



Meets monthly



[discord.defcon908.org](https://discord.defcon908.org)



[defcon908.org](https://defcon908.org)



[meetup.com/defcon908](https://meetup.com/defcon908)



[@defcon908](https://twitter.com/defcon908)

# Organizers



**Dan Sherry**

Organizer

dan@defcon908.org

@netbroom



**Jeremy Chisamore**

Organizer

jeremy@defcon908.org

@chazb0t



**Cid Dominique**

Organizer

cid@defcon908.org

/in/cid-dominique-cissp-12326926



**Ben Smith**

Advisor

ben@defcon908.org

/in/bensmith83



**Matt K**

Advisor

matt@defcon908.org

# Call for Talks

30 minutes + Q&A

- Technical
- Career
- Entrepreneurship or side projects
- "War stories" or research
- Demos
- Workshops

# Call for Volunteers

- Admin/resource management
- Sourcing speakers
- Event planning/scheduling
- Handling volunteer meetings
- Website management
- Social media management
- Partnerships with other groups
- Contributing ideas

# Introductions

2 minutes each - 15 minutes

# Resource Share

Post to Discord: #resources

# Career

Hiring? Post to Discord: #career

# Event

Disclaimer: photos may be taken

# Need for Speeduino

Retrofitting EFI on a Yamaha V-Max

By: Dmitriy Loshakov

Software & DevOps | Embedded & Motorsports

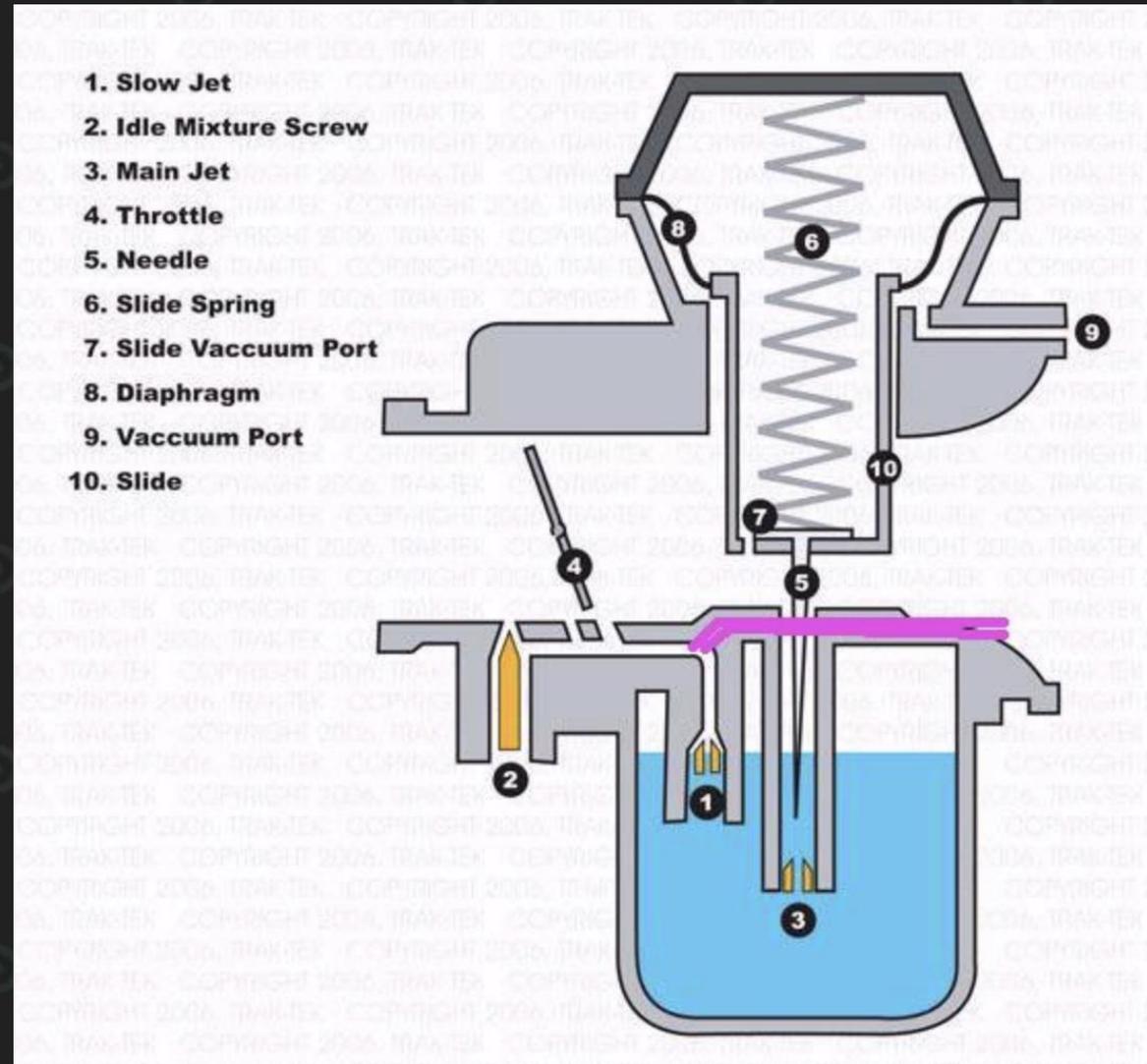
# Overview

- Background
- Prep & Maintenance
- Retrofitting & Assembly
- Wiring
- Initial Programming & Troubleshooting
- Fine Tuning



# Background

- What's a carburetor?
  - Primitive air/fuel metering device
- Why V-Max?
  - Fun bike, sounds great
  - Inexpensive
  - Parts still available



# Background (cont'd)

- Why convert to EFI?
  - Ease of tuning and maintenance
  - Easy to debug
  - Newer V-Max is 4 to 5x more expensive, hard to find
- Speeduino vs alternatives
  - Cheapest Option
  - Open Source
  - Arduino-based
  - Plenty of variations



