

Please use this Focus ST logging list to get started with for your Mountune calibration. It is common for me to ask you to change the list, but initially this is what I want you to use unless I say otherwise. Make sure you have the latest firmware on your AP. Please keep in mind that the items below are the data logging list and not the live monitoring list that you can visually see on the AP while it's plugged in. To get started please make sure that your data logging list matches what I've listed here. Anything missing should be added and anything extra should be removed.

Starting with 2016 Focus ST models there are several possible ROMs that could be loaded into your ECU from the factory. If you see a "greyed out" mountune calibration that means that we need to create your custom programming from a ROM other than what was initially used. Please let us know if you see this. You can temporarily use a Cobb OTS file appropriate for your fuel and modifications in the meantime while we rebuild the calibration for you.

Accelerator Pedal Position % - Accelerator pedal position (this is direct pedal input before translations).

Actual AFRs - Wideband front oxygen sensor reading converted from Lambda to AFR.

Airflow Mass lbs./min - The calculated airflow through the engine and is used for almost all flow based tables.

Boost Pressure - Manifold pressure (relative). This is MAP minus Barometric pressure.

Charge Air Temp - Post intercooler temperature as read before the throttle body.

Coolant Temp - Engine coolant temperature as measured post radiator.

Engine RPM - Current engine speed.

ETC Angle Actual - Electronic throttle control actual angle.

FRP Actual - Fuel rail pressure actual. This is the high pressure pump.

Grill Shutter Command - Commanded grill shutter duty cycle.

Ign Correction Cyl1 - Ignition timing correction applied to Cylinder 1.

Ign Correction Cyl2 - Ignition timing correction applied to Cylinder 2.

Ign Correction Cyl3 - Ignition timing correction applied to Cylinder 3.

Ign Correction Cyl4 - Ignition timing correction applied to Cylinder 4.

Ign Timing Cyl1 - Ignition timing after all compensations for Cylinder 1.

Load Actual - Engine load actual after all compensations.

LTFT - Long term fuel trim.

MAP or Manifold Absolute Pressure - Manifold absolute pressure. This is post-throttle.

Octane Adjust Ratio Learned - Octane adjust ratio learned. -1.0 is HIGH Octane, 1.0 is LOW octane.

STFT - Short term fuel trim.

Vehicle Speed - Vehicle speed when moving.

WGDC Actual % - Final wastegate duty cycle after compensations.

Turbo MFRACT Desired (formerly WGDC Y-Factor) - The measure of a fraction of exhaust flow for reference when tuning WG tables.

If you have removed the Active Grill Shutters from your car please remove Grill Shutter Command from the data logging list.

For live monitoring only use items that are already on your data logging list. Otherwise, you will use too much memory and the logging may not record correctly or you will get an error message. **AP Live Monitor List: Actual AFRs, Boost Pressure, Ignition Corrections for cylinders 1-4.**

IMPORTANT NOTES

1. Please incorporate the name of the program you created each log from into the name of the data log.

For example: david_bowie_Mountune 91 RR1HS FMIC Gamma w_4slots_datalog1

This helps with keeping track of what ECU calibration was in the car at the time of logging. **Don't shorten the file name; this is very important!**

2. Start your data logs at least 10 seconds before you need to be recording; it takes a bit to initiate. And make sure you don't end the log before you take your foot off the gas. If the end of the log is cut off you may be asked to make another set of data logs.

3. Unless otherwise stated, start with a 3rd or 4th gear Wide Open Throttle (WOT) data log. Please have your right foot to the floor by 2,100 RPMs and no earlier than 1,900 RPMs. If you have installed an MRX turbo upgrade or other big turbo upgrade please have your right foot to the floor at 2,500 RPMs (we don't want to bog the car down too much since it's very hard on the engine). Go up as high in the RPMs as you're comfortable with. This should be a fairly short log with one instance of Wide Open Throttle (WOT) to get this process started. Do not shift gears in the logs unless I request it. Keep in mind speeding on public roads is illegal and you assume the risks if you decide to do so. Visiting a dyno is one way to avoid this.

4. All logs should be done with the ESC fully disabled and A/C off unless I indicate otherwise. Logs should be kept to 1-2 logs per calibration file; please don't send more than 1-2 logs for one file. It's very important to limit the amount of WOT data logs you do, especially in the beginning. If there is a scenario where the car may be over boosting or if the fuel currently being used shows to be less than ideal, we don't want to repeat the hard driving over and over again with multiple data logs. For the sake of comparison and realizing gains it is **required** to do 2 data logs with the Cobb Stage 0 file, which is the stock file. Do the Stage 0 logs first and then the Mountune calibration logs. Doing all logs on the exact same stretch of road and in the same direction is **required** to ensure accuracy. The more flat and smooth the road, the more accurate the output information will be, so please keep that in mind.

