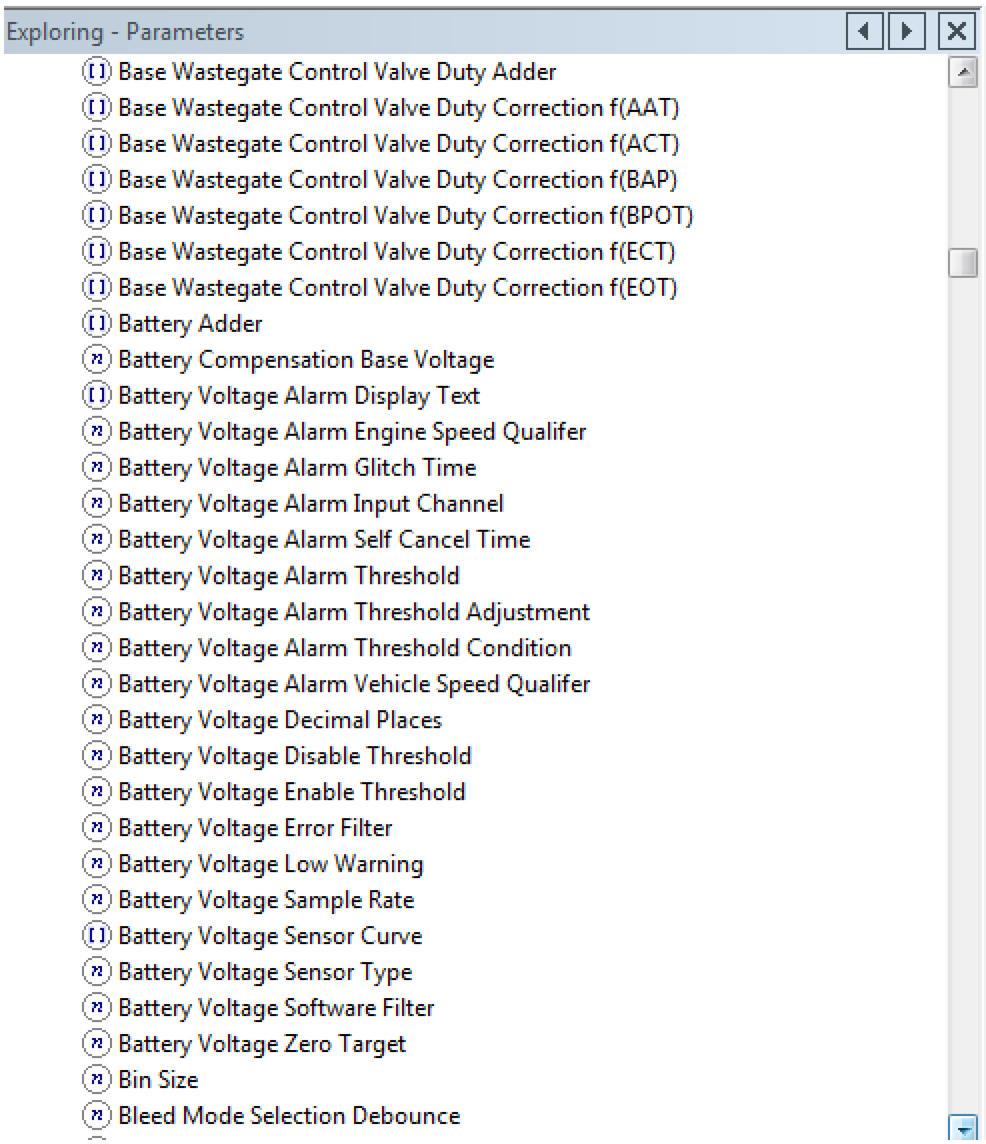
- Auxiliary Digital Output 1 Service Time
- Auxiliary Digital Output 1 Source
- Auxiliary Digital Output 1 Speed Off
- Auxiliary Digital Output 1 Speed On
- Auxiliary Digital Output 1 Temperature Off
- Auxiliary Digital Output 1 Temperature On
- Auxiliary Digital Output 2 Angle Off
- Auxiliary Digital Output 2 Angle On
- Auxiliary Digital Output 2 Digital Source
- Auxiliary Digital Output 2 Pressure Off
- Auxiliary Digital Output 2 Pressure On
- Auxiliary Digital Output 2 Pulse Off Time
- Auxiliary Digital Output 2 Pulse On Time
- Auxiliary Digital Output 2 Service Time
- Auxiliary Digital Output 2 Source
- Auxiliary Digital Output 2 Speed Off
- Auxiliary Digital Output 2 Speed On
- Auxiliary Digital Output 2 Temperature Off
- Auxiliary Digital Output 2 Temperature On
- Auxiliary Digital Output 3 Angle Off
- Auxiliary Digital Output 3 Angle On
- Auxiliary Digital Output 3 Digital Source
- Auxiliary Digital Output 3 Pressure Off
- Auxiliary Digital Output 3 Pressure On
- Auxiliary Digital Output 3 Pulse Off Time
- Auxiliary Digital Output 3 Pulse On Time
- Auxiliary Digital Output 3 Service Time
- Auxiliary Digital Output 3 Source
- Auxiliary Digital Output 3 Speed Off
- Auxiliary Digital Output 3 Speed On

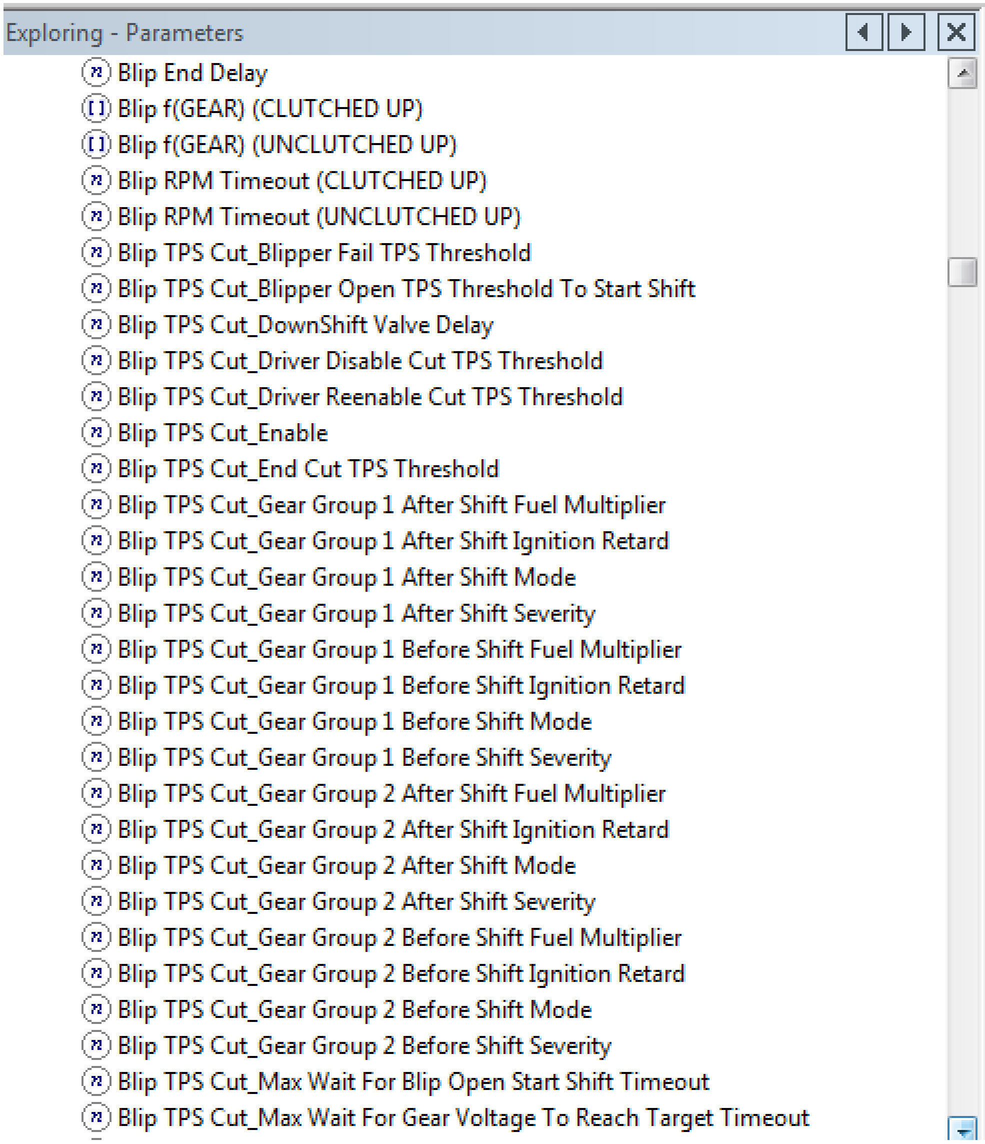

Exploring - Parameters
Auxiliary Digital Output 3 Temperature Off
Auxiliary Digital Output 3 Temperature On
Auxiliary PWM Output 1 Base Duty Map Cal1
Auxiliary PWM Output 1 Base Duty Map Cal2
Auxiliary PWM Output 1 Base Duty Map Cal3
Auxiliary PWM Output 1 Base Duty Map Cal4
Auxiliary PWM Output 1 Enable Closed Loop
Auxiliary PWM Output 1 Error Axis Breakpoint Size
Auxiliary PWM Output 1 Error Axis Breakpoints
Auxiliary PWM Output 1 Error Limit
Auxiliary PWM Output 1 Error Time Limit
Auxiliary PWM Output 1 Feedback Source
Auxiliary PWM Output 1 Integral Gain
Auxiliary PWM Output 1 Integral Maximum
Auxiliary PWM Output 1 Integral Minimum
Auxiliary PWM Output 1 Maximum Duty
Auxiliary PWM Output 1 Maximum Duty Mode
Auxiliary PWM Output 1 Minimum Duty
Auxiliary PWM Output 1 Minimum Duty Mode
Auxiliary PWM Output 1 Mode
Auxiliary PWM Output 1 Output Frequency
Auxiliary PWM Output 1 Output Mode When Engine Stopped
Auxiliary PWM Output 1 Proportional Gain
Auxiliary PWM Output 1 Service Time
Auxiliary PWM Output 1 Target Position Map Cal1
Auxiliary PWM Output 1 Target Position Map Cal2
Auxiliary PWM Output 1 Target Position Map Cal3
Auxiliary PWM Output 1 Target Position Map Cal4
Auxiliary PWM Output 1 Target Position Maximum Negative Rate of Change
Auxiliary PWM Output 1 Target Position Maximum Positive Rate of Change

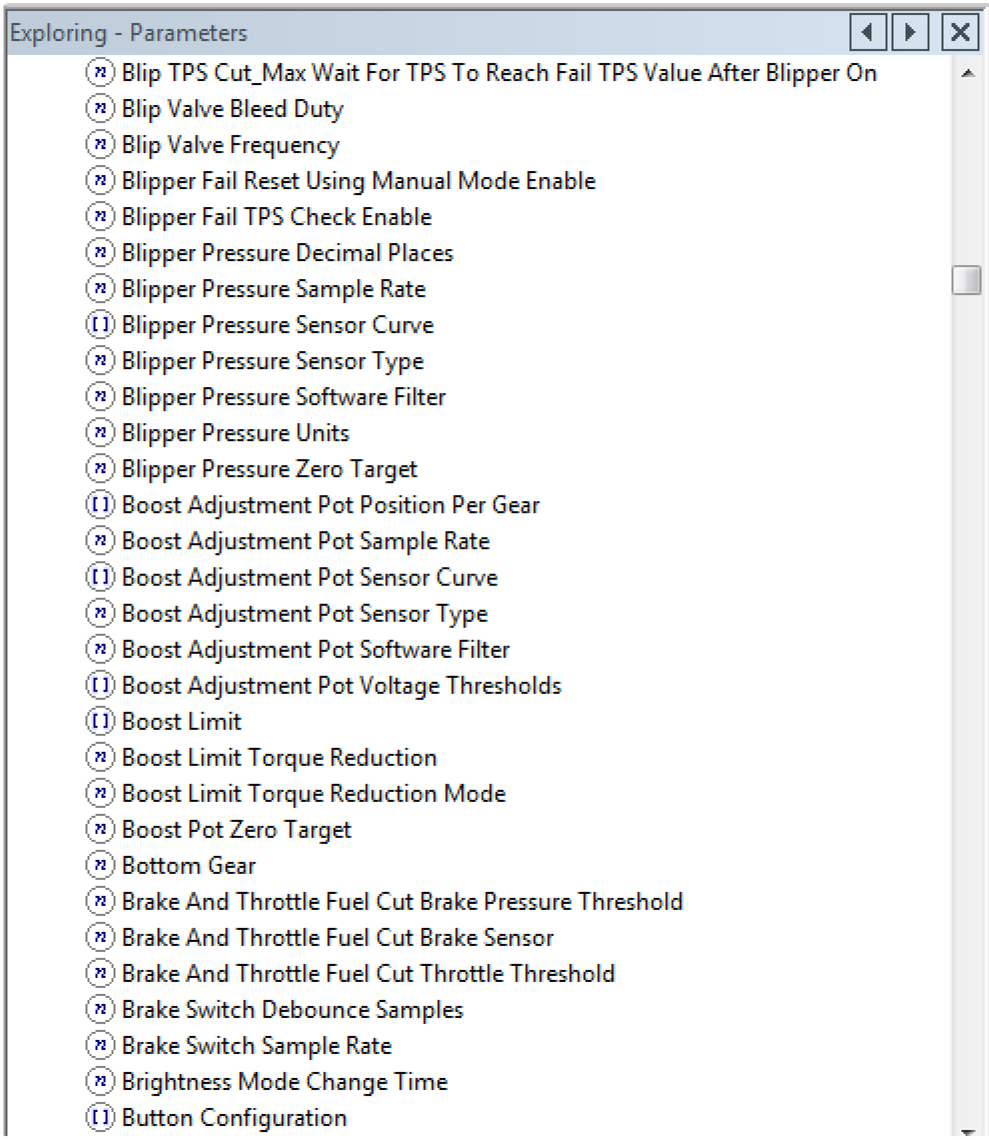

Exploring - Parameters
Auxiliary PWM Output 1 X-axis Breakpoints
Auxiliary PWM Output 1 X-axis Breakpoints Size
Auxiliary PWM Output 1 X-axis Engine Speed Maximum
Auxiliary PWM Output 1 X-axis Engine Speed Minimum
Auxiliary PWM Output 1 X-axis Source
Auxiliary PWM Output 1 Y-axis Breakpoints
Auxiliary PWM Output 1 Y-axis Breakpoints Size
Auxiliary PWM Output 1 Y-axis Source
Auxiliary PWM Output 1 Y-axis Temperature Maximum
Auxiliary PWM Output 1 Y-axis Temperature Minimum
Auxiliary PWM Output 2 Base Duty Map Cal1
Auxiliary PWM Output 2 Base Duty Map Cal2
Auxiliary PWM Output 2 Base Duty Map Cal3
Auxiliary PWM Output 2 Base Duty Map Cal4
Auxiliary PWM Output 2 Enable Closed Loop
Auxiliary PWM Output 2 Error Axis Breakpoint Size
Auxiliary PWM Output 2 Error Axis Breakpoints
Auxiliary PWM Output 2 Error Limit
Auxiliary PWM Output 2 Error Time Limit
Auxiliary PWM Output 2 Feedback Source
Auxiliary PWM Output 2 Integral Gain
Auxiliary PWM Output 2 Integral Maximum
Auxiliary PWM Output 2 Integral Minimum
Auxiliary PWM Output 2 Maximum Duty
Auxiliary PWM Output 2 Maximum Duty Mode
Auxiliary PWM Output 2 Minimum Duty
Auxiliary PWM Output 2 Minimum Duty Mode
Auxiliary PWM Output 2 Mode
Auxiliary PWM Output 2 Output Frequency
Auxiliary PWM Output 2 Output Mode When Engine Stopped

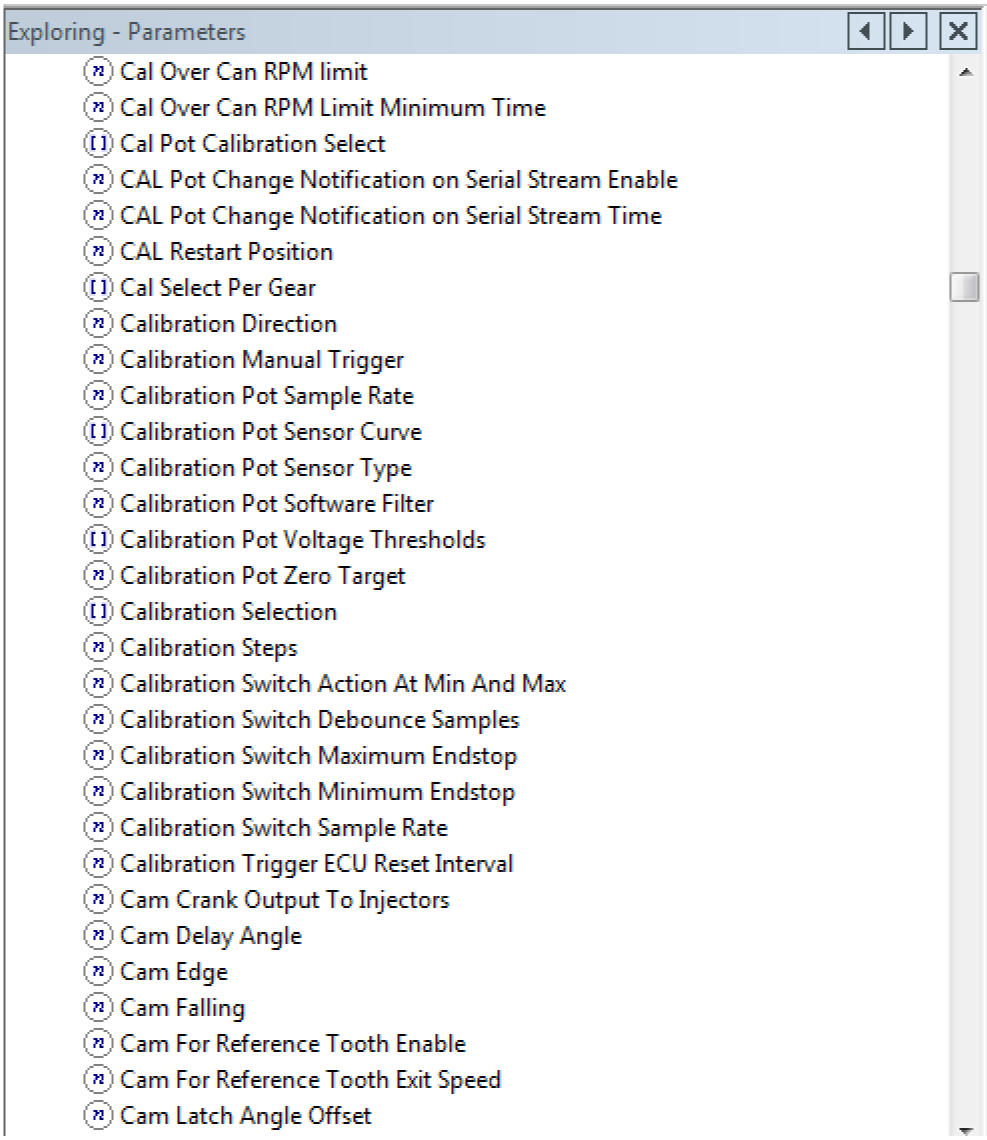

Exploring - Parameters
Auxiliary PWM Output 2 Proportional Gain
Auxiliary PWM Output 2 Service Time
Auxiliary PWM Output 2 Target Position Map Cal1
Auxiliary PWM Output 2 Target Position Map Cal2
Auxiliary PWM Output 2 Target Position Map Cal3
Auxiliary PWM Output 2 Target Position Map Cal4
Auxiliary PWM Output 2 Target Position Maximum Negative Rate of Change
Auxiliary PWM Output 2 Target Position Maximum Positive Rate of Change
Auxiliary PWM Output 2 X-axis Breakpoints
Auxiliary PWM Output 2 X-axis Breakpoints Size
Auxiliary PWM Output 2 X-axis Engine Speed Maximum
Auxiliary PWM Output 2 X-axis Engine Speed Minimum
Auxiliary PWM Output 2 X-axis Source
Auxiliary PWM Output 2 Y-axis Angle Maximum
Auxiliary PWM Output 2 Y-axis Angle Minimum
Auxiliary PWM Output 2 Y-axis Breakpoints
Auxiliary PWM Output 2 Y-axis Breakpoints Size
Auxiliary PWM Output 2 Y-axis Source
Average Frequency Multipliers
Average Sum Multipliers
averaging filter depth
Bank 0 Injector Channel Mapping
Bank 1 Injector Channel Mapping
BAP Decimal Places
BAP Units
Barometric Atmospheric Pressure Failure Time
Barometric Atmospheric Pressure Recovery Time
Barometric Atmospheric Pressure Sample Rate
Barometric Atmospheric Pressure Sensor Curve
Barometric Atmospheric Pressure Sensor Source

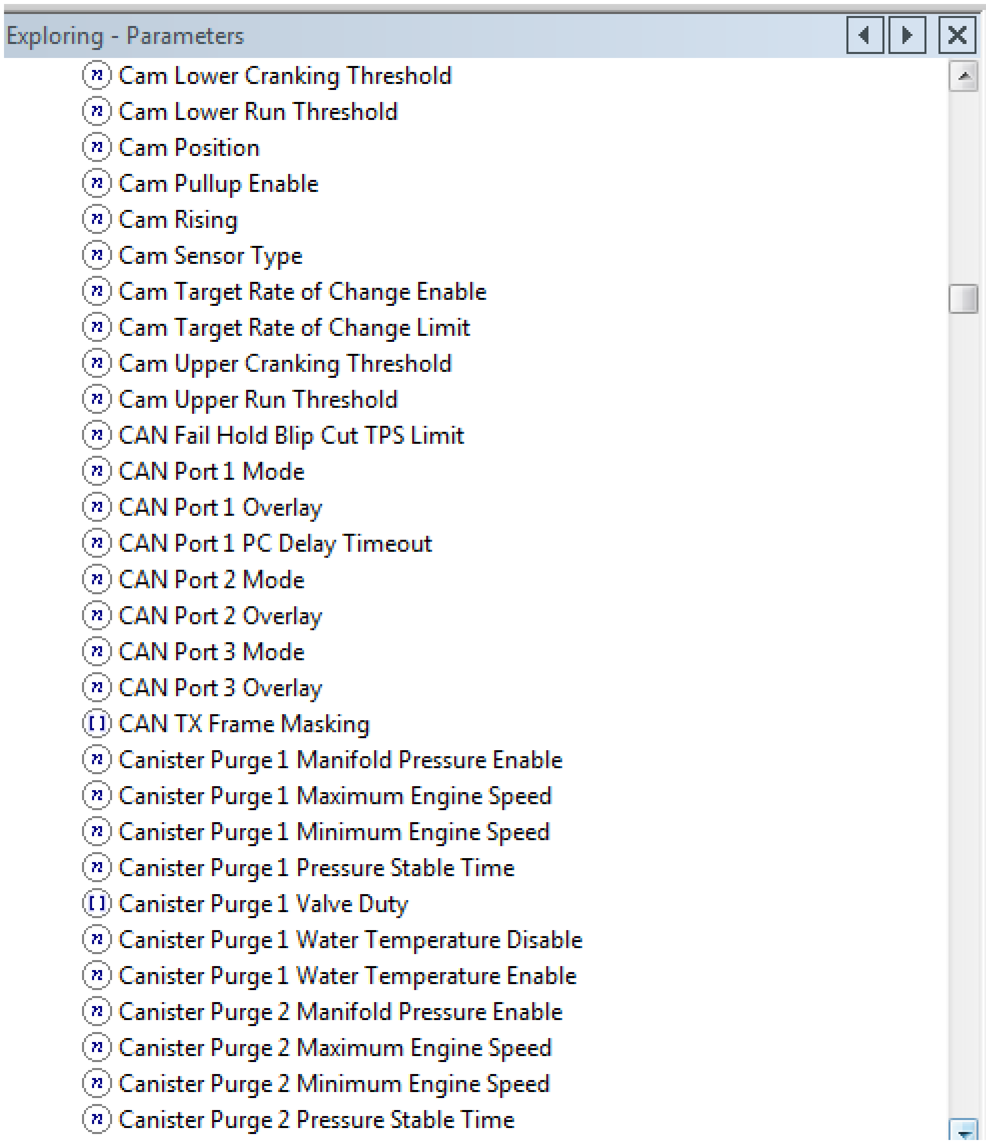

Exploring - Parameters
Barometric Atmospheric Pressure Sensor Type
Barometric Atmospheric Pressure Software Filter
Barometric Atmospheric Pressure Zero Target
Base Cal Select Enable
Base Duty
Base Duty Adder Breakpoint Size
Base Duty Adder Load Breakpoints
Base Engine Speed
Base Fuel in Crank
Base Fuel Map 1
Base Fuel Map 2
Base Fuel Map 3
Base Fuel Map 4
Base Goal Slip Difference
Base Goal Slip Percentage
Base Ignition Map 1
Base Ignition Map 2
Base Ignition Map 3
Base Ignition Map 4
Base Torque Reduction
Base Variable Cam Exhaust Timing Duty Map
Base Variable Cam Inlet Timing Duty Map
Base Wastegate Control Duty Map (First Gear) 1
Base Wastegate Control Duty Map (First Gear) 2
Base Wastegate Control Duty Map (First Gear) 3
Base Wastegate Control Duty Map (First Gear) 4
Base Wastegate Control Duty Map (Top Gear) 1
Base Wastegate Control Duty Map (Top Gear) 2
Base Wastegate Control Duty Map (Top Gear) 3
Base Wastegate Control Duty Map (Top Gear) 4

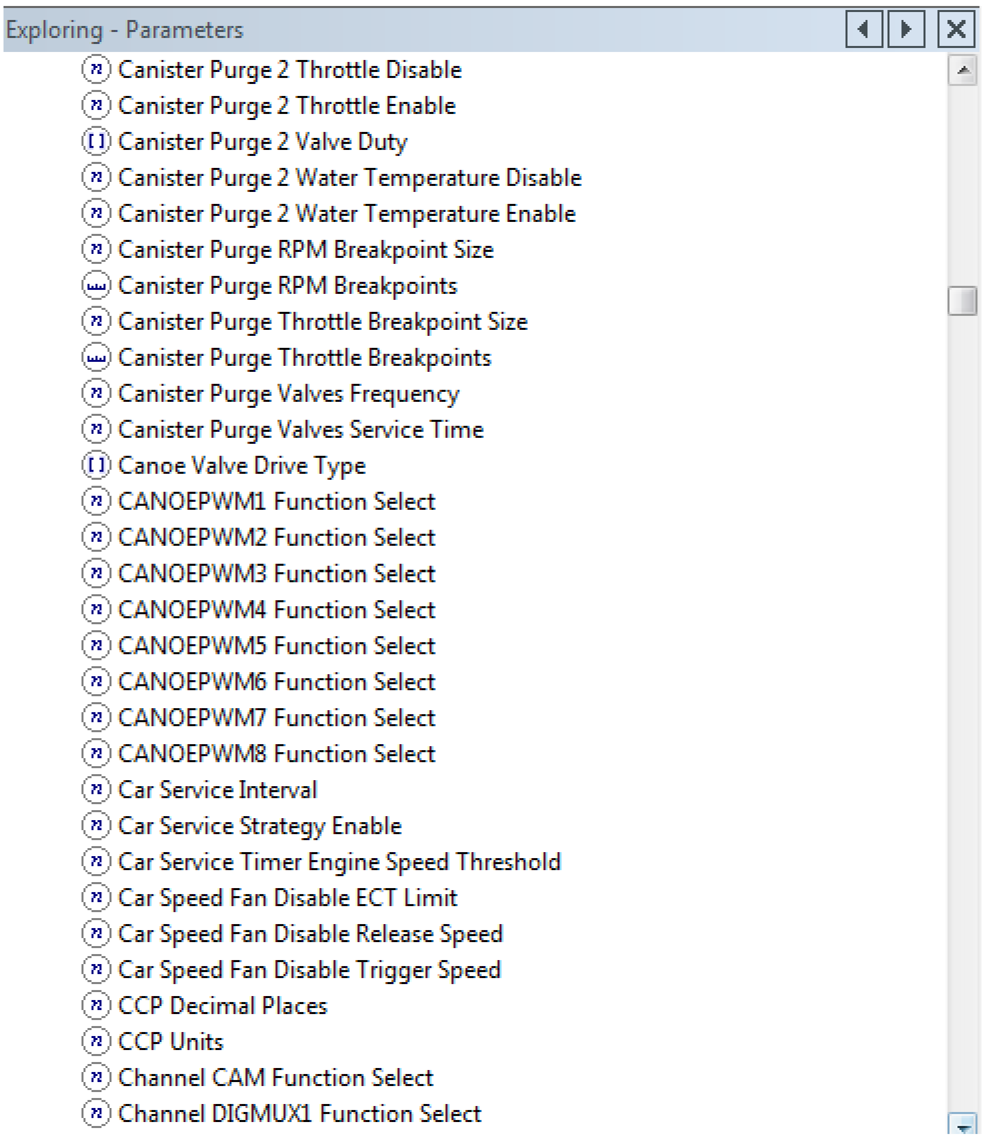

Exploring - Parameters
Base Wastegate Control Valve Duty Adder
Base Wastegate Control Valve Duty Correction f(AAT)
Base Wastegate Control Valve Duty Correction f(ACT)
Base Wastegate Control Valve Duty Correction f(BAP)
Base Wastegate Control Valve Duty Correction f(BPOT)
Base Wastegate Control Valve Duty Correction f(ECT)
Base Wastegate Control Valve Duty Correction f(EOT)
Battery Adder
Battery Compensation Base Voltage
Battery Voltage Alarm Display Text
Battery Voltage Alarm Engine Speed Qualifer
Battery Voltage Alarm Glitch Time
Battery Voltage Alarm Input Channel
Battery Voltage Alarm Self Cancel Time
Battery Voltage Alarm Threshold
Battery Voltage Alarm Threshold Adjustment
Battery Voltage Alarm Threshold Condition
Battery Voltage Alarm Vehicle Speed Qualifer
Battery Voltage Decimal Places
Battery Voltage Disable Threshold
Battery Voltage Enable Threshold
Battery Voltage Error Filter
Battery Voltage Low Warning
Battery Voltage Sample Rate
Battery Voltage Sensor Curve
Battery Voltage Sensor Type
Battery Voltage Software Filter
Battery Voltage Zero Target
Bin Size
Bleed Mode Selection Debounce

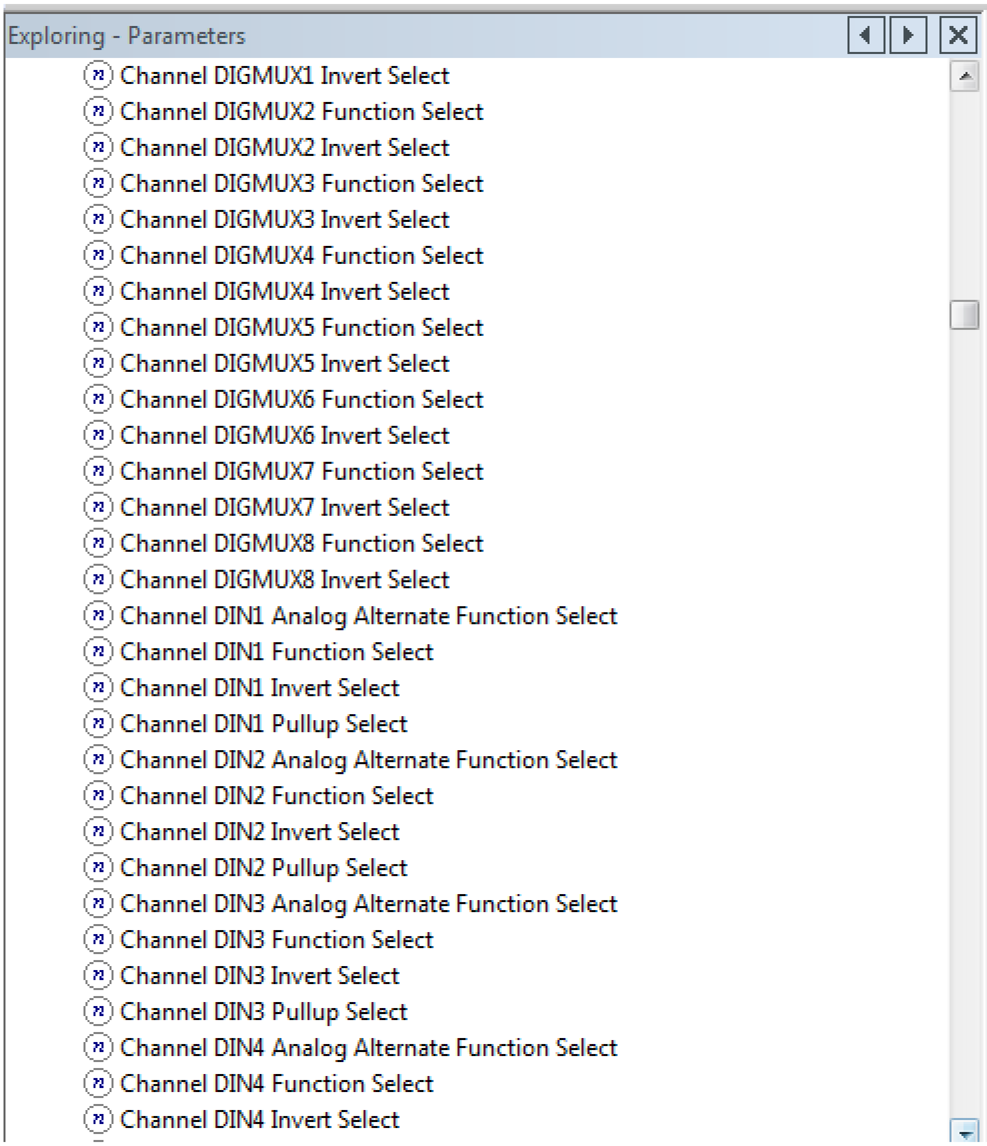

Exploring - Parameters
Blip End Delay
Blip f(GEAR) (CLUTCHED UP)
Blip f(GEAR) (UNCLUTCHED UP)
Blip RPM Timeout (CLUTCHED UP)
Blip RPM Timeout (UNCLUTCHED UP)
Blip TPS Cut_Blipper Fail TPS Threshold
Blip TPS Cut_Blipper Open TPS Threshold To Start Shift
Blip TPS Cut_DownShift Valve Delay
Blip TPS Cut_Driver Disable Cut TPS Threshold
Blip TPS Cut_Driver Reenable Cut TPS Threshold
Blip TPS Cut_Enable
Blip TPS Cut_End Cut TPS Threshold
Blip TPS Cut_Gear Group 1 After Shift Fuel Multiplier
Blip TPS Cut_Gear Group 1 After Shift Ignition Retard
Blip TPS Cut_Gear Group 1 After Shift Mode
Blip TPS Cut_Gear Group 1 After Shift Severity
Blip TPS Cut_Gear Group 1 Before Shift Fuel Multiplier
Blip TPS Cut_Gear Group 1 Before Shift Ignition Retard
Blip TPS Cut_Gear Group 1 Before Shift Mode
Blip TPS Cut_Gear Group 1 Before Shift Severity
Blip TPS Cut_Gear Group 2 After Shift Fuel Multiplier
Blip TPS Cut_Gear Group 2 After Shift Ignition Retard
Blip TPS Cut_Gear Group 2 After Shift Mode
Blip TPS Cut_Gear Group 2 After Shift Severity
Blip TPS Cut_Gear Group 2 Before Shift Fuel Multiplier
Blip TPS Cut_Gear Group 2 Before Shift Ignition Retard
Blip TPS Cut_Gear Group 2 Before Shift Mode
Blip TPS Cut_Gear Group 2 Before Shift Severity
Blip TPS Cut_Max Wait For Blip Open Start Shift Timeout
Blip TPS Cut_Max Wait For Gear Voltage To Reach Target Timeout

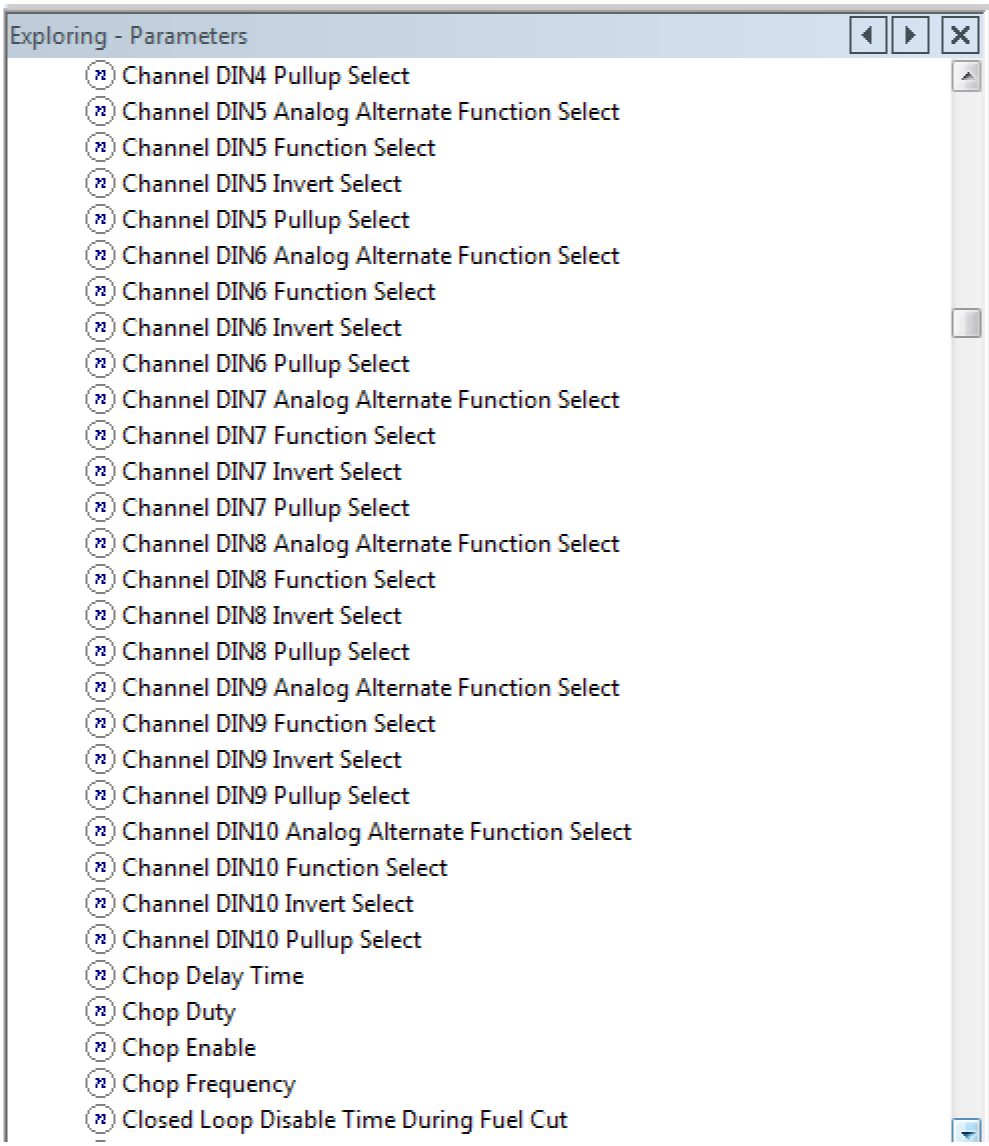

Exploring - Parameters
Blip TPS Cut_Max Wait For TPS To Reach Fail TPS Value After Blipper On
Blip Valve Bleed Duty
Blip Valve Frequency
Blipper Fail Reset Using Manual Mode Enable
Blipper Fail TPS Check Enable
Blipper Pressure Decimal Places
Blipper Pressure Sample Rate
Blipper Pressure Sensor Curve
Blipper Pressure Sensor Type
Blipper Pressure Software Filter
Blipper Pressure Units
Blipper Pressure Zero Target
Boost Adjustment Pot Position Per Gear
Boost Adjustment Pot Sample Rate
Boost Adjustment Pot Sensor Curve
Boost Adjustment Pot Sensor Type
Boost Adjustment Pot Software Filter
Boost Adjustment Pot Voltage Thresholds
Boost Limit
Boost Limit Torque Reduction
Boost Limit Torque Reduction Mode
Boost Pot Zero Target
Bottom Gear
Brake And Throttle Fuel Cut Brake Pressure Threshold
Brake And Throttle Fuel Cut Brake Sensor
Brake And Throttle Fuel Cut Throttle Threshold
Brake Switch Debounce Samples
Brake Switch Sample Rate
Brightness Mode Change Time
Button Configuration


Exploring - Parameters
Cal Over Can RPM limit
Cal Over Can RPM Limit Minimum Time
Cal Pot Calibration Select
CAL Pot Change Notification on Serial Stream Enable
CAL Pot Change Notification on Serial Stream Time
CAL Restart Position
Cal Select Per Gear
Calibration Direction
Calibration Manual Trigger
Calibration Pot Sample Rate
Calibration Pot Sensor Curve
Calibration Pot Sensor Type
Calibration Pot Software Filter
Calibration Pot Voltage Thresholds
Calibration Pot Zero Target
Calibration Selection
Calibration Steps
Calibration Switch Action At Min And Max
Calibration Switch Debounce Samples
Calibration Switch Maximum Endstop
Calibration Switch Minimum Endstop
Calibration Switch Sample Rate
Calibration Trigger ECU Reset Interval
Cam Crank Output To Injectors
Cam Delay Angle
Cam Edge
Cam Falling
Cam For Reference Tooth Enable
Cam For Reference Tooth Exit Speed
Cam Latch Angle Offset


Exploring - Parameters
Cam Lower Cranking Threshold
Cam Lower Run Threshold
Cam Position
Cam Pullup Enable
Cam Rising
Cam Sensor Type
Cam Target Rate of Change Enable
Cam Target Rate of Change Limit
Cam Upper Cranking Threshold
Cam Upper Run Threshold
CAN Fail Hold Blip Cut TPS Limit
CAN Port 1 Mode
CAN Port 1 Overlay
CAN Port 1 PC Delay Timeout
CAN Port 2 Mode
CAN Port 2 Overlay
CAN Port 3 Mode
CAN Port 3 Overlay
CAN TX Frame Masking
Canister Purge 1 Manifold Pressure Enable
Canister Purge 1 Maximum Engine Speed
Canister Purge 1 Minimum Engine Speed
Canister Purge 1 Pressure Stable Time
Canister Purge 1 Valve Duty
Canister Purge 1 Water Temperature Disable
Canister Purge 1 Water Temperature Enable
Canister Purge 2 Manifold Pressure Enable
Canister Purge 2 Maximum Engine Speed
Canister Purge 2 Minimum Engine Speed
Canister Purge 2 Pressure Stable Time

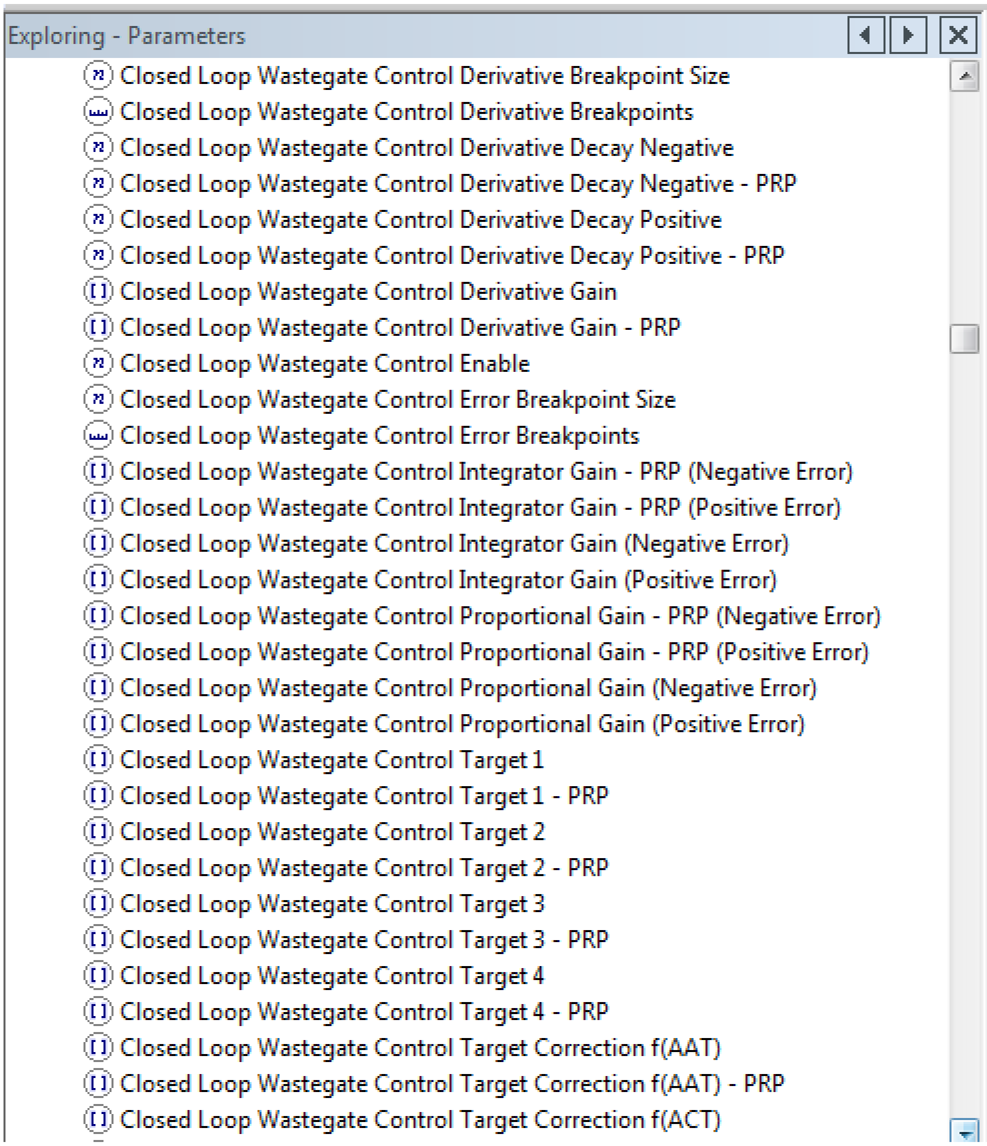

Exploring - Parameters
Canister Purge 2 Throttle Disable
Canister Purge 2 Throttle Enable
Canister Purge 2 Valve Duty
Canister Purge 2 Water Temperature Disable
Canister Purge 2 Water Temperature Enable
Canister Purge RPM Breakpoint Size
Canister Purge RPM Breakpoints
Canister Purge Throttle Breakpoint Size
Canister Purge Throttle Breakpoints
Canister Purge Valves Frequency
Canister Purge Valves Service Time
Canoe Valve Drive Type
CANOEPWM1 Function Select
CANOEPWM2 Function Select
CANOEPWM3 Function Select
CANOEPWM4 Function Select
CANOEPWM5 Function Select
CANOEPWM6 Function Select
CANOEPWM7 Function Select
CANOEPWM8 Function Select
Car Service Interval
Car Service Strategy Enable
Car Service Timer Engine Speed Threshold
Car Speed Fan Disable ECT Limit
Car Speed Fan Disable Release Speed
Car Speed Fan Disable Trigger Speed
CCP Decimal Places
CCP Units
Channel CAM Function Select
Channel DIGMUX1 Function Select


Exploring - Parameters
Channel DIGMUX1 Invert Select
Channel DIGMUX2 Function Select
Channel DIGMUX2 Invert Select
Channel DIGMUX3 Function Select
Channel DIGMUX3 Invert Select
Channel DIGMUX4 Function Select
Channel DIGMUX4 Invert Select
Channel DIGMUX5 Function Select
Channel DIGMUX5 Invert Select
Channel DIGMUX6 Function Select
Channel DIGMUX6 Invert Select
Channel DIGMUX7 Function Select
Channel DIGMUX7 Invert Select
Channel DIGMUX8 Function Select
Channel DIGMUX8 Invert Select
Channel DIN1 Analog Alternate Function Select
Channel DIN1 Function Select
Channel DIN1 Invert Select
Channel DIN1 Pullup Select
Channel DIN2 Analog Alternate Function Select
Channel DIN2 Function Select
Channel DIN2 Invert Select
Channel DIN2 Pullup Select
Channel DIN3 Analog Alternate Function Select
Channel DIN3 Function Select
Channel DIN3 Invert Select
Channel DIN3 Pullup Select
Channel DIN4 Analog Alternate Function Select
Channel DIN4 Function Select
Channel DIN4 Invert Select


Exploring - Parameters
Channel DIN4 Pullup Select
Channel DIN5 Analog Alternate Function Select
Channel DIN5 Function Select
Channel DIN5 Invert Select
Channel DIN5 Pullup Select
Channel DIN6 Analog Alternate Function Select
Channel DIN6 Function Select
Channel DIN6 Invert Select
Channel DIN6 Pullup Select
Channel DIN7 Analog Alternate Function Select
Channel DIN7 Function Select
Channel DIN7 Invert Select
Channel DIN7 Pullup Select
Channel DIN8 Analog Alternate Function Select
Channel DIN8 Function Select
Channel DIN8 Invert Select
Channel DIN8 Pullup Select
Channel DIN9 Analog Alternate Function Select
Channel DIN9 Function Select
Channel DIN9 Invert Select
Channel DIN9 Pullup Select
Channel DIN10 Analog Alternate Function Select
Channel DIN10 Function Select
Channel DIN10 Invert Select
Channel DIN10 Pullup Select
Chop Delay Time
Chop Duty
Chop Enable
Chop Frequency
Closed Loop Disable Time During Fuel Cut

