

Miata ECU Tuning – Rich Velardo - July 2018



Here's the whole ECUTEK Programming Kit. Packed in the soft case is the ECU/computer interface cable (coiled on the left), the license dongle (thumb drive) a couple of stickers (you must have stickers) and the instruction sheet (read it!). Once you have this in hand you can get going on your tune.

I'm currently working with Miata Tuner, Joe McClughan, at Dynotronics to install the newest ECUTEK tuning system in my Miata. You'll find Joe tuning a Miata in this episode of Performance TV (about 6 min into the video), he even got a haircut for this program; <https://youtu.be/L2Mi8caQkyE>. The Dynotronics website is <http://www.dynotronicstuning.com/>

OK, why am I doing this: more power, better drivability and some special shifting features that I'll get into shortly. I've had Joe tune my Miata before and the results have been positive, with more power, a raised rpm cutoff point and much better drivability. But now I'm after an updated tune to take into account the last exhaust modifications and to get those special shifting features.

The shifting features that I want are "flat foot shifting", "auto blip" and "launch control". These features are only available with the ECUTEK tuning software (available from several Miata tuners) these shifting features will be helpful when autocrossing. The "more power" that comes with the tune will be nice everywhere.

- **Flat foot shifting** works on upshifts and allows the driver to shift gears without letting up on the throttle, you can keep your foot planted on the floor and the

engine management computer holds the revs without the driver having to let up, the result is a much faster upshift.

- **Auto Blip** works on downshifts, where the driver would normally blip the throttle to rev-match on a downshift the auto blip does so without driver input, again without having to lift the throttle foot, making for a much faster shift.
- **Launch control**, simply stated the driver can use this to hold the revs at a predetermined point when launching at autocross or even drag racing. So if the optimal launch revs are 4,000 rpm, this allows the driver to set the car to hold 4,000 rpms at the start line and just plant his foot to the floor and the engine management computer will hold the revs at 4,000 until the car is moving when it all returns to normal.

Of course the new tune will take advantage of the intake & exhaust modifications that have been made on the car with the end result being a nice power boost & faster shifting.

Tunes like this are popular with NC and ND drivers as these tunes provide an otherwise stock Miata with a nice power boost (Dynotronics claims up to 20%), extra features and changes in the car's computer programming for a very reasonable price reasonable as compared to the price of mechanical changes that would give similar power increases. With the price of a Dell laptop computer that I needed in order to use the windows based programming (I have a Mac laptop), this cost about \$700 which is very reasonable considering the gains from the tune. Figure \$600 or a bit more or less, depending on what you order and if you have a windows laptop or tablet already.

That's the long winded "why" and "how much", now for the "how to". There are two ways that this tuning process can go. For either tune you need to pay for the tune license (this would be ECUTEK) and for the tuner to do the actual "tuning".

Choice 1. The first is the easiest and least expensive way to do a tune. For this tune you just remove the ECU from your Miata & ship the ECU off to Joe or the tuner of your choice. Your tuner will do a tune "on the bench" & return the ECU to you and you re-install the ECU in your Miata. Way back when I did the first tune, this was the only choice and yes, you will notice the difference with this style of tune, it's just not as good as it could be, but it is less expensive, easy and effective.

Choice 2. The second is the way to get the most out of the tune and is how I'm doing this tune. This involves some work with a computer on the owner's part (any Windows laptop or tablet works).

- You'll have to borrow, rent or buy the ECUTEK cable that connects your computer to the car's OBD monitor port and you'll get the ECU license dongle (thumb drive with the license information that's specific for only your car) from the tuner.
- With your laptop, cable & dongle in hand, you'll need to download via the internet some programming software from your tuner.

- Once this programming software is installed on your computer, you'll need then to download the factory ECU programming from your car to your computer with the ECUTEK cable & e-mail that downloaded file to your tuner, in my case this is Joe. You must also keep a copy of the original file as downloaded in case you have "undo" the following process.
- Joe then reads this file, modifies it for a "base file" and emails the file to you and you upload that file to your ECU. This is the first of maybe 4 or 5 exchanges that you'll be making as you data log information from your car's ECU & e-mail that to Joe for additional refinement.
- After each file update, you do a Data Logging. This involves about 30 miles of pretty normal driving with a mix of city/highway. Once those miles are done the actual data logging involves doing a "foot to the floor" acceleration in 3rd gear from 1,500 rpm to redline with the laptop computer hooked up via the ECUTEK cable to the POBD port. This file is then sent to Joe.
- Each time you do this, Joe will read the information & make changes in how the ECU runs the engine and create a new file and email it to you. These changes take into account everything that the ECU monitors & adjusts the programming to ensure the engine runs at its best. The download and upload can take up to a few minutes, depending upon your laptop or tablet and your connection.

As you work together & send information back & forth, Joe is adjusting many factors to get your specific engine working at its peak. This adjusting eliminates the factory tune that sets the parameters for engine operation. The factory tune was designed to be wide enough to safely run all of the engines produced (following the "one size fits all" theory).

The ECUTEK tune fits the tune to your specific engine and gets the most possible out of your engine. **Note that flashing your ECU, if discovered, will most likely void any remaining engine warranty you have.** Also, while very rare, should your dealer do a factory "ECU flash", say due to a service bulletin, that will overwrite your tuning changes and you will have to reload the tuning file from your from your laptop.

If you want to return to the original factory tune for some reason, you can just reload the original ECU download that you created at the start of the process.

This process is pretty slick and amazingly affective, you'll get lifetime updates and "touch-up" tunes from just about any of the tuners as well (check this before selecting a tuner to use). If you are interested in more information please contact Rich Velardo (email to competition@northcoast-miata.com) and go to the Dynotronics web site: <http://www.dynotronicstuning.com/>

Note that neither the Northcoast Miata Club nor Rich Velardo make any guarantees about doing the tuning process above. You must fully investigate this to ensure you are comfortable with the tuner and the changes that will be made before making any modifications to your Miata.