ECS Stage II/Stage III Fuel System Instructions

The ECS Stage II and Stage III fuel Systems are designed for late model Corvettes exceeding 750 RWHP.

The System Comes with a custom in tank fitting a Areomotive Fuel Pressure Regulator, a -6 an return line and an assortment of Anodized fitting to make the entire system work.

You are working with Fuel. Be mindful of any sources of heat, sparks or any other conditions that could cause a fire. ECS cannot and will not be held responsible for any damages caused by installation.

The stage II and Stage II systems require Removal of the driver side fuel tank for removal of the factory fuel Pressure regulator.

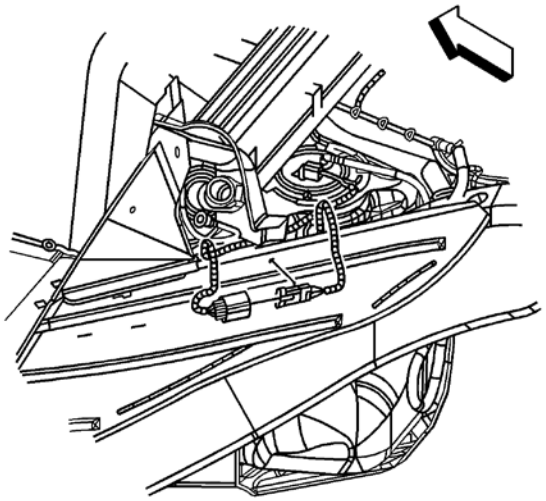
Start with an empty fuel tank.

Disconnect the negative battery cable.

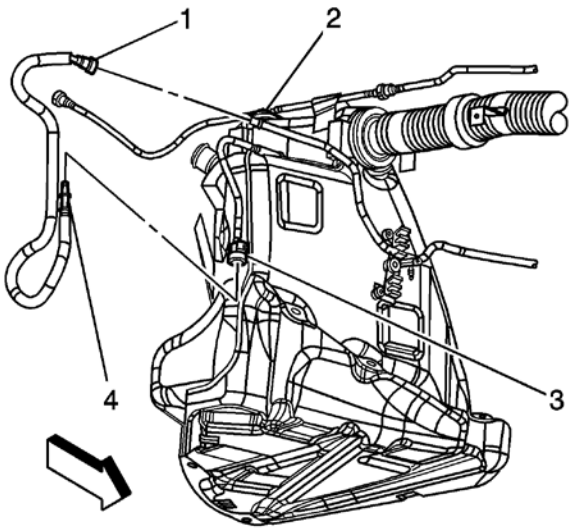
Remove the driver's side rear wheel and inner fender liner.

Remove both mufflers and exhaust midsection

Disconnect the fuel fill hose and recirculation line from gas door

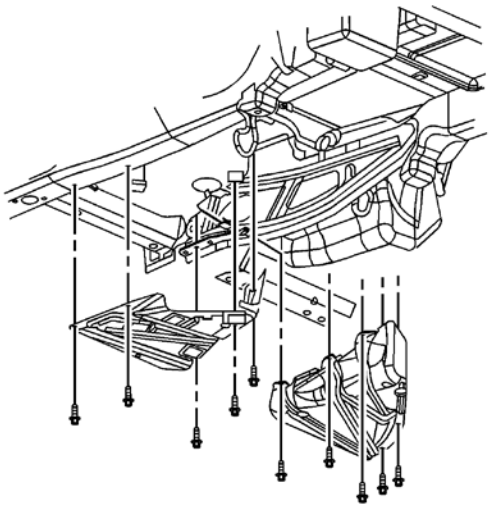


Disconnect the fuel pump harness connector.



