

How to install a Snow Performance Methanol Injection Kit

IMPORTANT: This kit is very versatile and is not made for any specific vehicle. All the mounting choices made in this guide are a personal preference. To follow this guide to the letter, you must still have a fuse box cover and you must have nothing installed on the passenger side frame rail (located behind the bumper, right next to the windshield wiper tank). This guide is technical and requires permanent modifications to your bumper frame rail. While the modifications in this guide should not affect the integrity and safety of the vehicle, no warranties or guarantees, implied or express, are made. There are countless configurations possible with this methanol kit. This guide presents one of the more straightforward ways to install this system on a 2005-2009 Mustang GT.

This kit is installed on a Whipple Supercharged Vehicle but the principle remains the same for all vehicles.

WARNING: Methanol injection is a serious modification and will affect the way your engine runs. Large amounts of methanol will increase your air-fuel ratios and may require modifications to your PCM calibration. Please consult your local tuner for advice!

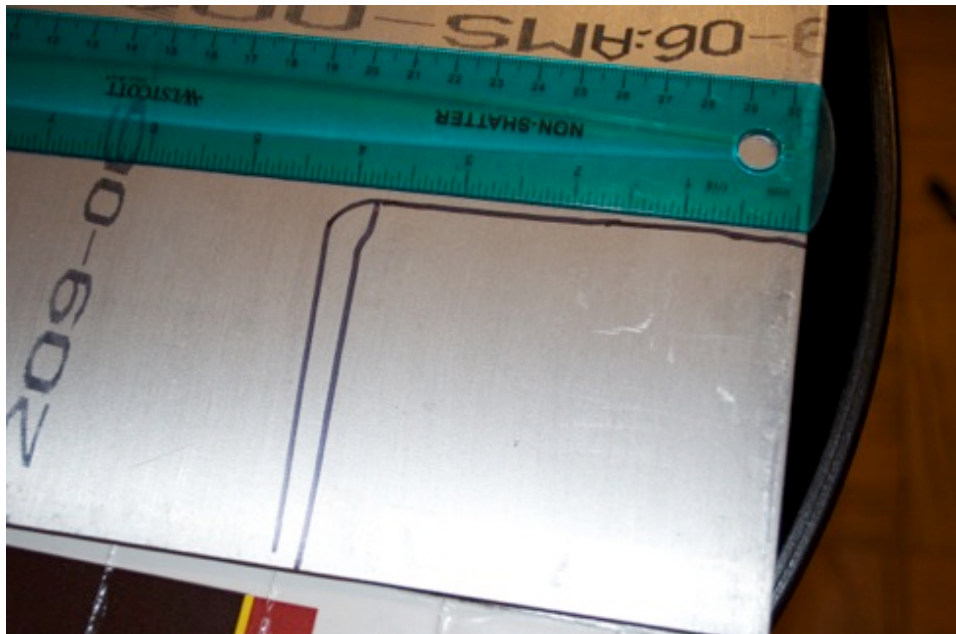
Tools and Materials needed:

- Snow Performance Stage 2 Methanol Kit
- 4"x4" aluminum plate (1/4" thickness), you may use steel or any other material but aluminum is preferred for its strength and weight. Aluminum is also softer and easier to work with. Locate this at your local metal supply, if they provide a larger sheet, be ready to cut the sheet.
- Power drill
- 3/16" drill bit (steel-capable bit)
- 9/16" drill bit
- 11/32" drill bit (capable of drilling into whatever your intake pipe is made of)
- 3/8" NPT tap
- 1/8"-27 NPT tap
- Ratcheting wrench
- 10mm deep socket
- 8mm deep socket
- 4mm shallow socket (you can also use an adjustable wrench for this)
- Flathead screwdriver (or pushpin tool)
- Phillips head screwdriver
- Four (4) M5 bolts, minimum 2.5" long—you can get longer bolts to be safe, they can always be cut to length.
- Eight (8) M5 nuts, nylon-locking preferable but not necessary.
- Eight (8) washer, does not matter what size, just make sure they fit on the M5 bolts and are reasonably sized. All hardware can be bought at your hardware store, they tend to stock all of these in bins—go through them and just mess with them. Bring your Snow Performance methanol pump to make sure it will thread through the mounting bracket in case you are not confused with the sizing.
- Red thread locker (also known as Loctite but you don't have to get the brand, use the permanent type)
- Tap-a-fuse (also known as "add-a-fuse), make sure to get one for mini fuses.
- 30 Amp mini-fuse
- Automotive relay (4 pin, if you get a 5-pin relay, the 5th pin will not be used) (this is not required but highly recommended)
- Inline fuse-holder with 20amp fuse (not required but highly recommended)
- 16gauge wire (required only if you need to extend the wiring in the kit, you can get your favorite color if you like, as long as it's electrical wire)
- Soldering Iron
- Solder
- Wire stripper
- Ring terminal ends (10-16gauge all work, these will be soldered for good measure).
- Electrical tape (you can alternatively use heatshrink, this is used to insulate your soldered joints)
- 3M mounting adhesive tape

- Box cutter or utility knife (you need something that will make clean and square cuts to the nylon tubing)
- Vacuum tubing and T-fitting (if you choose to use a boost reference to activate injection)
- Zipties
- E3000 sealant
- Rotary tool ("Dremel") with metal cutting blade (required only if you need to cut your aluminum plate to size)
- Grinding stone for rotary toll (required only if you need to cut your aluminum plate to size)
- Safety goggles and gloves
- Drain pan or bucket
- Rubber or silicone tubing for your boost line.
- Vacuum "T" fitting to tap into your boost line.
- #00 Phillips head screw driver (really small one, usually found in jeweler's kits)\