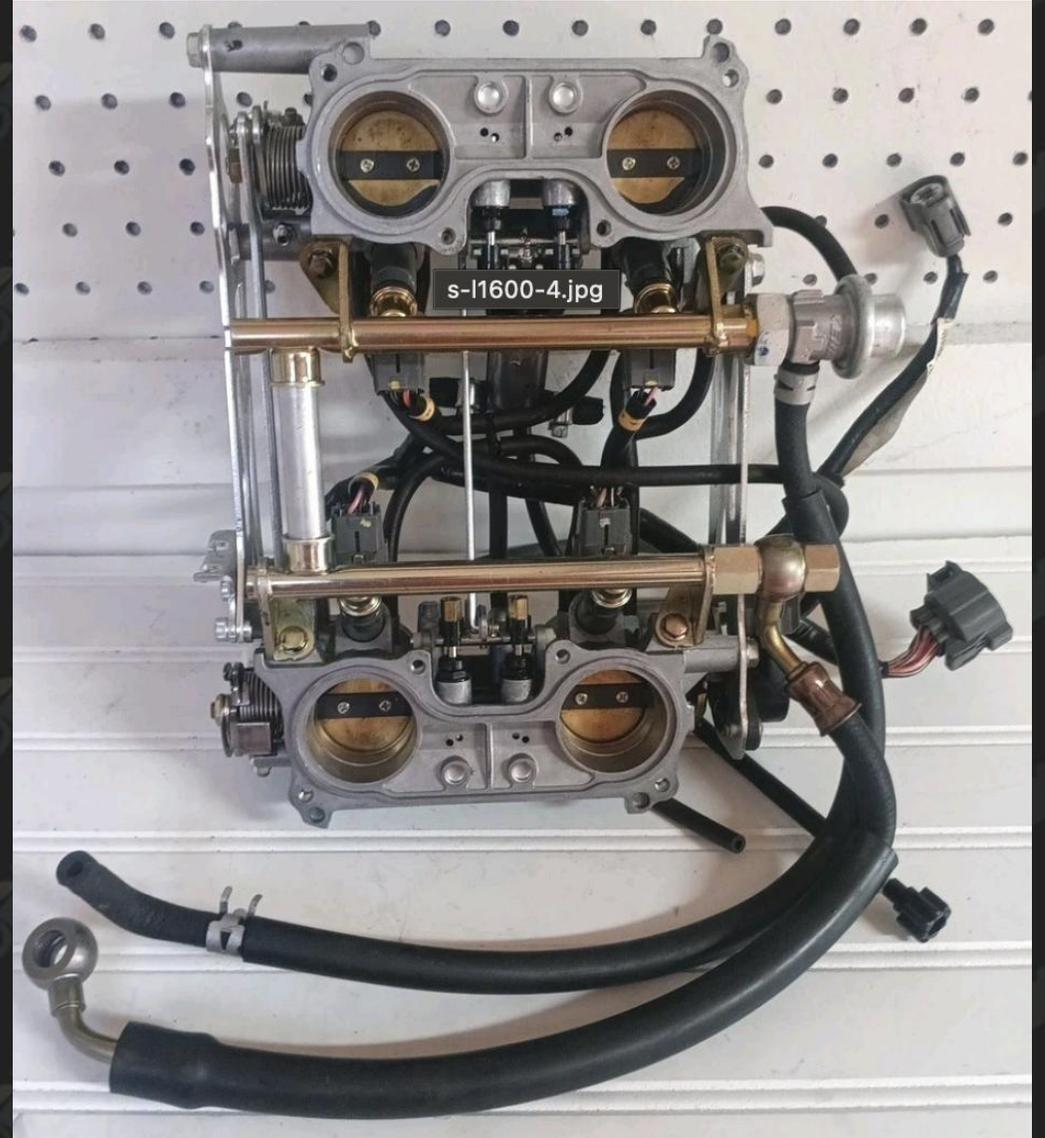
# Prep & Maintenance

- Ensure that all maintenance is done, engine starts and runs smoothly, **prior** to starting the project!
- Even small issues can derail the whole thing...
