Kit Packing C6 Vette

PAC controller _____

Pump w/4 Feet shielded cable _____

4 Feet 7/16 split loom _____

6 Feet ¼ split loom _____

2 long wire ties _____

PAC wiring + DS tape _____

7 inch hose –6 -6 _____

32 inch hose –4 –4 _____

32 inch hose -4 –4 _____

Methanol Filter _____

Str 3/8 –6 fitting _____

90’ 3/8 –4 fitting _____

MAP Sensor w/regulator _____

Brass T for MAP _____

5 self tapping w/washers _____

Cap w/vent _____

Motor Plug _____

Tank 90 w/seal _____

Nozzle w/washers + adapter _____

Check valve _____

Relay Assembly _____

Nozzle document _____

PAC document _____

MAP document _____

C6 install document _____

Custom Dual nozzle

M10 nozzle _____

1/8 T fitting _____

4 inch –4-4 hose 6 inch –4-4 hose _____

Large check valve _____

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ALKY

ALCOHOL INJECTION SYSTEMS

Alky Pump install

Important notes… Do Not Mount pump with head facing upwards as this will allow water to collect inside sleeve and ruin motor.

Please install as pictured, It can also be installed horizontally as long as the pitch does not allow water to collect in sleeve.

Any question.. please call 813-265-1400 Julio

Addendum to C6 system.

Before drilling feed hole on tank, first mount pump. Pump is located rear portion of tank. Optional to have head of pump be flush with bottom of frame, relocate the tank mounting screws upward. Or pivot tank on front mounting bolt and relocate rear bolt.

Hole sizing for tank hole that needs to be drilled is 7/8 diameter. Then rubber grommet inserted.. then barb pushed in.

C6 Corvette installation instructions

1) The tank modification

You first need to gain access to the tank by either pulling fender outward or removing the fender. The pump will sit below the frame rail unless the tank is either relocated upward or pivoted forward on its front bolt. Simple solution is to use self tapping screws provided to remount tank upwards. To start this, first jack car under the rear of drivers side fender there will be a lifting hole. Once lifted, support with a jackstand under the cradle. Now remove the inner fender by removing the pop in rivets and removing two 10MM head bolts underneath, two 7mm head screws, and the pop in rivets. Once the lower panel is removed. There will be a 7mm head screw supporting the inner fender that has to be removed.

Once this is done, I remove the torx screws holding the fender along the rail.

There is a small plastic panel coving the rear screw that also must come out.

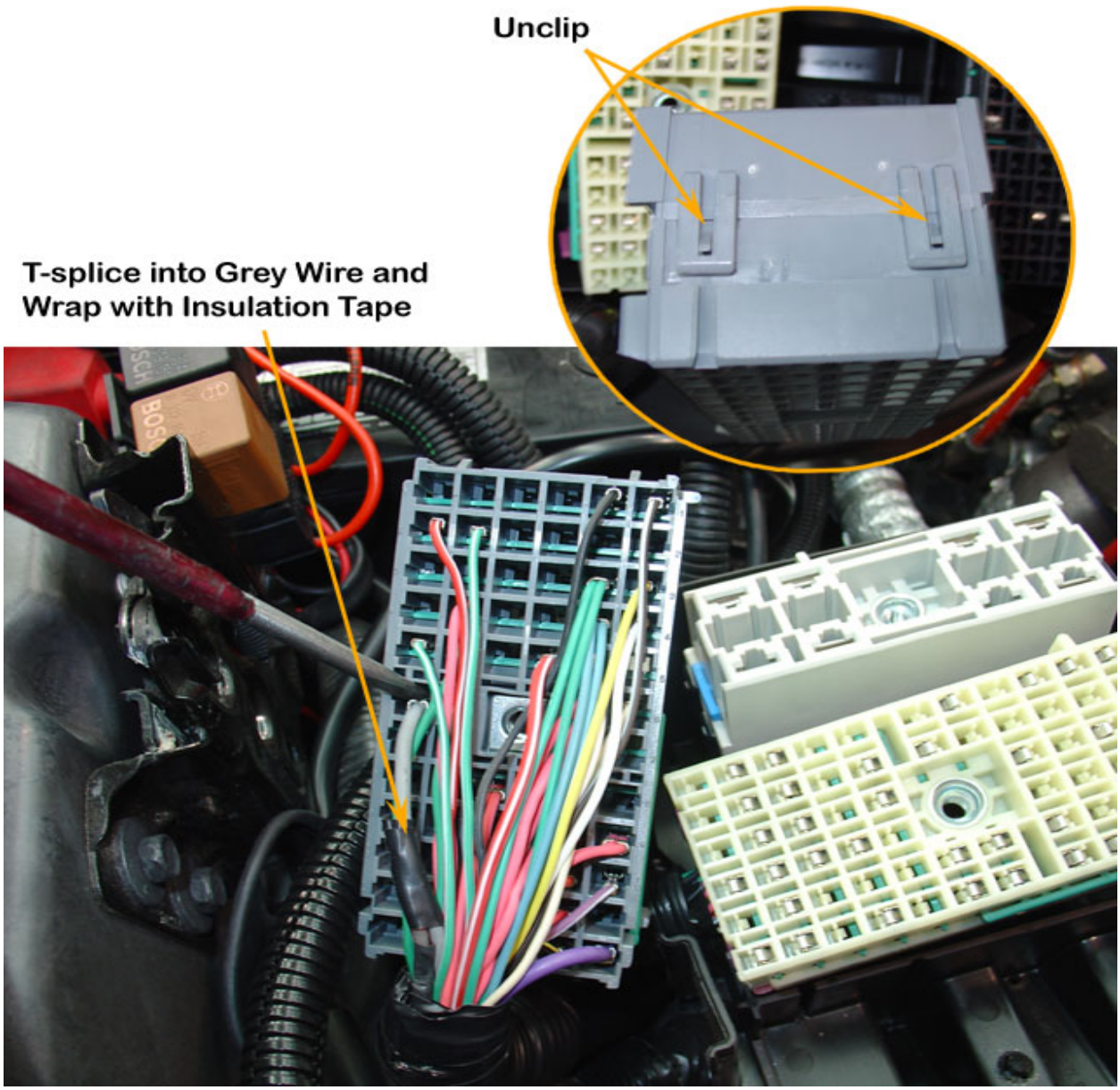
Once this is done, the fender will move outward allowing clearance so that the factory washer tank can be removed. I remove the hose from the factory washer motor and allow tank to drain. At this time you'll note the space behind the factory tank that is where the pump will be mounted. There are 3 bolts securing the tank and one push rivet on the neck. Pry out the push rivet and remove the 3 bolts. Tank can now be removed. Once removed the pump can be placed. Note that the pump is longer and will hang below the frame rail. So what I do is simply relocate the washer tank upwards 1 inch. This can simply be done by using two of the supplied self tapping screws and re-drilling the tank upward. Drill a hole in the front and back. Back of tank will rest on top of pumps cover.

