STRATIFIED
Aux Fuel System
VW MK6 GTI

Additional Fuel Injection System

Installation and User Guide

Thank you and congratulations on the purchase of your new Stratified Auxiliary Fuel System. Follow this document to ensure safe and proper installation and operation of your new device.

WARNINGS AND WARRANTY – PLEASE READ CAREFULLY

ALL parts are sold for OFF ROAD RACE-ONLY ground vehicle use only.
Aftermarket systems interacting with engine function are not for use on pollution controlled vehicles. Alteration of emission related components constitutes tampering under most local emission regulation guidelines and can lead to fines and penalties.

Limited Warranty

This Stratified product is warranted against defects in materials and workmanship for ninety (90) days from date of purchase. During the warranty period, Stratified will repair, or at its option replace at no charge, components that prove to be defective. The product must be returned, shipping prepaid, to a Stratified facility. This limited warranty does not apply if the product is damaged by accident or misuse. The foregoing warranty is in lieu of all other warranties expressed or implied including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. Stratified Automotive Controls Ltd. is not responsible for any fines, injuries, or damages incurred as a result of the installation or use or misuse of our products. It is the complete responsibility of the purchaser of such products to ensure that they are used in a legal, safe, and appropriate manner.

DISCONNECT THE NEGATIVE BATTERY TERMINAL BEFORE PERFORMING ANY ELECTRICAL WORK ON YOUR VEHICLE. IF YOU DO NOT FEEL COMFORTABLE MAKING THESE MODIFICATIONS, HAVE THEM PERFORMED BY A PROFESSIONAL.

Table of Contents

1. Features and Benefits

Protects your Engine from Fuel Starvation:
To make more power you need two main components. Air and Fuel. With more boost and bigger turbochargers or superchargers, your OEM direct injection components can't supply the fuel needed for safe high power operation. This auxiliary port injection system is a proven method for keeping your motor safely fueled under the most demanding conditions.

Provides The Fuel you Need for More Boost and Power:
Direct injection cars use expensive and complex components. When upgrading your vehicle to produce more power than stock, more fuel is needed. Direct injection injectors and fuel pumps are often not upgradeable. This fuel system augments your fueling under high power levels with proven components allowing you to achieve you power goals.

Cleaner Valves, Efficient Motor:
The direct injection (DI) system is very efficient and has cooling benefits. Keeping it in the car and working as intended is ideal. This is why a port injection system works so well. You keep the efficient DI fueling and augment it with port injection only under high power. This also has the benefit of keeping your intake valves cleaner.

Easy Installation:
We have worked very hard to make our systems as plug and play as possible. The kit you purchased is built and tested for your vehicle. This means everything fits right and works as it should from the get-go making it a painless and effective installation process.

Tested, Proven, Safe Solution:
We don't build and sell anything that we don't thoroughly test. The fuel system is a proven, safe solution for increasing fueling on your vehicle and we stand behind its performance, capabilities, and reliability.

E85 Safe, Simple Adjustments:
All kit components are E85 safe. The controller that calculates the fuel delivery as well as all components are purpose built and safe. We make adjusting the fueling as simple as possible to make sure you get to your results quickly whether we tune the system or someone else does.

2. Introduction and Precautions

***IMPORTANT*: When installing and working with the Auxiliary Fuel System you are working with flammable fluids. Take all safety precautions necessary during installation and operation of the fuel kit to prevent any fires or injuries. This means ensuring you are installing the system in a well-ventilated area away from any spark or flame source. After the installation and periodically thereafter check that the system continues to be leak free.**

The Aux Fuel System Electronic Controller should be mounted within the vehicle's engine bay, but it is **NOT water proof**. The controller should not be mounted directly on the engine. Do not spray or pressure wash the controller with water or any other liquids. Mount the controller in an area that is not in contact with the engine - preferably close to other vehicle electronics such as the fuse box.

The direct injection (DI) system in your vehicle is designed to supply enough fuel to run the OEM vehicle with OEM components. Most manufacturers build some headroom into their fueling systems but at some point, your quest for power requires more fuel. On a direct injected car this means that you need to upgrade at least the fuel injectors or high pressure fuel pump or often both. These upgrades are expensive and often not available.

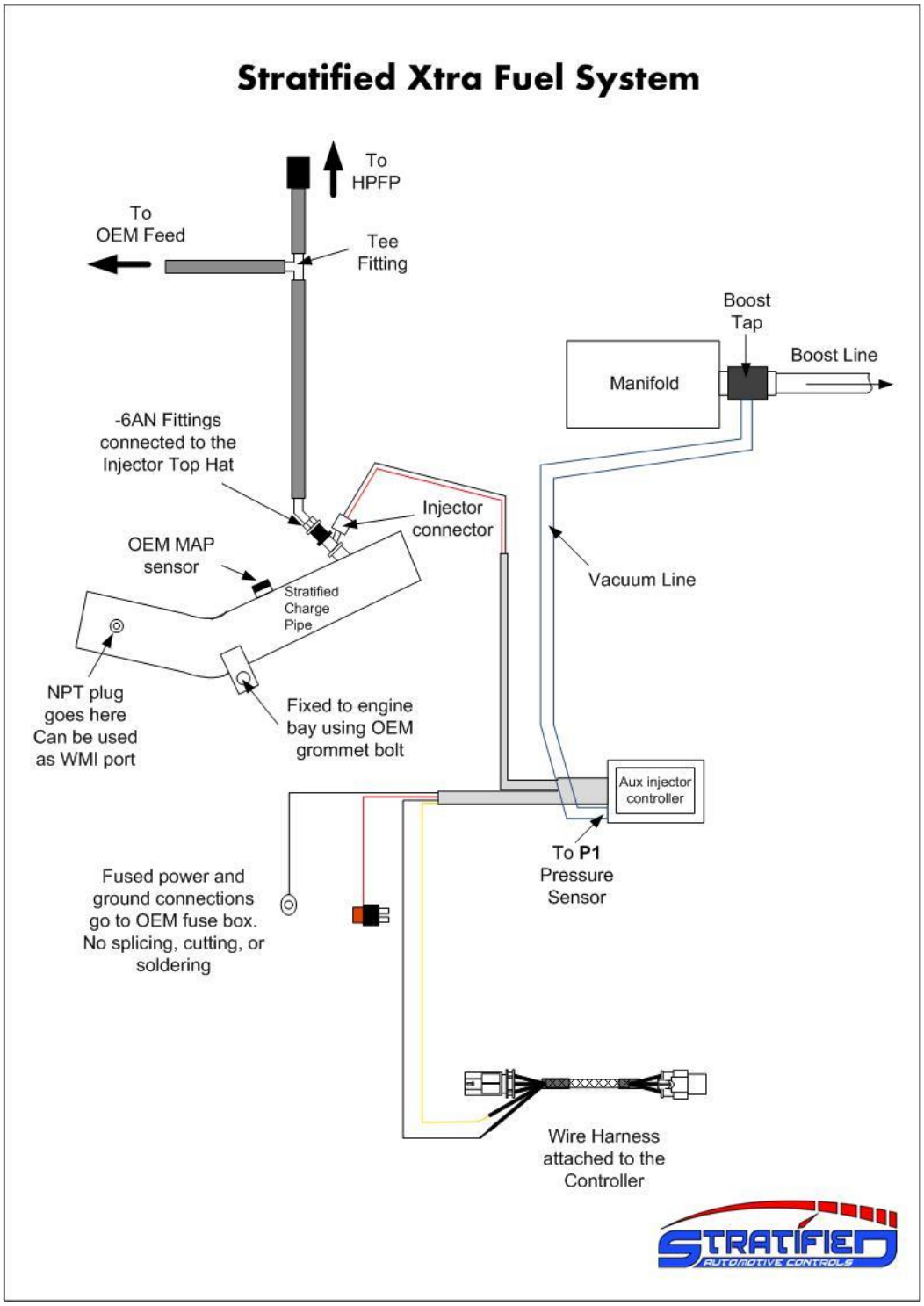
The Stratified Auxiliary Fuel System is designed to work in conjunction with your DI fuel system and offer additional fuel when needed under high boost or high power demands. This means that your car remains efficient and driveable while having the fueling capacity to reach higher power goals.

3. Parts Included

Verify that all these components are included with your fuel system kit:

Item	Specifics
1x – Charge Pipe w/ Injector (pre assembled)	• **1x** – Charge Pipe w/ Injector Boss • **1x** – Injector • **1x** – Injector Top Hat • **2x** – Injector Spacer Rods • **2x** – Injector Screws (M4-0.7 x 40) • **1x** – -6AN Adapter Fitting w/ O-ring • **1x** - NPT Brass Plug • **2x** – Bolts (M5-0.8 x 16)
1x – Fuel Line w/ Clamps & Fittings	• **1x** – Flexible Hose • **1x** – -6AN 45 deg. Fitting • **1x** – 4in. Flexible Hose • **1x** – 3-Way Tee Barb Fitting • **2x** – Metal clamps
Fuel System Controller Box	• **1x** – Controller • **1x** – Wire Harness • **1x** – USB Tuning Cable • **1x** – Add-a-fuse • **1x** – 10A Fuse • **1x** – Ring terminal – negative wire (18-22AWG, ¼” stud) • **1x** – Injector Connector
Hardware Bag	• **1x** – Boost Tap w/ Fittings, Key & O-Ring • **1x** – 3ft. Vacuum Line (5/32” ID) • **2x** – Plastic clamps • **10x** – Zip Ties – Small • **2x** – Zip Ties - Large • **2x** – 3M Dual Lock Strips • **2x** – Metal clamps

4. Installation Diagram



5. Hardware Installation Instructions

***IMPORTANT*: When installing and working with the Auxiliary Fuel System you are working with flammable fluids. Take all safety precautions necessary during installation and operation of the fuel kit to prevent any fires or injuries. This means ensuring you are installing the system in a well-ventilated area away from any spark or flame source. After the installation and periodically thereafter check that the system continues to be leak free.**

WARNING: Before working on or disconnecting any of the fuel tubes or fuel system components, relieve the fuel system pressure to prevent accidental spraying of fuel. Fuel in the fuel system remains under high pressure, even when the engine is not running. Failure to follow this instruction may result in serious personal injury.