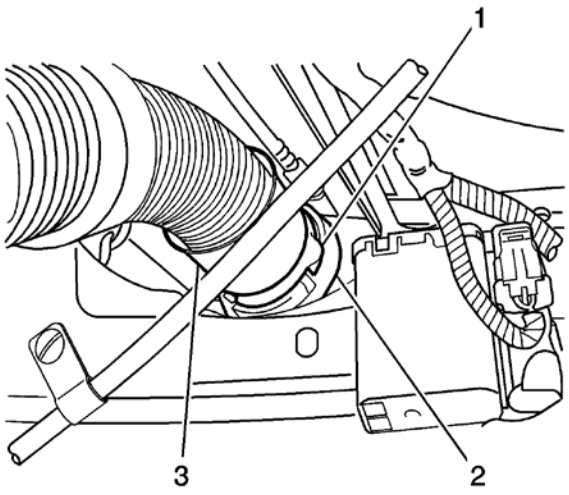
Disconnect the fuel feed line at the rear of the left fuel tank.

Cap the fuel pipes to prevent fuel system contamination.

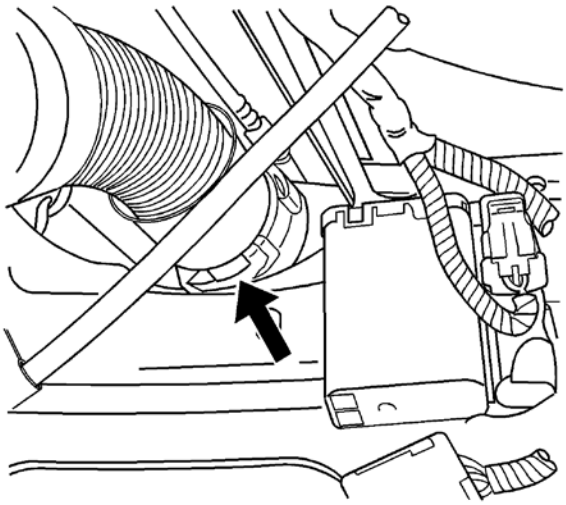


Support tank from below and with Loosen the fuel tank aluminum shield in order to drop

the tank approximately 1 inch.



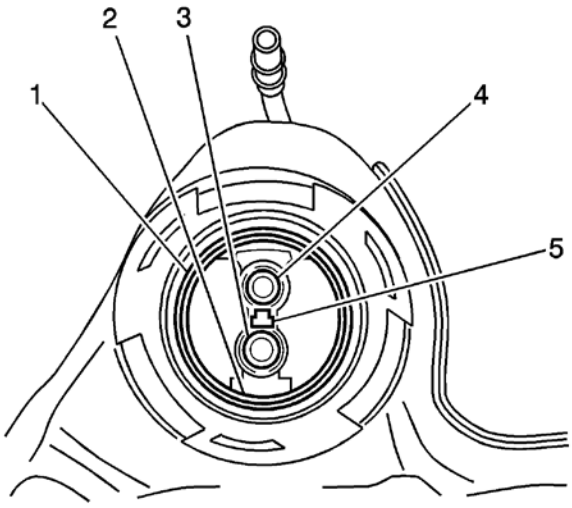
Disengage the crossover tube connector position assurance (CPA) retainer by pulling the tab (1) outward and rotate.



Important: The crossover tube CPA is released when the latch disengages from the tank connection groove.

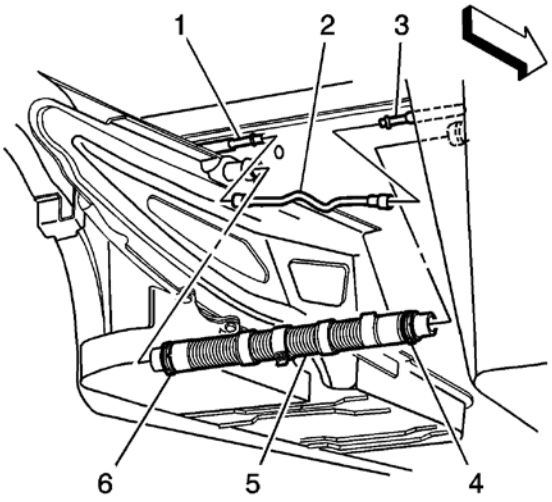
Rotate crossover tube collar counterclockwise to disengage.

