

Lethal Performance 2011+ GT/Boss Return Style Fuel System Installation Instructions

The Lethal Performance Return Style System is a fairly easy install. By taking your time and following the steps below it will ensure a successful install. **These instructions are to be used along with the CP-E fuel hat and Lethal Performance Dual Relay Return Style Wiring Harness Instructions.**

IMPORTANT NOTES:

- The installation of this fuel system should be done by a professional only.**
- The supplied metal crimp clamps should be used to secure the hose onto the barb fittings. Keep in mind that they can't be installed after fittings have been installed on each end. So install 1 fitting at a time and then secure it with the clamp once you've verified the hose is at the length you'd like it to be.**
- Be careful installing the fuel hat into the tank as the level sender is very fragile. It's also expensive to replace so take your time and be cautious.**
- Installing the hose ends on the hose can sometimes be difficult. It helps to use some wd40 on the hose and the barb fitting as well as to warm up the hose with either boiling water or a heat gun. If you use a heat gun make sure not to burn the hose. Only use it to warm/soften the hose. If you burn the hose it will get brittle and crack once it cools and can leak fuel if not done right.**

Watch this Youtube video to see how it's done.

<http://www.youtube.com/watch?v=iPTTX1lIORk>

- Remove the negative battery wire from the battery using an 8mm socket.
- Install the CP-E Fuel Hat with the instructions which can be downloaded from the installation instructions section located at the bottom of the home page on Lethal Performance.com.

- Install the 90 deg 10anx 10an XRP fitting onto the feed of the fuel hat and the Fragola FPS-495101 -8an O-ring x -6an male flare radius fitting onto the return port of the fuel hat.
- Now it's time to run the feed line. This can all be done with the tank still in place however it's much easier to drop the tank using a transmission jack or similar. This will give you a lot more room and flexibility to work with.
- Install a -10an straight hose end onto one end of the -10an hose. From the underside of the car feed that hose with the straight hose end on it up the drivers side of the fuel tank from underneath the vehicle. Once the hose is run up the side of the tank you can then install the 10an hose end onto the 90deg feed fitting on the fuel hat.
- Assemble the fuel filter with the (2) 495106 (10an O-Ring x -10an Flare) Radius Fittings.
- Find a location on the subframe where you prefer to mount the fuel filter. Once you've found a location you'd like to mount it cut the -10an hose coming from the tank and install another -10an straight hose end onto it. Attach it to the fuel filter. Attach another -10an straight hose end onto the remaining section of -10an hose and attach it to the other end of the fuel filter.
- Now you're going to run the fuel line from the fuel filter into the engine bay. Using the -10an hose you'll feed it from the underside of the car up through the K-member and fender lining following some of the hard lines in that area. It's easiest to have someone help you from the top of the car while you feed the line from underneath. Attach a -10an 90deg hoseend onto the -10 hose. This is what you'll use to attach the feed line onto the -10an fitting on the center port of the regulator.
- Now you're going to assemble the Aeromotive 13110 fuel pressure regulator. Install the -8an port plug supplied with the regulator onto the far right port Then install the -10an x 10an male flare onto the center port on the regulator. Lastly install the (2) XRP 90deg -8an x -8an fittings onto the regulator. These will be for the feed lines that come out of the regulator to each rail. Plug any remaining ports on the side of the regulator.
- Install the -6an radius fitting on the bottom of the regulator. This is for the return line.
- The regulator is going to be installed on the drivers side firewall just behind the drivers side strut tower.
- Assemble the Metco fuel rails with the supplied -8an port plugs at the front of each rail. Then install the (2) -8an x -8an male flare straight O-ring boss fittings onto the rear of each rail. Install the 0-100psi Mechanical Fuel Pressure gauge onto one of the 1/8" NPT ports located on the passenger side rail. Make sure to use TEFLON paste on the threads to seal it properly and prevent leaks.
- Now you're going to run the feed lines from the regulator to the front of each rail. The first line is will be about 4' long and goes from the far left port on the regulator to the rear port on the passenger side fuel rail. The end that goes on the regulator uses a 90deg -8an hose end. The end that attaches to the rail will use a 45deg -8an hose end. The drivers side feed line is about 2ft 3" and uses a 90deg -8an hose end to attach to the rail and a -8an 90deg hose end to attach to the regulator.

Running the Return Line

The easiest way to run the return line is starting from under the vehicle. Start at the rear of the car and install (1) -6an straight hose end to one end of the -6an hose. Feed the hose up the front side of the fuel tank in the same location as the feed lines were run. It's good to have someone inside the vehicle help you guide the hose through. Once the line is in the car attach it to the aluminum block that mounts to the top of the fuel hat with a -8an ORB fitting x -6an male flare. Re-attach the aluminum block to the fuel hat with the supplied bolts. Once the block is tightened down you can tighten up the return line to the hat.

Start to run the -6 hose towards the front of the car following the feed lines. Feed the line from the underside of the car up through the K-member and fender lining following some of the hard lines in that area. It's easiest to have someone help you from the top of the car while you feed the line from underneath.

Then connect the -6an return line to the bottom port on the regulator with a -6an straight hose end.

Now you can go back and tighten all fittings and mount the regulator. Make sure to tighten them good.