WARNING: Do not smoke, carry lighted tobacco or have an open flame of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

WARNING: Clean all fuel residue from the engine compartment. If not removed, fuel residue may ignite when the engine is returned to operation. Failure to follow this instruction may result in serious personal injury.

WARNING: Do not carry personal electronic devices such as cell phones, pagers or audio equipment of any type when working on or near any fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

WARNING: Always disconnect the battery ground cable at the battery when working on an evaporative emission (EVAP) system or fuel-related component. Highly flammable mixtures are always present and may be ignited. Failure to follow these instructions may result in serious personal injury.

WARNING: When handling fuel, always observe fuel handling precautions and be prepared in the event of fuel spillage. Spilled fuel may be ignited by hot vehicle components or other ignition sources. Failure to follow these instructions may result in serious personal injury.

WARNING: Avoid contact with fuel during a visual inspection for fuel leaks with the engine running. Do not work on the fuel system until the pressure has been released and the engine has cooled. Fuel in the high-pressure fuel system is hot and under very high pressure. High-pressure fuel may cause cuts and contact with hot fuel may cause burns. Failure to follow these instructions may result in serious personal injury

1. You must first relieve the fuel pressure in the OEM fuel system. This is done by pulling fuse shown below from the panel the side of the dash.
2. Remove the panel.

3. Remove the 15A fuse.

4. Now start the car and wait for the engine to stall. Once it has stalled, crank for another 10 seconds to ensure fuel pressure is relieved.
5. Turn the key to the OFF position and keep the fuse out of the panel until the fuel kit installation is complete. This might trigger some engine codes. Clear these after the installation.
6. Remove the negative battery cable.

7. The Stratified charge pipe should be installed next. Jack up the vehicle and secure it.
8. Remove the underbody panel

9. Disconnect your OEM cold side air charge pipe by first unplugging the MAP sensor wire harness from the sensor connector.

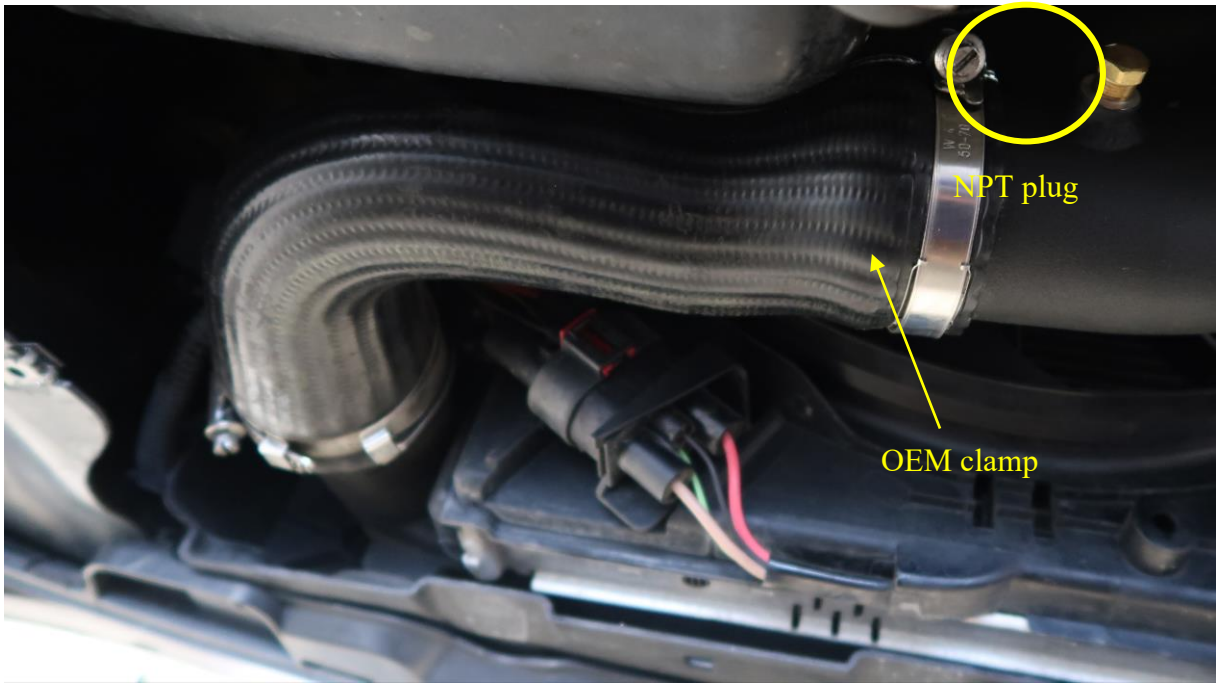
10. Loosen the OEM clamps on either side of the charge pipe.

11. Unscrew the OEM grommet bolt and take off the bolt and washer and remove the OEM charge pipe.

12. Remove the MAP sensor from the OEM charge pipe.
13. Put the OEM MAP sensor onto the Stratified charge pipe and thread in the two M5x16 bolts provided in the kit.

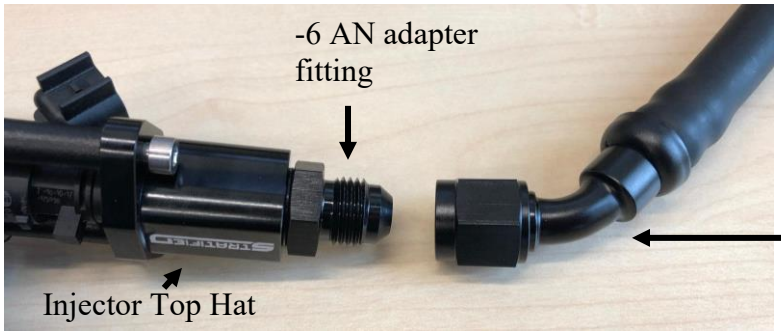
14. Insert the Stratified charge pipe where the OEM charge pipe was (see below) and tighten it in place using the OEM or aftermarket clamps.

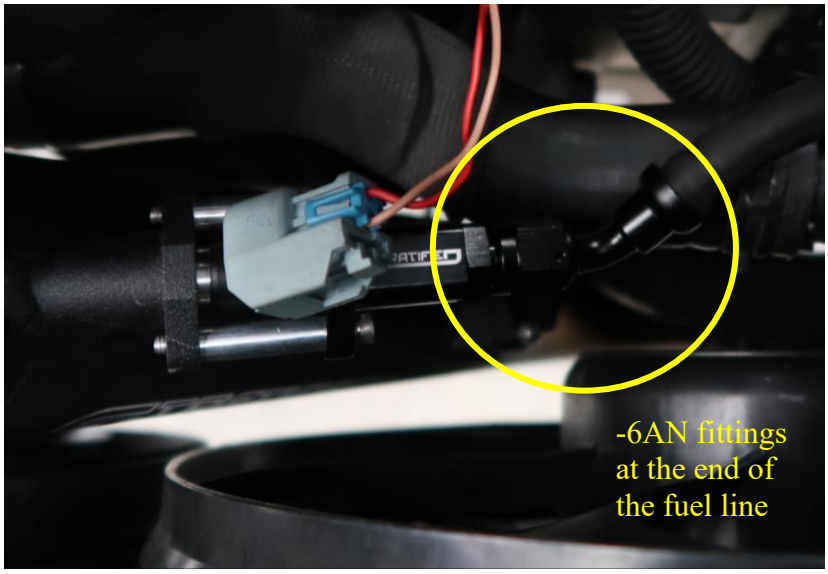
Note that the NPT plug can be removed for Water Methanol Injection (WMI).



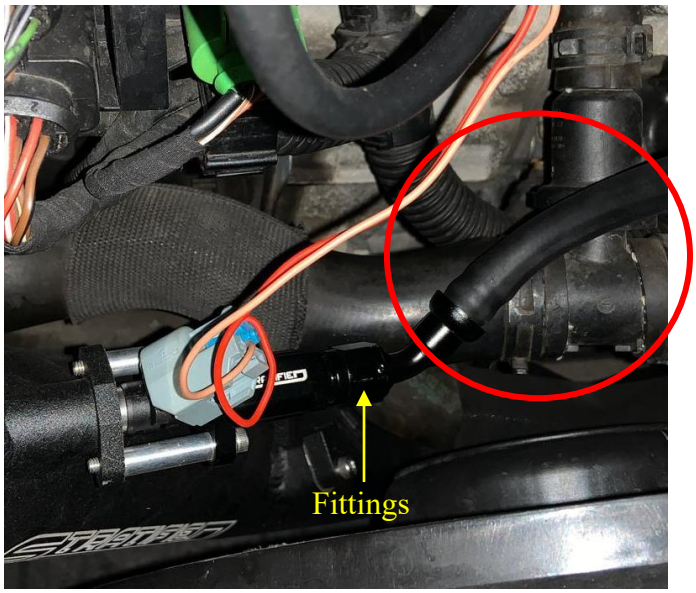
15. Thread in the OEM grommet bolt.