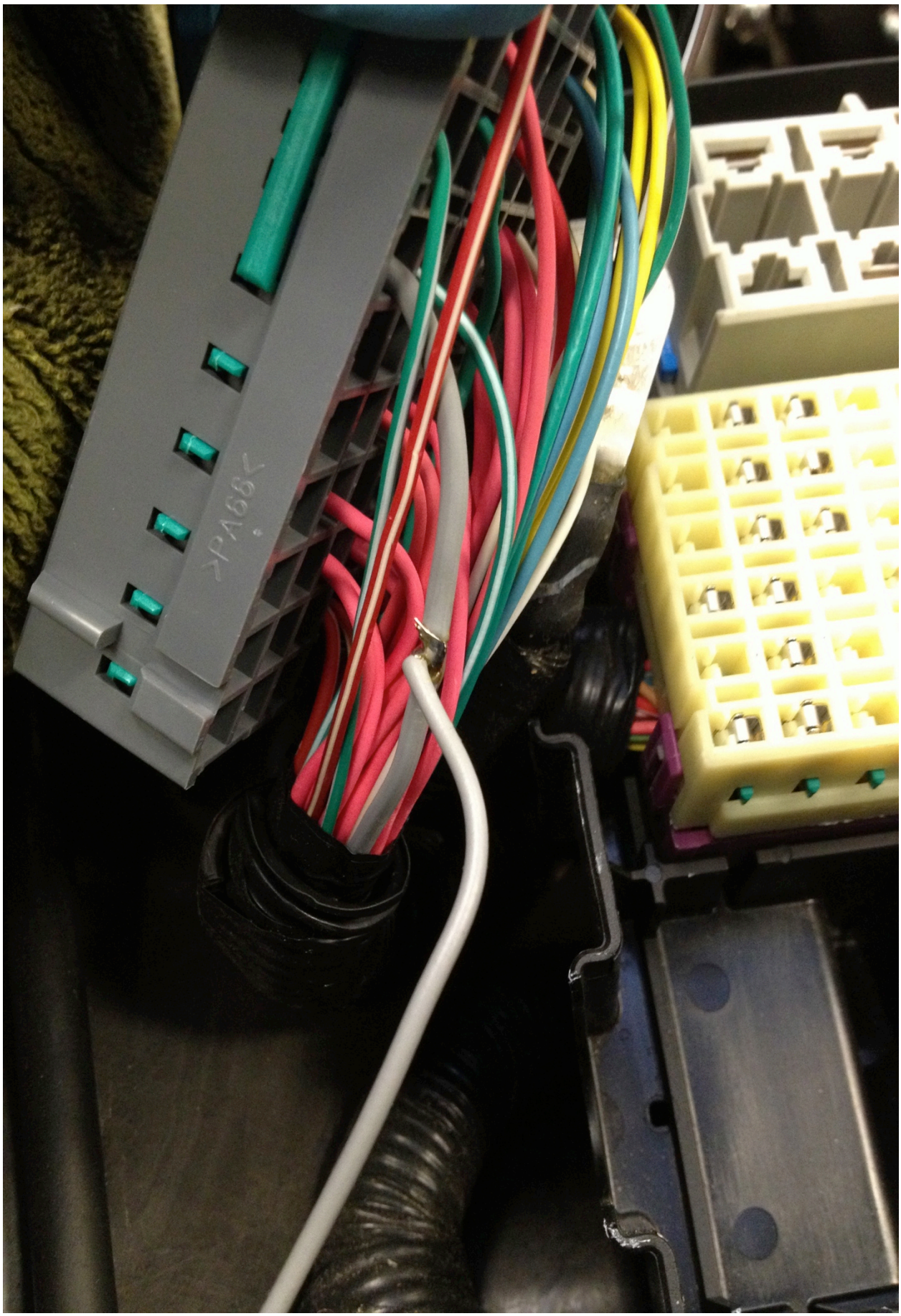
You will only be allowed to use 3 of the supplied screws as the frame contours will only allow that many. TIP.. The top screw will go on the edge of the frame rail***. And confirm pump is flush with bottom of frame***. TIP.. Once pump is located where you want it, remove the bracket from pump and use it as a template where to drill screws. A black marker works great.