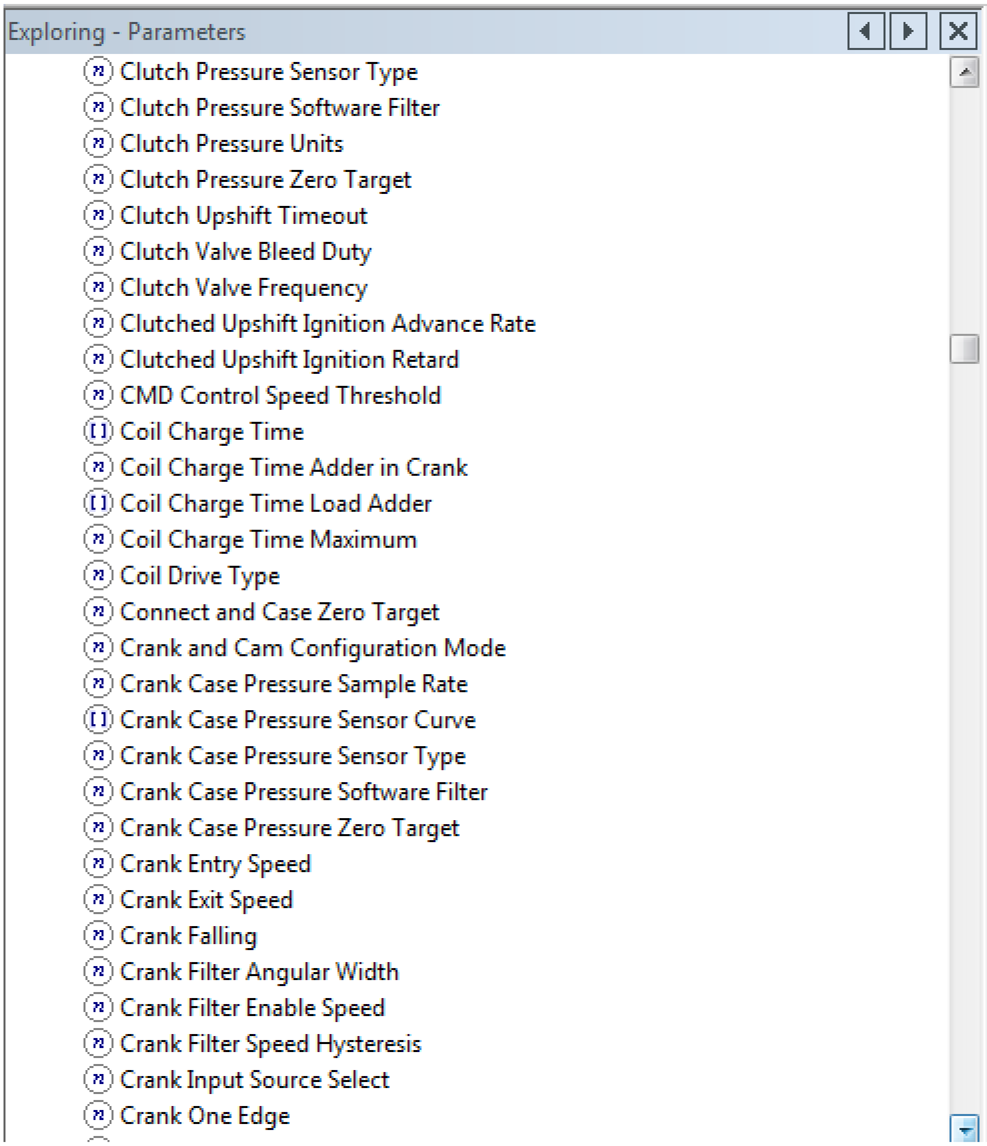
Exploring - Parameters

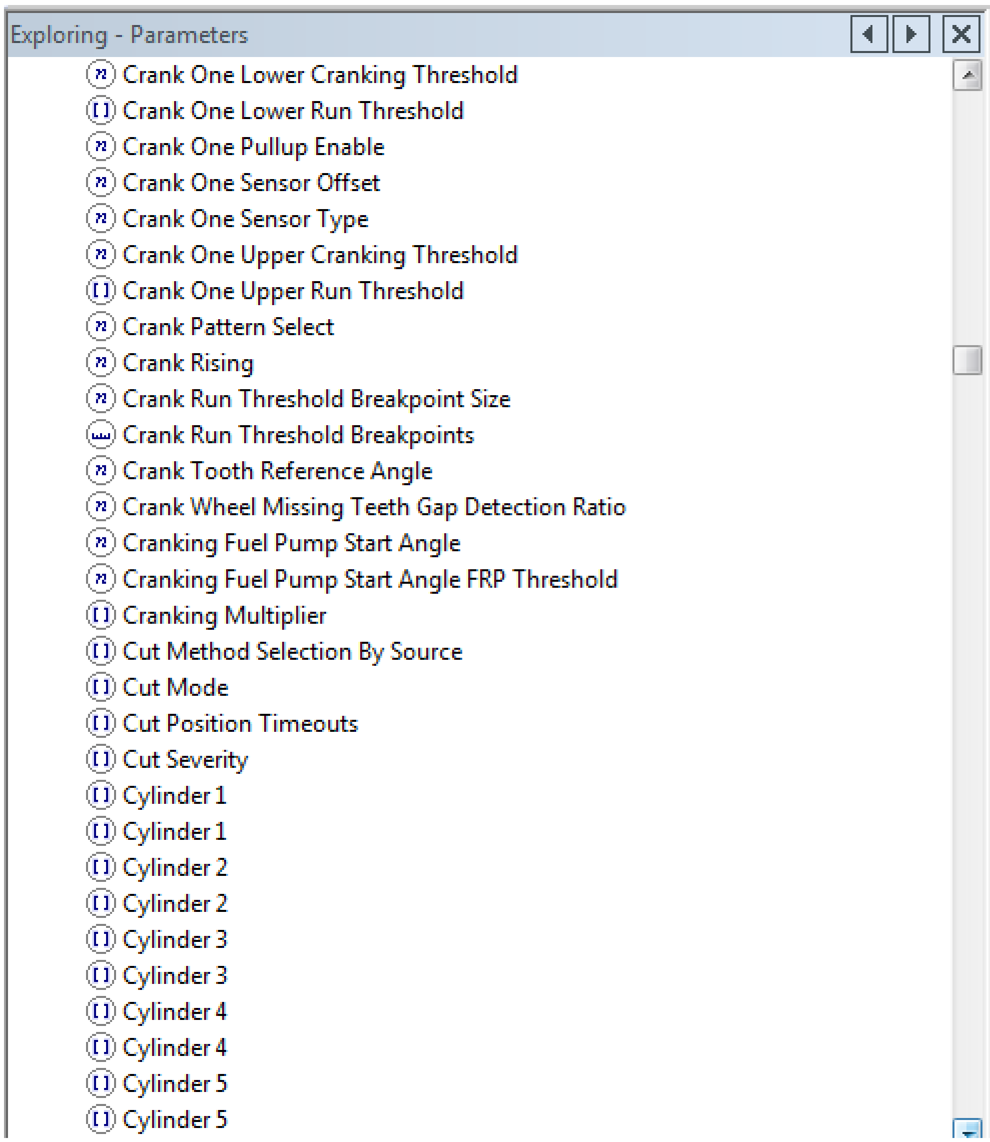
- Closed Loop Disable Time During Gear Shift
- Closed Loop Disable Time During Transient
- Closed Loop Disable Time Sensor Warmup
- Closed Loop Disable Time Starting
- Closed Loop Enable Lambda Maximum
- Closed Loop Enable Lambda Minimum
- Closed Loop Idle Control Enable Car Speed
- Closed Loop Idle Control Enable Manifold Pressure
- Closed Loop Idle Control Enable Speed
- Closed Loop Idle Control Target Base Offset
- Closed Loop Idle Control Target Initial Offset
- Closed Loop Idle Control Target Rate Limit
- Closed Loop Idle FBW Throttle Demand Maximum
- Closed Loop Idle FBW Throttle Rate Limits
- Closed Loop Idle View Select
- Closed Loop Lambda Enable
- Closed Loop Lambda Integral Gain
- Closed Loop Lambda Proportional Gain
- Closed Loop Lambda Target 1
- Closed Loop Lambda Target 2
- Closed Loop Lambda Target 3
- Closed Loop Lambda Target 4
- Closed Loop Lambda Target Exhaust Temperature Correction
- Closed Loop Lambda Target Multiplier f(ECT)
- Closed Loop Lambda Update Rate
- Closed Loop Target Maximum Rate of Change PPS Breakpoint Size
- Closed Loop Target Maximum Rate of Change PPS Breakpoints
- Closed Loop Variable Cam Timing Enable
- Closed Loop Variable Cam Timing Engine Speed Disable
- Closed Loop Variable Cam Timing Engine Speed Enable

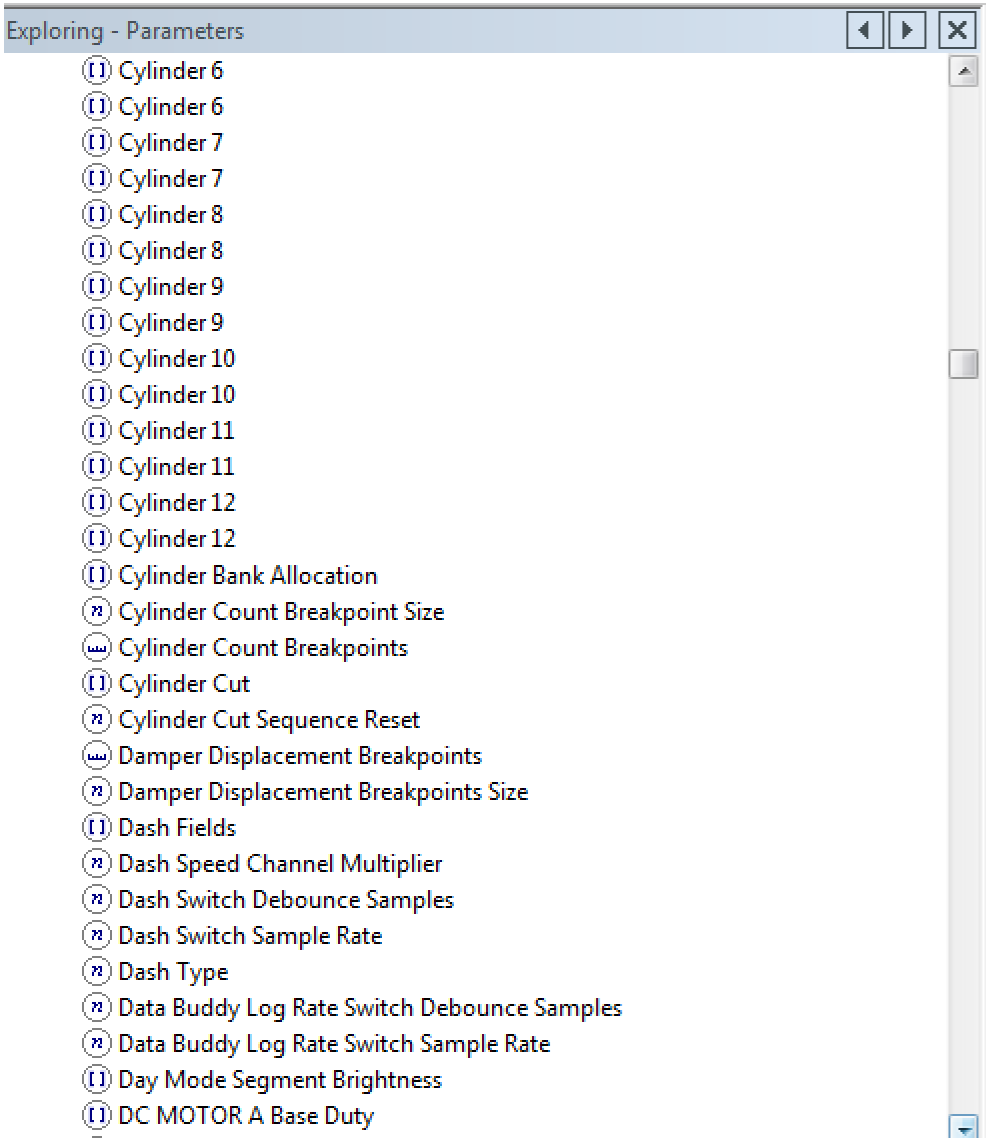

Exploring - Parameters
Closed Loop Wastegate Control Derivative Breakpoint Size
Closed Loop Wastegate Control Derivative Breakpoints
Closed Loop Wastegate Control Derivative Decay Negative
Closed Loop Wastegate Control Derivative Decay Negative - PRP
Closed Loop Wastegate Control Derivative Decay Positive
Closed Loop Wastegate Control Derivative Decay Positive - PRP
Closed Loop Wastegate Control Derivative Gain
Closed Loop Wastegate Control Derivative Gain - PRP
Closed Loop Wastegate Control Enable
Closed Loop Wastegate Control Error Breakpoint Size
Closed Loop Wastegate Control Error Breakpoints
Closed Loop Wastegate Control Integrator Gain - PRP (Negative Error)
Closed Loop Wastegate Control Integrator Gain - PRP (Positive Error)
Closed Loop Wastegate Control Integrator Gain (Negative Error)
Closed Loop Wastegate Control Integrator Gain (Positive Error)
Closed Loop Wastegate Control Proportional Gain - PRP (Negative Error)
Closed Loop Wastegate Control Proportional Gain - PRP (Positive Error)
Closed Loop Wastegate Control Proportional Gain (Negative Error)
Closed Loop Wastegate Control Proportional Gain (Positive Error)
Closed Loop Wastegate Control Target 1
Closed Loop Wastegate Control Target 1 - PRP
Closed Loop Wastegate Control Target 2
Closed Loop Wastegate Control Target 2 - PRP
Closed Loop Wastegate Control Target 3
Closed Loop Wastegate Control Target 3 - PRP
Closed Loop Wastegate Control Target 4
Closed Loop Wastegate Control Target 4 - PRP
Closed Loop Wastegate Control Target Correction f(AAT)
Closed Loop Wastegate Control Target Correction f(AAT) - PRP
Closed Loop Wastegate Control Target Correction f(ACT)

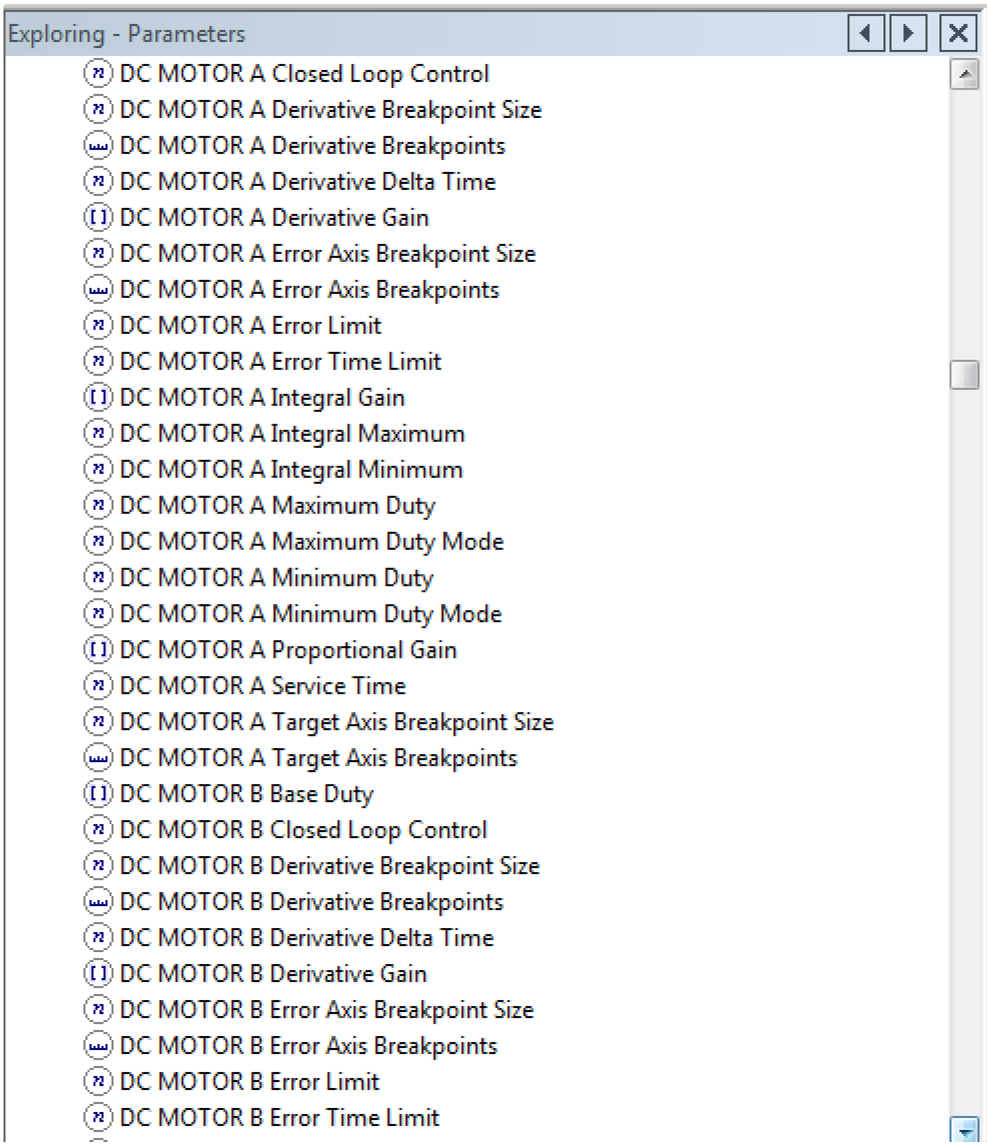
Exploring - Parameters

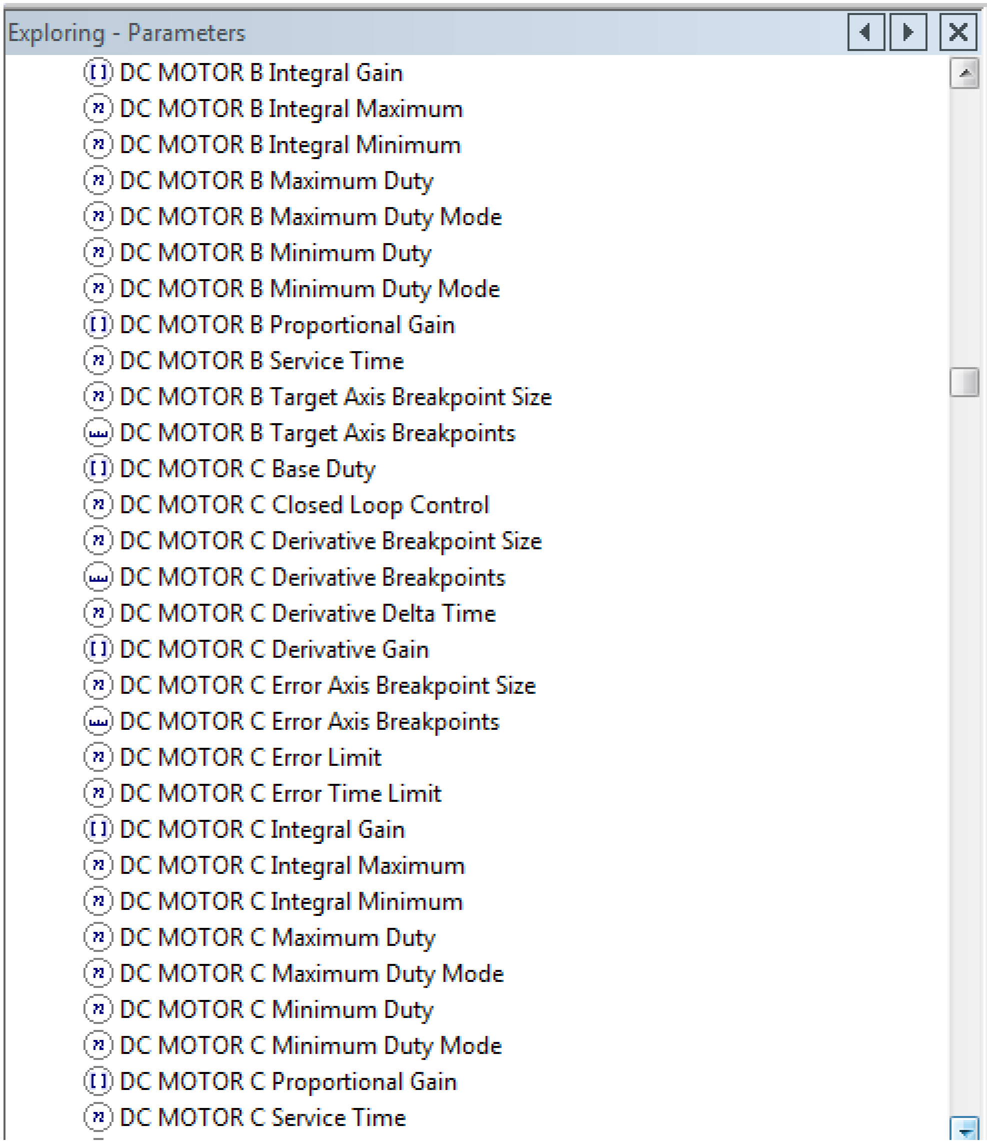
Closed Loop Wastegate Control Target Correction f(ACT) - PRP
Closed Loop Wastegate Control Target Correction f(BAP)
Closed Loop Wastegate Control Target Correction f(BAP) - PRP
Closed Loop Wastegate Control Target Correction f(BPOT)
Closed Loop Wastegate Control Target Correction f(BPOT) - PRP
Closed Loop Wastegate Control Target Correction f(ECT)
Closed Loop Wastegate Control Target Correction f(ECT) - PRP
Closed Loop Wastegate Control Target Correction f(EOT)
Closed Loop Wastegate Control Target Correction f(EOT) - PRP
Closed Loop Wastegate Control Target Correction f(TORQUE error)
Closed Loop Wastegate Control Target Correction f(TORQUE error) - PRP
Closed Loop Wastegate Control Target Type
Closed Loop Wastegate Control Throttle Angle Enable
Closed Loop Wastegate Target Maximum Rate of Change
Closed Loop Wastegate Temporary Disable Time
Closed Throttle Hysteresis
Closed Throttle Window
Clutch Disengage Duty
Clutch Displacement Decimal Places
Clutch Displacement Sample Rate
Clutch Displacement Sensor Curve
Clutch Displacement Sensor Type
Clutch Displacement Software Filter
Clutch Displacement Units
Clutch Displacement Zero Target
Clutch Downshift Timeout
Clutch Engage Duty
Clutch Pressure Decimal Places
Clutch Pressure Sample Rate
Clutch Pressure Sensor Curve

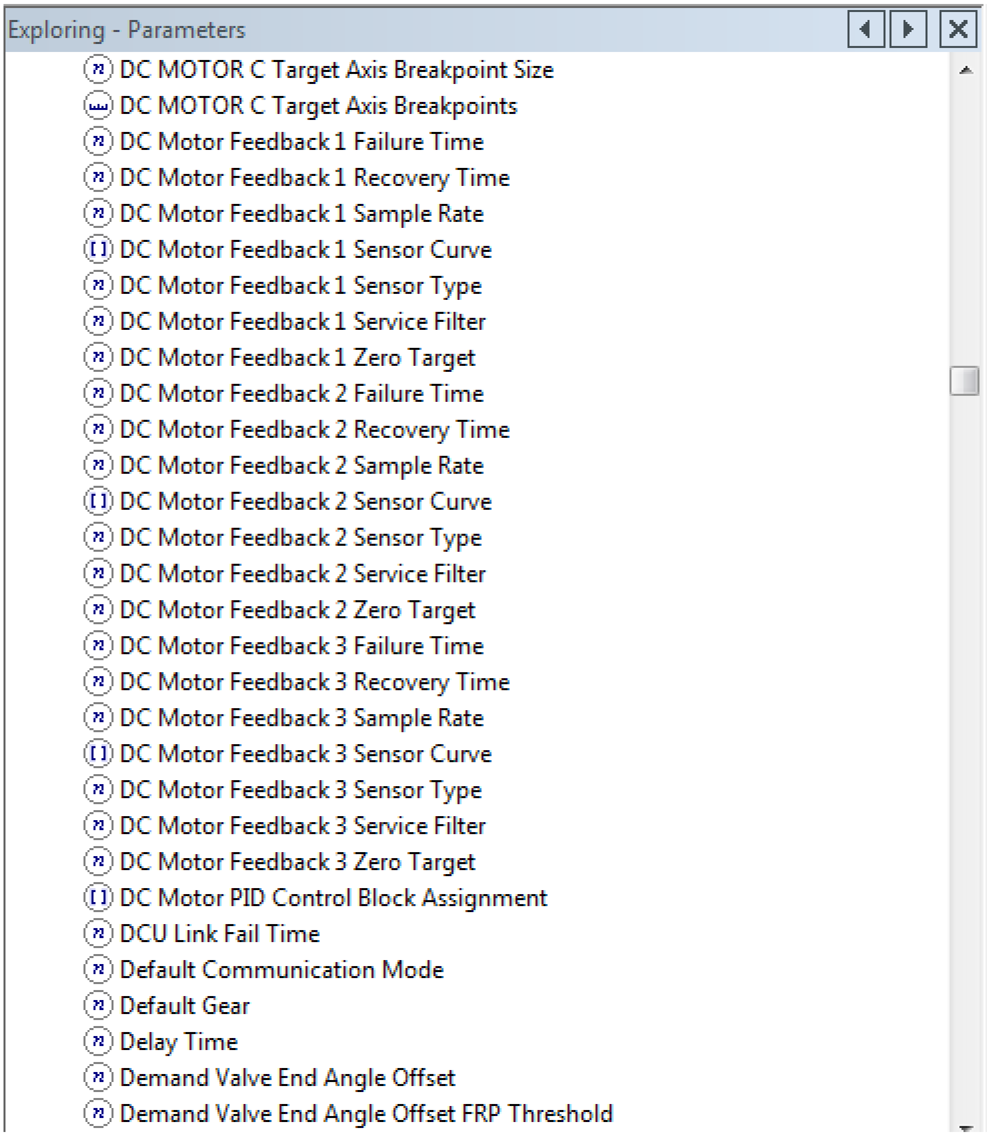

Exploring - Parameters
Clutch Pressure Sensor Type
Clutch Pressure Software Filter
Clutch Pressure Units
Clutch Pressure Zero Target
Clutch Upshift Timeout
Clutch Valve Bleed Duty
Clutch Valve Frequency
Clutched Upshift Ignition Advance Rate
Clutched Upshift Ignition Retard
CMD Control Speed Threshold
Coil Charge Time
Coil Charge Time Adder in Crank
Coil Charge Time Load Adder
Coil Charge Time Maximum
Coil Drive Type
Connect and Case Zero Target
Crank and Cam Configuration Mode
Crank Case Pressure Sample Rate
Crank Case Pressure Sensor Curve
Crank Case Pressure Sensor Type
Crank Case Pressure Software Filter
Crank Case Pressure Zero Target
Crank Entry Speed
Crank Exit Speed
Crank Falling
Crank Filter Angular Width
Crank Filter Enable Speed
Crank Filter Speed Hysteresis
Crank Input Source Select
Crank One Edge

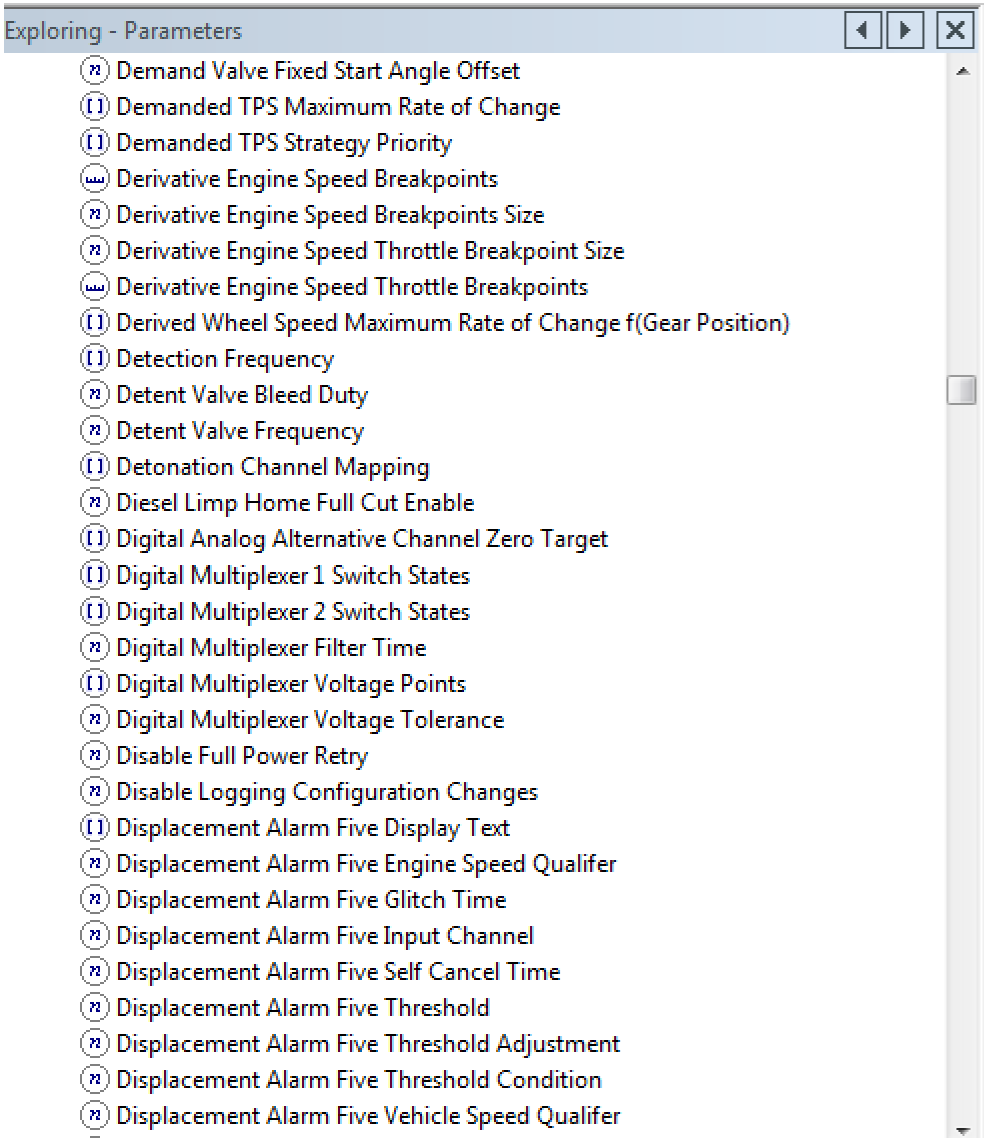

Exploring - Parameters
Crank One Lower Cranking Threshold
Crank One Lower Run Threshold
Crank One Pullup Enable
Crank One Sensor Offset
Crank One Sensor Type
Crank One Upper Cranking Threshold
Crank One Upper Run Threshold
Crank Pattern Select
Crank Rising
Crank Run Threshold Breakpoint Size
Crank Run Threshold Breakpoints
Crank Tooth Reference Angle
Crank Wheel Missing Teeth Gap Detection Ratio
Cranking Fuel Pump Start Angle
Cranking Fuel Pump Start Angle FRP Threshold
Cranking Multiplier
Cut Method Selection By Source
Cut Mode
Cut Position Timeouts
Cut Severity
Cylinder 1
Cylinder 1
Cylinder 2
Cylinder 2
Cylinder 3
Cylinder 3
Cylinder 4
Cylinder 4
Cylinder 5
Cylinder 5


Exploring - Parameters
Cylinder 6
Cylinder 6
Cylinder 7
Cylinder 7
Cylinder 8
Cylinder 8
Cylinder 9
Cylinder 9
Cylinder 10
Cylinder 10
Cylinder 11
Cylinder 11
Cylinder 12
Cylinder 12
Cylinder Bank Allocation
Cylinder Count Breakpoint Size
Cylinder Count Breakpoints
Cylinder Cut
Cylinder Cut Sequence Reset
Damper Displacement Breakpoints
Damper Displacement Breakpoints Size
Dash Fields
Dash Speed Channel Multiplier
Dash Switch Debounce Samples
Dash Switch Sample Rate
Dash Type
Data Buddy Log Rate Switch Debounce Samples
Data Buddy Log Rate Switch Sample Rate
Day Mode Segment Brightness
DC MOTOR A Base Duty


Exploring - Parameters
DC MOTOR A Closed Loop Control
DC MOTOR A Derivative Breakpoint Size
DC MOTOR A Derivative Breakpoints
DC MOTOR A Derivative Delta Time
DC MOTOR A Derivative Gain
DC MOTOR A Error Axis Breakpoint Size
DC MOTOR A Error Axis Breakpoints
DC MOTOR A Error Limit
DC MOTOR A Error Time Limit
DC MOTOR A Integral Gain
DC MOTOR A Integral Maximum
DC MOTOR A Integral Minimum
DC MOTOR A Maximum Duty
DC MOTOR A Maximum Duty Mode
DC MOTOR A Minimum Duty
DC MOTOR A Minimum Duty Mode
DC MOTOR A Proportional Gain
DC MOTOR A Service Time
DC MOTOR A Target Axis Breakpoint Size
DC MOTOR A Target Axis Breakpoints
DC MOTOR B Base Duty
DC MOTOR B Closed Loop Control
DC MOTOR B Derivative Breakpoint Size
DC MOTOR B Derivative Breakpoints
DC MOTOR B Derivative Delta Time
DC MOTOR B Derivative Gain
DC MOTOR B Error Axis Breakpoint Size
DC MOTOR B Error Axis Breakpoints
DC MOTOR B Error Limit
DC MOTOR B Error Time Limit


Exploring - Parameters
DC MOTOR B Integral Gain
DC MOTOR B Integral Maximum
DC MOTOR B Integral Minimum
DC MOTOR B Maximum Duty
DC MOTOR B Maximum Duty Mode
DC MOTOR B Minimum Duty
DC MOTOR B Minimum Duty Mode
DC MOTOR B Proportional Gain
DC MOTOR B Service Time
DC MOTOR B Target Axis Breakpoint Size
DC MOTOR B Target Axis Breakpoints
DC MOTOR C Base Duty
DC MOTOR C Closed Loop Control
DC MOTOR C Derivative Breakpoint Size
DC MOTOR C Derivative Breakpoints
DC MOTOR C Derivative Delta Time
DC MOTOR C Derivative Gain
DC MOTOR C Error Axis Breakpoint Size
DC MOTOR C Error Axis Breakpoints
DC MOTOR C Error Limit
DC MOTOR C Error Time Limit
DC MOTOR C Integral Gain
DC MOTOR C Integral Maximum
DC MOTOR C Integral Minimum
DC MOTOR C Maximum Duty
DC MOTOR C Maximum Duty Mode
DC MOTOR C Minimum Duty
DC MOTOR C Minimum Duty Mode
DC MOTOR C Proportional Gain
DC MOTOR C Service Time


Exploring - Parameters
DC MOTOR C Target Axis Breakpoint Size
DC MOTOR C Target Axis Breakpoints
DC Motor Feedback 1 Failure Time
DC Motor Feedback 1 Recovery Time
DC Motor Feedback 1 Sample Rate
DC Motor Feedback 1 Sensor Curve
DC Motor Feedback 1 Sensor Type
DC Motor Feedback 1 Service Filter
DC Motor Feedback 1 Zero Target
DC Motor Feedback 2 Failure Time
DC Motor Feedback 2 Recovery Time
DC Motor Feedback 2 Sample Rate
DC Motor Feedback 2 Sensor Curve
DC Motor Feedback 2 Sensor Type
DC Motor Feedback 2 Service Filter
DC Motor Feedback 2 Zero Target
DC Motor Feedback 3 Failure Time
DC Motor Feedback 3 Recovery Time
DC Motor Feedback 3 Sample Rate
DC Motor Feedback 3 Sensor Curve
DC Motor Feedback 3 Sensor Type
DC Motor Feedback 3 Service Filter
DC Motor Feedback 3 Zero Target
DC Motor PID Control Block Assignment
DCU Link Fail Time
Default Communication Mode
Default Gear
Delay Time
Demand Valve End Angle Offset
Demand Valve End Angle Offset FRP Threshold


Exploring - Parameters
Demand Valve Fixed Start Angle Offset
Demanded TPS Maximum Rate of Change
Demanded TPS Strategy Priority
Derivative Engine Speed Breakpoints
Derivative Engine Speed Breakpoints Size
Derivative Engine Speed Throttle Breakpoint Size
Derivative Engine Speed Throttle Breakpoints
Derived Wheel Speed Maximum Rate of Change f(Gear Position)
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Detent Valve Bleed Duty
Detent Valve Frequency
Detonation Channel Mapping
Diesel Limp Home Full Cut Enable
Digital Analog Alternative Channel Zero Target
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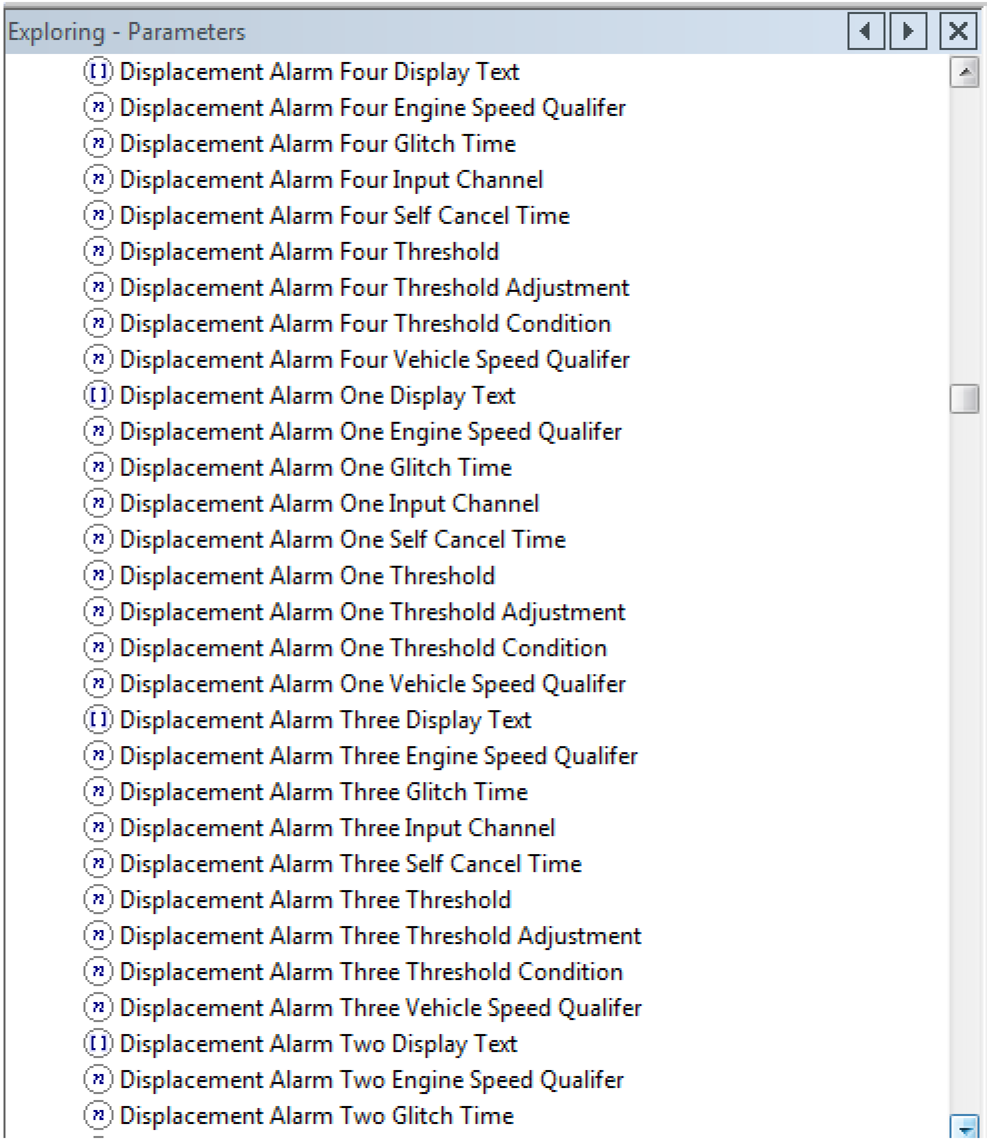
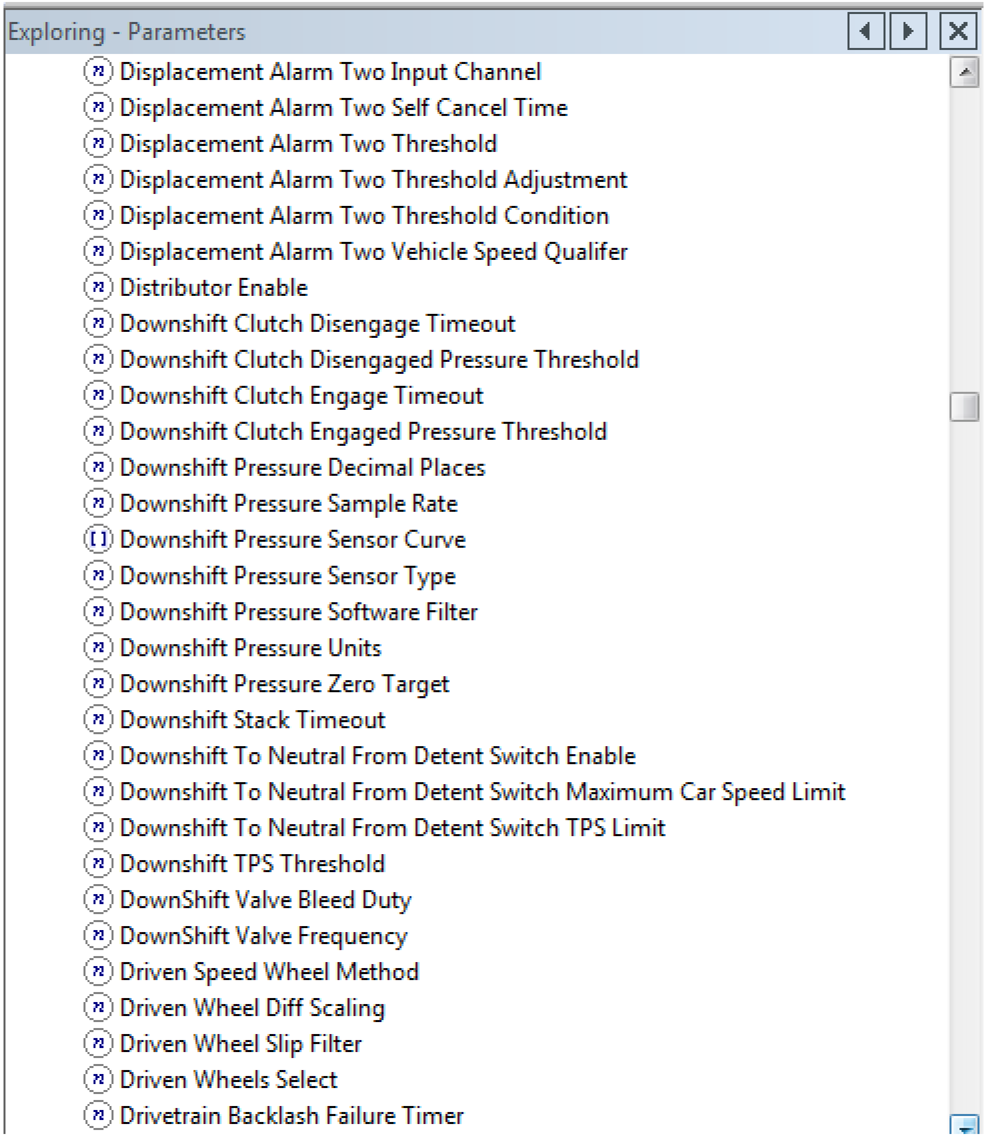
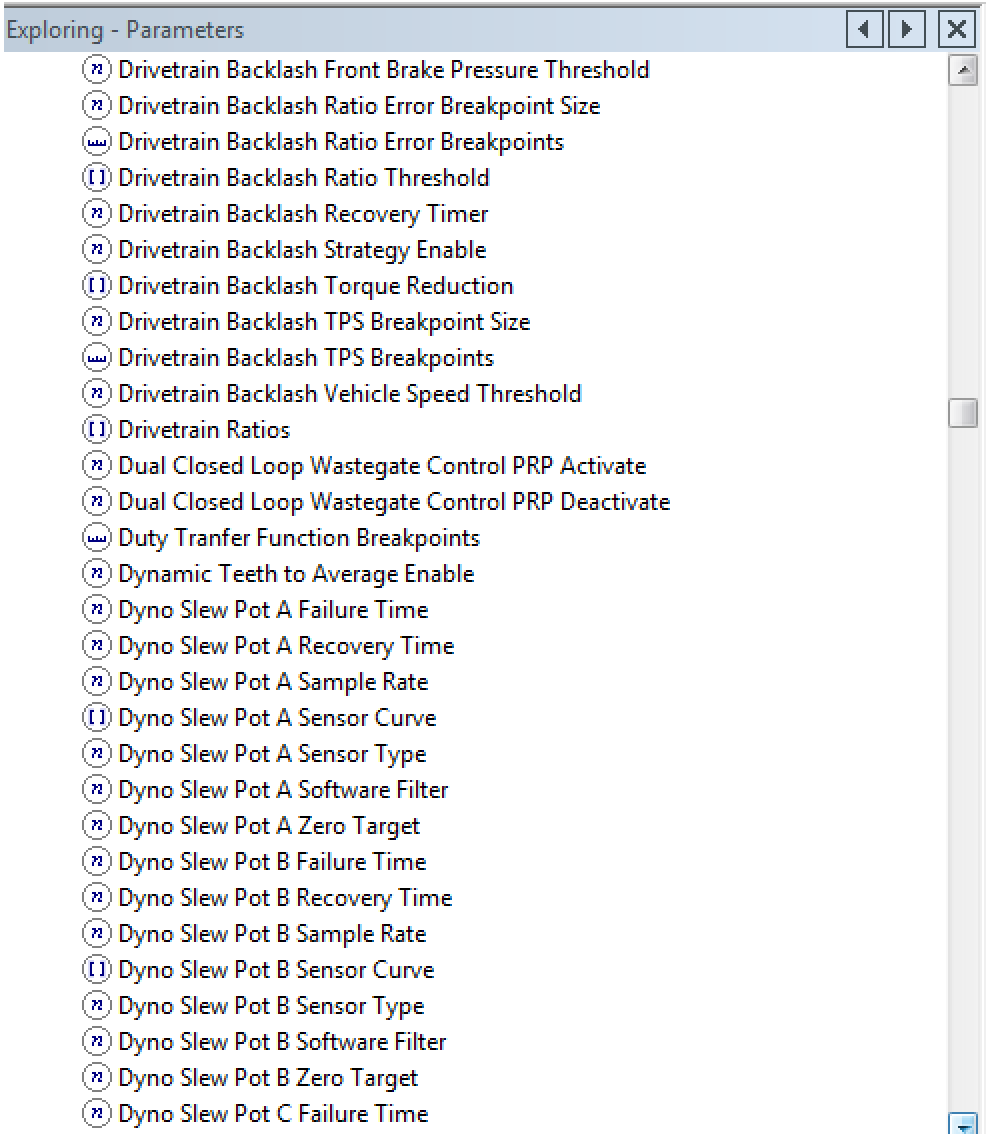
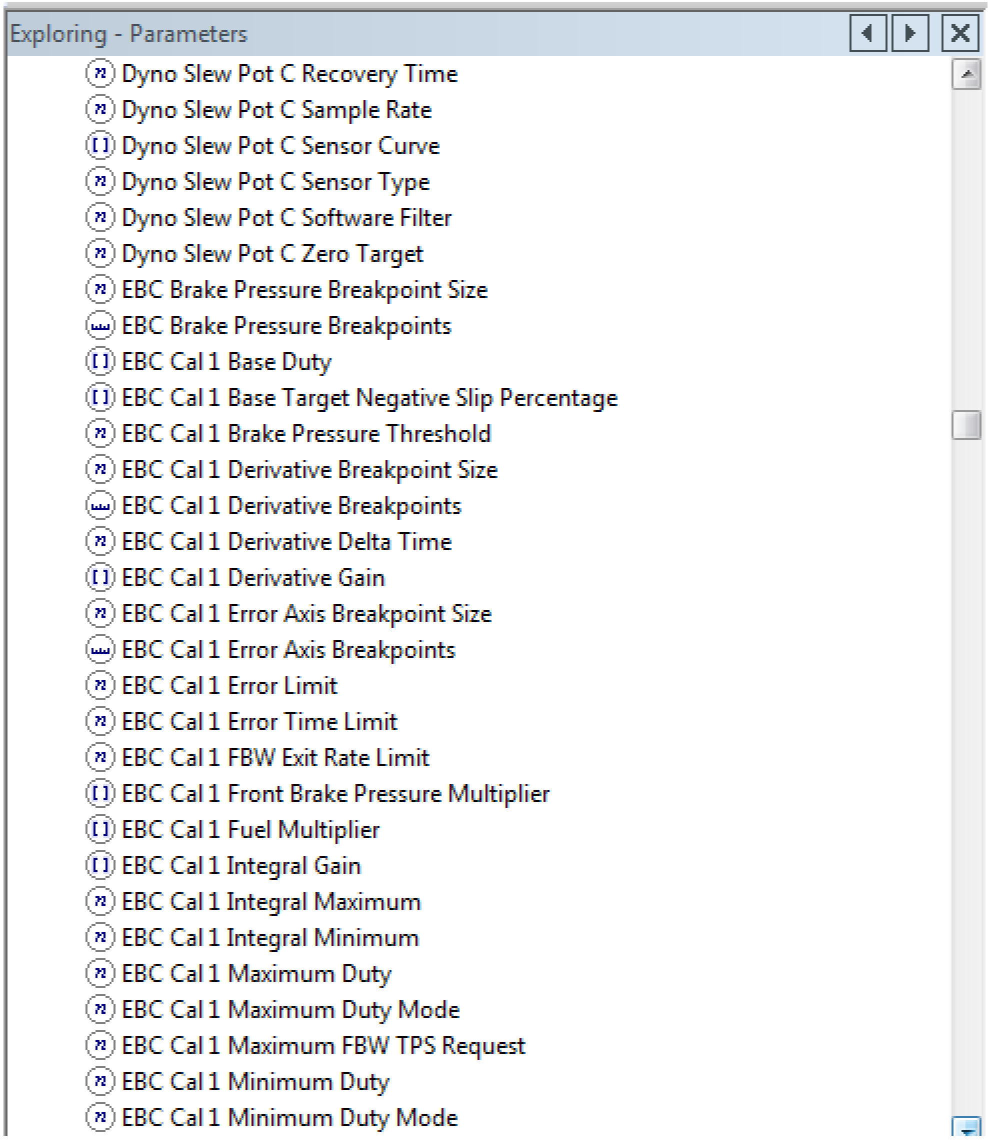
Digital Multiplexer 2 Switch States
Digital Multiplexer Filter Time
Digital Multiplexer Voltage Points
Digital Multiplexer Voltage Tolerance
Disable Full Power Retry
Disable Logging Configuration Changes
Displacement Alarm Five Display Text
Displacement Alarm Five Engine Speed Qualifer
Displacement Alarm Five Glitch Time
Displacement Alarm Five Input Channel
Displacement Alarm Five Self Cancel Time
Displacement Alarm Five Threshold
Displacement Alarm Five Threshold Adjustment
Displacement Alarm Five Threshold Condition
Displacement Alarm Five Vehicle Speed Qualifer


Exploring - Parameters
Displacement Alarm Four Display Text
Displacement Alarm Four Engine Speed Qualifer
Displacement Alarm Four Glitch Time
Displacement Alarm Four Input Channel
Displacement Alarm Four Self Cancel Time
Displacement Alarm Four Threshold
Displacement Alarm Four Threshold Adjustment
Displacement Alarm Four Threshold Condition
Displacement Alarm Four Vehicle Speed Qualifer
Displacement Alarm One Display Text
Displacement Alarm One Engine Speed Qualifer
Displacement Alarm One Glitch Time
Displacement Alarm One Input Channel
Displacement Alarm One Self Cancel Time
Displacement Alarm One Threshold
Displacement Alarm One Threshold Adjustment
Displacement Alarm One Threshold Condition
Displacement Alarm One Vehicle Speed Qualifer
Displacement Alarm Three Display Text
Displacement Alarm Three Engine Speed Qualifer
Displacement Alarm Three Glitch Time
Displacement Alarm Three Input Channel
Displacement Alarm Three Self Cancel Time
Displacement Alarm Three Threshold
Displacement Alarm Three Threshold Adjustment
Displacement Alarm Three Threshold Condition
Displacement Alarm Three Vehicle Speed Qualifer
Displacement Alarm Two Display Text
Displacement Alarm Two Engine Speed Qualifer
Displacement Alarm Two Glitch Time

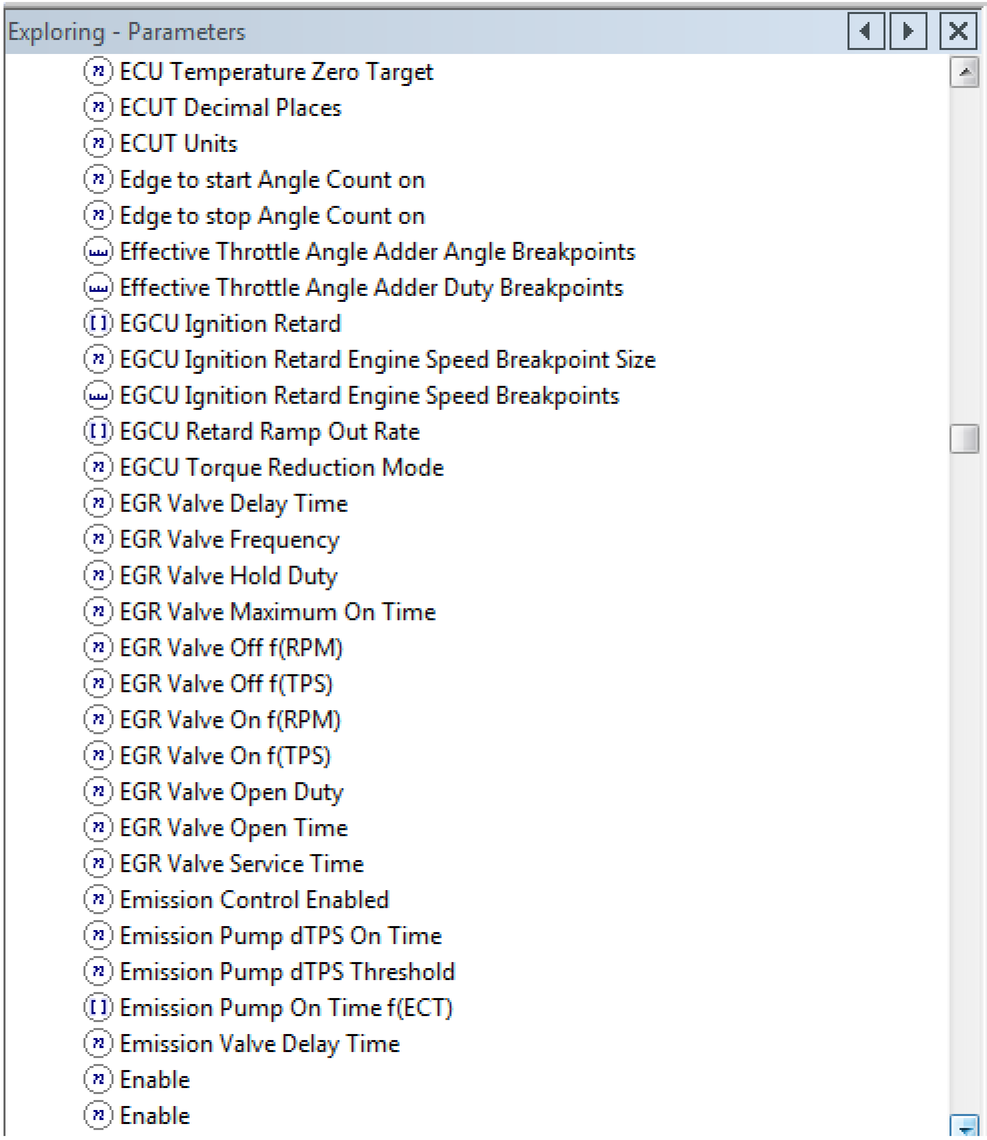

Exploring - Parameters
Displacement Alarm Two Input Channel
Displacement Alarm Two Self Cancel Time
Displacement Alarm Two Threshold
Displacement Alarm Two Threshold Adjustment
Displacement Alarm Two Threshold Condition
Displacement Alarm Two Vehicle Speed Qualifer
Distributor Enable
Downshift Clutch Disengage Timeout
Downshift Clutch Disengaged Pressure Threshold
Downshift Clutch Engage Timeout
Downshift Clutch Engaged Pressure Threshold
Downshift Pressure Decimal Places
Downshift Pressure Sample Rate
Downshift Pressure Sensor Curve
Downshift Pressure Sensor Type
Downshift Pressure Software Filter
Downshift Pressure Units
Downshift Pressure Zero Target
Downshift Stack Timeout
Downshift To Neutral From Detent Switch Enable
Downshift To Neutral From Detent Switch Maximum Car Speed Limit
Downshift To Neutral From Detent Switch TPS Limit
Downshift TPS Threshold
DownShift Valve Bleed Duty
DownShift Valve Frequency
Driven Speed Wheel Method
Driven Wheel Diff Scaling
Driven Wheel Slip Filter
Driven Wheels Select
Drivetrain Backlash Failure Timer

