

Fuel Supply Modification for a Model T Ford

Symptoms: I just installed a new six-volt battery in my 1925 Model T Ford Runabout. The other battery was three-years-old. I thought I was ready for a *winter tour* down to get gas. After changing the oil and checking the spark, I started the engine. It took 5-seconds cranking with *lotsa* choke to *get it running!* I backed it out of the garage and let it run to warm up the engine.

After 10 minutes, the engine suddenly stopped. It was out of gas. Two gallons of gas were added and still no start.

I removed the fuel inlet line at the carburetor. It would barely *drip* fuel with the electric pump on.

Note: I run a six-volt electric pump for durable touring at 50+ MPH. Today's gas [2007] has a higher vapor pressure [like 9-11 psi] compared to 1925 gas [like 4-5 psi].

Today's gas starts boiling at a lower temperature, like around 100°F. Of course, *vapor lock* [fuel foaming] develops because underhood temperatures climb to 300°F in a Model T Ford! Fuel in the line will boil no matter how well you insulate the fuel line.

Fuel Pressure: Gravity fuel systems in most Model Ts are inadequate above 40 MPH on a hot 100°F ambient day!

If you calculate the fuel pressure in a gravity system, with the fuel tank under the seat, the carburetor only gets 0.2 [that's two-tenths] psi at the carburetor bowl with a full tank of gas! The gas will boil!

With a fuel pump, and a regulator, I adjust the pressure to 1.5 psi. No more vapor lock, plus the carburetor does not *flood*. Electric pumps without a regulator run up to eight [8] psi, way too much pressure for a Model T Ford!

Maintenance: Fuel pumps, fuel lines, fuel filters need service once a year. Most any type of fuel will deteriorate the fuel system lines if not changed. I recommend changing all fuel lines one time each year!

Safety: Old fuel lines often crack and start leaking. I have experienced 5/16 inch fuel tubing on 1/4 inch fuel fittings, **a no, no!** Obviously very unsafe! **Fires happen! We all read about fires!** Good solid sound fuel line

maintenance once a year is usually adequate for safe durable touring. **Here's how!**

Testing the Fuel System: Remove the fuel line at the carburetor inlet. Attach a long fuel line and *drape* the end into a **plastic** dishpan. Metal dishpans may spark and cause a fire. Use plastic!

Turn on the pump and watch the flow. If it pumps about one-half cup in 15 seconds, you have good flow. Check the gas in the dishpan for *grit*.

Any amount of grit is too much. Look in the fuel tank for rust, debris, and/or *shellac*. Have the tank professionally cleaned or replace it with a new tank.

Clean and repair the sediment bowl or gas shutoff valve.

Note again: I prefer the shut off lever at the tank. I turn mine off every time I park it in the garage.

With the valve installed at the carburetor, it's always possible for fuel leaks to happen.

Again, quite unsafe.

Fuel line Maintenance: Remove the fuel supply line to the electric pump. Install a long hose and route to a plastic dishpan. Turn on the gas tank lever to prove you have a strong fuel flow out of the tank. Next, remove the *screen*-type fuel filter on the electric pump inlet side. Blow through it verifying it is open. If plugged, replace it. Re-install the inlet filter.

Remove the fuel line between the carburetor and the fuel filter. Make sure the line is not plugged or kinked. Remove the regulator on the pump outlet.

Turn on the pump and measure the flow. If it's strong without a pressure regulator, replace the pressure regulator. Adjust to 1½ psi on a Model T Ford.

Pump Voltage Tests: Check the voltage to the pump when it is running and flowing fuel. You can hook the test meter at the pump switch. Ground the other test lead to the engine.

Open circuit voltage [switch off] on the hot side of the switch should be the same as the battery voltage [6.4 full charge]. Turn on the pump and watch the voltage. With a retarded

spark, crank the engine with the crank, slowly, and open the ignition points or stop the buzzing in the coils. Now read the volts again. If the pump volts are around 6.0, the pump is OK. This is normal voltage drop when pumping gas.

If the pump voltage is less than 5.8 volts, the pump is defective and should be replaced. *It's drawin' too much juice.*

Safety: Place a fire extinguisher nearby just in case.

