COBB TUNING™

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USDM Mazda
Table Descriptions and Tuning Tips

Note: This is a list of tables available on all Mazda AccessTUNER products. Not all tables are available in your software.

Closed Loop Tables

Closed Loop – A/F Targets A

Table Description

This 3 dimensional look-up table modifies the target Lambda of the main Air/Fuel tables while in closed loop operation. The Lambda targets in the main Air/Fuel tables are modified by the values entered in this table. This allows for very precise control over the air/fuel ratios while in closed loop. The values in the table are a percentage of the main Air/Fuel table target values.

Precautions and Warnings
None at this time.

Closed Loop – A/F Targets B

Table Description

This 3 dimensional look-up table modifies the target Lambda of the main Air/Fuel tables while in closed loop operation. The Lambda targets in the main Air/Fuel tables are modified by the values entered in this table. This allows for very precise control over the air/fuel ratios while in closed loop. The values in the table are a percentage of the main Air/Fuel table target values.

Precautions and Warnings
None at this time.

Closed Loop – A/F Targets Thr. Comp

Table Description
None at this time.

Precautions and Warnings

None at this time.

Closed Loop – Exit Load A

Table description – A single row of values that represent the calculated load value that will allow the ECU to exit close loop fueling strategies. Once the calculated load is below these values the ECU will transition to open loop fueling strategies, once a series of conditional criteria are met.

Tuning tips – Closed loop delays can be extended to allow for better fuel economy. In contrast, closed loop delays are often reduced to allow more reliable transition from cruise or light throttle to higher loads.

Precautions and Warnings
None at this time.

Closed Loop – Exit Load B

Table description – A single row of values that represent the calculated load value that will allow the ECU to exit close loop fueling strategies. Once the calculated load is below these values the ECU will transition to open loop fueling strategies, once a series of conditional criteria are met.

Tuning tips – Closed loop delays can be extended to allow for better fuel economy. In contrast, closed loop delays are often reduced to allow more reliable transition from cruise or light throttle to higher loads.

Precautions and Warnings
None at this time.

Closed Loop – Exit Load C

Table description – A single row of values that represent the calculated load value that will allow the ECU to exit close loop fueling strategies. Once the calculated load is below these values the ECU will transition to open loop fueling strategies, once a series of conditional criteria are met.

Tuning tips – Closed loop delays are extended to allow for better fuel economy. In contrast, closed loop delays are reduced to allow the ECU to go into open-loop fueling strategies earlier.

Precautions and Warnings
None at this time.

Closed Loop – Exit Load Hyst.

Table description – The amount of change in the calculated load value (from the Closed Loop – Exit Load tables) the ECU must see before it reengages closed loop fueling strategies for the engine, after the ECU has already switched to open loop fueling.

Tuning tips – Once the ECU has switched to open loop fueling, it will stay in open loop until the calculated load value drops below the values in the Closed Loop – Exit Load tables by this amount. At that point, the ECU will switch back to closed loop fueling strategies, once a series of conditional criteria are met.

Precautions and Warnings
None at this time.

Closed Loop – Exit RPM

Table description – A single values that represent the engine RPM point that will allow the ECU to exit close loop fueling strategies. Once the engine RPM is above this value the ECU will transition to open loop fueling strategies, once a series of conditional criteria are met.

Tuning tips – Closed loop delays are extended to allow for better fuel economy. In contrast, closed loop delays are reduced to allow the ECU to go into open-loop fueling strategies earlier. There is generally no need to alter these settings from stock.

Precautions and Warnings
None at this time.

Closed Loop – Exit RPM Hyst.

Table description – The amount of engine speed reduction (from the Closed Loop – Exit RPM value) the ECU must see before it reengages closed loop fueling strategies for the engine, after the ECU has already switched to open loop fueling.

Tuning tips – Once the ECU has switched to open loop fueling, it will stay in open loop until the engine RPM value drops below the value in the Closed Loop – Exit RPM table by this amount. At that point, the ECU will switch back to closed loop fueling strategies, once a series of conditional criteria are met.

Precautions and Warnings
None at this time.

Closed Loop – Exit Throttle

Table description – A single row of values that represent the TPS value that will allow the ECU to exit close loop fueling strategies. Once the TPS is above these values the ECU will transition to open loop fueling strategies, once a series of conditional criteria are met.

Tuning tips – Closed loop delays are extended to allow for better fuel economy. In contrast, closed loop delays are reduced to allow the ECU to go into open-loop fueling strategies earlier. There is generally no need to alter these settings from stock.

Precautions and Warnings
None at this time.

Closed Loop – Exit Throttle Hyst.

Table description – The amount of change in TPS value (from the Closed Loop – Exit Throttle value) the ECU must see before it reengages closed loop fueling strategies for the engine, after the ECU has already switched to open loop fueling.

Tuning tips – Once the ECU has switched to open loop fueling, it will stay in open loop until the TPS value drops below the value in the Closed Loop – Exit Throttle table by this amount. At that point, the ECU will switch back to closed loop fueling strategies, once a series of conditional criteria are met.

Precautions and Warnings
None at this time.

Fuel Tables

Air/Fuel Gear 1-2

Table description – This large 3 dimensional look-up table indicates the desired air-fuel mixture or Lambda for 1st and 2nd gears. The horizontal X-axis breakpoints are defined by calculated engine load and the vertical Y-axis breakpoints are defined by engine speed (RPM). The values in the table represent air fuel mixture or Lambda targets.

Tuning Tips – The values in this table are critical to engine performance and fuel economy. The values indicated in the lower load regions are used as targets under closed loop fuel control. (In some case separate closed loop fuel maps define target closed loop fuel mixtures). In other words, these values are actively targeted by the ECU using feedback from the front oxygen sensor. If the injector scaling, injector latency, and the MAF calibration have been properly set then the corrections calculated to achieve these targets will be small (typically + or – 5% or less). Under higher loads the ECU will switch from a closed loop fueling to an open loop strategy. The transition from closed to open loop fueling is determined by many factors outlined in those tables under closed loop. If the MAF and injectors are properly calibrated then the observed air fuel mixtures under higher load will be close to those indicated in the table. The stock RX-8 ECU blends injectors and the fuel values may not match what is in these tables during those transitions. A very large difference in the observed and indicated fuel indicates that the injector set size or MAF Calibration is incorrect.