Once positioned, mark where the bolts will be installed and using a 3/8 socket on a drill, use supplied SS bolts to affix pump to frame. There is a white wire with o-ring, it needs to be attached to one of the bolts going into the chassis. Install straight fitting unto the pump head, and 90 degree fitting into the outlet. The 90 will be pointing upward. Install hand tight. Do not force or the head will crack on the pump. It's a pipe thread, just needs to be snug. Once pump and fittings are installed now get the feed hose and 90 degree fitting. Install on pump the hose and mark where to drill hole into factory tank. The windshield washer tank will need to be modified to deliver the fluid to the pump assembly. The modification entails drilling a 7/8 diameter hole in the bottom of the tank, its lowest rear point, then installing the supplied push-in fitting. Make sure to clean out all debris from drilling hole. To install fitting, insert rubber grommet into 7/8 hole, then using a lubricant like WD40 spray the grommet and simply push the fitting in. NOTE>> the best advice is to use a UniBit step type drill bit that has 7/8 as its largest size. Do not use a regular drill bit, else you will destroy the tank..
At this time attach hose onto fitting and pump. Next is install cap onto factory washer motor and disconnect the wiring. Attach pump cable to pump. Next is drill hole into firewall and feed pump cable through. TIP..The clutch port on an automatic is a great place to drill the hole.

2) Relay mounting

The relay supplied is used to supply power to the controller using the fuel pump circuit to drive its activation. It will go by the fuse box and get its power to the open lug from the battery lug by the fuse box. The black wire on the relay goes to ground. The Gray wire is the one that gets signal from the fuel pump circuit. And the red long wire gets routed into the vehicle. The main purpose of this relay is to isolate the PAC controller from any of the on-board electronics. Simply open box and loosen the main studs. Box pries apart.


Unclip
T-splice into Grey Wire and
Wrap with Insulation Tape



I use the ground on the frame ahead of the fuse box.

Mount relay on inner fender. Route 12 gauge red wire using supplied loom through rear of engine compartment. Route under brake booster and go through hole in firewall where pump cable will go through.