Disconnect the crossover tube from the left fuel tank by pulling straight out.

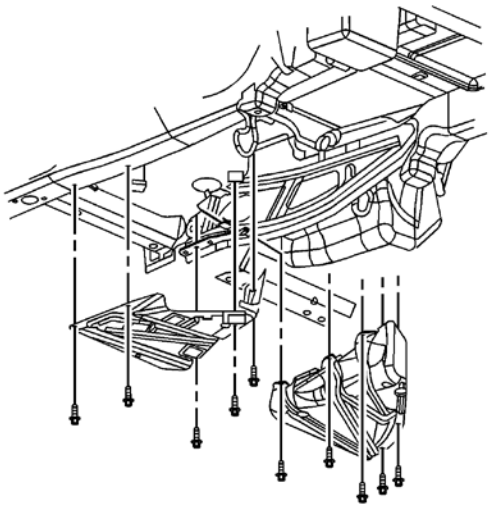


Important: Take care not to disturb the internal O-rings in the fuel tank connections.

Disconnect the evaporative emission (EVAP) crossover pipe (2) quick connect fitting at the left fuel tank.

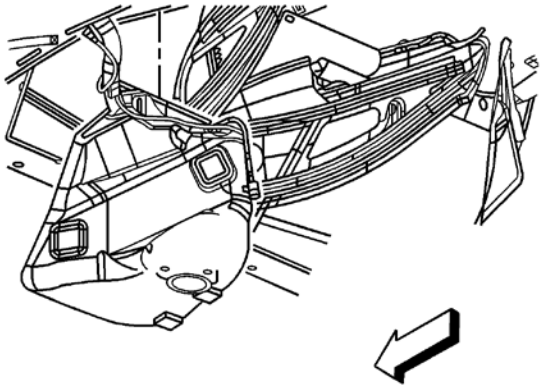


Cap the EVAP pipe (1, 3) to prevent system contamination.



Remove the fuel tank strap mount bolts.

Remove the fuel tank strap from the vehicle.



Remove the fuel tank.

With the tank on a clean level surface, use a brass hammer or punch to remove the factory fuel pump retaining ring by gently taping on tabs to rotate. Remove ring.

Lift Fuel pump module up and out of tank. Remove fuel cross over line from bottom of pump and remove from tank. Be patient removing the module. They will often swell while in tank from sitting in fuel.

Remove Crossover line by depressing clips on both sides gently pulling downwards on crossover tube. Be careful not to damage line or retainer clip.

Once module is removed, drain excess fuel from assembly, and place on a clean work surface.

We will be replacing the factory fuel pressure regulator with the ECS Fuel Pressure regulator block off plate.

With pick tool, remove ground wire from plastic retainer on factory regulator.

Next remove the plastic retaining ring that holds the FP regulator in the module by pressing the retaining tabs at the 6 and 12 o'clock positions inward and pulling cover off FP regulator.

Remove Fuel Pressure regulator from FP assembly, using pliers if necessary.

Transfer o-rings from factory FP regulator over to the ECS Fuel Pressure Regulator Block off plate. (just the black o-rings need to be moved)

Seat ECS Fuel Pressure Block off plate in the FP assembly and reinstall the plastic retaining ring, and the factory ground.

While the FP assembly is out of the tank, remove any excess fuel from the tank.

Using a a file or wiz wheel with a Roll Lock sanding disk, prepare the exterior surface of the tank to be sure that the surface is flush and true.

Approximately 3 inches from seam and 2 ¾ inches from bottom of tank make a mark where you will be drilling for the ECS in tank auxiliary fuel pick up assembly.

Using supplied 1 ¾ hole saw, drill tank as shown being sure to de burr tank and clean any residual debris from tank afterwards.

