VaporWorx

We Give You Gas

WARNING

Working with fuel is dangerous. If fuel is handled improperly it can lead to fires and death. It is imperative above anything else that all appropriate safety measures be used to control the fuel and any ignition sources, including static electricity, heat, sparks, and any other sources. Proper high-pressure fuel lines and connections must be used in accordance to the manufacturer's specifications and routed away from any potential sources of heat, ignition, and protected from mechanical damage. If you are unsure about your work or safety, stop work immediately and consult with a qualified automotive technician and/or safety official.

VaporWorx Ally Control System for Dual Fuel Pump LT Engine Series Applications.

Thank you for your purchase of the VaporWorx fuel module speed control system for use with the GM LT series crate engine control systems utilizing twin GM fuel pump modules (Gen5/6 ZL1 or equivalent). The GM Fuel Pump Power Module will act as the master system controlling the primary pump. The VaporWorx controller will act as an "Ally", taking its commands from the GM FPPM. This allows the power burden to be shared by both controllers, hence reducing the chances of overpowering the FPPM if operating both pumps alone.

The purpose of the "Ally" system is to allow the GM FPPM to control one pump in the fuel module while the VaporWorx controller powers the other. When used in this manner the power output of the FPPM remains within factory thresholds, meaning that no reprogramming or special adders are needed.

The Ally works by using the FPPM positive output to the pump as a guide for function. Both pumps, powered by separate sources, are thus under the single control of the GM system. Hence, all of the factory feedback and diagnostics remain in place.

VaporWorx was founded on Customer Satisfaction and Service. We strive to treat people and our products the way we would want others to treat us and the products we purchase. That is why our electronics products are tested thoroughly before they are packaged and shipped. VaporWorx stands behind our products for one full year after purchase with a well-stocked repair facility and quick turnaround times. VaporWorx does not want to be the reason you cannot enjoy your car. The Terms of Warranty and Service are as follows:

Limited Warranty

VaporWorx warrants its products to be free from defects in material and workmanship under normal use and if properly installed for a period of one year from date of purchase. If found to be defective as mentioned above, it will be replaced or repaired if returned along with proof of date of purchase. This shall constitute the sole remedy of the purchaser and the sole liability of VaporWorx to the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations whether expressed or implied, including any implied warranty of merchantability or fitness. In no event shall VaporWorx be liable for special or consequential damages. This warranty is only valid on products purchased from VaporWorx or their Authorized Dealers.

Service

In case of malfunction, your VaporWorx component will be repaired free of charges according to the terms of the warranty. When returning VaporWorx components for warranty service, Proof of Purchase must be supplied for warranty verification. After the warranty period has expired, repair service is charged based on a minimum and maximum charge rate. (Contact VaporWorx for current rates).

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The following steps will help to ensure good fuel module operation and long life. Careful attention to wire routing, protection, strain relief, connectors, crimps, etc. will lead to a longer lasting and more reliable installation. Appropriate safety equipment and procedures should also be worn and utilized at all times. A minimum BC rated fire extinguisher must be within reach at all times. Wear protective gloves when handling fuels and do not smoke or have any sources of ignition anywhere in the working area.

1) Disconnect the battery from the vehicle.

2) Note that all of the braid included in the kit is much easier to work with if the ends are sealed with a soldering iron immediately after cutting. The braid can also be cut with a soldering iron.

3) Find a suitable **flat** surface to mount the VaporWorx pulse width modulation controller (black box) near the vehicle battery. It is imperative that the box be mounted as close and directly to the battery as practical. If not connected directly to the battery controller malfunction will result. Do not mount the controller near sources of heat such as exhaust systems, radiators, etc. The cooler the electronics are during operation, the longer their expected life will be. #8 x ¾" screws are provided for mounting. Confirm that the screws will not penetrate fuel tanks, lines, electrical, or any other systems during installation.

4) Connect the supplied black 10ga 4' long wire from the controller BAT/PUMP- to the battery negative terminal. Do not chassis ground or controller malfunction will result. Excess wire length should be trimmed but allow for easy access, strain relief, routing, etc. Ring terminals are included in the kit and must be securely installed. Heat shrink tubing is provided to insulate the ring terminal crimp similar to that of the one already installed on the wire. Attach, but to not tighten the nut on the VaporWorx controller. The negative wire to the pump will be attached later.

5) Perform the same for the 10ga orange BAT+ fused wire included in the kit. The wire is installed into the fuse holder in a loop. Cut to the lengths needed and terminate the ends using the provided ring terminals and heat shrink like that in Step 4. Tighten the brass nut on the VaporWorx controller to 10inlbs. *Do not over-tighten the brass terminal nuts on the controller.*

6) Plug the two-cavity GT150 connector with the red/grey wires into the similar connector on the VaporWorx controller. Install the protective braid and route it to the area around the FPPM.