3) Nozzle

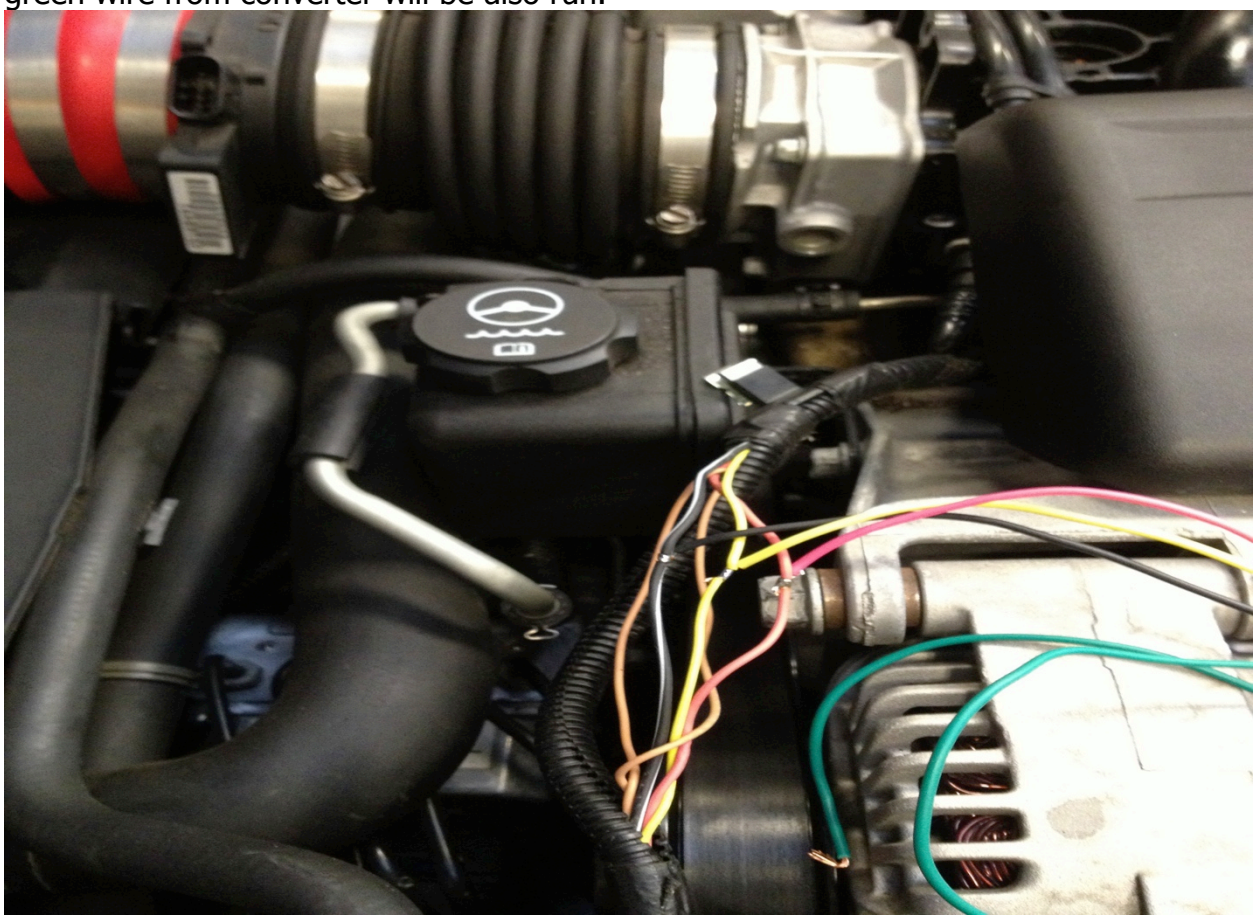
The nozzle will be placed before throttle body. Install head of nozzle in the upper portion of the air bridge 2 o'clock position on Mag cars or in the upper portion of the pipe on supercharged applications. **The installed height of the nozzle must be higher than the tank. Else siphoning can occur.** Simply drill 3/8 diameter hole into location, feed nozzle in leaving one sealing washer on the inside.. tighten fitting on the outside , then depending on thickness of material, install other washer on the outside. Some applications require no washers with thick aluminum or silicone hose installs.. others require just one.. others both.. in the case of thin aluminum. Trick is to not bottom nozzle out in the 90 degree elbow supplied. After nozzle is installed attach supplied 1/8 pipe to –4 adapter. Clean area for debris, reinstall pipe. There is a supplied check valve "IN CASE" siphoning occurs, whereby liquid flows when system is shut off.

4) MAP sensor

The MAP(manifold air pressure) sensor can be installed under the dash if an aftermarket mechanical gauge is used. Enclosed is a brass "t" and compression fittings so the plastic line going to the aftermarket gauge can be used. Simply cut tubing, and place brass block in-line. Then attach small section of hose from brass barb to nipple on MAP sensor. Enclosed for 5 volt power is a 5 volt regulator. Wire the regulator RED to Red on 6 pin, Black to ground, green to PAC green input.

5) Under-hood wiring

The only wiring needed to be done under the hood is the pump, and the relay. Then run wire into vehicle through firewall. Two options, one is through the grommet or drilling a small hose through the fiberglass and using RTV sealant underneath the hood latch grommet. If the install is using the MAF converter instead of a MAP, then the green wire from converter will be also run.



Now maybe a good time to take a break, wash hands, the easy part begins.

6) In-Car wiring

This is just guidelines from numerous installations I have done. The sky is the limit on creativity, and this should only be used as reference for what I have done, has been easy, and has worked.

The first thing I always do is visually place where the location of the "turn-on" LED will be located. Typically this will be near your boost gauge. The purpose of this LED is to indicate when the system has reached its turn-on threshold based on the signal from the MAP sensor.

At this point remove the lower panel under the dash, and the panel that goes under the steering column. Drill holes and run LED wiring from the pillar to underneath the dash.

The turn-on LED has a orange/brown wire. Next is locate a solid ground point under the dash. The black wire from the PAC power distribution box will be attached to this, and the black wire from the 5 volt regulator. The red wire coming from the relay under the hood will go the larger red wire with spade terminal on the PAC. Next is attach the **orange wire from the turn-on led to the orange wire coming from the controller, brown wire to brown wire.** Attach the green wire from the MAP to the green wire on the PAC controller. The violet/gray wire leave alone until latter.

And finally the pump connections. Cut the wire to length and strip approx 3-4 inches of insulation from the wire. Remove foil. Then strip about ½ inch of insulation on the red and black wires that lead to the pump.

PAC terminal wiring instructions

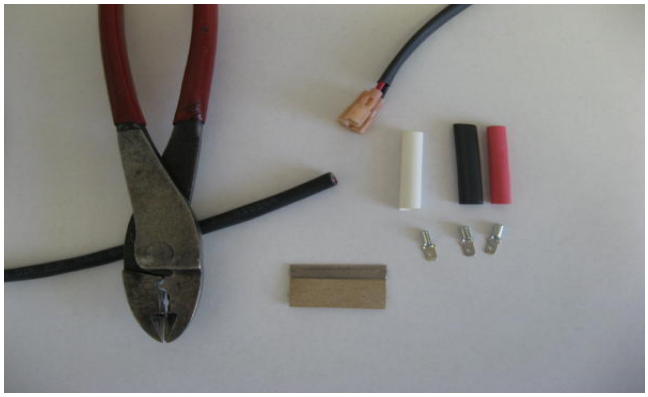
The following pictures show how to connect the pump cable wiring to the PAC controller.