Every motor and every kind of fuel may indicate a different air/fuel ratio or Lambda value. However, most NA RX-8s operate better with a leaner fuel curve and turbo applications utilize a rich mixture of fuel to air when under high load. Depending upon fuel quality a normal “on boost' fuel mixture may be in the lower 11s (0.72 to 0.75 lambda) to mid 10s (0.68 to 0.72 lambda). Under more moderate load conditions, fuel ratios can be run much leaner.

Precautions and Warnings
Excessively lean fuel mixtures under heavy loads can quickly damage the motor and other components. Always monitor Air Fuel ratios with a wide band oxygen sensor (Lambda) when generating calibrations. If you are unsure of what kinds of fuel mixtures to target please examine stock calibrations and Cobb Tuning OTS calibrations for guidance.

Air/Fuel Gear 1-2 Baro. Comp.

Table Description
None at this time.

Precautions and Warnings
None at this time.

Air/Fuel Gear 3-4

Table description – This large 3 dimensional look-up table indicates the desired air-fuel mixture or Lambda for 3rd and 4th gears. The horizontal X-axis breakpoints are defined by calculated engine load and the vertical Y-axis breakpoints are defined by engine speed (RPM). The values in the table represent air fuel mixture or Lambda targets.

Tuning Tips – The values in this table are critical to engine performance and fuel economy. The values indicated in the lower load regions are used as targets under closed loop fuel control. (In some case separate closed loop fuel maps define target closed loop fuel mixtures). In other words, these values are actively targeted by the ECU using feedback from the front oxygen sensor. If the injector scaling, injector latency, and the MAF calibration have been properly set then the corrections calculated to achieve these targets will be small (typically + or – 5% or less). Under higher loads the ECU will switch from a closed loop fueling to an open loop strategy. The transition from closed to open loop fueling is determined by many factors outlined in those tables under closed loop. If the MAF and injectors are properly calibrated then the observed air fuel mixtures under higher load will be close to those indicated in the table. The stock RX-8 ECU blends injectors and the fuel values may not match what is in these tables during those transitions. A very large difference in the observed and indicated fuel indicates that the injectors size or MAF Calibration is incorrect.

Every motor and every kind of fuel may indicate a different air/fuel ratio or Lambda value. However, most NA RX-8s operate better with a leaner fuel curve and turbo applications utilize a rich mixture of fuel to air when under high load. Depending upon fuel quality a normal “on boost' fuel mixture may be in the lower 11s (0.72 to 0.75 lambda) to mid 10s (0.68 to 0.72 lambda). Under more moderate load conditions, fuel ratios can be run much leaner.

Precautions and Warnings
Excessively lean fuel mixtures under heavy loads can quickly damage the motor and other components. Always monitor Air Fuel ratios with a wide band oxygen sensor (Lambda) when generating calibrations. If you are unsure of what kinds of fuel mixtures to target please examine stock calibrations and Cobb Tuning OTS calibrations for guidance. A safe practice is to run a richer fuel curve in the higher gears.

Air/Fuel Gear 3-4 Baro. Comp.

Table Description
None at this time.

Precautions and Warnings
None at this time.

Air/Fuel Gear 5-6

Table description – This large 3 dimensional look-up table indicates the desired air-fuel mixture or Lambda for 5th and 6th gears. The horizontal X-axis breakpoints are defined by calculated engine load and the vertical Y-axis breakpoints are defined by engine speed (RPM). The values in the table represent air fuel mixture or Lambda targets.

Tuning Tips – The values in this table are critical to engine performance and fuel economy. The values indicated in the lower load regions are used as targets under closed loop fuel control. (In some case separate closed loop fuel maps define target closed loop fuel mixtures). In other words, these values are actively targeted by the ECU using feedback from the front oxygen sensor. If the injector scaling, injector latency, and the MAF calibration have been properly set then the corrections calculated to achieve these targets will be small (typically + or – 5% or less). Under higher loads the ECU will switch from a closed loop fueling to an open loop strategy. The transition from closed to open loop fueling is determined by many factors outlined in those tables under closed loop. If the MAF and injectors are properly calibrated then the observed air fuel mixtures under higher load will be close to those indicated in the table. The stock RX-8 ECU blends injectors and the fuel values may not match what is in these tables during those transitions. A very large difference in the observed and indicated fuel indicates that the injectors size or MAF Calibration is incorrect.

Every motor and every kind of fuel may indicate a different air/fuel ratio or Lambda value. However, most NA RX-8s operate better with a leaner fuel curve and turbo applications utilize a rich mixture of fuel to air when under high load. Depending upon fuel quality a normal “on boost' fuel mixture may be in the lower 11s (0.72 to 0.75 lambda) to mid 10s (0.68 to 0.72 lambda). Under more moderate load conditions, fuel ratios can be run much leaner.

Precautions and Warnings
Excessively lean fuel mixtures under heavy loads can quickly damage the motor and other components. Always monitor Air Fuel ratios with a wide band oxygen sensor (Lambda) when generating calibrations. If you are unsure of what kinds of fuel mixtures to target please examine stock calibrations and Cobb Tuning OTS calibrations for guidance. A safe practice is to run a richer fuel curve in the higher gears.

Air/Fuel Gear 5-6 Baro. Comp.

Table Description
None at this time.

Precautions and Warnings
None at this time.

Air/Fuel Idle

Table Description
None at this time.

Precautions and Warnings
None at this time.

Air/Fuel Idle Baro. Comp.

Table Description
None at this time.

Precautions and Warnings
None at this time.

Bank 1 Injector Size

Table description – A single numerical value that represents the flow capacity of Bank 1 fuel injector set.

Tuning tips – This value should not be changed for vehicles using stock injectors. For vehicles with different injectors this value changes in proportion with the difference in injector size compared to stock. Larger injectors are represented by HIGHER values and smaller injectors will have LOWER values. The correct value for non-stock injectors is determined by:

To calculate a starting value for a different injector size than stock, use the following formula:

New Size Value = (New Injector Size / Original Injector Size) * Original Size Value.