  - Can make proper tuning difficult if not impossible
  - Can make initial troubleshooting very frustrating
  - Can lead to unstable operation



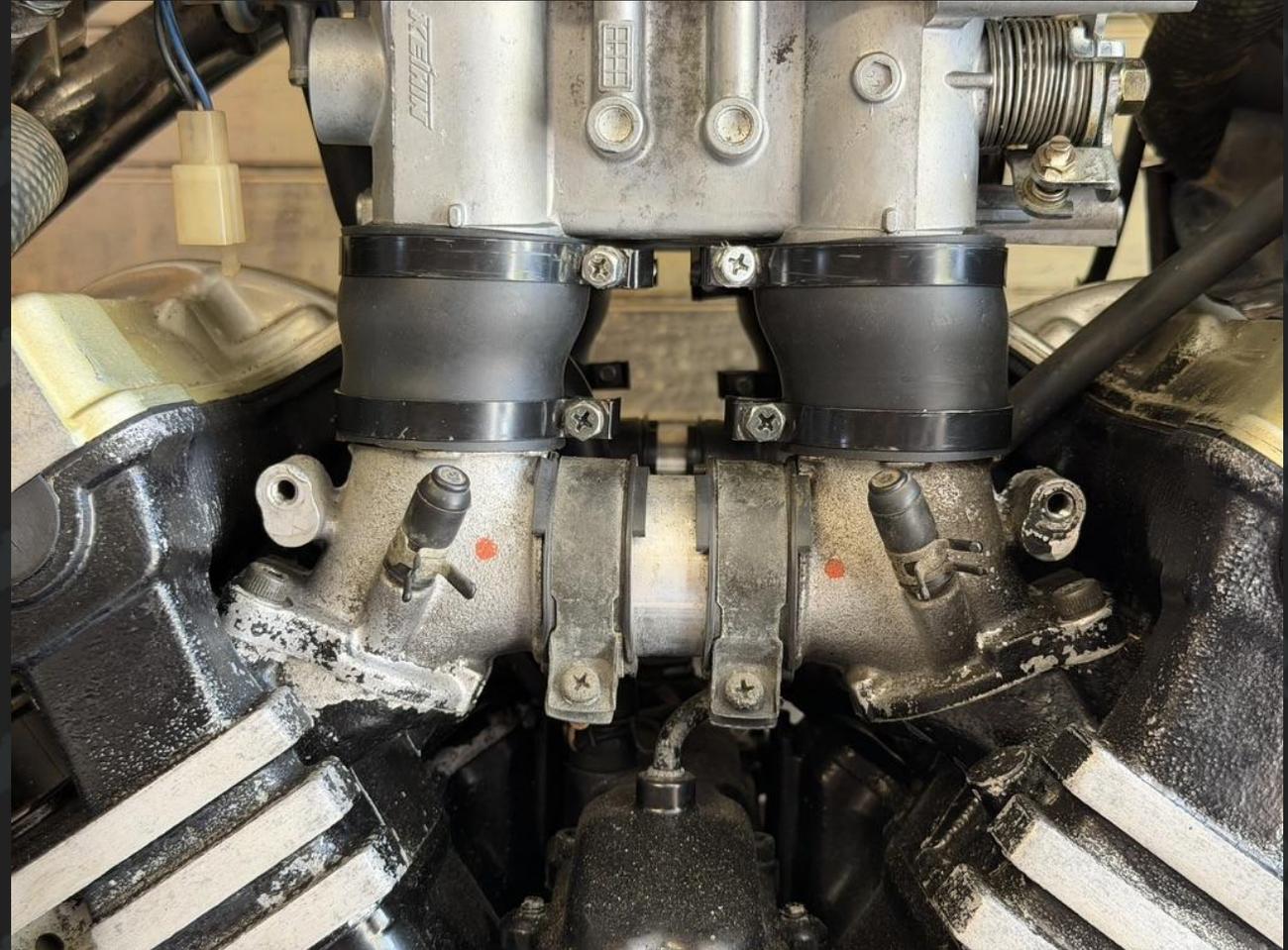
# Retrofitting (Additional Components)