Tools needed

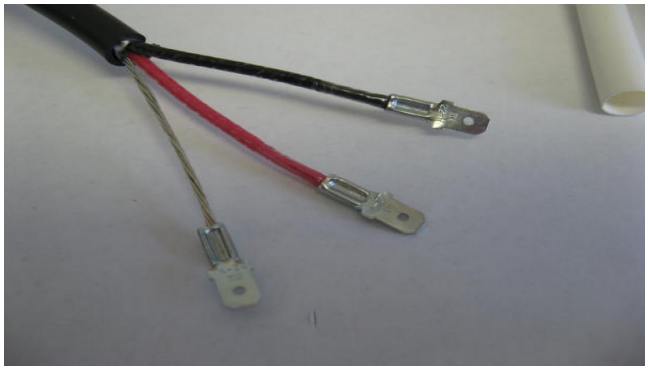
1)Heavy duty set of crimpers(available through Home Depot, NAPA, Sears, Klein, Blue-Point, etc.) Do Not Use Cheap made in China crimpers….

2)Razor blade

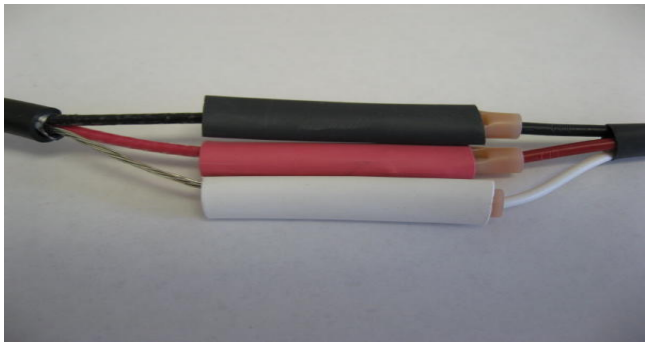
3)Heat gun or lighter



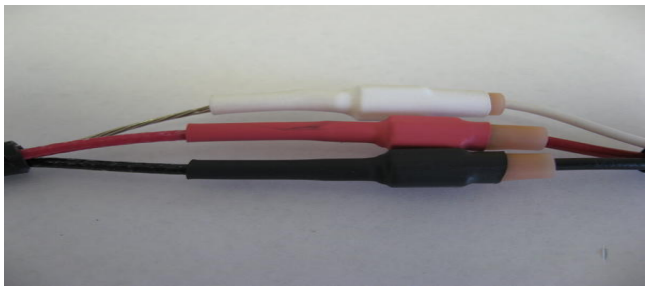
Step 1
Strip insulation from end of pump cable and separate wires. Note there are three wires. Red, Black, bare wire. Strip insulation Red and black wires. About ¼ inch is fine. And use the small supplied Male spade terminals. Crimp the terminals from the bottom as shown.



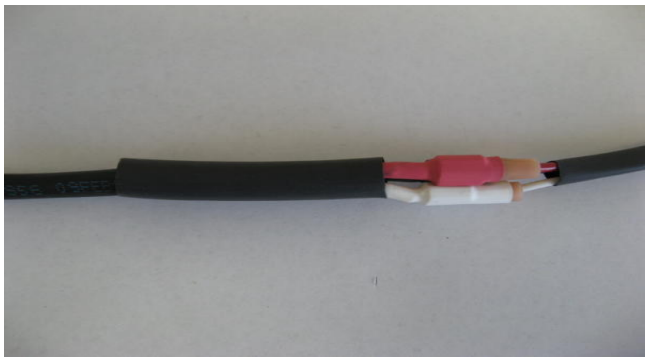
Step 2
Slide large black heat-shrink over terminals and cable. Next is slide white heat-shrink over Bare wire, slide Red heat-shrink over Red wire. Slide Black heat-shrink over Black wire. Then push male spades into their respective colored female connectors as shown. Next is slide heat-shrink over terminals.



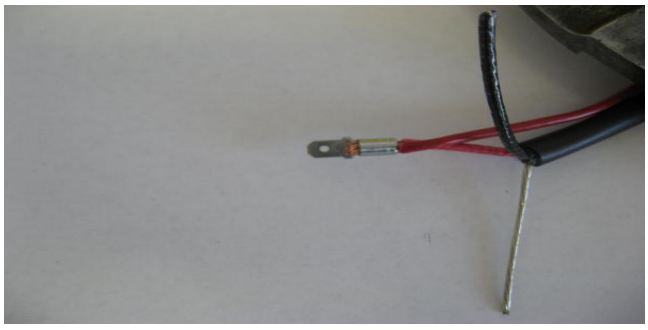
Step 3
Apply heat to the heat-shrink.