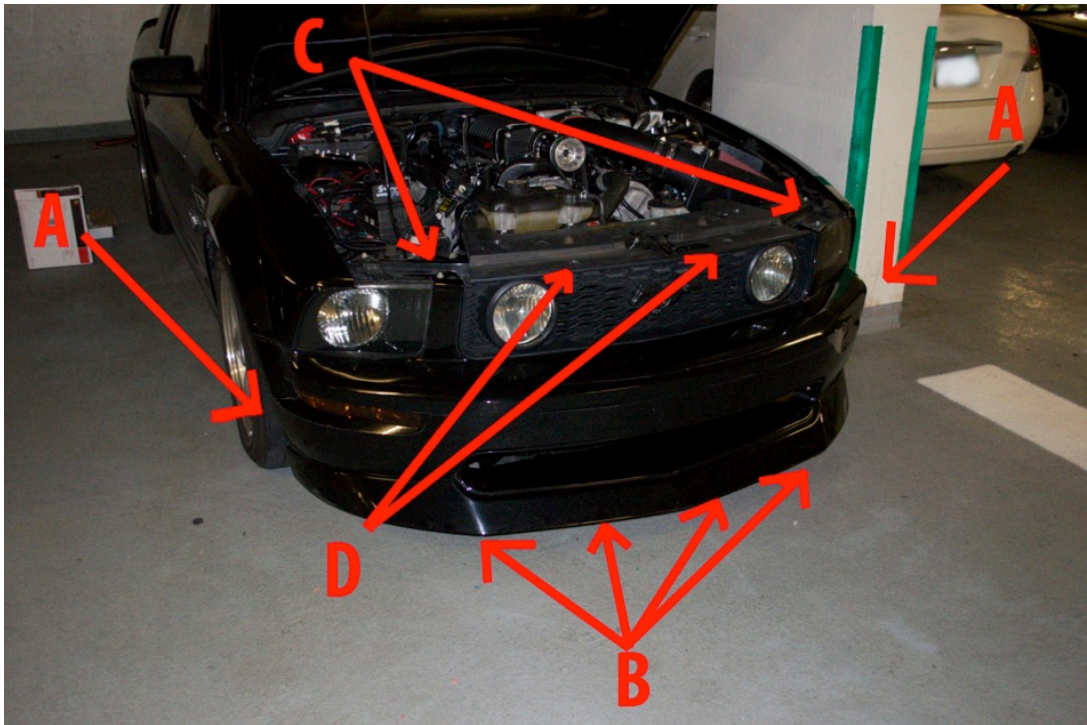
Installation Instructions:

1. (Skip this step if you have a 4x4" piece of aluminum) Using your rotary tool, cut your aluminum plate to a 4x4" plate. Use grinding stone to clean up the edges so they are not sharp. Please use safety goggles and gloves when doing this.





2. Remove the mounting plate from the methanol pump using 8mm socket. Use the mounting plate as a guide to drill your 4x4" aluminum plate. Drill 4 holes using your power drill and 3/16" bit. Please use safety goggles and gloves when doing this.
3. Once drilled, test fit your M5 bolts and make sure that they fit in the holes. If the holes are too small or you have drilled the holes slightly crooked, use your power drill and core out the holes. DO NOT USE A LARGER DRILL BIT. Use the 3/16" bit and gently core out the holes to size.
4. Remove your front bumper cover (see picture below for reference).
 - a. A) Remove three (3) Phillips head screws from bumper/mud guard using Phillips screw driver. You may need to turn your wheels to one side to do this. Remove push pin tabs and pull mudguard out of the bumper. You can also remove the mudguard if you prefer. There are two (2) 10mm nuts between the top of the bumper and the fender. Remove these using a 10mm socket.
 - b. B) Remove four (4) screws with 4mm socket. These are the screws holding the underbelly plastic trim to the bumper.
 - c. C) Remove two (2) 10mm bolts on the top side of the bumper between headlights and grill.
 - d. D) Remove two (2) pushpins closest to the front of the vehicle. Radiator covers does not need to be removed.

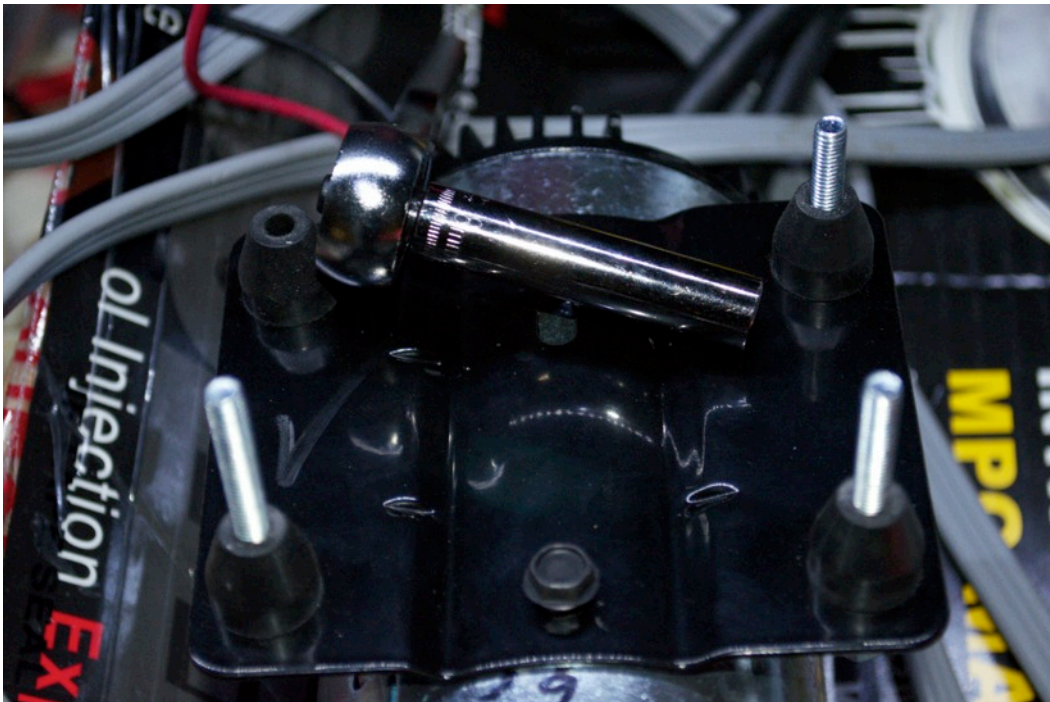


NOTE: If you have an aftermarket bumper, these steps may vary. Bumper shown is a factory bumper with an aftermarket front lip that does not change mounting points.

