

Swamp's Diesel Performance

Competition Parts For Your Diesel

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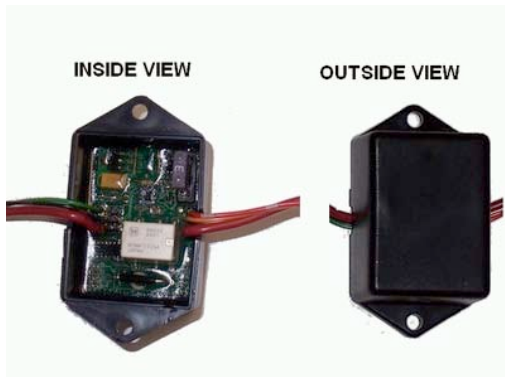
Custom Water Injection System
Installation instructions & parts list

Included in our System:

(1) VC2 flat panel controller/display



(1) Failsafe Control Box (FCB)



(1) 7 gallon tank (includes vented lid, straps, brackets, & bolts)

(2) 250psi pumps

(x) Length of 1000psi burst rated 1/4" poly tubing

(2) 800cc/min (12.8GPH) Super Atomizing water injectors



(2) Nozzle holders



(2) Solenoid valves (normally closed)



(1) 30amp relay & relay wiring pigtail

(5) Bundles of wire (for power, ground & relay activation)

(1) Length of boost boost tubing & T fitting

(x) Miscellaneous wiring terminals, inline fuse & holder & t-tap connector(s)

Using a multimeter (or test light), find a factory wire within your cab that has 12v power with the key in the 'on' position. Double check to make sure this wire is NOT powered on with the *key out* of the ignition. This wire will be T-tapped into to trigger the relay which controls the two water pumps, as well the (2) solenoids, as well as power to the VC2 controller.

Locate a convenient spot to mount the two water pumps, and secure them to the vehicle. It is recommended to mount the pumps at a level lower than that of your water tank. Also, the pumps should be no more than 6 feet from the tank. Also, mount your VC2 controller in the cab of the vehicle.

If using our 7-gallon tank, locate a suitable mounting location, & temporarily mount it using the included mounting hardware & straps. The tank will need to be drilled & tapped (1/8" NPT) for the lines to each pump. If mounting the tank in the bed of the truck/vehicle; **ENSURE** that the fittings (to be tapped into the tank) & poly tubing will clear any components under the chassis (clear of frame rails, bed support braces, factory wiring, fuel lines, cross members, driveshaft's, etc).

Also pick a location (under dash) & mount the FCB (failsafe control box) where it can still be accessed to make the wiring connections.

Open the hood of the vehicle and choose the locations for your water injection nozzles. Mark these points with a sharpie, or go ahead and use a punch to slightly dimple the pipe so that you can drill and tap for the nozzles. Remove your intercooler piping, drill & tap the piping, and clean any shavings from the inside of the pipe(s) prior to installing on

the vehicle. The water injection nozzles need to be flush or protrude slightly from the inside of the piping.

Pick one of the solenoid valves, and label it FIRST stage. Label the other solenoid valve as SECOND stage. Securely mount the solenoids in a convenient location, where they can still be accessed for wiring & tubing connections.

Also tap into the factory rubber MAP sensor line with the supplied brass T fitting and run the black (supplied) boost tubing to the VC2 controller.

Also, mount the (supplied) relay near one of the batteries in the engine compartment.

If using on a vehicle equipped with an intercooler, we recommend installing the first stage nozzle as close to the turbocharger compressor outlet as possible (pre-intercooler), and the second stage nozzle approx. 6" from where the air splits to either cylinder head.

If using 3 nozzles, with 2 nozzles on the second stage. We recommend drilling & tapping the intake "Y" pipe in the valley of the engine, such that you have one nozzle on each leg' of the "Y". *Be sure that you are not drilling in an area of the piping/or "Y" that would interfere with the silicon boots &/or clamps.*

VC2 wiring & connections

Once all the hardware components are mounted, you can begin making the electrical connections.

Run a black (ground) wire from one of the engine batteries (negative pole) to the black wire on the VC2 controller.

Run a red wire from the 12v (key on power) wire, located earlier to the orange wire on the VC2 controller. INSTALL the 10amp INLINE FUSE in this wire.

From the VC2 controller, locate the red wire on the controller, and run a new (red) wire to the RED wire on the first stage water pump.

From the VC2 controller, locate the green wire on the controller, and run a new (green) wire to the BLACK wire on the first stage water pump.