For example, let's say you are replacing your factory RX-8 Bank 1 injector set (290cc) for after market 440cc injectors. The formula would look like:
New Size Value = (440cc / 290cc) * 369;
New Size Value = 560

Input the calculated value as a starting Fuel Injector Size value. To fine tune the injector size value, we suggest you install the stock intake system and run with stock level fuel pressure levels. You will want to display the STFT and LTFT values with the Dashboard. With the engine idling at full temperature (coolant temperature between 180-195 F and intake air temperature +/- 15 degrees F of ambient temperature), you can make adjustments to the size value until the STFT + A/F Learned are as close to zero as possible, +/- 5% is generally acceptable. The closer you can get to 0% is ideal. DO NOT attempt to tune for an after market Intake and after market injectors at the same time. An after market intake will affect your STFT and LTFT values at idle and part throttle, making it nearly impossible to find an accurate Injector Size Value. If you have an after market intake please use the above equation to establish your initial Fuel Injector Size value then proceed to the MAF Calibration section. If you plan to use an after market intake, it can be installed and the necessary tuning can be performed AFTER you have found the optimal Fuel Injector Size value. In many circumstances the injector size will not be exactly as predicted by simple math. This calculation is a good starting point but the correct number can sometimes only be determined through direct testing. Many injectors do not flow the specific quantities indicated by the manufacturer.

Precautions and Warnings
None at this time.

Bank 2 Injector Size

Table description – A single numerical value that represents the flow capacity of Bank 2 fuel injector set.

Tuning tips – This value should not be changed for vehicles using stock injectors. For vehicles with different injectors this value changes in proportion with the difference in injector size compared to stock. Larger injectors are represented by HIGHER values and smaller injectors will have LOWER values. The correct value for non-stock injectors is determined by:

To calculate a starting value for a different injector size than stock, use the following formula:

New Size Value = (New Injector Size / Original Injector Size) * Original Size Value.

For example, let's say you are replacing your factory RX-8 Bank 2 injector set (390cc) for after market 550cc injectors. The formula would look like:
New Size Value = (550cc / 390cc) * 476;
New Size Value = 670

Precautions and Warnings
None at this time.

Bank 3 Injector Size

Table description – A single numerical value that represents the flow capacity of Bank 2 fuel injector set.

Tuning tips – This value should not be changed for vehicles using stock injectors. For vehicles with different injectors this value changes in proportion with the difference in injector size compared to stock. Larger injectors are represented by HIGHER values and smaller injectors will have LOWER values. The correct value for non-stock injectors is determined by:

To calculate a starting value for a different injector size than stock, use the following formula:

New Size Value = (New Injector Size / Original Injector Size) * Original Size Value.

For example, let's say you are replacing your factory RX-8 Bank 3 injector set (390cc) for after market 550cc injectors. The formula would look like:
New Size Value = (550cc / 390cc) * 476;
New Size Value = 670

Precautions and Warnings
None at this time.

Fuel ECT Compensation A

Table description – This simple 1 row table defines how fueling is impacted with changes in coolant temperature. Fueling changes are represented as a target. Increasing fuel offsets are positive percentages and reduced fuel is represented by negative numbers.

Tuning tips – For most applications this table does not need adjustment. Under some circumstances it is advisable to indicate positive corrections at coolant temperatures considered dangerous. This overall richening of fuel air mixtures helps to protect a motor enduring higher than desired coolant temperatures.

Fuel ECT Compensation B

Table description – This simple 1 cell table defines how fueling is impacted with changes in coolant temperature. Fueling changes are represented as a target. Increasing fuel offsets are positive percentages and reduced fuel is represented by negative numbers.

Tuning tips – For most applications this table does not need adjustment. Under some circumstances it is advisable to indicate positive corrections at coolant temperatures considered dangerous. This overall richening of fuel air mixtures helps to protect a motor enduring higher than desired coolant temperatures.

Fuel VE

Table Description
This large table allows for fine compensation adjustments of fuel delivery over the entire operating range of the motor, regardless of the currently referenced Air/Fuel target table. Much like the “Closed Loop – A/F Targets” tables, this table changes commanded Lambda targets by a percentage.

Precautions and Warnings
None at this time.

Injector Latency (Primary)

Table description – This 3 dimensional look-up table indicates the desired primary fuel injector latency in milliseconds (1000mS = 1 second). The horizontal X-axis breakpoints are defined by barometric pressure and the vertical Y-axis breakpoints are defined by battery voltage. The values in the table represent an additional amount of injector open time added to all fuel commands under different voltage and barometric pressure conditions. All fuel injectors require a certain amount of time to fully open which is referred to as Injector Latency. This property may also be referred to as injector dead time or dwell time. The amount of latency an injector has is dependent on several factors such as battery voltage, fuel pressure, boost pressure. Lower battery voltage will increase the injector's latency (dead time). Likewise, higher fuel pressure may also increase the injector's latency. The factory ECU has injector latency adjustments based on battery voltage and barometric pressure. The data in this table is represented in milliseconds; this is the only table that exists for the sole purpose of adjusting injector latency values for the primary fuel injector set.

Tuning tips – Proper values in this table are critical for accurate injector calibration. Fuel injectors are simply solenoids that open and close high pressure fuel valves. The force that opens the injector comes from an electromagnetic coil. The time it takes to charge this coil and thus open the injector can vary tremendously across different brands and types of injector, as well as how much fuel pressure is behind the injector or manifold pressure in front of the injector. The injector coil charge time also depends upon the cars voltage. For stock injectors this table does not need to be altered. Most fuel injector manufacturers will be able to provide you with this latency data and the voltage they are referenced at.

Use that as a starting point and modify from there. Don't be afraid if your final values differ from what the manufacturer provided. To tune this table, we suggest that you first establish a good Injector Size value.

One way to find the correct latency (or at least the latency that works best with the injector drivers in the ECU and your particular injectors) is to have your fuel system running stock fuel pressure and have the stock intake system installed then;

1st - set the proper size value for the primary fuel injector set you are using based off the injector set size calculation.
2nd - start the engine and let the car warm up to temperature (coolant temperature between 180-195 F and intake air temperature +/- 15 degrees F of ambient temperature) then re-set the ECU so your fuel trims start at zero.
3rd - start the vehicle again and watch the **SUM of your fuel trims, A/F Trim Immediate + LTFT**

If you see that the SUM of your fuel trims (STFT + LTFT) is positive then add injector latency until you see the SUM of your fuel trims come closer to zero. If you see that the SUM of your fuel trims is negative then reduce injector latency until you see the SUM of your fuel trims come closer to zero. You will have to test this throughout the operating range of the engine...the entire MAF curve. Try to avoid sudden throttle movements during this process, you want to avoid seeing any corrections based on the tip-in enrichment table settings.

This is part of a calibration process that should be able to get you close to the ideal settings necessary to properly control your primary fuel injector set. Please take into account that you will most likely have to fine tune the MAF calibration table as the final step. This will be necessary to match the characteristics of the new primary fuel injector set.

