

# HOW TO INSTALL YOUR FR SERIES ELECTRIC FUEL PUMP

## **READ INSTRUCTIONS COMPLETELY BEFORE ATTEMPTING INSTALLATION**

The FR series Electric Fuel Pump is designed to deliver fuel at a specified flow rate and pressure. It has been manufactured under the most exacting quality control procedures and has been designed to meet the most advanced state of today's electric fuel pump technology.

## **HOW THE FR SERIES ELECTRIC FUEL PUMP WORKS:**

When supplied with suitable electric power, a control circuit in the FR pump sends current to a coil. This coil produces a magnetic attraction for the pump piston (armature) and moves it down to compress a spring. The electric current is then interrupted. The compressed spring is then free to push the piston back to the top of its stroke. This reciprocating motion allows the FR series to pump fuel with the aid of two check valves. An inlet valve assembly and a piston mounted outlet valve.

## **WHAT THE FR FUEL PUMP IS DESIGNED TO DO:**

This FR fuel pump is designed to deliver fuel at a specified pressure. It can function as a primary pump (replacing mechanical fuel pump) or as an auxiliary pump (assists current primary pump) for most vehicles.

### On carbureted applications (FRA, FRB, & FRC):

The FR fuel pump self regulates to a predetermined pressure when the carburetor is full, and responds to float movement in the carburetor as required.

- When the engine demands more fuel, the pump increases its flow rate.
- When the engine demand drops, the pump reduces its flow rate.

When installed and operating properly, you should be able to hear the FR fuel pump cycling as the coil is turned on and off automatically by the electrical circuit contained within the pump.

The electric fuel pump will not perform satisfactorily if used on vehicle with a vapor return line.

### Diesel lift pump applications (FRA, FRB, & FRC):

The FR pump will deliver fuel to the diesel injection pump, assuring a positive pressure at the pump inlet. The FR pump is designed to refill diesel filters after service or replacement.

### For transfer pump applications, including "fuel polishing" systems (FRA, FRB, & FRC):

The FR pump will run continuously as long as there is electrical power supplied to the pump.

### For heater or stove applications (FRD):

FRD pumps will slow their cycling rate to deliver only the fuel required by the stove carburetor. FRD pumps can also fill day tanks for units without carburetors.

FR fuel pumps are designed to pump the following fuels:

1. no-lead regular gasoline
2. premium gasoline
3. gasoline-alcohol blends
4. diesel fuel
5. bio-diesel fuel
6. Stoddard solvent
7. E85

## **INSTALLATION PRECAUTIONS**

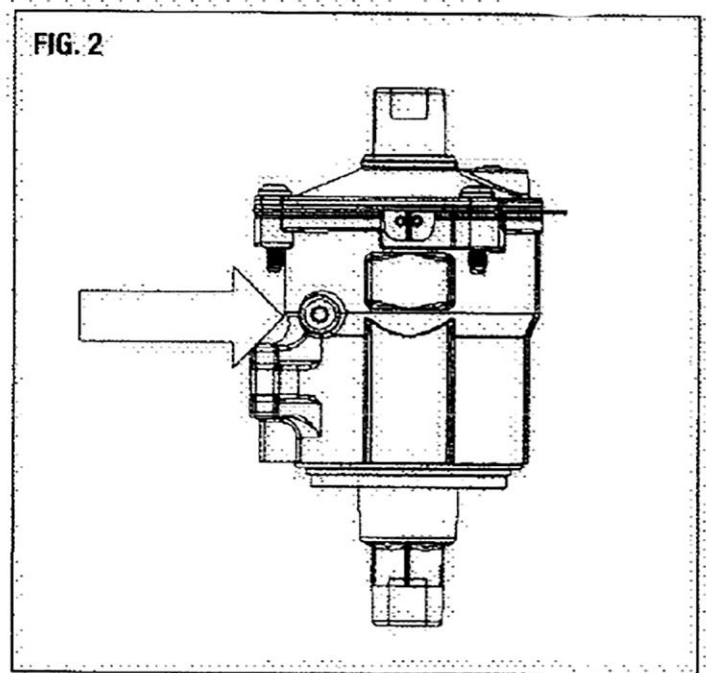
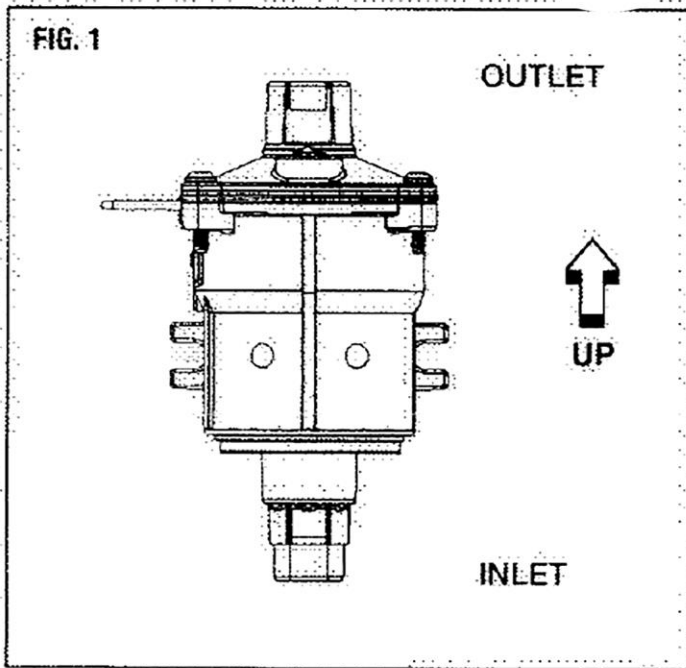
1. Work in a well ventilated area.
2. Disconnect the vehicle ground cable at the battery.
3. Do not mount pump over or near hot exhaust components.
4. Use #16 AWG wire or larger for electrical hook-up and install a 5 amp fuse.
5. Mount pump as near the fuel tank as possible. For carbureted applications, mount the pump 12" below carburetor level.
6. Install a fuel filter between fuel tank and electric fuel pump.
7. This pump is not intended to supply fuel injectors in fuel injection systems. It is suitable as a lift or supply pump for gasoline EFI and diesel engines.
8. An oil pressured safety switch should be incorporated in the circuit to shut off the fuel pump in the event of a collision or engine failure.
9. Marine gasoline applications must have the pump grounded to the battery ground using screw 96-3037 and ring terminal 187-12 or equivalent (see Fig. 2).