Installing ECS Auxiliary Fuel Pick Up Assembly

With the Brass wire tool provided, insert fuel backer plate into tank as shown.

Suspend backer plate freely in tank.

Insert fuel puck up with fuel sock being careful not to hit backer plate.

Slide backer plate over fuel pick up tube

Pull fuel pick up tube to hold backer plate to back of tank rotating fuel block so the return is at the 12 o'clock position.

Reinsert wire tool into backer plate through return opening or one of the screw holes to support backer plate holding it against the back of the tank.

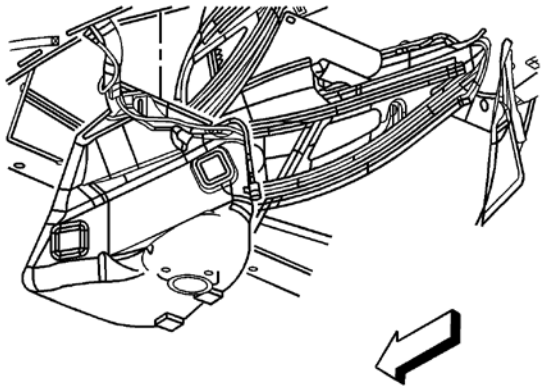
Begin threading one of the provided allen bolts with o-ring through pick up and into backer plate.

Install second allen bolt (with o-ring) and snug down. Torque bots down to 12 ft/pounds.

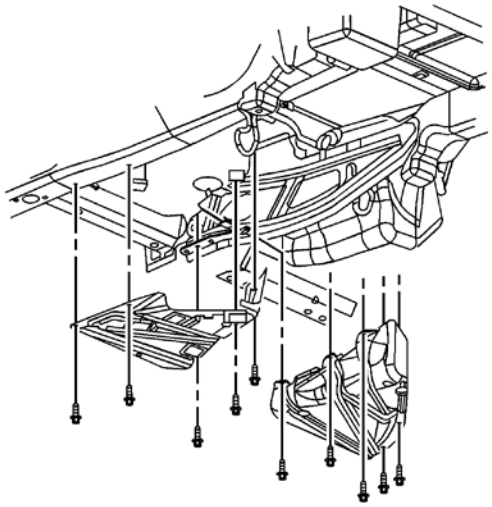
Install 90 deg 6AN fitting on one end of supplied braided return fuel line. (All ECS Systems are shipped unassembled. It is your responsibility to make sure that your connections are correct and leak free. If you are unsure of how to properly install AN fittings be sure to look it up as this is critical to your safety and the performance and reliability of your fuel system.)

Installing the return line is easier with the motor, drive train and exhaust out of the car. Install supplied -6 braided fuel return line from the back of the car by the tank going over frame rail and through drive train tunnel, securing return line to factory fuel lines. Be sure line is clear of any obstacles, and will not be pinched or chafed in anyway by drive train. Bring fuel Line up firewall and secure for later installation. Be sure to leave enough fuel line to reach the front of the factory fuel rail.

Re Install Fuel Tank *(DIRECTIONS)

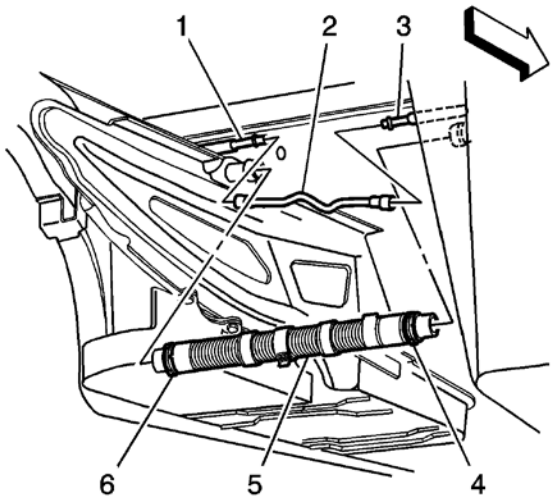


Place the tank on the aluminum fuel tank shield and raise tank into vehicle.