Installing New Fuel Lines: If there are any cracks on the outer rubber fuel hose surfaces, replace all the fuel lines. Use aircraft-style clamps and tighten without cutting the new fuel lines. **See Photo 1.**

Install one line at a time, beginning at the fuel tank. As you install each line, turn on the pump to flow new fuel and clean the lines.

The last new fuel line hook up is at the carburetor. Flow the gas into a plastic dishpan and look for residue in the gas. Dispose of the gas after each flow test. Keep doing this until the gas looks clean flowing into the dishpan. **See Photo 2.**

Final Checks into Carburetor: Connect the fuel line to the carburetor elbow. Open the carburetor petcock and drain the fuel out of the carburetor bowl. Leave the carburetor petcock valve open, turn on the pump and flow fuel into the dishpan. Let it [the pump] run for several seconds to ensure the carburetor needle and seat are flushed and clean. Then, wrap a rag around your wrist and screw the petcock closed to shut off the fuel.

Leave the pump running to fill the bowl with new gas. As the bowl is filling up, the needle valve should close off stopping the flow into the bowl. **See Photo 3.**

If gas appears at the bowl top [wet], and/or it starts dripping out the carburetor back end, **stop** and turn off the pump. It is flooding because the needle valve has some dirt on the tip or the float needle is *cocked* sideways and not seating properly, the float is sunk, or the float is at the wrong level. **Wipe up fuel for safety.**

Start Up: If the carburetor is still dry on the outside surfaces with the pump on, start the

engine and check for leaks. If the carburetor bowl is wet with the pump on, repair the carburetor, making sure the float is not heavy and the float level is correct.

Fuel Thread Sealant: Permatex is making a thread sealant. When replacing the pipe nipples and/or the fuel line pipe fittings, smear the outer threads. **No Teflon tape!**

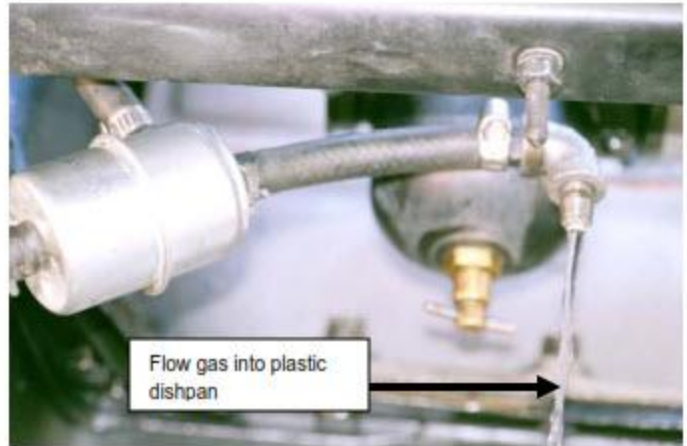
Note: If compression sleeves or inverted flare nut seals are leaking, replace fittings. Always use two wrenches to properly seal the pipe fittings and/or fuel line compression sleeves [ferrals in the good ol' days]. **See Photo 4.**

Caution: No Teflon tape ever, never, never!



PHOTO 1 - Fuel Line Service: *If the old fuel line is cracked on the outside or mushy on the inside, replace the fuel line with the correct size SAE rubber tubing [no 5/16 on a 1/4 inch line]. Install clamp. Do not cut surface.*

Fuel Supply Maintenance



Flow gas into plastic dishpan

PHOTO 2 - Fuel Flow Check – *Supply flow gas into plastic dishpan. Look for debris in pan. Dispose of gas and try again until gas is clear.*



Flow gas into plastic dishpan

PHOTO 3 – Fuel Flow Check, Needle Valve: *Check fuel flow by opening the carburetor drain. This will flush needle and seat. Drain into plastic dishpan.*

Turn drain petcock off. Check carburetor bowl at top. It should stay dry. If it's wet, needle valve is leaking [flooding]. Replace needle valve if flooding occurs.



Thread sealant

PHOTO 4 – Fuel Line Sealant: *Use Permatex sealant on pipe threads. Apply sparingly. **Never, never use Teflon Tape.***