16. Install the Stratified flexible fuel line by threading the -6AN 45-degree hose end fitting onto the -6AN adapter fitting that is connected to the injector top hat.





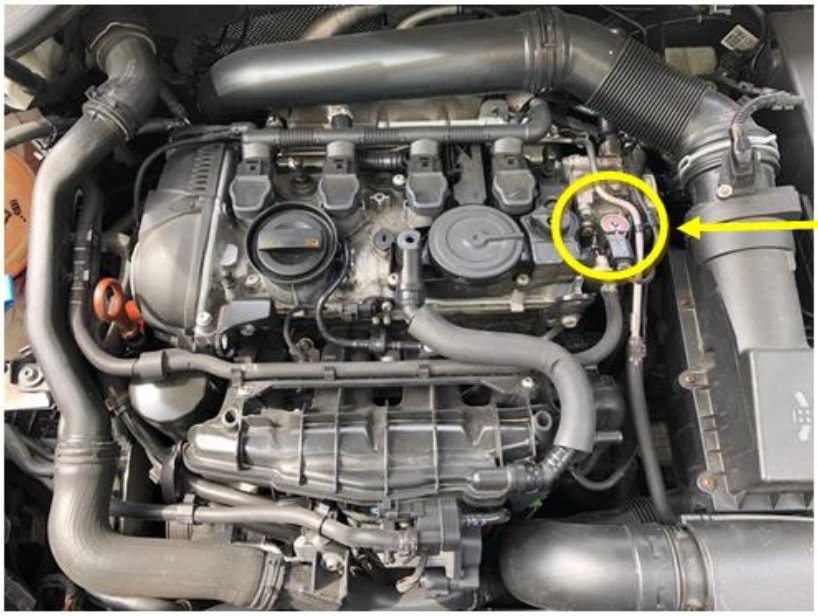
Note: When threading the fittings onto each other, make sure that the fuel line is oriented properly and that it is not touching the coolant line. Otherwise the fuel line will get damaged over time.

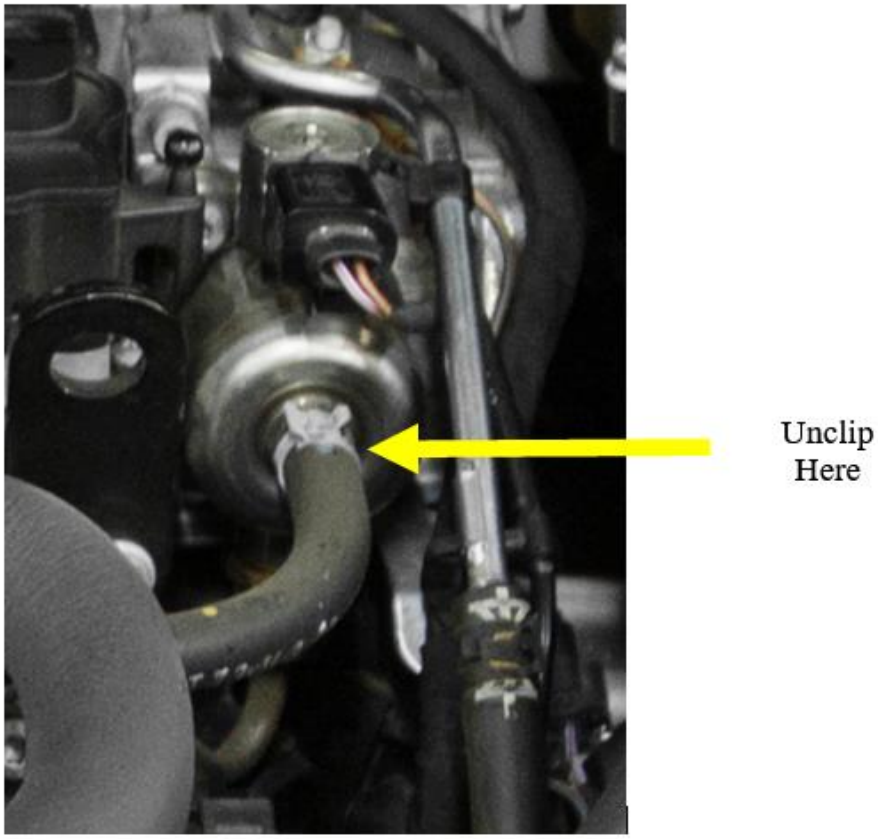


Fuel line must not touch coolant line

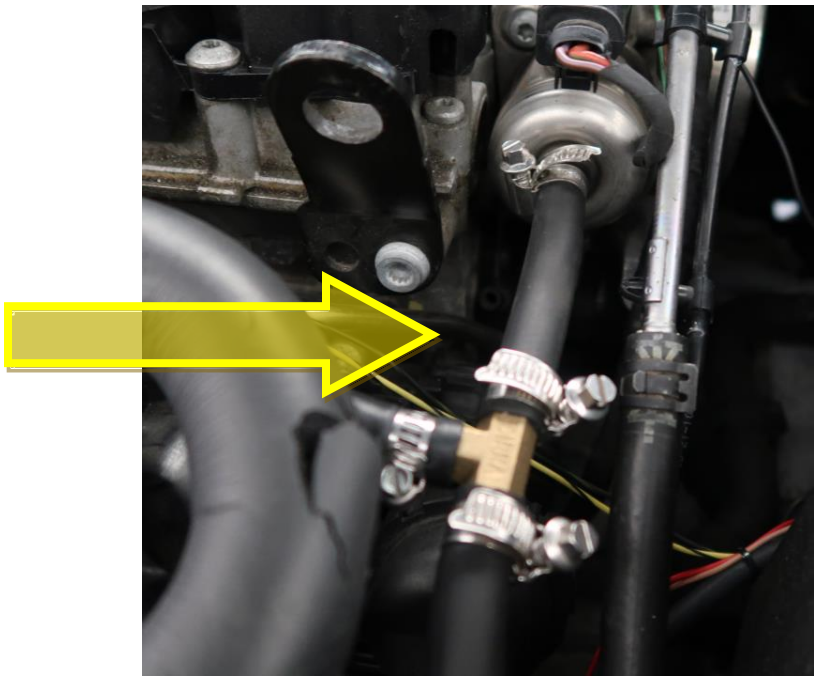
17. The other end of the fuel line is then attached the OEM feed line which goes into the High-Pressure Fuel Pump (HPFP).

18. Disconnect the OEM feed line from the HPFP.

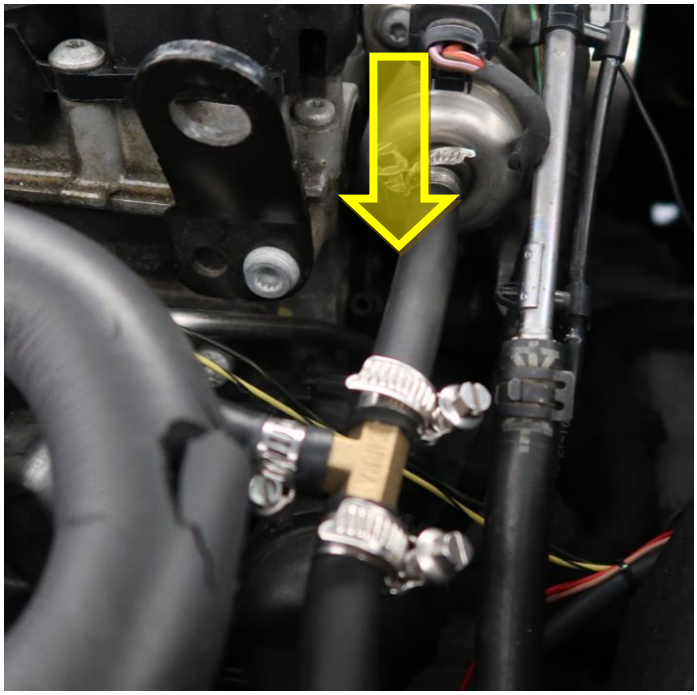




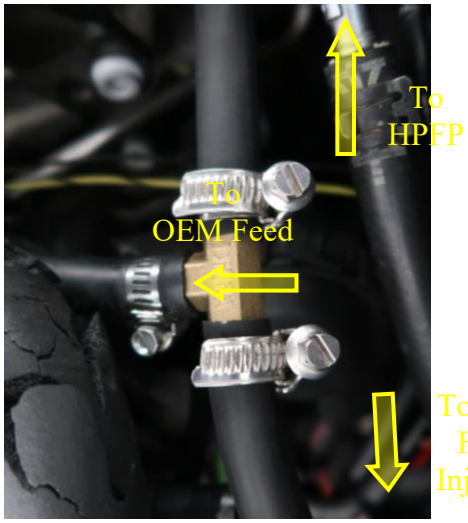
19. Cut the fuel feed line that was going into the HPFP 3.5 inches from the open end.
20. Insert OEM fuel feed line into bottom of the Tee as shown below and clamp on using provided clamp.