Precautions and Warnings
None at this time.

Injector Latency (Sec./Aux.)

Table description – This 3 dimensional look-up table indicates the desired secondary and auxiliary fuel injector latency in milliseconds (1000mS = 1 second). The horizontal X-axis breakpoints are defined by barometric pressure and the vertical Y-axis breakpoints are defined by battery voltage. The values in the table represent an additional amount of injector open time added to all fuel commands under different voltage and barometric pressure conditions. All fuel injectors require a certain amount of time to fully open which is referred to as Injector Latency. This property may also be referred to as injector dead time or dwell time. The amount of latency an injector has is dependent on several factors such as battery voltage, fuel pressure, calib pressure. Lower battery voltage will increase the injector's latency (dead time). Likewise, higher fuel pressure may also increase the injector's latency. The factory ECU has injector latency adjustments based on battery voltage and barometric pressure. The data in this table is represented in milliseconds; this is the only table that exists for the sole purpose of adjusting injector latency values for the secondary and auxiliary fuel injector sets.

Tuning tips – Proper values in this table are critical for accurate injector calibration. Fuel injectors are simply solenoids that open and close high pressure fuel valves. The force that opens the injector comes from an electromagnetic coil. The time it takes to charge this coil and thus open the injector can vary tremendously across different brands and types of injector, as well as how much fuel pressure is behind the injector or manifold pressure in front of the injector. The injector coil charge time also depends upon the cars voltage. For stock injectors this table does not need to be altered. Most fuel injector manufacturers will be able to provide you with this latency data and the voltage they are referenced at. Use that as a starting point and modify from there. Don't be afraid if your final values differ from what the manufacturer provided. To tune this table, we suggest that you first establish a good Injector Size value.

One way to find the correct latency (or at least the latency that works best with the injector drivers in the ECU and your particular injectors) is to have your fuel system running stock fuel pressure and have the stock intake system installed then;

1st - set the proper size value for the secondary and auxiliary injectors you are using based off the injector set size calculation.
2nd - start the engine and let the car warm up to temperature (coolant temperature between 180-195 F and intake air temperature +/- 15 degrees F of ambient temperature) then re-set the ECU so your fuel trims start at zero.
3rd - start the vehicle again and watch the **SUM of your fuel trims, A/F Trim Immediate + LTFT**

If you see that the SUM of your fuel trims (STFT + LTFT) is positive then add injector latency until you see the SUM of your fuel trims come closer to zero. If you see that the SUM of your fuel trims is negative then reduce injector latency until you see the SUM of your fuel trims come closer to zero. You will have to test this throughout the operating range of the engine...the entire MAF curve. Try to avoid sudden throttle movements during this process, you want to avoid seeing any corrections based on the tip-in enrichment table settings.

This is part of a calibration process that should be able to get you close to the ideal settings necessary to properly control your secondary and auxiliary fuel injector sets. Please take into account that you will most likely have to fine tune the MAF calibration table as the final step. This will be necessary to match the characteristics of the new secondary and auxiliary fuel injector sets.

Precautions and Warnings
None at this time.

Throttle Fuel Gear 1-2

Table Description
This table behaves like the “accelerator pump” function found on some engine management systems (analogous to the pump found on old carbureted systems). The modifies the target Lambda while in closed loop and first or second gear.

Precautions and Warnings
None at this time.

Throttle Fuel Gear 3-4

Table Description
This table behaves like the “accelerator pump” function found on some engine management systems (analogous to the pump found on old carbureted systems). The modifies the target Lambda while in closed loop and third or fourth gear.

Precautions and Warnings
None at this time.

Throttle Fuel Gear 5-6

Table Description
This table behaves like the “accelerator pump” function found on some engine management systems (analogous to the pump found on old carbureted systems). The modifies the target Lambda while in closed loop and fifth or sixth gear.

Precautions and Warnings
None at this time.

Throttle Fuel Idle

Table Description
None at this time.

Precautions and Warnings
None at this time.

Idle Speed

ECT-Based A

ECT-Based B

ECT-Based C

ECT-Based D

ECT-Based E

Table description – A single row of target idle speeds that vary as a function of engine coolant temperature. The various tables in these series (A through E) are indicated by an an assortment of conditional parameters.

Tuning tips – When running larger fuel injectors we have found it has been helpful to maintain an Idle Speed which is 100-400 RPM higher than the factory calibration. At idle, the vehicle is in closed-loop operation trying to maintain 1 Lambda or an AFR Petrol of 14.68:1. The ECU might modify the injector pulse width (IPW) to a point where the ECU will not allow a fuel injector to fully open and close due to the calculated short pulse width necessary hit this fuel target. Larger fuel injectors need a minimum injector pulse width in order to fully open and close; if the motor is idling too low then the pulse width may be too short to allow the injector to work properly, and an occasional miss-fire may occur.

If your idle RPM or AFR at idle has a slight fluctuation then you may need to modify your MAF calibration table settings around the MAF voltage the vehicle idles. We have found that the stock calibration settings at idle can be too far apart and they may need to be adjusted so the grams/sec values are closer together at the MAF voltage where the vehicle idles.

Precautions and Warnings
None at this time.

Ignition Tables

Ignition Dwell Time

Table description – This 3 dimensional look-up table indicates the desired ignition coil dwell in milliseconds (1000mS = 1 second). The horizontal X-axis breakpoints are defined by engine speed (RPM) and the vertical Y-axis breakpoints are defined by battery voltage. The values in the table represent the amount of ignition coil charge time under different engine RPM and voltage conditions. All ignition coils require a certain amount of charge time before the full spark energy can be discharged, this is referred to as Ignition Dwell. This property may also be referred to as coil dead time or dwell time. The amount of latency a coil needs depends on the design of the coil and the spark energy necessary to ignite the combustion gases. Lower battery voltage will increase the coil's dwell (dead time). Likewise, higher battery voltage may reduce the charge time necessary. The factory ECU has ignition dwell adjustments based on battery voltage and engine RPM. The data in this table is represented in milliseconds; this is the only table that exists for the sole purpose of adjusting ignition coil dwell values.