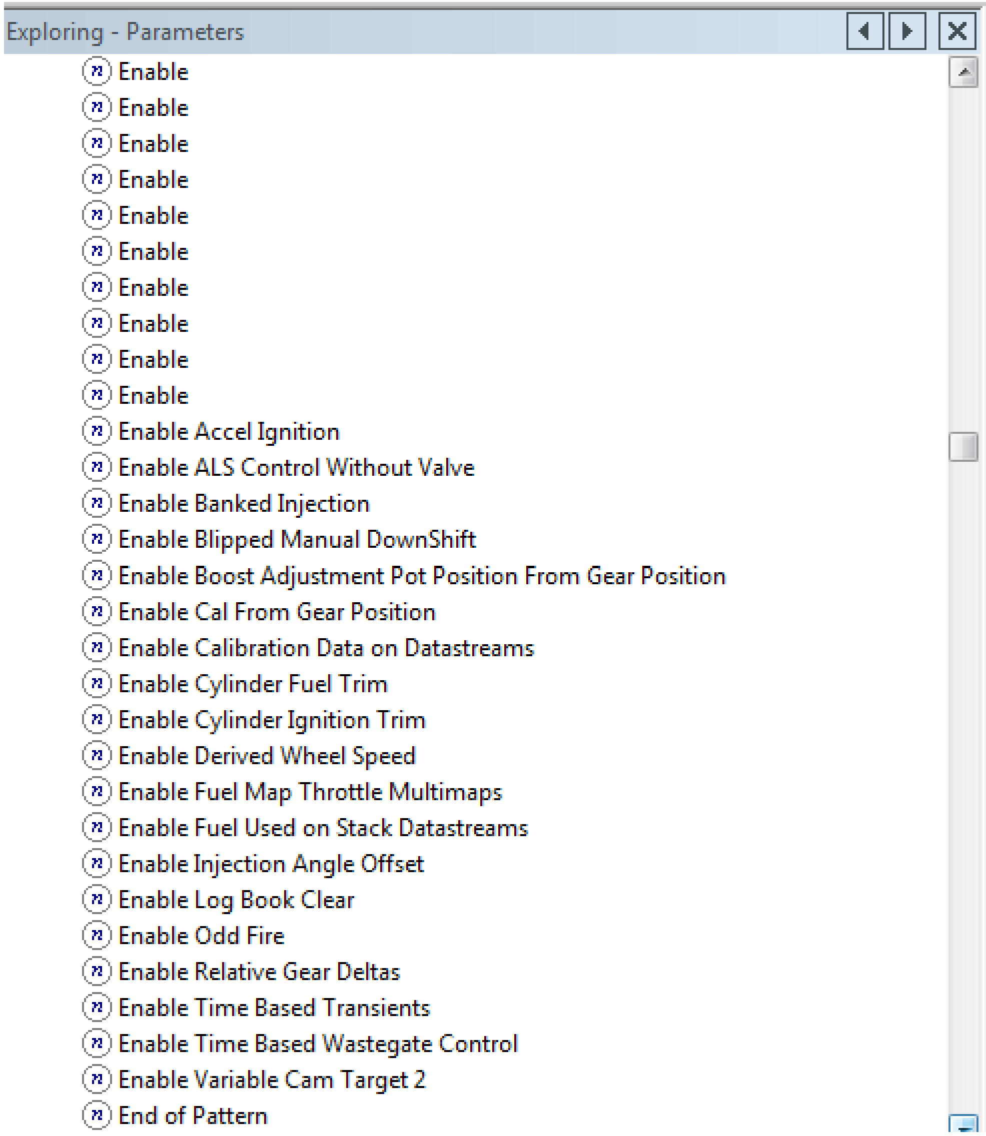

Exploring - Parameters
Drivetrain Backlash Front Brake Pressure Threshold
Drivetrain Backlash Ratio Error Breakpoint Size
Drivetrain Backlash Ratio Error Breakpoints
Drivetrain Backlash Ratio Threshold
Drivetrain Backlash Recovery Timer
Drivetrain Backlash Strategy Enable
Drivetrain Backlash Torque Reduction
Drivetrain Backlash TPS Breakpoint Size
Drivetrain Backlash TPS Breakpoints
Drivetrain Backlash Vehicle Speed Threshold
Drivetrain Ratios
Dual Closed Loop Wastegate Control PRP Activate
Dual Closed Loop Wastegate Control PRP Deactivate
Duty Tranfer Function Breakpoints
Dynamic Teeth to Average Enable
Dyno Slew Pot A Failure Time
Dyno Slew Pot A Recovery Time
Dyno Slew Pot A Sample Rate
Dyno Slew Pot A Sensor Curve
Dyno Slew Pot A Sensor Type
Dyno Slew Pot A Software Filter
Dyno Slew Pot A Zero Target
Dyno Slew Pot B Failure Time
Dyno Slew Pot B Recovery Time
Dyno Slew Pot B Sample Rate
Dyno Slew Pot B Sensor Curve
Dyno Slew Pot B Sensor Type
Dyno Slew Pot B Software Filter
Dyno Slew Pot B Zero Target
Dyno Slew Pot C Failure Time


Exploring - Parameters
Dyno Slew Pot C Recovery Time
Dyno Slew Pot C Sample Rate
Dyno Slew Pot C Sensor Curve
Dyno Slew Pot C Sensor Type
Dyno Slew Pot C Software Filter
Dyno Slew Pot C Zero Target
EBC Brake Pressure Breakpoint Size
EBC Brake Pressure Breakpoints
EBC Cal 1 Base Duty
EBC Cal 1 Base Target Negative Slip Percentage
EBC Cal 1 Brake Pressure Threshold
EBC Cal 1 Derivative Breakpoint Size
EBC Cal 1 Derivative Breakpoints
EBC Cal 1 Derivative Delta Time
EBC Cal 1 Derivative Gain
EBC Cal 1 Error Axis Breakpoint Size
EBC Cal 1 Error Axis Breakpoints
EBC Cal 1 Error Limit
EBC Cal 1 Error Time Limit
EBC Cal 1 FBW Exit Rate Limit
EBC Cal 1 Front Brake Pressure Multiplier
EBC Cal 1 Fuel Multiplier
EBC Cal 1 Integral Gain
EBC Cal 1 Integral Maximum
EBC Cal 1 Integral Minimum
EBC Cal 1 Maximum Duty
EBC Cal 1 Maximum Duty Mode
EBC Cal 1 Maximum FBW TPS Request
EBC Cal 1 Minimum Duty
EBC Cal 1 Minimum Duty Mode

Exploring - Parameters

- EBC Cal 1 Proportional Gain
- EBC Cal 1 Rear Brake Pressure Adder
- EBC Cal 1 Rear Brake Pressure Multiplier
- EBC Cal 1 Rear Damper Displacement Multiplier
- EBC Cal 1 Service Time
- EBC Cal 1 Traction Control Pot Multiplier
- EBC Duty Breakpoint Size
- EBC Duty Breakpoints
- EBC Enable
- EBC Fuelling Correction Engine Speed Breakpoint Size
- EBC Fuelling Correction Engine Speed Breakpoints
- EBC Negative Slip Percentage Breakpoint Size
- EBC Negative Slip Percentage Breakpoints
- EBC Output Method
- EBC Rear Damper Breakpoint Size
- EBC Rear Damper Breakpoints
- EBC Vehicle Speed Threshold
- ECP Decimal Places
- ECP Units
- ECT Decimal Places
- ECT High Alarm Threshold
- ECT In Decimal Places
- ECT In Units
- ECT Units
- ECU Errors Alarm Display Text
- ECU Errors Alarm Enable
- ECU License Abort
- ECU License Reset Count
- ECU License Time
- ECU Link Fail Time


Exploring - Parameters
ECU Temperature Zero Target
ECUT Decimal Places
ECUT Units
Edge to start Angle Count on
Edge to stop Angle Count on
Effective Throttle Angle Adder Angle Breakpoints
Effective Throttle Angle Adder Duty Breakpoints
EGCU Ignition Retard
EGCU Ignition Retard Engine Speed Breakpoint Size
EGCU Ignition Retard Engine Speed Breakpoints
EGCU Retard Ramp Out Rate
EGCU Torque Reduction Mode
EGR Valve Delay Time
EGR Valve Frequency
EGR Valve Hold Duty
EGR Valve Maximum On Time
EGR Valve Off f(RPM)
EGR Valve Off f(TPS)
EGR Valve On f(RPM)
EGR Valve On f(TPS)
EGR Valve Open Duty
EGR Valve Open Time
EGR Valve Service Time
Emission Control Enabled
Emission Pump dTPS On Time
Emission Pump dTPS Threshold
Emission Pump On Time f(ECT)
Emission Valve Delay Time
Enable
Enable


Exploring - Parameters
Enable
Enable
Enable
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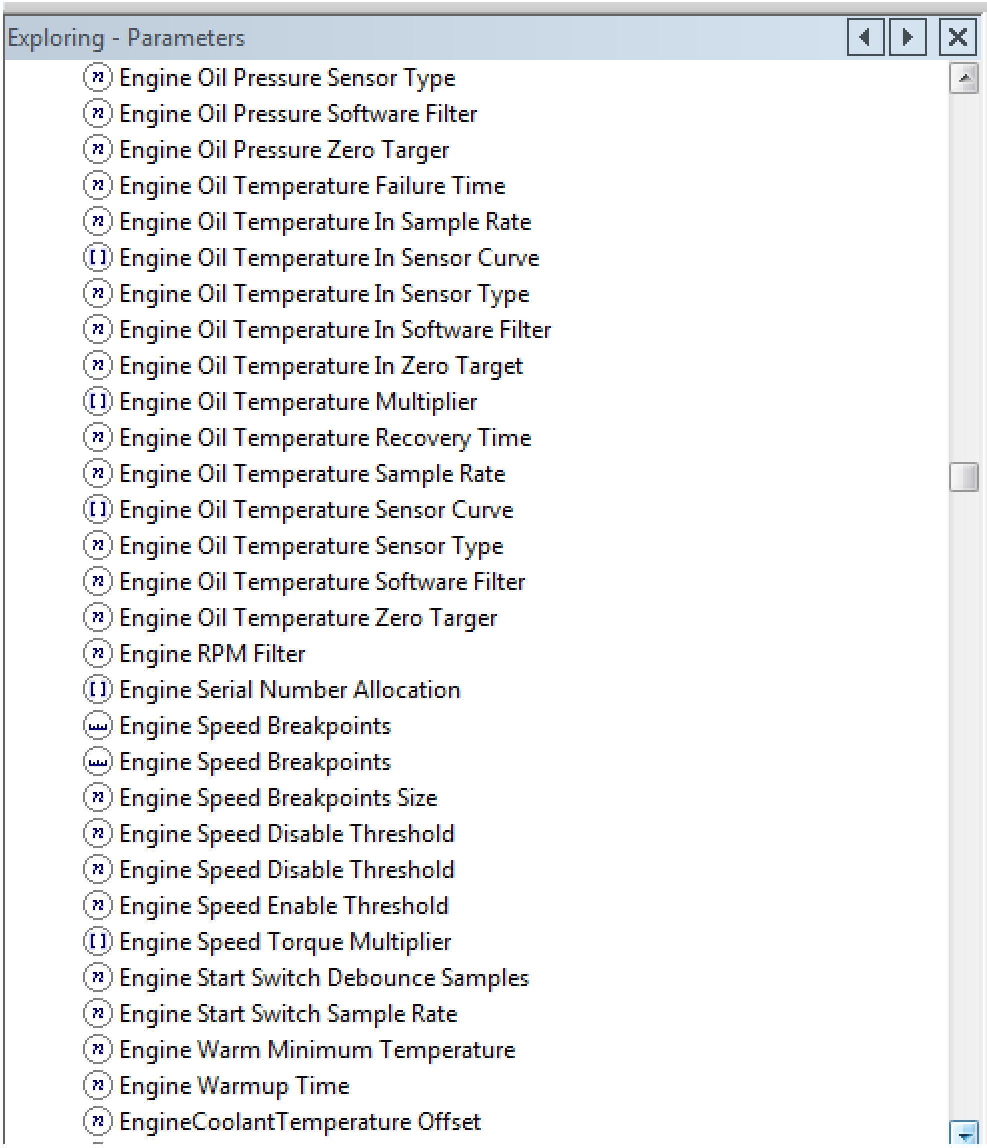
Enable
Enable
Enable
Enable
Enable
Enable Accel Ignition
Enable ALS Control Without Valve
Enable Banked Injection
Enable Blipped Manual DownShift
Enable Boost Adjustment Pot Position From Gear Position
Enable Cal From Gear Position
Enable Calibration Data on Datastreams
Enable Cylinder Fuel Trim
Enable Cylinder Ignition Trim
Enable Derived Wheel Speed
Enable Fuel Map Throttle Multimaps
Enable Fuel Used on Stack Datastreams
Enable Injection Angle Offset
Enable Log Book Clear
Enable Odd Fire
Enable Relative Gear Deltas
Enable Time Based Transients
Enable Time Based Wastegate Control
Enable Variable Cam Target 2
End of Pattern

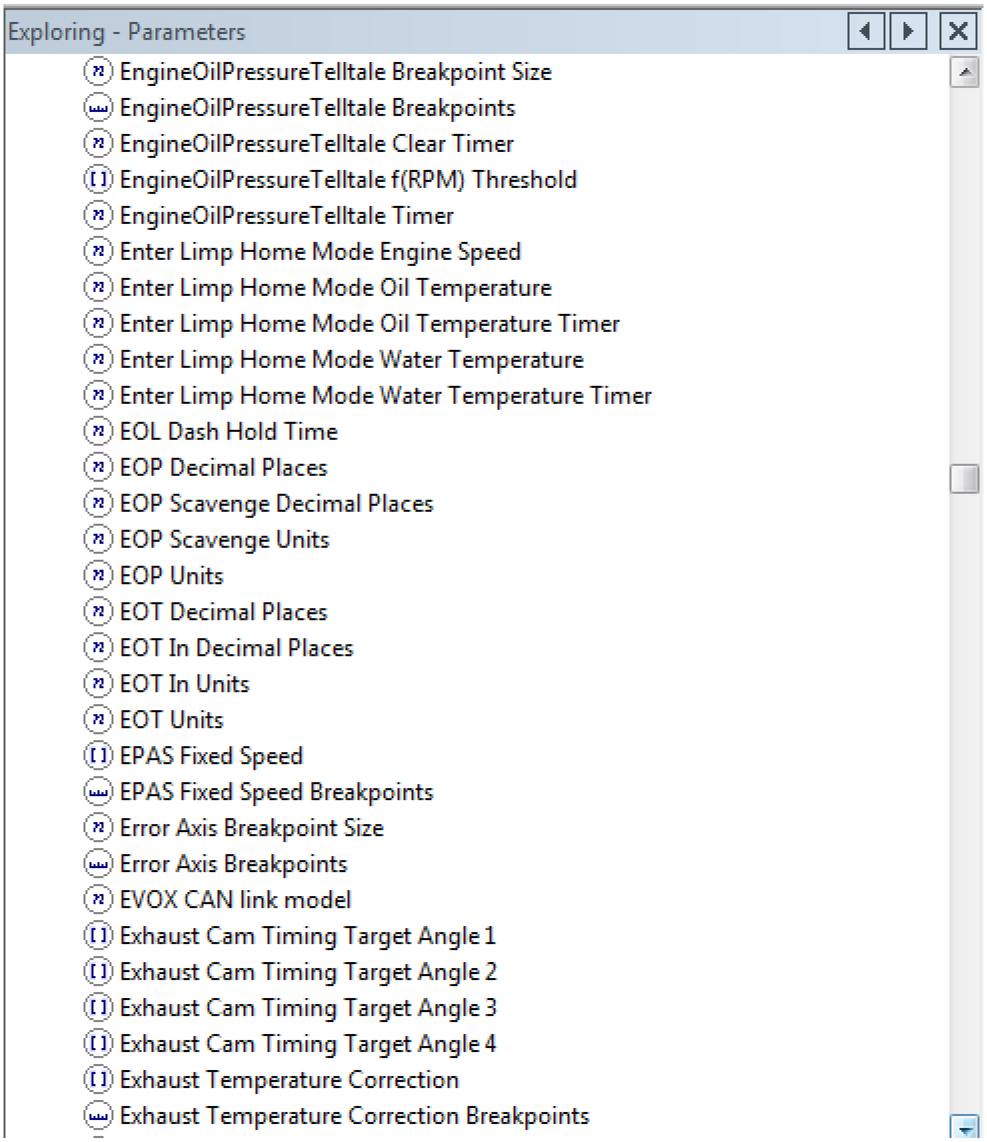
Exploring - Parameters

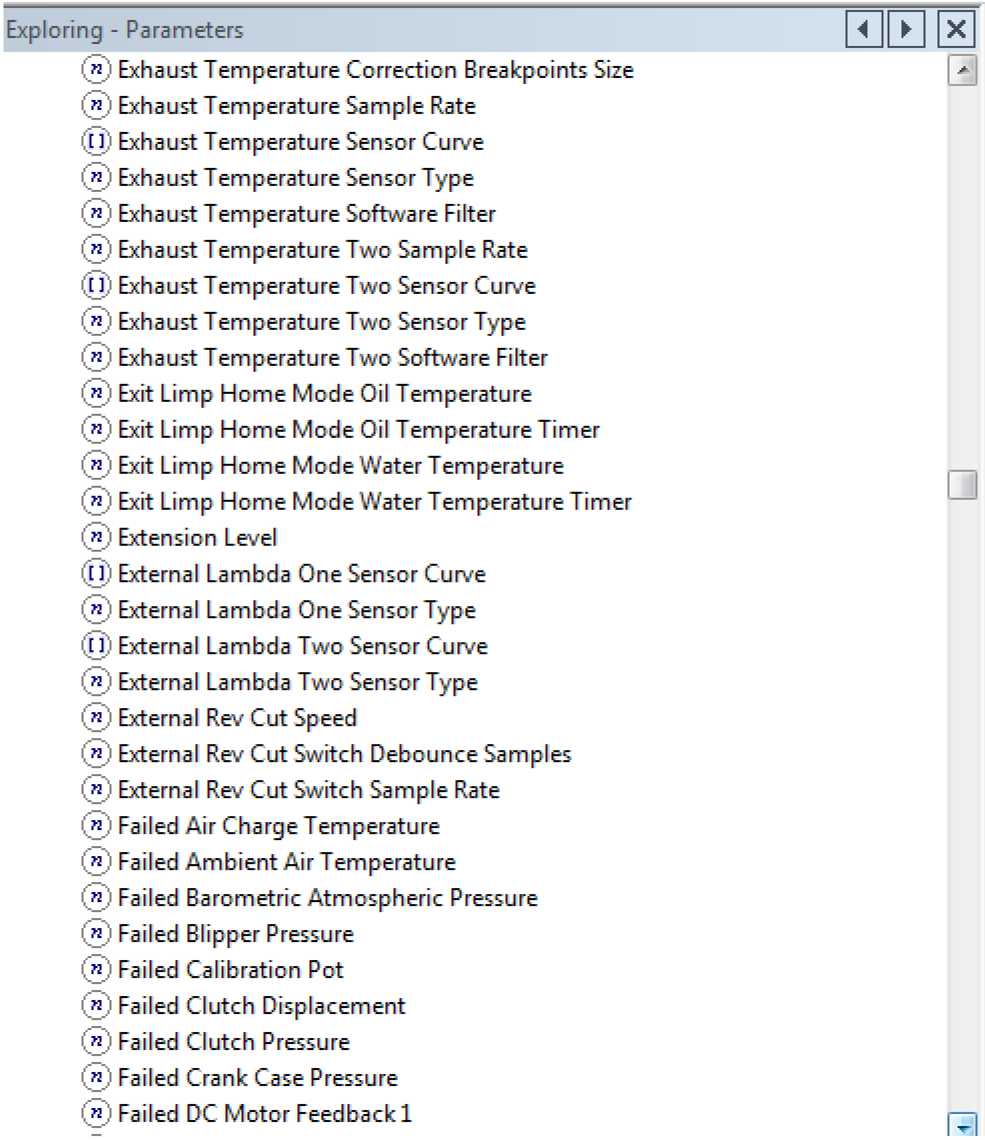
End of Pattern
End of Pattern
End of Pattern
End of Pattern
End of Pattern
End of Pattern
End of Pattern
End of Pattern Pulse Count Value Comparison
End of Pattern Pulse Count Value Comparison
End of Pattern Pulse Count Value Comparison
End of Pattern Pulse Count Value Comparison
End of Pattern Pulse Count Value Comparison
End of Pattern Pulse Count Value Comparison
End of Pattern Pulse Count Value Comparison
End of Pattern Pulse Count Value Comparison
Engine Coolant Temperature Axis Breakpoint Size
Engine Coolant Temperature Axis Breakpoints
Engine Coolant Temperature Disable Threshold
Engine Coolant Temperature Disable Threshold
Engine Coolant Temperature Enable Threshold
Engine Coolant Temperature Failure Time
Engine Coolant Temperature In Sample Rate
Engine Coolant Temperature In Sensor Curve
Engine Coolant Temperature In Sensor Type
Engine Coolant Temperature In Software Filter
Engine Coolant Temperature In Zero Target
Engine Coolant Temperature Multiplier
Engine Coolant Temperature Recovery Time
Engine Coolant Temperature Sample Rate
Engine Coolant Temperature Sensor Curve

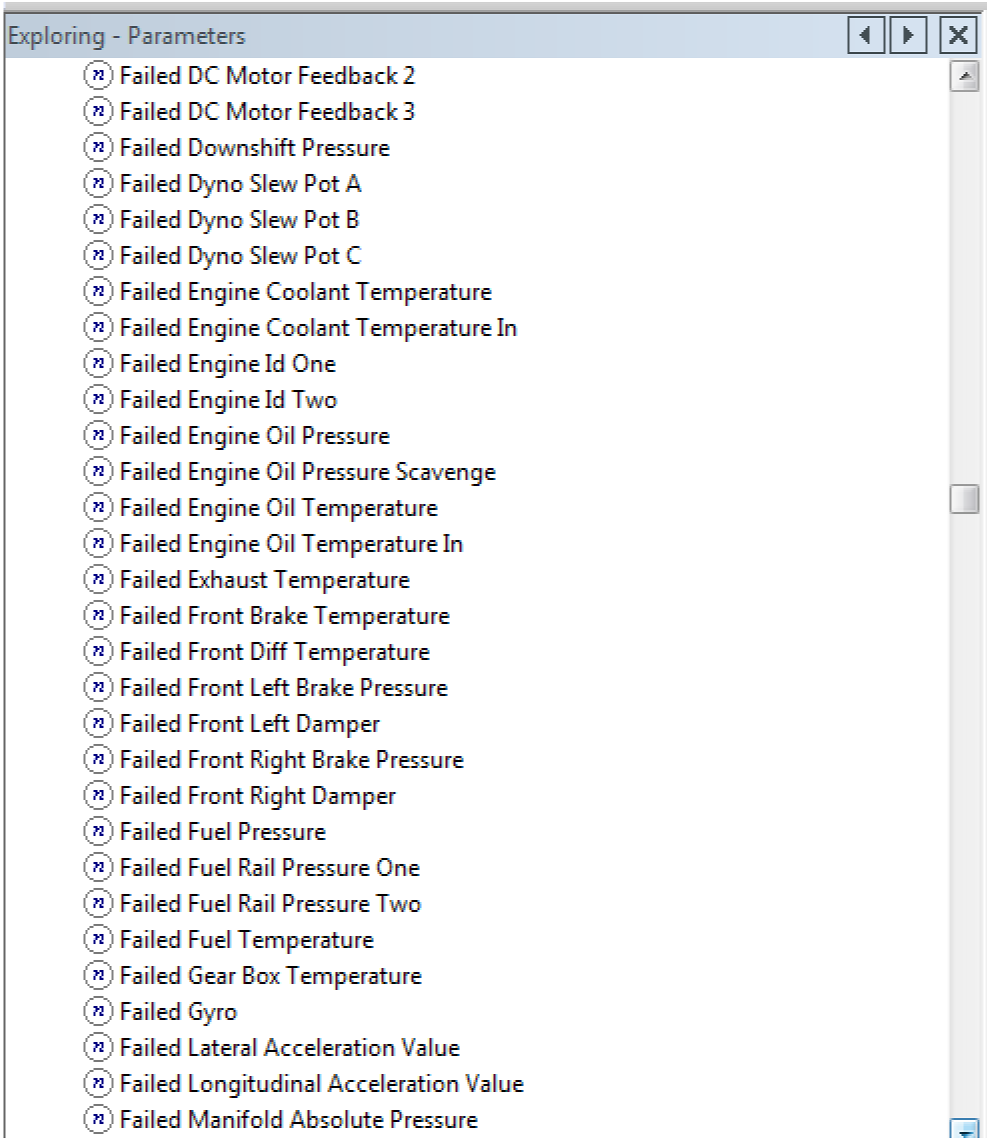
Exploring - Parameters

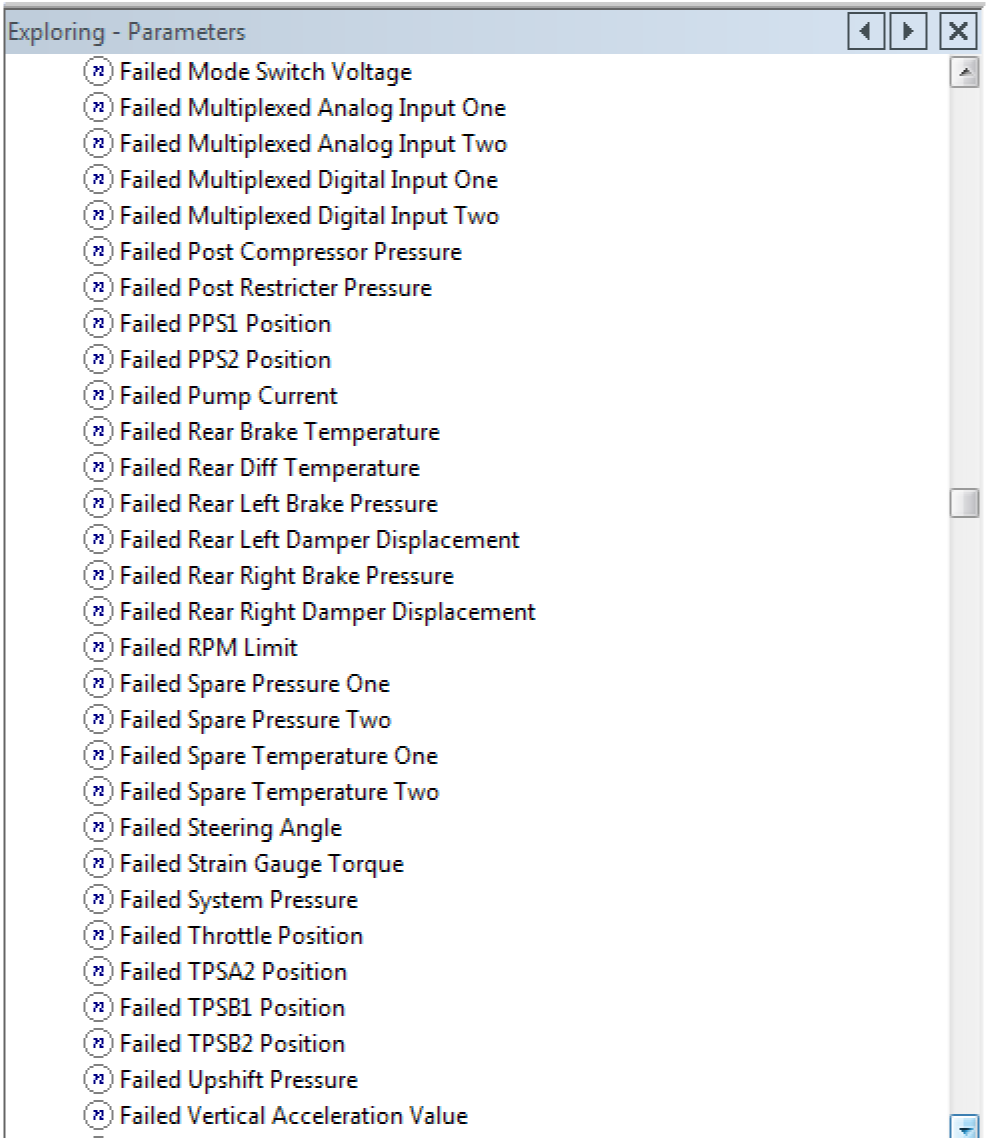
- Engine Coolant Temperature Sensor Type
- Engine Coolant Temperature Software Filter
- Engine Coolant Temperature Zero Target
- Engine Id One Sample Rate
- Engine Id One Sensor Curve
- Engine Id One Sensor Type
- Engine Id One Software Filter
- Engine Id One Voltage Thresholds
- Engine Id One Zero Target
- Engine Id Two Sample Rate
- Engine Id Two Sensor Curve
- Engine Id Two Sensor Type
- Engine Id Two Software Filter
- Engine Id Two Voltage Thresholds
- Engine Id Two Zero Target
- Engine Kill Switch Debounce Samples
- Engine Kill Switch Sample Rate
- Engine Kill Switch Timer
- Engine Mode On CAN Fail
- Engine Monitor Setup
- Engine Oil Pressure Failure Time
- Engine Oil Pressure Multiplier
- Engine Oil Pressure Recovery Time
- Engine Oil Pressure Sample Rate
- Engine Oil Pressure Scavenge Sample Rate
- Engine Oil Pressure Scavenge Sensor Curve
- Engine Oil Pressure Scavenge Sensor Type
- Engine Oil Pressure Scavenge Software Filter
- Engine Oil Pressure Scavenge Zero Target
- Engine Oil Pressure Sensor Curve


Exploring - Parameters
Engine Oil Pressure Sensor Type
Engine Oil Pressure Software Filter
Engine Oil Pressure Zero Targer
Engine Oil Temperature Failure Time
Engine Oil Temperature In Sample Rate
Engine Oil Temperature In Sensor Curve
Engine Oil Temperature In Sensor Type
Engine Oil Temperature In Software Filter
Engine Oil Temperature In Zero Target
Engine Oil Temperature Multiplier
Engine Oil Temperature Recovery Time
Engine Oil Temperature Sample Rate
Engine Oil Temperature Sensor Curve
Engine Oil Temperature Sensor Type
Engine Oil Temperature Software Filter
Engine Oil Temperature Zero Targer
Engine RPM Filter
Engine Serial Number Allocation
Engine Speed Breakpoints
Engine Speed Breakpoints
Engine Speed Breakpoints Size
Engine Speed Disable Threshold
Engine Speed Disable Threshold
Engine Speed Enable Threshold
Engine Speed Torque Multiplier
Engine Start Switch Debounce Samples
Engine Start Switch Sample Rate
Engine Warm Minimum Temperature
Engine Warmup Time
EngineCoolantTemperature Offset


Exploring - Parameters
EngineOilPressureTelltale Breakpoint Size
EngineOilPressureTelltale Breakpoints
EngineOilPressureTelltale Clear Timer
EngineOilPressureTelltale f(RPM) Threshold
EngineOilPressureTelltale Timer
Enter Limp Home Mode Engine Speed
Enter Limp Home Mode Oil Temperature
Enter Limp Home Mode Oil Temperature Timer
Enter Limp Home Mode Water Temperature
Enter Limp Home Mode Water Temperature Timer
EOL Dash Hold Time
EOP Decimal Places
EOP Scavenge Decimal Places
EOP Scavenge Units
EOP Units
EOT Decimal Places
EOT In Decimal Places
EOT In Units
EOT Units
EPAS Fixed Speed
EPAS Fixed Speed Breakpoints
Error Axis Breakpoint Size
Error Axis Breakpoints
EVOX CAN link model
Exhaust Cam Timing Target Angle 1
Exhaust Cam Timing Target Angle 2
Exhaust Cam Timing Target Angle 3
Exhaust Cam Timing Target Angle 4
Exhaust Temperature Correction
Exhaust Temperature Correction Breakpoints

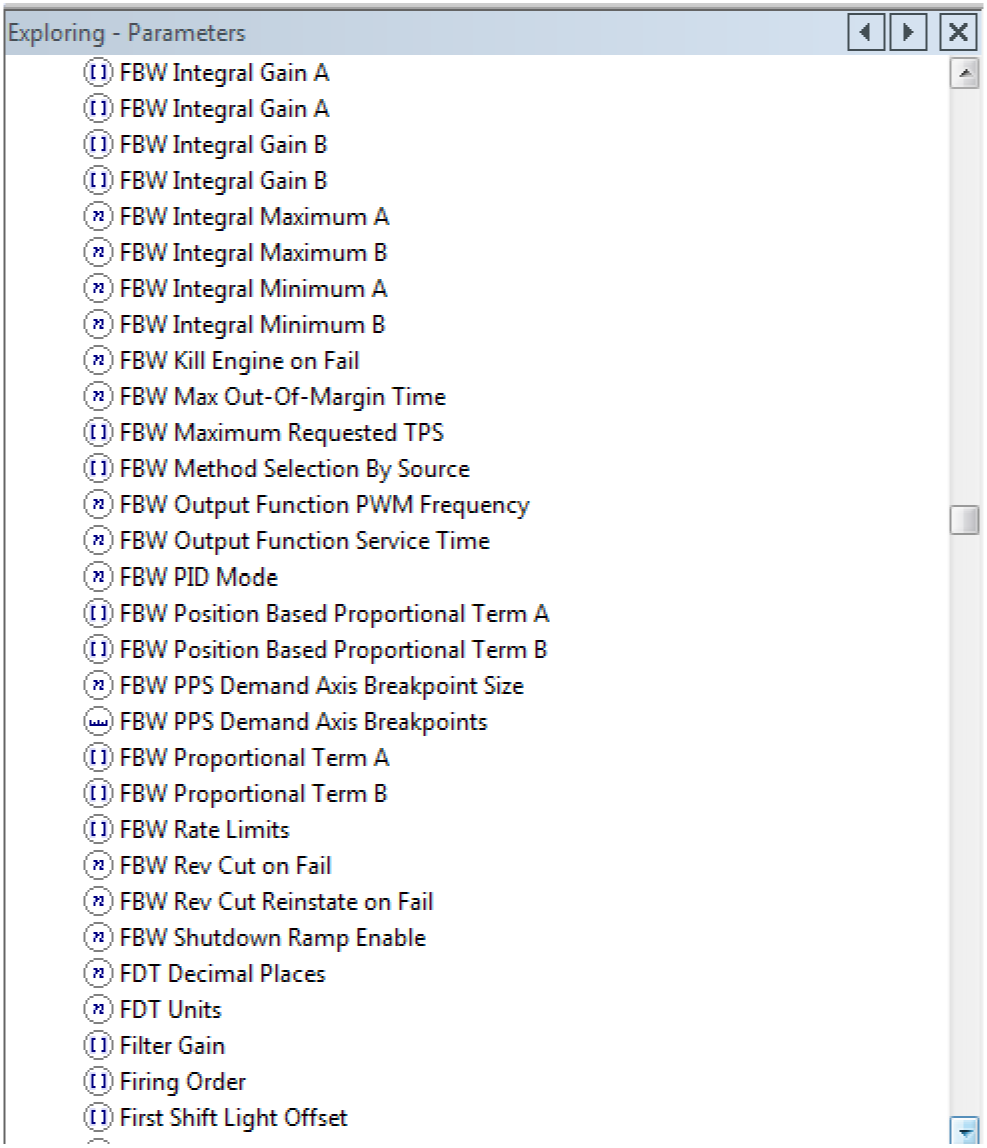

Exploring - Parameters
Exhaust Temperature Correction Breakpoints Size
Exhaust Temperature Sample Rate
Exhaust Temperature Sensor Curve
Exhaust Temperature Sensor Type
Exhaust Temperature Software Filter
Exhaust Temperature Two Sample Rate
Exhaust Temperature Two Sensor Curve
Exhaust Temperature Two Sensor Type
Exhaust Temperature Two Software Filter
Exit Limp Home Mode Oil Temperature
Exit Limp Home Mode Oil Temperature Timer
Exit Limp Home Mode Water Temperature
Exit Limp Home Mode Water Temperature Timer
Extension Level
External Lambda One Sensor Curve
External Lambda One Sensor Type
External Lambda Two Sensor Curve
External Lambda Two Sensor Type
External Rev Cut Speed
External Rev Cut Switch Debounce Samples
External Rev Cut Switch Sample Rate
Failed Air Charge Temperature
Failed Ambient Air Temperature
Failed Barometric Atmospheric Pressure
Failed Blipper Pressure
Failed Calibration Pot
Failed Clutch Displacement
Failed Clutch Pressure
Failed Crank Case Pressure
Failed DC Motor Feedback 1


Exploring - Parameters
Failed DC Motor Feedback 2
Failed DC Motor Feedback 3
Failed Downshift Pressure
Failed Dyno Slew Pot A
Failed Dyno Slew Pot B
Failed Dyno Slew Pot C
Failed Engine Coolant Temperature
Failed Engine Coolant Temperature In
Failed Engine Id One
Failed Engine Id Two
Failed Engine Oil Pressure
Failed Engine Oil Pressure Scavenge
Failed Engine Oil Temperature
Failed Engine Oil Temperature In
Failed Exhaust Temperature
Failed Front Brake Temperature
Failed Front Diff Temperature
Failed Front Left Brake Pressure
Failed Front Left Damper
Failed Front Right Brake Pressure
Failed Front Right Damper
Failed Fuel Pressure
Failed Fuel Rail Pressure One
Failed Fuel Rail Pressure Two
Failed Fuel Temperature
Failed Gear Box Temperature
Failed Gyro
Failed Lateral Acceleration Value
Failed Longitudinal Acceleration Value
Failed Manifold Absolute Pressure


Exploring - Parameters
Failed Mode Switch Voltage
Failed Multiplexed Analog Input One
Failed Multiplexed Analog Input Two
Failed Multiplexed Digital Input One
Failed Multiplexed Digital Input Two
Failed Post Compressor Pressure
Failed Post Restricter Pressure
Failed PPS1 Position
Failed PPS2 Position
Failed Pump Current
Failed Rear Brake Temperature
Failed Rear Diff Temperature
Failed Rear Left Brake Pressure
Failed Rear Left Damper Displacement
Failed Rear Right Brake Pressure
Failed Rear Right Damper Displacement
Failed RPM Limit
Failed Spare Pressure One
Failed Spare Pressure Two
Failed Spare Temperature One
Failed Spare Temperature Two
Failed Steering Angle
Failed Strain Gauge Torque
Failed System Pressure
Failed Throttle Position
Failed TPSA2 Position
Failed TPSB1 Position
Failed TPSB2 Position
Failed Upshift Pressure
Failed Vertical Acceleration Value

Exploring - Parameters

- Failed Wastegate Pressure
- Failed Water Pressure
- Failure Time Fuel Rail Pressure One
- Failure Time Fuel Rail Pressure Two
- Fan Override Debounce Samples
- Fan Override Maximum Time
- Fan Override Stuck Switch Detection Time
- Fan Override Switch Sample Rate
- FBW Control Frequency
- FBW Control Maximum Duty
- FBW Control Minimum Duty
- FBW Control Offset A
- FBW Control Offset B
- FBW Control Throttle Angle Axis Breakpoints
- FBW Control Throttle Angle Axis Size
- FBW Derivative Axis Breakpoint Size
- FBW Derivative Axis Breakpoints
- FBW Derivative Delta Period A
- FBW Derivative Delta Period B
- FBW Derivative Term A
- FBW Derivative Term A
- FBW Derivative Term B
- FBW Derivative Term B
- FBW Enabled
- FBW Engine Speed Axis Breakpoints
- FBW Engine Speed Demand Axis Breakpoint Size
- FBW Engine Stopped Timeout
- FBW Error Axis Breakpoint Size
- FBW Error Axis Breakpoints
- FBW Error Margin

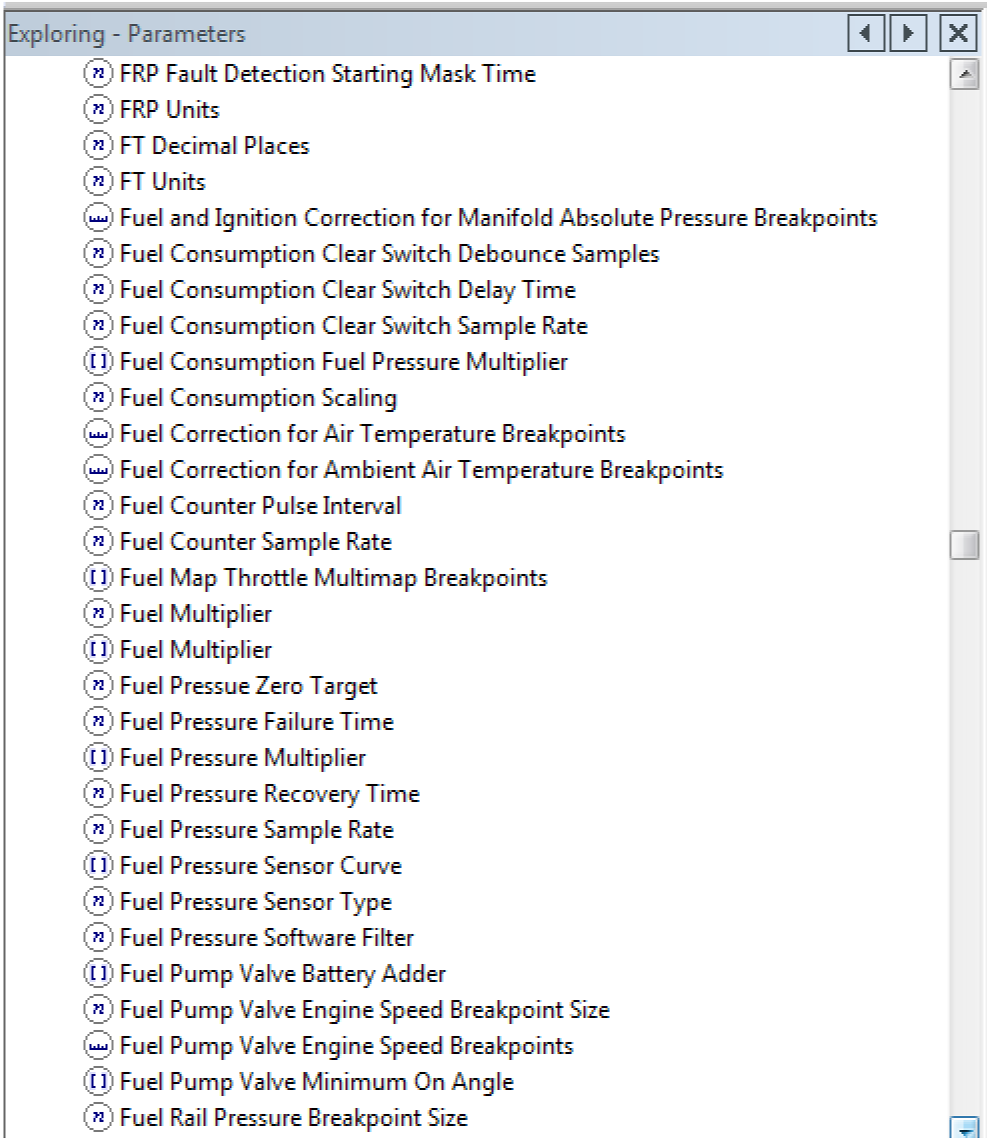

Exploring - Parameters
FBW Integral Gain A
FBW Integral Gain A
FBW Integral Gain B
FBW Integral Gain B
FBW Integral Maximum A
FBW Integral Maximum B
FBW Integral Minimum A
FBW Integral Minimum B
FBW Kill Engine on Fail
FBW Max Out-Of-Margin Time
FBW Maximum Requested TPS
FBW Method Selection By Source
FBW Output Function PWM Frequency
FBW Output Function Service Time
FBW PID Mode
FBW Position Based Proportional Term A
FBW Position Based Proportional Term B
FBW PPS Demand Axis Breakpoint Size
FBW PPS Demand Axis Breakpoints
FBW Proportional Term A
FBW Proportional Term B
FBW Rate Limits
FBW Rev Cut on Fail
FBW Rev Cut Reinstate on Fail
FBW Shutdown Ramp Enable
FDT Decimal Places
FDT Units
Filter Gain
Firing Order
First Shift Light Offset

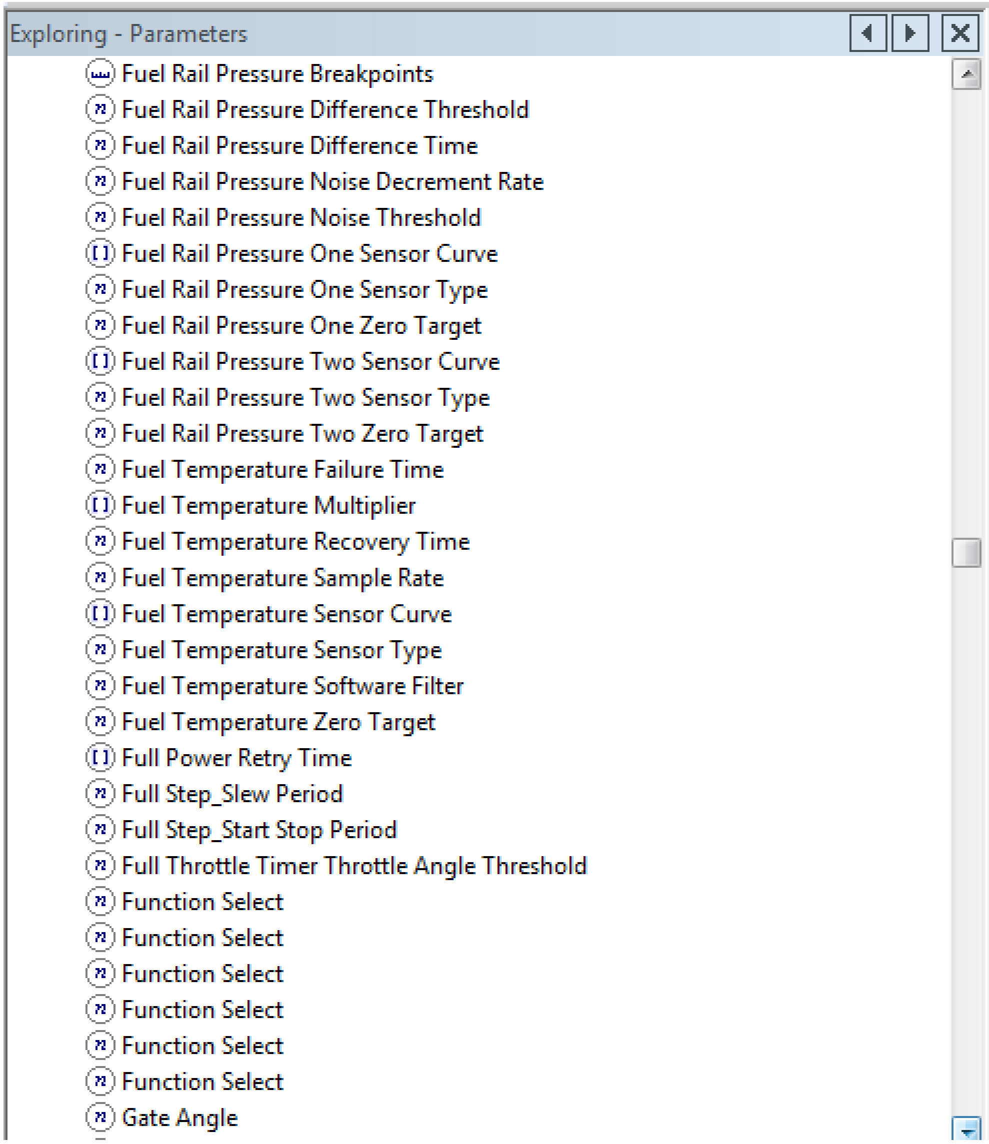
Exploring - Parameters

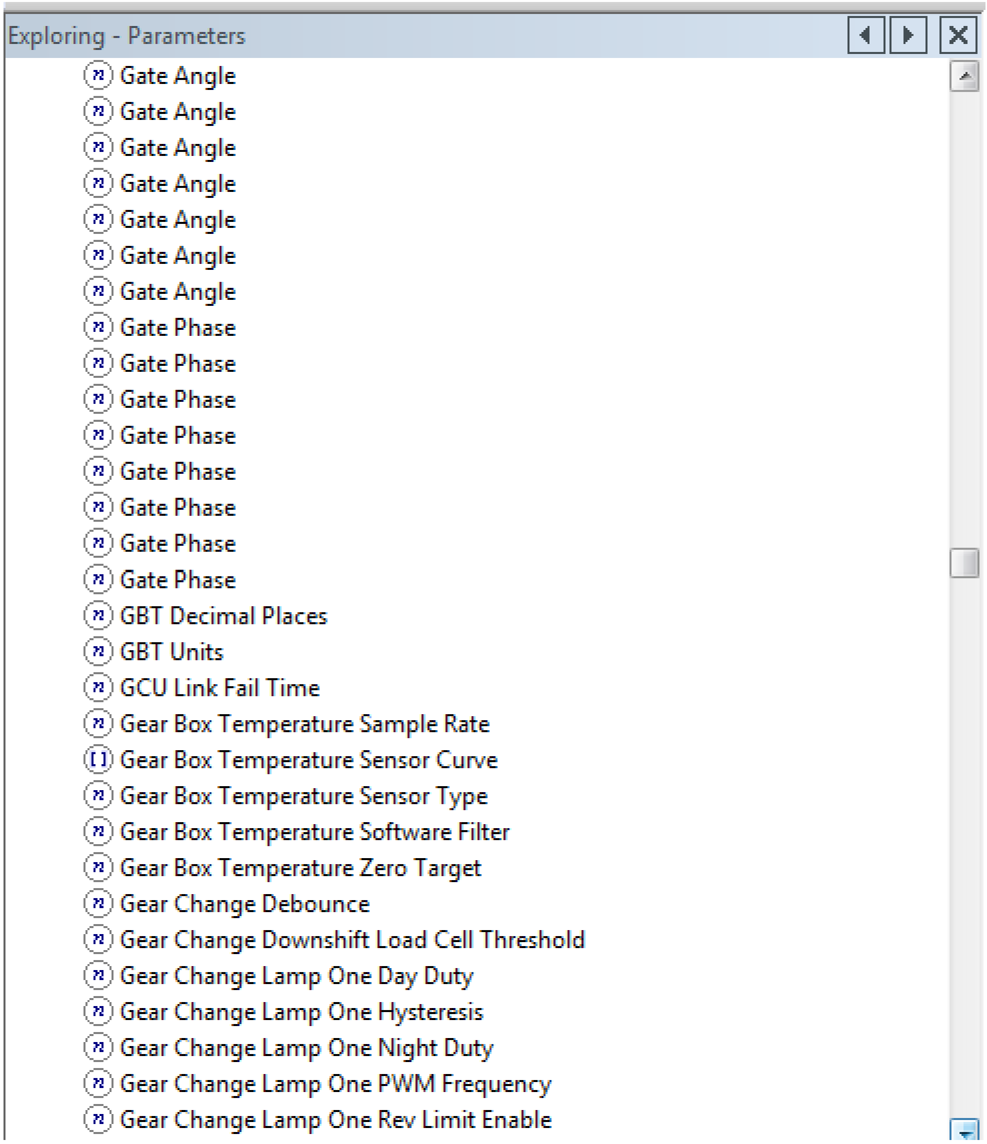
- Foley Maximum Gear Change Time On CAN Fail
- FP Decimal Places
- FP Units
- Frequency
- Frequency Based Variable Inlet Cam Duty Positive
- Frequency Based Variable Inlet Cam Enable
- Front Brake Temperature Sample Rate
- Front Brake Temperature Sensor Curve
- Front Brake Temperature Sensor Type
- Front Brake Temperature Software Filter
- Front Brake Temperature Zero Target
- Front Damper Displacement Decimal Places
- Front Damper Displacement Units
- Front Diff Temperature Sample Rate
- Front Diff Temperature Sensor Curve
- Front Diff Temperature Sensor Type
- Front Diff Temperature Software Filter
- Front Diff Temperature Zero Target
- Front Left Brake Pressure Decimal Places
- Front Left Brake Pressure Sample Rate
- Front Left Brake Pressure Sensor Curve
- Front Left Brake Pressure Sensor Type
- Front Left Brake Pressure Software Filter
- Front Left Brake Pressure Units
- Front Left Brake Pressure Zero Target
- Front Left Damper Displacement Decimal Places
- Front Left Damper Displacement Units
- Front Left Damper Displacement Zero Target
- Front Left Damper Sample Rate
- Front Left Damper Sensor Curve

Exploring - Parameters

- Front Left Damper Sensor Type
- Front Left Damper Software Filter
- Front Left Wheel Speed Sample Rate
- Front Left Wheel Speed Units
- Front Right Brake Pressure Decimal Places
- Front Right Brake Pressure Sample Rate
- Front Right Brake Pressure Sensor Curve
- Front Right Brake Pressure Sensor Type
- Front Right Brake Pressure Software Filter
- Front Right Brake Pressure Units
- Front Right Brake Pressure Zero Target
- Front Right Damper Displacement Decimal Places
- Front Right Damper Displacement Units
- Front Right Damper Displacement Zero Target
- Front Right Damper Sample Rate
- Front Right Damper Sensor Curve
- Front Right Damper Sensor Type
- Front Right Damper Software Filter
- Front Right Wheel Speed Sample Rate
- Front Right Wheel Speed Units
- Front Speed Lean Angle Compensation
- Front Speed Wheel Select
- Front Wheel Number Of Teeth to Average Axis Breakpoints
- Front Wheel Speed Units
- Front Wheels Dynamic Measurement Change Speed
- Front Wheels Number of Teeth
- Front Wheels Number of Teeth to Average
- Front Wheels Outside Diameter A
- Front Wheels Outside Diameter B
- FRP Decimal Places