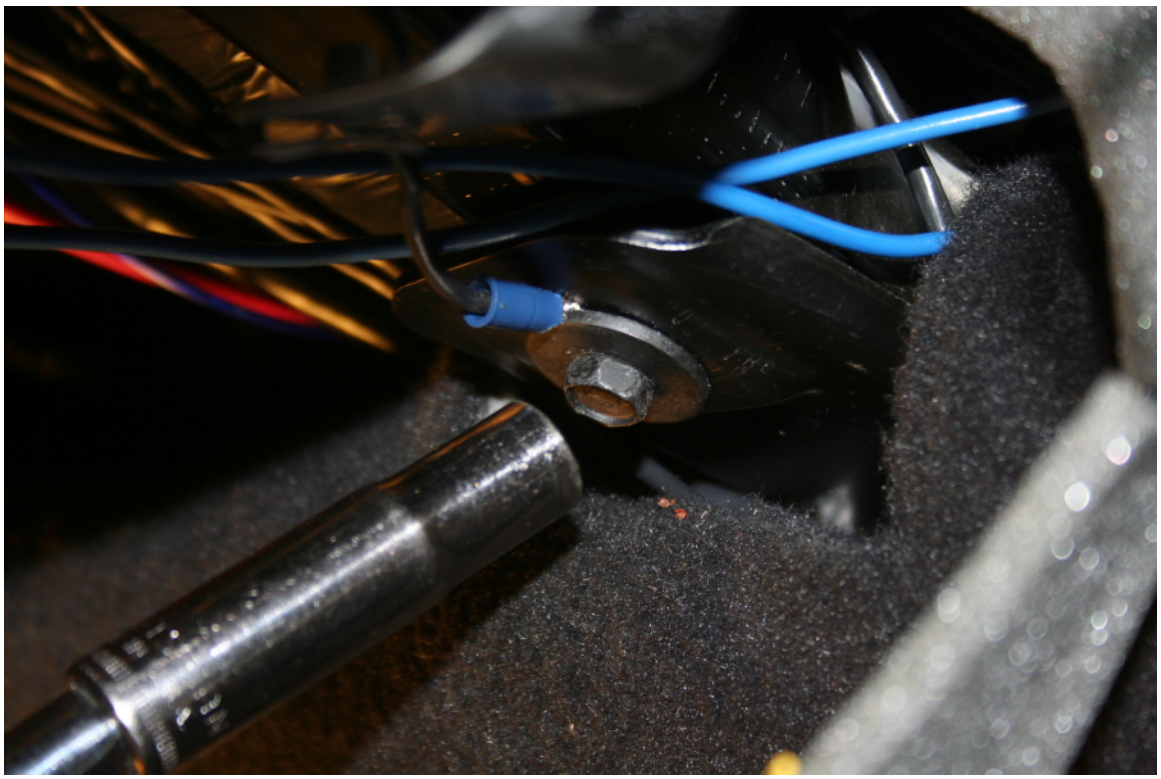


Step4
Slide large heat-shrink over entire connections



Step 5
In the event more than one wire will be attached to the Red wire. Example Map sensor regulator, use the larger supplied Male spade that can accommodate larger wire and assemble as stated above.





Mount PAC controller under the dash where access can be gained to in case of adjustment when tuning is performed. Some cars I have seen this done on the passenger floor board are, then mount the Gain controller inside the glove box.

A simple location for the controller can be behind the dead foot panel. Easily removed by removing two 10mm head nuts.

7) The gray/violet wire

Be careful on how this wire is to be used, most applications will not benefit from it being connected. Here's the principle and connectivity. The violet wire while a ground is applied will limit the pressure output of the system. And its only use is to help assist with spool-up while brake torque is applied to spool the turbo in a racing

application. So here are some ideas and methods to connect the wire for this feature to be present.

Simplest method is a momentary toggle switch in the ashtray whereby one leg of the switch goes to ground, the other to the violet wire. While staging the car, depress the switch and build boost.. As soon as the car launches release the switch and the system goes back to normal.

Next is to wire a relay to activate while the brake is being depressed. To do so, wire the Bosch 30 amp automotive relay as follows. Terminal 85 to the blue wire with stripe on the brake pedal switch. Terminal 86 on the relay and terminal 87 on the relay to chassis ground. Terminal 30 to violet. When the brakes are applied, the relay "clicks" thus applying a ground to the violet wire.

The gray wire can be used to trigger an auxillary system. In case a solenoid or other device requires a signal once the system activates.

Typically these wires are not used.

8) Final

At this point you've concluded the installation, first thing to do is before putting alcohol/water into the tank, is start engine and set the blue gain knob to the middle position. Next depress the black test button and observe the turn-on LED next to the boost gauge lights up red. At this point observe the low washer fluid lamp, which should also be lit since the tank is empty. If everything checks ok, fill the tank with alcohol/water, and check for leaks coming from fittings that may have not been tightened. Start the vehicle, place gain on position 8, and push and hold the test button. Observe the turn-on LED illuminates red, then goes green since pressure now has been established. Motor should also stumble. NOTE>>> on twin nozzle systems LED will not go GREEN on TEST.

