18388, 18389, 18394, 18395
Universal Fuel Pump
Installation Instructions

**IMPORTANT INSTALL REQUIREMENTS:**

1. Must have at least a 4.5” diameter flat surface on the fuel tank to install this pump.
2. Minimum vertical install height of 9.75”.
3. Pump cannot be mounted horizontal (TOP MOUNT ONLY).
4. Baffling required at the pickup point for pump longevity and performance.

**CAUTION:**

Installation of this product requires detailed knowledge of automotive systems and repair procedures. We recommend that this installation be carried out by a qualified automotive technician.

Installation of this product requires handling of gasoline. Ensure you are working in a well-ventilated area with an approved fire extinguisher nearby. Extinguish all open flames, prohibit smoking and eliminate all sources of ignition in the area of the vehicle before proceeding with the installation.

When installing this product, wear eye goggles and other safety apparel as needed to protect yourself from debris and sprayed gasoline.

**WARNING!**

The controller used in this product has a fixed polarity. ENSURE THAT THE POLARITY IS CORRECT ON CONNECTION (red wire to battery red wire, black wire to battery black wire)! Reversing the polarity will render the controller inoperable. IMPROPER INSTALLATION WILL VOID ALL WARRANTIES FOR THIS PRODUCT!

Maximum continuous operating pressure should not exceed 70 psi.

The enclosed pump uses ORB ports, they are NOT PIPE THREAD and utilize NO THREAD SEALANT. You must install ORB port fittings with o-rings to seal the fitting into the pump.

Kit includes:

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>1 x Brushless fuel pump</td>
<td></td>
</tr>
<tr>
<td>1 x Filter Assembly</td>
<td></td>
</tr>
<tr>
<td>1 x ¾ tube</td>
<td></td>
</tr>
<tr>
<td>10 x Teflon washer’s</td>
<td></td>
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<tr>
<td>1 x 10AN ORB tube clamp</td>
<td></td>
</tr>
<tr>
<td>1 x Pump Retainer Ring</td>
<td></td>
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<tr>
<td>1 x Pump Gasket</td>
<td></td>
</tr>
<tr>
<td>10 x Pump mounting bolts</td>
<td></td>
</tr>
<tr>
<td>2 x Retainer ring mounting screws</td>
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</tbody>
</table>
Aeromotive system components are not legal for sale or use on emission controlled motor vehicles.

The following steps are typical of most installations:

1. On the top of the fuel tank find a 4.5” diameter flat area for fuel pump location (towards the rear of the tank is the best location). Mark the center of this location so it can be cut out.

2. Use a 3.5” hole saw to cut out the pump hole. Lower the pump into the hole and use a transfer punch to locate the 10 mounting holes. Remove the pump and drill the holes using a .225” drill bit. Drill two more holes for the pump retainer ring 180 degrees apart. Refer to figure 1-1 for these two holes.

3. Now take an 82 degree chamfer tool and chamfer the two holes for the pump retainer ring. Once finished it will look like figure 1-1.

![FIGURE 1-1](image)

4. Construct baffling for the filter pick area. This is key for pump performance and longevity. Typical baffling size is 8x8x5. Use figure 1-2 for reference.
5. Drill two .375" holes near the bottom of the baffling running from the front to rear of the vehicle. Also construct an 8" x 1.6" x 1.6" wall along the bottom of the baffle box for the return to feed into. This will keep the fuel calm at the pickup point and reduce the chance of cavitation. **Figure 1-3**

6. Typical position for the baffle box is below the fuel pump cut out although they can be mounted apart. For this illustration we will use the most common. Position the baffle box below the fuel pump cut out and secure it to the floor of the tank. When finished it will look like **figure 1-4**.

**NOTE:** Pump does not need to be mounted directly above the baffle box. It can be mounted anywhere on the top of the tank as long as you can get a tube from the pickup filter assembly to the inlet of the pump.
7. Now install the fuel pump retainer ring into the tank and secure it with the two tapered screws provided. Use some thread sealant on the threads to prevent leaks. **Figure 1-5**

8. Measure the depth of the tank so you know the length the pump assembly needs to be. Subtract .125-.250” off of the length, so the pickup isn’t resting on the bottom of the baffle. Cut the supplied tube to desired length. Deburr the inside of the pipe and chamfer the outside edge so it doesn’t cut the o-rings when you push the tube into the clamps (use light grease or oil to aid in assembly). Assemble the pump and filter as shown in **figure 1-6** (figure shown is the shortest configuration, 9.75”).
9. Insert the pump with gasket into the tank. Figure 1-7

10. With the pump inserted into the tank, take the supplied socket head cap screws and washers and tighten them down. Do not over tighten as it may damage the washers. The finished product should look like figure 1-8.
11. Connect the fuel pump as shown in the following diagram, +12VDC to the red lead, Ground to the black lead. A kit is available, Aeromotive fuel pump wiring kit, part # 16307. **NOTE: POWER TO THE PUMP MUST BE FLAT DC, NOT PULSE WIDTH MODULATED!**

**CAUTION:** DO NOT REVERSE THE POLARITY-CONNECT AS STATED ABOVE. Reversing the polarity will render the controller inoperable and will void all warranties for this product!