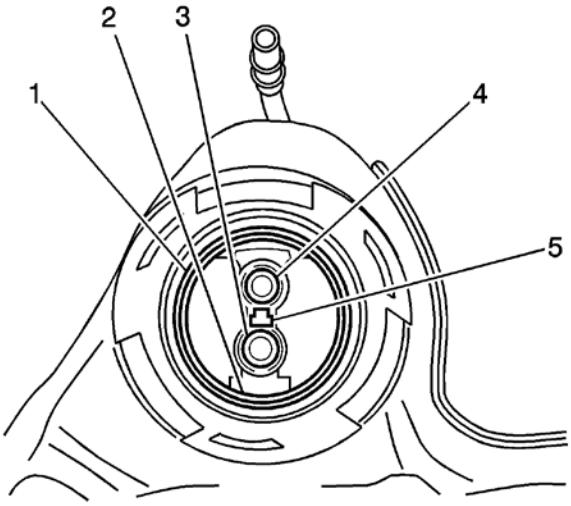


Install the fuel shield bolts loosely leaving the tank hanging approximately one inch while still supporting the tank from below.

Reinstall EVAP pipe.

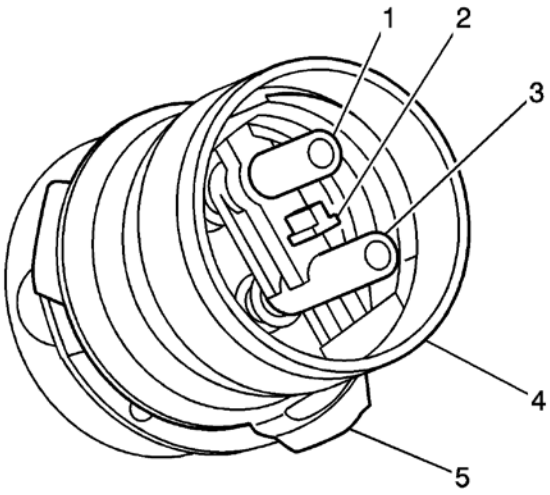


Connect the EVAP crossover pipe (2) quick connect fitting at the left fuel tank.



Lubricate the crossover tube to fuel tank connection O-rings (1-4) with GM P/N 1051717 rubber lubricant.

Important: Note the location of the T-shaped alignment feature (5) between the jet pump feed/return pipes connector.



Lubricate the crossover tube O-ring mating surfaces (1-4) with GM P/N 1051717 rubber lubricant.

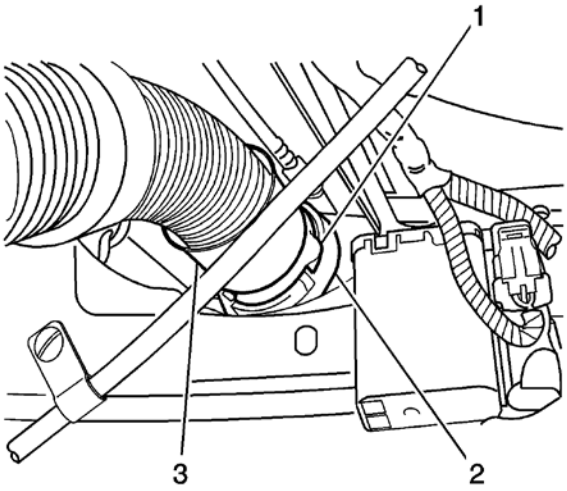
Important:

- Note the T-shaped alignment feature on the crossover tube.
- The crossover tube will not fully seat into the fuel tank if the jet pump lines are misaligned.

Connect the crossover tube to the left fuel tank using the features previously noted.

Important: The crossover tube collar tangs will not latch if misalignment exists.