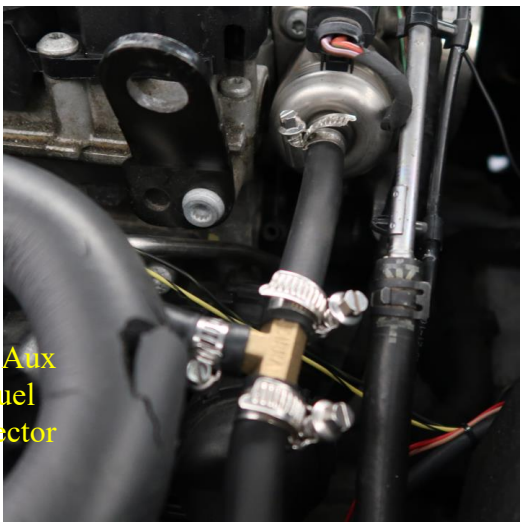


21. Take the smaller side of flexible hose and point it towards the HPFP.



22. Then connect this small piece of hose to the HPFP side.





23. Take the Aux Fuel controller provided in the kit and place it securely on top of the fuse box or a similar location using 3M dual lock strips.

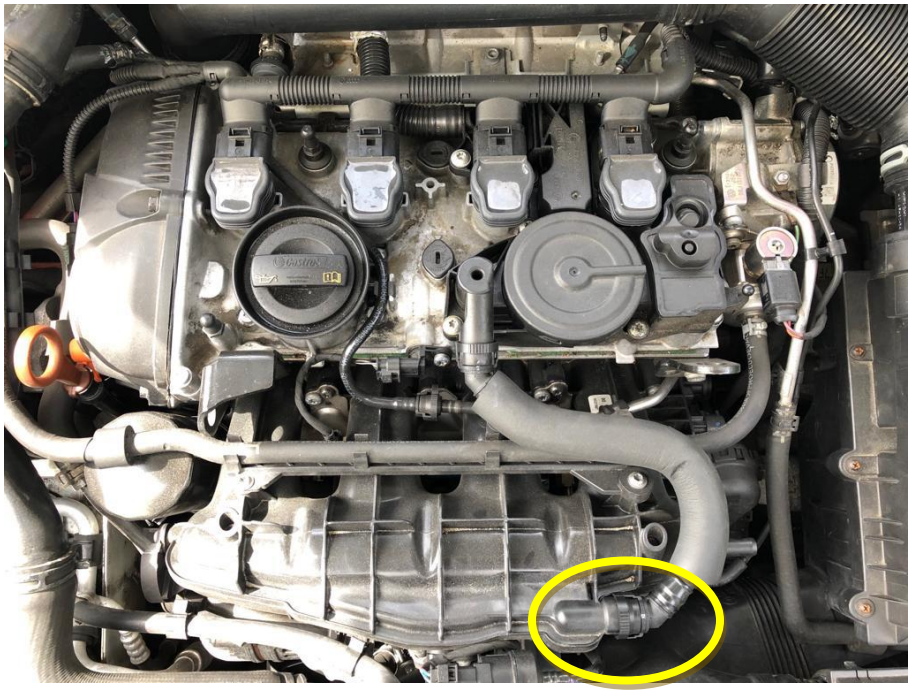
    *Note that controller is **NOT waterproof**. Do not spray or pressure wash the controller with water or any other liquids.*

24. Insert the vacuum line (5/32” ID) onto the P1 fitting attached to the Pressure Sensor 1 on the controller and tighten it using a black, plastic clamp provided.

25. The boost line will be tapped into using the COBB boost tap next.

Take the boost tap provided in the kit and screw the barbed fitting into one tapped hole and the plug into the other tapped hole.

26. Unplug the PCV line from the manifold.

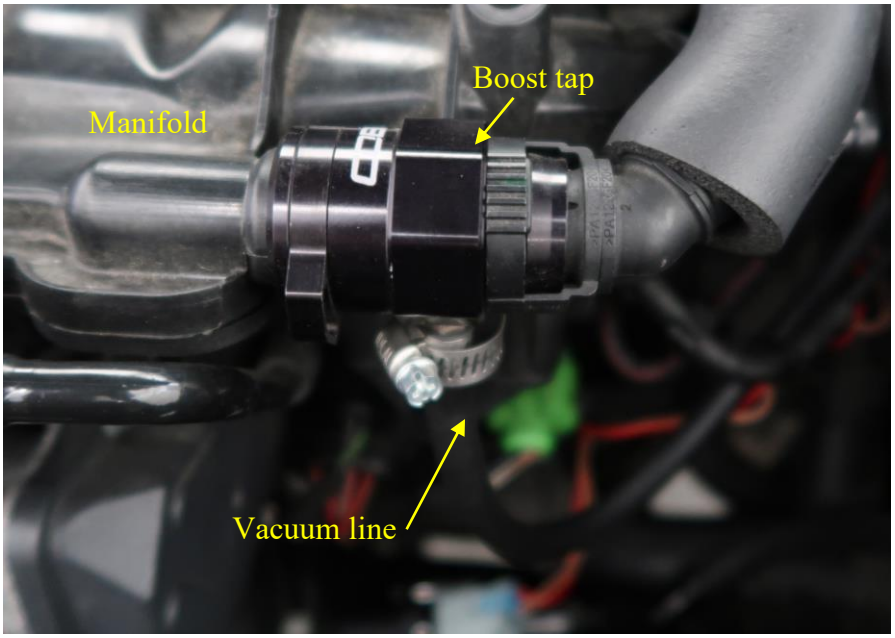


27. Place the female end of the boost tap onto the manifold. Take the retaining clip provided and clip the boost tap to the intake manifold.

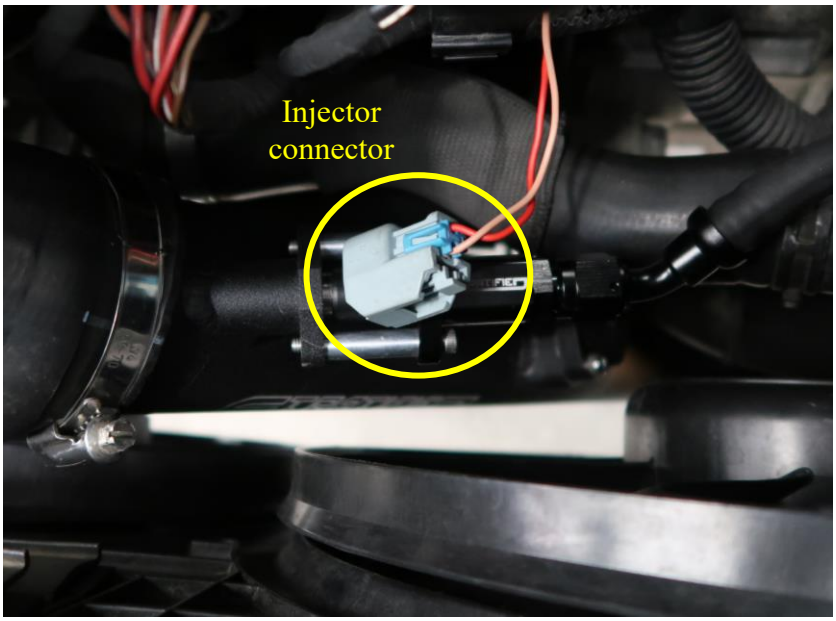
28. Clip the hose onto the boost tap.

    Note that the clip will click into place once it slides over the grooves on the boost tap.

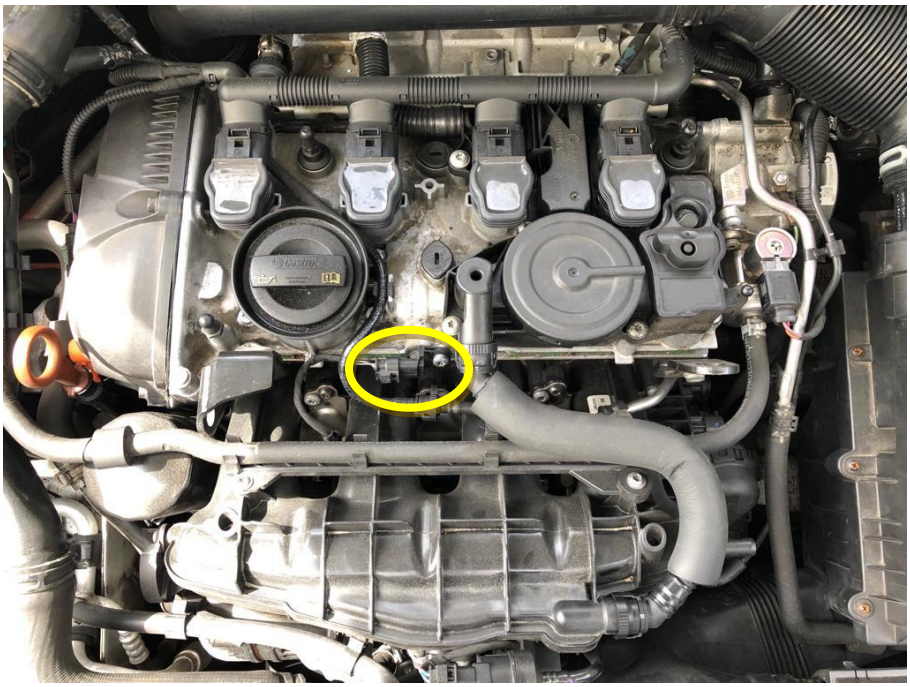
29. Run the vacuum line from the controller to the boost tap and insert the line onto the boost tap barbed fitting. Then tighten it using the plastic clamp.

