

# Auxiliary (electric) Fuel Pumps

By Frank Daly

With a properly rebuilt fuel pump using a diaphragm made of material which is compatible with ethanol (deathanol?), a mechanical fuel pump should be all that is needed to keep your Airflow rolling down the road. After all, these cars were driven for tens of thousands of miles 'in the day' with just the mechanical pump.

However, there are a couple of reasons to consider an auxiliary electric fuel pump.

I use an electric fuel pump on most of my vintage vehicles, but I only use the pump to prime the carburetor after the car has been sitting for a while. If I plan to drive a particular car every day (such as when on a tour) or even every two or three days, I don't use the electric pump at all. However, after my cars have been sitting for four or five days or more, the fuel in the carburetor bowl and perhaps even part of the line has evaporated. It takes a great deal of cranking before there is sufficient fuel to start the car. I used to worry that this implied a leak in the bowl, but given that I find no evidence of leakage on any car, and since this occurs on all of my vintage cars, I'm convinced (as are others) that evaporation is taking place – perhaps through the opening where the accelerator pump rod passes through the top of the bowl?

In any event, I use a small momentary switch, out of site under the dash. I hold it in for about 30 seconds before starting my cars, and it always works like a charm.

Another reason to consider an auxiliary pump is the dreaded vapor lock. Modern fuels are formulated to run under a great deal of pressure – I've been told 30 psi. At atmospheric pressure, today's gas boils relatively easily. At higher altitudes, fuel boils/vaporizes even more readily. I have seen (and listened to) fuel boiling in a friend's carburetor when the engine compartment was very hot. More importantly, fuel can boil in the mechanical fuel pump and until the pump cools, no fuel will flow.

Electric fuel pumps can produce a greater rate of flow (gallons per hour) than mechanical pumps. As long as the pressure of this flow is regulated, this is fine in our older cars. The greater (and usually unnecessary) capacity of the electric pump can push enough fuel through a hot pump (or dry bowl due to boiling) to get the car going. I've only experienced vapor lock once (in my Cord, of course!). I pulled over to let things cool down. I could see that the glass sediment bowl was empty. I turned the engine over every five minutes without luck. A friend on the tour mentioned that it was too bad that I didn't have an electric fuel pump. I'd forgotten that I did have the pump which I use for priming the carburetor! I pushed the momentary

switch, the sediment bowl filled, and I was on my way. I

did use a wire with alligator clips on each end, attached to the switch terminals, to keep the pump going until things cooled down.

Having said all of that, my theory is just my theory and some folks simply want the added security of an electric pump full time. If you choose to go that route, might I offer a couple of suggestions?

First of all, be sure that the pump is wired through your ignition switch. During a regional WPC tour on a very hot day in Oregon, six of the 19 vehicles on the tour were stricken by vapor lock. One member switched on his electric fuel pump and was successful in overcoming the vapor lock. Unfortunately, about an hour later he noticed a wisp of smoke coming from under the hood. He pulled over and was attempting to open the hood when there was a large "whoomph" and the engine compartment was instantly and fully engulfed in flame. In his haste to exit the car, he had not flipped the toggle switch for the fuel pump and it continued pumping since it was not wired through the ignition switch. It was not clear what started the small fire, but this fire melted a rubber section of the fuel line (used for an aftermarket fuel filter) and the pump did its job, fueling the fire. The car was totaled.

Second, it is a good idea to bypass the mechanical pump if you are going to run the electric fuel pump all the time. Why? Because if the diaphragm in the mechanical pump is marginal and could possibly leak (often the reason for installing a continuously running auxiliary pump!), then you run the risk of pumping fuel past the diaphragm and into the crankcase. A friend in the CCCA experienced just this situation, and one day when starting his car there was a tremendous explosion. Fortunately, damage was limited to a destroyed oil pan and (I'm speculating here) possibly some soiled upholstery.

Also, since a hot fuel pump can be a source of vapor lock, if you're going to run your electric fuel pump continuously, why not eliminate this potential issue?

If you are going to use your electric fuel pump only to prime the carburetor and possibly overcome vapor lock, you need to use the right kind of fuel pump.