12. This pump controller allows the ability to change the speed of the pump via a 0-5VDC analog input to the yellow signal wire. **THE CONTROL SIGNAL MUST BE A TRUE ANALOG INPUT, NOT PWM.** A PWM signal can only be used if filtered sufficiently for smooth operation. The signal wire used to control the speed of the pump may be connected in ONE of multiple configuration examples as shown in the following illustrations to control the speed of the pump.

13. This pump controller has a minimum floor for pump speed of 25-30% depending on the pump. This means that fuel pump speed will not fall below 25-30% of full speed with zero input voltage on the yellow control signal wire.

14. This pump controller has a minimum voltage threshold of approximately 0.5VDC, above which, the minimum floor pump speed will begin to be exceeded. Signal input of voltage below 0.5VDC will have no effect on pump speed. This ensures allowance for minimum, closed throttle TPS settings of up to 0.5VDC are allowed and will not affect fuel pump speed at idle.
15. This pump controller has a full pump speed voltage threshold of approximately 3.7VDC, where the full pump speed will be achieved with signal input voltage at or above 3.7VDC and above which no further change in pump speed will occur. This ensures that when a TPS signal is used to drive pump speed that typical throttle openings of 70-75% and higher will ensure full fuel pump volume to the fuel rail or carburetor.

CONTROL CONFIGURATIONS:

MODE 1 – TPS or Other 0-5VDC Input Control

Aeromotive recommends the “Mode 1” control method where the 0-5VDC signal input is tied to a Throttle Position Sensor using the output wire to the ECU. The intent for this control is to reduce the fuel pump output (and thus the amount of returned fuel flow) during low throttle opening (low engine demand) to reduce excess recycling of fuel to help keep fuel tank temperatures low. Alternatively, other 0-5VDC analog output sensors (some MAF sensors, boost pressure sensor, etc.) or voltage dividing/regulating/switching components may be used. It is the customer’s responsibility to ensure a signal supply and control strategy where the fuel flow is sufficient.

If no signal supply is suitable or desired, the controller can still be wired for use as in Modes 2 – 4, as shown below, to allow different fuel pump speed and flow outputs from the pump.

MODE 2 – Constant Full Speed
**Mode 3 – Constant Low Speed**

**Mode 4 – Switched Speed On - Demand from Low to High**

Mode 4 can be activated by any relay or switch providing 5VDC or higher to the control wire. A relay for this purpose could be activated using the programmable output from a tunable ECU, or via a boost or WOT switch connected to 12VDC to name a few examples.

Ensure that any spilled fuel and any fuel soaked shop towels are cleaned up and removed from the vicinity of the vehicle.

**CAUTION:** If any fuel leaks are detected, immediately turn the ignition to OFF, remove any spilled fuel and repair the leak(s) before proceeding!
WARNING: This product can expose you to chemicals, including chromium, which is known to the State of California to cause cancer or birth defects or other reproductive harm. For more information, visit: [www.p65Warnings.ca.gov](http://www.p65Warnings.ca.gov)

AEROMOTIVE, INC. LIMITED WARRANTY

This Aeromotive Product, with proof of purchase dated on or after January 1, 2003, is warranted to be free from defects in materials and workmanship for a period of one year from the original date of purchase. No warranty claim will be valid without authentic, dated proof of purchase.

This warranty is to the original retail purchaser and none other and is available directly from Aeromotive and not through any point of distribution or purchase.

If a defect is suspected, the retail purchaser must contact Aeromotive directly to discuss the problem, possible solutions and obtain a Return Goods Authorization (RGA), if deemed necessary by the company. Please call 913-647-7300 and dial option 3 for the technical service dept. All returns must be shipped freight pre-paid to the company and with valid RGA before they will be processed.

Aeromotive will examine any product returned with the proper authorization to determine if the failure resulted from a defect or from abuse, improper installation, misapplication or alteration. Aeromotive will then, at its sole discretion, return, repair or replace the product.

If any Aeromotive product is determined defective, buyer’s exclusive remedy is limited in value to the sale price of the good. In no event shall Aeromotive be liable for incidental or consequential damages.

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This Limited Warranty covers only the product itself and not the cost of installation or removal.

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