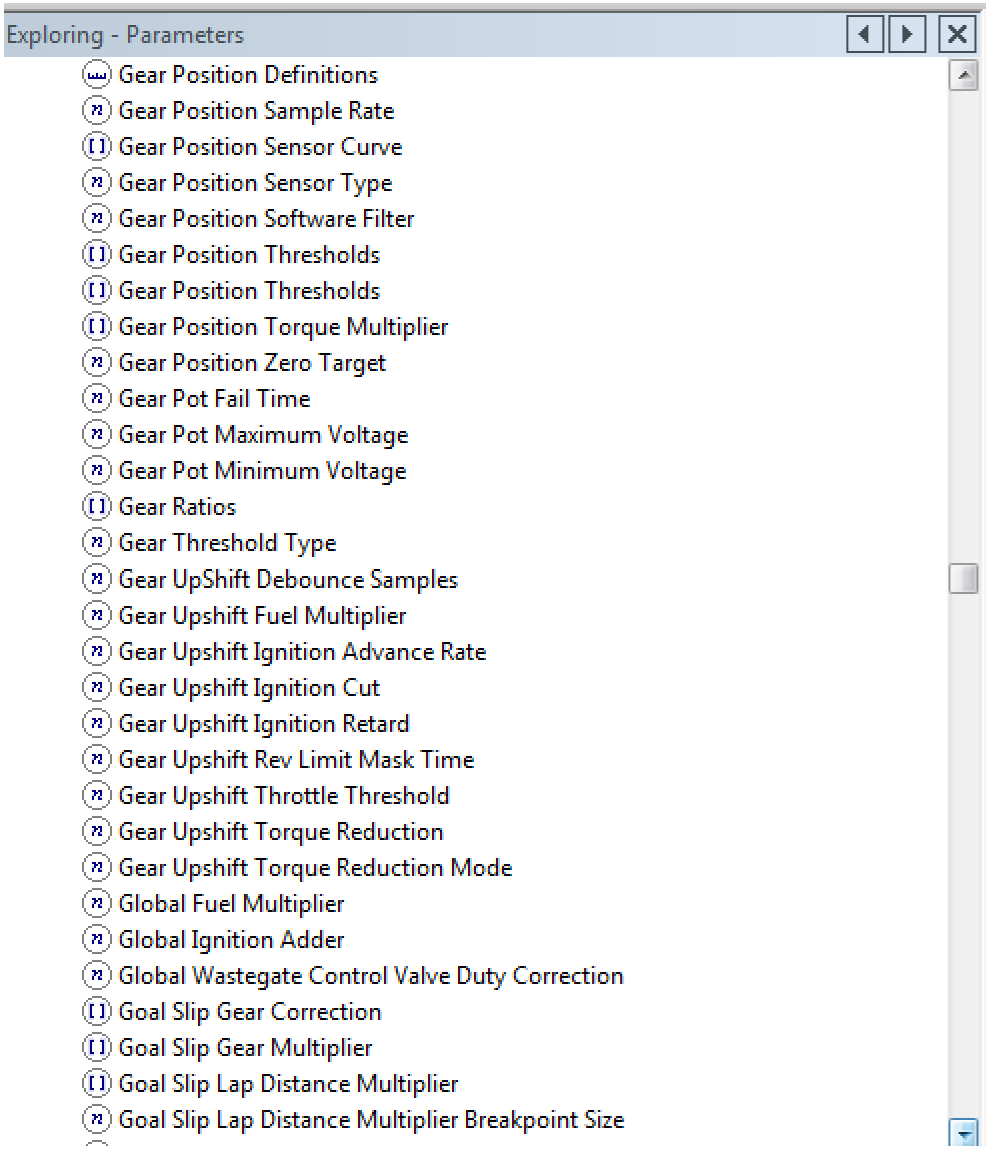

Exploring - Parameters
FRP Fault Detection Starting Mask Time
FRP Units
FT Decimal Places
FT Units
Fuel and Ignition Correction for Manifold Absolute Pressure Breakpoints
Fuel Consumption Clear Switch Debounce Samples
Fuel Consumption Clear Switch Delay Time
Fuel Consumption Clear Switch Sample Rate
Fuel Consumption Fuel Pressure Multiplier
Fuel Consumption Scaling
Fuel Correction for Air Temperature Breakpoints
Fuel Correction for Ambient Air Temperature Breakpoints
Fuel Counter Pulse Interval
Fuel Counter Sample Rate
Fuel Map Throttle Multimap Breakpoints
Fuel Multiplier
Fuel Multiplier
Fuel Pressue Zero Target
Fuel Pressure Failure Time
Fuel Pressure Multiplier
Fuel Pressure Recovery Time
Fuel Pressure Sample Rate
Fuel Pressure Sensor Curve
Fuel Pressure Sensor Type
Fuel Pressure Software Filter
Fuel Pump Valve Battery Adder
Fuel Pump Valve Engine Speed Breakpoint Size
Fuel Pump Valve Engine Speed Breakpoints
Fuel Pump Valve Minimum On Angle
Fuel Rail Pressure Breakpoint Size

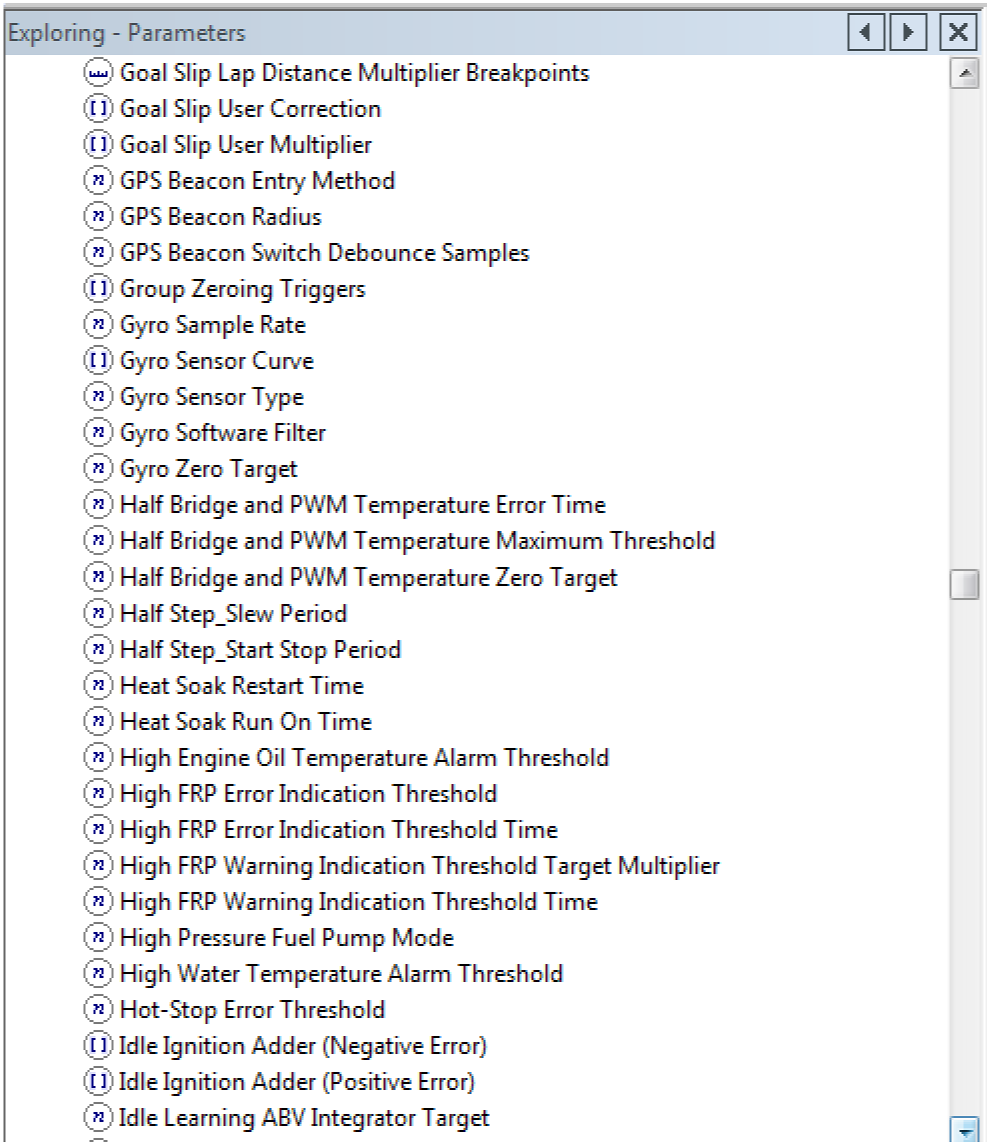

Exploring - Parameters
Fuel Rail Pressure Breakpoints
Fuel Rail Pressure Difference Threshold
Fuel Rail Pressure Difference Time
Fuel Rail Pressure Noise Decrement Rate
Fuel Rail Pressure Noise Threshold
Fuel Rail Pressure One Sensor Curve
Fuel Rail Pressure One Sensor Type
Fuel Rail Pressure One Zero Target
Fuel Rail Pressure Two Sensor Curve
Fuel Rail Pressure Two Sensor Type
Fuel Rail Pressure Two Zero Target
Fuel Temperature Failure Time
Fuel Temperature Multiplier
Fuel Temperature Recovery Time
Fuel Temperature Sample Rate
Fuel Temperature Sensor Curve
Fuel Temperature Sensor Type
Fuel Temperature Software Filter
Fuel Temperature Zero Target
Full Power Retry Time
Full Step_Slew Period
Full Step_Start Stop Period
Full Throttle Timer Throttle Angle Threshold
Function Select
Function Select
Function Select
Function Select
Function Select
Function Select
Gate Angle

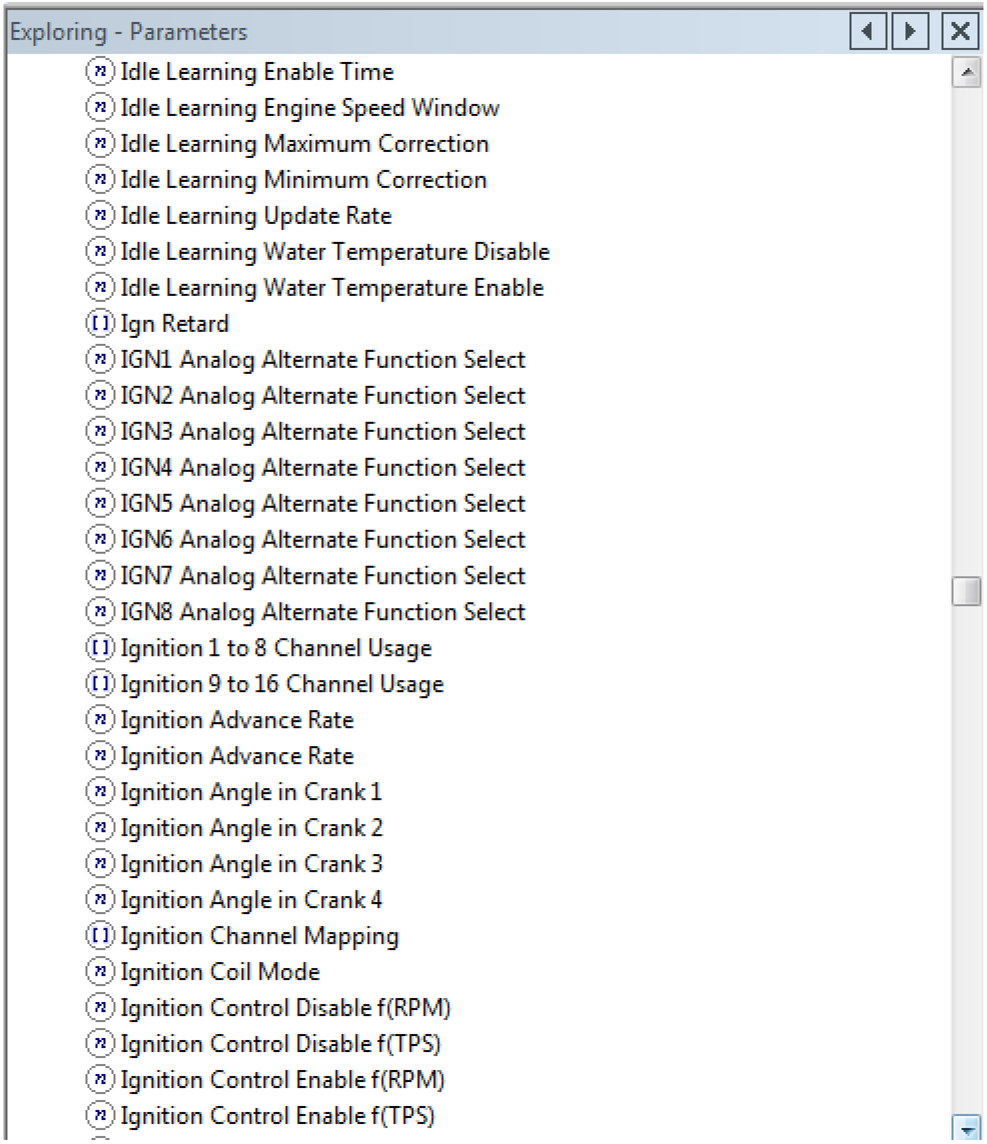

Exploring - Parameters
Gate Angle
Gate Angle
Gate Angle
Gate Angle
Gate Angle
Gate Angle
Gate Angle
Gate Phase
Gate Phase
Gate Phase
Gate Phase
Gate Phase
Gate Phase
Gate Phase
Gate Phase
GBT Decimal Places
GBT Units
GCU Link Fail Time
Gear Box Temperature Sample Rate
Gear Box Temperature Sensor Curve
Gear Box Temperature Sensor Type
Gear Box Temperature Software Filter
Gear Box Temperature Zero Target
Gear Change Debounce
Gear Change Downshift Load Cell Threshold
Gear Change Lamp One Day Duty
Gear Change Lamp One Hysteresis
Gear Change Lamp One Night Duty
Gear Change Lamp One PWM Frequency
Gear Change Lamp One Rev Limit Enable

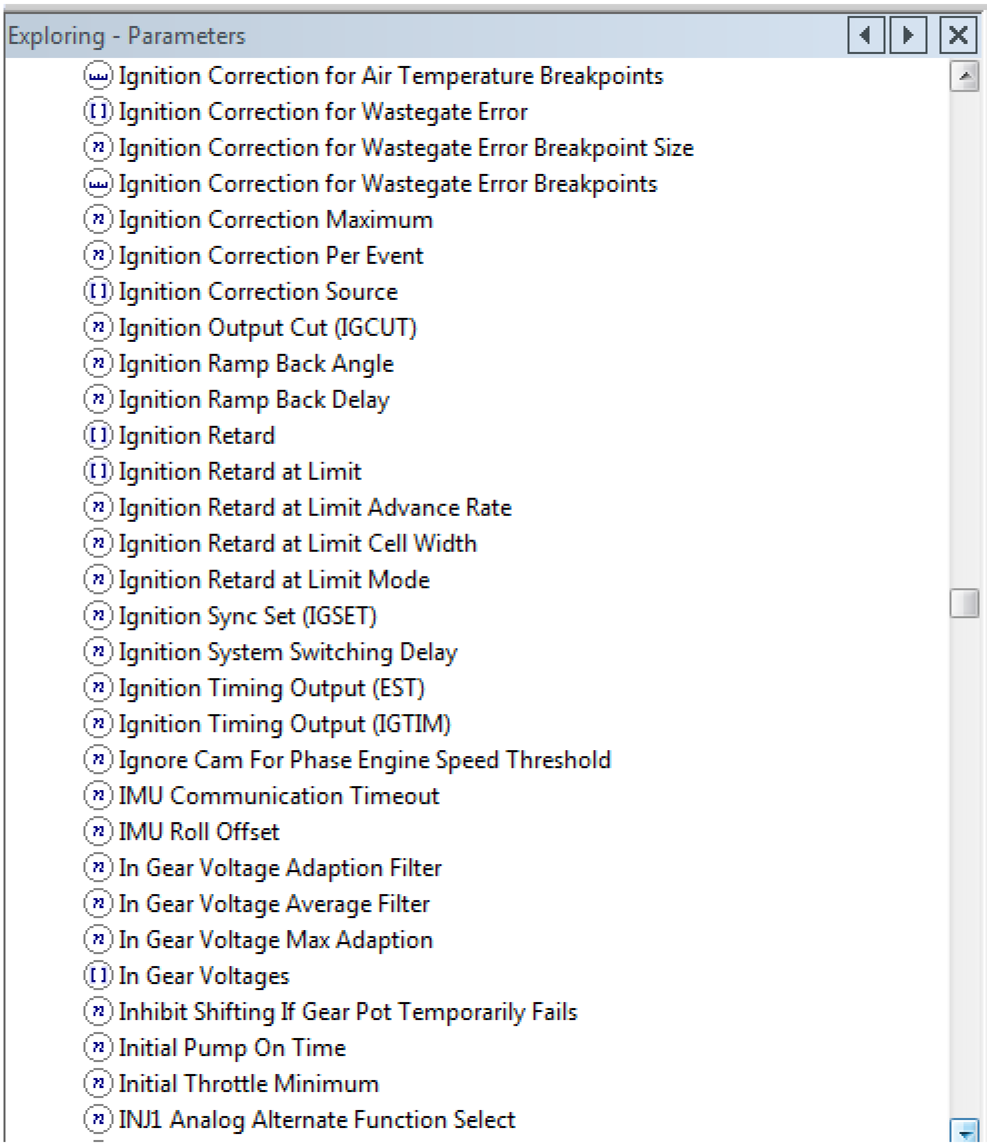
Exploring - Parameters

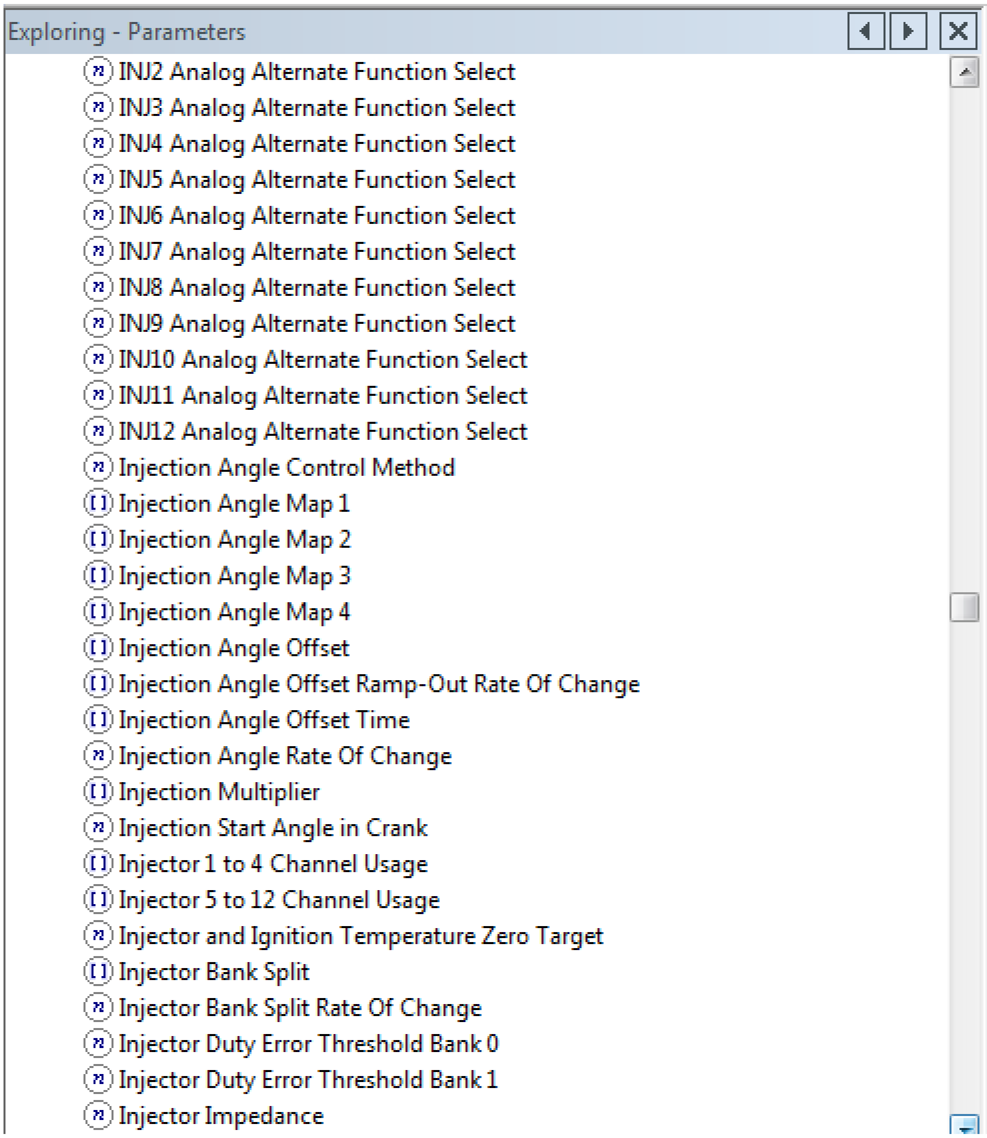
- Gear Change Lamp One Service Time
- Gear Change Lamp One Turn On Speed
- Gear Change Lamp Two Day Duty
- Gear Change Lamp Two Hysteresis
- Gear Change Lamp Two Night Duty
- Gear Change Lamp Two PWM Frequency
- Gear Change Lamp Two Service Time
- Gear Change Lamp Two Turn On Speed
- Gear Change Load Cell Inversion
- Gear Change Mask Enable
- Gear Change Mask Offset Time
- Gear Change One-Shot
- Gear Change Time
- Gear Change Upshift Load Cell Threshold
- Gear Change Wastegate Control Duty
- Gear Change Wastegate Control Duty
- Gear Change Wastegate Control Time
- Gear Change Wastegate Control Time
- Gear Cut Abort Time
- Gear Cut Load Cell Sample Rate
- Gear Cut Load Cell Sensor Curve
- Gear Cut Load Cell Sensor Type
- Gear Cut Load Cell Software Filter
- Gear Cut Load Cell Zero Target
- Gear Cut Time Engine Speed Axis Breakpoints
- Gear Cut Time Engine Speed Axis Size
- Gear Delta Offset
- Gear DownShift Debounce Samples
- Gear Group 1 Fly-by-Wire Throttle Blip Demand
- Gear Group 2 Fly-by-Wire Throttle Blip Demand

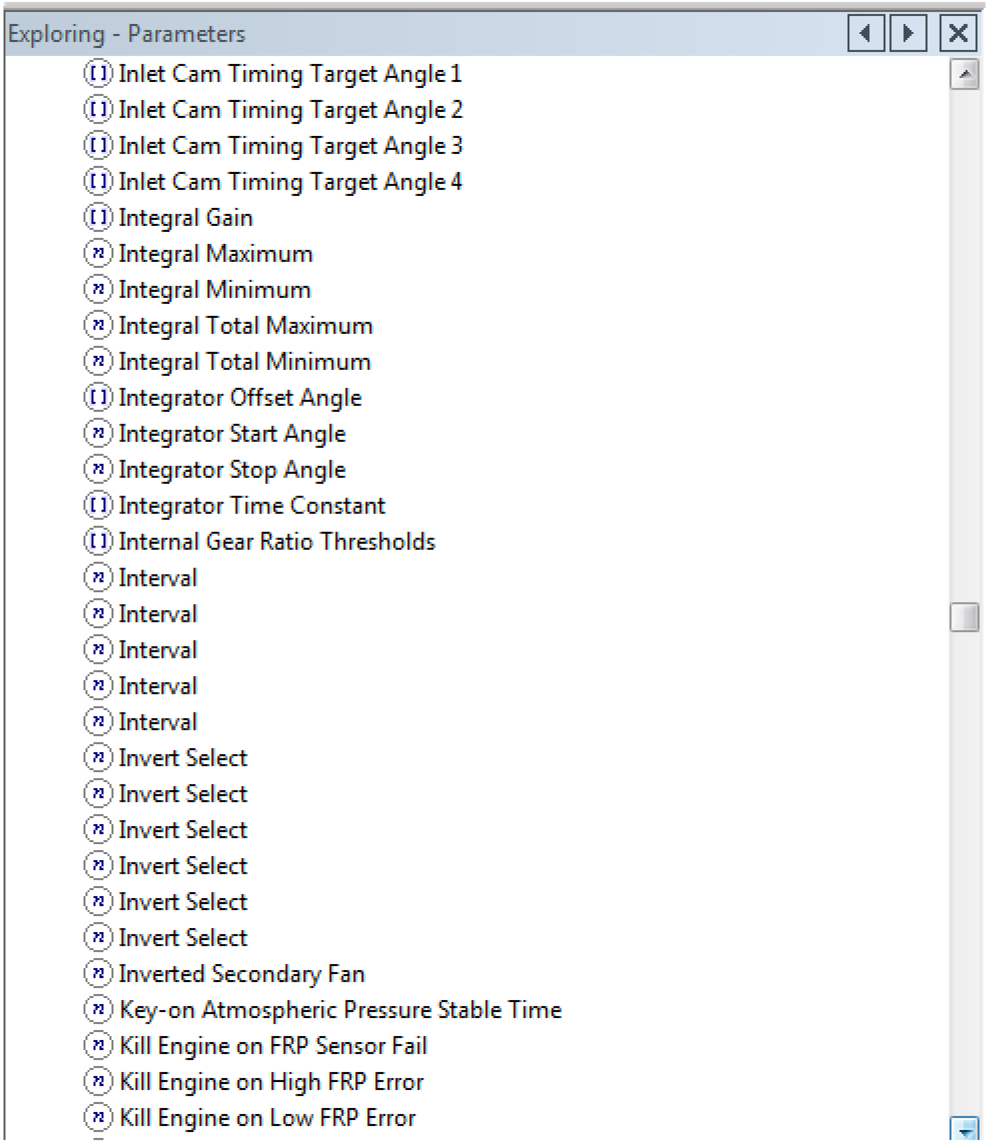

Exploring - Parameters
Gear Position Definitions
Gear Position Sample Rate
Gear Position Sensor Curve
Gear Position Sensor Type
Gear Position Software Filter
Gear Position Thresholds
Gear Position Thresholds
Gear Position Torque Multiplier
Gear Position Zero Target
Gear Pot Fail Time
Gear Pot Maximum Voltage
Gear Pot Minimum Voltage
Gear Ratios
Gear Threshold Type
Gear UpShift Debounce Samples
Gear Upshift Fuel Multiplier
Gear Upshift Ignition Advance Rate
Gear Upshift Ignition Cut
Gear Upshift Ignition Retard
Gear Upshift Rev Limit Mask Time
Gear Upshift Throttle Threshold
Gear Upshift Torque Reduction
Gear Upshift Torque Reduction Mode
Global Fuel Multiplier
Global Ignition Adder
Global Wastegate Control Valve Duty Correction
Goal Slip Gear Correction
Goal Slip Gear Multiplier
Goal Slip Lap Distance Multiplier
Goal Slip Lap Distance Multiplier Breakpoint Size

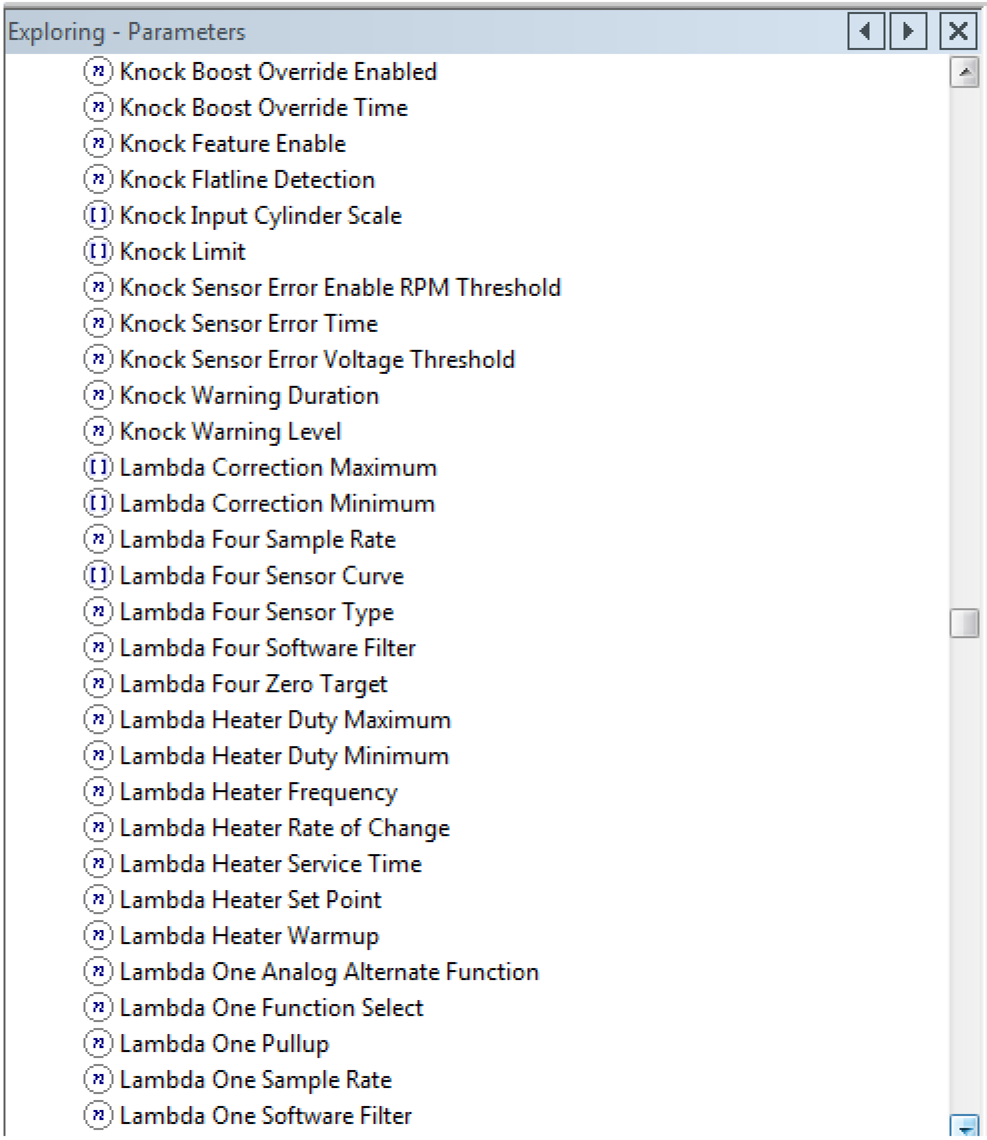

Exploring - Parameters
Goal Slip Lap Distance Multiplier Breakpoints
Goal Slip User Correction
Goal Slip User Multiplier
GPS Beacon Entry Method
GPS Beacon Radius
GPS Beacon Switch Debounce Samples
Group Zeroing Triggers
Gyro Sample Rate
Gyro Sensor Curve
Gyro Sensor Type
Gyro Software Filter
Gyro Zero Target
Half Bridge and PWM Temperature Error Time
Half Bridge and PWM Temperature Maximum Threshold
Half Bridge and PWM Temperature Zero Target
Half Step_Slew Period
Half Step_Start Stop Period
Heat Soak Restart Time
Heat Soak Run On Time
High Engine Oil Temperature Alarm Threshold
High FRP Error Indication Threshold
High FRP Error Indication Threshold Time
High FRP Warning Indication Threshold Target Multiplier
High FRP Warning Indication Threshold Time
High Pressure Fuel Pump Mode
High Water Temperature Alarm Threshold
Hot-Stop Error Threshold
Idle Ignition Adder (Negative Error)
Idle Ignition Adder (Positive Error)
Idle Learning ABV Integrator Target

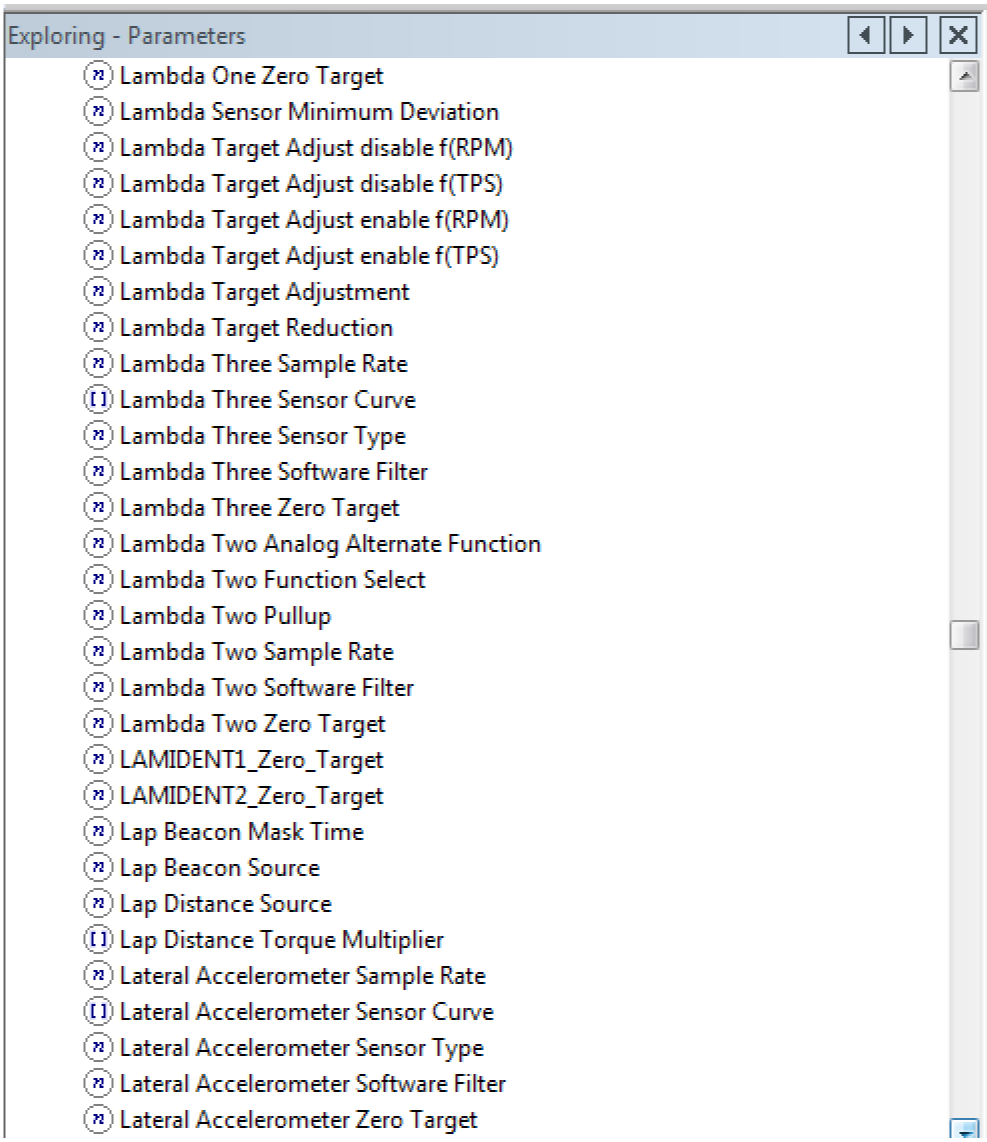

Exploring - Parameters
Idle Learning Enable Time
Idle Learning Engine Speed Window
Idle Learning Maximum Correction
Idle Learning Minimum Correction
Idle Learning Update Rate
Idle Learning Water Temperature Disable
Idle Learning Water Temperature Enable
Ign Retard
IGN1 Analog Alternate Function Select
IGN2 Analog Alternate Function Select
IGN3 Analog Alternate Function Select
IGN4 Analog Alternate Function Select
IGN5 Analog Alternate Function Select
IGN6 Analog Alternate Function Select
IGN7 Analog Alternate Function Select
IGN8 Analog Alternate Function Select
Ignition 1 to 8 Channel Usage
Ignition 9 to 16 Channel Usage
Ignition Advance Rate
Ignition Advance Rate
Ignition Angle in Crank 1
Ignition Angle in Crank 2
Ignition Angle in Crank 3
Ignition Angle in Crank 4
Ignition Channel Mapping
Ignition Coil Mode
Ignition Control Disable f(RPM)
Ignition Control Disable f(TPS)
Ignition Control Enable f(RPM)
Ignition Control Enable f(TPS)

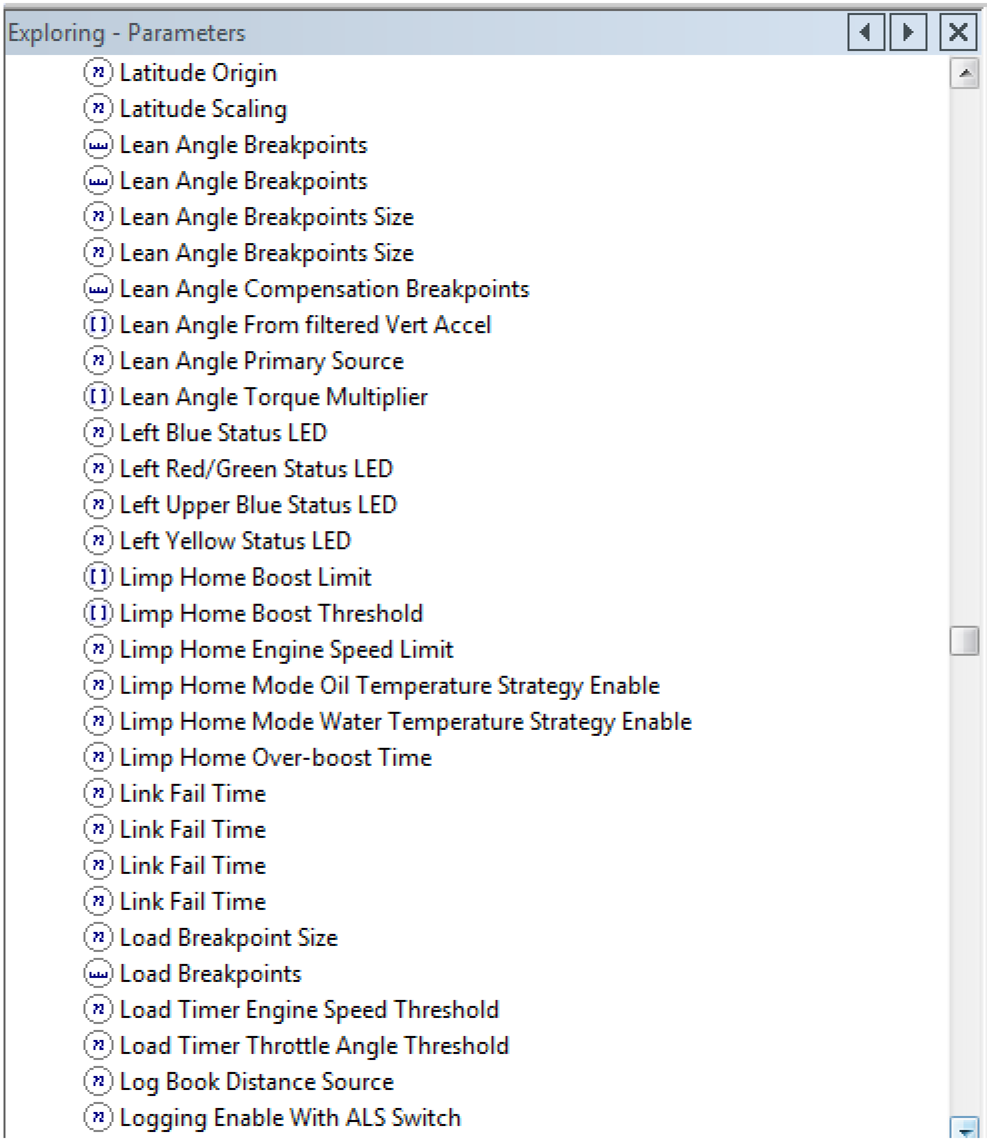

Exploring - Parameters
Ignition Correction for Air Temperature Breakpoints
Ignition Correction for Wastegate Error
Ignition Correction for Wastegate Error Breakpoint Size
Ignition Correction for Wastegate Error Breakpoints
Ignition Correction Maximum
Ignition Correction Per Event
Ignition Correction Source
Ignition Output Cut (IGCUT)
Ignition Ramp Back Angle
Ignition Ramp Back Delay
Ignition Retard
Ignition Retard at Limit
Ignition Retard at Limit Advance Rate
Ignition Retard at Limit Cell Width
Ignition Retard at Limit Mode
Ignition Sync Set (IGSET)
Ignition System Switching Delay
Ignition Timing Output (EST)
Ignition Timing Output (IGTIM)
Ignore Cam For Phase Engine Speed Threshold
IMU Communication Timeout
IMU Roll Offset
In Gear Voltage Adaption Filter
In Gear Voltage Average Filter
In Gear Voltage Max Adaption
In Gear Voltages
Inhibit Shifting If Gear Pot Temporarily Fails
Initial Pump On Time
Initial Throttle Minimum
INJ1 Analog Alternate Function Select

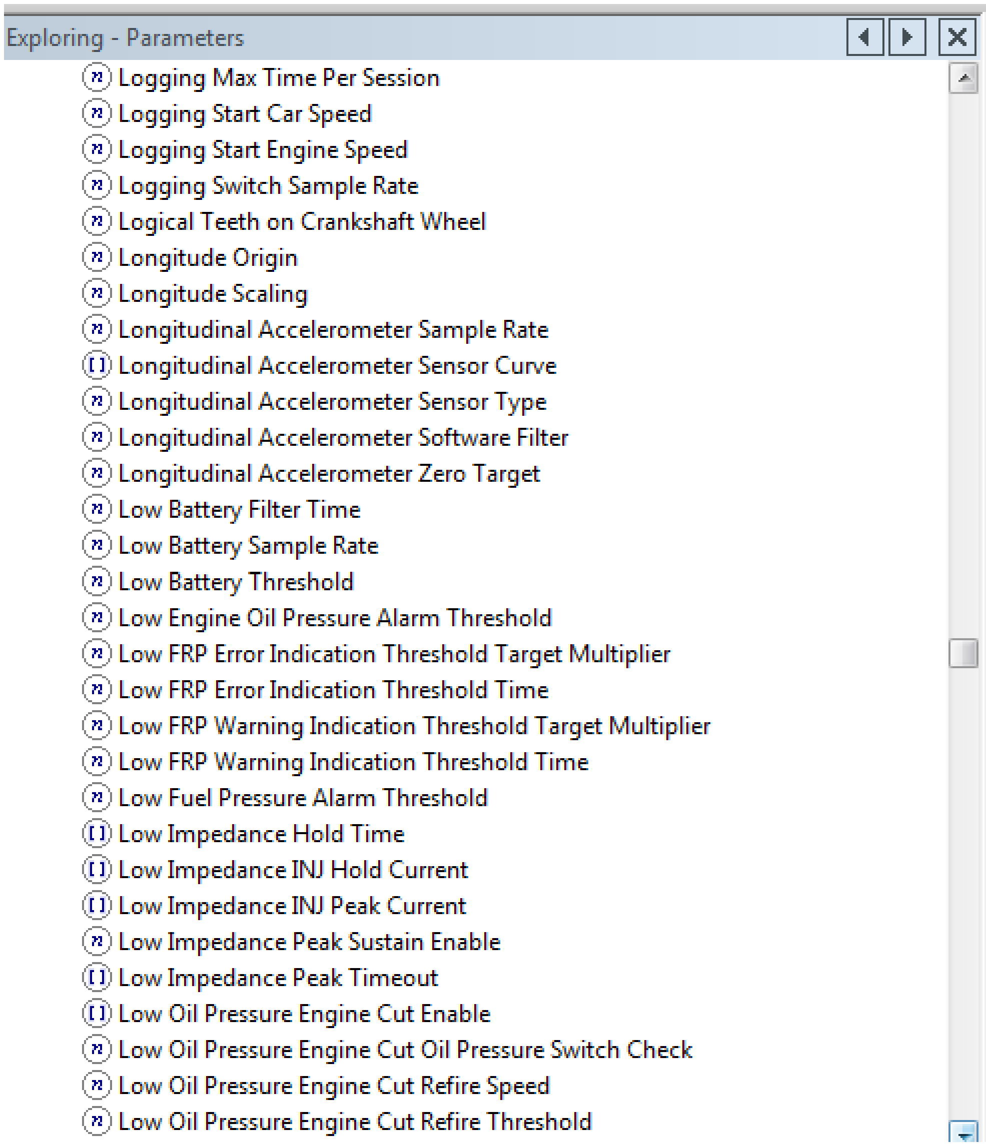

Exploring - Parameters
INJ2 Analog Alternate Function Select
INJ3 Analog Alternate Function Select
INJ4 Analog Alternate Function Select
INJ5 Analog Alternate Function Select
INJ6 Analog Alternate Function Select
INJ7 Analog Alternate Function Select
INJ8 Analog Alternate Function Select
INJ9 Analog Alternate Function Select
INJ10 Analog Alternate Function Select
INJ11 Analog Alternate Function Select
INJ12 Analog Alternate Function Select
Injection Angle Control Method
Injection Angle Map 1
Injection Angle Map 2
Injection Angle Map 3
Injection Angle Map 4
Injection Angle Offset
Injection Angle Offset Ramp-Out Rate Of Change
Injection Angle Offset Time
Injection Angle Rate Of Change
Injection Multiplier
Injection Start Angle in Crank
Injector 1 to 4 Channel Usage
Injector 5 to 12 Channel Usage
Injector and Ignition Temperature Zero Target
Injector Bank Split
Injector Bank Split Rate Of Change
Injector Duty Error Threshold Bank 0
Injector Duty Error Threshold Bank 1
Injector Impedance

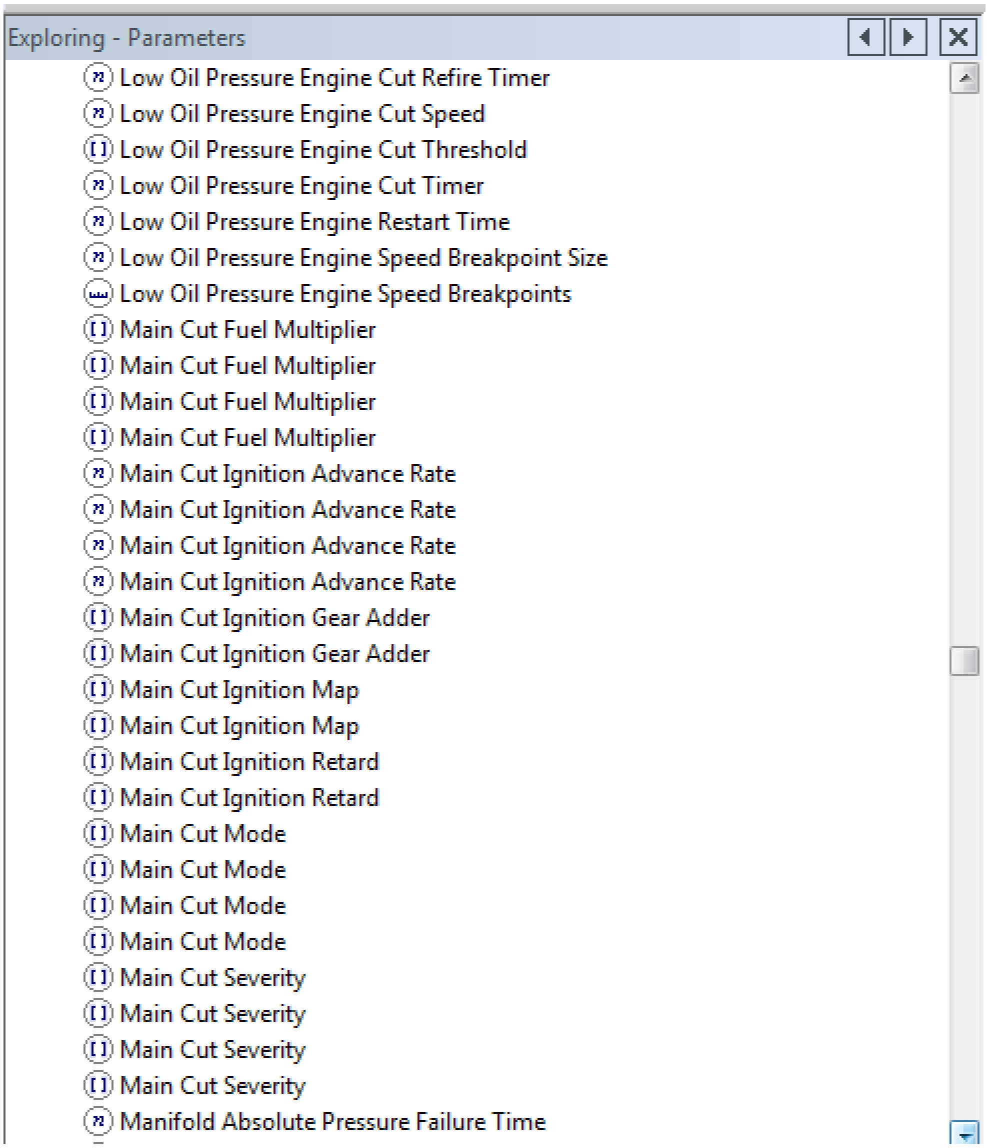

Exploring - Parameters
Inlet Cam Timing Target Angle 1
Inlet Cam Timing Target Angle 2
Inlet Cam Timing Target Angle 3
Inlet Cam Timing Target Angle 4
Integral Gain
Integral Maximum
Integral Minimum
Integral Total Maximum
Integral Total Minimum
Integrator Offset Angle
Integrator Start Angle
Integrator Stop Angle
Integrator Time Constant
Internal Gear Ratio Thresholds
Interval
Interval
Interval
Interval
Interval
Invert Select
Invert Select
Invert Select
Invert Select
Invert Select
Invert Select
Inverted Secondary Fan
Key-on Atmospheric Pressure Stable Time
Kill Engine on FRP Sensor Fail
Kill Engine on High FRP Error
Kill Engine on Low FRP Error

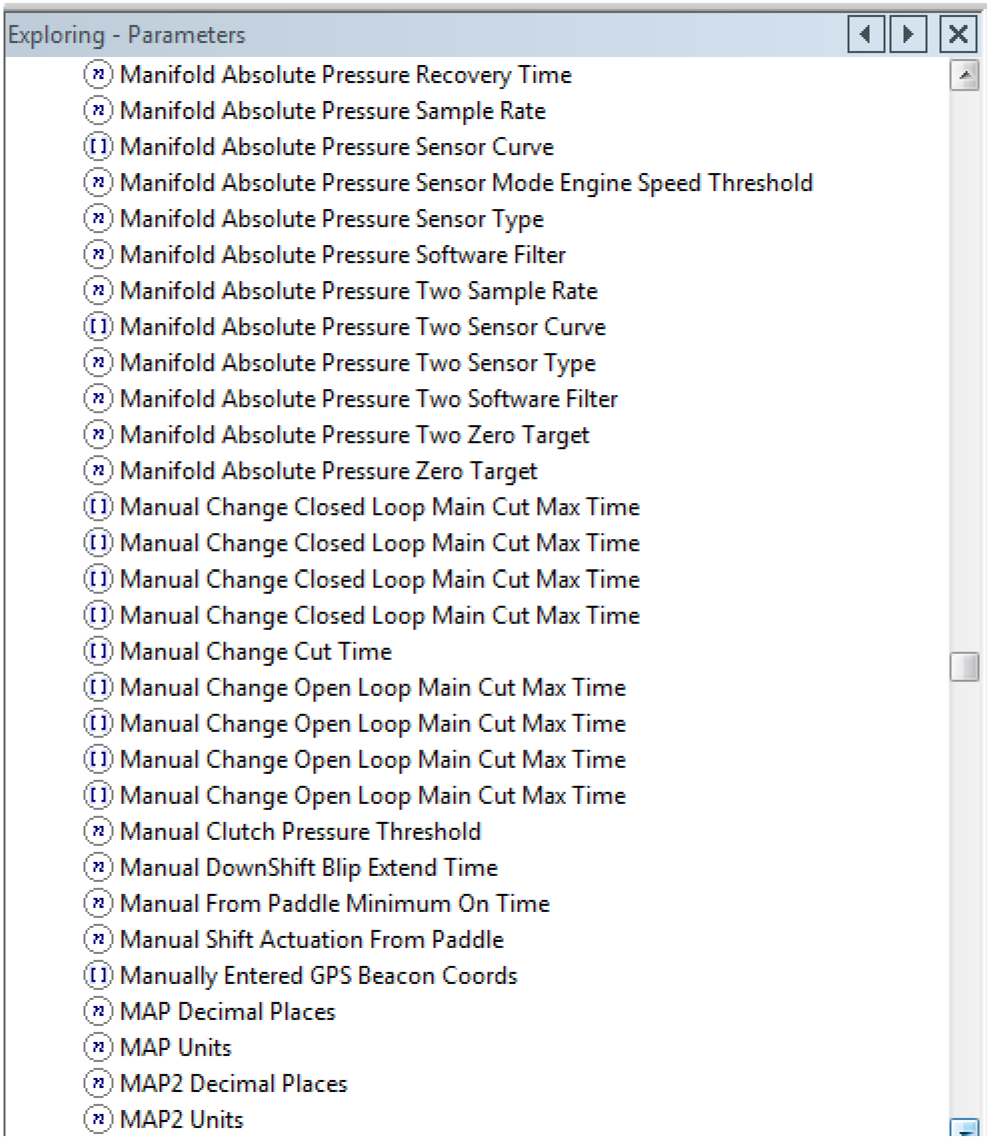

Exploring - Parameters
Knock Boost Override Enabled
Knock Boost Override Time
Knock Feature Enable
Knock Flatline Detection
Knock Input Cylinder Scale
Knock Limit
Knock Sensor Error Enable RPM Threshold
Knock Sensor Error Time
Knock Sensor Error Voltage Threshold
Knock Warning Duration
Knock Warning Level
Lambda Correction Maximum
Lambda Correction Minimum
Lambda Four Sample Rate
Lambda Four Sensor Curve
Lambda Four Sensor Type
Lambda Four Software Filter
Lambda Four Zero Target
Lambda Heater Duty Maximum
Lambda Heater Duty Minimum
Lambda Heater Frequency
Lambda Heater Rate of Change
Lambda Heater Service Time
Lambda Heater Set Point
Lambda Heater Warmup
Lambda One Analog Alternate Function
Lambda One Function Select
Lambda One Pullup
Lambda One Sample Rate
Lambda One Software Filter