- Required for fuel injection:
  - Throttle body (& fuel injectors)
  - Throttle Position Sensor
  - Manifold Absolute Pressure (MAP) Sensor
  - Temperature Sensors (Coolant, Intake Air)
  - [Wideband] Oxygen Sensor
  - RPM Detection Mechanism
    - Typically via Crank/Cam Position Sensor(s)
    - Alternatively via Coil (-)



# Assembly

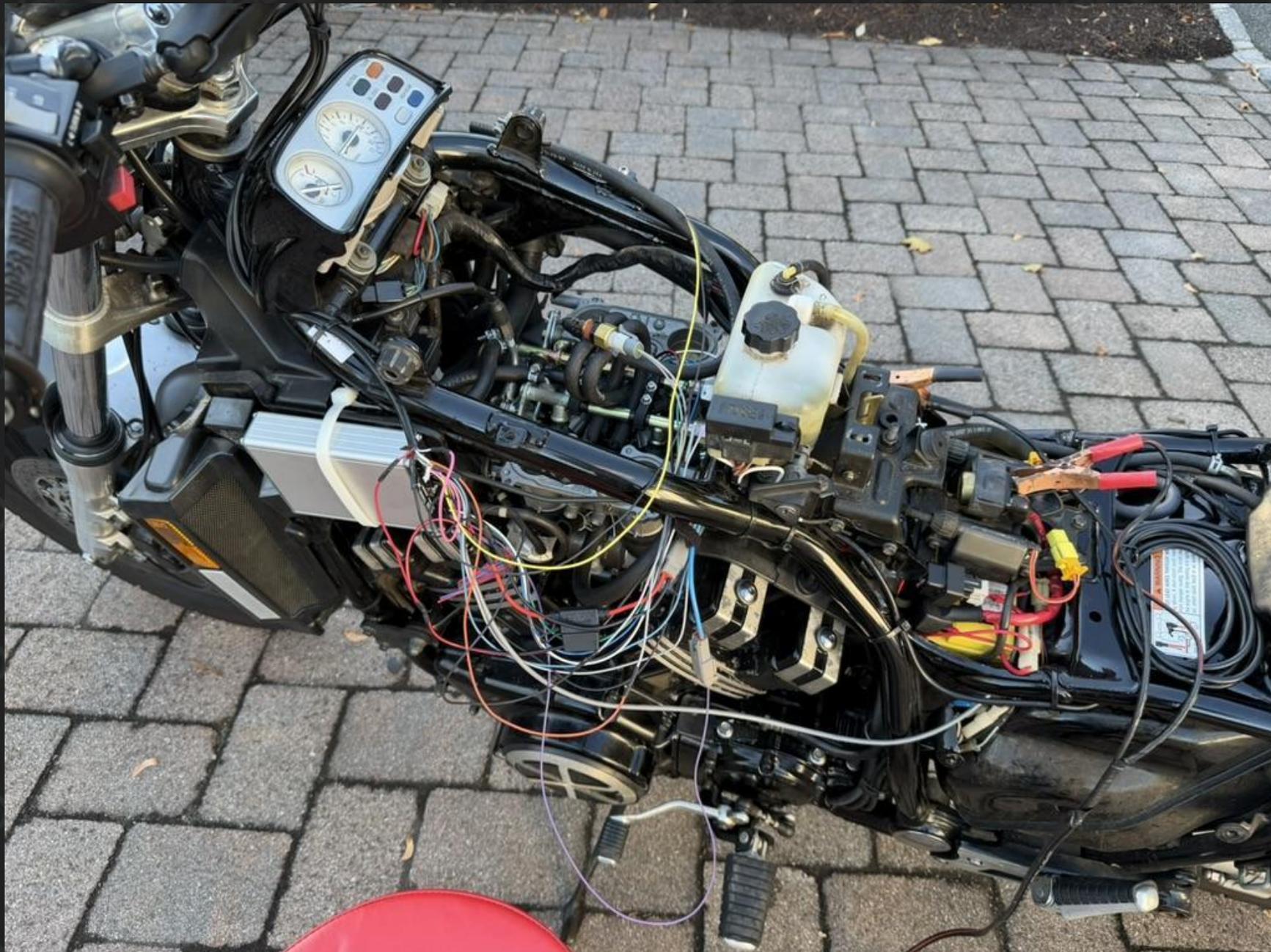
- Figuring out how to retrofit the EFI parts to the bike
  - Clever usage of universal components
  - Modifying existing components
  - Fabricating brackets, mounts, etc..
  - 3D printing is a big help, but not always required