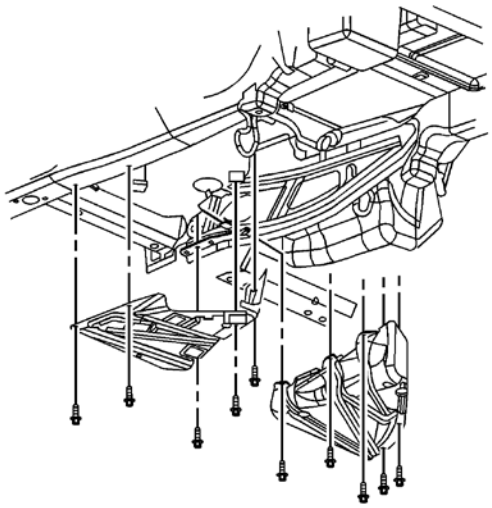
Rotate the crossover tube collar (3) clockwise to engage the tangs.



Rotate the crossover tube CPA retainer counterclockwise past the collar latching tang and push the tab (1) into the locked position.

Important: If the CPA retainer is locked into position, the crossover tube collar will not rotate.

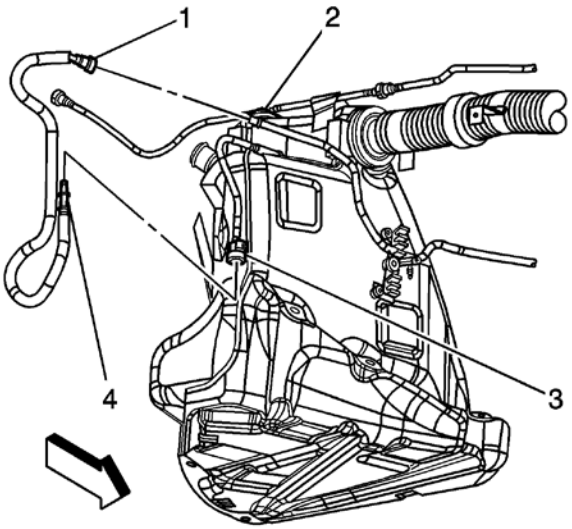
Test the crossover tube to fuel tank connection by attempting to rotate the crossover tube collar counterclockwise.



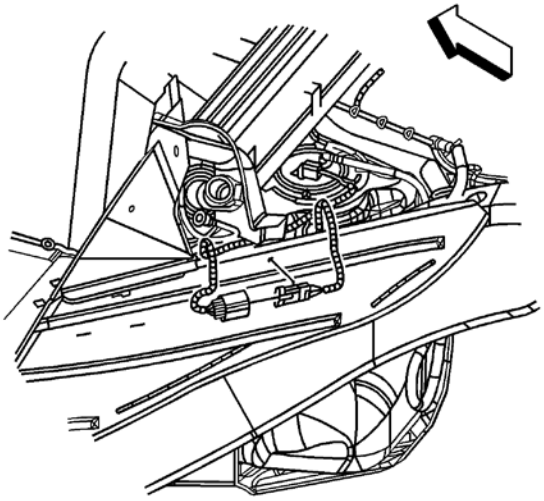
Tighten the fuel tank strap bolts.

Tighten
Tighten the bolts to 25 N·m (18 lb in).

Remove the cap from the fuel pipes.



Connect the fuel feed pipe (4) at the rear of the left fuel tank.



Connect the fuel pump jumper harness connector.

Connect the fuel fill hose and recirculation line to the fill tube.

Once the motor is back in the car, you'll be installing a 90 deg 6an in the end of the return line as shown. This 90 will attach to the 6an union on the Aeromotive 13105 pressure regulator as shown. Remove shrader valve from factory fuel line. Install the provided 4an female/4an female to the Aeromotive regulator first . If desired, install fuel pressure gauge sending unit to other side or regulator. When complete, attach regulator to fuel rail being careful not to over tighten. Once installed, attach 7/32nd vacuum hose to port on regulator with the other end attached to vacuum port on brake line (not provided in kit – they are available at www.eastcoastsupercharging.com)

At the tank, Install 6an return line on to top fitting on the ECS Aux fuel Block.