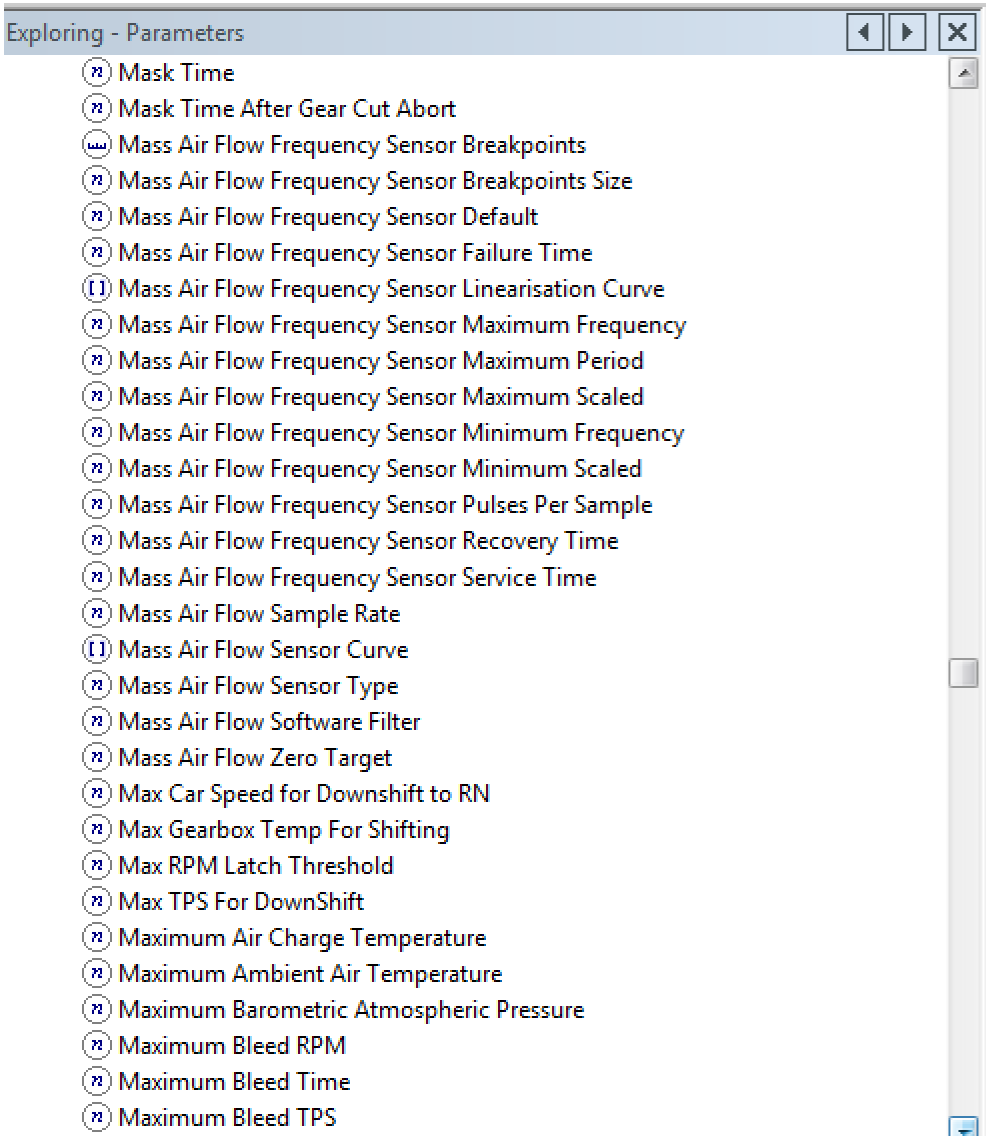

Exploring - Parameters
Lambda One Zero Target
Lambda Sensor Minimum Deviation
Lambda Target Adjust disable f(RPM)
Lambda Target Adjust disable f(TPS)
Lambda Target Adjust enable f(RPM)
Lambda Target Adjust enable f(TPS)
Lambda Target Adjustment
Lambda Target Reduction
Lambda Three Sample Rate
Lambda Three Sensor Curve
Lambda Three Sensor Type
Lambda Three Software Filter
Lambda Three Zero Target
Lambda Two Analog Alternate Function
Lambda Two Function Select
Lambda Two Pullup
Lambda Two Sample Rate
Lambda Two Software Filter
Lambda Two Zero Target
LAMIDENT1_Zero_Target
LAMIDENT2_Zero_Target
Lap Beacon Mask Time
Lap Beacon Source
Lap Distance Source
Lap Distance Torque Multiplier
Lateral Accelerometer Sample Rate
Lateral Accelerometer Sensor Curve
Lateral Accelerometer Sensor Type
Lateral Accelerometer Software Filter
Lateral Accelerometer Zero Target


Exploring - Parameters
Latitude Origin
Latitude Scaling
Lean Angle Breakpoints
Lean Angle Breakpoints
Lean Angle Breakpoints Size
Lean Angle Breakpoints Size
Lean Angle Compensation Breakpoints
Lean Angle From filtered Vert Accel
Lean Angle Primary Source
Lean Angle Torque Multiplier
Left Blue Status LED
Left Red/Green Status LED
Left Upper Blue Status LED
Left Yellow Status LED
Limp Home Boost Limit
Limp Home Boost Threshold
Limp Home Engine Speed Limit
Limp Home Mode Oil Temperature Strategy Enable
Limp Home Mode Water Temperature Strategy Enable
Limp Home Over-boost Time
Link Fail Time
Link Fail Time
Link Fail Time
Link Fail Time
Load Breakpoint Size
Load Breakpoints
Load Timer Engine Speed Threshold
Load Timer Throttle Angle Threshold
Log Book Distance Source
Logging Enable With ALS Switch


Exploring - Parameters
Logging Max Time Per Session
Logging Start Car Speed
Logging Start Engine Speed
Logging Switch Sample Rate
Logical Teeth on Crankshaft Wheel
Longitude Origin
Longitude Scaling
Longitudinal Accelerometer Sample Rate
Longitudinal Accelerometer Sensor Curve
Longitudinal Accelerometer Sensor Type
Longitudinal Accelerometer Software Filter
Longitudinal Accelerometer Zero Target
Low Battery Filter Time
Low Battery Sample Rate
Low Battery Threshold
Low Engine Oil Pressure Alarm Threshold
Low FRP Error Indication Threshold Target Multiplier
Low FRP Error Indication Threshold Time
Low FRP Warning Indication Threshold Target Multiplier
Low FRP Warning Indication Threshold Time
Low Fuel Pressure Alarm Threshold
Low Impedance Hold Time
Low Impedance INJ Hold Current
Low Impedance INJ Peak Current
Low Impedance Peak Sustain Enable
Low Impedance Peak Timeout
Low Oil Pressure Engine Cut Enable
Low Oil Pressure Engine Cut Oil Pressure Switch Check
Low Oil Pressure Engine Cut Refire Speed
Low Oil Pressure Engine Cut Refire Threshold

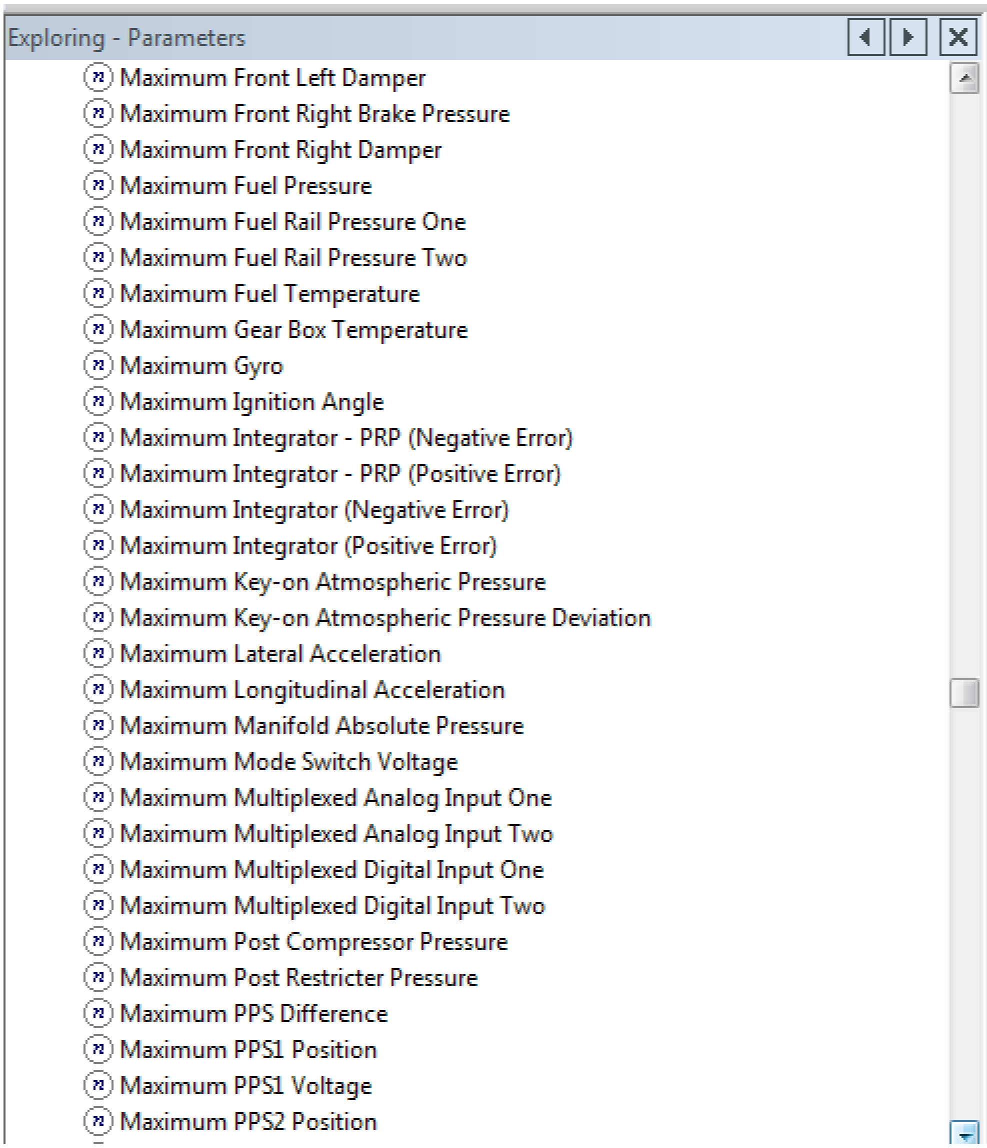

Exploring - Parameters
Low Oil Pressure Engine Cut Refire Timer
Low Oil Pressure Engine Cut Speed
Low Oil Pressure Engine Cut Threshold
Low Oil Pressure Engine Cut Timer
Low Oil Pressure Engine Restart Time
Low Oil Pressure Engine Speed Breakpoint Size
Low Oil Pressure Engine Speed Breakpoints
Main Cut Fuel Multiplier
Main Cut Fuel Multiplier
Main Cut Fuel Multiplier
Main Cut Fuel Multiplier
Main Cut Ignition Advance Rate
Main Cut Ignition Advance Rate
Main Cut Ignition Advance Rate
Main Cut Ignition Advance Rate
Main Cut Ignition Gear Adder
Main Cut Ignition Gear Adder
Main Cut Ignition Map
Main Cut Ignition Map
Main Cut Ignition Retard
Main Cut Ignition Retard
Main Cut Mode
Main Cut Mode
Main Cut Mode
Main Cut Mode
Main Cut Severity
Main Cut Severity
Main Cut Severity
Main Cut Severity
Manifold Absolute Pressure Failure Time


Exploring - Parameters
Manifold Absolute Pressure Recovery Time
Manifold Absolute Pressure Sample Rate
Manifold Absolute Pressure Sensor Curve
Manifold Absolute Pressure Sensor Mode Engine Speed Threshold
Manifold Absolute Pressure Sensor Type
Manifold Absolute Pressure Software Filter
Manifold Absolute Pressure Two Sample Rate
Manifold Absolute Pressure Two Sensor Curve
Manifold Absolute Pressure Two Sensor Type
Manifold Absolute Pressure Two Software Filter
Manifold Absolute Pressure Two Zero Target
Manifold Absolute Pressure Zero Target
Manual Change Closed Loop Main Cut Max Time
Manual Change Closed Loop Main Cut Max Time
Manual Change Closed Loop Main Cut Max Time
Manual Change Closed Loop Main Cut Max Time
Manual Change Cut Time
Manual Change Open Loop Main Cut Max Time
Manual Change Open Loop Main Cut Max Time
Manual Change Open Loop Main Cut Max Time
Manual Change Open Loop Main Cut Max Time
Manual Clutch Pressure Threshold
Manual DownShift Blip Extend Time
Manual From Paddle Minimum On Time
Manual Shift Actuation From Paddle
Manually Entered GPS Beacon Coords
MAP Decimal Places
MAP Units
MAP2 Decimal Places
MAP2 Units


Exploring - Parameters
Mask Time
Mask Time After Gear Cut Abort
Mass Air Flow Frequency Sensor Breakpoints
Mass Air Flow Frequency Sensor Breakpoints Size
Mass Air Flow Frequency Sensor Default
Mass Air Flow Frequency Sensor Failure Time
Mass Air Flow Frequency Sensor Linearisation Curve
Mass Air Flow Frequency Sensor Maximum Frequency
Mass Air Flow Frequency Sensor Maximum Period
Mass Air Flow Frequency Sensor Maximum Scaled
Mass Air Flow Frequency Sensor Minimum Frequency
Mass Air Flow Frequency Sensor Minimum Scaled
Mass Air Flow Frequency Sensor Pulses Per Sample
Mass Air Flow Frequency Sensor Recovery Time
Mass Air Flow Frequency Sensor Service Time
Mass Air Flow Sample Rate
Mass Air Flow Sensor Curve
Mass Air Flow Sensor Type
Mass Air Flow Software Filter
Mass Air Flow Zero Target
Max Car Speed for Downshift to RN
Max Gearbox Temp For Shifting
Max RPM Latch Threshold
Max TPS For DownShift
Maximum Air Charge Temperature
Maximum Ambient Air Temperature
Maximum Barometric Atmospheric Pressure
Maximum Bleed RPM
Maximum Bleed Time
Maximum Bleed TPS

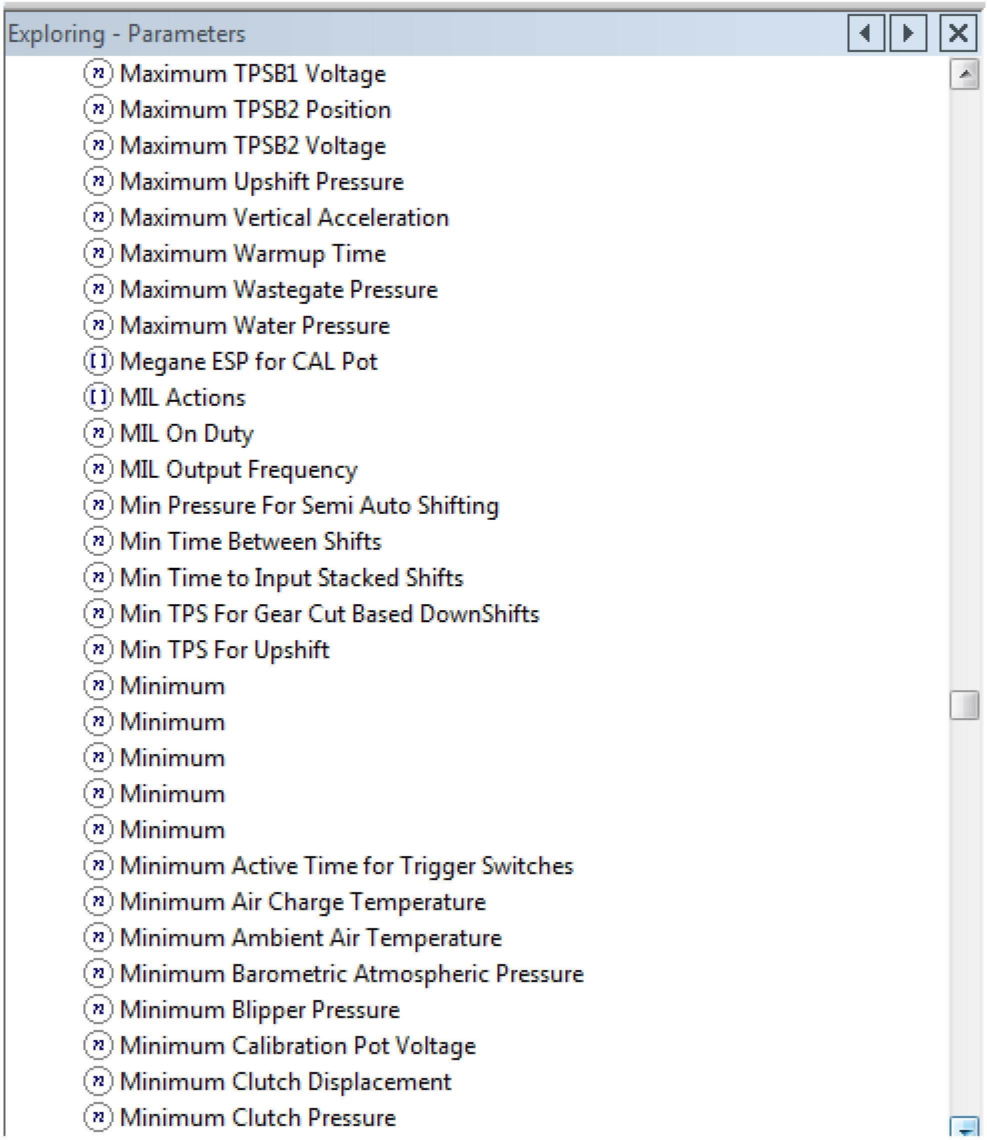
Exploring - Parameters

- Maximum Blipper Pressure
- Maximum Calibration Pot Voltage
- Maximum Car Speed For Forced Downshifts
- Maximum Clutch Disengage Timeouts
- Maximum Clutch Displacement
- Maximum Clutch Pressure
- Maximum Crank Case Pressure
- Maximum DC Motor Feedback 1
- Maximum DC Motor Feedback 2
- Maximum DC Motor Feedback 3
- Maximum Downshift Pressure
- Maximum Duty
- Maximum Dyno Slew Pot A
- Maximum Dyno Slew Pot B
- Maximum Dyno Slew Pot C
- Maximum Engine Coolant Temperature
- Maximum Engine Coolant Temperature In
- Maximum Engine Id One Voltage
- Maximum Engine Id Two Voltage
- Maximum Engine Oil Pressure
- Maximum Engine Oil Pressure Scavenge
- Maximum Engine Oil Temperature
- Maximum Engine Oil Temperature In
- Maximum Engine Speed
- Maximum Engine Speed For Forced Downshifts
- Maximum Exhaust Temperature
- Maximum Failures
- Maximum Front Brake Temperature
- Maximum Front Diff Temperature
- Maximum Front Left Brake Pressure


Exploring - Parameters
Maximum Front Left Damper
Maximum Front Right Brake Pressure
Maximum Front Right Damper
Maximum Fuel Pressure
Maximum Fuel Rail Pressure One
Maximum Fuel Rail Pressure Two
Maximum Fuel Temperature
Maximum Gear Box Temperature
Maximum Gyro
Maximum Ignition Angle
Maximum Integrator - PRP (Negative Error)
Maximum Integrator - PRP (Positive Error)
Maximum Integrator (Negative Error)
Maximum Integrator (Positive Error)
Maximum Key-on Atmospheric Pressure
Maximum Key-on Atmospheric Pressure Deviation
Maximum Lateral Acceleration
Maximum Longitudinal Acceleration
Maximum Manifold Absolute Pressure
Maximum Mode Switch Voltage
Maximum Multiplexed Analog Input One
Maximum Multiplexed Analog Input Two
Maximum Multiplexed Digital Input One
Maximum Multiplexed Digital Input Two
Maximum Post Compressor Pressure
Maximum Post Restricter Pressure
Maximum PPS Difference
Maximum PPS1 Position
Maximum PPS1 Voltage
Maximum PPS2 Position

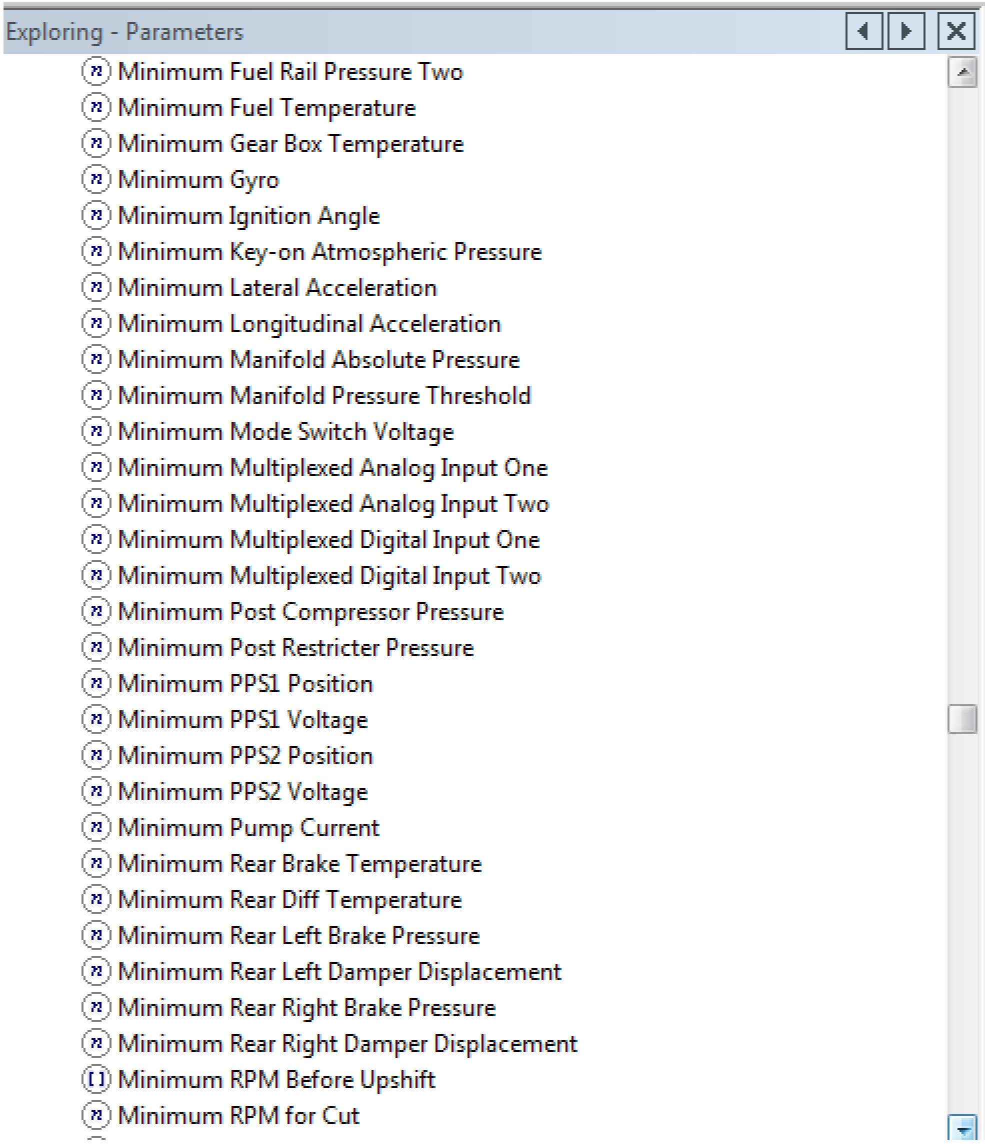
Exploring - Parameters

- Maximum PPS2 Voltage
- Maximum Pump Current
- Maximum Rate of Change of Turbine Speed
- Maximum Rear Brake Temperature
- Maximum Rear Diff Temperature
- Maximum Rear Left Brake Pressure
- Maximum Rear Left Damper Displacement
- Maximum Rear Right Brake Pressure
- Maximum Rear Right Damper Displacement
- Maximum Rev Limit f(ECT)
- Maximum Rev Limit f(EOT)
- Maximum RPM After Downshift
- Maximum RPM Before Downshift
- Maximum Spare Pressure One
- Maximum Spare Pressure Two
- Maximum Spare Temperature One
- Maximum Spare Temperature Two
- Maximum Stacked Downshifts
- Maximum Stacked Upshifts
- Maximum Steering Angle
- Maximum Strain Gauge Torque
- Maximum System Pressure
- Maximum System Pressure Voltage
- Maximum Throttle Angle
- Maximum Throttle Position
- Maximum Throttle Voltage
- Maximum TPS Difference
- Maximum TPSA2 Position
- Maximum TPSA2 Voltage
- Maximum TPSB1 Position


Exploring - Parameters
Maximum TPSB1 Voltage
Maximum TPSB2 Position
Maximum TPSB2 Voltage
Maximum Upshift Pressure
Maximum Vertical Acceleration
Maximum Warmup Time
Maximum Wastegate Pressure
Maximum Water Pressure
Megane ESP for CAL Pot
MIL Actions
MIL On Duty
MIL Output Frequency
Min Pressure For Semi Auto Shifting
Min Time Between Shifts
Min Time to Input Stacked Shifts
Min TPS For Gear Cut Based DownShifts
Min TPS For Upshift
Minimum
Minimum
Minimum
Minimum
Minimum
Minimum Active Time for Trigger Switches
Minimum Air Charge Temperature
Minimum Ambient Air Temperature
Minimum Barometric Atmospheric Pressure
Minimum Blipper Pressure
Minimum Calibration Pot Voltage
Minimum Clutch Displacement
Minimum Clutch Pressure

Exploring - Parameters

- Minimum Crank Case Pressure
- Minimum DC Motor Feedback 1
- Minimum DC Motor Feedback 2
- Minimum DC Motor Feedback 3
- Minimum Delta Throttle
- Minimum Downshift Pressure
- Minimum Duty
- Minimum Dyno Slew Pot A
- Minimum Dyno Slew Pot B
- Minimum Dyno Slew Pot C
- Minimum Engine Coolant Temperature
- Minimum Engine Coolant Temperature In
- Minimum Engine Id One Voltage
- Minimum Engine Id Two Voltage
- Minimum Engine Oil Pressure
- Minimum Engine Oil Pressure Scavenge
- Minimum Engine Oil Temperature
- Minimum Engine Oil Temperature In
- Minimum Engine Speed Threshold
- Minimum entry time
- Minimum Exhaust Temperature
- Minimum Fast Start Time
- Minimum Front Brake Temperature
- Minimum Front Diff Temperature
- Minimum Front Left Brake Pressure
- Minimum Front Left Damper
- Minimum Front Right Brake Pressure
- Minimum Front Right Damper
- Minimum Fuel Pressure
- Minimum Fuel Rail Pressure One

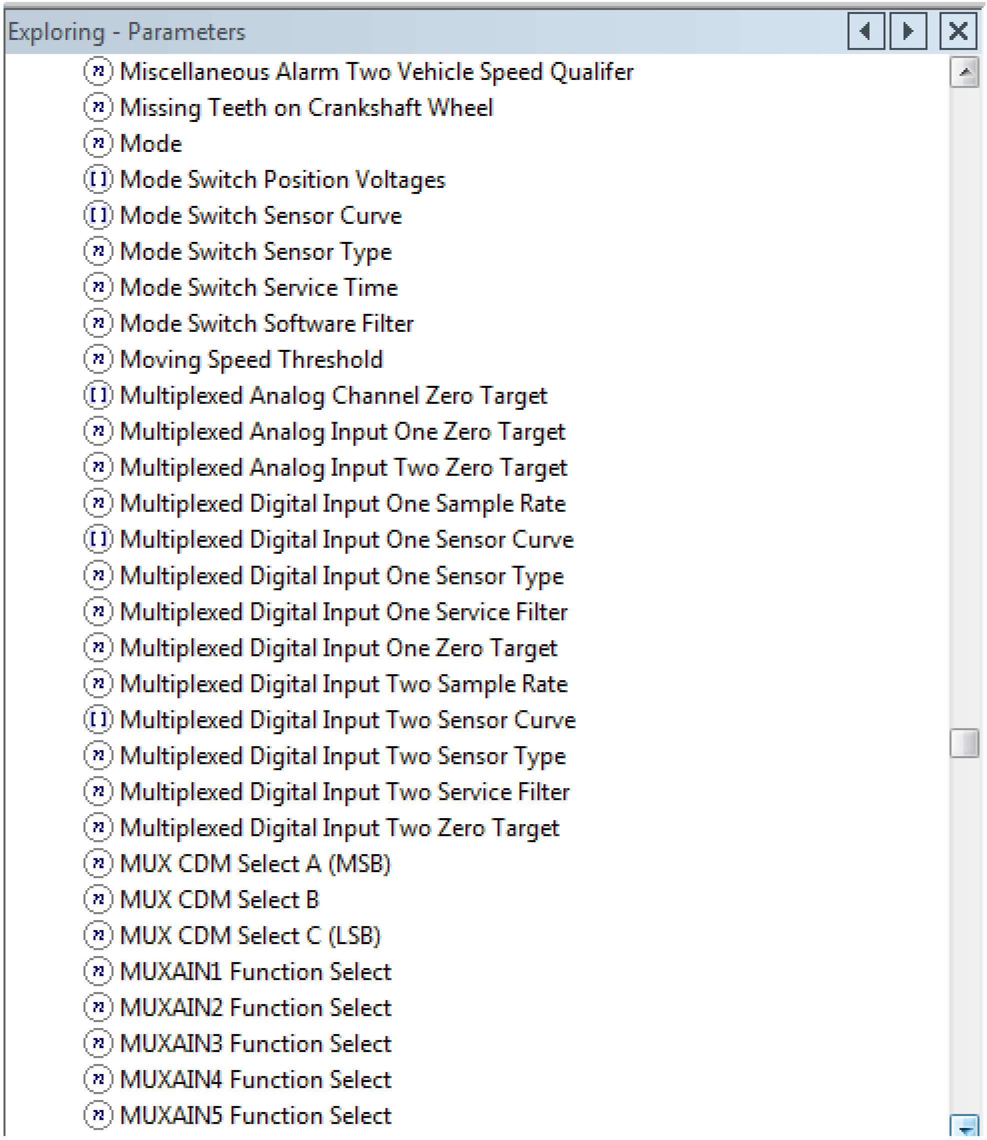

Exploring - Parameters
Minimum Fuel Rail Pressure Two
Minimum Fuel Temperature
Minimum Gear Box Temperature
Minimum Gyro
Minimum Ignition Angle
Minimum Key-on Atmospheric Pressure
Minimum Lateral Acceleration
Minimum Longitudinal Acceleration
Minimum Manifold Absolute Pressure
Minimum Manifold Pressure Threshold
Minimum Mode Switch Voltage
Minimum Multiplexed Analog Input One
Minimum Multiplexed Analog Input Two
Minimum Multiplexed Digital Input One
Minimum Multiplexed Digital Input Two
Minimum Post Compressor Pressure
Minimum Post Restricter Pressure
Minimum PPS1 Position
Minimum PPS1 Voltage
Minimum PPS2 Position
Minimum PPS2 Voltage
Minimum Pump Current
Minimum Rear Brake Temperature
Minimum Rear Diff Temperature
Minimum Rear Left Brake Pressure
Minimum Rear Left Damper Displacement
Minimum Rear Right Brake Pressure
Minimum Rear Right Damper Displacement
Minimum RPM Before Upshift
Minimum RPM for Cut

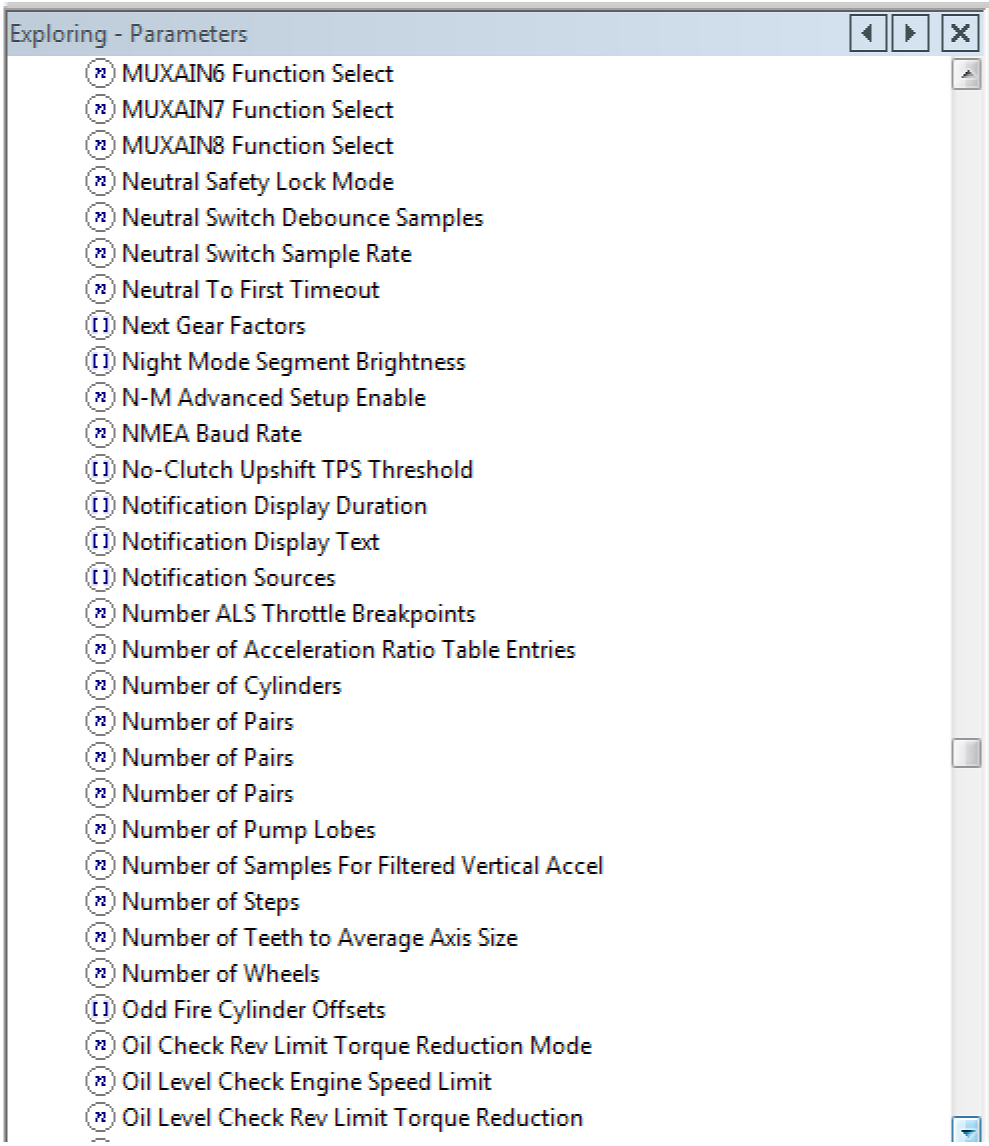
Exploring - Parameters

- Minimum RPM Pump Enable
- Minimum Sensor Speed
- Minimum Spare Pressure One
- Minimum Spare Pressure Two
- Minimum Spare Temperature One
- Minimum Spare Temperature Two
- Minimum Spark Time
- Minimum Steering Angle
- Minimum Strain Gauge Torque
- Minimum System Pressure
- Minimum System Pressure Voltage
- Minimum Throttle Position
- Minimum Throttle Voltage
- Minimum TPS for Cut
- Minimum TPSA2 Position
- Minimum TPSA2 Voltage
- Minimum TPSB1 Position
- Minimum TPSB1 Voltage
- Minimum TPSB2 Position
- Minimum TPSB2 Voltage
- Minimum Upshift Pressure
- Minimum Vehicle Speed for Distance Multiplier
- Minimum Vertical Acceleration
- Minimum Wastegate Pressure
- Minimum Water Pressure
- Miscellaneous Alarm Five Display Text
- Miscellaneous Alarm Five Engine Speed Qualifer
- Miscellaneous Alarm Five Glitch Time
- Miscellaneous Alarm Five Input Channel
- Miscellaneous Alarm Five Self Cancel Time

Exploring - Parameters

- Miscellaneous Alarm Five Threshold
- Miscellaneous Alarm Five Threshold Adjustment
- Miscellaneous Alarm Five Threshold Condition
- Miscellaneous Alarm Five Vehicle Speed Qualifer
- Miscellaneous Alarm Four Display Text
- Miscellaneous Alarm Four Engine Speed Qualifer
- Miscellaneous Alarm Four Glitch Time
- Miscellaneous Alarm Four Input Channel
- Miscellaneous Alarm Four Self Cancel Time
- Miscellaneous Alarm Four Threshold
- Miscellaneous Alarm Four Threshold Adjustment
- Miscellaneous Alarm Four Threshold Condition
- Miscellaneous Alarm Four Vehicle Speed Qualifer
- Miscellaneous Alarm Three Display Text
- Miscellaneous Alarm Three Engine Speed Qualifer
- Miscellaneous Alarm Three Glitch Time
- Miscellaneous Alarm Three Input Channel
- Miscellaneous Alarm Three Self Cancel Time
- Miscellaneous Alarm Three Threshold
- Miscellaneous Alarm Three Threshold Adjustment
- Miscellaneous Alarm Three Threshold Condition
- Miscellaneous Alarm Three Vehicle Speed Qualifer
- Miscellaneous Alarm Two Display Text
- Miscellaneous Alarm Two Engine Speed Qualifer
- Miscellaneous Alarm Two Glitch Time
- Miscellaneous Alarm Two Input Channel
- Miscellaneous Alarm Two Self Cancel Time
- Miscellaneous Alarm Two Threshold
- Miscellaneous Alarm Two Threshold Adjustment
- Miscellaneous Alarm Two Threshold Condition


Exploring - Parameters
Miscellaneous Alarm Two Vehicle Speed Qualifer
Missing Teeth on Crankshaft Wheel
Mode
Mode Switch Position Voltages
Mode Switch Sensor Curve
Mode Switch Sensor Type
Mode Switch Service Time
Mode Switch Software Filter
Moving Speed Threshold
Multiplexed Analog Channel Zero Target
Multiplexed Analog Input One Zero Target
Multiplexed Analog Input Two Zero Target
Multiplexed Digital Input One Sample Rate
Multiplexed Digital Input One Sensor Curve
Multiplexed Digital Input One Sensor Type
Multiplexed Digital Input One Service Filter
Multiplexed Digital Input One Zero Target
Multiplexed Digital Input Two Sample Rate
Multiplexed Digital Input Two Sensor Curve
Multiplexed Digital Input Two Sensor Type
Multiplexed Digital Input Two Service Filter
Multiplexed Digital Input Two Zero Target
MUX CDM Select A (MSB)
MUX CDM Select B
MUX CDM Select C (LSB)
MUXAIN1 Function Select
MUXAIN2 Function Select
MUXAIN3 Function Select
MUXAIN4 Function Select
MUXAIN5 Function Select


Exploring - Parameters
MUXAIN6 Function Select
MUXAIN7 Function Select
MUXAIN8 Function Select
Neutral Safety Lock Mode
Neutral Switch Debounce Samples
Neutral Switch Sample Rate
Neutral To First Timeout
Next Gear Factors
Night Mode Segment Brightness
N-M Advanced Setup Enable
NMEA Baud Rate
No-Clutch Upshift TPS Threshold
Notification Display Duration
Notification Display Text
Notification Sources
Number ALS Throttle Breakpoints
Number of Acceleration Ratio Table Entries
Number of Cylinders
Number of Pairs
Number of Pairs
Number of Pairs
Number of Pump Lobes
Number of Samples For Filtered Vertical Accel
Number of Steps
Number of Teeth to Average Axis Size
Number of Wheels
Odd Fire Cylinder Offsets
Oil Check Rev Limit Torque Reduction Mode
Oil Level Check Engine Speed Limit
Oil Level Check Rev Limit Torque Reduction

Exploring - Parameters

- Oil Pressure Switch Debounce Samples
- Oil Pressure Switch Sample Rate
- Oil Temperature Adder
- Omega RX Link Base CAN ID
- Omega RX Timeout Frame 01 (CAN ID 0x75)
- Omega RX Timeout Frame 02 (CAN ID 0x76)
- Omega RX Timeout Frame 03 (CAN ID 0x77)
- Omega RX Timeout Frame 04 (CAN ID 0x78)
- Omega TX Link Base CAN ID
- OMEGA_L2_RST XAP Dash Sensor Zero Trigger Time
- OMEGA_L2_RST XAP Dash Steering Wheel Cut Enable
- OMEGA_L2_RST XAP Dash Steering Wheel Cut Timeout
- Open Loop Engine Speed Switch Point
- Open-Loop Clutch Downshift Timeout
- Out Of Gear Delta Offset
- OUT1 Function Select
- OUT2 Function Select
- OUT3 Function Select
- OUT4 Function Select
- OUT5 Function Select
- Over rev timing TPS threshold
- Overall Transmission Control Mode
- Overrun Fuel Cut Off Cal 1
- Overrun Fuel Cut Off Cal 2
- Overrun Fuel Cut Off Cal 3
- Overrun Fuel Cut Off Cal 4
- Overrun Fuel Reinstate Cal 1
- Overrun Fuel Reinstate Cal 2
- Overrun Fuel Reinstate Cal 3
- Overrun Fuel Reinstate Cal 4

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- Page Availability
- PalmerSport Torque Reduction Mode
- Pattern Enable
- Pattern Enable
- Pattern Enable
- Pattern Enable
- Pattern Enable
- Pattern Enable
- Pattern Enable
- Pattern Enable
- Pattern Type
- Pattern Type
- Pattern Type
- Pattern Type
- Pattern Type
- Pattern Type
- Pattern Type
- Pattern Type
- PDV Adder
- Pedal Position Sensors Input Select
- Penalty Amount
- Penalty Threshold
- Penalty Time
- PEU Datastream Timeout
- Phase Error Checking
- Phase Error Checking
- Phase Error Checking
- Phase Error Checking
- Phase Error Checking
- Phase Error Checking

Exploring - Parameters

Phase Error Checking
Phase Error Checking
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Phase of Tooth
Phase of Tooth
Phase of Tooth
Phase of Tooth
Phase of Tooth
Phase of Tooth
Phase of Tooth
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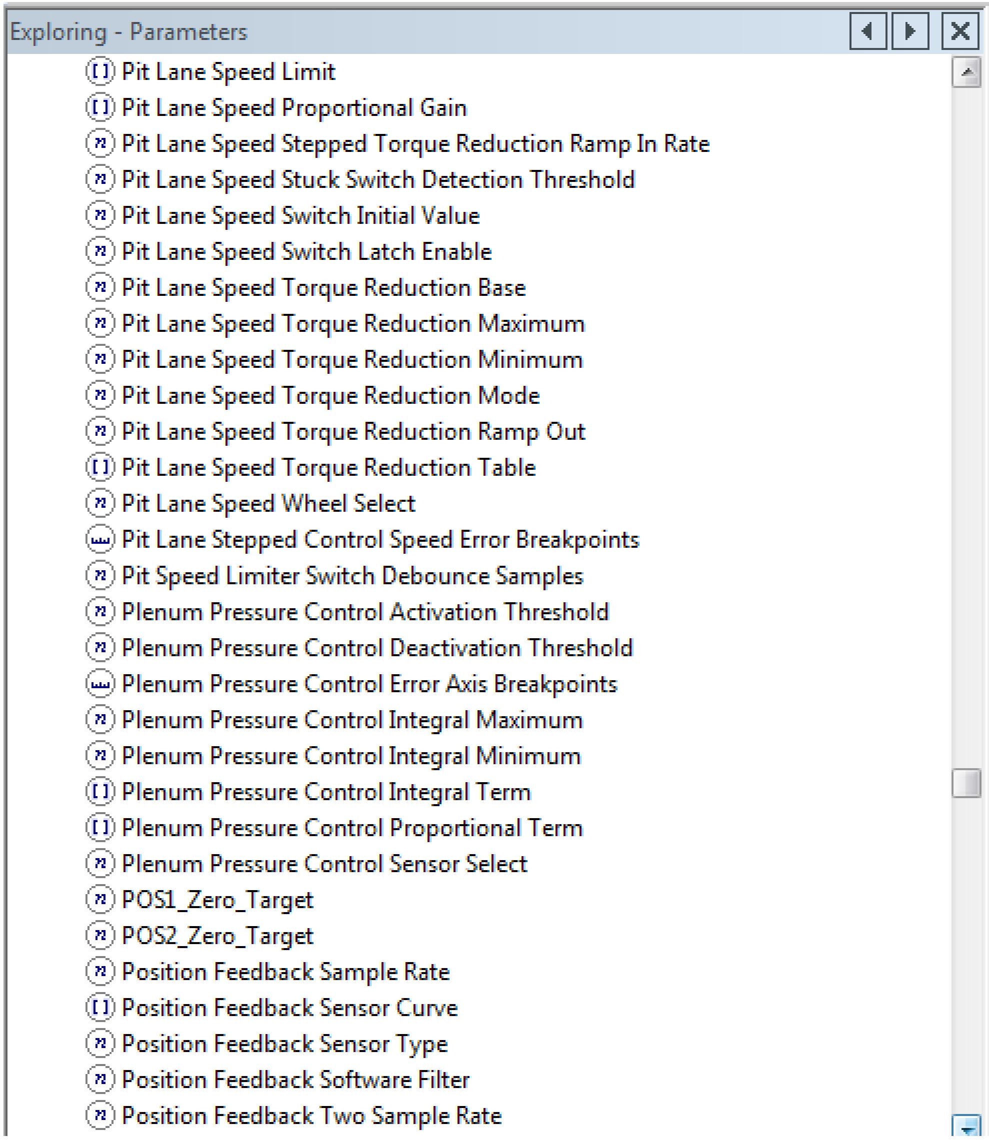
Pi Sys Datastream UDWORD Channel IDs
Pi Sys Datastream UDWORD Channel Types
PID Integral Reset
Pit Lane Calculated Speed Period
Pit Lane Calculated Speed Scaling
Pit Lane FBW Request at No Cut
Pit Lane Minimum Engine Speed Threshold
Pit Lane PPS to TPS Cal Select
Pit Lane Speed Absolute Ign Angle
Pit Lane Speed Catch Speed
Pit Lane Speed Cut Type
Pit Lane Speed Enable Ignition Correction
Pit Lane Speed Error Axis Breakpoints
Pit Lane Speed Error Breakpoint Size
Pit Lane Speed Filter
Pit Lane Speed Ignition Ramp In Rate
Pit Lane Speed Integral Gain
Pit Lane Speed Integral Maximum
Pit Lane Speed Integral Minimum


Exploring - Parameters
Pit Lane Speed Limit
Pit Lane Speed Proportional Gain
Pit Lane Speed Stepped Torque Reduction Ramp In Rate
Pit Lane Speed Stuck Switch Detection Threshold
Pit Lane Speed Switch Initial Value
Pit Lane Speed Switch Latch Enable
Pit Lane Speed Torque Reduction Base
Pit Lane Speed Torque Reduction Maximum
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Pit Lane Speed Torque Reduction Mode
Pit Lane Speed Torque Reduction Ramp Out
Pit Lane Speed Torque Reduction Table
Pit Lane Speed Wheel Select
Pit Lane Stepped Control Speed Error Breakpoints
Pit Speed Limiter Switch Debounce Samples
Plenum Pressure Control Activation Threshold
Plenum Pressure Control Deactivation Threshold
Plenum Pressure Control Error Axis Breakpoints
Plenum Pressure Control Integral Maximum
Plenum Pressure Control Integral Minimum
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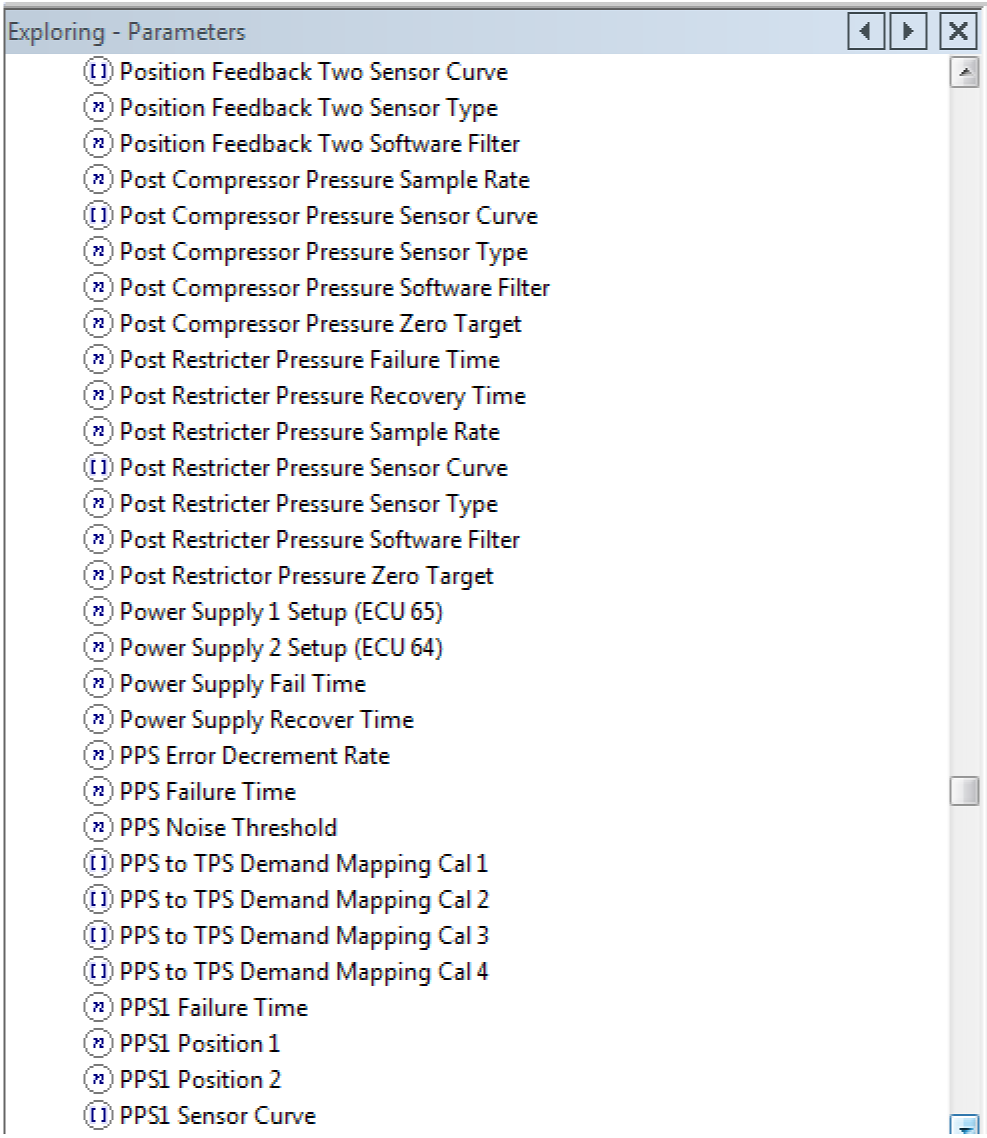
Plenum Pressure Control Proportional Term
Plenum Pressure Control Sensor Select
POS1_Zero_Target
POS2_Zero_Target
Position Feedback Sample Rate
Position Feedback Sensor Curve
Position Feedback Sensor Type
Position Feedback Software Filter
Position Feedback Two Sample Rate


Exploring - Parameters
Position Feedback Two Sensor Curve
Position Feedback Two Sensor Type
Position Feedback Two Software Filter
Post Compressor Pressure Sample Rate
Post Compressor Pressure Sensor Curve
Post Compressor Pressure Sensor Type
Post Compressor Pressure Software Filter
Post Compressor Pressure Zero Target
Post Restricter Pressure Failure Time
Post Restricter Pressure Recovery Time
Post Restricter Pressure Sample Rate
Post Restricter Pressure Sensor Curve
Post Restricter Pressure Sensor Type
Post Restricter Pressure Software Filter
Post Restrictor Pressure Zero Target
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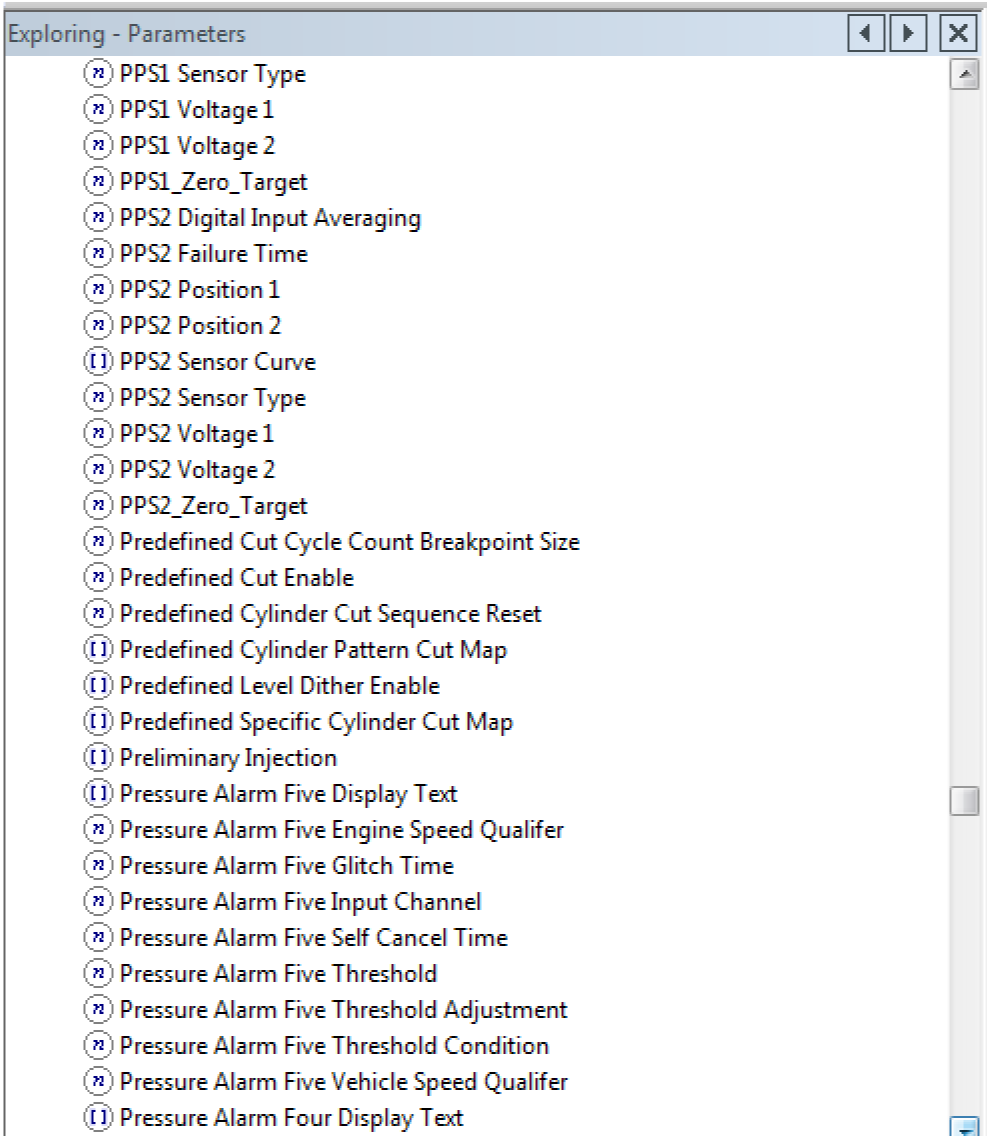
Power Supply 2 Setup (ECU 64)
Power Supply Fail Time
Power Supply Recover Time
PPS Error Decrement Rate
PPS Failure Time
PPS Noise Threshold
PPS to TPS Demand Mapping Cal 1
PPS to TPS Demand Mapping Cal 2
PPS to TPS Demand Mapping Cal 3
PPS to TPS Demand Mapping Cal 4
PPS1 Failure Time
PPS1 Position 1
PPS1 Position 2
PPS1 Sensor Curve