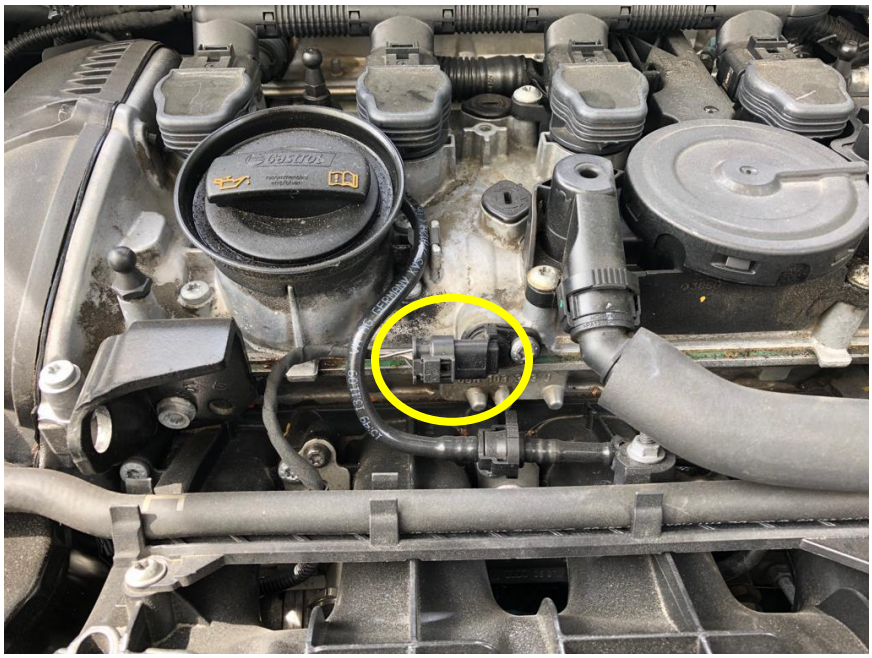


30. Plug in the injector connector from the controller onto the injector located on the Stratified charge pipe.

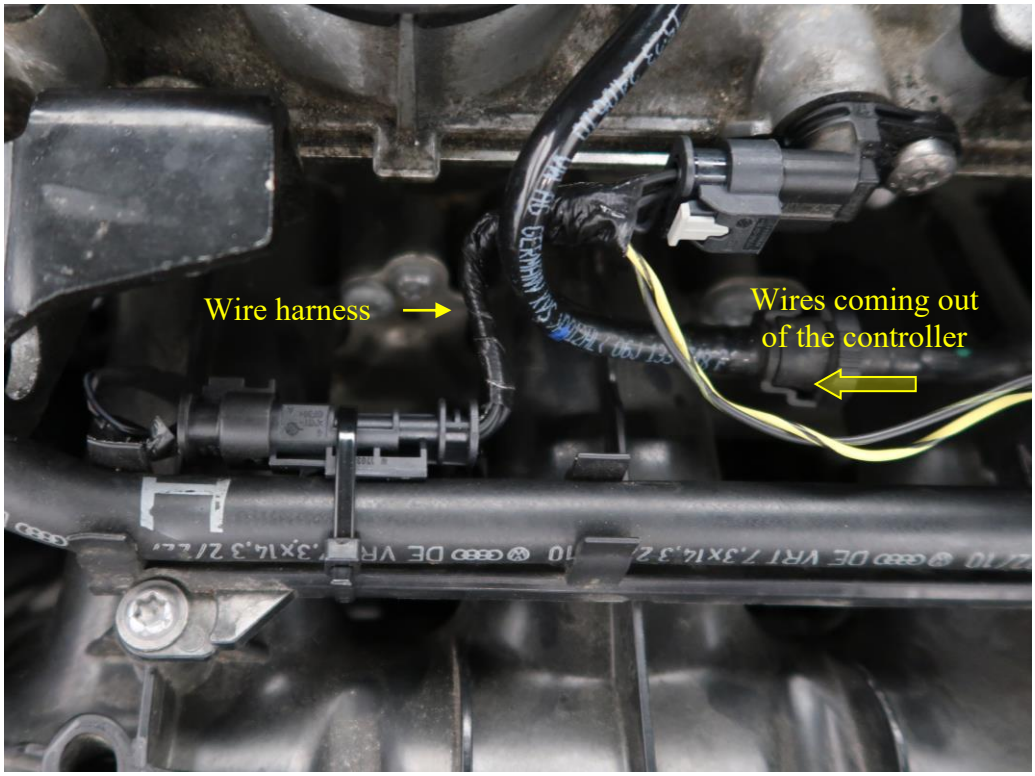


31. Unclip the OEM cam position connector located on top of the engine as shown below.





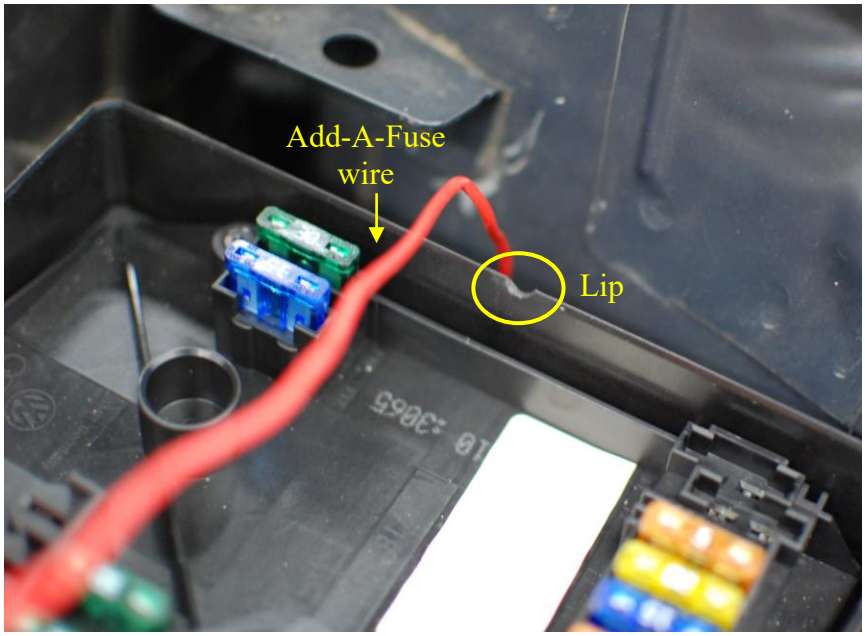
32. Plug in the male and female terminals at the end of the wire harness to the respective connectors. Secure the connector to the OEM fuel line using a zip tie.



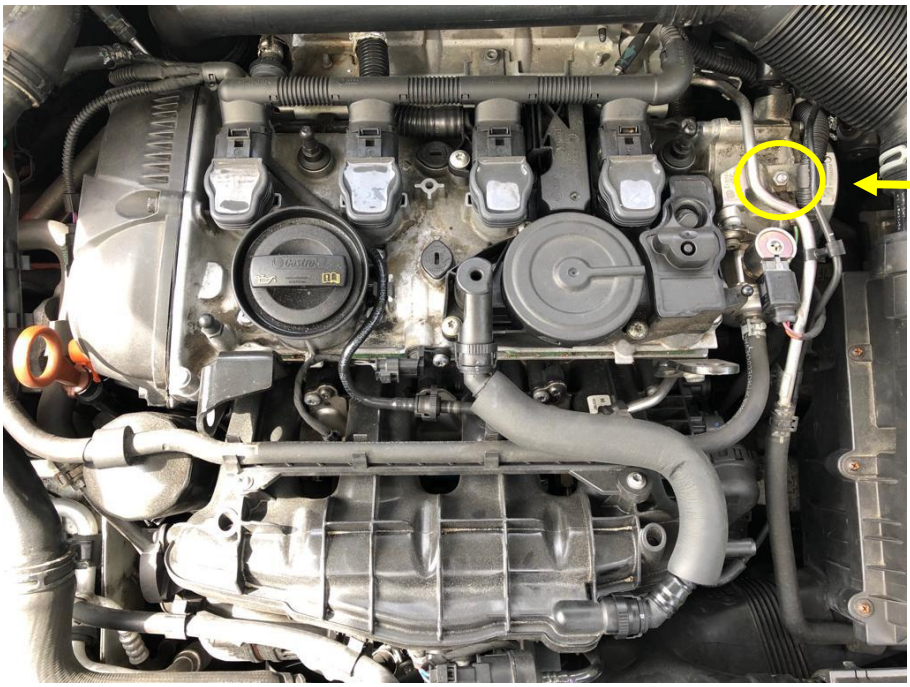
33. Open the fuse box and install the Add-A-Fuse supplied to one of the switched fuse locations in the fuse box by the battery.