One pump which has become extremely popular is the so-called gear pump. Carter calls them "Gerotor Style". According to the Carter literature this pump utilizes "...a unique gear and rotor eccentric mechanism that squeezes



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**TECHNICAL Tips** *continued from page 5*

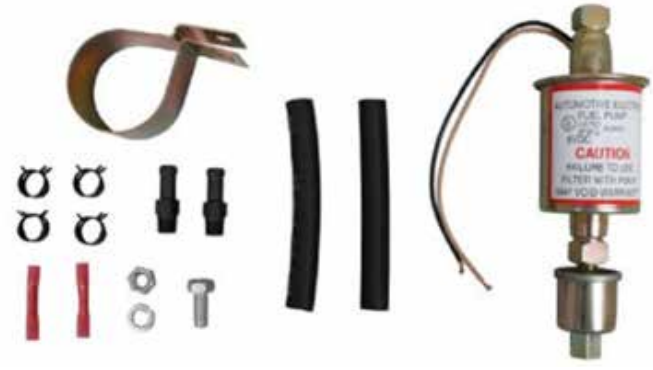
the fuel within the pump...". Here is a picture of this type of pump:



This pump is fine, and recommended, if you are going to run the electric fuel pump continuously. The advantages of this pump are small size, light weight, and quiet operation. It runs on six or twelve volts; at six volts it puts out 20 GPH at 4-6 PSI. The Carter number is P60430. This pump is not recommended for priming the carburetor or other intermittent use. The reason is that the gear/rotor mechanism restricts fuel flow when the pump is not running, and if the gear and rotor end up in just the right (actually, wrong) position when the pump is switched off, the pump can block fuel flow completely.

If you want to use your mechanical fuel pump as your primary pump, but wish to have an auxiliary electric fuel pump for priming the carburetor or for 'emergency' operation, a piston type electric fuel pump is appropriate. When this pump is switched off, it does not restrict flow through the pump, and the mechanical pump can 'pull' fuel through

this pump without additional effort. A very popular fuel pump for this use is the Airtex E8902. Here's a photo:



This pump can run on six or twelve volts. At six volts it puts out 25 – 30 GPH at 2.5 – 4.0 PSI, more than enough flow at an appropriate pressure for vintage vehicles. They are readily available at about \$35.00. I recently purchased two from Amazon.com. This style of pump works just fine in continuous operation as well.

Whichever pump you choose, mount it as close to your fuel tank as possible. These pumps are much better at pushing fuel than they are at pulling it. Neither pump uses the body as an electrical connection, so there is no issue with our positive ground cars. Simply connect the (+) terminal to a good, clean ground and wire the (-) terminal from your ignition switch and through your off/on switch – intermittent or continuous, depending on your chosen mode of operation.

Remember, points are not deducted for an auxiliary fuel pump, as long as it is neatly installed in an inconspicuous location.

*~ Happy Airflowing!*

**STREAMLINE AUTO TRAILER HAS SINGLE SWIVEL WHEEL**

MODERN streamline ideas have been applied to a new one-wheel automobile trailer for carrying luggage. The trailer consists of a rounded hood fitted over a steel frame which is attached to the frame of the automobile by hingelike couplings. A lid at the rear gives access to the interior. The trailer rides on a single wheel mounted on a swivel, and the tire is a modification of an airplane tail-wheel tire. The casterlike wheel, being free to rotate, adapts itself readily to irregularities of the road. When the car is backed, the swivel turns.

New streamline auto trailer for carrying luggage. Note the single swiveled wheel that supports it

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POPULAR SCIENCE MONTHLY

They make 70 wt. oil for turbo-charged engines now, cost \$1.80 a quart. I had to buy the case as there isn't that much call for it. Order part #527-7137 as Dave Askey suggested.

OIL FILTERS - Wix WF $\frac{1}{2}$  is a replacement for Fram PB $\frac{1}{2}$  and Purolator PER $\frac{1}{2}$  which fit our cars. Wix STILL MAKES their filter! Call (704) 864-6711 and ask who your local distributor is. Order # 51035, should cost \$13.84 each.

ROOF MATERIALS - The fine short grain pattern that runs the length of the car is available from LeBaron Bonney at \$12.95 the yard. Write them at 6 Chestnut St., Amesbury, MA or call (617) 388-3811.

AUTOMATIC CHOKES had an asbestos and wire gasket under them, if you can find one to put there.

SPOT LIGHTS are an appropriate dealer installed them.