7) The 20ga grey wire in Step 6 ties in to the FPPM fuel pump + wire. The FPPM pump + is typically a heavy gauge grey wire that goes to the fuel pump but this must be verified. Exercising caution, strip approximately ½" from the heavy gauge FSCM grey wire.

8) Cut and strip the 20ga grey wire to the appropriate lengths, slip 2pcs ½" long shrink tubing onto the braid, then secure the wire to the FSCM grey wire by soldering. Seal the connection with heat shrink tubing provided. Heat the ½ long heat shrink pieces to the ends of the braid to keep them from fraying.

9) Connect the FPPM wiring to the primary pump as outlined in the GM instruction manual.

10) The red 20ga wire will not be used. Insulate the end to protect from shorting to ground. The red wire can be used for voltage boosters utilizing a 0-5v input for voltage ramping. Contact VaporWorx if a voltage booster option is being considered.

11) See Diagram 1 and 2 for Steps 12-15.

12) Route the red and black wires from the VaporWorx fuel module wiring harness white plug to the VaporWorx controller. Allow sufficient length for pump access. Cut to length and install the supplied wire braid. Install heat shrink tubing to seal the ends of the braid to the wiring. **Install grommets where the wiring passes through sheet metal or any sharp edged hole. Protect all wiring from sharp edges, moving equipment, and heat sources. Take care not to pinch the wire between the tank and trunk floor.**

13) Attach the red wire from the VaporWorx fuel module wiring harness to the Pump+ output on the VaporWorx controller. Ring terminals are provided. Tighten the brass nut to 10inlbs. *Do not over-tighten the brass terminal nuts on the controller.*

14) Attach the black wire from the fuel module wiring harness to the BAT/PUMP- terminal on the VaporWorx controller. Tighten the brass nut to 10inlbs. *Do not over-tighten the brass terminal nuts on the controller.*

15) The final wiring should layout like that in Diagram 2.

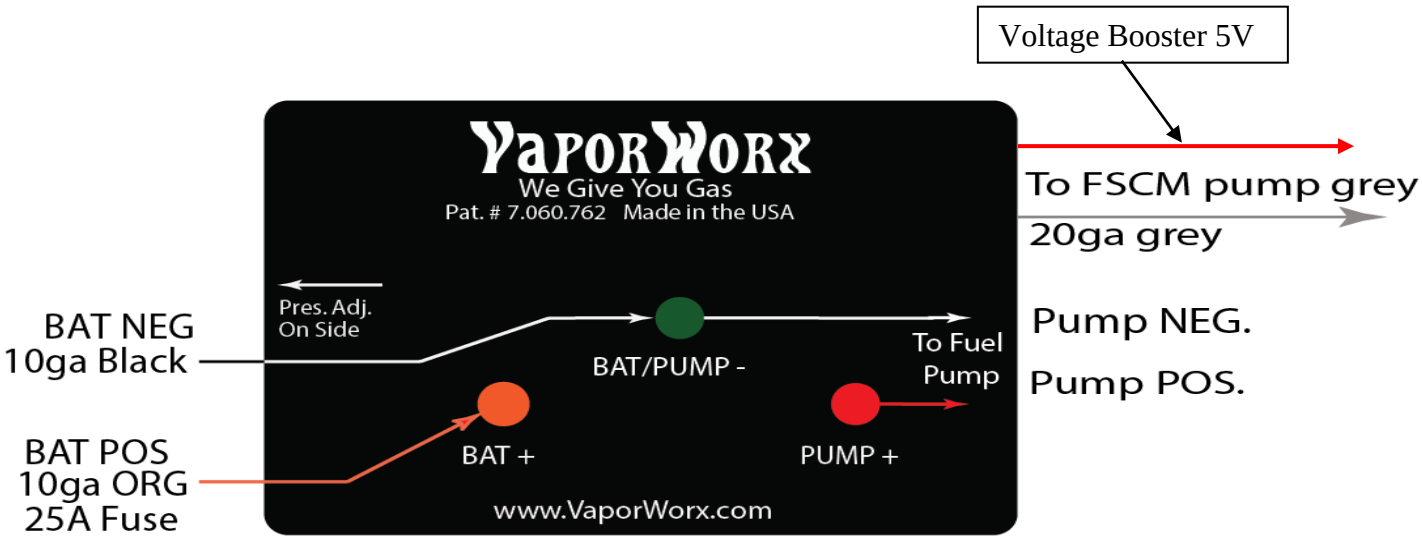

Diagram 1. Basic wiring layout for the VaporWorx controller. The wiring may enter/exit the controller area as needed provided that there is no chance of shorting between connections. The 20ga red wire can be used as a 0-5v voltage booster input (JMS FuelMax).

Preparation Required Prior to Engine Startup

1) The VaporWorx controller is tuned to work with the OE FPPM. No further tuning is needed.