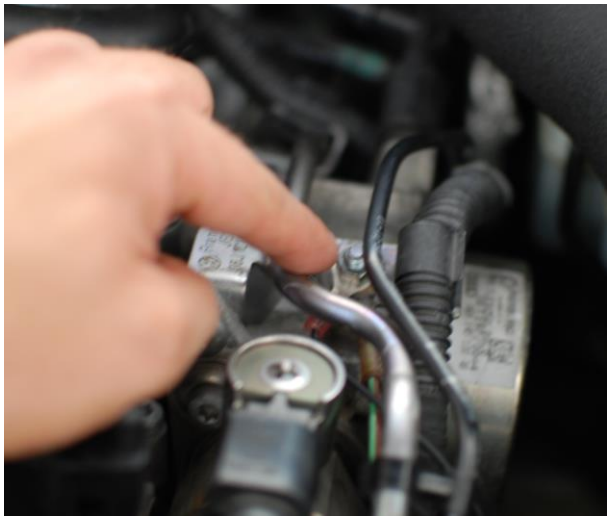
34. Take out the 10A fuse in that fuse box location and put it on the add-a-fuse then plug add-a-fuse into same location.

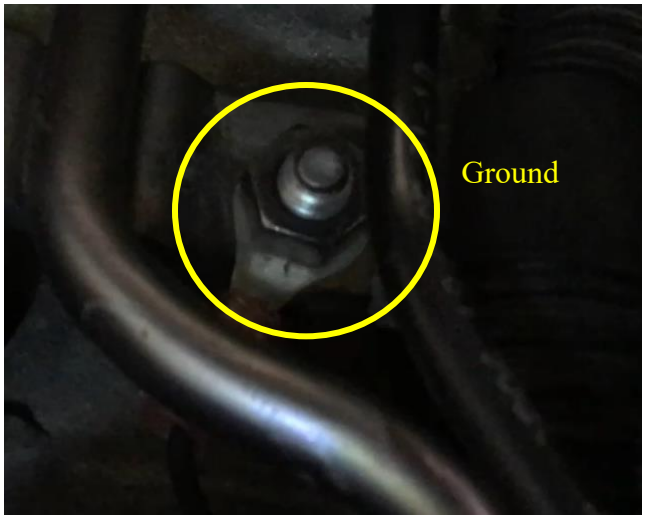
35. File edge of fuse box to create a small notch and close the fuse box



36. Attach the ground connection from the controller to the bolt next to the HPFP (see below).







37. Now set up the controller by following the software installation instructions in the next chapter.

6. Software Installation Instructions

Your Aux Fuel Controller comes preloaded with a base map file. The following instructions are for when you want to confirm it's working correctly or upload a new tune file to the controller.

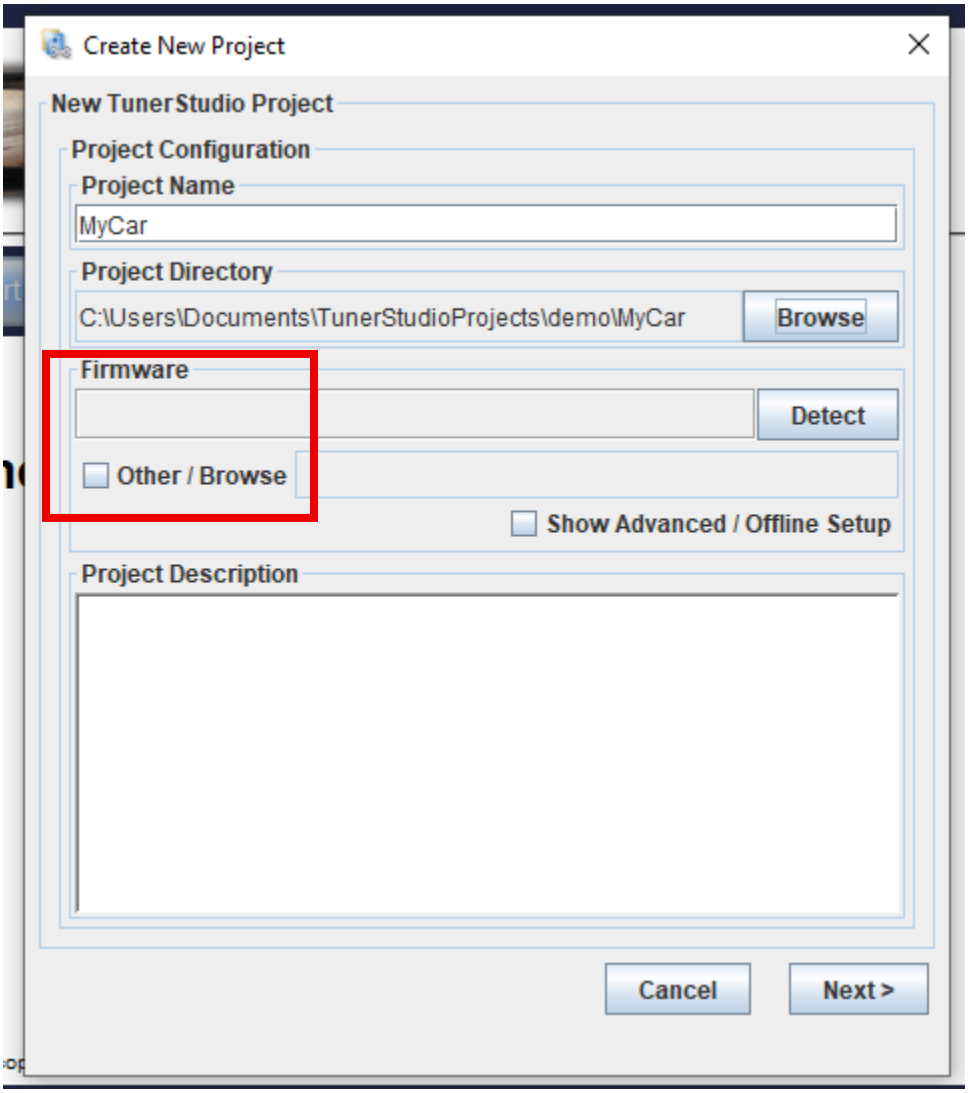
1. Get your tuning laptop ready with additional USB-C cable, any USB-C cable that supports data transfer will work.
2. Remove the USB cable dust cover and connect the controller to your laptop computer.

3. The controller is programmed by TunerStudio Software (use the Windows version, you can download from our website).

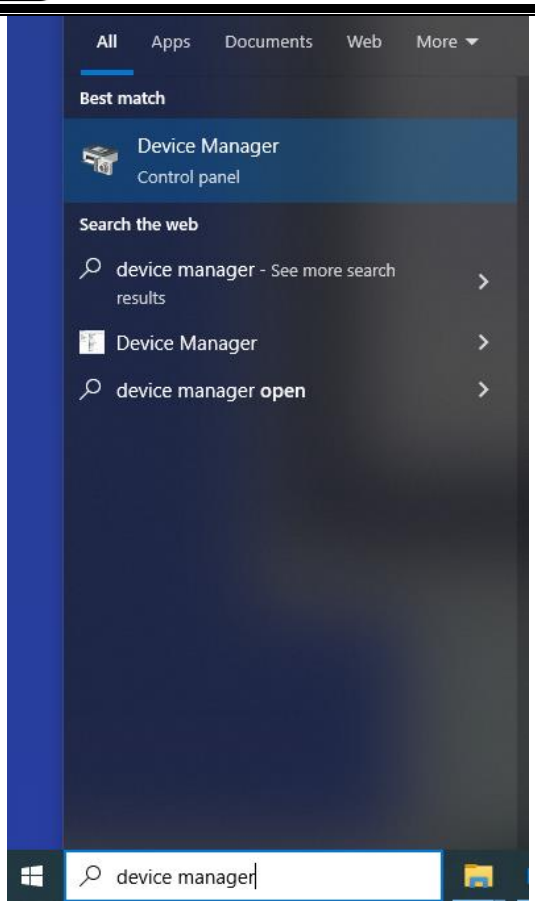
4. From the downloaded package, locate and extract the .ini file called [**Stratified_aux_firmware.ini**]. You will use this file to setup the TunerStudio Project for the Stratified Aux Controller.

5. After you install the TunerStudio Software, you will need to create a new project to connect to the Stratified Aux Controller. Open the TunerStudio software, select [**Create New Project**]. It will create the project under \Documents\TunerStudioProjects\ProjectName\.