FUEL PUMPS - Several people who drive their cars long distances have a backup electric fuel pump (AC makes a 6 volt pump). It also helps fight vapor lock that these cars are prone to. The preferred location for the pump is on the crossmember near the gas tank. You can get percolation without a pressure regulator (something else these cars are already prone to) but some run them without it.

IMPROVED CARBERATOR: A Stromberg 1938 AAV2 will solve the percolation problems and give you better carberation in general. You will need to make a leveling plate.

UNIVERSAL JOINTS - are available from NAPA and have a grease fitting. Order Precision #344 or a u-joint that fits a Truimph TR3, 1953-58.

MASTER BRAKE CYLINDERS for a 1936 Chrysler are the same as NAPA #544 for a 1952 Dodge truck.

INSTRUMENT GAGES on the Chrysler C1 are the same as the C6 or CZ (C Zed if you are Canadian!).

AIRFLOW TOYS AVAILABLE; Bricklin toy of a 1934 Airflow Chrysler from Model Expo of Fairfield, N J (800) 526-2598 at \$49.95 + \$5.00 shipping.

Except for the Wix filter I cannot take credit for this information. The rest was collected in conversations with the following people. Any mistakes are probably mine. Thank you Bob Milbrand, Ed Patterson, Ellis Claar, Jack Bryant, Joe Ferrell, Jack Hall, Duke Casaleiz and others.



## In a dilemma with your Battery or Fuel Pump?

I have help for a couple of old car problems. First, try the Optima 6 volt battery, model 6V-1050. It is half the width (10" long, 3-17/32" wide, and 7-13/16" high) of our old lead-acid batteries and has 800 cranking amps. It is sealed and leak proof and has a long life expectancy (72 month warranty). It is great for our under floor applications and makes starting much easier. They cost a little over \$100.00, but solve a lot of problems. Call 1-888-8OPTIMA for your nearest dealer.

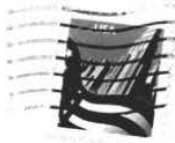
Second, the noisy, failure prone electric fuel pumps we are using which often fail due to the new gasolines eating away the rubber parts inside. My local parts store no longer has the old style, but they had a Carter P-4259 6-volt electric pump. It has a rotary electric motor operation and is quieter and much more reliable. I paid about \$125.00 for mine. It has hardware for mounting and a really good instruction sheet.

*submitted by Victor West*

*Airflow* NEWSLETTER

## Letter to the Editor

*from Jack Biickert, Parksville, British Columbia*



### **Electric Fuel Pump**

As with other members I also became frustrated with the amount of engine cranking require to fill an empty carburetor fuel bowl on my 1935 Airflow. So I mounted a 6 volt electric Carter fuel pump on the frame cross brace next to the gas tank and attached a clear plastic FRAM G1 fuel filter between the gas tank and the fuel pump. Unlike aluminum fuel filters I prefer being able to see if my clear filter is clean and not plugged. Frank is very correct in his comments that an electric fuel pump is designed to push and not suck. It is

the only fuel pump I use. No mechanical pump. My Carter fuel pump Part Number is P4259. It cost me \$184.80. It is a rotary vane pump and delivers a Free Flow Rate of 72 gph at 6 psi. This much fuel pressure is a problem because it pushes the fuel bowl float so hard it causes the fuel bowl to overflow and leak. To rectify this I installed an inexpensive Purolator PRO-FUEL pressure regulator on the gas line close to the carburetor and as such easy to access rather than trying to hide it. This fuel flow regulator can be dialed in small increments any where from 1 psi to 6 psi. Over the past 11 years of operation I found dialing it in to run at 3 psi worked just dandy. As Frank mentioned the fuel pump is positive grounded to the frame and negative wired to the ignition

## Letter to the Editor - continued

switch. I did add one feature to this. I wired in a separate inline on/off switch within reach under the dash board and just before the ignition switch so that for storage purposes or in case of an accident the electric fuel pump can be neutralized. Also please remember these electric fuel pumps run constantly and not intermittently and so if you want to park your Airflow and turn on the ignition switch to listen to the radio you can turn off the fuel pump with this inline switch. On any given day and even after weeks of storage when I turn on the ignition switch the carburetor is primed within seconds and my Airflow starts immediately.

Picture shows FRAM G1 filter and Carter Fuel pump with its mounting bracket and all the various fittings.

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