# Assembly (Oxygen Sensor)

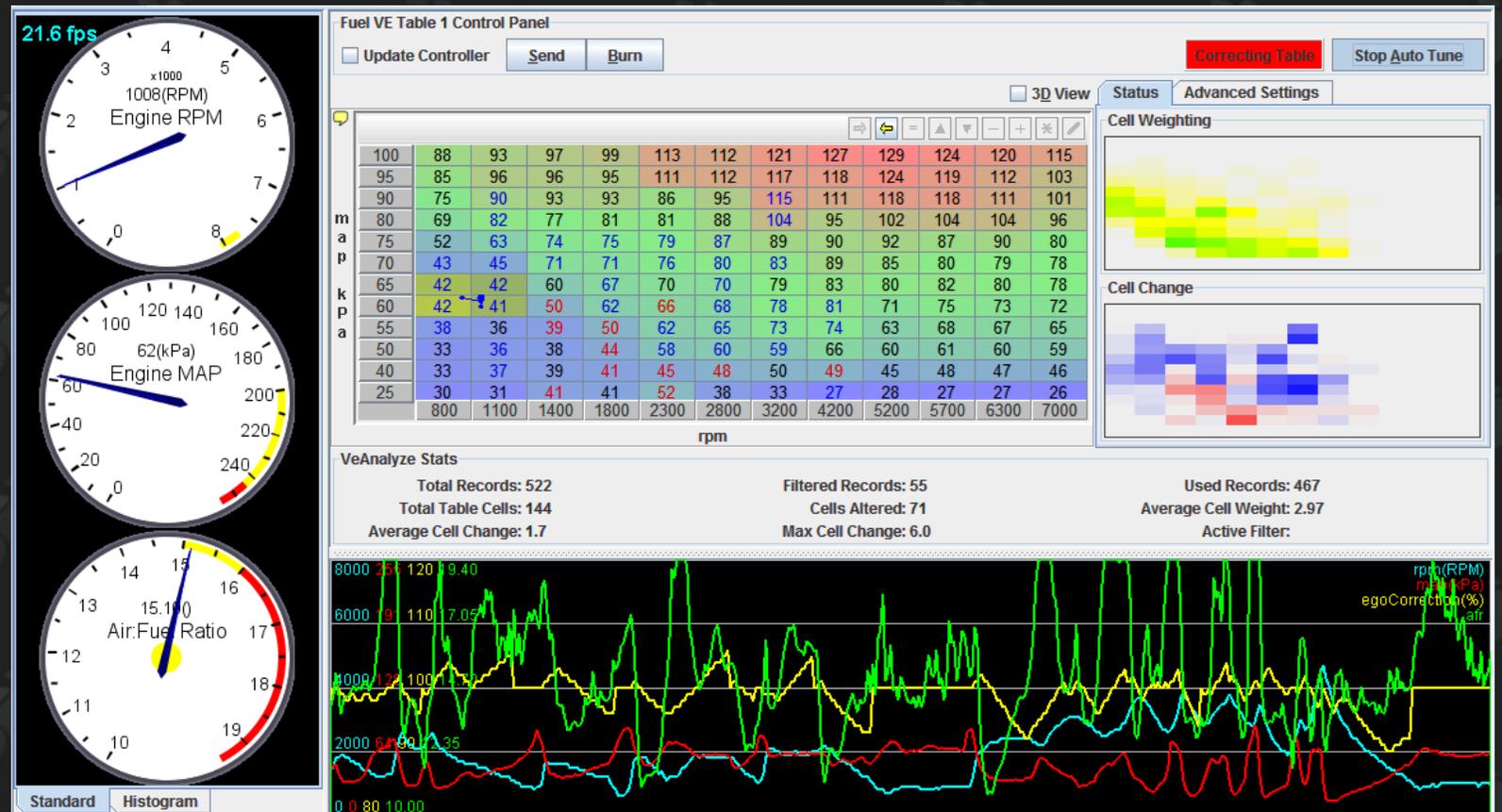


# Wiring



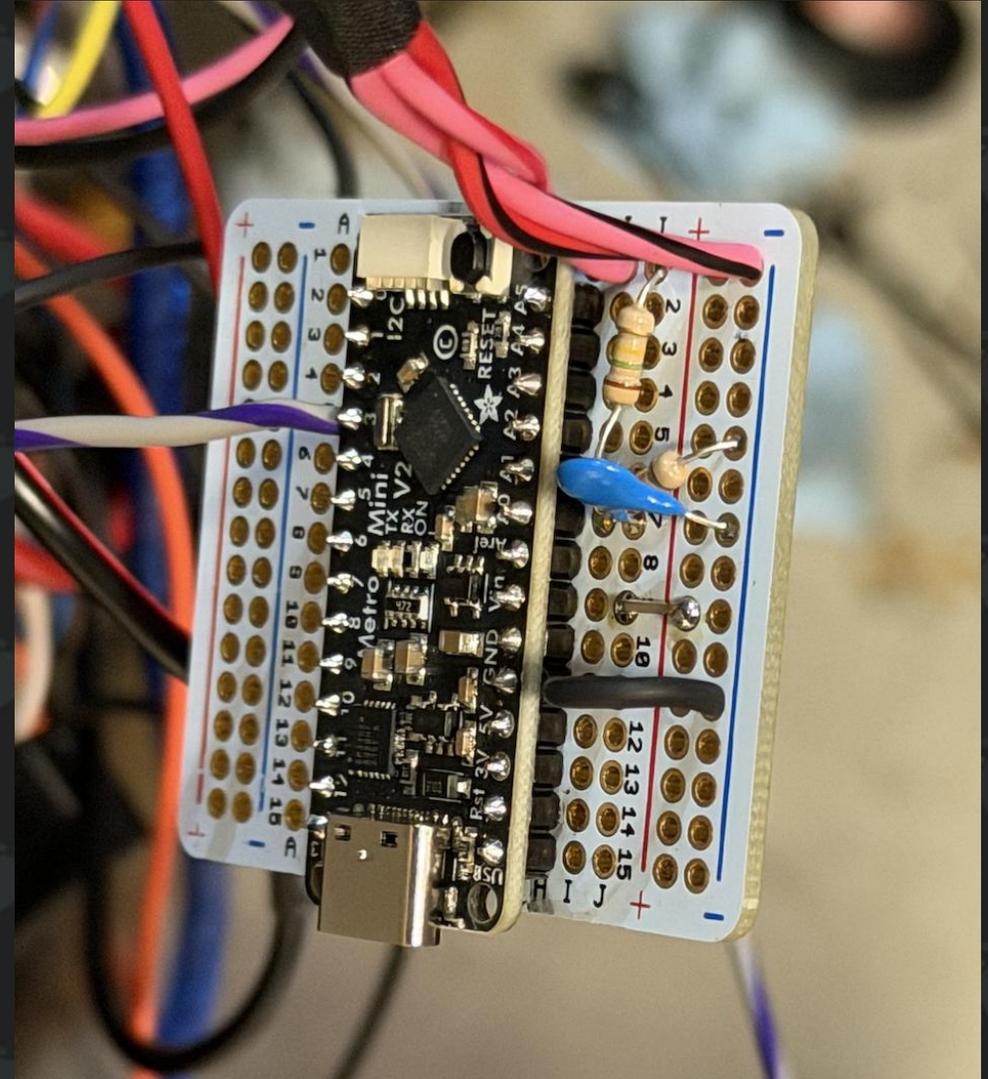
# Initial Programming

- Flash Speeduino Firmware
- Load Initial Tune (via TunerStudio)
- Fire it up!



# Troubleshooting

- ... or not.
- Issues with RPM / Triggering mechanism
- Back to the drawing board, alternative trigger used



# Firing it up & Fine Tuning

- With a reliable trigger mechanism, it finally runs
- Dialing in the various parameters via auto-tune
- Dyno Tuning

# Links & Additional Info

- V-Max Forum [Project Log](#)
- V-Max Forum [Inspiration Thread](#)
- [Speeduino Docs](#)