5. Gently pry off your bumper cover. Make sure to detach fog lamp harnesses and turn signal harnesses on both sides. Your turn signals have two bulbs each for a total of 4 harnesses to disconnect.
6. Drain your windshield wiper tank. Simply take off the rubber tube located on the small pump attached to the tank. Use drain pan to catch the fluid.
7. Remove your factory windshield wiper tank by removing the 3 nuts using a 10mm socket. The windshield wiper will become loose and you will be able to pull it down gently. These 3 nuts are located on the frame rail to your right (when looking at the car head on), underneath the support beam, and behind the support beam. Just follow the wiper tank's outline and you can't miss them.
8. Once removed, use your 9/16" drill bit to drill a hole. This is plastic and will not require a lot of force. However, plastic is slippery and you may want to drill a pilot hole with your dremel if possible but is not required.
9. Once your 9/16" hole is drilled, clean up the plastic shavings. Use your box cutter to clean it up if necessary (a lot of the time, the plastic tends to melt a little from friction). Use 3/8" NPT tap to thread the hole.
10. Thread the methanol tank fitting from the Snow Performance kit into the hole, using E3000 sealant on the threads and outside to ensure a good seal. Let sit and cure completely.
11. Locate passenger frame rail and test fit your 4x4" aluminum plate for fitment. There is a rail pinch on the bottom of the frame rail that will serve as our mounting point. Do not use the actual rail, just the pinch under the rail. Once test fitted, use your power drill and 3/16" bit. Drill two holes using your aluminum plate as a guide. BE SURE THAT THE PLATE IS ORIENTED SO THAT THE PUMP WILL BE PERPENDICULAR TO THE GROUND. SEE STEPS BELOW WHERE PUMP IS MOUNTED.



12. Reinstall mounting plate to pump, use some thread locker on the two bolts. Tighten snugly with 8mm socket.

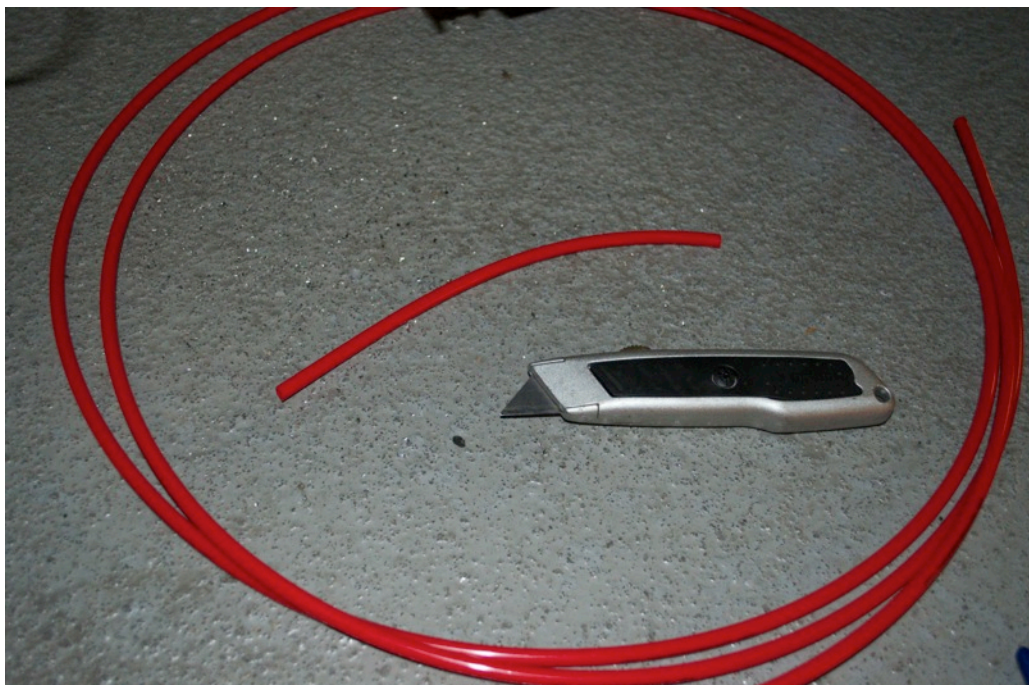


13. At this point, check your washer tank. If it is cured, put some water in it and check for leaks. Reapply E3000 sealant as necessary to any leaks (you can be generous with it). Once done, reinstall the tank using the 3 nuts and 8mm socket.
14. Mount the pump upside down to the frame rail and insert the four M5 screws through the frame rail holes that you drilled. Remember to use a washer on each side, one between the head of the bolts and mounting plate rubber grommets, and one on the other side of the frame rail where the bolt will go through. Apply thread locker to the threads on the screws and thread M5 bolts onto the other side.

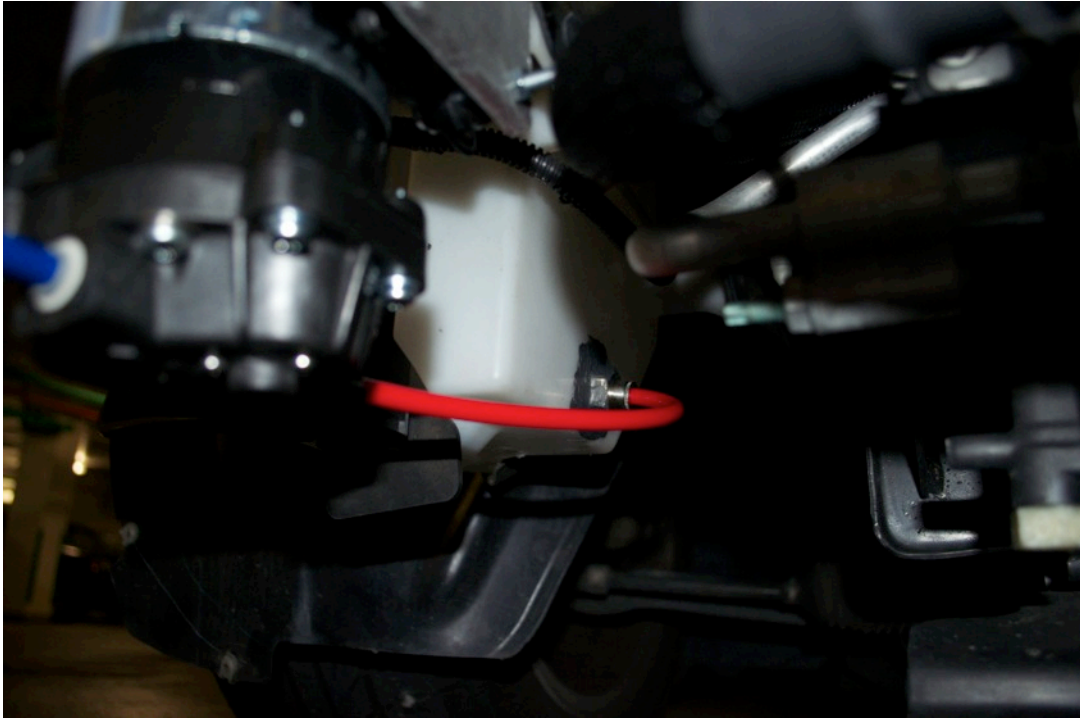
15. Tighten using 8mm socket (socket may be different size depending on what bolts you got) until you feel a little resistance. Because of the rubber grommets, the nuts will never feel tight. This is normal. To prevent the nuts backing out, thread on another nut on top of each nut with thread locker. Your pump should look like this in the end:



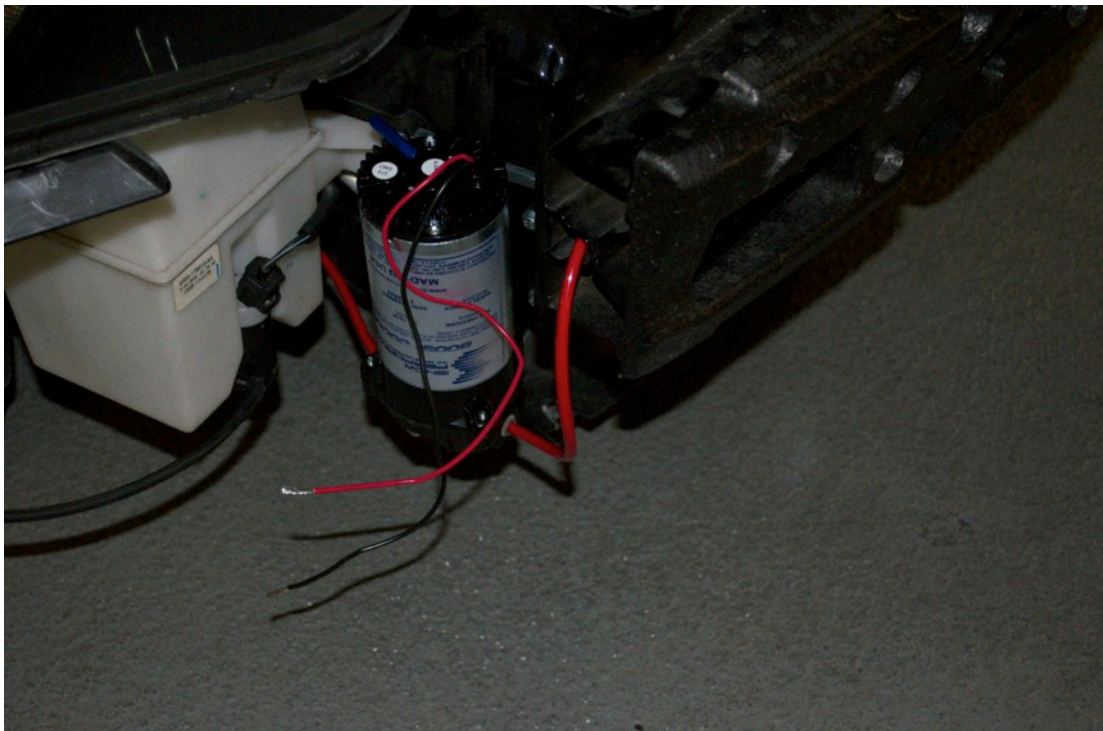
16. Take out the nylon tubing and test measure a length from the pump to the fitting that we sealed into the tank. Make a straight and square cut with your box cutter.