Tuning tips – Proper values in this table are critical for proper coil maintenance and operation. Ignition coils are temporary storages of spark energy and are discharge with every power cycle of the engine. The time it takes to charge a coil to full capacity will need to be calibrated if the coils are different from stock, and the charge time can vary tremendously across different brands and types of coils, as well as how much combustion pressure (manifold pressure) the coil has to ignite within. The coil charge time also depends upon the car's electrical system voltage. For properly operating stock coils this table does not need to be altered. Most ignition coil manufacturers will be able to provide you with this dwell data and the voltage they are referenced at. Use that as a starting point and modify from there. Don't be afraid if your final values differ from what the manufacturer provided. To tune this table, we suggest that you first establish a stable idle with the new coils.

One way to find the correct dwell (or at least the dwell that works best with the ignition drivers in the ECU and your particular coils) is to have your calibration running on a fuel curve that has proven to work well. You can then increase and decrease ignition dwell time to test what setting work best for your coil combination.

This is part of a calibration process that should be able to get you close to the ideal settings necessary to allow for proper ignition coil charge times. This will be necessary to match the characteristics of the ignition coils.

Precautions and Warnings
We suggest you do not run too much ignition dwell for this will prematurely wear the coils. Insufficient ignition dwell settings will discharge the coil with too little spark energy. The sputtering would sound much like operating the engine with a spark plug gap that is too large.

Leading – Coolant Comp.

Table description – a single row table that is used to increase or degrease ignition advance to the leading ignition calculations based on coolant temperature sensor readings. The values are degrees of ignition advance adjustment. This table indicates additional leading ignition advance under colder conditions. This additional leading spark advance is eliminated as engine coolant temperatures increase to normal operating temperatures.

Tuning Tips – In most circumstances this table is unchanged. For some race vehicles it may be advantageous to increase leading ignition advance at colder coolant temperatures.

Precautions and Warnings
None at this time.

Leading – IAC vs Desired RPM

Table Description
A single row table that is used to set the target idle timing values for the leading ignition as a function of RPM.

Precautions and Warnings
None at this time.

Leading – Idle

Table description – This 3 dimensional look-up table indicates the desired leading ignition advance in degrees of spark advance. The horizontal X-axis breakpoints are defined by calculated load and the vertical Y-axis breakpoints are defined by engine RPM. The values in the table represent the amount of leading spark advance that is looked when the ECU considers the engine is under idle conditions.

Precautions and Warnings
None at this time.

Leading – Idle B

Table Description
None at this time.

Precautions and Warnings
None at this time.

Leading – RPM Delta A

Table Description
None at this time.

Precautions and Warnings
None at this time.

Leading – RPM Delta B

Table Description
None at this time.

Precautions and Warnings
None at this time.

Leading Ignition Main

Table description – This is a large 3 dimensional table, defined by calculated load on the horizontal X-axis and engine speed on the vertical Y-axis. The numbers in the table represent the rotational angle in degrees before top dead center that the leading coils are fired in both epitrochoidal combustion cycles.

Tuning Tips – To tune the ignition advance curve for WOT, you must run an excessively rich fuel curve (something around Lambda of 0.82 or a low 12:1 AFR Petrol). You will need to datalog the following variables: RPM, Engine Load, Ignition Timing Leading, Throttle Position, and a Wideband O2 input. For tuning of Leading Ignition Main, we suggest you start of with less total ignition advance than is optimal, that way you can work your way up from there. Generally speaking, a rotary motor will run the least amount of ignition advance near peak torque and ignition advance will generally rise as RPM rise in order to keep up with the increasing rotor speed. This trend is normal for most internal combustion spark ignition motors; as VE (Volumetric Efficiency) increases the amount of ignition advance a motor needs will decrease. As you cruise a motor's VE will not be the highest so ignition advance will usually be higher. As VE increases at WOT ignition advance will go down to its lowest point by peak torque then it will slowly increase during the torque plateau. Once torque begins to fall off you will see ignition advance increase at higher rates. This is due to the decreasing VE and is also done in order to keep up with the increasing rotor speeds; you have to start the burn earlier so that the pressure wave expansion occurs at the optimal time.

We have found that one must have a chassis dyno to help find the thresholds for maximum ignition advance for a particular motor and the fuel that is being used. The following section should give you a much better understanding as to how the factory ignition system works and what you are trying to do by tuning your ignition advance curve. The objective of ignition tuning is very simple. You are trying to start the flame front, BEFORE TDC, so that the peak of the combustion chamber pressure wave pushes on the rotor AFTER TDC. This is why values in the Trailing Ignition Main are in degrees of ignition advance before TDC.

With the above said, what you will be trying to do is to get the total ignition advance curve as close to optimal for your motor and the fuel you are using. You should be satisfied with the ignition advance curve if while at WOT for several runs, hot ones even, the ignition advance is a smooth predictable curve. This is not the only way to tune, just another perspective.

Generally speaking, ignition advance is used to increase the volumetric efficiency (VE) of an engine where the efficiency does not naturally exist. With this said, peak VE is found at peak torque so the engine will usually need the least amount of ignition advance under these conditions. After the engine's torque peak, you will typically need to increase ignition advance in order to keep up with the increasing rotor speeds the engine will see as RPM increase. Please take into account that once you exceed MBT (Minimum spark advance for Best Torque output), it is possible to make less power with more ignition advance. This is when tuning on a load based chassis dynamometer can be very beneficial.

Precautions and warnings – We cannot stress how important it is to properly populate the ignition advance tables. Do not make assumptions about how different ignition advance tables work together.

Trailing – Coolant Comp.

Table description – A single row table that is used to increase or degrease ignition advance to the trailing ignition calculations based on coolant temperature sensor readings. The values are degrees of ignition advance adjustment. This table indicates additional trailing ignition advance under colder conditions. This additional trailing spark advance is eliminated as engine coolant temperatures increase to normal operating temperatures.

Tuning Tips – In most circumstances this table is unchanged. For some race vehicles it may be advantageous to increase trailing ignition advance at colder coolant temperatures.

Precautions and Warnings
None at this time.

Trailing – IAC vs Desired RPM

Table Description
A single row table that is used to set the target idle timing values for the leading ignition as a function of RPM.

Precautions and Warnings
None at this time.

Trailing – Idle

Table description – This 3 dimensional look-up table indicates the desired trailing ignition advance in degrees of spark advance. The horizontal X-axis breakpoints are defined by calculated load and the vertical Y-axis breakpoints are defined by engine RPM. The values in the table represent the amount of trailing spark advance that is run when the ECU considers the engine is under idle conditions.

Tuning Tips – none at this time.

Precautions and Warnings
None at this time.