If these tests are passed, then your ready for a road check. And on your maiden voyage bring the boost up slowly and as the gauge goes past 4 PSI boost, the turn-on LED will illuminate. If it doesn't, do not continue the test and see why the MAP sensor isn't working. **This is very important.**

If it does work correctly, then proceed to increase the boost level observing how the engine feels and assure there is no surging when the system is spraying. If this part is passed, watch your knock readings, and roll into the throttle to your desired boost level. Stabbing the throttle on some cars can induce false knock. Just trying to make sure what you see is real or false. Also observe the turn-on LED and it will change color from

red to green when initial pressure is developed. This can be changed via the adjusting screw on top of the pump. Outward decreases activation pressure, inward.. increases it. Typically I will set so it comes on early on. You may find our setting to be acceptable. Adjusting this screw has no affect on the system or its delivery. Its for changing when the LED indicator flips color.

From this point fine tuning of the system can be performed.

9) **Fine tuning**

Although most cars will work with the system setup as is from factory default settings, this is just a guideline. With the gain knob(blue) turned to minimum, you should see some knock but not a whole lot. Typically less than 2 degrees at WOT. Increasing the gain knob should make the motor go to zero knock. If your setting is at minimum and you don't see any knock, you may have too much alcohol being sprayed. The adjustment that affects this is the knob inside the PAC controller labeled "INITIAL". Turning this screw counterclockwise reduces the ramp and puts less alcohol/water into the motor. Small adjustments make big changes. Repeat the procedure until the motor just has enough alcohol to curb the detonation, but not too much.

On certain applications, whereby chip/fueling is adjustable, it may be beneficial to increase the initial and lower the fueling whereby upping the flow of alcohol through the motor.

Individual results may vary, enjoy the product.

10) Contact

If any part of this procedure is unclear, or issue arises, please contact me or the vendor for assistance. Also note there are installation pictures available on my web site www.alkycontrol.com . It would be my pleasure in helping you make the car go fast and stay together.

Julio Don 1-813-265-1400
email: idoxlr8_70@yahoo.com

www.alkycontrol.com

PAC- Progressive Alcohol Controller

Introduction

The PAC is a versatile electronic motor controller using pulse width modulation technology. It allows the user to custom tailor voltage output to the injection pump being used so that it increases pressure with the increase in voltage output coming from the vehicle MAP sensor. Recommended that vehicle have a 3 bar map sensor for better voltage control. Will support any injection pump rated up to 15 amps.

Features

Added flexibility to the control of an injection pump to overcome boost pressure in intake tract, ability to run higher pressures from an injection pump without inducing flooding or transitional knock, input terminal for pressure reduction(brake input), ability to custom tailor installation, ease of use, and flexibility. Built in fuse.

Unpacking

Included in the kit should be enough wiring and connectors to do a full install. This is a list of what is included. Controller, 12 feet 16 gauge shielded cable, 12 feet ¼ inch loom, 4 red splices, 8 wire ties, 3 spade terminals, one LED, solder, and some heat shrink tubing.

Tools Required/Recommended

Connector crimper.. Klein, Blue point, etc. , soldering iron or gun with 60/40 solder, drill with unibit drill bit, 12V test lite, heat gun, basic hand tools, and a digital voltmeter.

6

Installation

These are general guidelines for component installation. The kit comprises of two individual modules. They are the main controller, and the remote controller. A RED and a Black weather pack connector is used to supply power to the main controller. The Red goes to a switched ignition source capable of handling 15 amps. I use the IGN terminal on a GM fuse block. Or this can be routed from a relay activated by the ignition switch. Black goes to chassis ground. The connections to the injection pump are the Red/Black/White wires coming from the main controller. Connections to these using the supplied spade connectors. Red wire to from the pump to Red wire from main controller. Black wire from pump to Black wire from main controller. There is a “drain/silver/bare” wire for the pressure sensing, this will be connected to the White terminal. It is highly recommended that these connections be soldered to assure reliable connections.

IMPORTANT NOTE: The “Black Pump Wire” on the main controller is not a ground.

Main controller wiring, green-violet-gray-orange-brown.

Green is connected to the MAP sensor signal wire. On in the case of Ford vehicles.. MAF

Gray is an auxillary output that will switch + voltage when system activates. Examples to run a solenoid driver relay module, input to external boost controller, etc.. typically not used

Orange/Brown twisted go to the Turn-on LED. These wires will flip polarity when pressure is developed. Suggestion is to place turn-on LED near boost gauge to indicate system has activated.

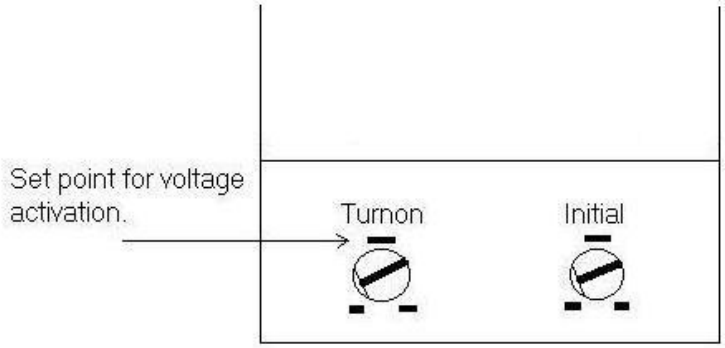
Violet wire is the negative trigger input terminal for pump speed reduction. Grounding this wire reduces injection pump speed to initial pump pressure for staging applications while drag racing. Intended application are E-brake switches.