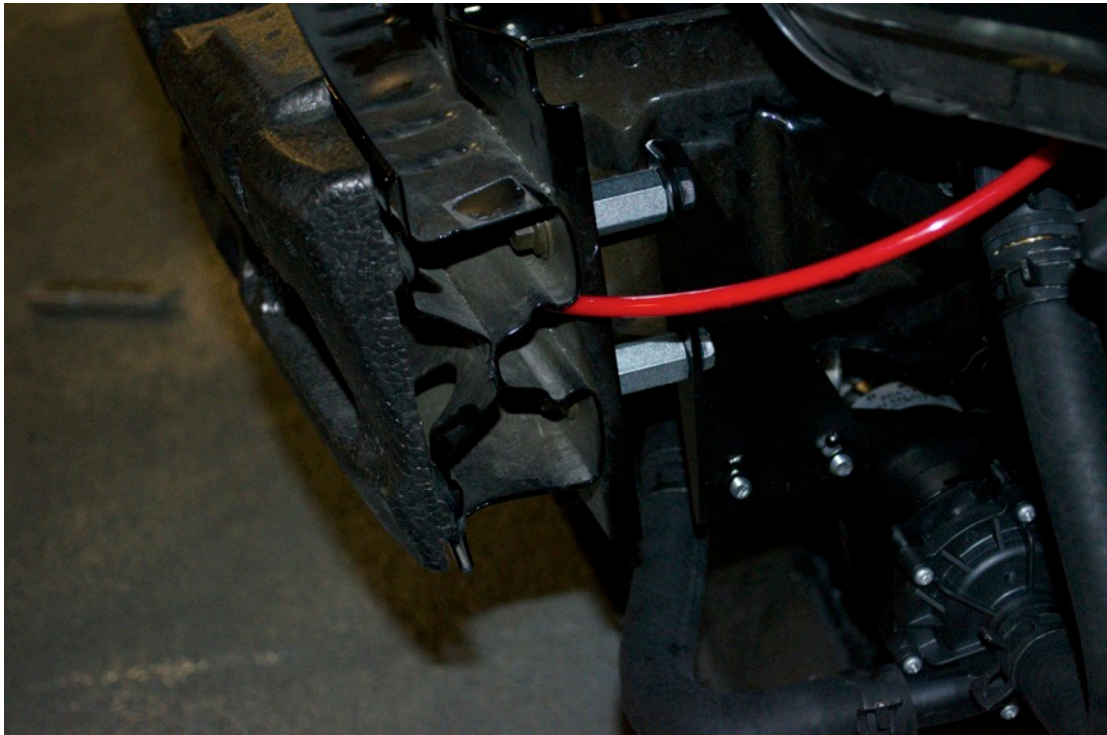


17. Remove the blue protector caps on the pump. To do this, simply push on the grey ring and pull on the cap. This is the same way you will remove the nylon tubing. Insert the tubing into the pump and the other end into the fitting. Give it a light tug on each side to make sure it is secure. If it comes out, you need to push it in more until it “locks”. The nylon is very flexible but ensure there are no kinks.



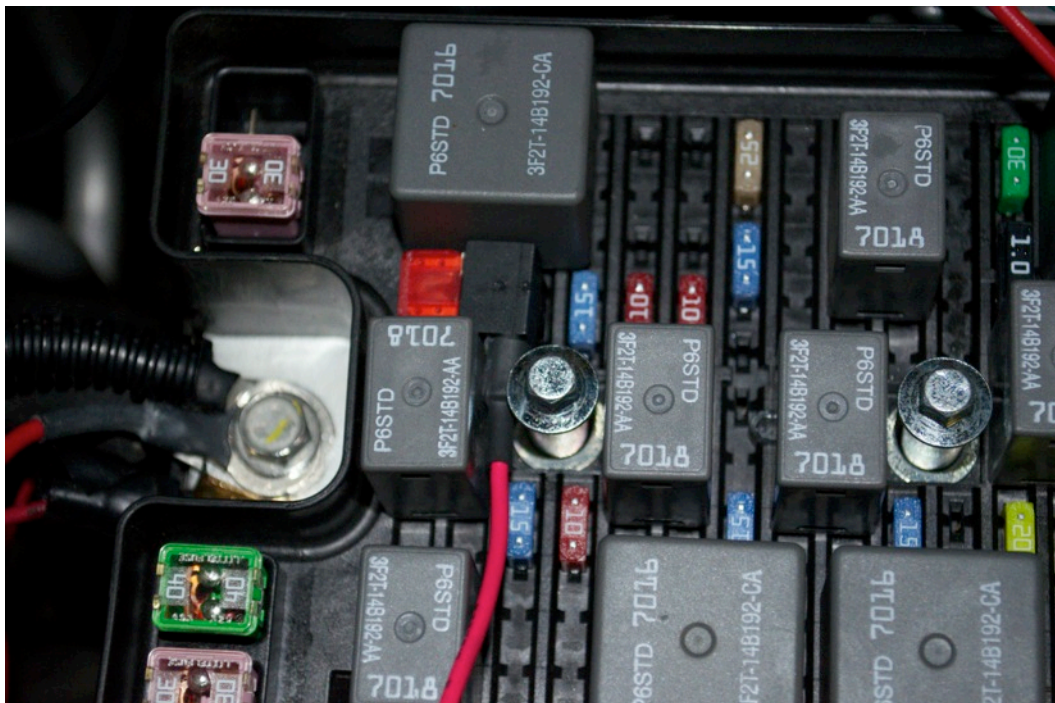
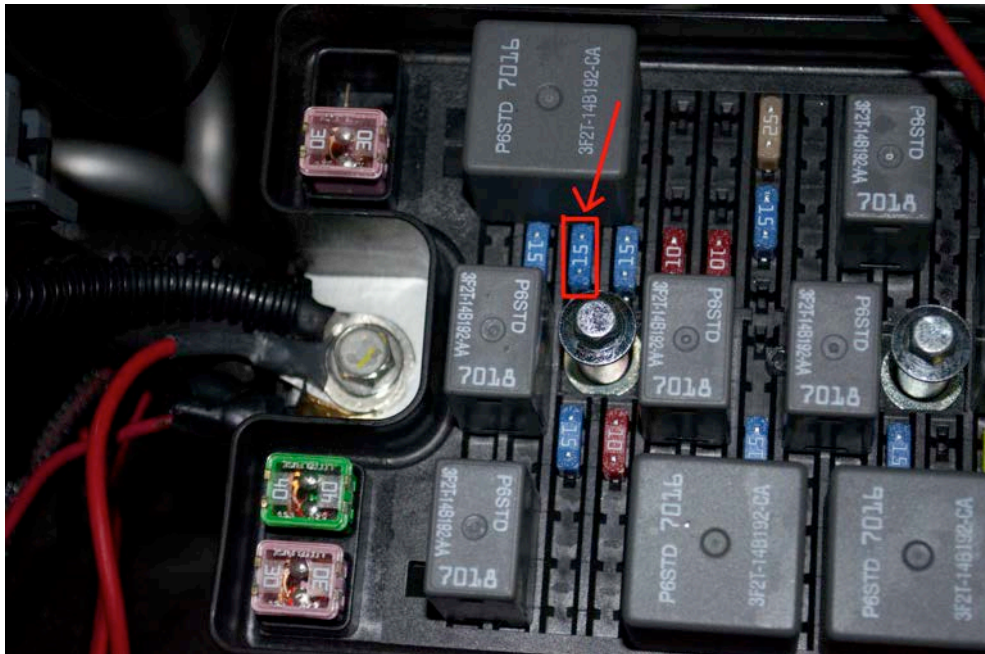
18. Take the rest of your tubing and insert it into the other side of the pump. Route it to wherever you will inject your methanol into the intake stream. In my case, it needed to go to the driver’s side so I went through the bumper rail, out the other side, and back into the engine bay under the headlight. You can route it pretty much anyway you wish, just ensure there are no kinks and that it does not touch a hot surface such as the radiator or exhaust manifolds, remember that the injection point must be downstream of the MAF sensor but upstream of the throttle body:





19. Disconnect your battery's negative terminal (8mm socket) and push it aside, ensuring that it will not contact the terminal on the battery.