Exploring - Parameters
PPS1 Sensor Type
PPS1 Voltage 1
PPS1 Voltage 2
PPS1_Zero_Target
PPS2 Digital Input Averaging
PPS2 Failure Time
PPS2 Position 1
PPS2 Position 2
PPS2 Sensor Curve
PPS2 Sensor Type
PPS2 Voltage 1
PPS2 Voltage 2
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Predefined Cut Enable
Predefined Cylinder Cut Sequence Reset
Predefined Cylinder Pattern Cut Map
Predefined Level Dither Enable
Predefined Specific Cylinder Cut Map
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Pressure Alarm Five Engine Speed Qualifer
Pressure Alarm Five Glitch Time
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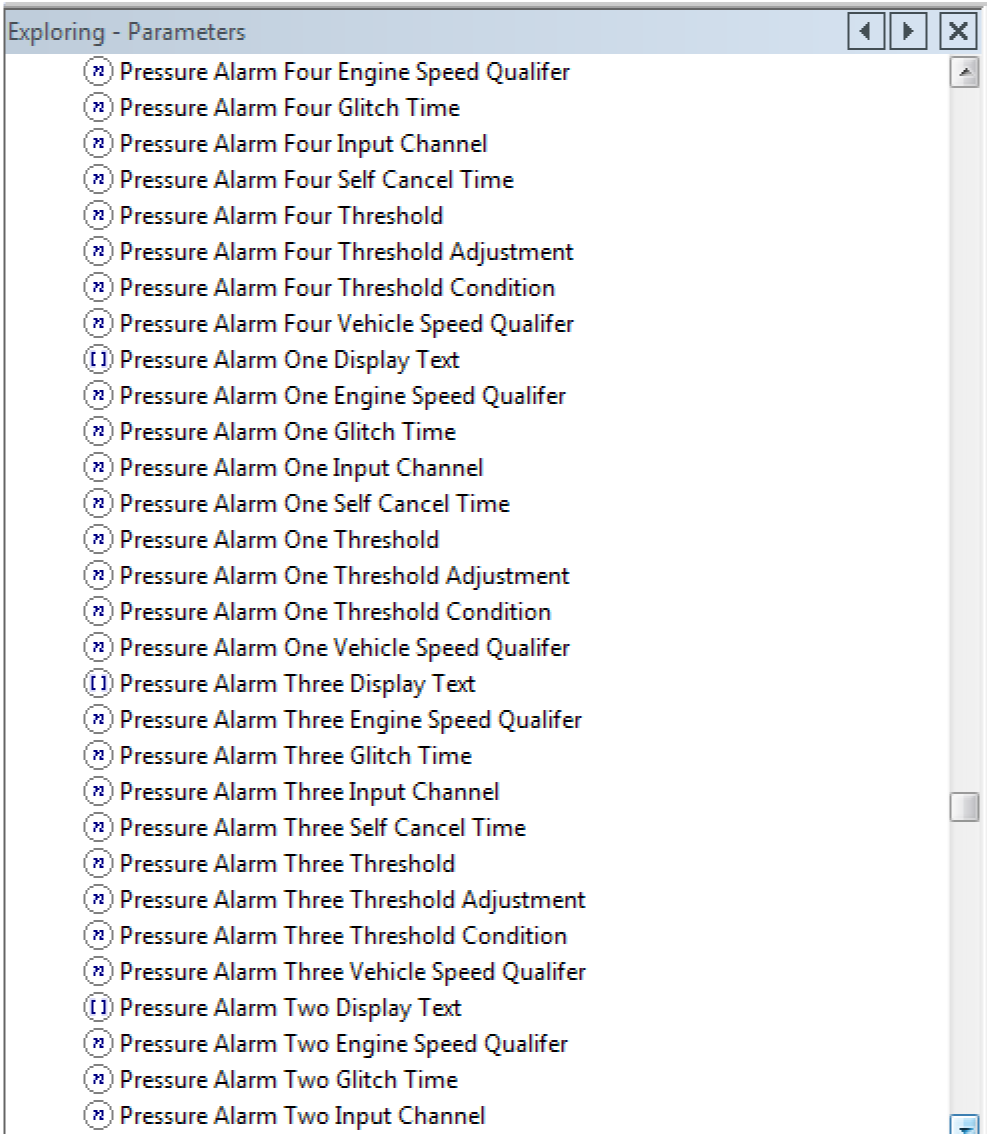
Pressure Alarm Five Self Cancel Time
Pressure Alarm Five Threshold
Pressure Alarm Five Threshold Adjustment
Pressure Alarm Five Threshold Condition
Pressure Alarm Five Vehicle Speed Qualifer
Pressure Alarm Four Display Text


Exploring - Parameters
Pressure Alarm Four Engine Speed Qualifer
Pressure Alarm Four Glitch Time
Pressure Alarm Four Input Channel
Pressure Alarm Four Self Cancel Time
Pressure Alarm Four Threshold
Pressure Alarm Four Threshold Adjustment
Pressure Alarm Four Threshold Condition
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Pressure Alarm One Display Text
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Pressure Alarm One Input Channel
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Pressure Alarm Three Threshold Adjustment
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Pressure Alarm Two Threshold Adjustment
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Pressure Breakpoint Size
Pressure Breakpoint Size
Pressure Breakpoint Size
Pressure Breakpoint Size
Pressure Breakpoint Size
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Pressure Breakpoints
Pressure Breakpoints
Pressure Breakpoints
Pressure Breakpoints
Pressure Breakpoints
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Pressure Control Enable
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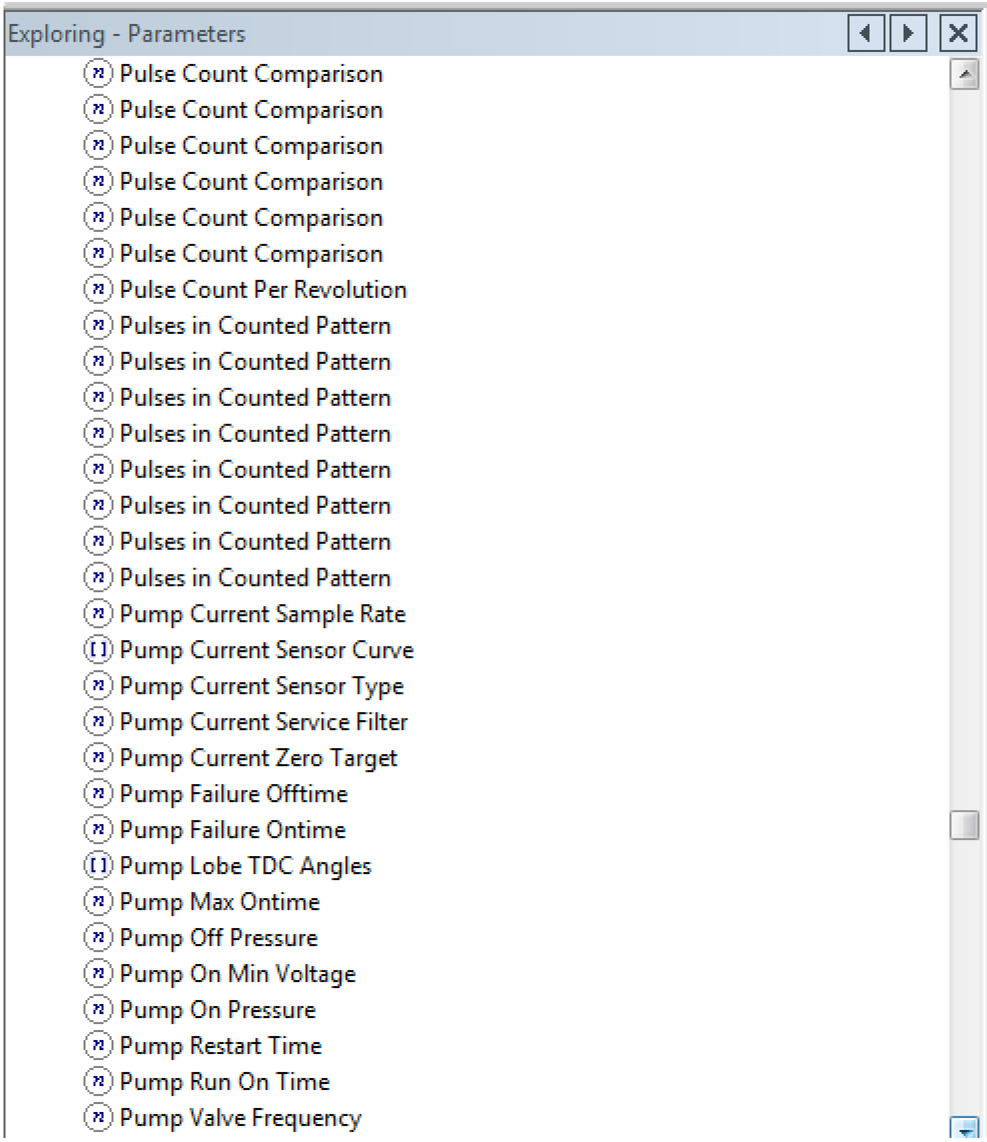
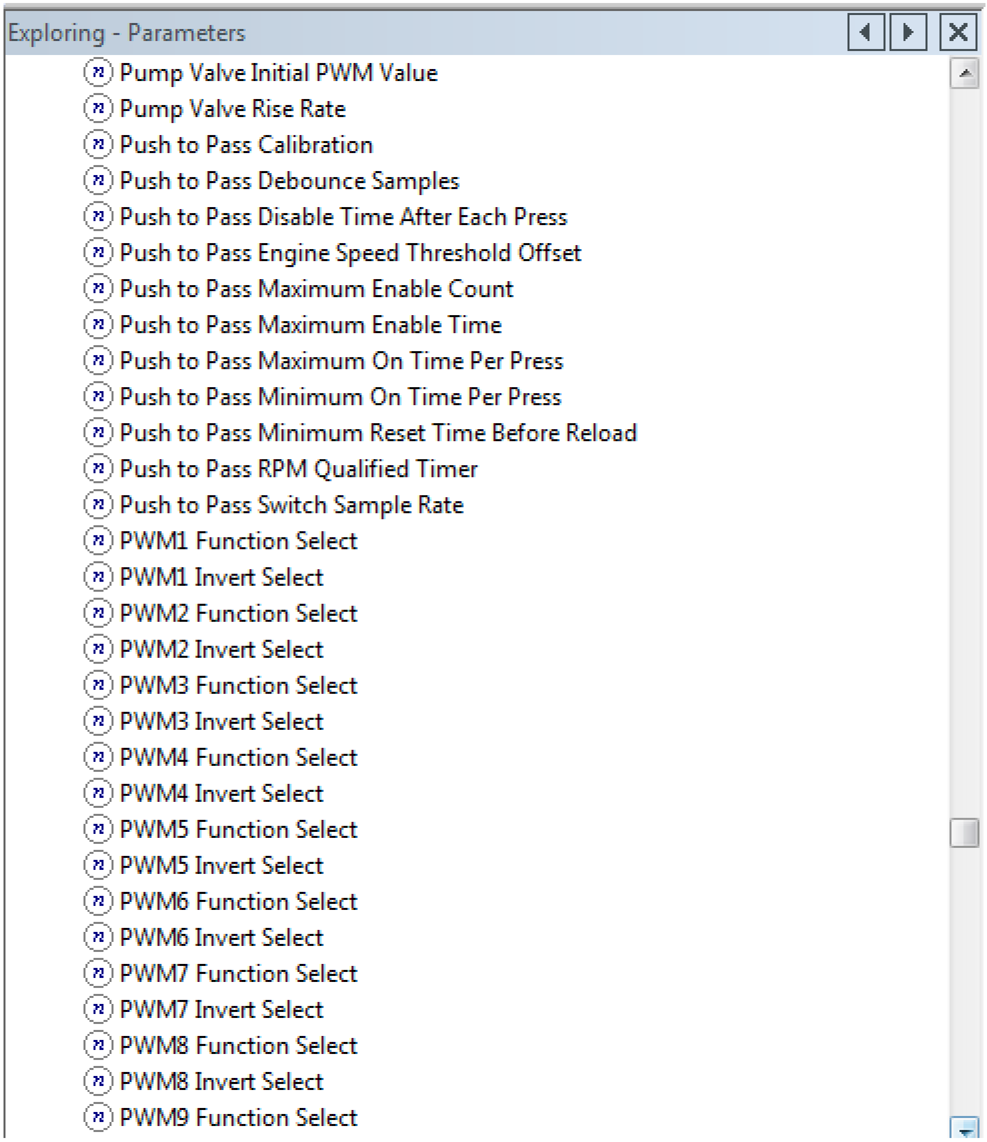
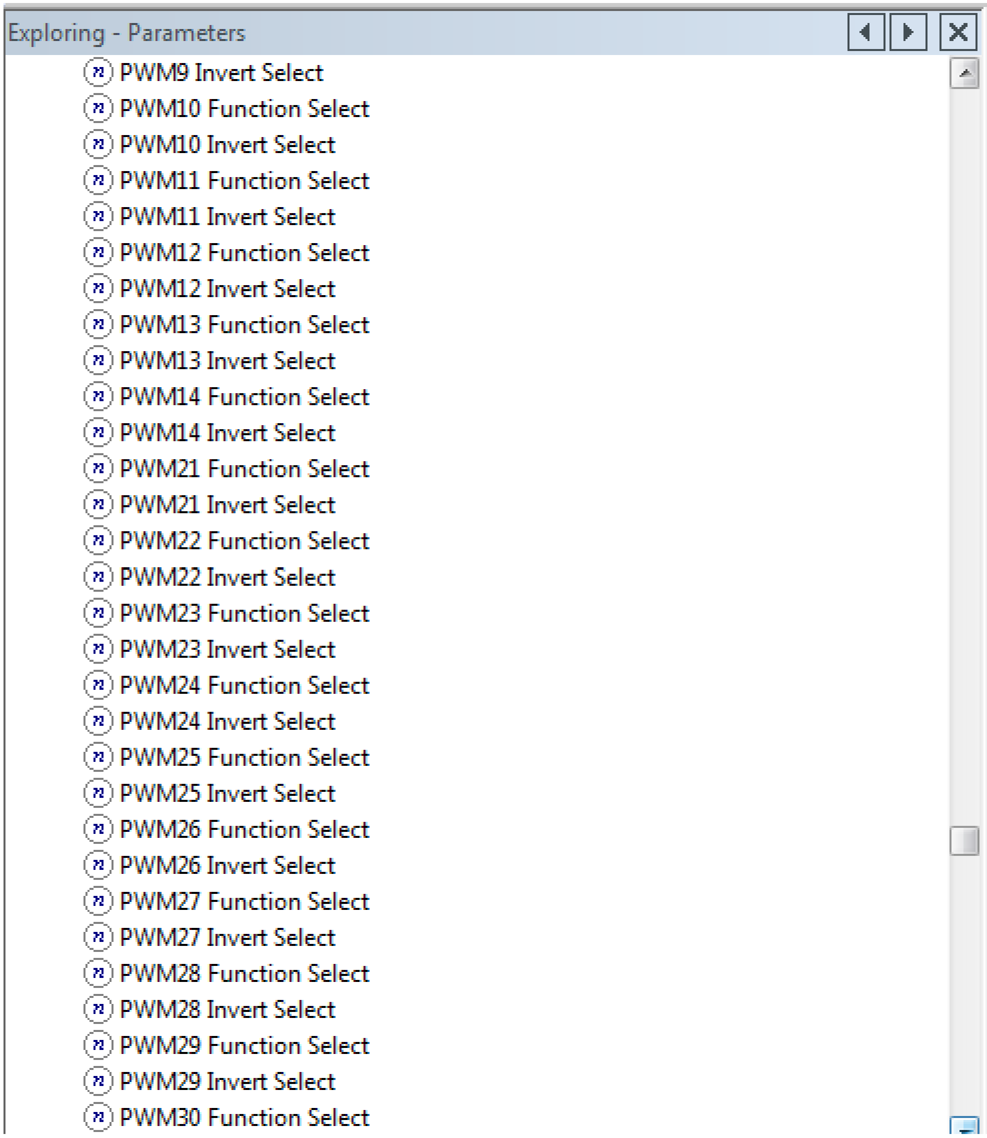
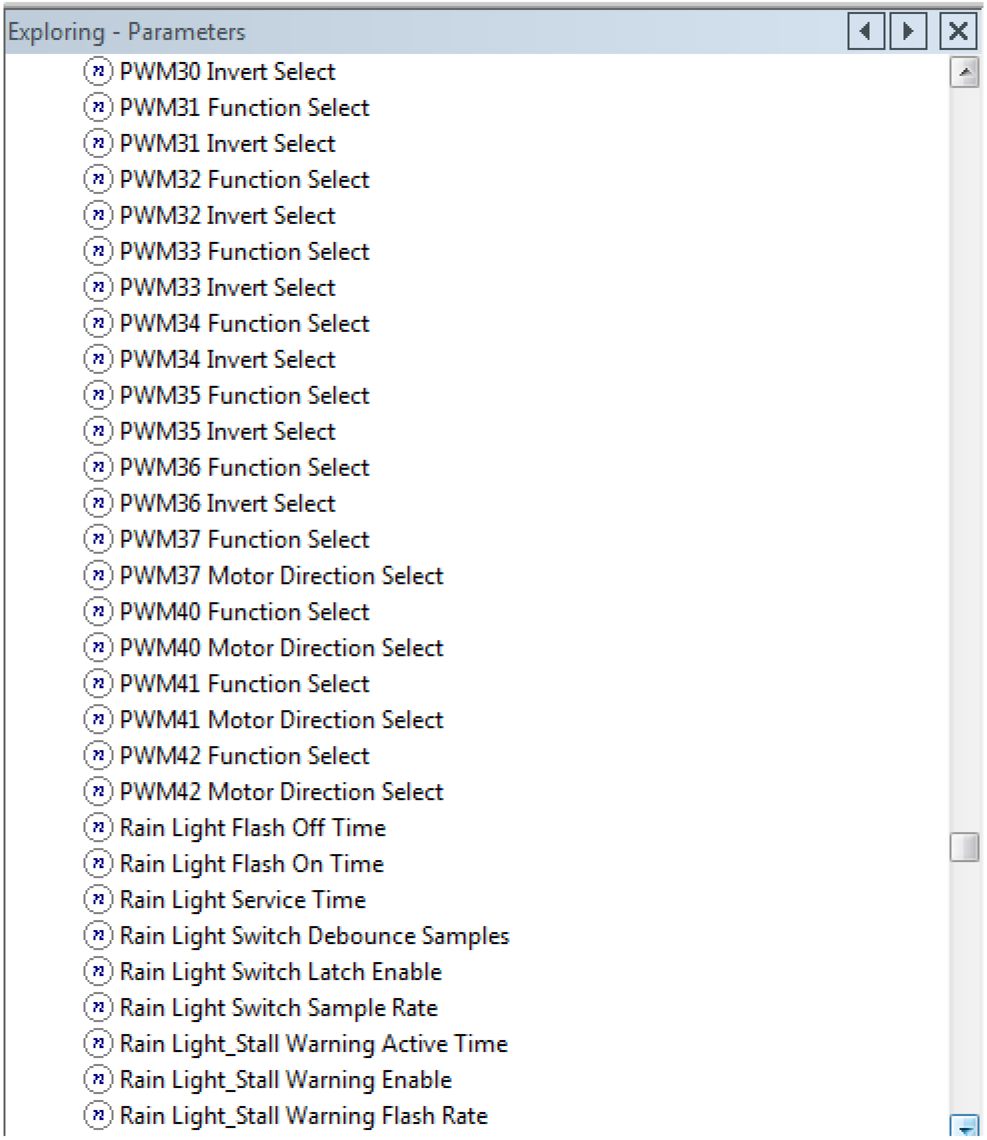
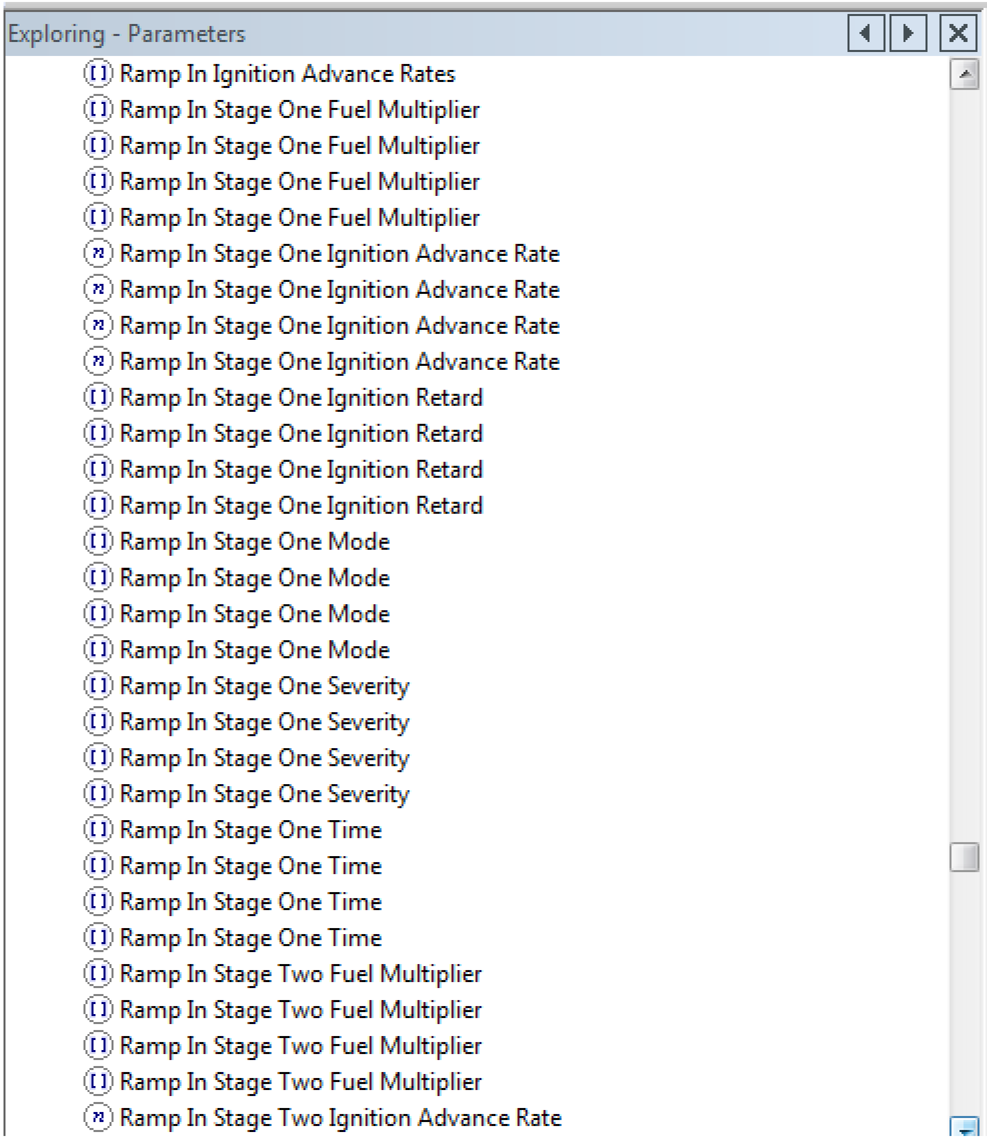
Primary Fan Run On
Primary Fan Service Time
Primary Fan Turn Off f(ECT)
Primary Fan Turn On f(ECT)
Prime Pump On Start Up Enable
Proportional Gain
PRP Decimal Places
PRP Units
Pulse Count Comparison
Pulse Count Comparison


Exploring - Parameters
Pulse Count Comparison
Pulse Count Comparison
Pulse Count Comparison
Pulse Count Comparison
Pulse Count Comparison
Pulse Count Comparison
Pulse Count Per Revolution
Pulses in Counted Pattern
Pulses in Counted Pattern
Pulses in Counted Pattern
Pulses in Counted Pattern
Pulses in Counted Pattern
Pulses in Counted Pattern
Pulses in Counted Pattern
Pulses in Counted Pattern
Pump Current Sample Rate
Pump Current Sensor Curve
Pump Current Sensor Type
Pump Current Service Filter
Pump Current Zero Target
Pump Failure Offtime
Pump Failure Ontime
Pump Lobe TDC Angles
Pump Max Ontime
Pump Off Pressure
Pump On Min Voltage
Pump On Pressure
Pump Restart Time
Pump Run On Time
Pump Valve Frequency


Exploring - Parameters
Pump Valve Initial PWM Value
Pump Valve Rise Rate
Push to Pass Calibration
Push to Pass Debounce Samples
Push to Pass Disable Time After Each Press
Push to Pass Engine Speed Threshold Offset
Push to Pass Maximum Enable Count
Push to Pass Maximum Enable Time
Push to Pass Maximum On Time Per Press
Push to Pass Minimum On Time Per Press
Push to Pass Minimum Reset Time Before Reload
Push to Pass RPM Qualified Timer
Push to Pass Switch Sample Rate
PWM1 Function Select
PWM1 Invert Select
PWM2 Function Select
PWM2 Invert Select
PWM3 Function Select
PWM3 Invert Select
PWM4 Function Select
PWM4 Invert Select
PWM5 Function Select
PWM5 Invert Select
PWM6 Function Select
PWM6 Invert Select
PWM7 Function Select
PWM7 Invert Select
PWM8 Function Select
PWM8 Invert Select
PWM9 Function Select


Exploring - Parameters
PWM9 Invert Select
PWM10 Function Select
PWM10 Invert Select
PWM11 Function Select
PWM11 Invert Select
PWM12 Function Select
PWM12 Invert Select
PWM13 Function Select
PWM13 Invert Select
PWM14 Function Select
PWM14 Invert Select
PWM21 Function Select
PWM21 Invert Select
PWM22 Function Select
PWM22 Invert Select
PWM23 Function Select
PWM23 Invert Select
PWM24 Function Select
PWM24 Invert Select
PWM25 Function Select
PWM25 Invert Select
PWM26 Function Select
PWM26 Invert Select
PWM27 Function Select
PWM27 Invert Select
PWM28 Function Select
PWM28 Invert Select
PWM29 Function Select
PWM29 Invert Select
PWM30 Function Select


Exploring - Parameters
PWM30 Invert Select
PWM31 Function Select
PWM31 Invert Select
PWM32 Function Select
PWM32 Invert Select
PWM33 Function Select
PWM33 Invert Select
PWM34 Function Select
PWM34 Invert Select
PWM35 Function Select
PWM35 Invert Select
PWM36 Function Select
PWM36 Invert Select
PWM37 Function Select
PWM37 Motor Direction Select
PWM40 Function Select
PWM40 Motor Direction Select
PWM41 Function Select
PWM41 Motor Direction Select
PWM42 Function Select
PWM42 Motor Direction Select
Rain Light Flash Off Time
Rain Light Flash On Time
Rain Light Service Time
Rain Light Switch Debounce Samples
Rain Light Switch Latch Enable
Rain Light Switch Sample Rate
Rain Light_Stall Warning Active Time
Rain Light_Stall Warning Enable
Rain Light_Stall Warning Flash Rate


Exploring - Parameters
Ramp In Ignition Advance Rates
Ramp In Stage One Fuel Multiplier
Ramp In Stage One Fuel Multiplier
Ramp In Stage One Fuel Multiplier
Ramp In Stage One Fuel Multiplier
Ramp In Stage One Ignition Advance Rate
Ramp In Stage One Ignition Advance Rate
Ramp In Stage One Ignition Advance Rate
Ramp In Stage One Ignition Advance Rate
Ramp In Stage One Ignition Retard
Ramp In Stage One Ignition Retard
Ramp In Stage One Ignition Retard
Ramp In Stage One Ignition Retard
Ramp In Stage One Mode
Ramp In Stage One Mode
Ramp In Stage One Mode
Ramp In Stage One Mode
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Ramp In Stage One Severity
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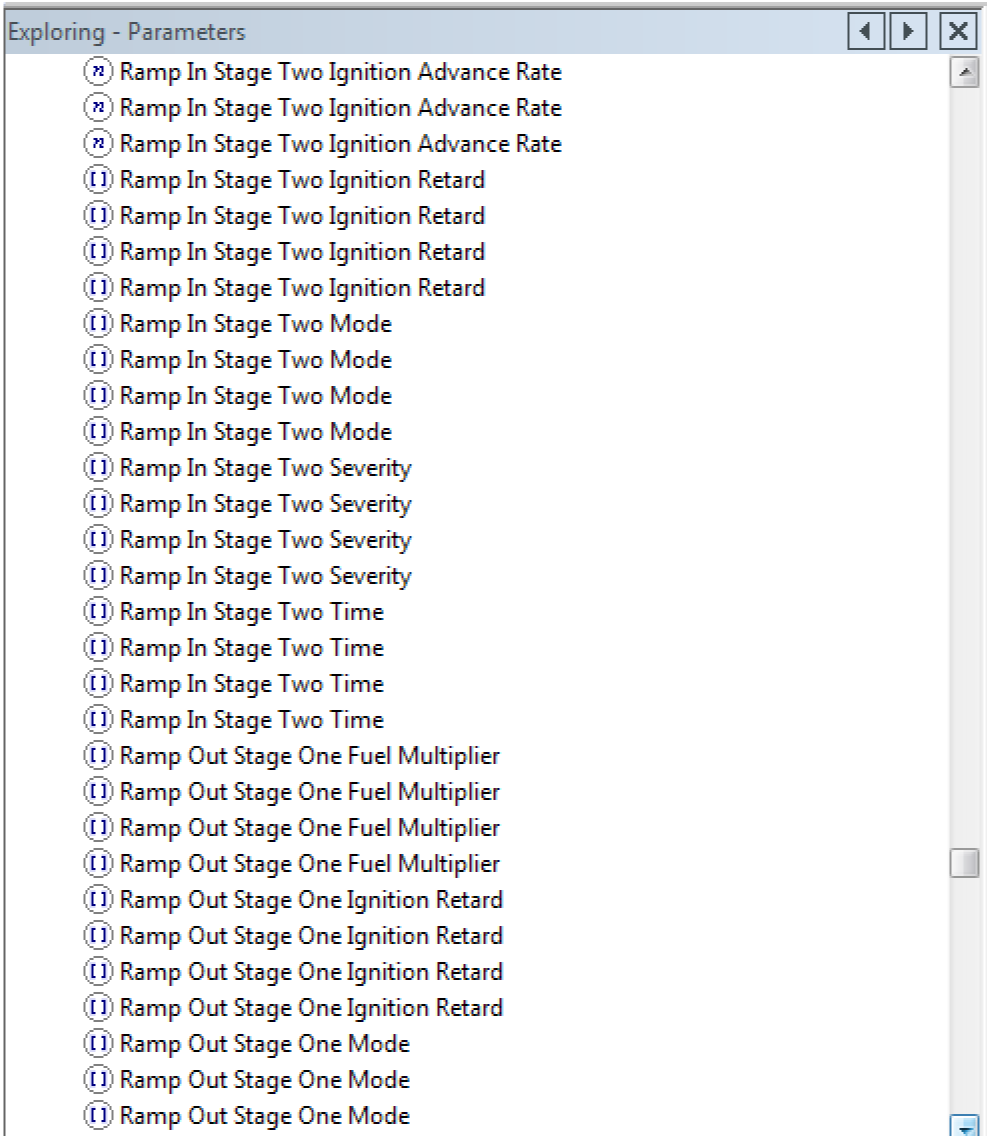
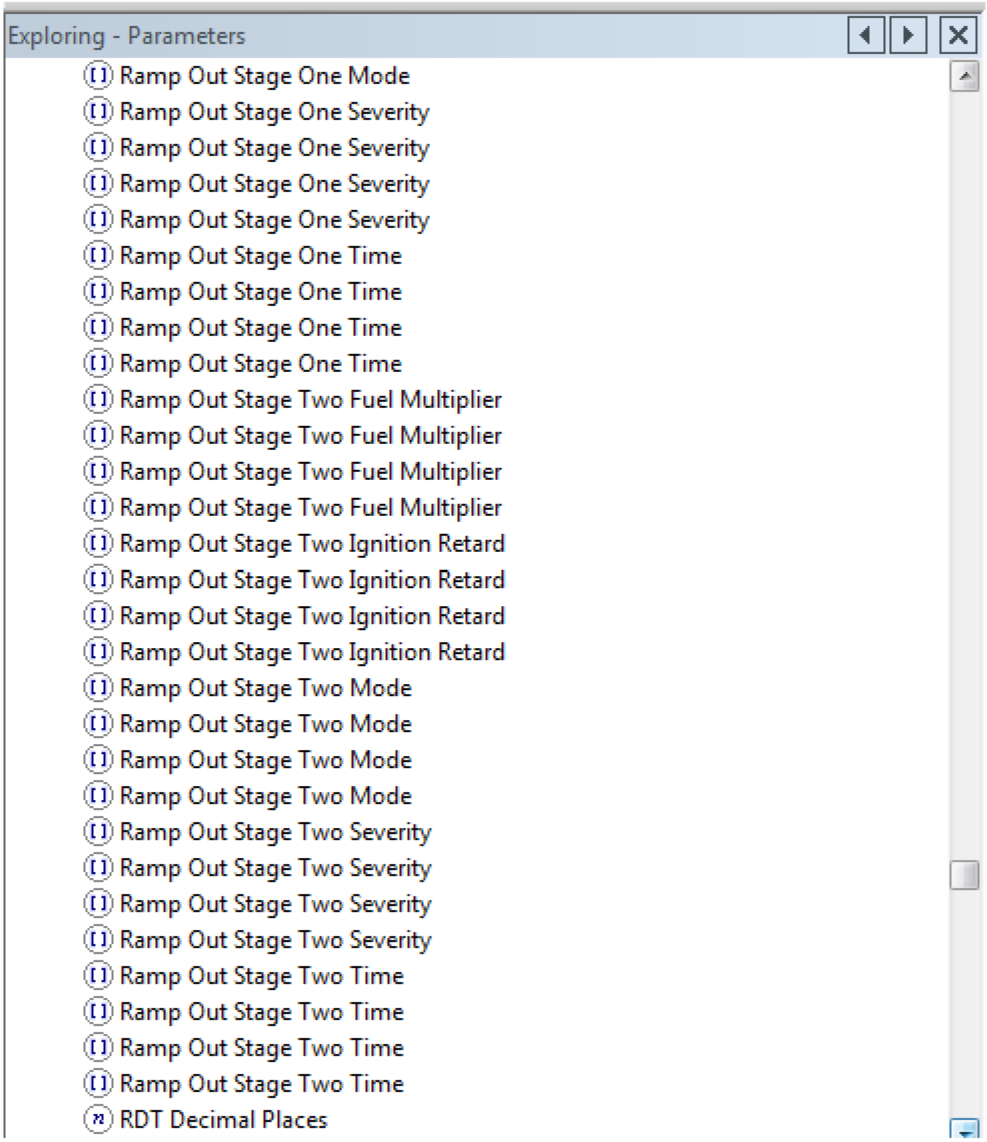
Ramp In Stage One Time
Ramp In Stage One Time
Ramp In Stage One Time
Ramp In Stage One Time
Ramp In Stage Two Fuel Multiplier
Ramp In Stage Two Fuel Multiplier
Ramp In Stage Two Fuel Multiplier
Ramp In Stage Two Fuel Multiplier
Ramp In Stage Two Ignition Advance Rate


Exploring - Parameters
Ramp In Stage Two Ignition Advance Rate
Ramp In Stage Two Ignition Advance Rate
Ramp In Stage Two Ignition Advance Rate
Ramp In Stage Two Ignition Retard
Ramp In Stage Two Ignition Retard
Ramp In Stage Two Ignition Retard
Ramp In Stage Two Ignition Retard
Ramp In Stage Two Mode
Ramp In Stage Two Mode
Ramp In Stage Two Mode
Ramp In Stage Two Mode
Ramp In Stage Two Severity
Ramp In Stage Two Severity
Ramp In Stage Two Severity
Ramp In Stage Two Severity
Ramp In Stage Two Time
Ramp In Stage Two Time
Ramp In Stage Two Time
Ramp In Stage Two Time
Ramp Out Stage One Fuel Multiplier
Ramp Out Stage One Fuel Multiplier
Ramp Out Stage One Fuel Multiplier
Ramp Out Stage One Fuel Multiplier
Ramp Out Stage One Ignition Retard
Ramp Out Stage One Ignition Retard
Ramp Out Stage One Ignition Retard
Ramp Out Stage One Ignition Retard
Ramp Out Stage One Mode
Ramp Out Stage One Mode
Ramp Out Stage One Mode


Exploring - Parameters
Ramp Out Stage One Mode
Ramp Out Stage One Severity
Ramp Out Stage One Severity
Ramp Out Stage One Severity
Ramp Out Stage One Severity
Ramp Out Stage One Time
Ramp Out Stage One Time
Ramp Out Stage One Time
Ramp Out Stage One Time
Ramp Out Stage Two Fuel Multiplier
Ramp Out Stage Two Fuel Multiplier
Ramp Out Stage Two Fuel Multiplier
Ramp Out Stage Two Fuel Multiplier
Ramp Out Stage Two Ignition Retard
Ramp Out Stage Two Ignition Retard
Ramp Out Stage Two Ignition Retard
Ramp Out Stage Two Ignition Retard
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Ramp Out Stage Two Mode
Ramp Out Stage Two Mode
Ramp Out Stage Two Mode
Ramp Out Stage Two Severity
Ramp Out Stage Two Severity
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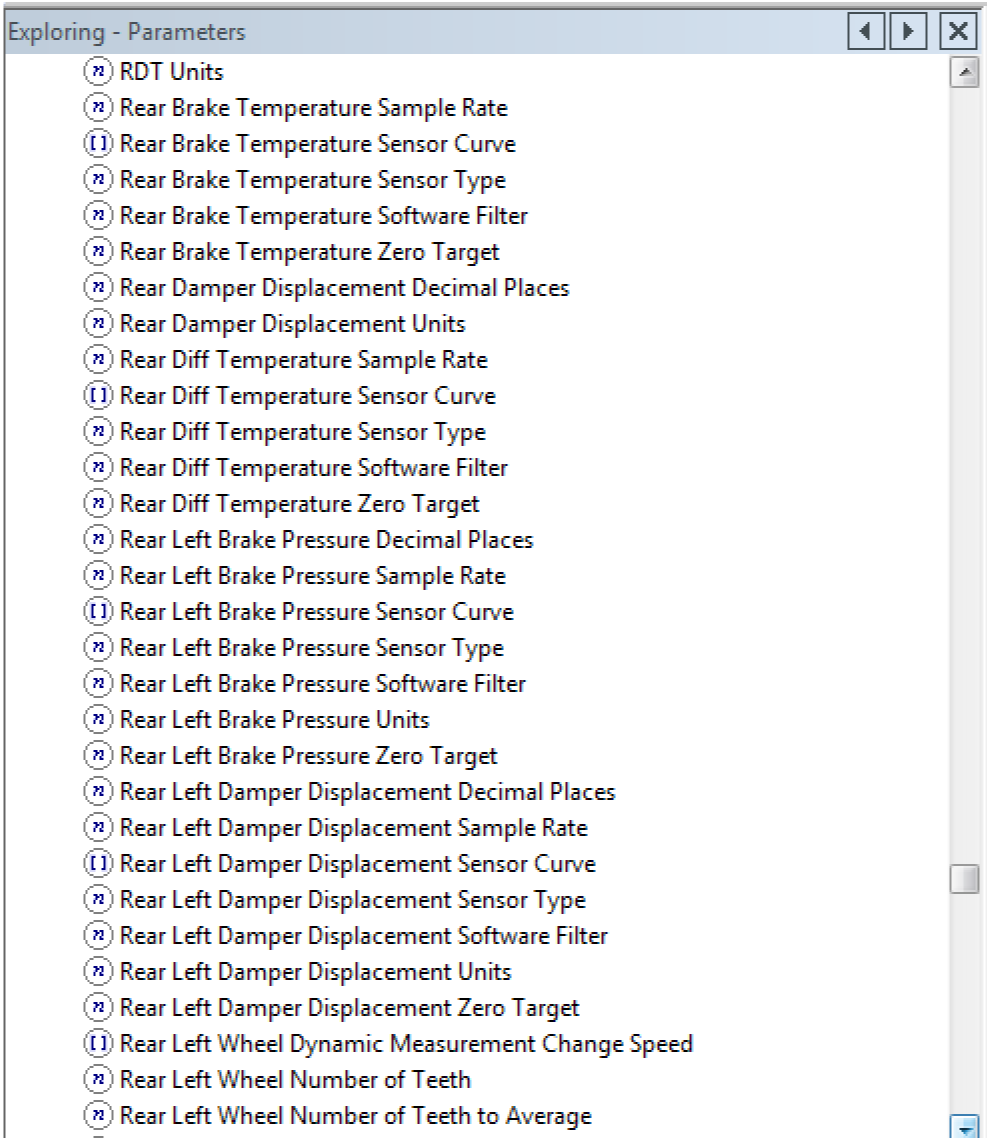
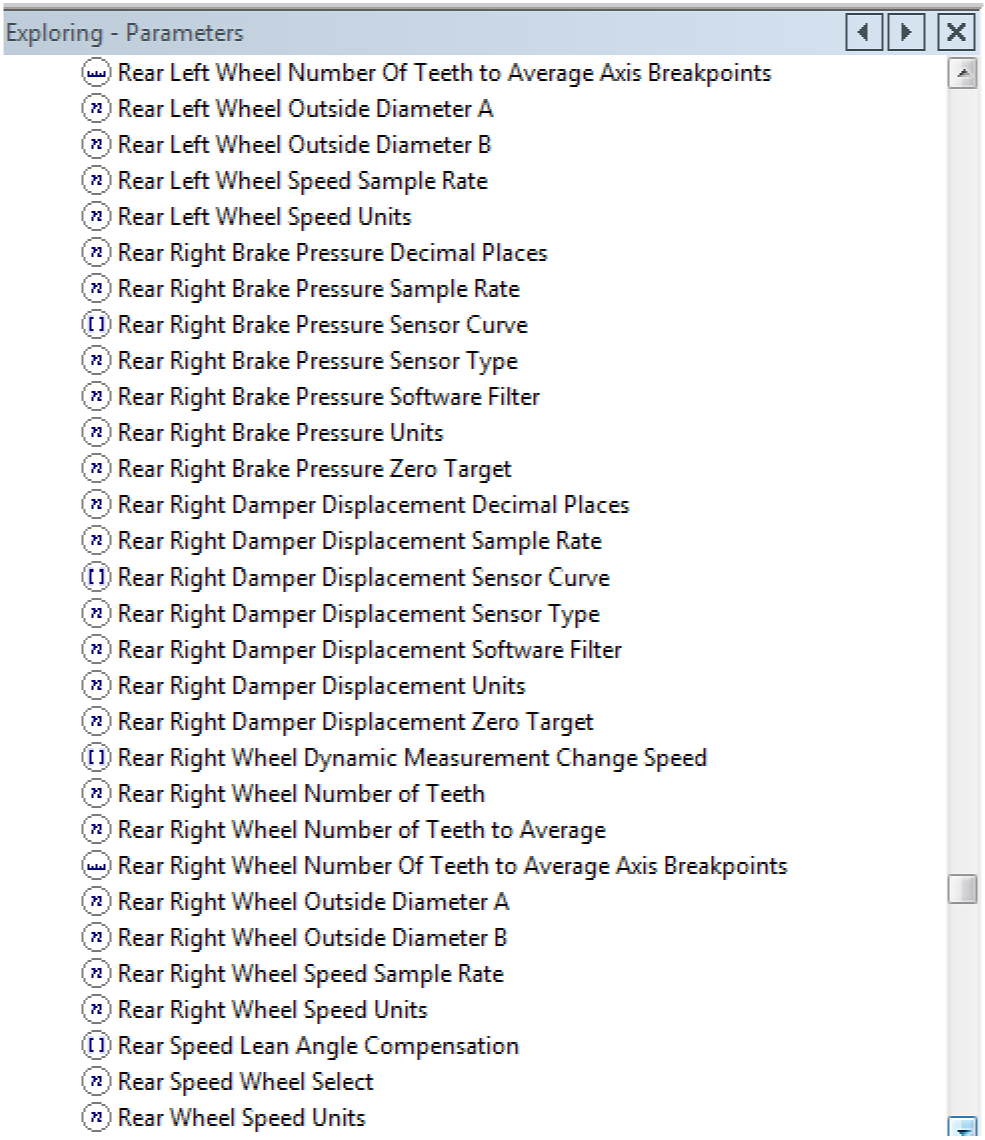
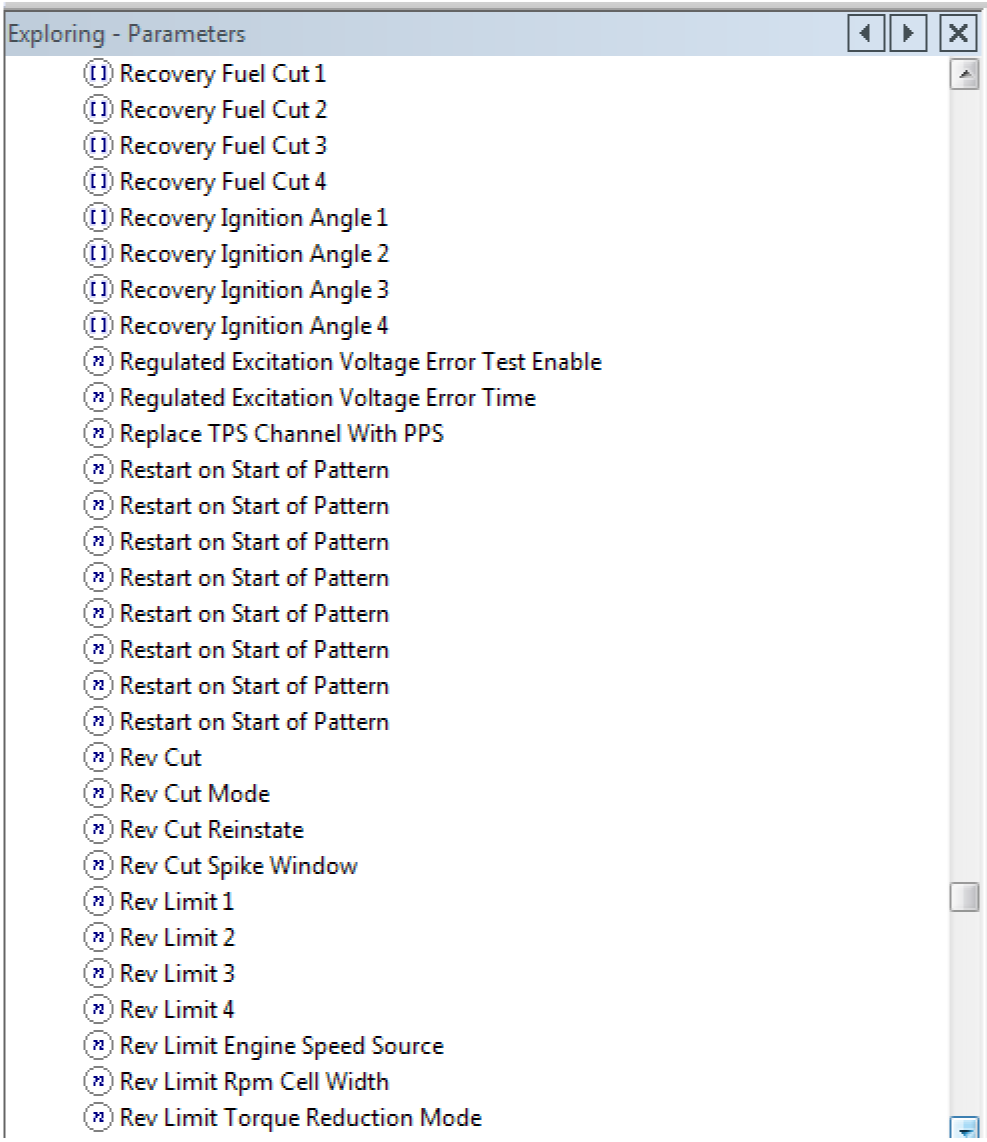
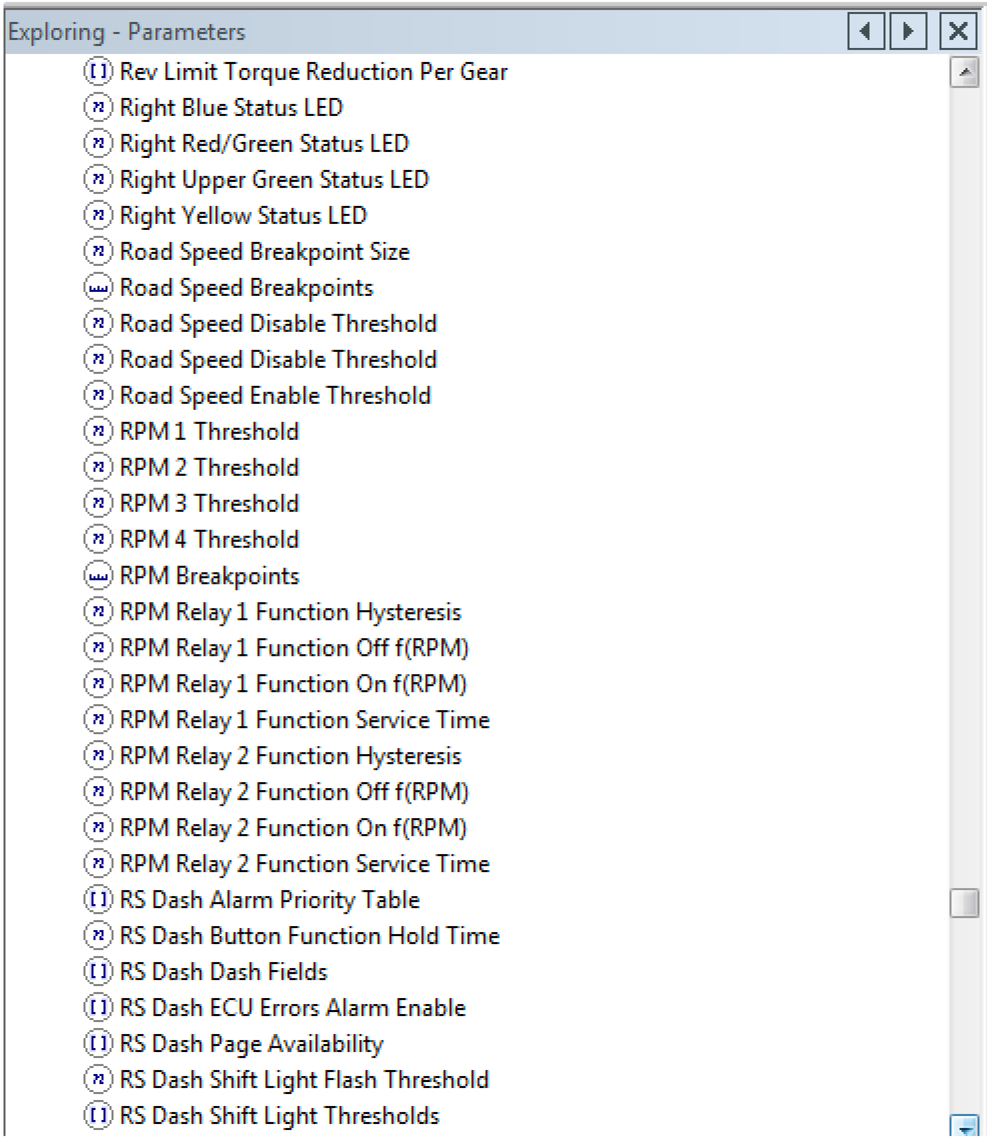
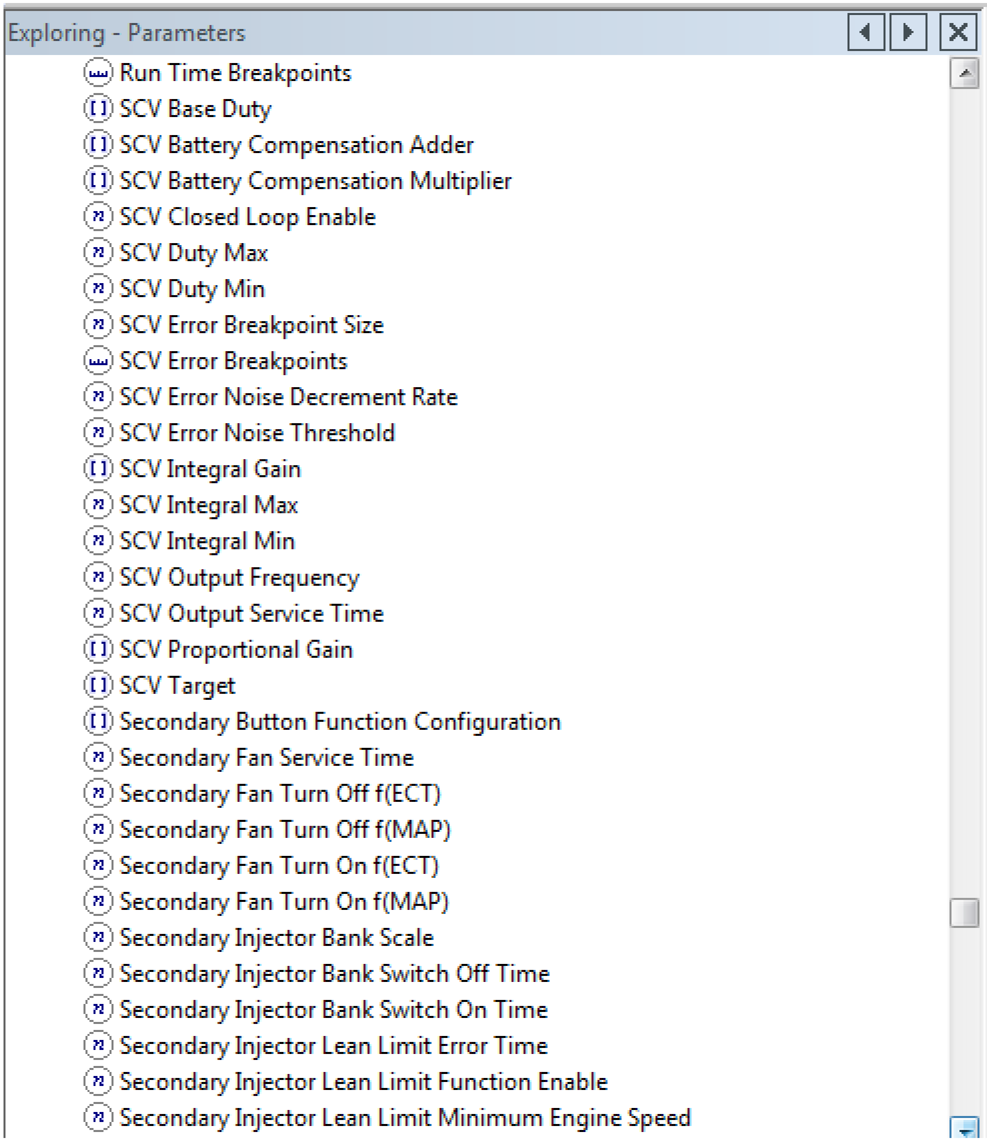
Ramp Out Stage Two Time
Ramp Out Stage Two Time
Ramp Out Stage Two Time
Ramp Out Stage Two Time
RDT Decimal Places