From the VC2 controller, locate the yellow wire, and run a new wire to pole 85 on the electrical relay.

From the VC2 controller, locate the blue wire, and connect it to the blue wire on the Failsafe Control Box (FCB)

From the VC2 controller, locate the small, 22gauge orange wire, and connect it to the small orange wire on the FCB (failsafe control box)

Connect the black boost tubing, Tee'd from the (factory) MAP sensor hose to the plastic barb/nipple on the back/side of the VC2 controller.

(Some wires from the VC2 will have no connections, since we aren't using optional tank float, tank fluid level input, etc)

First stage pump wiring

From the first stage pump, locate the red wire, and connect it to the FUSED RED 16gauge red wire on the Failsafe Control Box.

From the first stage pump, locate the black wire, and connect it to the LARGE GREEN wire on the VC2 controller.

First stage SOLENOID wiring

From the FCB (failsafe control box), locate the small, 22gauge GREEN wire and run it to one of the wires on the FIRST STAGE solenoid. Does not matter which wire on the solenoid...

Connect the *other* wire from the first stage solenoid to the 12v KEY ON power wire, which was located previously.

Second stage pump & Second stage solenoid wiring

Run a red wire from the 12v (key on power) wire, located earlier to pole 86 on the relay.

Run a red wire from pole 87 on the relay to the red wire on the second stage pump.

Run the black wire from the second stage pump to a good chassis ground, (or the negative terminal on the battery).

Locate the red wire on the second stage pump (that connects to pole 87 on the relay). And tap into it with *one* of

the wires from the SECOND STAGE SOLENOID (again, it doesn't matter *which* wire). The other wire on the solenoid can be connected to a good chassis ground (or neg. battery terminal).

Relay wiring (many of these connections will have already been made)

Pole 85 to small yellow wire on VC2 controller

Pole 87 to SECOND stage pump RED WIRE

Pole 86 to KEY ON 12v power, located previously

Pole 30 to 12v POSITIVE ON BATTERY.

Tubing Water Connections

Install (2) fittings into bottom of tank.



Run a length of the poly tubing from the one fitting in the tank, to the INLET of the first stage pump.

Run a length of tubing from the outlet of the first stage pump to the FIRST STAGE solenoid.

From the outlet of the first stage solenoid, run a length of tubing to the first stage water injection nozzle. You may have installed this nozzle near the compressor housing of the turbocharger (or on the driver's side intercooler pipe).

Secure the poly tubing to the chassis (frame, etc) to prevent chaffing, or coming into contact with moving parts (steering shaft, driveshaft's, etc) or parts of the engine that will be hot.

From the other/second fitting in the tank, run a length of tubing to the inlet of the second stage pump.

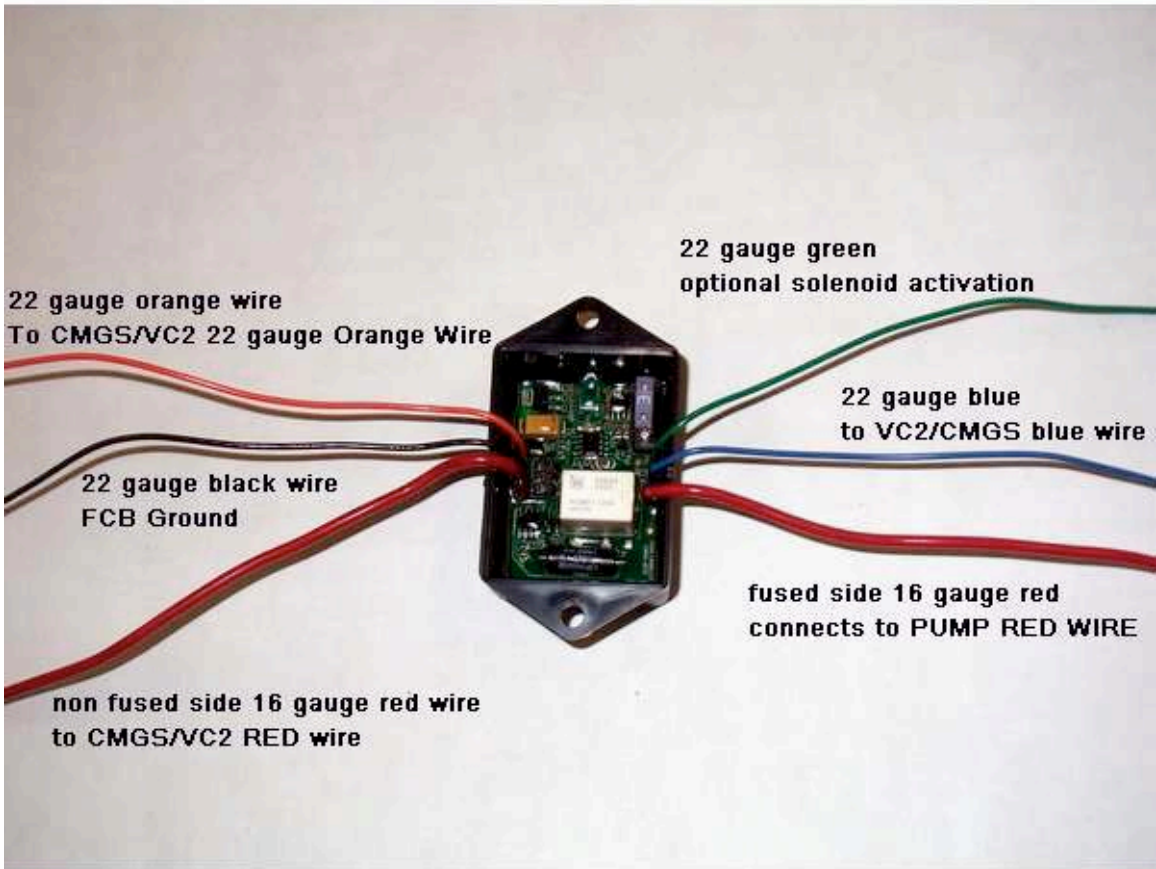
From the outlet of the second stage pump, run another length of tubing to one side of the SECOND STAGE solenoid.