Wiring

Use the supplied wiring harness and start running the power wires from the back of the car to the battery. Run the power wire behind the rear seat on the passenger side to pass it into the vehicle from the trunk. Continue to run the wire under the carpet along the passenger side by lifting up the sill plate. To run the power wire into the engine bay you'll need to remove the battery and battery tray. Once you've done that you'll find a rubber grommet under the battery tray in the engine bay. Use another piece of wire to pass through the grommet into the vehicle. Once you've done that use attach the power wire that you've run to the front of the car from the trunk and snake it through the grommet back into the engine bay.

Attach the fusible link to the (2) red power wires. It's recommended to solder and heat shrink the connection. Once that connection is made you can connect the ring terminal on the fusible link to the positive battery terminal screw.

Now you can go to the rear of the car and finish the wiring.

The next step is to connect the wiring harness to the stock wiring in order to trigger the relays. Start by removing the plastic cover on the rear wall of the trunk. From there you'll locate the stock FPDM (fuel pump driver module). Peel back the wire loom several inches from the FPDM connector so that you can see each wire and it's color. You're going to cut the white wire (05-09 GT/GT500) or the violet wire (2010+ GT/GT500) or the Violet with Green tracer wire (2011-2013 GT/Boss). Then connect that wire (wire side) to the

BLUE wires from the relays. Make sure to heat shrink the connection. After take the BLACK ground wires from the relays that have the ring terminal on them and ground them to the chassis at the same location the FPDM is ground.

Mount the relays in the area around the FPDM with some self tapping screws.

Once the relays have been mounted run wires with the 6 pin connector on the end of them to the fuel hat assembly. Plug the 6 pin connector onto the connector on DivisionX fuel hat. If you're using this harness with an older model hat which doesn't have the 6 pin connector on it you can cut the 6 pin connector off of the harness and wire the harness directly to the wires on the hat. The (2) BLACK larger black wires go to the BLACK ground wires on the fuel hat. The ORANGE and GREEN power wires on the harness to each red wire on the hat which is power to the pumps.

LEVEL SENDER WIRES

On the wire harness where the 6 pin connector meets the fuel hat you'll see (2) short wires with butt connectors crimped onto them. Those are for the level sender. You're going to connect the YELLOW wire on the Lethal Harness to the YELLOW wire on the stock wiring harness. Then connect the BLACK or PURPLE wire on the Lethal Harness to the BLACK/ORANGE wire on the stock wiring harness.

We recommend you solder and heat shrink the connections for each pump. Make sure that you use extreme caution soldering around the fuel tank as you do not want to cause any sparks or open flames close to gasoline.

Installing the Boost/Vac Hose to the regulator

Using the T-fitting you'll T into the boost vacuum line that goes to your stock fuel rail pressure sensor. From that T you'll run the supplied vacuum hose to the barbed fitting on the regulator. Use the small zip ties to secure all connections.

Now you'll want to go back and tighten all connections as well as use the supplied loom clamps to secure the hose safely to the chassis. Once you're finished, double check all connections and fittings that they are secure. Now you can raise the tank back up and secure it with the tank straps.

Re-attach the negative battery wire to the battery. Cycle the key and check for leaks. Double check again for leaks and clearance issues.

Setting the fuel pressure Loosen the nut on top of the regulator. Make sure to have the correct size allen key available as well as you'll need that to turn the screw on the top of the regulator. With someone watching the gauge on the fuel rail you'll turn the key to the on position but do not start the car. This will pressurize the system. Once the person watching the gauge verifies the amount of pressure the gauge sees you can adjust the screw to either increase or lower pressure. Make a few turns then turn the key off and then on again. Once you've got the gauge to read the base pressure you want to start with cycle the key a few times just to make sure it continues to see the desired fuel pressure. After the desired fuel pressure is reached tighten the nut on the regulator. Key the car on again to make sure that when you tightened the nut the pressure setting stayed the same.

Once the base pressure is set you can then start the car. You can give the car some throttle to see if pressure goes up with boost. A quick blip of the throttle should increase boost over the base pressure on most applications.

Final Preparation

Since you've just converted from a returnless style system to a return style system you're going to need your tuner to turn off the fuel pump driver modules in the tune as well as let the computer know that the car is now running a return style fuel system. This must be done before trying to start the car in order for the car to run properly.

Now you can go back and tighten up all of the fittings through the entire system making sure they are properly secured. Double check all of the wiring and connections once more before putting the negative battery wire back onto the battery.

Re-install the negative battery wire to the battery. Since there is no fuel in the fuel lines at this point you'll want to cycle the key several times to get the fuel flowing through the lines, filter and rails.

Now you're ready to start the car. Start the car with the hood open and the back seat still removed. Let the car idle for about 20 seconds. Turn the car off. Go back and check all of the connections to make sure no fuel is leaking. If there's a leak, re-tighten the fittings. Try and start the car again following the same procedure. After 20 seconds check all of the fittings again. If there are no leaks you'll then want to drive the car for a minute giving the car a little more

throttle. This should pressurize the lines more then they would be if the car was just idling. Stop the car and re-check all of the fittings once again to make sure there's no leaks. Although you've performed the steps to make sure there are no leaks continually check the system after driving for the first few times out on the road.

You're done. Thanks for choosing Lethal Performance. Please let us know if there's anything else we can assist you with.