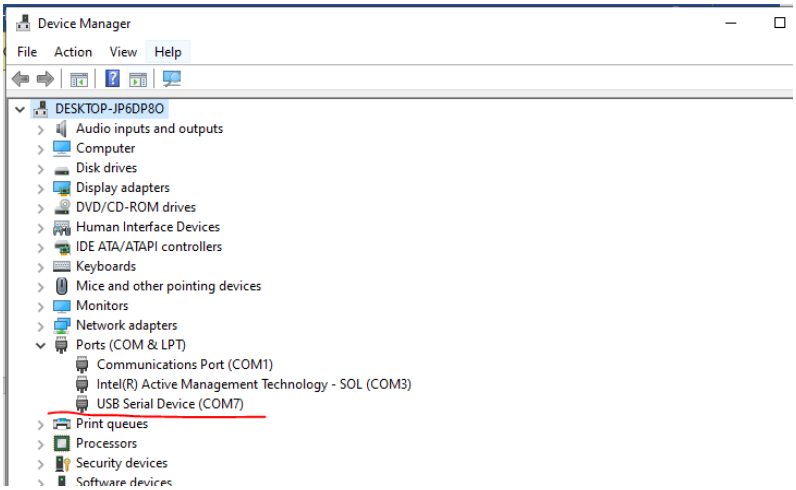
6. Under Firmware section, check the box before [Other / Browse], then locate the downloaded [**Stratified_aux_firmware.ini**] file.



7. Next we need to find out which port was used by the controller to connect to the computer. To do this, power the controller by turn on the ignition on, engine off. Connect the USB-C to the computer, search and open the [**Device Manager**] under the windows taskbar.

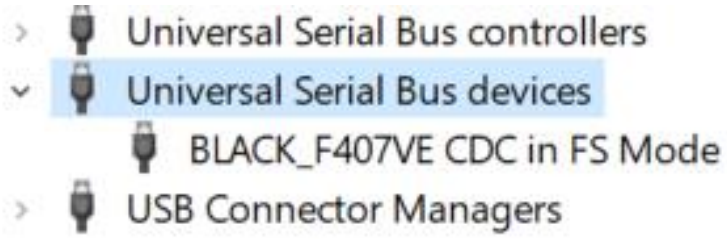


8. The controller should show as [USB Serial Device (COM#)] or [USB to UART Bridge] under the Ports (COM &LPT) section. If you are unsure which port it is, you can unplug and replug in the controller and you will see it pop up. Remember that COM number then go to **Step 11.**



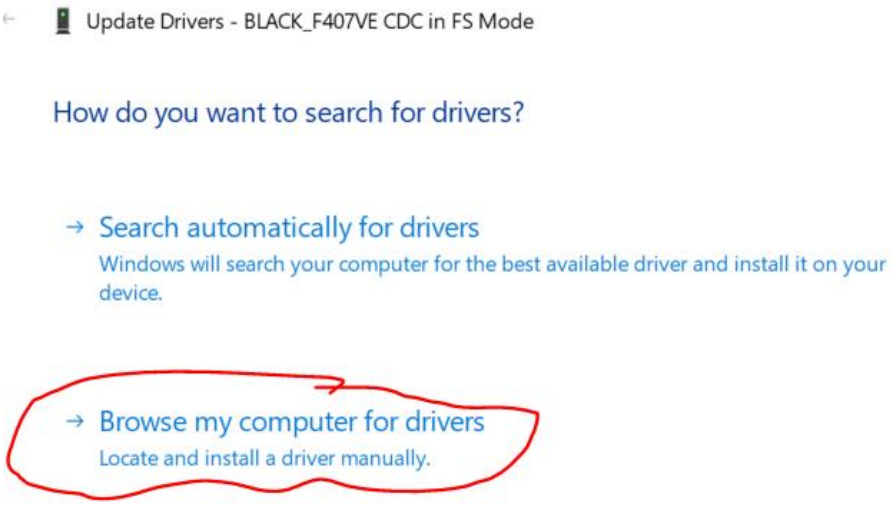
9. If there's no new COM port added when plugging in the controller, you will need to install a driver. To do this, go down the list in the device manager, under the [**Universal Serial Bus devices/controllers**].

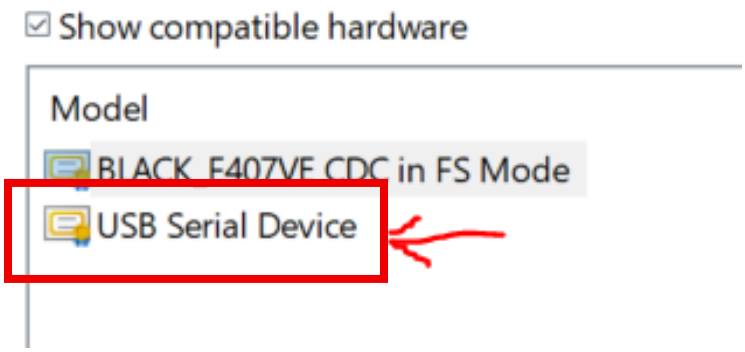
   Once again plug in the USB-C to find the connected controller. It is usually named [BLACK_F407VE CDC in FS Mode].



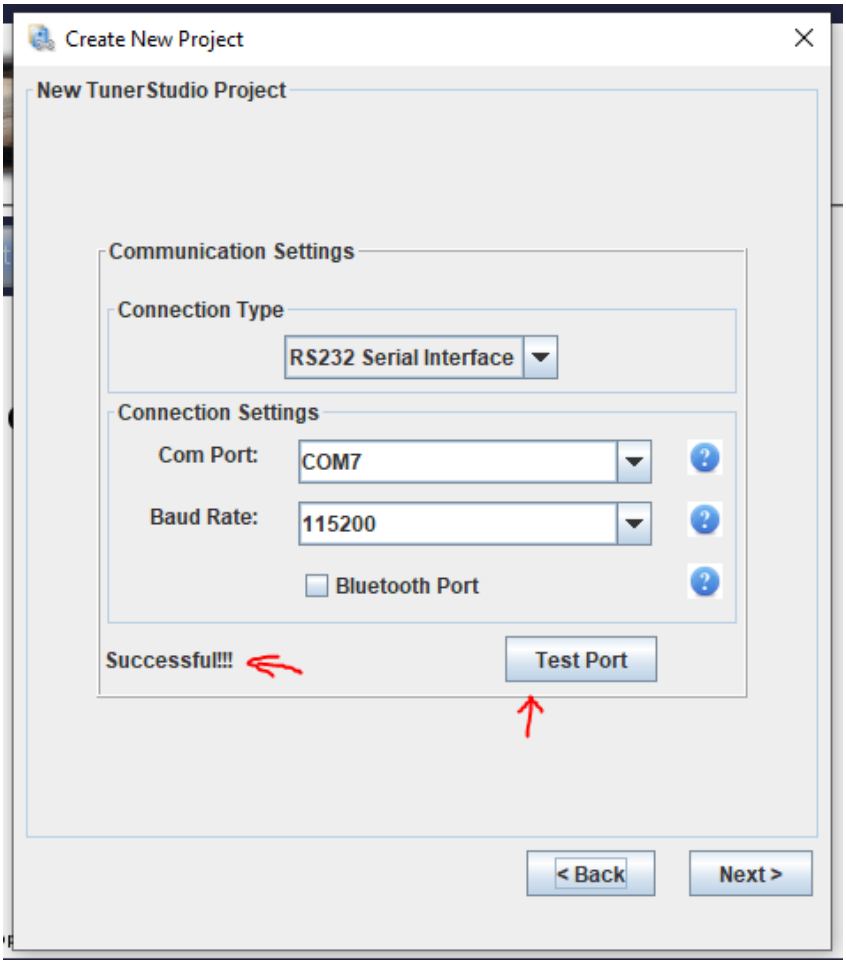
10. Right click on it, select [Update Drivers] > [Browse my computer for drivers] > [Let me pick from a list of available drivers on my computer] > YOU MUST Choose [**USB Serial Device**] then [Next] to confirm.

    Once the driver is installed go back to Ports (COM &LPT) section, find the updated COM port that is now used.





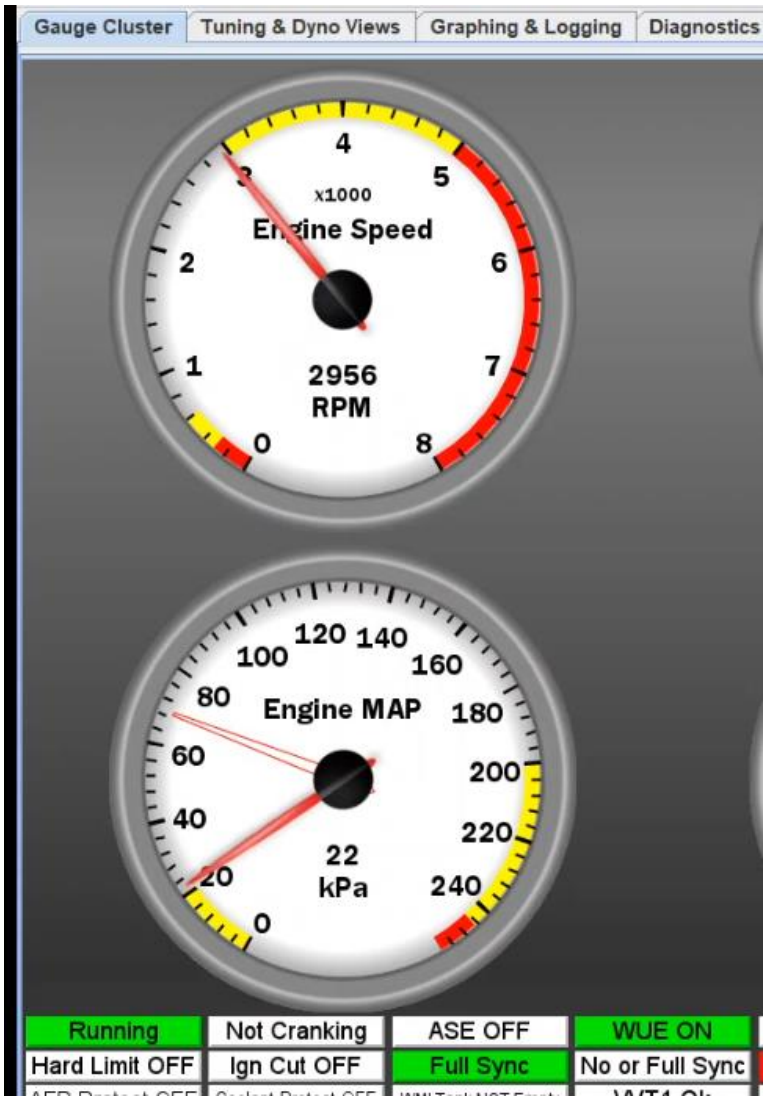
11. Go back to TunerStudio software, select the Com Port # you remembered from previous step. Make sure Baud Rate is set to 115200, make sure the Bluetooth Port is **unchecked**, and click [Test Port]. Once it shows **Successful!!!**, select [Next >], click [Finish].