From the second stage solenoid, run a length of tubing to the second stage water injection nozzle (or to a T-fitting, if you are running 2 nozzles on the second stage).

LAST PAGE INCLUDES INSTRUCTIONS ON TESTING THE SYSTEM AS WELL AS SETTING UP THE CONFIGURATION/PARAMETERS TO POWER THE SECOND PUMP.

You must complete the (one time) config of parameter #5 (set to 003) in order for the second pump to come on.

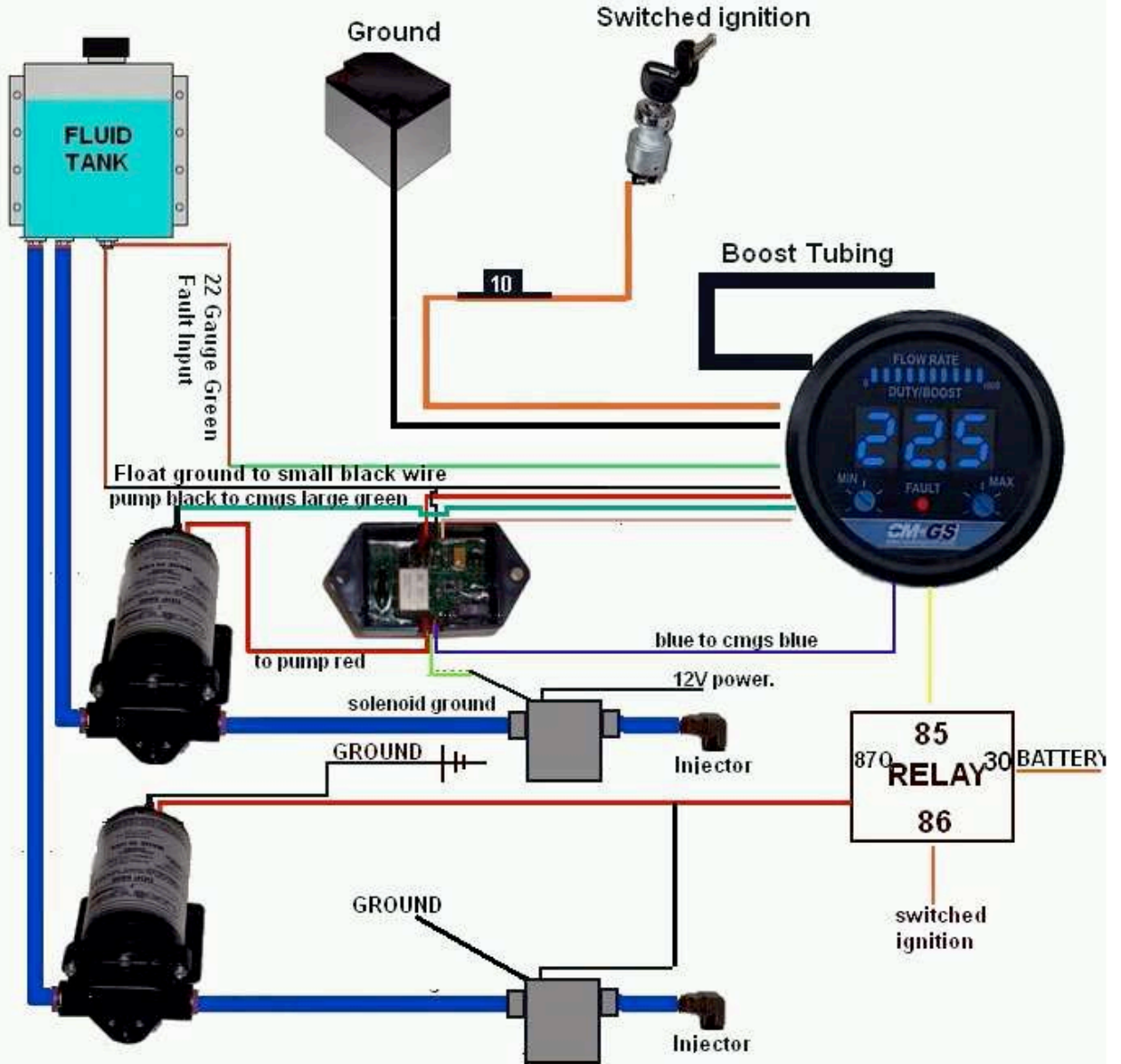
Failsafe Control Box schematic (read instructions above for connections for this application)



