

# Megasquirt Install

Contributed by Peter  
Monday, 24 November 2008  
Last Updated Monday, 24 November 2008

I finally bit the bullet and installed Megasquirt. I couldn't be happier!!!

I

A big thanks goes out to Peter Florance of Va Beach, VA , and his expert assistance in tuning this setup. I can attest to his skills. I

I

I

10/22/2008: Time go get started!

Here's the build sheet so far:

| Purchased Item  | Price    |
|---|----------|
| X MegaSquirt-II Engine Management System w/PCB3 - UnAssembled Kit | \$250.00 |
| X MegaSquirt Stimulator v2.1 - UnAssembled Kit                    | \$48.00  |
| X MegaSquirt Relay Board - UnAssembled Kit                        | \$65.00  |
| X MegaSquirt-I or II Relay Cable                                  | \$70.00  |
| X MegaSquirt Wiring Bundle - 12' Long                             | \$40.00  |
| X GM Closed Element CLT / IAT Sensor with Connector               | \$15.00  |
| X GM Open Element IAT Sensor with Connector                       | \$20.00  |
| X MapDaddy 4 Bar MAP Sensor with Barometric Correction            | \$60.00  |
| X Lead Bending Tool   | \$6.00   |
| X 4 Fuel Injector Connector - Bosch                               | \$18.00  |
| X Megasquirt Decal  | \$4.00   |
| X Wideband O2 Sensor  | \$80.00  |

Total Megasquirt \$676.00

Remaining \$-

I purchased everything from DIYAutoTune.com over the course of a few months. Shipping was really fast and they are good for support on the build section. I bought the "Stimulator" a while ago. I have had quite a bit of soldering experience but I was still really surprised at how easy it went together. I

I

I also decided to install EDIS and eliminate the distributor/TFI system. I purchased the EDIS bracket and wheel from pyropete on turboford.org, and the rest of the accessories I got off eBay. Total for all of this was around \$200. I

I

10/27/2008: Parts are in!!

Stimulator is assembled and Relay board is assembled. The actual "Megasquirt" board is getting there and I've confirmed communication with my laptop and uploaded the first round of software.

I've decided to just go all the way and do ignition using Ford EDIS. It's really not that much more work and I have to assemble things differently depending on which ignition system I'm using, so it was pointless to use the antiquated stock ignition when I'd just have to desolder and resolder when I upgraded to EDIS.

I think I'll have the assembly finished tomorrow. Next step will be installing in the XR

I

I

11/1/2008: Progress!

Â Everything is assembled and tested! It's so cool to have it sitting on our dining room table (in true MM fashion) blinking all sorts of LEDs that show injector banks, warm up enrichment, accel enrichment, etc.

I'm almost done with the fuel side of the new wiring harness. Tomorrow I'll start on the spark side, it's a little more involved because I have to use shielded wire in various places and there are more connections to make for the EDIS.

The EDIS parts won't arrive until later in the week unfortunately, so I'm just wiring to where I am going to place the parts so I can hopefully hook them in quickly upon arrival. In the mean time I can test sensors and read a lot on how this whole tuning thing works.

I'm really impressed with the system so far. Great directions and it's so much smaller and more simple than the 1985 version I'm replacing. Plus I'm going from my Mass Air (converted) setup to Speed Density, so that means two fewer connections to boot.

Â

Â 11/5/2008: Cross your fingers!

Wow, what a project.

I've been working for about two weeks non-stop on this it seems. I just finished the last of the wiring though and the task list is starting to get pretty small!

The car will be ready to test (not start, test) this evening. I will start with seeing if the injectors work (MS has an injector test mode), then I'll see if I have spark, and I can test the base timing to see if I'm remotely close.

Then I have a bunch of reading to do before I actually try to start it.

Tomorrow is start day.  
Fingers crossed!

Â

11/10/2008: Where's the spark?

We have spark!!!

A new (to me) EDIS module arrived in the mail today. I made a cool little testing system out of a specialized wav file and by splicing into a headphone cord. I can plug the system into the headphone jack of my laptop and play the wav file. It sends the proper voltage signal simulating the engine turning at 1150RPM. Here's a link to the setup for those interested: <http://www.heggs.co.uk/vrssim/wav/index.htm>

Anyhow, plugged the new system in and I had sparks everywhere! (I had the plug wires disconnected from the head and just laying on the engine, so they were arcing everywhere they could find a ground!).

I primed the fuel pump (accidentally) and got a little "pumph!" from the engine too!

This is good!

Next is making sure the VR sensor is working right. With this system I get about 130mv AC, so with the VR sensor hooked up and the engine cranking, I should see about half that theoretically. Oh, and more sparks!

Progress!

Â

11/16/2008: Time for some pictures!

Â Below are the pictures of the build so far.Â Keep scrolling down for videos of it idling and the dyno session!

Â

Â

11/16/2008: It Idles!!!

Finally got it started and idling. What a great sound! For a video of it idling, [click here](#).

^

11/22/2008: Tuning and Dyno!

Once the car was idling we got a basic tune on it. We then started tuning it further and further with lots of test runs and analysis, until we could go full throttle at 13psi. This meant it was close, so it was time to take it to the dyno for some real tuning.

We went to Abacus Racing in Virginia Beach, VA. I was really impress with Rob and the crew there. Very professional and very knowledgeable. We did an hour's worth of runs. We gained about 45 horsepower just through tuning, and we hit our target that I needed to be classed correctly to race with GTS3 in NASA.

The goal was around 250 whp to be classed at the upper edge of GTS3. I thought for sure I'd have to go to 16psi to do that, but we nailed it with only 13psi! Air/Fuel and spark curves are all set to a safe point too. As a comparison, with the stock ECU, 13 psi yielded 208whp. The guys there felt confident that if I ran it at 18psi, which last time yielded 310whp, that I'd have close to 400 whp. Yikes! I think I should set up another map and put in an electronic boost controller! I really like running low boost because racing is so hard on an engine. It thrills me that I'll only be running 13psi for the 20-40 minute track sessions.

Here's the dyno sheet:

^

^

I'm thrilled. A quick drive in the car reveals a very noticeable increase in power. Until the tires warm up, I can only put it to the floor toward the end of 3rd gear. What a great feeling!