5. **Pro Tip:** DO NOT bog the car or lug the car around in 5th and 6th gear. If you are cruising and are at low RPMs (1600 RPMs, for example) in high gear and suddenly go WOT for whatever reason you are likely to see some negative spark correction. Doing this is very hard on the engine and is a bad idea. Please down shift if you need to accelerate quickly. If you are just needing to casually accelerate, applying light throttle in high gear is perfectly fine.

6. Please include the weights for the driver, passengers, and cargo for every log you send in. Don't forget. This is important!

7. **For any and all types of racing, especially when participating in an event that you've never data logged, it is STRONGLY recommended to run a few gallons of unleaded race gas.** This is the least expensive form of insurance for your car that you can buy. Racing can be very hard on your engine and this should not be ignored. I can't stress enough how important this is!! And please take data logs when racing!

8. Negative Ignition Corrections. This is something that may come up in the forthcoming conversations about dialing in your car. You have 2 knock sensors that are mounted to your engine block. They are constantly listening for certain frequencies that have been designated as knock, detonation, or pinging, etc. When the knock sensors pick up what they interpret as knock, the ECU will reduce Ignition Timing (spark) which will also reduce power and torque. This is done to help protect the engine from damage since detonation is not a good thing. If there's a significant amount of negative Ignition Correction taking place the Octane Adjust Ratio Learned value will start to change in an effort to minimize the corrections. Alternatively, the knock sensors can add Ignition Timing (spark) when the fuel and conditions are ideal, which will add power and torque.

If you use fuel that is sub-par you will have a much greater chance of having negative Ignition Corrections. You may also have the Octane Adjust Ratio Learned value adjust towards ZERO or towards a positive number, which is not desired.

Ideally, we want the OAR Learned value to be -1.00 and we'd only like to see positive Ignition Corrections. The EcoBoost 4 cylinder engines are "noisy", literally and figuratively (a lot of activity). You can sometimes see negative corrections just by blipping the throttle while stationary and not in boost. Using the best fuel available is required for optimum performance and safety. You may be asked to try a different brand and/or station if excessive negative corrections are being recorded in the data logs. While we don't like to see negative corrections, having them appear in Wide Open Throttle driving is much worse than having them appear while in vacuum and less than WOT. We'd advise letting off the throttle if you see Ignition Corrections more negative than -1.5 at WOT. Excessive Ignition Corrections should be reported to us immediately. If you find yourself in a situation where that's happening please switch to Slot 4, which is your Panic Mode, made for this exact situation. Fuel quality can and will vary from brand to brand and from station to station so keep an eye on your AP with hard driving.

Fuel quality aside, there is the scenario of NVH that is the cause of the negative Ignition Corrections. NVH... Noise, Vibration, Harshness can be picked up by the knock sensors and be interpreted as knock, detonation, pinging, etc. That means the ECU will reduce Ignition Timing resulting in less power and torque. So NVH can have the same impact on power and torque as using mediocre fuel. To avoid NVH hindering the performance of your car we need to make sure that any possible sources for NVH are investigated and rectified. A few of the more common sources for NVH: worn engine mounts, rattling heat shields, loose parts, loose engine covers, downpipe flex joints that are too stiff or too flexible, and excessive exhaust movement. Recent installations and modifications are also a good place to search for NVH.

When trying to identify if the negative Ignition Corrections are from bad fuel or NVH the fastest and most effective way to test the validity of the corrections would be to use race gas. Adding 4 or more gallons of unleaded race gas to your tank will be a clear indicator if your fuel is the cause. If you've had excessive negative corrections and add the race gas and the negative corrections disappear, that's a clear indicator that the fuel previously used is not up to the task. At that point a decision can be made as to how to proceed. There's no need to fill up your tank with race gas, however. You can run the tank low and add the 4 gallons in for this test. The less standard fuel that is in the tank the higher the overall octane level will be for the race gas test.

9. Email your data logs to randy.robles@mountune.com. You will normally have a reply back in a few days with information and instructions on how to proceed.

END OF LINE

Best Regards,

Randy Robles
Calibrator
Mountune USA
randy.robles@mountune.com
714 424-9400