## **PUMP MAINTENANCE**

FR series electric fuel pumps are designed to pump no-lead regular and premium gasolines, gasoline-alcohol blends, E85, and diesel fuel as well as biodiesel fuels (20% and 100%).

The pump should not require maintenance if protected from contamination with a suitable filter under normal conditions, however, the pump's moving parts are subject to wear.

**S.W. Maxima Tech, LLC will accept no responsibility for damages caused by chemical additives or any fuel not listed above.**



### INSTALLATION INSTRUCTIONS:

**Step 1.** Locate a desirable pump mounting location along fuel line, away from heat and splash, preferably close to the fuel tank. Use vehicle frame for mount whenever possible. Drain the fuel lines if possible.

**Step 2.** When the pump location is established, clean the area where the pump will be mounted. Drill necessary holes and mount the pump as shown in **Fig. 1**. If the pump is used to replace an existing pump, use a tubing cutter to remove at least 12 inches of the metal fuel line, centered at the pump location. (Take care to prevent dirt, chips, etc. from entering cut fuel lines).

**Step 3.** Make line connections with lengths of 5/16" (8 mm) ID fuel hose cut to fit. Use the four clamps (#195-49) furnished. Two go over the hose on the fuel lines, and two go over the hose at the pump fittings. Install fuel filter between fuel tank and pump using hose clamps.

**Step 4.** If an original mechanical fuel pump is by-passed, remove the old pump and cover the mounting hole with a suitable plate.

**Step 5.** Using #16 AWG or larger wire, connect the positive pump lead (red) to the vehicle positive power supply, utilizing a 5 amp fuse. If the application utilizes an engine ignition switch, assure that the pump is "on" only when the engine is "on" (and cranking during start). The pump should turn on and off with the ignition switch, however, it should not be powered by the line to the ignition coil.

**Note:** If it is necessary to use a ground through the body of the pump (one wire connection-negative ground), the ground lead (black wire) should be cut to length of ~ 50 mm (2.0 inches) from the pump body. Strip ~ 7 mm (.28 inches) of insulation from the end of the wire and install the 187-12 ring terminal securely. Use screw part number 96-3037 (or equivalent) to secure the ring terminal to the cylindrical mounting boss (See **Fig. 2**) located adjacent to the mounting bracket. (Torque to 20 - 24 in lbs).

### CAUTION:

**Gasoline is extremely flammable and care must be taken to clean up any spilled fuel prior to reconnecting the battery ground cable or turning on the fuel pump. Failure to clean up spilled fuel can lead to a fire.**

Check all the connections to see that they are dry and that no fuel is leaking. Tighten or repair any connections that leak.

To avoid any electrical, vapor or clogging problems:

1. Make sure all fittings are tight.
2. Install an in-line fuel filter between the fuel tank and the pump.
3. Check carefully for leaks along the fuel line and at the inlet and outlet of the pump. Fuel leaks can be dangerous and could reduce the life of the pump.