20. Use your tap-a-fuse and tap into this 15 Amp fuse in the engine compartment fuse box. Remove the fuse and be sure to place it back into the correct tap-a-fuse slot (look at the packaging to see which one is which, it will tell you which slot is for the original fuse and which one is for the added accessory, in our case, the methanol system). Insert your 30A fuse into the other slot for the accessory.



21. Take your Snow Performance Controller Box, ensure the bottom is clean and apply strips of 3M tape liberally. Ensure your fuse box cover is clean. Remove red backing from the tape and stick the Controller Box onto the fuse box cover. You can alternatively mount this somewhere else but this is by far the simplest way to do it. The 3M tape is very strong and is fit for this purpose. If you prefer, you may use the self-tapping screws supplied in the Snow Performance Kit to drill the box into the cover.



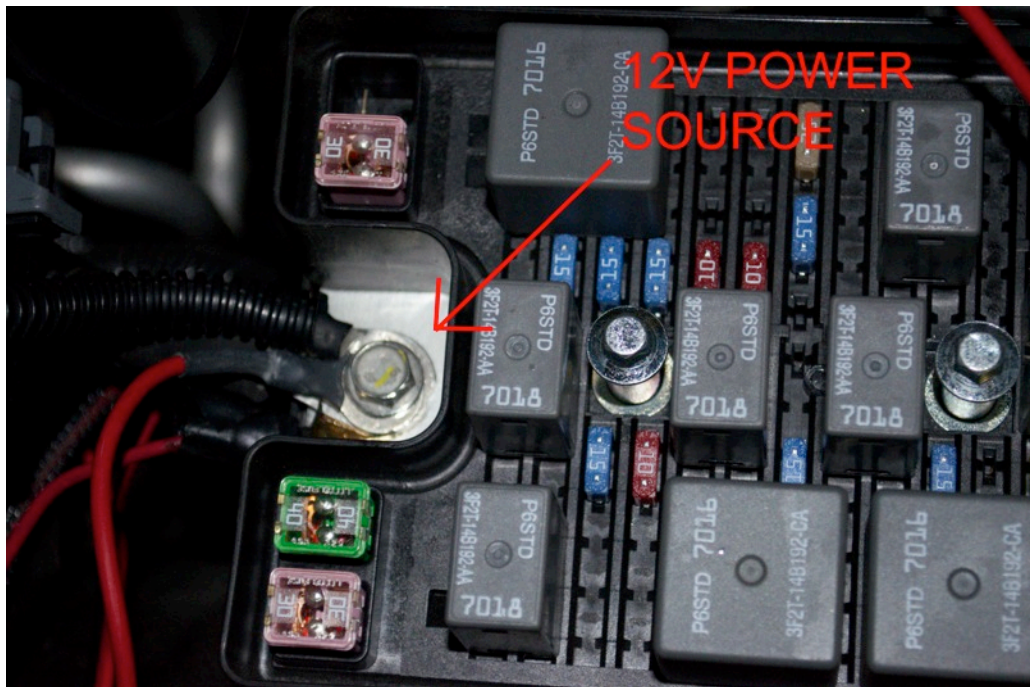
22. Next, you are going to do the wiring for the kit. This part is intricate and can get confusing. Here is a list of the wires you will be dealing with:
- Controller Box:
 - Black wire: Ground
 - Green wire: 12V OUTPUT (Goes to red pump wire)
 - Red wire: Goes to Relay Pin 87 wire (12V power source)
 - Yellow wire: Goes to your MAF sensor if you choose to use MAF as the input. This guide will use Boost. If you wish to use MAF, simply find your MAF and determine which wire is the 0-5V airflow reading (this will vary by MAF). Splice into that wire.
 - Pump:
 - Red wire: Power (goes to Controller Box Green wire)
 - Black wire: Ground
 - Relay (wire colors vary, look at the packaging to determine which wire is which, your relay will have a wire for 30, 85, 86, and 87; if you have a 5 wire relay, it will have an extra 87A pin, which is in the middle of the other 4. We will not be using this, just leave it be):
 - Pin 30: Goes to Battery, via our inline fuse (for safety!)
 - Pin 85: Goes to Ground.
 - Pin 86: Goes to Tap-a-Fuse wire
 - Pin 87: Goes to Controller Box Red Wire
23. The reason for using a relay is not just to make things complicated. The reason is simple: relays are safer to use when tapping into the battery for power and reduce the risk of fire. Do not worry, this guide will take you step by step so that you cannot make any mistakes.
24. Strip all the ends of all the wires we have, we are going to make all the connections and solder them all at once to make it easier. To make things appear less messy, route your wires in whatever manner you want them to be once everything is put together. This will avoid a mess later.