Trailing – Idle B

Table Description

This 3 dimensional look-up table indicates the desired trailing ignition advance in degrees of spark advance. The horizontal X-axis breakpoints are defined by calculated load and the vertical Y-axis breakpoints are defined by engine RPM. The values in the table represent the amount of trailing spark advance that is run when the ECU considers the engine is under off-throttle conditions.

Precautions and Warnings
None at this time.

Trailing – RPM Delta A

Table Description
None at this time.

Precautions and Warnings
None at this time.

Trailing – RPM Delta B

Table Description
None at this time.

Precautions and Warnings
None at this time.

Trailing Ignition Main

Table description – This is a large 3 dimensional table, defined by calculated load on the horizontal X-axis and engine speed on the vertical Y-axis. The numbers in the table represent the rotational angle in degrees before top dead center that the trailing coils are fired in both epitrochoidal combustion cycles.

Tuning Tips – To tune the ignition advance curve for WOT, you must run an excessively rich fuel curve (something around Lambda of 0.82 or a low 12:1 AFR Petrol). You will need to datalog the following variables: RPM, Engine Load, Ignition Timing Leading, Throttle Position, and a Wideband O2 input. For tuning of Leading Ignition Main, we suggest you start of with less total ignition advance than is optimal, that way you can work your way up from there. Generally speaking, a rotary motor will run the least amount of ignition advance near peak torque and ignition advance will generally rise as RPM rise in order to keep up with the increasing rotor speed. This trend is normal for most internal combustion spark ignition motors; as VE (Volumetric Efficiency) increases the amount of ignition advance a motor needs will decrease. As you cruise a motor's VE will not be the highest so ignition advance will usually be higher. As VE increases at WOT ignition advance will go down to its lowest point by peak torque then it will slowly increase during the torque plateau. Once torque begins to fall off you will see ignition advance increase at higher rates. This is due to the decreasing VE and is also done in order to keep up with the increasing rotor speeds; you have to start the burn earlier so that the pressure wave expansion occurs at the optimal time.

We have found that one must have a chassis dyno to help find the thresholds for maximum ignition advance for a particular motor and the fuel that is being used. The following section should give you a much better understanding as to how the factory ignition system works and what you are trying to do by tuning your ignition advance curve. The objective of ignition tuning is very simple. You are trying to start the flame front, BEFORE TDC, so that the peak of the combustion chamber pressure wave pushes on the rotor AFTER TDC. This is why values in the Trailing Ignition Main are in degrees of ignition advance before TDC.

With the above said, what you will be trying to do is to get the total ignition advance curve as close to optimal for your motor and the fuel you are using. You should be satisfied with the ignition advance curve if while at WOT for several runs, hot ones even, the ignition advance is a smooth predictable curve. This is not the only way to tune, just another perspective.

Generally speaking, ignition advance is used to increase the volumetric efficiency (VE) of an engine where the efficiency does not naturally exist. With this said, peak VE is found at peak torque so the engine will usually need the least amount of ignition advance under these conditions. After the engine's torque peak, you will typically need to increase ignition advance in order to keep up with the increasing rotor speeds the engine will see as RPM increase. Please take into account that once you exceed MBT (Minimum spark advance for Best Torque output), it is possible to make less power with more ignition advance. This is when tuning on a load based chassis dynamometer can be very beneficial.

Precautions and warnings – We cannot stress how important it is to properly populate the ignition advance tables. Do not make assumptions about how different ignition advance tables work together.

Knock Retard Tables

Knock Retard – Base

Table Description
None at this time.

Precautions and Warnings
None at this time.

Knock Retard – Decrement A

Table description
When the PCM detects knock in first or second gear, this table determines the number of degrees to pull from total timing *per knock event* up to the value indicated in the “Knock Retard – Max” table.

Precautions and Warnings
The RX-8 OE knock sensor is notoriously insensitive and ANY knock event under load in a rotary engine may cause permanent catastrophic damage to the motor. The values in this table should be treated as more of an intellectual exercise than a tuning aid. Always use proper fuel and ignition values to avoid knock at all costs and do not rely on the knock sensor retard values to save the motor from tuning mistakes.

Knock Retard – Decrement B

Table Description
When the PCM detects knock in third or fourth gear, this table determines the number of degrees to pull from total timing *per knock event* up to the value indicated in the "Knock Retard – Max" table.

Precautions and Warnings
The RX-8 OE knock sensor is notoriously insensitive and ANY knock event under load in a rotary engine may cause permanent catastrophic damage to the motor. The values in this table should be treated as more of an intellectual exercise than a tuning aid. Always use proper fuel and ignition values to avoid knock at all costs and do not rely on the knock sensor retard values to save the motor from tuning mistakes.

Knock Retard – Decrement C

Table description
When the PCM detects knock in third or fourth gear, this table determines the number of degrees to pull from total timing *per knock event* up to the value indicated in the "Knock Retard – Max" table.

Precautions and Warnings
The RX-8 OE knock sensor is notoriously insensitive and ANY knock event under load in a rotary engine may cause permanent catastrophic damage to the motor. The values in this table should be treated as more of an intellectual exercise than a tuning aid. Always use proper fuel and ignition values to avoid knock at all costs and do not rely on the knock sensor retard values to save the motor from tuning mistakes.

Knock Retard – Increment A

Table description – A single value indicating the smallest increment of ignition advance added after the recovery of a knock event.

Precautions and Warnings
None at this time.

Knock Retard – Increment B

Table description – A single value indicating the smallest increment of ignition advance added after the recovery of a knock event.

Precautions and Warnings
None at this time.

Knock Retard – Max

Table Description – The maximum amount of ignition advance allowed to be removed through knock detection.

Tuning tips – none at this time

Precautions and Warnings
None at this time.

Knock Retard – Max RPM

Table Description – The maximum RPM of the knock detection range. The ECU will not try to detect knock events above this RPM.

Tuning tips – none at this time

Precautions and Warnings
None at this time.

Knock Retard – Min RPM

Table Description
None at this time.

Precautions and Warnings
None at this time.

Knock Retard – Min ECT

Table Description – The minimum coolant temperature that has to be exceeded for knock detection to occur. The ECU will not try to detect knock events when the coolant is colder than this value.

Precautions and Warnings
None at this time.

Knock Retard – Min Load

Table Description – The minimum calculated load that has to be exceeded for knock detection to occur. The ECU will not try to detect knock events when the calculated load is less than this value.