2) Insert the 25A fuse into the WeatherPack fuse link.

3) Confirm that all wiring is connected per the Diagrams and that the fuel lines are properly attached and sealed.

4) Connect a pressure gauge to the engine fuel rail or monitor via the vehicle OBDII port.

5) Turn on the ignition switch. The fuel system should turn on for 1-2 seconds during the prime cycle. Turn off the ignition.

6) If the fuel level in the tank is above the fuel pump module bucket reservoir you may immediately cycle the ignition on again to continue to prime the fuel system. Continue cycling until pressure is built. If the fuel level in the tank is below the fuel pump module bucket reservoir, wait at least one minute before cycling the ignition. This allows the reservoir to refill.

7) Check for leaks and repair as needed.

8) If no leaks are found, start the engine and confirm the fuel pressure.

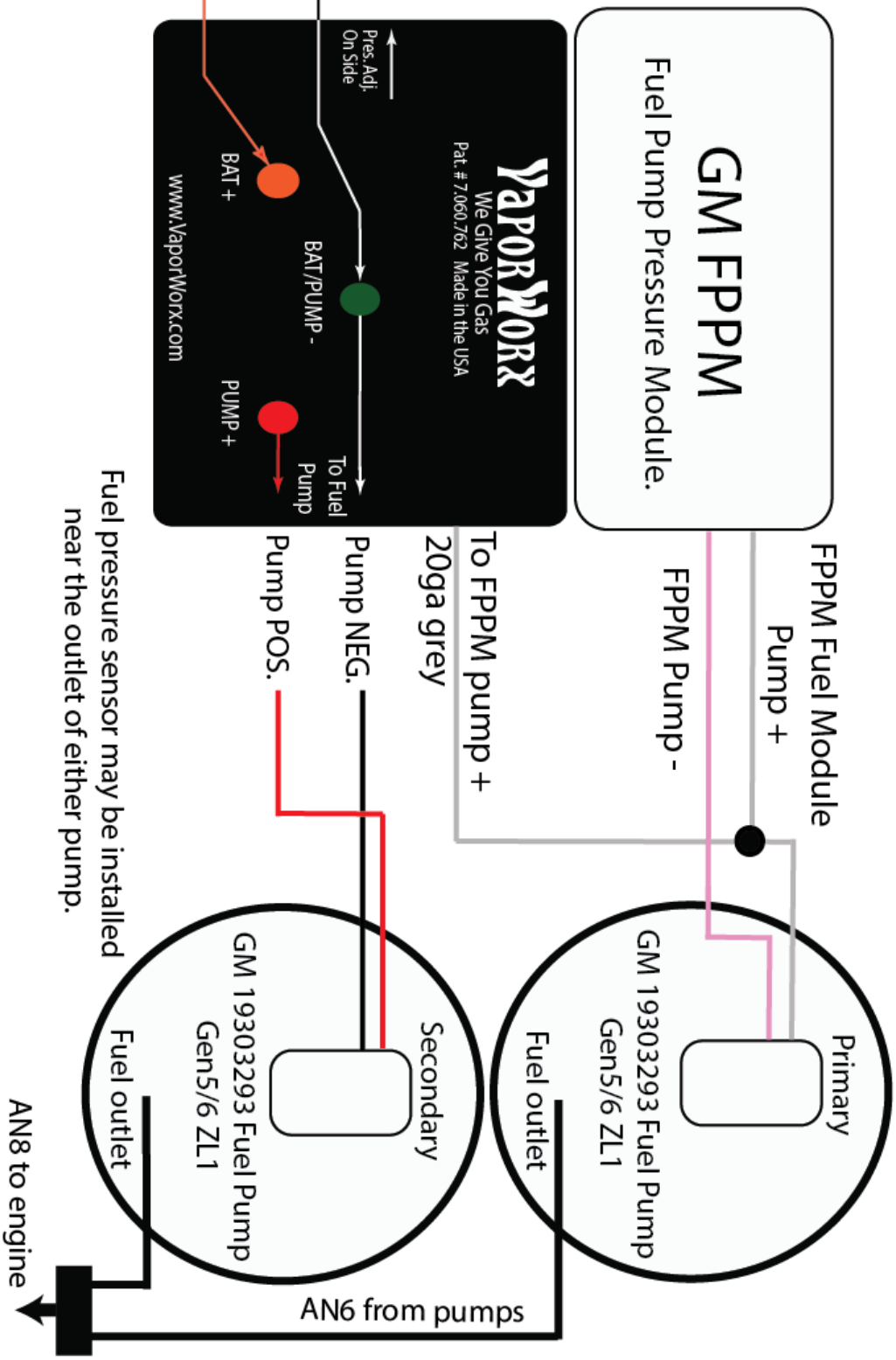

Diagram 2. Overall system layout.