12. The controller comes with the tune pre-installed, before driving the car you must check the operation of the controller.

13. To confirm the controller is in working condition key on, engine off. The Engine Map Gauge should be at around 101 kPa at sea level when the engine is off.

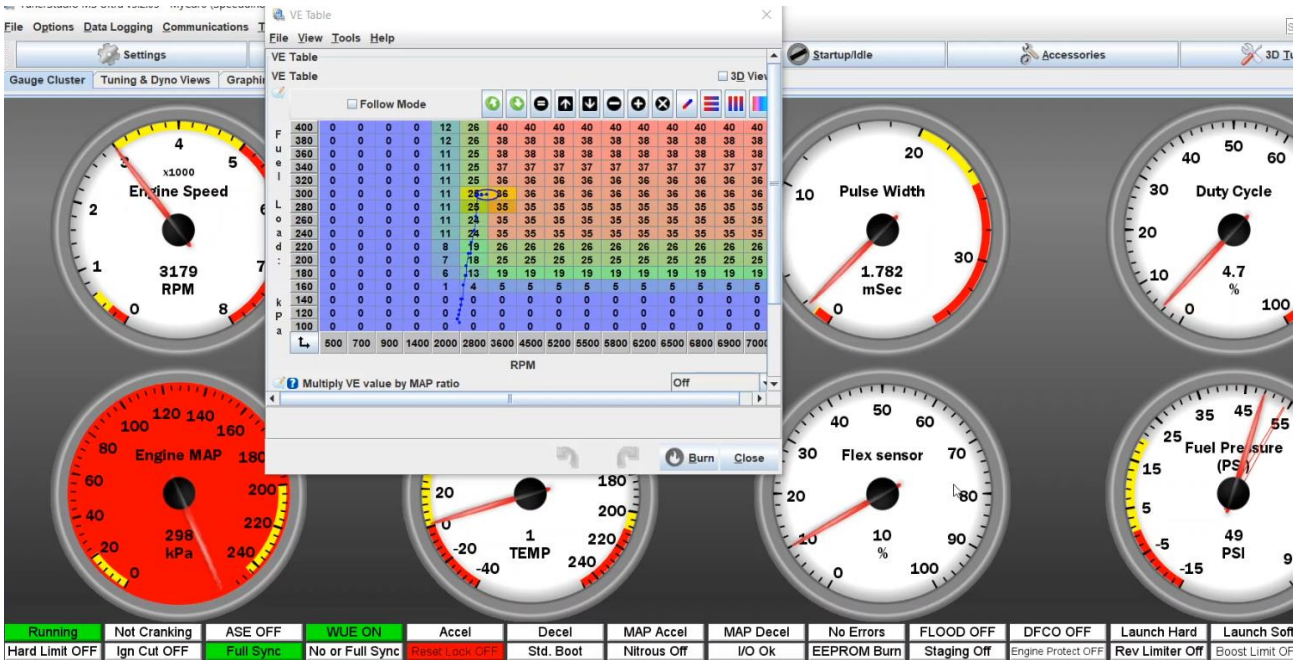
14. Start the engine and let it idle. Make sure the Engine Speed gauge reading on the dash is matching the actual engine RPM. The Engine MAP gauge will drop when letting off the throttle or idling due to vacuum in the manifold.



15. The fuel map is found under Tuning > VE tables. Only adjust this if you are instructed by your tuner or you are tuning the car yourself and have the knowledge to do so.

16. The final test is to determine if the aux injector is adding fuel.

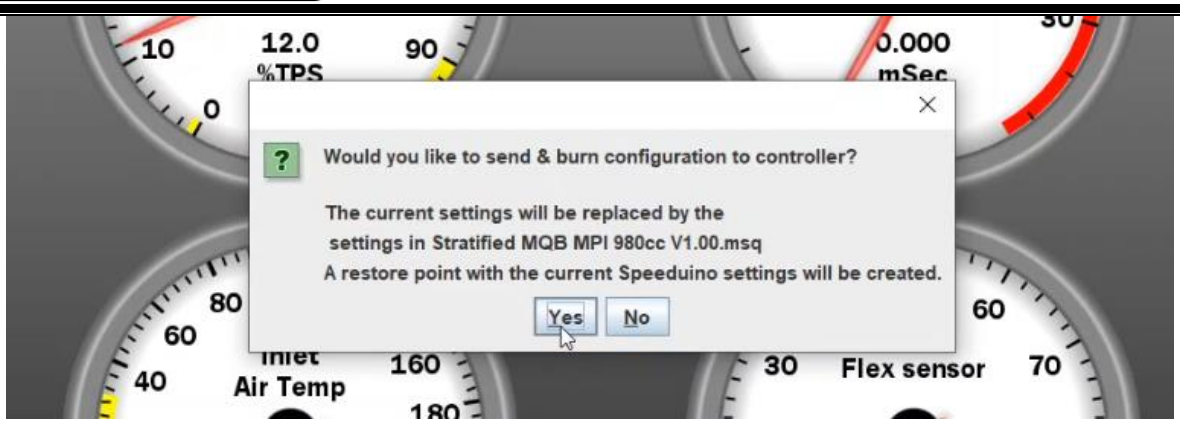
    Warm up the car and slowly enter boost. Once the car reaches higher boost levels the injector will open and start adding fuel. You can see this in the Pulse Width and Duty Cycle gauges which will move above 0.



17. Congratulations, your aux fuel system is now setup. Time to tune it and enjoy the added fueling and performance!

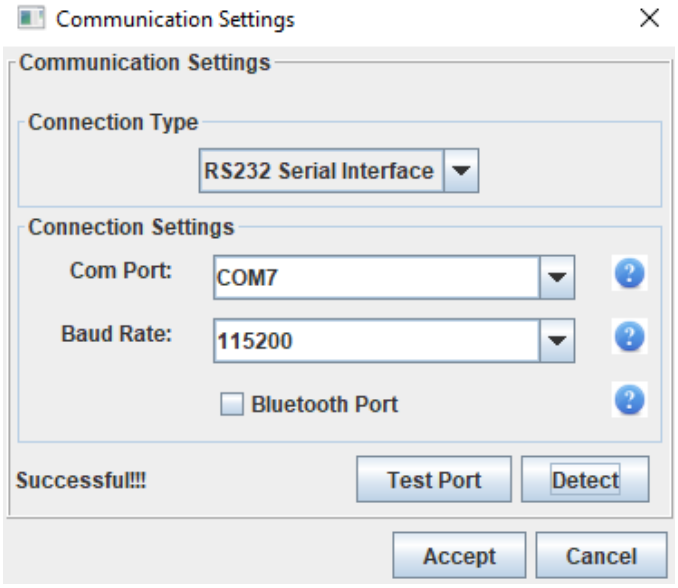
Flashing a New Tune on the Stratified Aux Fuel Controller

18. To flash a new file to the controller, connect the controller to the software, open the project you already created and make sure the controller is online.
19. Then select [File] > [Load Tune (msq)], then select the new .msq tune file.
20. Confirm to burn then power cycle the key. Make sure the controller is actually power cycled. Some fuses in the engine bay may not power down when you cycle the power. If that is the case you can cycle the power on the controller by unplugging the it from the harness and plugging it back in.


12.0
%TPS
90
10
0
0.000
mSec
Would you like to send & burn configuration to controller?
The current settings will be replaced by the
settings in Stratified MQB MPI 980cc V1.00.msq
A restore point with the current Speeduino settings will be created.
Yes
No
80
60
40
Air Temp
160
180
30
Flex sensor
60
70

7. Trouble Shooting

1. If the controller goes offline, select [Communications] > [Settings], make sure the correct com port and baud rate is still selected, un-plug and plug-in the controller again, wait 10 seconds then select [Test Port] until Successful, then [Accept].



2. The computer may change the COM # after re-flashing a new map on the controller, try ignition cycle and re-plug the USB-C on the computer. Then jump back to step 7-10 above, under the software tuning section to find out which new COM port is used. Re-select the correct COM port, test port until successful, click [Accept] and it will connect to the controller again.