Install 8an 120deg fitting on the ECS Aux Fuel Block for fuel pump as shown. (a 90degree fitting is shown in pics. This has been updated to a 120 degree fitting.

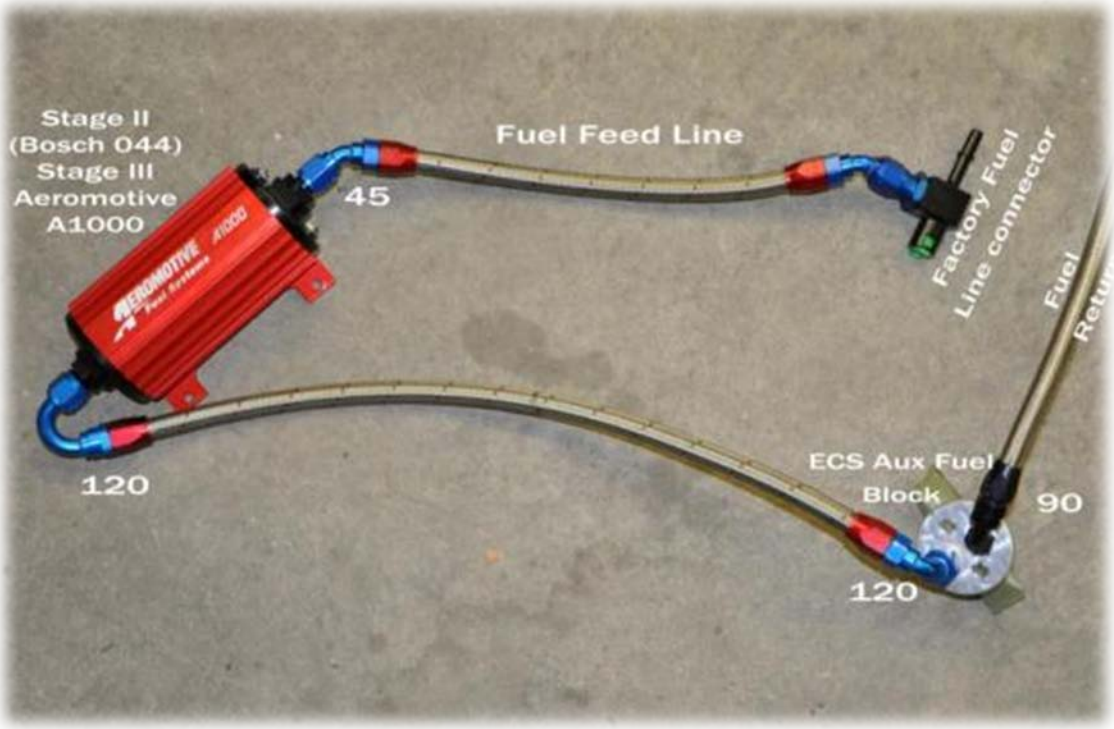
Take 12” of the Provided 8AN Braided Fuel Line and Install a 45deg fitting, followed by the male/male 8an union, and the provided fuel line adapter as shown.

On the other end of the braided 8an line, install a second 45 deg fitting. This line goes from your aux pump outlet to your Black Fuel Adapter.

The Fuel Line adapter will snap in place between the factory fuel pump outlet and the factory fuel feed line as shown below.

With a second length of 24 in 8 AN hose, we will assemble the line from the ECS auxiliary fuel block to the Pump inlet using a 120 degree fitting on either end.

When Assembled, this system will look like this.



Wiring the system

Wiring the ECS fuel system is very simple. Follow the diagram below being certain that all connections are to clean ground sources on the frame and soldering and/or shrink wrapping all connections.