Precautions and Warnings
None at this time.

Limiters

Calc. Load Max

Table Description – This single-line table sets the upper maximum calculated load for the engine across the full operating RPM range. Calculated load values achieved by the motor that are above the value indicated are locked to the value set in this table. This restricts fuel delivery and ignition timing advance. This table is used in conjunction with Calc. Load Max – Baro Comp and Calc. Load Max – IAT Comp to help determine if the ECU is calculating too much load for the given conditions. The ECU will use the product of these three tables to measure if calculated load is getting too high.

Precautions and Warnings
Other tables in the calibration affect the final calculated load value as well, so it is important to log observed calculated load values under all operating conditions before changing these values. If you do not set these values high enough on high power or forced induction applications the ECU will think it is calculating too much load and it will switch to a default ignition timing curve that is very aggressive and this can cause engine failure from detonation.

Calc. Load Max – Baro Comp

Table Description
This single-line table modifies the calculated load value as a function of barometric pressure. The computed calculated load is a result of the measured load at the current operating condition of the engine multiplied by this value. This table is used in conjunction with Calc. Load Max and Calc. Load Max – IAT Comp to help determine if the ECU is calculating too much load for the given conditions. The ECU will use the product of these three tables to measure if calculated load is getting too high.

Precautions and Warnings
Other tables in the calibration affect the final calculated load value as well, so it is important to log observed calculated load values under all operating conditions before changing these values. If you do not set these values high enough on high power or forced induction applications the ECU will think it is calculating too much load and it will switch to a default ignition timing curve that is very aggressive and this can cause engine failure from detonation.

Calc. Load Max – IAT Comp

Table Description – This table is used in conjunction with Calc. Load Max and Calc. Load Max – Baro Comp to help determine if the ECU is calculating too much load for the given conditions. The ECU will use the product of these three tables to measure if calculated load is getting too high.

Precautions and Warnings
Other tables in the calibration affect the final calculated load value as well, so it is important to log observed calculated load values under all operating conditions before changing these values. If you do not set these values high enough on high power or forced induction applications the ECU will think it is calculating too much load and it will switch to a default ignition timing curve that is very aggressive and this can cause engine failure from detonation.

Rev Limit

Table description – The engine speed values that represent the switch to define the maximum allowable engine speed. Fuel delivery is turned off and other overrun parameters enabled to keep engine speeds below this set point. The fueling to the engine will stop until the engine speed lessens by the amount of the Rev Limit Hysteresis table value.

Tuning tips
In some case throttle mapping must be changed in order to effectively raise maximum engine speed.

Precautions and Warnings
Increasing engine speed produces exponentially higher forces on the engine components and oiling systems. Increasing allowable engine speeds may produce catastrophic engine failure.

Rev Limit Hysteresis

Table description – The amount of engine speed reduction (from the Rev Limit value) the ECU must see before it reengages fueling to the engine.

Precautions and Warnings
None at this time.

Warm-up Rev Limit

Table description – A temporary Rev Limiter that is set until the engine coolant temperature is above the Warm-up Rev Limit ECT Threshold.

Precautions and Warnings
None at this time.

Warm-up Rev Limit ECT Threshold

Table description – Engine coolant temperature must exceed this value before the standard Rev Limit is used. The Warm-up Rev Limit will be used until engine coolant temperature exceeds this value.

Precautions and Warnings
None at this time.

Warm-up Rev Limit ECT Threshold Hysteresis

Table description – The Warm-up Rev Limit will continue once the engine coolant temperature exceeds the Warm-up Rev Limit ECT Threshold. If the engine coolant temperature drops below this value after it has initially exceeded the Warm-up Rev Limit ECT Threshold, then the ECU will again engage the Warm-up Rev Limit.

Precautions and Warnings
None at this time.

Warm-up Rev Limit Hysteresis

Table description – The amount of engine speed reduction (from the Warm-up Rev Limit value) the ECU must see before it reengages fueling to the engine.

Precautions and Warnings
None at this time.

Oil Metering

Load-Based

Table description – This 3 dimensional look-up table indicates the desired OMP duty cycles. The horizontal X-axis breakpoints are defined by engine RPM and the vertical Y-axis breakpoints are defined by calculated load. The values in the table represent the duty cycles that are driven to the OMP for the given conditions.

Precautions and Warnings
None at this time.

Throttle-Based

Table description – This 3 dimensional look-up table indicates the desired OMP duty cycles. The horizontal X-axis breakpoints are defined by engine RPM and the vertical Y-axis breakpoints are defined by throttle duty cycles. The values in the table represent the duty cycles that are driven to the OMP for the given conditions.

Precautions and Warnings
None at this time.

Radiator Fan Threshold

Fan 1 – A

Table description – Engine coolant temperature must exceed this value before the Fan 1 – A is turned on.

Precautions and Warnings
None at this time.

Fan 1 – A Hysteresis

Table description – The amount of coolant temperature reduction (from the Fan 1 – A value) the ECU must see before it turns off Fan 1 – A, after it has been turned on by the ECU.

Precautions and Warnings
None at this time.

Fan 1 – B

Table description – Engine coolant temperature must exceed this value before the Fan 1 – B is turned on.

Precautions and Warnings
None at this time.

Fan 1 – B Hysteresis

Table description – The amount of coolant temperature reduction (from the Fan 1 – B value) the ECU must see before it turns off Fan 1 – B, after it has been turned on by the ECU.

Precautions and Warnings
None at this time.

Fan 2 – ECT

Table description – Engine coolant temperature must exceed this value before the Fan 2 is turned on.

Precautions and Warnings
None at this time.

Fan 2 – ECT Hysteresis

Table description – The amount of coolant temperature reduction (from the Fan 2 – ECT value) the ECU must see before it turns off Fan 2, after it has been turned on by the ECU.

Precautions and Warnings
None at this time.

Fan 2 – VSS

Table description – Vehicle speed must exceed this value before the fans are turned off.

Precautions and Warnings
None at this time.

Fan 2 – VSS Hysteresis

Table description – The amount of vehicle speed reduction (from the Fan 2 – VSS value) the ECU must see before it reengages the Fan 2, after it has been turned on by the ECU.

Precautions and Warnings

None at this time.

S-DAIS Tables

APV Open RPMs

Table description – A single row table that is used to indicate the RPM point when the ECU will open the Auxiliary Port Valve (APV) based on coolant temperature readings. The values are in engine RPM.

Precautions and Warnings
None at this time.