25. Make the following connections:

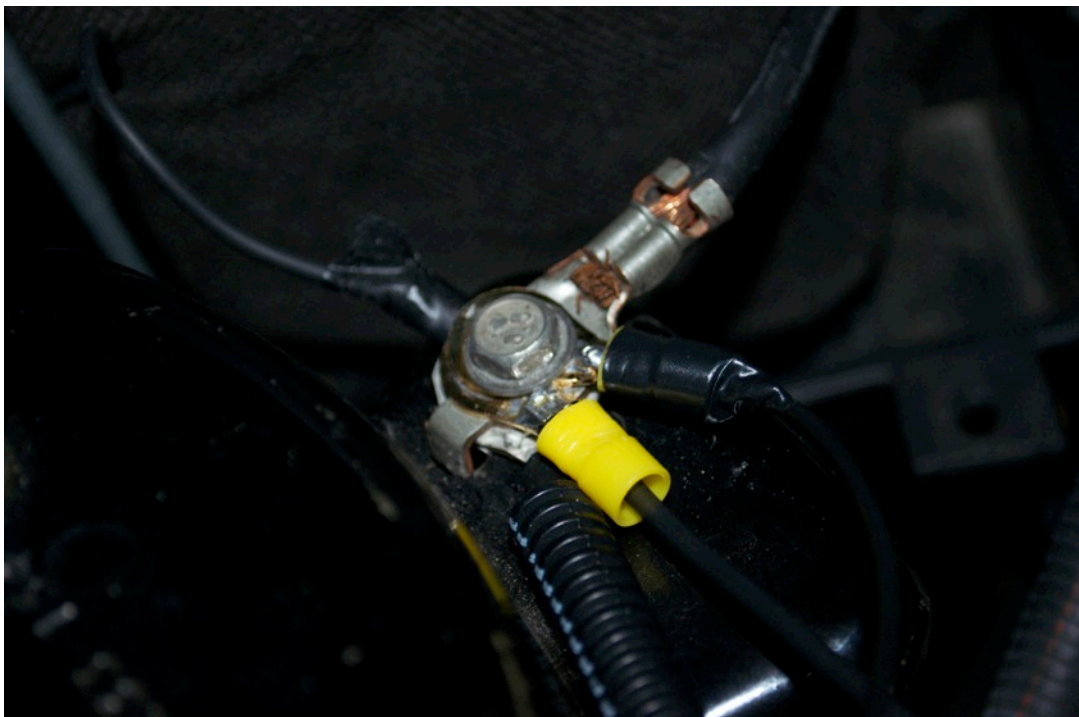
- a. From the Controller Box:
 - i. BLACK WIRE: crimp ring terminal on the end.
 - ii. GREEN WIRE: route it under the passenger headlight and down to the pump, twist the ends with the RED pump wire.
 - iii. RED wire: twist it into Relay Pin 87 wire.
 - iv. YELLOW: (OPTIONAL) If you wish to use your maf, route this to your MAF and splice into 0-5V signal wire. If you wish to use boost, you can leave this wire alone and tuck it away somewhere.
- b. From the Pump:
 - i. RED WIRE: this should already be twisted with the GREEN Controller Box wire
 - ii. BLACK WIRE: Crimp ring terminal on the end, use 10mm socket and remove this ground bolt, then ground the terminal by reinstalling bolt over it:



- c. From the Relay:
 - i. Pin 30 wire: Crimp to one end of the inline fuse holder. Take the other end of the inline fuse holder and crimp a ring terminal onto it. Insert 20A fuse into fuse holder. Remove 12V junction bolt from the fuse box using 10mm socket and reinstall bolt over the ring terminal.



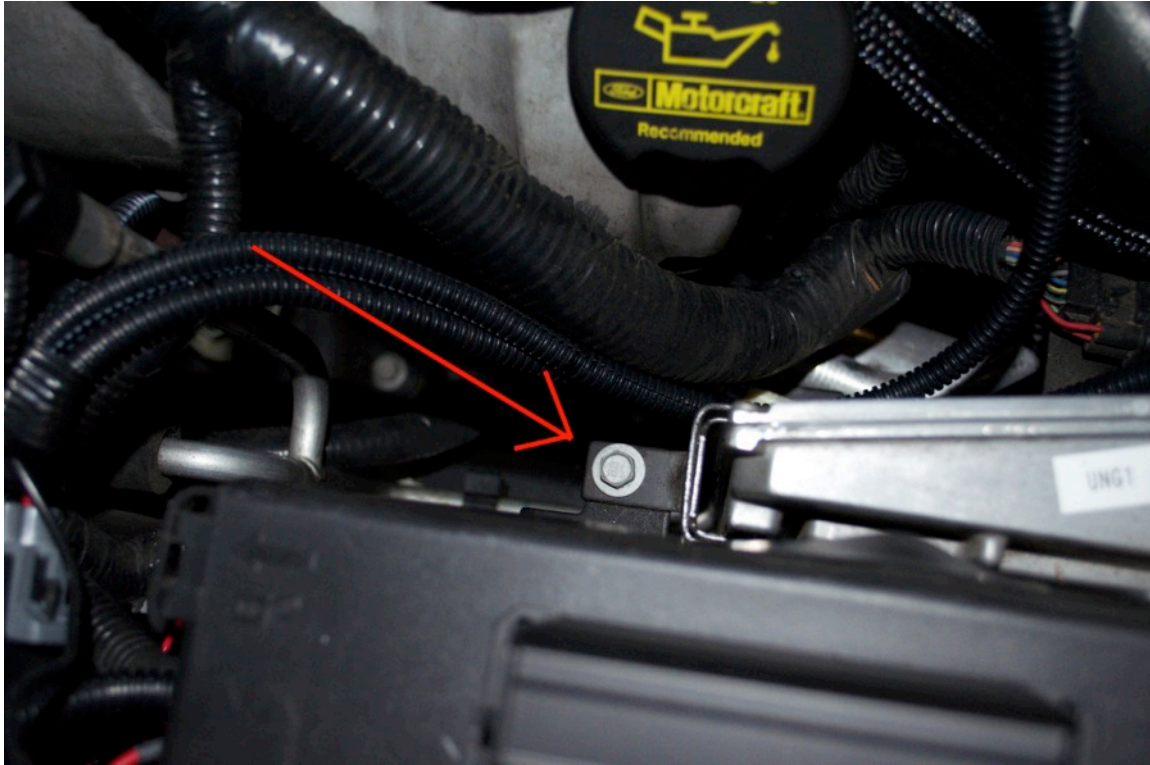
- ii. Pin 85 wire: Crimp ring terminal on the end. Take this wire along with the BLACK wire from the Controller Box (it will also have a ring terminal on it that you crimped on earlier). Ground them both to the passenger side strut tower ground as shown here, this ground point is near the battery on the inside of the strut tower, you cannot miss it. Use 10mm socket to remove bolt and reinstall over the both ring terminals:



- iii. Pin 86: twist with wire from Tap-A-Fuse
- iv. Pin 87: This should already be twisted with the RED wire from the Controller Box

26. At this point, you have grounded 3 wires total (Pump, Controller Box, Relay), tapped into the 12V fusebox junction, and all other connections should be made (other than the MAF if you choose to use Boost). There should be no extra wire ends!

27. Solder all connections and insulate them with electrical tape.
28. Remove one of the ECU bolts with 10mm socket and install your relay here for convenience. You can mount this anywhere you like or you can even zip-tie it to something. I chose this spot because it's easy and out of the way:
29. Reconnect negative terminal to battery.