CMGS SYSTEM X

Dual Pump, Dual Solenoid Kit.

NOTE: YOU MUST SET PARAM #5 TO 003



VC2 Controller Wiring/First stage pumps Testing:

- 1) Remove the nozzle(s) from your charge pipe so it will spray in the air.
- 2) On the VC2, Set both the MIN and MAX 'knobs' to 1 and count down from 5 to 0 to go into configuration mode.
- 3) Turn the *max* dial until only 6 bars are lit up on the controller.
- 4) Turn the min dial through the various duty cycles (make sure water is in your tank). Water will start flowing...
Doing the above the system will turn on and prime. What this does is prime your line. It does not test the failsafe.

The CMGS FS and VC2 FS are by default setup to inject based on boost, display boost and flow rate with no failsafe. TO GET THE SECOND PUMP TO COME ON when the first pump hits its' max boost setting YOU MUST set up parameter #5 to "003"

To set up the SECOND STAGE PUMP CONTROL, & once you have tested the VC2 controller (first stage operation)...you will have to go through the following CONFIG operation to get the second stage to come on.

- 1) Remove the nozzle(s) from your charge pipe so it will spray in the air.
- 2) On the VC2, Set both the MIN and MAX 'knobs' to 1 and then count down from 5 to 0 to go into configuration mode.
- 3) Turn the *max* dial until only 5 bars are lit up on the controller.

- 4) Turn the *min* dial until you see “003” displayed in the LED’s.
- 5) Turn the MAX dial ALL the way to the right.
- 6) Turn the MIN dial ALL the way to the right...this will store the “003” setting in memory.

Now, you can go back to test the operation of BOTH pumps by following these instructions:

- 1) Remove the nozzle(s) from your charge pipe so it will spray in the air.
- 2) On the VC2, Set both the MIN and MAX ‘knobs’ to 1 and count down from 5 to 0 to go into configuration mode.
- 3) Turn the *max* dial until only 6 bars are lit up on the controller.
- 4) Turn the min dial through the various duty cycles (make sure water is in your tank). Water will start flowing from the first pump when duty cycle is low...the SECOND pump will start flowing when the duty cycle reaches 100% (turn the min dial all the way to the right during this second test to activate the second pump, which simulates max DC% of the first pump)

If you want to inject based on VOLTAGE or *boost and voltage* or if you
Want to *display* something other than boost or want to activate the failsafe you will need to understand how VC2 Failsafe works. Before anything can happen we must get the VC2 into configuration mode. To do this set the **MIN** and

MAX both to 1 and the VC2 will count down from 5. Once at zero the screen will come back and the fault light will blink steady. This is configuration mode.

See the attached pages for configuring the Failsafe & other parameters.

Or read pages 4-7 at the following link:

<http://www.coolingmist.com/instructions/cmgsfs.pdf>