The remote controller affords the user the flexibility of custom installing controls with dash panels of vehicles or attaching control box as is. For custom installation, simply remove screws from box and relocate controls and LED. A small jewelers screwdriver will be required to remove knob assembly. Unibit drill bit makes graduated drilling holes a snap.

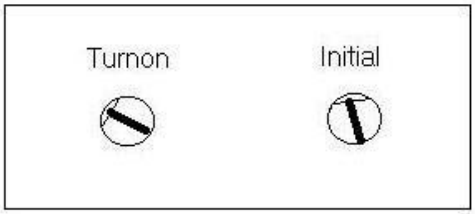
Setup and Use

The remote controller features a knob that controls ON/OFF and GAIN. The LED next to it indicates system is armed and the push button applies “initial” pump speed to the pump for testing operation.

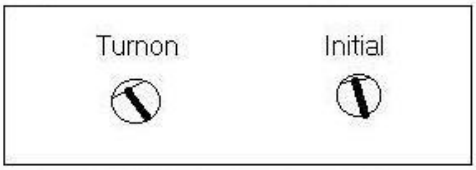
On the main controller is an access door. Opening the access door reveals two controls internally labeled “TURN-ON” and “INITIAL”. The turn-on control allows the user to set a turn-on voltage from 1.7volts to 5volts. Clockwise rotation increases the voltage needed to trigger system. The “INITIAL” control determines how much voltage is sent to the pump when the system is triggered. Typical settings are factory preset for 4 PSI turn-on with a 2 volt output to the pump. These can be recalibrated by the user by simply turning the controls clockwise to increase, counter clockwise to reduce. A LITTLE AT A TIME. Use fingers or small flat screwdriver. An electronic voltmeter can be used for initial pump setup as well. Procedure involves placing voltmeter across terminals on power distribution block and pressing the push button on remote controller. Typical setting is 1-3 volts. Next is the “Pump Gain Control” on the remote controller. This control interacts with the initial pump speed control. Usual and typical settings place this knob in the 12-2 o’clock position. It is used to ramp the voltage gain to the pump as the signal from the MAP sensor increases. Turning this knob clockwise will increase output voltage multiplication and slightly increase the initial pump speed. Only way to know what is best suited for your particular application is trial and error.



Turnon control will adjust from 1.7 volts DC to 4.9 volts DC. Full CCW is 1.7. Full CW is 4.9. Voltage can be adjusted by probing center terminal on Turnon control and adjusting to desired level.
3 bar GM sensor 5 PSI ~2.15 volts DC, 2 bar 4 PSI is 2.9 volts DC



This is typical factory preset for a GM 3 bar application. IE, Turbo Buick 2.2 volts DC



This is typical factory preset for a GM 2 bar application. IE Corvette 2.7 volts DC

Tuning suggestions

First, best place to tune an alcohol system is the race track under closed track conditions. I do not recommend hi-speed testing of products on public roadways where you or others may be in-danger. Also no expressed liability is expressed with the use of this product. USE AT YOUR OWN RISK.

Ok, we're ready. Set pump gain knob to 6 and bring turbo up to your initial PSI setting(recommend ½ half of factory boost setting) see if LED illuminates, if not re-calibrate setting in main controller. Once this is done, monitoring engine knock, race car…. If knock retard is encountered, ascertain if the knock is occurring as the boost increases(transitional) or is occurring at due to high boost levels.

Adding gain to the knob(clockwise) increases pump pressure output. If the knock is occurring due to transitional, increasing initial pump speed or decreasing turn-on point will aid these conditions. Again every vehicle is different, the initial and turn-on will more than likely never be recalibrated once system is setup. They will not correct a tuning problem and/or engine fault.

Timing suggestions, Low timing and high boost. Setting up the fueling, timing, coupled with the alcohol output requires time and patience. Do small steps at a time and enjoy the product and its technology.

The pump features an allen screw to adjust pressure activation. Every vehicle is different, as will be the setting of this screw. Suggestion is to have it sense pressure early on. If there ever is an issue with the system(empty tank, tank leak, clogged feed line, etc) this will advise of a problem. Although it can be set to activate under higher pressures. This is a personal preference. And the brown wire can be used for triggering boost controllers as well. No pressure=no Hi Boost

TIPS

On applications like the Buick Grand National, I wire a 12 volt bulb across the pump output terminals (+, -) . This allows me to see the bulb brightness increase as the boost level increases. And light dimly when the initial pushbutton is depressed. Other options are the use of an electric pressure gauge (optional) or mechanical pressure gauge (optional) to setup pressure. It is not needed, but can be handy for initially setting up controls. Other options are the use of a voltmeter across those terminals.
Most if not all street applications, once the knobs are set, they rarely get changed. Minor changes to the gain knob is all that will usually be required. Keep an eye on the road at all times…and if an unreasonable amount of knock is encountered, take your foot of the pedal and diagnose problem.

www.alkycontrol.com