30. Fill your windshield washer tank with methanol/water mix.
31. Use your small Phillips head screwdriver, set the Controller Box to BOOST, and set both MIN and MAX dials to their lowest settings.
32. Key your car's ignition to ON but do not start the motor, we are going to test the pump.
33. To test the pump, take your rubber or silicone boost tube, attach it to the back of the Controller Box. Make sure the end of the nylon tubing (that we routed earlier) is not pointed at anything important, such as a person's face).
34. Blow into the tube with your mouth, you should see a stream of methanol/water mix spray out of the nylon tubing. If you do not, check that all fuses are intact, replace if necessary. Check all connections and remake them if necessary.
35. Once tested, reinstall your bumper cover back onto the car. Follow Step 4 backwards.
36. Remove your intake tube where you wish to install your methanol jet, remember that this must be between your MAF and throttle body.

37. Use 11/32" drill bit and drill a hole into your intake. Once drilled, use 1/8" NPT tap and thread the hole:



38. Your methanol kit comes with the jets and 90-degree nozzle separately. Determine which jet you wish to use, bigger is not always better, here are rough guidelines but it is best to ask your tuner for professional advice:

- a. 250-350whp: 175ml/min jet (smallest hole, it's easy to tell by comparison)
- b. 350-475whp: 375ml/min jet
- c. 475-600whp: 625ml/min jet (largest hole)

39. Use supplied E6000 sealant and coat the threads of the jet. Thread the jet into the nozzle, with the filter side going in first (filter looks like a cylinder made of screen mesh).

40. Use E6000 sealant and coat the threads on the jet itself, thread gently into your intake hole and let cure. Do not worry about the orientation of the 90-degree elbow, it turns independent of the jet itself.

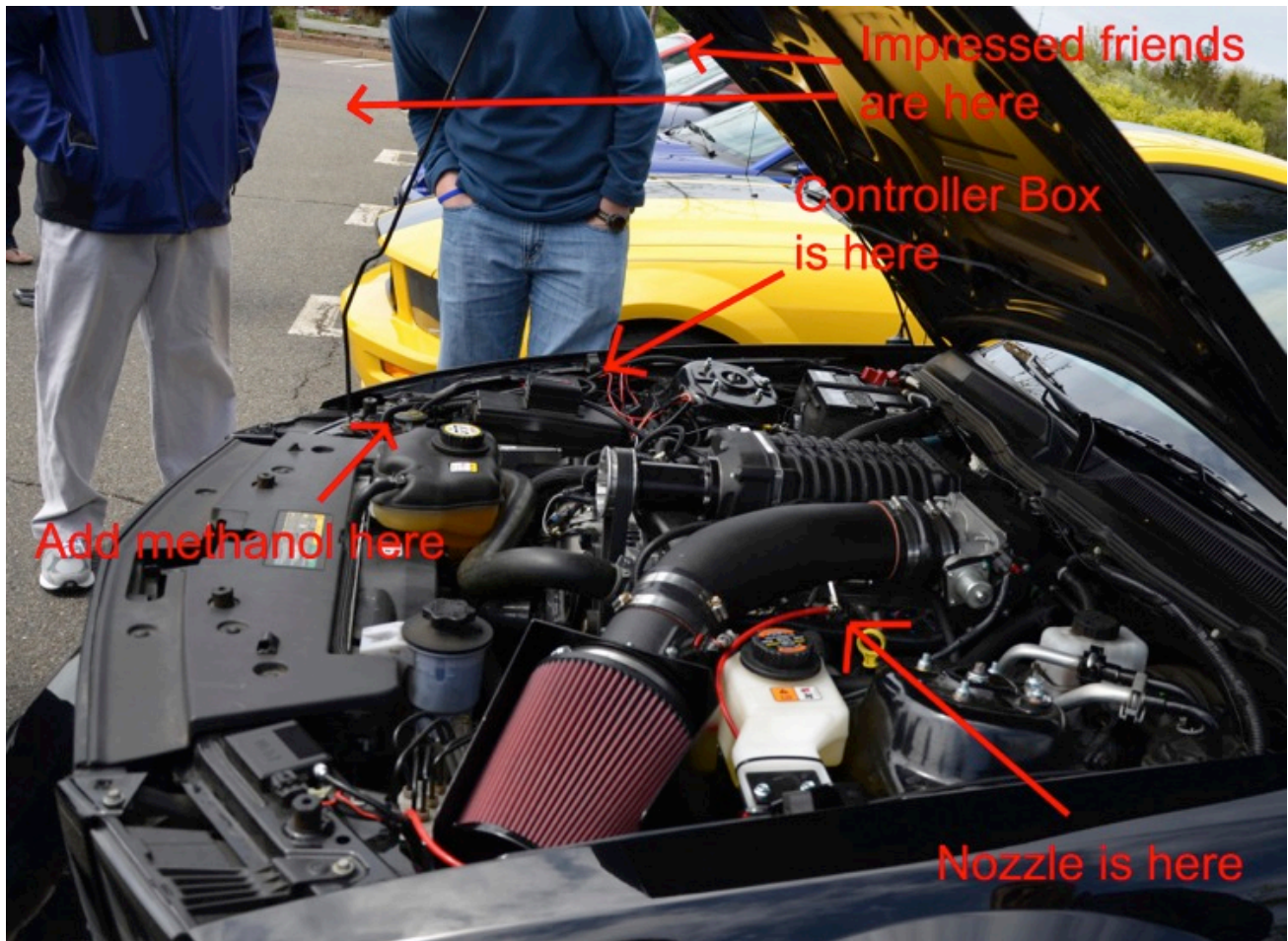


41. Reinstall your intake.
42. Locate your nylon tube, which you have routed close by as per previous steps. Measure it according to the location of the nozzle and trim accordingly.
43. Once trimmed, insert tube into nozzle, give it a light tug to ensure it has “locked” in.



44. You may use wireloom to hide the wires from the Controller Box and zip ties to tuck them away as you please.

45. Use your vacuum "T" and tap into your boost line. Connect the boost line from the methanol box to the vacuum "T". Use screwdriver and set MIN/MAX on Controller Box to your desired settings (also, set to MAF if you are using MAF instead and ignore instructions on boost line tapping)
46. Your methanol kit install is now completed!



Installation Instructions written by AmericanMuscle customer Billy Zhang 5.30.12