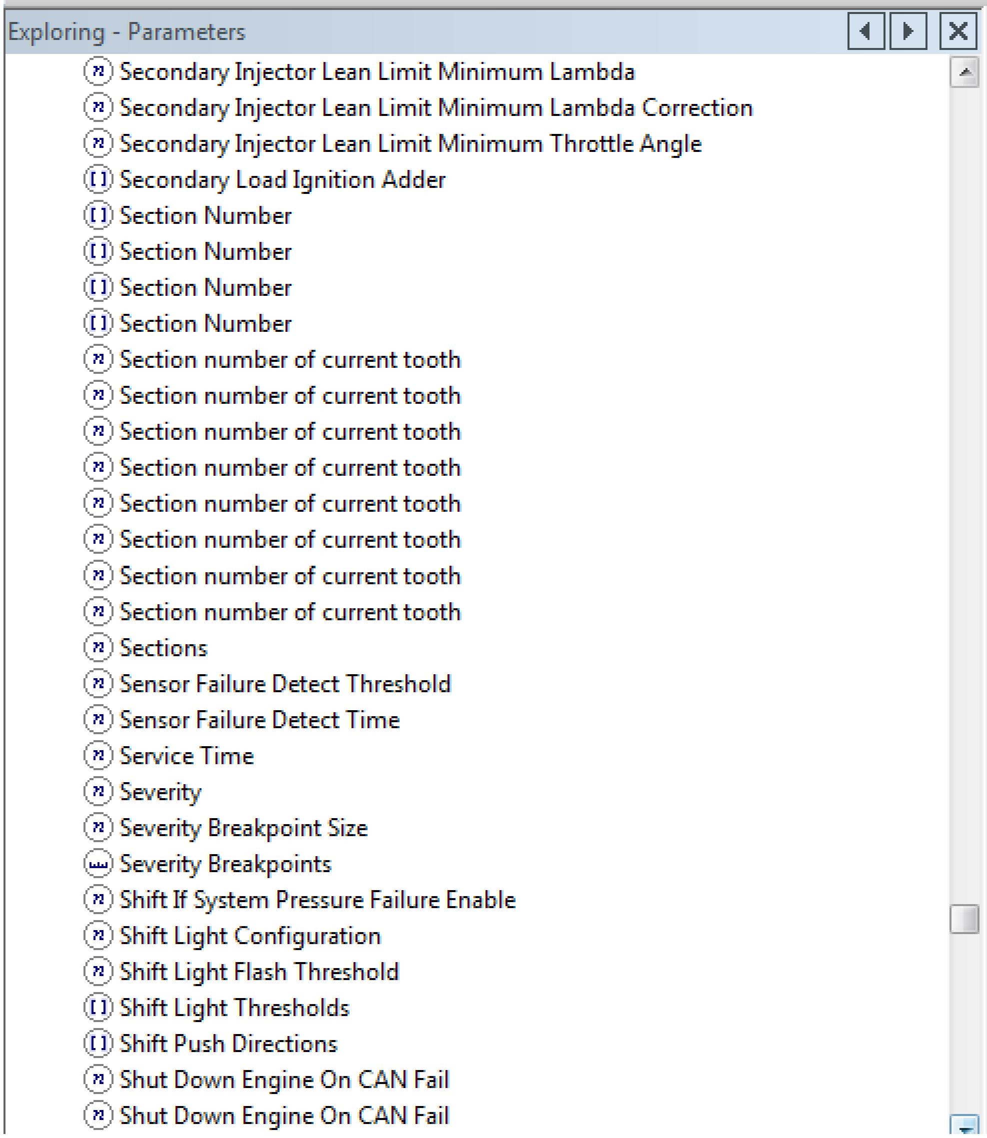

Exploring - Parameters
RDT Units
Rear Brake Temperature Sample Rate
Rear Brake Temperature Sensor Curve
Rear Brake Temperature Sensor Type
Rear Brake Temperature Software Filter
Rear Brake Temperature Zero Target
Rear Damper Displacement Decimal Places
Rear Damper Displacement Units
Rear Diff Temperature Sample Rate
Rear Diff Temperature Sensor Curve
Rear Diff Temperature Sensor Type
Rear Diff Temperature Software Filter
Rear Diff Temperature Zero Target
Rear Left Brake Pressure Decimal Places
Rear Left Brake Pressure Sample Rate
Rear Left Brake Pressure Sensor Curve
Rear Left Brake Pressure Sensor Type
Rear Left Brake Pressure Software Filter
Rear Left Brake Pressure Units
Rear Left Brake Pressure Zero Target
Rear Left Damper Displacement Decimal Places
Rear Left Damper Displacement Sample Rate
Rear Left Damper Displacement Sensor Curve
Rear Left Damper Displacement Sensor Type
Rear Left Damper Displacement Software Filter
Rear Left Damper Displacement Units
Rear Left Damper Displacement Zero Target
Rear Left Wheel Dynamic Measurement Change Speed
Rear Left Wheel Number of Teeth
Rear Left Wheel Number of Teeth to Average

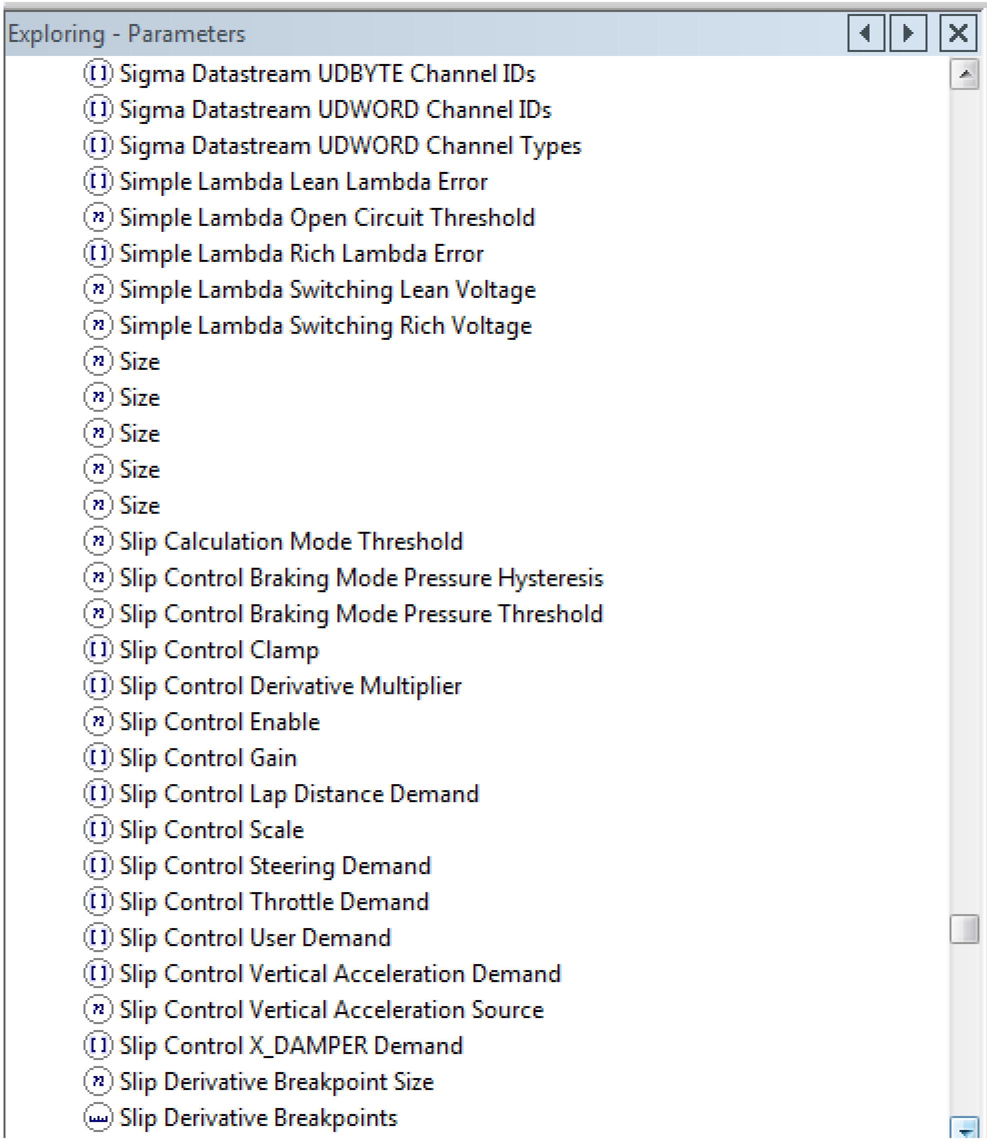

Exploring - Parameters
Rear Left Wheel Number Of Teeth to Average Axis Breakpoints
Rear Left Wheel Outside Diameter A
Rear Left Wheel Outside Diameter B
Rear Left Wheel Speed Sample Rate
Rear Left Wheel Speed Units
Rear Right Brake Pressure Decimal Places
Rear Right Brake Pressure Sample Rate
Rear Right Brake Pressure Sensor Curve
Rear Right Brake Pressure Sensor Type
Rear Right Brake Pressure Software Filter
Rear Right Brake Pressure Units
Rear Right Brake Pressure Zero Target
Rear Right Damper Displacement Decimal Places
Rear Right Damper Displacement Sample Rate
Rear Right Damper Displacement Sensor Curve
Rear Right Damper Displacement Sensor Type
Rear Right Damper Displacement Software Filter
Rear Right Damper Displacement Units
Rear Right Damper Displacement Zero Target
Rear Right Wheel Dynamic Measurement Change Speed
Rear Right Wheel Number of Teeth
Rear Right Wheel Number of Teeth to Average
Rear Right Wheel Number Of Teeth to Average Axis Breakpoints
Rear Right Wheel Outside Diameter A
Rear Right Wheel Outside Diameter B
Rear Right Wheel Speed Sample Rate
Rear Right Wheel Speed Units
Rear Speed Lean Angle Compensation
Rear Speed Wheel Select
Rear Wheel Speed Units

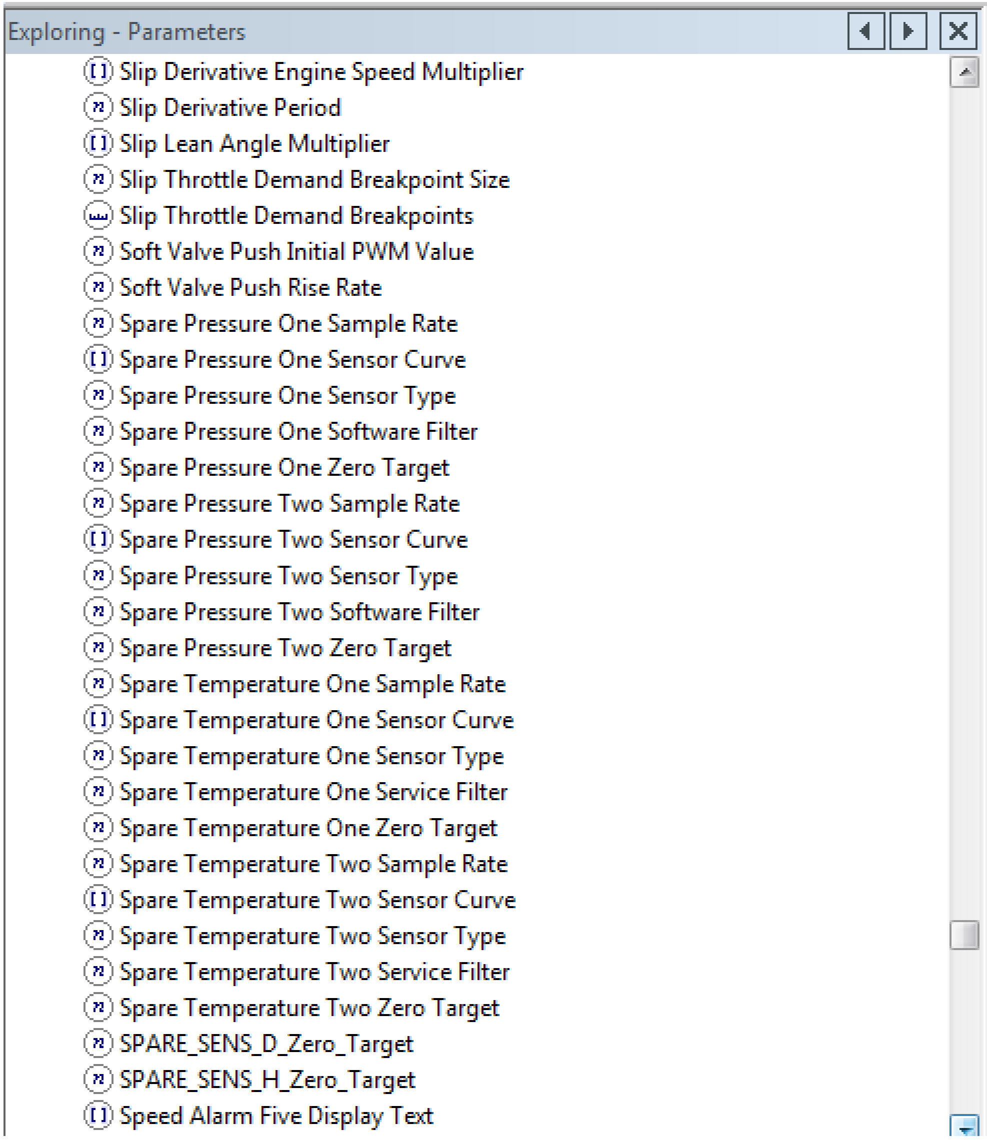

Exploring - Parameters
Recovery Fuel Cut 1
Recovery Fuel Cut 2
Recovery Fuel Cut 3
Recovery Fuel Cut 4
Recovery Ignition Angle 1
Recovery Ignition Angle 2
Recovery Ignition Angle 3
Recovery Ignition Angle 4
Regulated Excitation Voltage Error Test Enable
Regulated Excitation Voltage Error Time
Replace TPS Channel With PPS
Restart on Start of Pattern
Restart on Start of Pattern
Restart on Start of Pattern
Restart on Start of Pattern
Restart on Start of Pattern
Restart on Start of Pattern
Restart on Start of Pattern
Restart on Start of Pattern
Rev Cut
Rev Cut Mode
Rev Cut Reinstate
Rev Cut Spike Window
Rev Limit 1
Rev Limit 2
Rev Limit 3
Rev Limit 4
Rev Limit Engine Speed Source
Rev Limit Rpm Cell Width
Rev Limit Torque Reduction Mode


Exploring - Parameters
Rev Limit Torque Reduction Per Gear
Right Blue Status LED
Right Red/Green Status LED
Right Upper Green Status LED
Right Yellow Status LED
Road Speed Breakpoint Size
Road Speed Breakpoints
Road Speed Disable Threshold
Road Speed Disable Threshold
Road Speed Enable Threshold
RPM 1 Threshold
RPM 2 Threshold
RPM 3 Threshold
RPM 4 Threshold
RPM Breakpoints
RPM Relay 1 Function Hysteresis
RPM Relay 1 Function Off f(RPM)
RPM Relay 1 Function On f(RPM)
RPM Relay 1 Function Service Time
RPM Relay 2 Function Hysteresis
RPM Relay 2 Function Off f(RPM)
RPM Relay 2 Function On f(RPM)
RPM Relay 2 Function Service Time
RS Dash Alarm Priority Table
RS Dash Button Function Hold Time
RS Dash Dash Fields
RS Dash ECU Errors Alarm Enable
RS Dash Page Availability
RS Dash Shift Light Flash Threshold
RS Dash Shift Light Thresholds


Exploring - Parameters
Run Time Breakpoints
SCV Base Duty
SCV Battery Compensation Adder
SCV Battery Compensation Multiplier
SCV Closed Loop Enable
SCV Duty Max
SCV Duty Min
SCV Error Breakpoint Size
SCV Error Breakpoints
SCV Error Noise Decrement Rate
SCV Error Noise Threshold
SCV Integral Gain
SCV Integral Max
SCV Integral Min
SCV Output Frequency
SCV Output Service Time
SCV Proportional Gain
SCV Target
Secondary Button Function Configuration
Secondary Fan Service Time
Secondary Fan Turn Off f(ECT)
Secondary Fan Turn Off f(MAP)
Secondary Fan Turn On f(ECT)
Secondary Fan Turn On f(MAP)
Secondary Injector Bank Scale
Secondary Injector Bank Switch Off Time
Secondary Injector Bank Switch On Time
Secondary Injector Lean Limit Error Time
Secondary Injector Lean Limit Function Enable
Secondary Injector Lean Limit Minimum Engine Speed

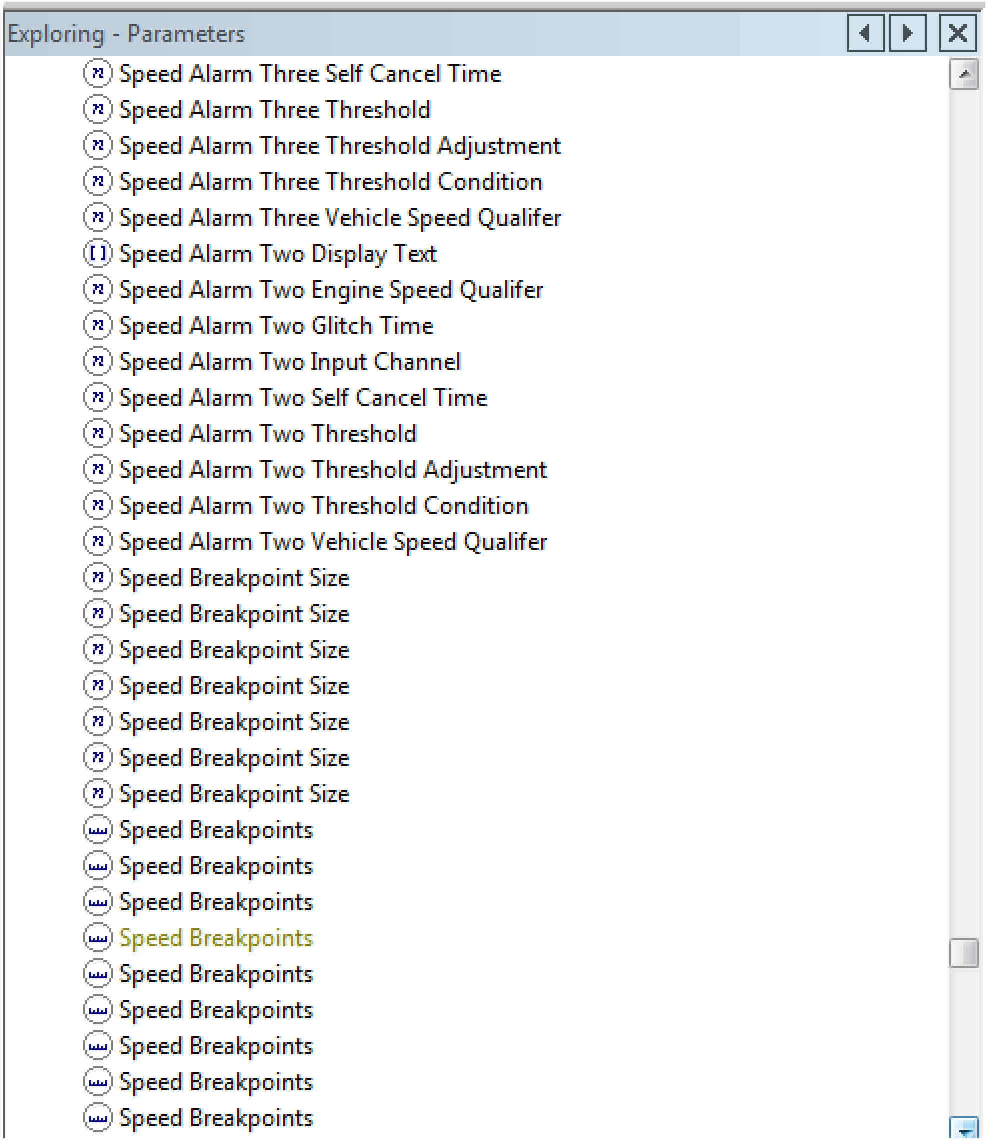

Exploring - Parameters
Secondary Injector Lean Limit Minimum Lambda
Secondary Injector Lean Limit Minimum Lambda Correction
Secondary Injector Lean Limit Minimum Throttle Angle
Secondary Load Ignition Adder
Section Number
Section Number
Section Number
Section Number
Section number of current tooth
Section number of current tooth
Section number of current tooth
Section number of current tooth
Section number of current tooth
Section number of current tooth
Section number of current tooth
Section number of current tooth
Sections
Sensor Failure Detect Threshold
Sensor Failure Detect Time
Service Time
Severity
Severity Breakpoint Size
Severity Breakpoints
Shift If System Pressure Failure Enable
Shift Light Configuration
Shift Light Flash Threshold
Shift Light Thresholds
Shift Push Directions
Shut Down Engine On CAN Fail
Shut Down Engine On CAN Fail

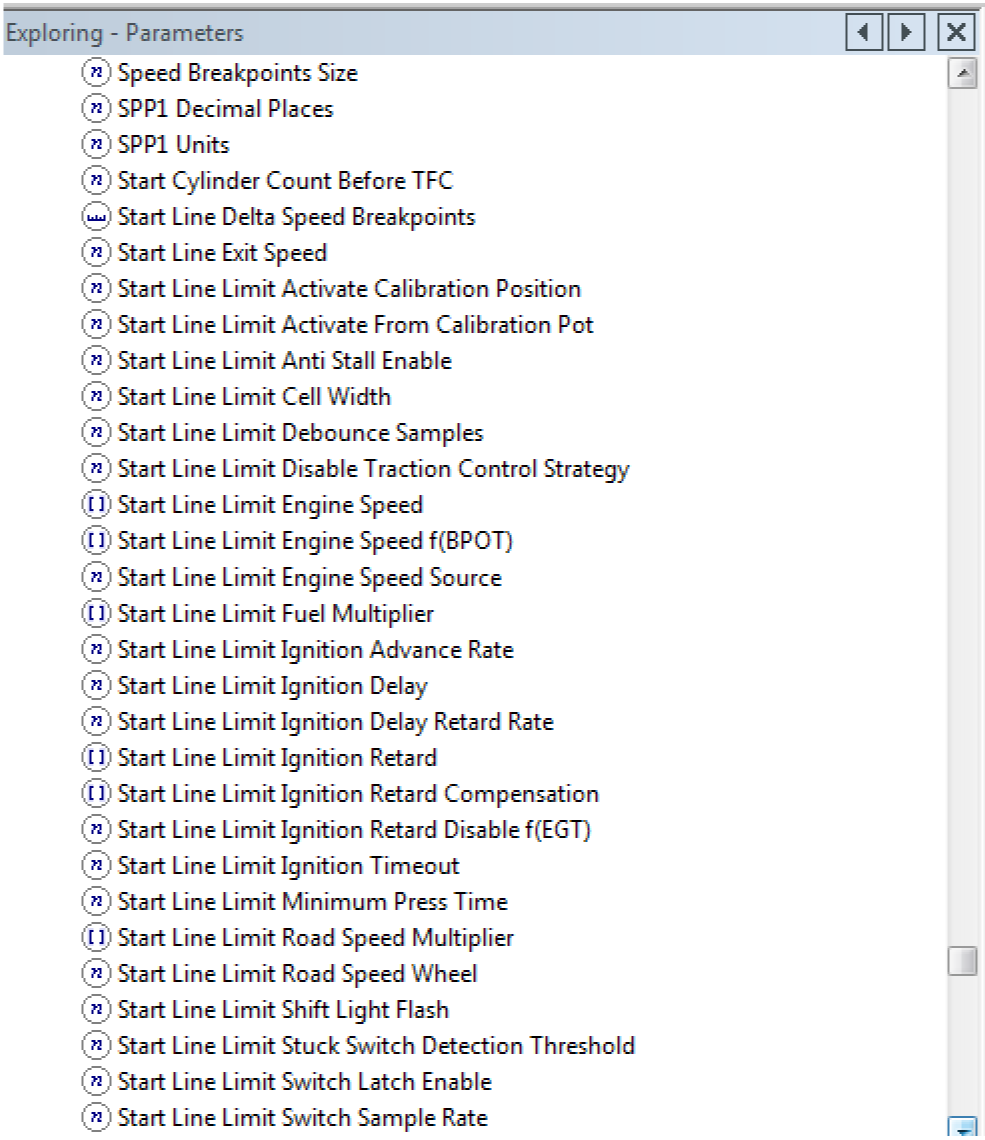

Exploring - Parameters
Sigma Datastream UDBYTE Channel IDs
Sigma Datastream UDWORD Channel IDs
Sigma Datastream UDWORD Channel Types
Simple Lambda Lean Lambda Error
Simple Lambda Open Circuit Threshold
Simple Lambda Rich Lambda Error
Simple Lambda Switching Lean Voltage
Simple Lambda Switching Rich Voltage
Size
Size
Size
Size
Size
Slip Calculation Mode Threshold
Slip Control Braking Mode Pressure Hysteresis
Slip Control Braking Mode Pressure Threshold
Slip Control Clamp
Slip Control Derivative Multiplier
Slip Control Enable
Slip Control Gain
Slip Control Lap Distance Demand
Slip Control Scale
Slip Control Steering Demand
Slip Control Throttle Demand
Slip Control User Demand
Slip Control Vertical Acceleration Demand
Slip Control Vertical Acceleration Source
Slip Control X_DAMPER Demand
Slip Derivative Breakpoint Size
Slip Derivative Breakpoints

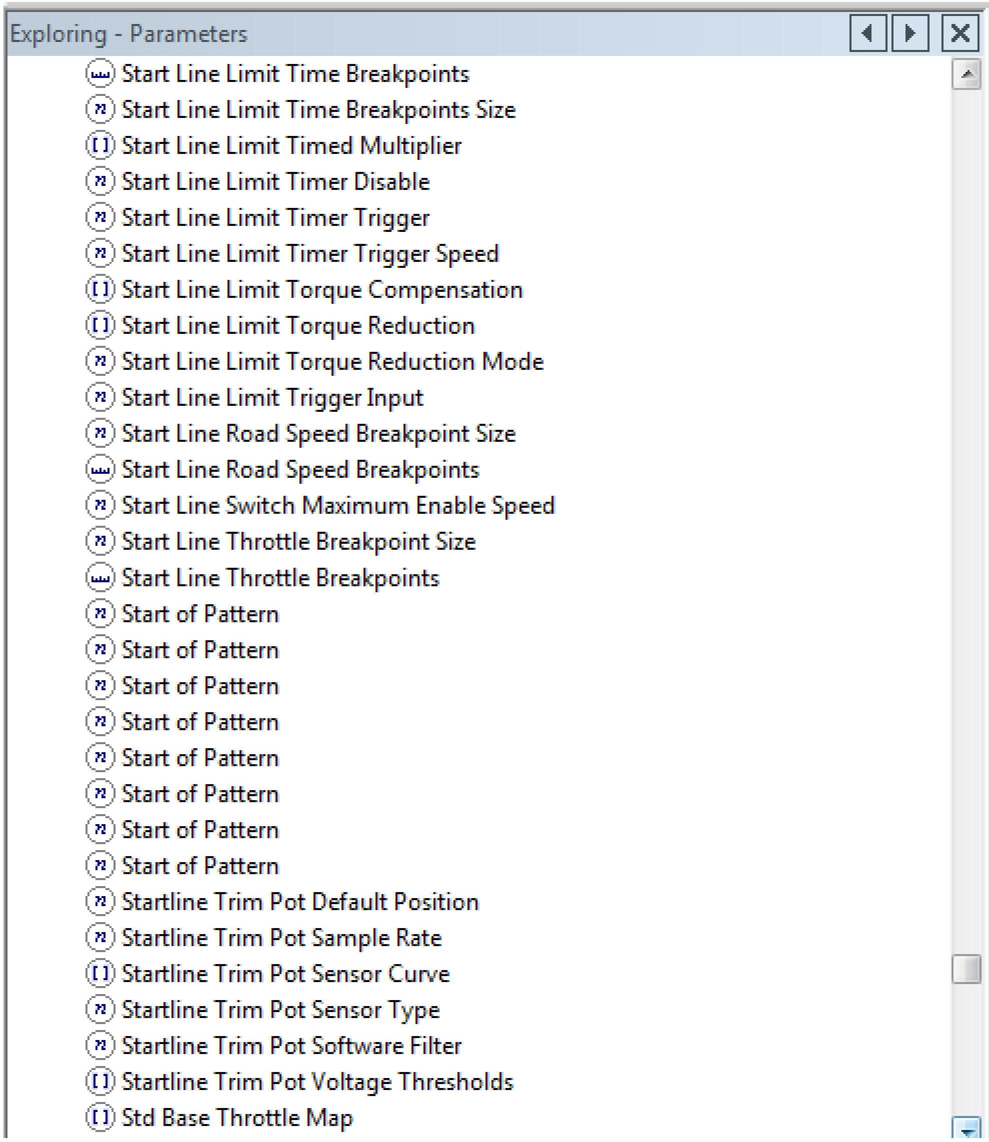

Exploring - Parameters
Slip Derivative Engine Speed Multiplier
Slip Derivative Period
Slip Lean Angle Multiplier
Slip Throttle Demand Breakpoint Size
Slip Throttle Demand Breakpoints
Soft Valve Push Initial PWM Value
Soft Valve Push Rise Rate
Spare Pressure One Sample Rate
Spare Pressure One Sensor Curve
Spare Pressure One Sensor Type
Spare Pressure One Software Filter
Spare Pressure One Zero Target
Spare Pressure Two Sample Rate
Spare Pressure Two Sensor Curve
Spare Pressure Two Sensor Type
Spare Pressure Two Software Filter
Spare Pressure Two Zero Target
Spare Temperature One Sample Rate
Spare Temperature One Sensor Curve
Spare Temperature One Sensor Type
Spare Temperature One Service Filter
Spare Temperature One Zero Target
Spare Temperature Two Sample Rate
Spare Temperature Two Sensor Curve
Spare Temperature Two Sensor Type
Spare Temperature Two Service Filter
Spare Temperature Two Zero Target
SPARE_SENS_D_Zero_Target
SPARE_SENS_H_Zero_Target
Speed Alarm Five Display Text

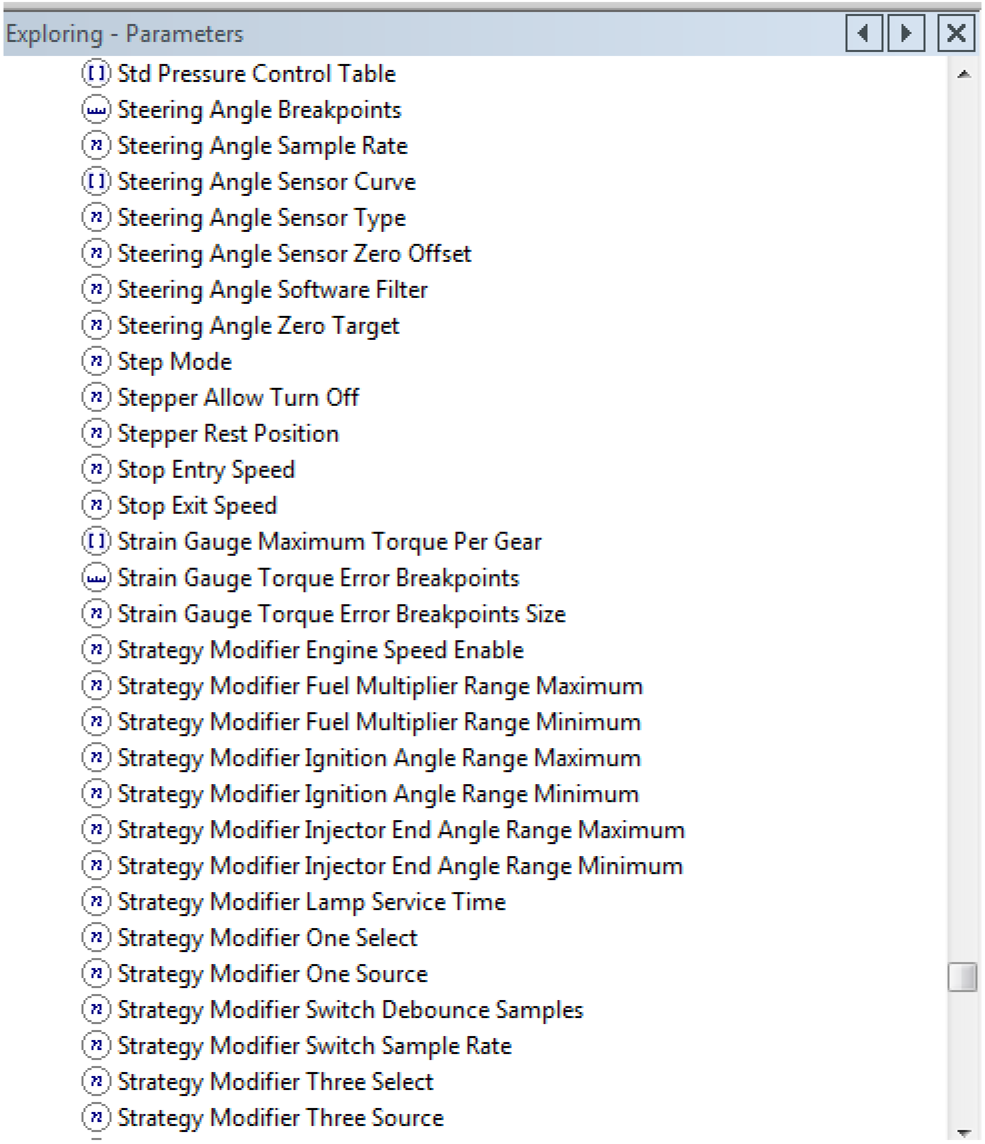
Exploring - Parameters

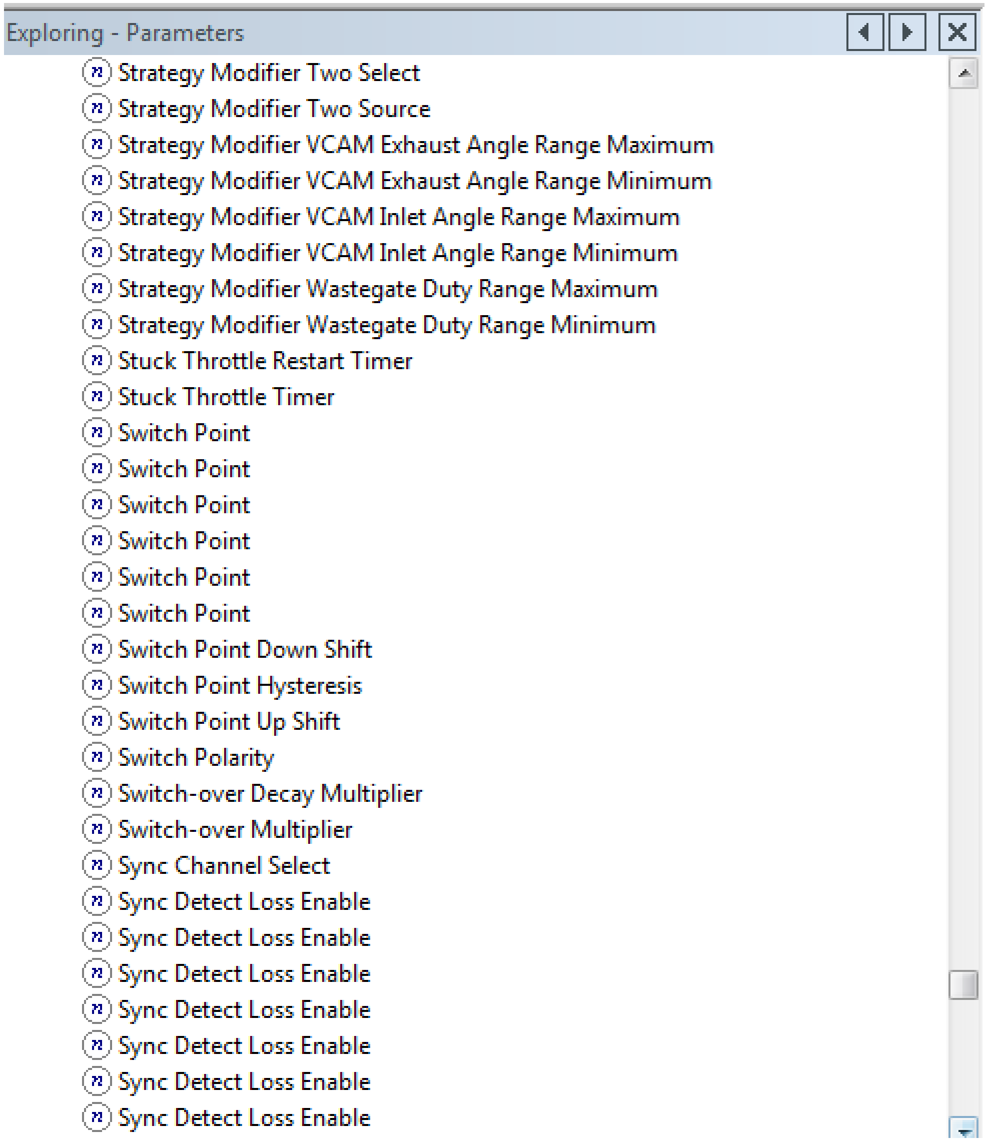
- Speed Alarm Five Engine Speed Qualifer
- Speed Alarm Five Glitch Time
- Speed Alarm Five Input Channel
- Speed Alarm Five Self Cancel Time
- Speed Alarm Five Threshold
- Speed Alarm Five Threshold Adjustment
- Speed Alarm Five Threshold Condition
- Speed Alarm Five Vehicle Speed Qualifer
- Speed Alarm Four Display Text
- Speed Alarm Four Engine Speed Qualifer
- Speed Alarm Four Glitch Time
- Speed Alarm Four Input Channel
- Speed Alarm Four Self Cancel Time
- Speed Alarm Four Threshold
- Speed Alarm Four Threshold Adjustment
- Speed Alarm Four Threshold Condition
- Speed Alarm Four Vehicle Speed Qualifer
- Speed Alarm One Display Text
- Speed Alarm One Engine Speed Qualifer
- Speed Alarm One Glitch Time
- Speed Alarm One Input Channel
- Speed Alarm One Self Cancel Time
- Speed Alarm One Threshold
- Speed Alarm One Threshold Adjustment
- Speed Alarm One Threshold Condition
- Speed Alarm One Vehicle Speed Qualifer
- Speed Alarm Three Display Text
- Speed Alarm Three Engine Speed Qualifer
- Speed Alarm Three Glitch Time
- Speed Alarm Three Input Channel

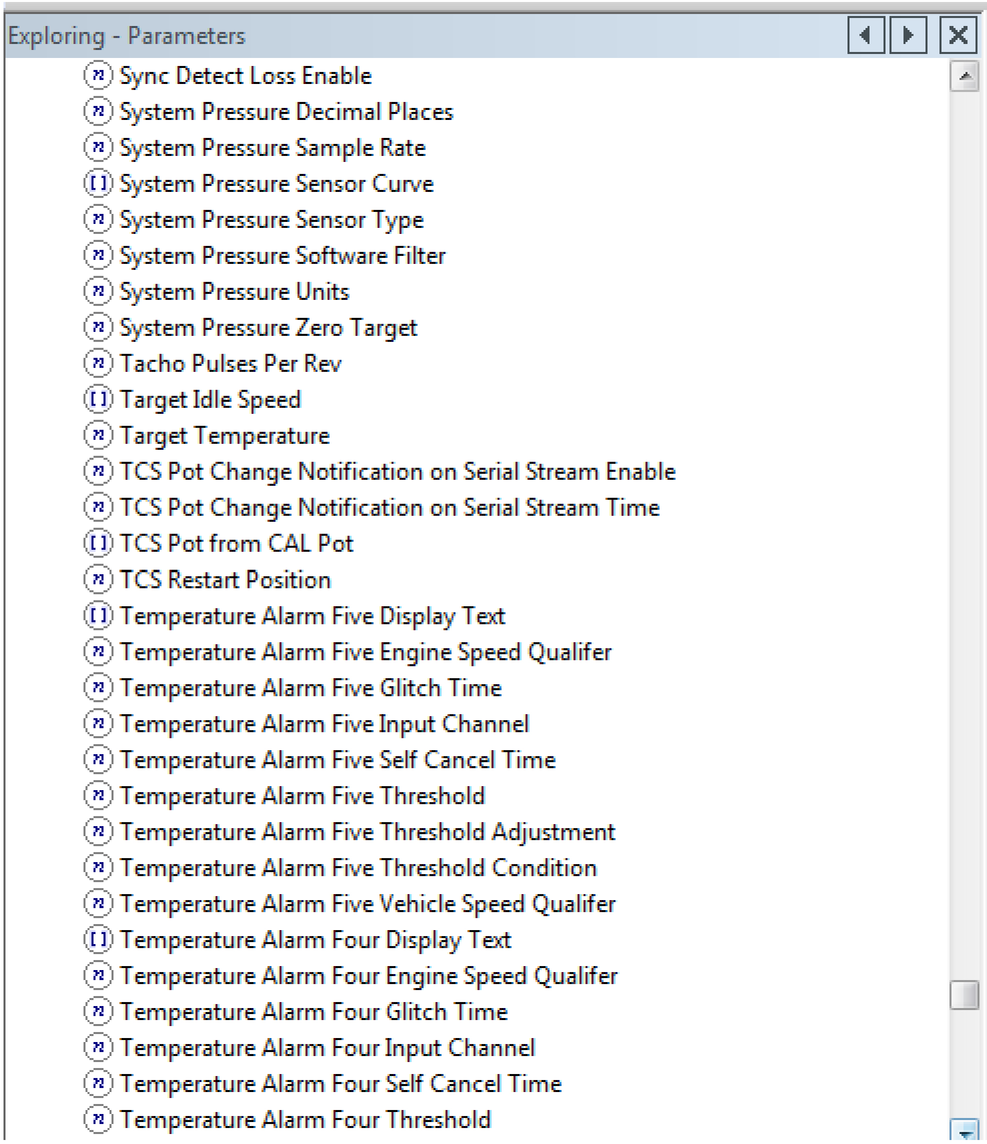

Exploring - Parameters
Speed Alarm Three Self Cancel Time
Speed Alarm Three Threshold
Speed Alarm Three Threshold Adjustment
Speed Alarm Three Threshold Condition
Speed Alarm Three Vehicle Speed Qualifer
Speed Alarm Two Display Text
Speed Alarm Two Engine Speed Qualifer
Speed Alarm Two Glitch Time
Speed Alarm Two Input Channel
Speed Alarm Two Self Cancel Time
Speed Alarm Two Threshold
Speed Alarm Two Threshold Adjustment
Speed Alarm Two Threshold Condition
Speed Alarm Two Vehicle Speed Qualifer
Speed Breakpoint Size
Speed Breakpoint Size
Speed Breakpoint Size
Speed Breakpoint Size
Speed Breakpoint Size
Speed Breakpoint Size
Speed Breakpoint Size
Speed Breakpoints
Speed Breakpoints
Speed Breakpoints
Speed Breakpoints
Speed Breakpoints
Speed Breakpoints
Speed Breakpoints
Speed Breakpoints
Speed Breakpoints

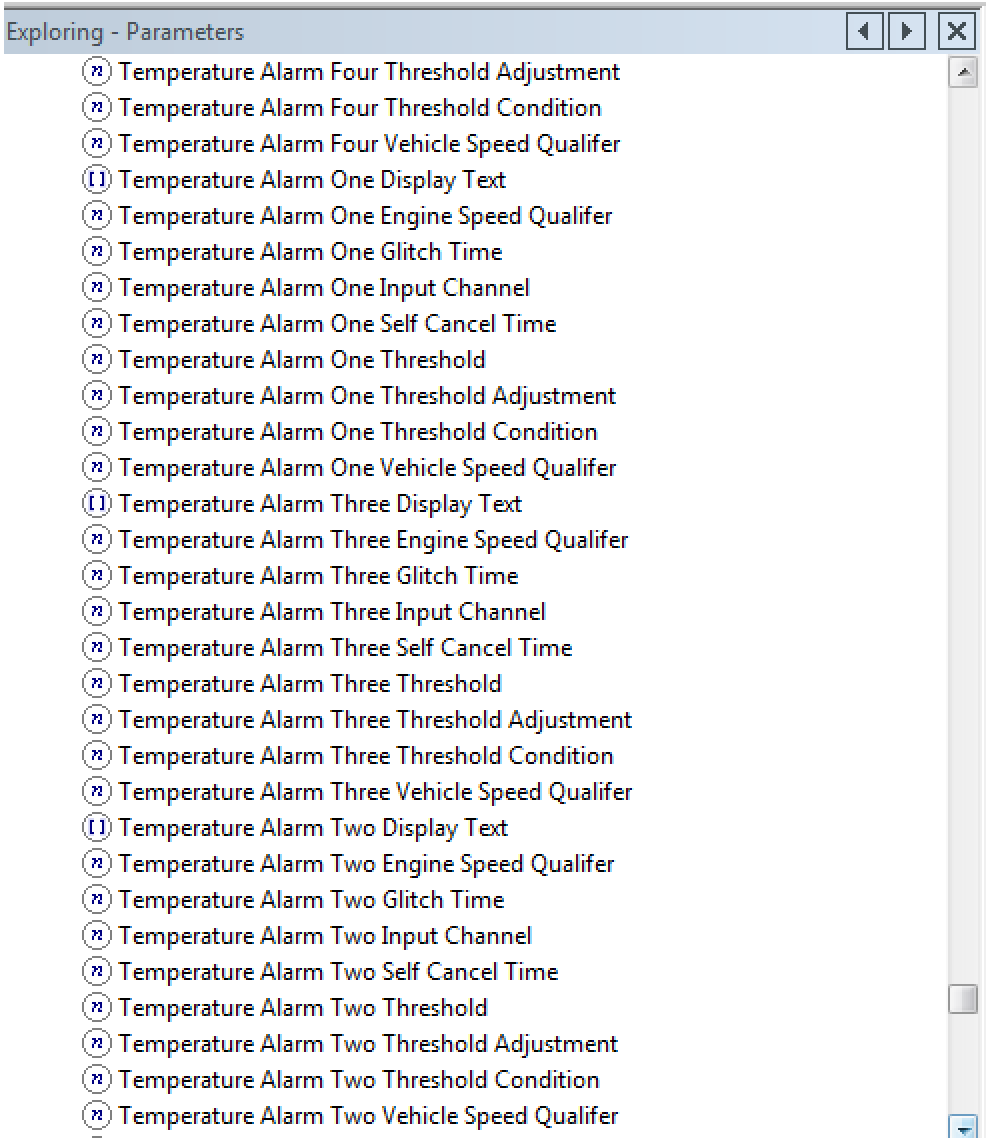

Exploring - Parameters
Speed Breakpoints Size
SPP1 Decimal Places
SPP1 Units
Start Cylinder Count Before TFC
Start Line Delta Speed Breakpoints
Start Line Exit Speed
Start Line Limit Activate Calibration Position
Start Line Limit Activate From Calibration Pot
Start Line Limit Anti Stall Enable
Start Line Limit Cell Width
Start Line Limit Debounce Samples
Start Line Limit Disable Traction Control Strategy
Start Line Limit Engine Speed
Start Line Limit Engine Speed f(BPOT)
Start Line Limit Engine Speed Source
Start Line Limit Fuel Multiplier
Start Line Limit Ignition Advance Rate
Start Line Limit Ignition Delay
Start Line Limit Ignition Delay Retard Rate
Start Line Limit Ignition Retard
Start Line Limit Ignition Retard Compensation
Start Line Limit Ignition Retard Disable f(EGT)
Start Line Limit Ignition Timeout
Start Line Limit Minimum Press Time
Start Line Limit Road Speed Multiplier
Start Line Limit Road Speed Wheel
Start Line Limit Shift Light Flash
Start Line Limit Stuck Switch Detection Threshold
Start Line Limit Switch Latch Enable
Start Line Limit Switch Sample Rate


Exploring - Parameters
Start Line Limit Time Breakpoints
Start Line Limit Time Breakpoints Size
Start Line Limit Timed Multiplier
Start Line Limit Timer Disable
Start Line Limit Timer Trigger
Start Line Limit Timer Trigger Speed
Start Line Limit Torque Compensation
Start Line Limit Torque Reduction
Start Line Limit Torque Reduction Mode
Start Line Limit Trigger Input
Start Line Road Speed Breakpoint Size
Start Line Road Speed Breakpoints
Start Line Switch Maximum Enable Speed
Start Line Throttle Breakpoint Size
Start Line Throttle Breakpoints
Start of Pattern
Start of Pattern
Start of Pattern
Start of Pattern
Start of Pattern
Start of Pattern
Start of Pattern
Start of Pattern
Startline Trim Pot Default Position
Startline Trim Pot Sample Rate
Startline Trim Pot Sensor Curve
Startline Trim Pot Sensor Type
Startline Trim Pot Software Filter
Startline Trim Pot Voltage Thresholds
Std Base Throttle Map


Exploring - Parameters
Std Pressure Control Table
Steering Angle Breakpoints
Steering Angle Sample Rate
Steering Angle Sensor Curve
Steering Angle Sensor Type
Steering Angle Sensor Zero Offset
Steering Angle Software Filter
Steering Angle Zero Target
Step Mode
Stepper Allow Turn Off
Stepper Rest Position
Stop Entry Speed
Stop Exit Speed
Strain Gauge Maximum Torque Per Gear
Strain Gauge Torque Error Breakpoints
Strain Gauge Torque Error Breakpoints Size
Strategy Modifier Engine Speed Enable
Strategy Modifier Fuel Multiplier Range Maximum
Strategy Modifier Fuel Multiplier Range Minimum
Strategy Modifier Ignition Angle Range Maximum
Strategy Modifier Ignition Angle Range Minimum
Strategy Modifier Injector End Angle Range Maximum
Strategy Modifier Injector End Angle Range Minimum
Strategy Modifier Lamp Service Time
Strategy Modifier One Select
Strategy Modifier One Source
Strategy Modifier Switch Debounce Samples
Strategy Modifier Switch Sample Rate
Strategy Modifier Three Select
Strategy Modifier Three Source