VDI Open RPM

Table description – A singular value used to indicate the RPM point when the ECU will open the Variable Dynamic Intake (VDI). This value is in engine RPM.

Precautions and Warnings
None at this time.

VDI Open RPM Hyst

Table description – The amount of engine RPM reduction (from the VDI Open RPM value) the ECU must see before it turns closes the VDI, after it has been turned on by the ECU.

Precautions and Warnings
None at this time.

VFAD Open RPM

Table description – A singular value used to indicate the RPM point when the ECU will open the Variable Fresh Air Duct (VFAD). This value is in engine RPM.

Precautions and Warnings
None at this time.

VFAD Open RPM Hyst

Table description – The amount of engine RPM reduction (from the VFAD Open RPM value) the ECU must see before it turns closes the VFAD, after it has been turned on by the ECU.

Precautions and Warnings
None at this time.

Sensor Cal. Tables

ECT Calibration

Table description – This single row table is the non-linear calibration of the stock engine coolant temperature sensor based on sensor voltage.

Tuning tips – None at this time.

IAT Calibration

Table description – This single row table is the non-linear calibration of the stock intake air temperature sensor based on sensor voltage.

Tuning tips – None at this time

MAF Calibration

Table description – This single row table is the non-linear calibration of the stock mass air flow sensor over a voltage range and the sensor's useful output of zero to nearly 5 volts. The values in this table represent an equivalent mass of fuel to the mass of air moving through the stock MAF housing.

Tuning tips – The equivalent fuel mass values derived from the MAF calibration are the primary consideration when the ECU is calculating both fuel and ignition timing. It is this value that determines the engine load, and thus all critical engine control and EMS calculation parameters. With a stock intake it is rarely necessary to significantly alter this calibration. However, after market intakes pass air across the mass air flow sensor differently and often need considerable changes in order to yield acceptable results. A primary rule to follow is to keep injector size at values indicated when using a stock intake. With proper injector scaling and offset, the mass air flow curve calibration can be adjusted to yield proper fueling. The advantage of keeping injector scaling accurate is that the resulting MAF Calibration will more accurately reflect real engine load. This accurate calculation of engine load is critical for the dozens of other tables that use engine load to calculate a spark or fueling event.

Start the vehicle, let it idle, and come to temperature...it may not perfectly idle, but just deal with it until it comes to temperature, 180-190 F. Use the dashboard to pull up your Short-Term Fuel Trim (STFT), Long-Term Fuel Trim (LTFT), MAF Voltage, and Coolant Temp. After the vehicle has come to temperature, re-set the ECU (you will be prompted to turn the vehicle off then back on). Start the motor again, and then watch your MAF voltage and fuel trims. You want the combination of your fuel trims to be as close to 0 as possible. EX = If your STFT is +5% and LTFT is 0, then simply look up the MAF Voltage, which should be close to 1.2-1.28 volts at idle, on the MAF Calibration table and adjust the grams/sec value for that voltage up (+) until your combined fuel trims are 0 or close to zero. These adjustments can be made very easily by looking at the combined % correction of the STFT and LTFT. If that total is +6% then you can highlight the MAF Calibration cell for that particular MAF voltage and hit the “M” key, you will then be prompted to enter a floating point value. The correct value for this particular situation would be 1.06; this adjustment will now tell your ECU for that particular MAF voltage you now have a 6% greater MASS of air entering the motor so 6% more mass of fuel should be injected. After this adjustment is made you’re fuel Trims should be close to zero. (If that total is -6% then you can highlight the MAF Calibration cell for that particular MAF voltage and hit the “M” key, you will then be prompted to enter a floating point value. The correct value for this particular situation would be

0.94; this adjustment will now tell your ECU for that particular MAF voltage you now have 6% less MASS of air entering the motor so 6% less mass of fuel should be injected, bringing your fuel trims close to zero.) We suggest you shoot for a LTFT value of +/- 5% max. You may have to re-set your ECU throughout this process with the AccessTUNER Professional software to remove any learned fuel trims. To re-set your ECU while live tuning, close down any tracing or dashboard, then you can go to the “ECU” drop down menu and select the Reset ECU option. You will be prompted to turn your vehicle fully of and back on again. Make sense?

Complete these calculations along the MAF Calibration table up to 2.6 volts or so ON A LOAD-BASED CHASSIS DYNO at part-throttle. Be sure to run the vehicle with the A/C on as well to make sure your calibrations are consistent. If you have a properly designed intake system the MAF Calibration should look very similar to your stock MAF Calibration graph under the table data. Be sure to keep your throttle movement as steady as possible during this process. Rapid movements of the throttle will employ adjustments from the Tip-in Enrichment table and may skew your fuel trims.

Your trim values will always adjust back and forth (+/-); let them, that is what they are supposed to do. Do not beat yourself up trying to get them at exactly 0...it is impossible (temperature, weather, gasoline, etc. changes will not keep anything constant while you are tuning).

If you are seeing plateaus, spikes, dips, or flat spots in the graph for the MAF Calibration table then you know something is wrong...replace the intake system with a properly designed one.

NOTE: Changing the MAF Calibration table will change your calculated load. If all other variables remain constant, the less airflow you calibrate in the ECU for a given MAF voltage; the less engine load will be calculated.

Precautions and Warnings
Nearly every important table utilized for coordinated engine function is defined in part by engine load and this is derived from the mass air flow sensor calibration of the intake. A mistake in this table can cause catastrophic engine damage.

MAF Limit (Min.)

Table description – This singular value is the ceiling airflow value (grams/sec) that the ECU does not want to see when the car is in the accessory position.

Precautions and Warnings
If the reported airflow value (grams/sec) is higher than this when the car is keyed to the accessory or on position, then the ECU will illuminate the MIL for P0335.

Throttle

Duty Cycle A

Duty Cycle B

Duty Cycle C

Duty Cycle D

Table description – These tables define the throttle duty cycles indicated under four separate conditions (A, B, C, & D) as a function of engine speed and accelerator pedal position (APP) sensor.

Tuning Tips – The requested torque values indicated how much or little to open the throttle. The requested torque is a function of throttle position in parallel tables “throttle requested torque A, B, C” . These tables can be altered together to adjust the sensitivity of throttle position to produce a response in engine power.

Precautions and Warnings
None at this time.

Max Duty Cycle

Table description – This singular value is the maximum throttle duty cycle that the ECU will allow.

Precautions and Warnings
None at this time.