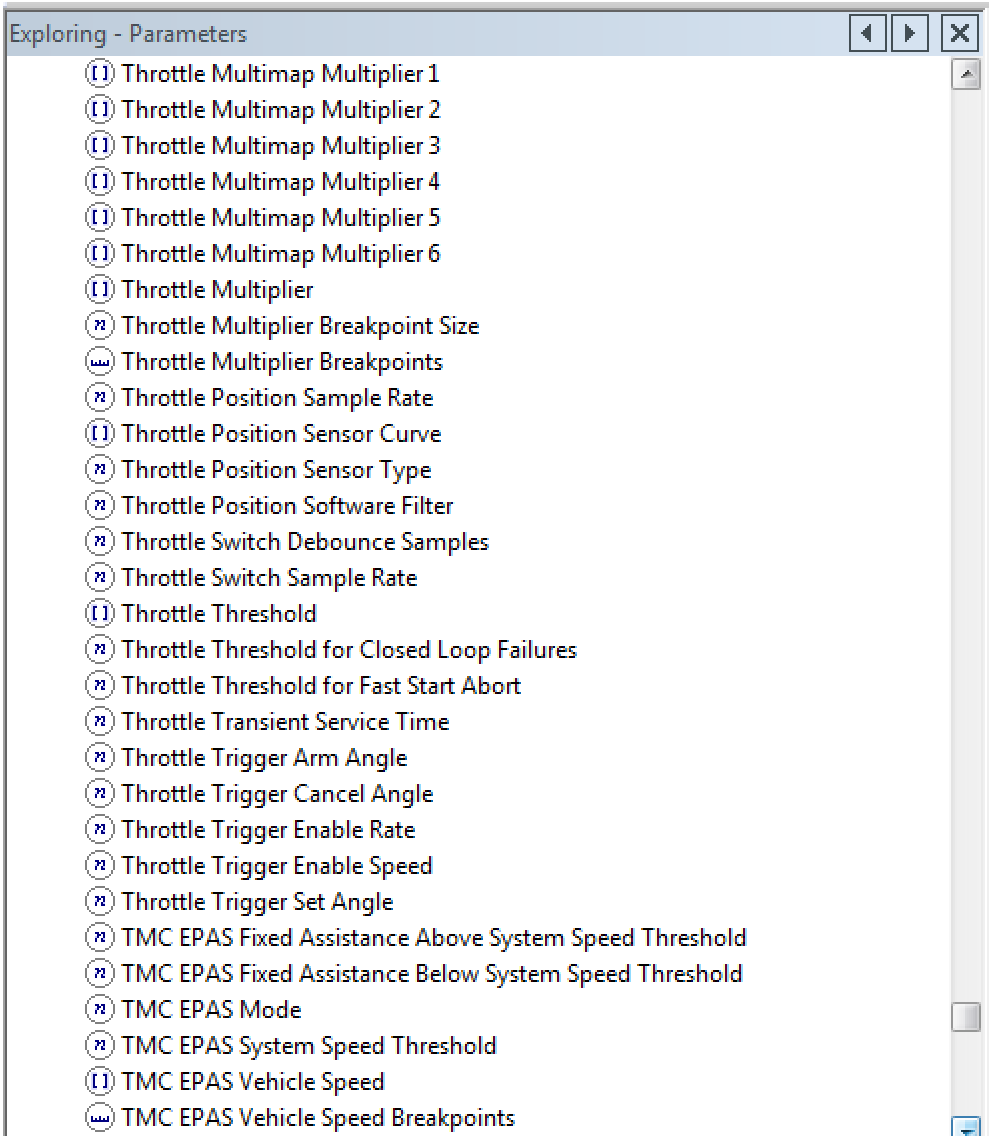

Exploring - Parameters
Strategy Modifier Two Select
Strategy Modifier Two Source
Strategy Modifier VCAM Exhaust Angle Range Maximum
Strategy Modifier VCAM Exhaust Angle Range Minimum
Strategy Modifier VCAM Inlet Angle Range Maximum
Strategy Modifier VCAM Inlet Angle Range Minimum
Strategy Modifier Wastegate Duty Range Maximum
Strategy Modifier Wastegate Duty Range Minimum
Stuck Throttle Restart Timer
Stuck Throttle Timer
Switch Point
Switch Point
Switch Point
Switch Point
Switch Point
Switch Point
Switch Point Down Shift
Switch Point Hysteresis
Switch Point Up Shift
Switch Polarity
Switch-over Decay Multiplier
Switch-over Multiplier
Sync Channel Select
Sync Detect Loss Enable
Sync Detect Loss Enable
Sync Detect Loss Enable
Sync Detect Loss Enable
Sync Detect Loss Enable
Sync Detect Loss Enable
Sync Detect Loss Enable

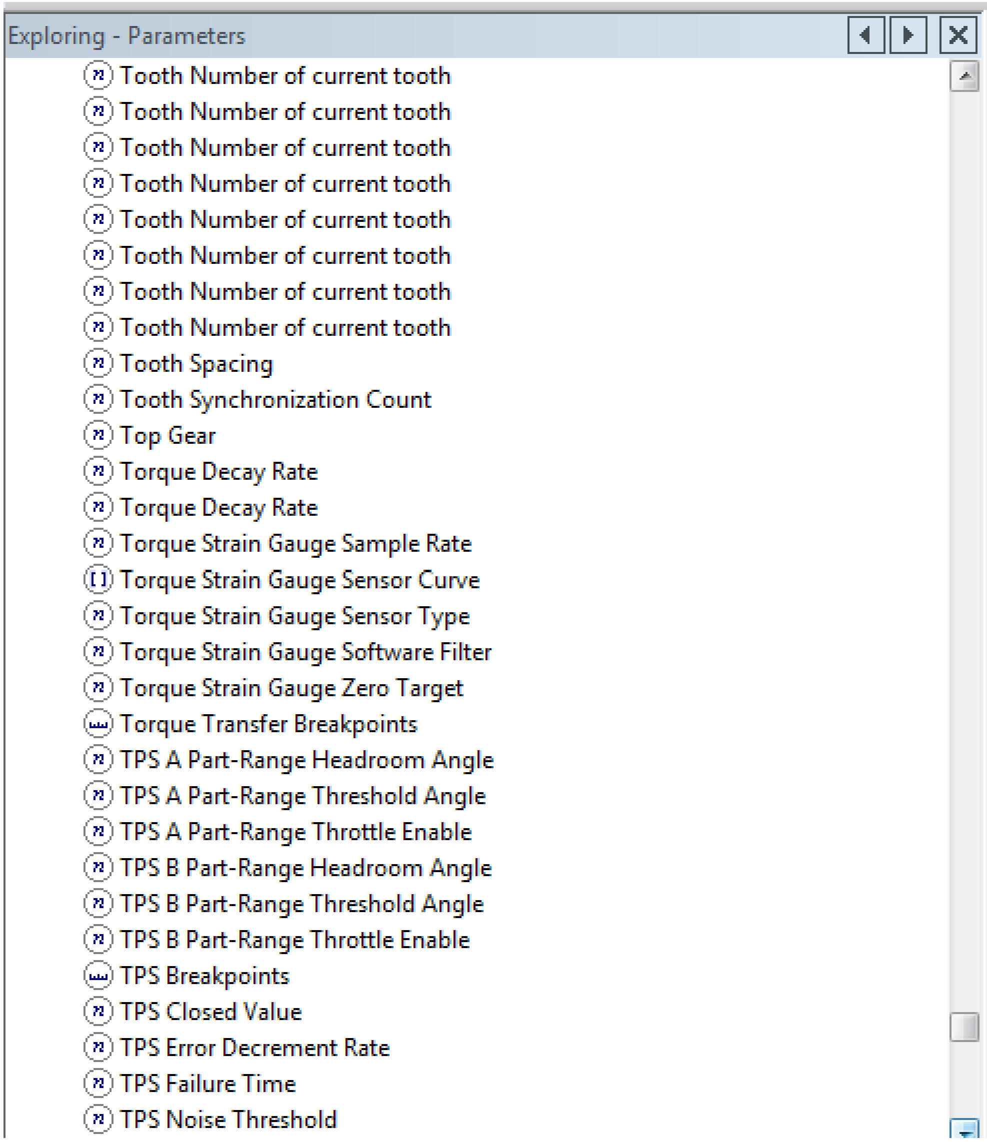

Exploring - Parameters
Sync Detect Loss Enable
System Pressure Decimal Places
System Pressure Sample Rate
System Pressure Sensor Curve
System Pressure Sensor Type
System Pressure Software Filter
System Pressure Units
System Pressure Zero Target
Tacho Pulses Per Rev
Target Idle Speed
Target Temperature
TCS Pot Change Notification on Serial Stream Enable
TCS Pot Change Notification on Serial Stream Time
TCS Pot from CAL Pot
TCS Restart Position
Temperature Alarm Five Display Text
Temperature Alarm Five Engine Speed Qualifer
Temperature Alarm Five Glitch Time
Temperature Alarm Five Input Channel
Temperature Alarm Five Self Cancel Time
Temperature Alarm Five Threshold
Temperature Alarm Five Threshold Adjustment
Temperature Alarm Five Threshold Condition
Temperature Alarm Five Vehicle Speed Qualifer
Temperature Alarm Four Display Text
Temperature Alarm Four Engine Speed Qualifer
Temperature Alarm Four Glitch Time
Temperature Alarm Four Input Channel
Temperature Alarm Four Self Cancel Time
Temperature Alarm Four Threshold

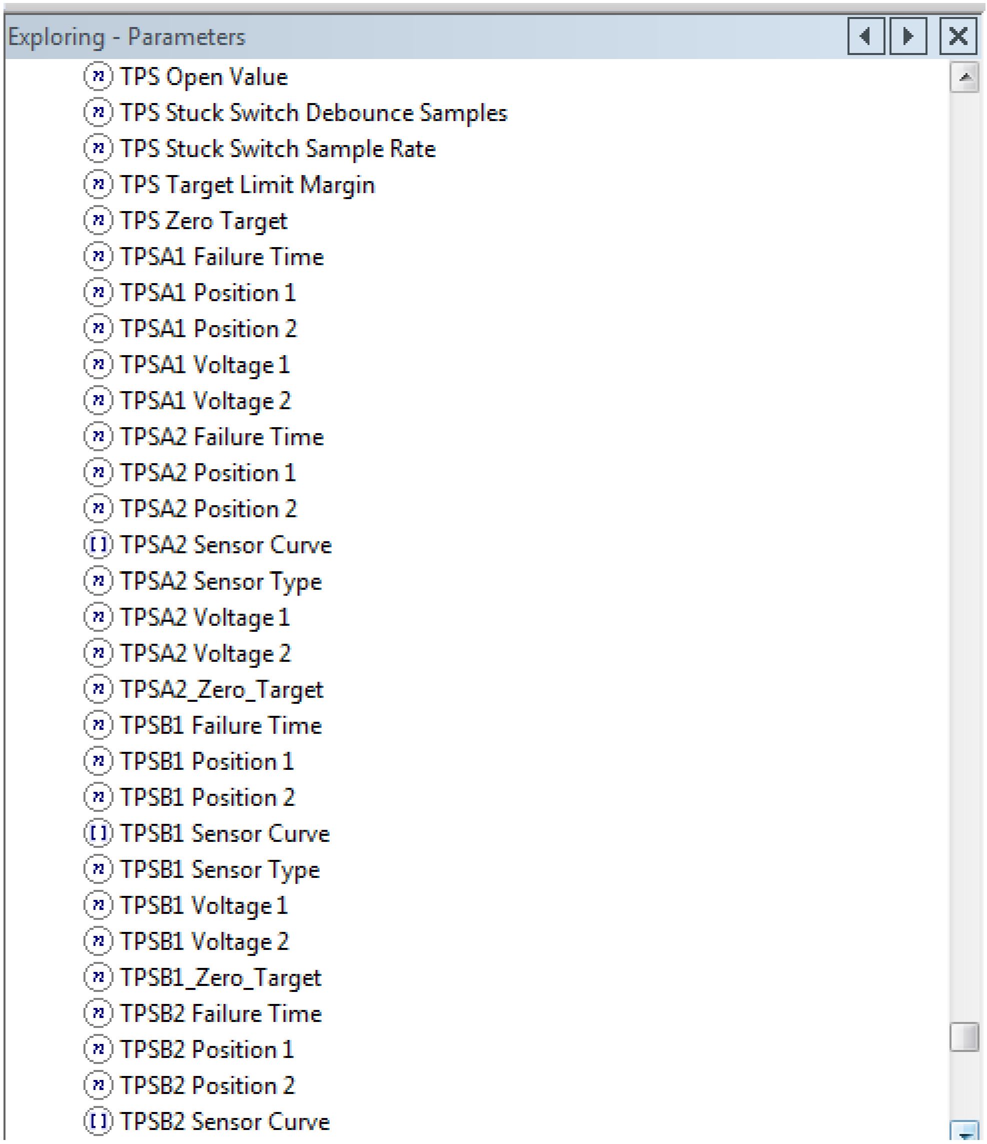

Exploring - Parameters
Temperature Alarm Four Threshold Adjustment
Temperature Alarm Four Threshold Condition
Temperature Alarm Four Vehicle Speed Qualifer
Temperature Alarm One Display Text
Temperature Alarm One Engine Speed Qualifer
Temperature Alarm One Glitch Time
Temperature Alarm One Input Channel
Temperature Alarm One Self Cancel Time
Temperature Alarm One Threshold
Temperature Alarm One Threshold Adjustment
Temperature Alarm One Threshold Condition
Temperature Alarm One Vehicle Speed Qualifer
Temperature Alarm Three Display Text
Temperature Alarm Three Engine Speed Qualifer
Temperature Alarm Three Glitch Time
Temperature Alarm Three Input Channel
Temperature Alarm Three Self Cancel Time
Temperature Alarm Three Threshold
Temperature Alarm Three Threshold Adjustment
Temperature Alarm Three Threshold Condition
Temperature Alarm Three Vehicle Speed Qualifer
Temperature Alarm Two Display Text
Temperature Alarm Two Engine Speed Qualifer
Temperature Alarm Two Glitch Time
Temperature Alarm Two Input Channel
Temperature Alarm Two Self Cancel Time
Temperature Alarm Two Threshold
Temperature Alarm Two Threshold Adjustment
Temperature Alarm Two Threshold Condition
Temperature Alarm Two Vehicle Speed Qualifer

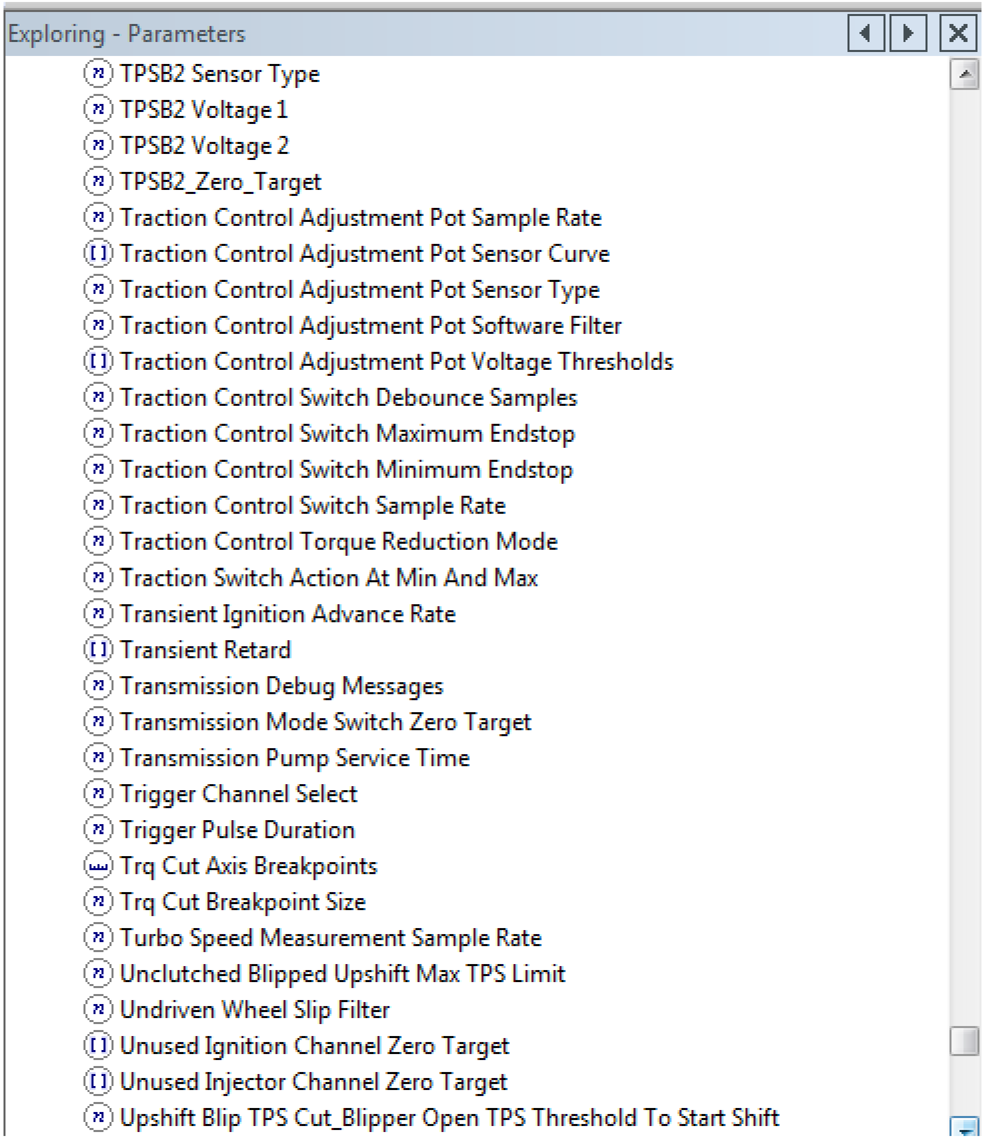
Exploring - Parameters

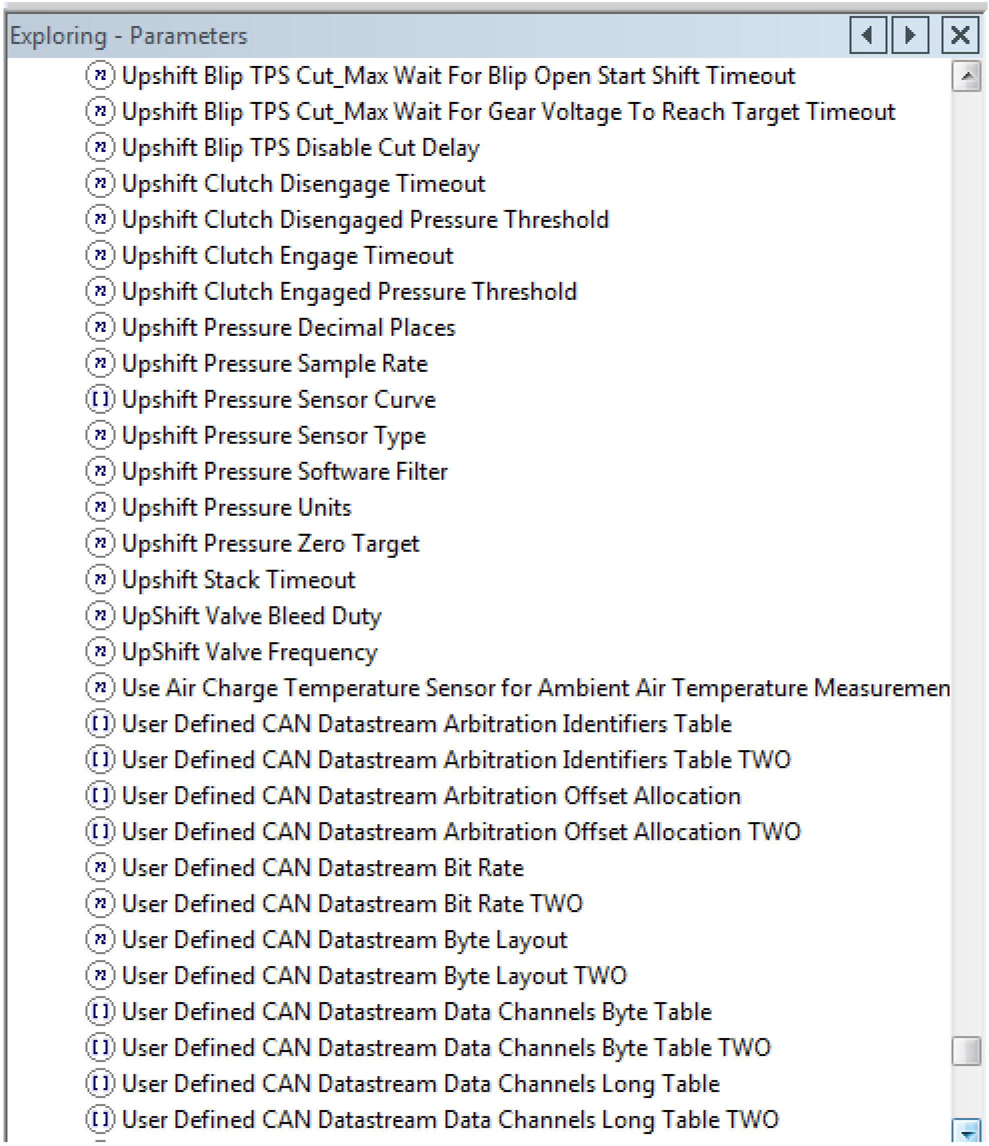
- Tertiary Fan Service Time
- Tertiary Fan Turn Off f(ECT)
- Tertiary Fan Turn On f(ECT)
- TEX1 Decimal Places
- TEX1 Units
- TEX2 Decimal Places
- TEX2 Units
- TH1 Function Select
- TH2 Function Select
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Pair Values
- Threshold Select Group 1 DIN1 and DIN2
- Threshold Select Group 2 DIN3 and DIN4
- Threshold Select Group 3 DIN5 and DIN6
- Threshold Select Group 4 DIN7 to DIN10
- Throttle Angle Breakpoints
- Throttle Breakpoint Size
- Throttle Breakpoints
- Throttle Breakpoints
- Throttle Breakpoints Size

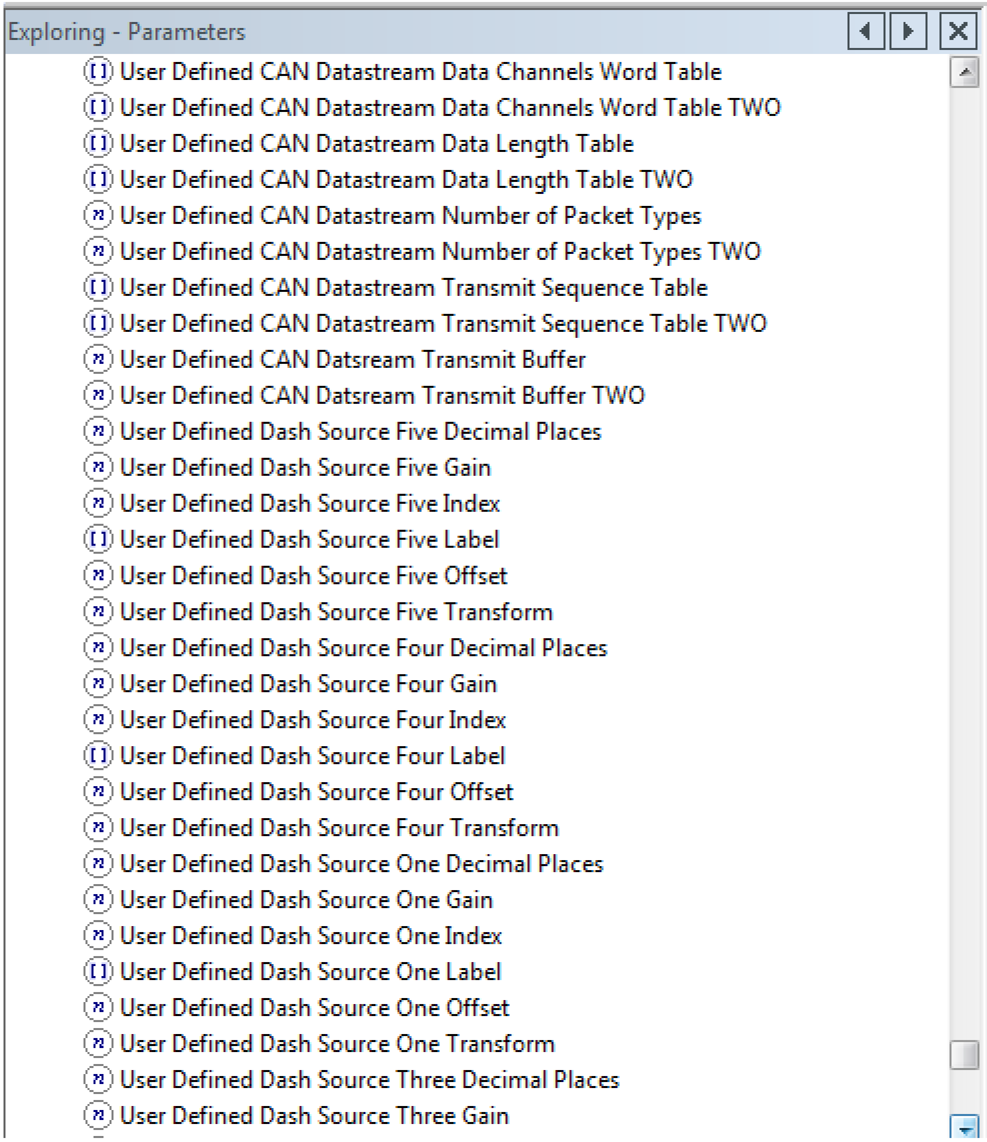

Exploring - Parameters
Throttle Multimap Multiplier 1
Throttle Multimap Multiplier 2
Throttle Multimap Multiplier 3
Throttle Multimap Multiplier 4
Throttle Multimap Multiplier 5
Throttle Multimap Multiplier 6
Throttle Multiplier
Throttle Multiplier Breakpoint Size
Throttle Multiplier Breakpoints
Throttle Position Sample Rate
Throttle Position Sensor Curve
Throttle Position Sensor Type
Throttle Position Software Filter
Throttle Switch Debounce Samples
Throttle Switch Sample Rate
Throttle Threshold
Throttle Threshold for Closed Loop Failures
Throttle Threshold for Fast Start Abort
Throttle Transient Service Time
Throttle Trigger Arm Angle
Throttle Trigger Cancel Angle
Throttle Trigger Enable Rate
Throttle Trigger Enable Speed
Throttle Trigger Set Angle
TMC EPAS Fixed Assistance Above System Speed Threshold
TMC EPAS Fixed Assistance Below System Speed Threshold
TMC EPAS Mode
TMC EPAS System Speed Threshold
TMC EPAS Vehicle Speed
TMC EPAS Vehicle Speed Breakpoints


Exploring - Parameters
Tooth Number of current tooth
Tooth Number of current tooth
Tooth Number of current tooth
Tooth Number of current tooth
Tooth Number of current tooth
Tooth Number of current tooth
Tooth Number of current tooth
Tooth Number of current tooth
Tooth Spacing
Tooth Synchronization Count
Top Gear
Torque Decay Rate
Torque Decay Rate
Torque Strain Gauge Sample Rate
Torque Strain Gauge Sensor Curve
Torque Strain Gauge Sensor Type
Torque Strain Gauge Software Filter
Torque Strain Gauge Zero Target
Torque Transfer Breakpoints
TPS A Part-Range Headroom Angle
TPS A Part-Range Threshold Angle
TPS A Part-Range Throttle Enable
TPS B Part-Range Headroom Angle
TPS B Part-Range Threshold Angle
TPS B Part-Range Throttle Enable
TPS Breakpoints
TPS Closed Value
TPS Error Decrement Rate
TPS Failure Time
TPS Noise Threshold


Exploring - Parameters
TPS Open Value
TPS Stuck Switch Debounce Samples
TPS Stuck Switch Sample Rate
TPS Target Limit Margin
TPS Zero Target
TPSA1 Failure Time
TPSA1 Position 1
TPSA1 Position 2
TPSA1 Voltage 1
TPSA1 Voltage 2
TPSA2 Failure Time
TPSA2 Position 1
TPSA2 Position 2
TPSA2 Sensor Curve
TPSA2 Sensor Type
TPSA2 Voltage 1
TPSA2 Voltage 2
TPSA2_Zero_Target
TPSB1 Failure Time
TPSB1 Position 1
TPSB1 Position 2
TPSB1 Sensor Curve
TPSB1 Sensor Type
TPSB1 Voltage 1
TPSB1 Voltage 2
TPSB1_Zero_Target
TPSB2 Failure Time
TPSB2 Position 1
TPSB2 Position 2
TPSB2 Sensor Curve

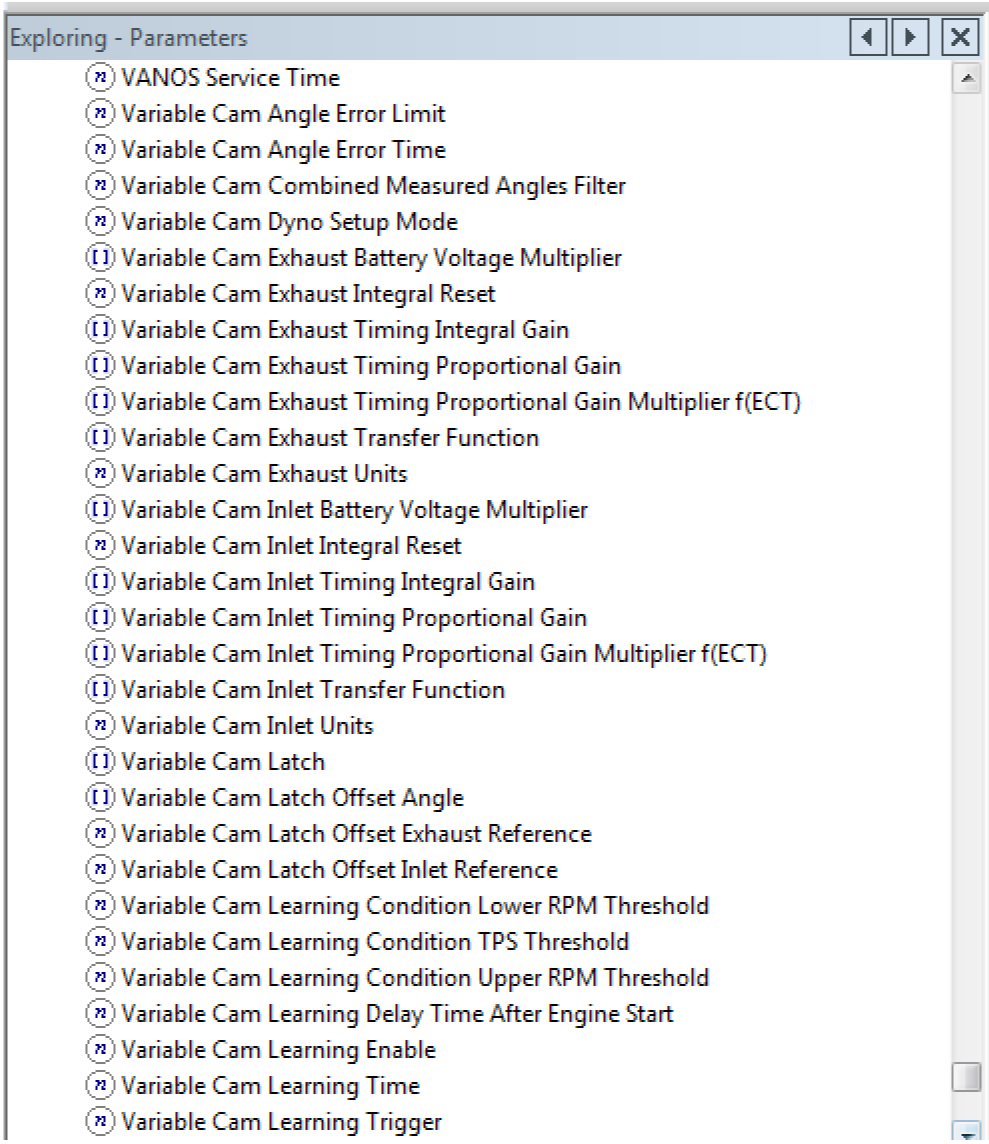

Exploring - Parameters
TPSB2 Sensor Type
TPSB2 Voltage 1
TPSB2 Voltage 2
TPSB2_Zero_Target
Traction Control Adjustment Pot Sample Rate
Traction Control Adjustment Pot Sensor Curve
Traction Control Adjustment Pot Sensor Type
Traction Control Adjustment Pot Software Filter
Traction Control Adjustment Pot Voltage Thresholds
Traction Control Switch Debounce Samples
Traction Control Switch Maximum Endstop
Traction Control Switch Minimum Endstop
Traction Control Switch Sample Rate
Traction Control Torque Reduction Mode
Traction Switch Action At Min And Max
Transient Ignition Advance Rate
Transient Retard
Transmission Debug Messages
Transmission Mode Switch Zero Target
Transmission Pump Service Time
Trigger Channel Select
Trigger Pulse Duration
Trq Cut Axis Breakpoints
Trq Cut Breakpoint Size
Turbo Speed Measurement Sample Rate
Unclutched Blipped Upshift Max TPS Limit
Undriven Wheel Slip Filter
Unused Ignition Channel Zero Target
Unused Injector Channel Zero Target
Upshift Blip TPS Cut_Blipper Open TPS Threshold To Start Shift

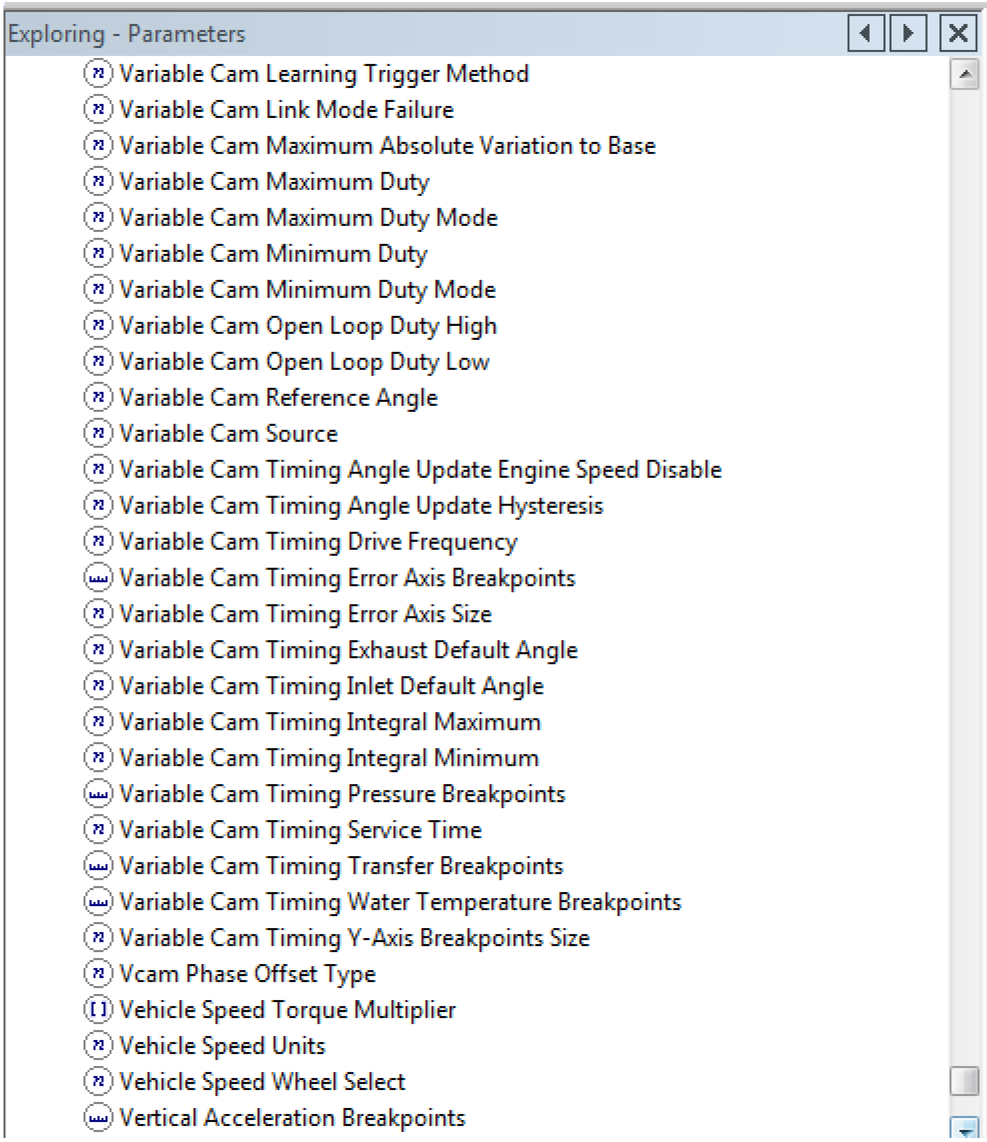

Exploring - Parameters
Upshift Blip TPS Cut_Max Wait For Blip Open Start Shift Timeout
Upshift Blip TPS Cut_Max Wait For Gear Voltage To Reach Target Timeout
Upshift Blip TPS Disable Cut Delay
Upshift Clutch Disengage Timeout
Upshift Clutch Disengaged Pressure Threshold
Upshift Clutch Engage Timeout
Upshift Clutch Engaged Pressure Threshold
Upshift Pressure Decimal Places
Upshift Pressure Sample Rate
Upshift Pressure Sensor Curve
Upshift Pressure Sensor Type
Upshift Pressure Software Filter
Upshift Pressure Units
Upshift Pressure Zero Target
Upshift Stack Timeout
UpShift Valve Bleed Duty
UpShift Valve Frequency
Use Air Charge Temperature Sensor for Ambient Air Temperature Measuremen
User Defined CAN Datastream Arbitration Identifiers Table
User Defined CAN Datastream Arbitration Identifiers Table TWO
User Defined CAN Datastream Arbitration Offset Allocation
User Defined CAN Datastream Arbitration Offset Allocation TWO
User Defined CAN Datastream Bit Rate
User Defined CAN Datastream Bit Rate TWO
User Defined CAN Datastream Byte Layout
User Defined CAN Datastream Byte Layout TWO
User Defined CAN Datastream Data Channels Byte Table
User Defined CAN Datastream Data Channels Byte Table TWO
User Defined CAN Datastream Data Channels Long Table
User Defined CAN Datastream Data Channels Long Table TWO

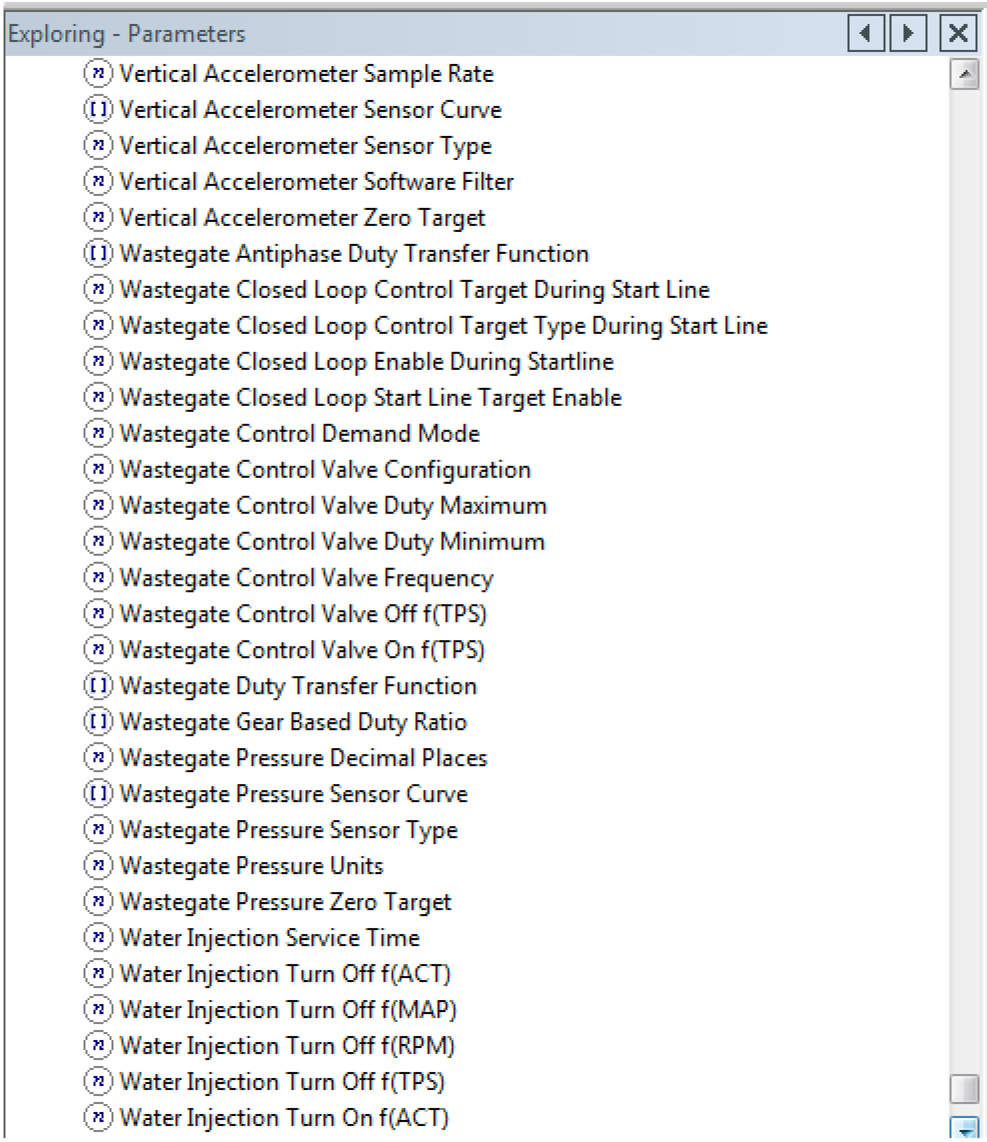

Exploring - Parameters
User Defined CAN Datastream Data Channels Word Table
User Defined CAN Datastream Data Channels Word Table TWO
User Defined CAN Datastream Data Length Table
User Defined CAN Datastream Data Length Table TWO
User Defined CAN Datastream Number of Packet Types
User Defined CAN Datastream Number of Packet Types TWO
User Defined CAN Datastream Transmit Sequence Table
User Defined CAN Datastream Transmit Sequence Table TWO
User Defined CAN Datsream Transmit Buffer
User Defined CAN Datsream Transmit Buffer TWO
User Defined Dash Source Five Decimal Places
User Defined Dash Source Five Gain
User Defined Dash Source Five Index
User Defined Dash Source Five Label
User Defined Dash Source Five Offset
User Defined Dash Source Five Transform
User Defined Dash Source Four Decimal Places
User Defined Dash Source Four Gain
User Defined Dash Source Four Index
User Defined Dash Source Four Label
User Defined Dash Source Four Offset
User Defined Dash Source Four Transform
User Defined Dash Source One Decimal Places
User Defined Dash Source One Gain
User Defined Dash Source One Index
User Defined Dash Source One Label
User Defined Dash Source One Offset
User Defined Dash Source One Transform
User Defined Dash Source Three Decimal Places
User Defined Dash Source Three Gain

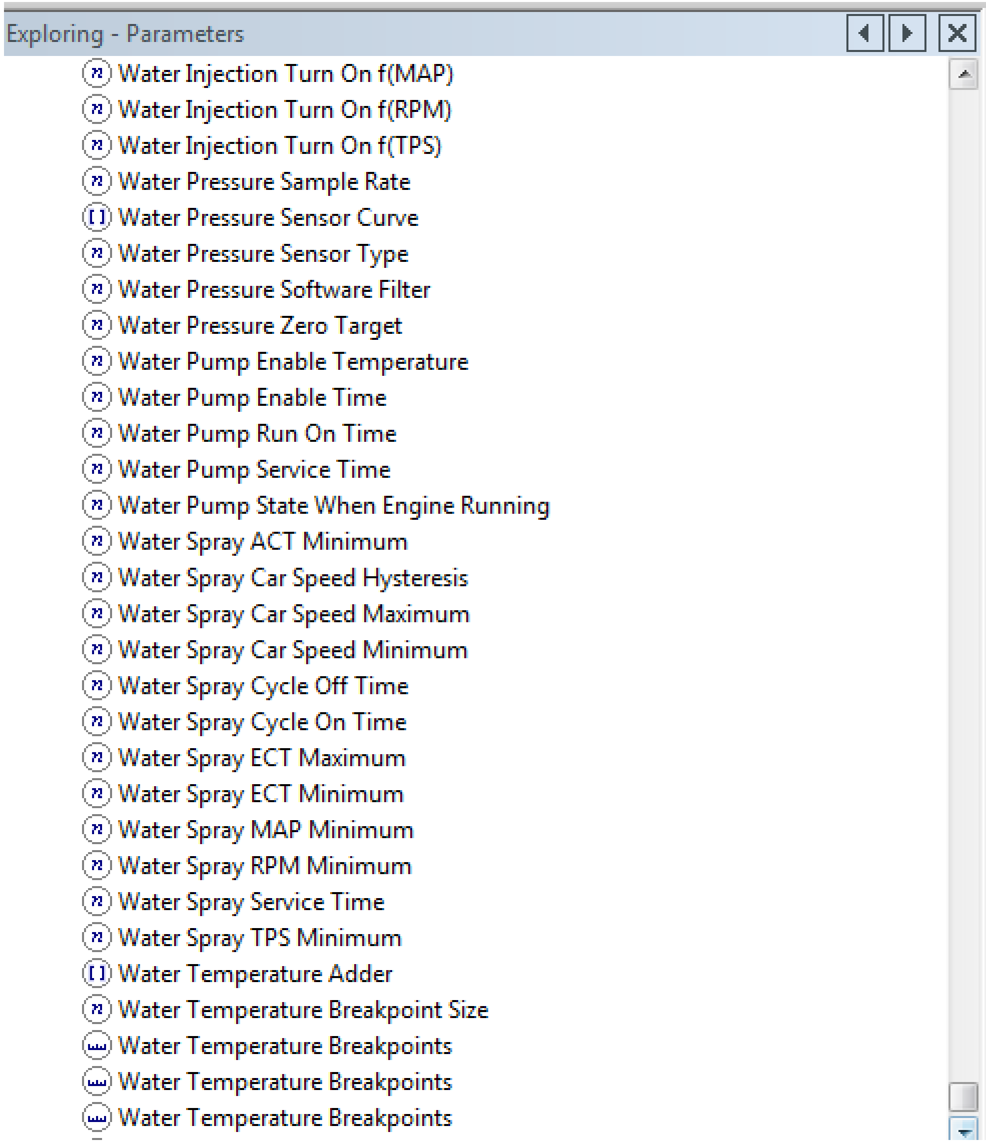
Exploring - Parameters

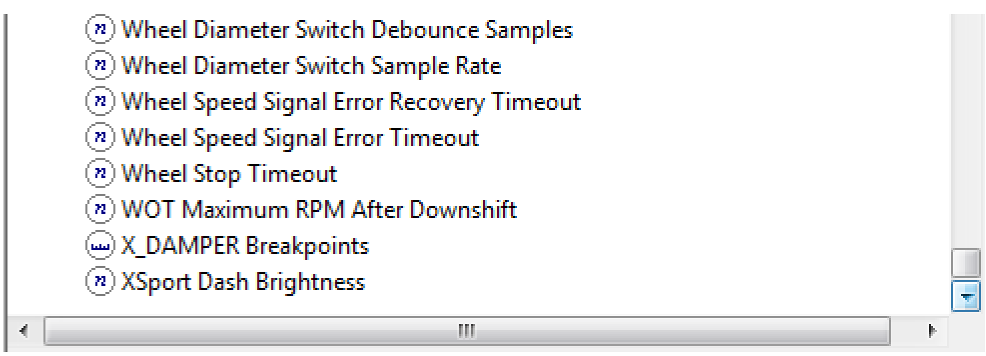
- User Defined Dash Source Three Index
- User Defined Dash Source Three Label
- User Defined Dash Source Three Offset
- User Defined Dash Source Three Transform
- User Defined Dash Source Two Decimal Places
- User Defined Dash Source Two Gain
- User Defined Dash Source Two Index
- User Defined Dash Source Two Label
- User Defined Dash Source Two Offset
- User Defined Dash Source Two Transform
- User Defined Phase Offset
- User Rev Limit
- User-Defined CAN Datastream CAN Port
- User-Defined CAN Datastream CAN Port TWO
- User-Defined Ignition Angle Set Point
- User-Defined Ignition Enable
- VANOS Base Pulse Width
- VANOS Cam Angle Deadband
- VANOS Cam Angle Error Limit
- VANOS Cam Angle Error Time
- VANOS Cam Latch
- VANOS Cam Latch Offset Angle
- VANOS Closed Loop Error Pulse Width Multiplier
- VANOS Max Closed Loop Pulse Width
- VANOS Open Loop Error Strategy
- VANOS Open Loop Exhaust Pulse Direction
- VANOS Open Loop Exhaust Pulse Width
- VANOS Open Loop Inlet Pulse Direction
- VANOS Open Loop Inlet Pulse Width
- VANOS Open Loop Pulse Rate


Exploring - Parameters
VANOS Service Time
Variable Cam Angle Error Limit
Variable Cam Angle Error Time
Variable Cam Combined Measured Angles Filter
Variable Cam Dyno Setup Mode
Variable Cam Exhaust Battery Voltage Multiplier
Variable Cam Exhaust Integral Reset
Variable Cam Exhaust Timing Integral Gain
Variable Cam Exhaust Timing Proportional Gain
Variable Cam Exhaust Timing Proportional Gain Multiplier f(ECT)
Variable Cam Exhaust Transfer Function
Variable Cam Exhaust Units
Variable Cam Inlet Battery Voltage Multiplier
Variable Cam Inlet Integral Reset
Variable Cam Inlet Timing Integral Gain
Variable Cam Inlet Timing Proportional Gain
Variable Cam Inlet Timing Proportional Gain Multiplier f(ECT)
Variable Cam Inlet Transfer Function
Variable Cam Inlet Units
Variable Cam Latch
Variable Cam Latch Offset Angle
Variable Cam Latch Offset Exhaust Reference
Variable Cam Latch Offset Inlet Reference
Variable Cam Learning Condition Lower RPM Threshold
Variable Cam Learning Condition TPS Threshold
Variable Cam Learning Condition Upper RPM Threshold
Variable Cam Learning Delay Time After Engine Start
Variable Cam Learning Enable
Variable Cam Learning Time
Variable Cam Learning Trigger


Exploring - Parameters
Variable Cam Learning Trigger Method
Variable Cam Link Mode Failure
Variable Cam Maximum Absolute Variation to Base
Variable Cam Maximum Duty
Variable Cam Maximum Duty Mode
Variable Cam Minimum Duty
Variable Cam Minimum Duty Mode
Variable Cam Open Loop Duty High
Variable Cam Open Loop Duty Low
Variable Cam Reference Angle
Variable Cam Source
Variable Cam Timing Angle Update Engine Speed Disable
Variable Cam Timing Angle Update Hysteresis
Variable Cam Timing Drive Frequency
Variable Cam Timing Error Axis Breakpoints
Variable Cam Timing Error Axis Size
Variable Cam Timing Exhaust Default Angle
Variable Cam Timing Inlet Default Angle
Variable Cam Timing Integral Maximum
Variable Cam Timing Integral Minimum
Variable Cam Timing Pressure Breakpoints
Variable Cam Timing Service Time
Variable Cam Timing Transfer Breakpoints
Variable Cam Timing Water Temperature Breakpoints
Variable Cam Timing Y-Axis Breakpoints Size
Vcam Phase Offset Type
Vehicle Speed Torque Multiplier
Vehicle Speed Units
Vehicle Speed Wheel Select
Vertical Acceleration Breakpoints


Exploring - Parameters
Vertical Accelerometer Sample Rate
Vertical Accelerometer Sensor Curve
Vertical Accelerometer Sensor Type
Vertical Accelerometer Software Filter
Vertical Accelerometer Zero Target
Wastegate Antiphase Duty Transfer Function
Wastegate Closed Loop Control Target During Start Line
Wastegate Closed Loop Control Target Type During Start Line
Wastegate Closed Loop Enable During Startline
Wastegate Closed Loop Start Line Target Enable
Wastegate Control Demand Mode
Wastegate Control Valve Configuration
Wastegate Control Valve Duty Maximum
Wastegate Control Valve Duty Minimum
Wastegate Control Valve Frequency
Wastegate Control Valve Off f(TPS)
Wastegate Control Valve On f(TPS)
Wastegate Duty Transfer Function
Wastegate Gear Based Duty Ratio
Wastegate Pressure Decimal Places
Wastegate Pressure Sensor Curve
Wastegate Pressure Sensor Type
Wastegate Pressure Units
Wastegate Pressure Zero Target
Water Injection Service Time
Water Injection Turn Off f(ACT)
Water Injection Turn Off f(MAP)
Water Injection Turn Off f(RPM)
Water Injection Turn Off f(TPS)
Water Injection Turn On f(ACT)


Exploring - Parameters
Water Injection Turn On f(MAP)
Water Injection Turn On f(RPM)
Water Injection Turn On f(TPS)
Water Pressure Sample Rate
Water Pressure Sensor Curve
Water Pressure Sensor Type
Water Pressure Software Filter
Water Pressure Zero Target
Water Pump Enable Temperature
Water Pump Enable Time
Water Pump Run On Time
Water Pump Service Time
Water Pump State When Engine Running
Water Spray ACT Minimum
Water Spray Car Speed Hysteresis
Water Spray Car Speed Maximum
Water Spray Car Speed Minimum
Water Spray Cycle Off Time
Water Spray Cycle On Time
Water Spray ECT Maximum
Water Spray ECT Minimum
Water Spray MAP Minimum
Water Spray RPM Minimum
Water Spray Service Time
Water Spray TPS Minimum
Water Temperature Adder
Water Temperature Breakpoint Size
Water Temperature Breakpoints
Water Temperature Breakpoints
Water Temperature Breakpoints


Wheel Diameter Switch Debounce Samples
Wheel Diameter Switch Sample Rate
Wheel Speed Signal Error Recovery Timeout
Wheel Speed Signal Error Timeout
Wheel Stop Timeout
WOT Maximum RPM After Downshift
X_DAMPER Breakpoints
XSport Dash Brightness