Packards
INTERNATIONAL
MOTOR CAR CLUB

Q-TIPS

by

FRED MAUCK

The Hydrostatic Gasoline Gauge

Thanks to Jerry Vinarcik for some of the below material.

There are two types of gasoline gauges, hydrostatic and electric, to give a reading on the instrument board when the tank is located in the rear. In the hydrostatic type, the hydrostatic or gravity pressure at the bottom of the tank depends on how much fuel is in the tank. Therefore a pipe filled with air running from the bottom of the tank connects with a pressure gauge on the instrument board, the gauge being calibrated in gallons instead of fractions of a pound. The simplest gauge is a U-tube filled with a suitable liquid. With zero pressure the level of the liquid is the same in both legs of the U-tube. As pressure increases the level rises in one leg and falls in the other, the amount of rise being pro portional to the pressure.

K. S. Telgage

The King Seeley Telgage, used on Auburn, Buick, Franklin, Graham, Kissel, Lincoln, Nash, Oakland, Oldsmobile, Packard, Pontiac, Reo, Studebaker and Viking cars, consists of three parts, a dash unit, a tank unit and an air line connecting the two units.

The dash unit has a U-tube with special liquid in it, about four times heavier than gasoline. With the air line disconnected, liquid in both sides of the U-tube balances and liquid in the glass side registers with the lowest line on the gauge.

The tank unit, in general, consists of three tubes. One supplies fuel to the engine, another allows air to come in or go out so that there is always atmospheric pressure in the tank, and the other is connected to the air line that leads to the U-tube.

The air line is a small diameter copper tube. As the gauge depends on air pressure to operate it, joints on each end must always be tight.

When gasoline is added to the tank and the level rises, the fuel tries to seek its own level in the air line and compresses the air. Therefore, the more gasoline that is added the greater the pressure. This pressure against the liquid in the U-tube forces it into the front side of the tube where it registers on the gauge.

From this it will be seen that if there is a leak in the air line the pressure instead of increasing will remain the same and the gauge will not register.

So that the gauge will automatically recitfy its reading, there are two small surge tubes of different lengths on the tank unit.

A cup is mounted on the top of these surge tubes and the lower ends open into an inverted cup forming the bottom of the tank unit. After repairing a leak in the air line the gauge liquid will register with the bottom line (zero) until air replaces the fuel in the tank unit portion of the air line. This is done by driving the car. Starting, stopping and turning corners causes the fuel to slosh around in the tank, consequently en trapping fine bubbles of air. Some of this air and fuel mixture falls into one of the surge cups and makes its way to the lower end of the surge tube. When the air leaves the tube it dis entangles itself from the fuel and flows upward into the air tine, clearing it of fuel and then the gauge registers correctly. The higher surge cup functions on a full tank and the lower cup on a tank partly full.

When tightening the nuts on the ends of the air line, use two wrenches to tighten them properly and not bend the tubes. These joints must be airtight to get the proper readings on the gauge.

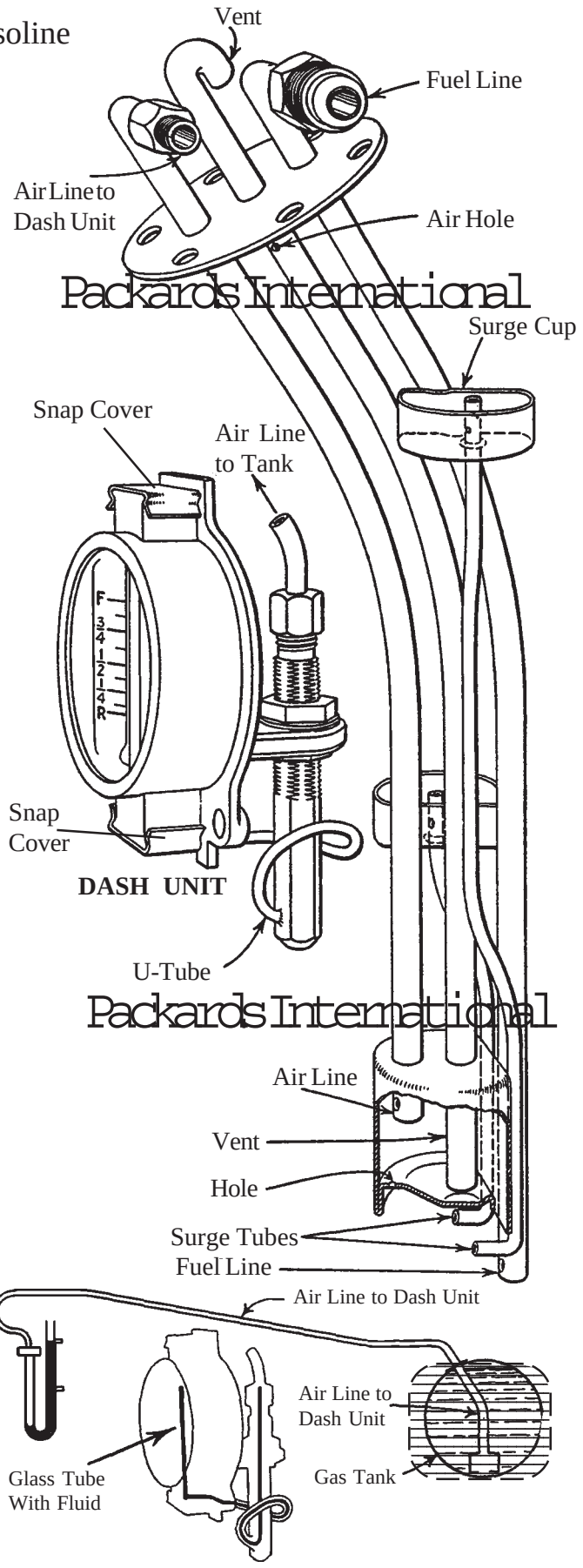
From the description of the operation, the necessity of using the correct liquid should be seen. If it is too light, the air pressure will force the reading higher than it should be and if the liquid is too heavy it will not force it high enough. In correct fluid may also evaporate, causing an incorrect reading, or freeze.

K.S. Telgage Service Instructions

SYMPTOM A. Gauge reading too high.

Cause-1. Too much liquid in the U-tube. 2. Improper liquid in the U-tube.

Remedy-1. Use a match, toothpick or pipe cleaner to absorb some of the liquid until, with the air line disconnected, it registers with the bottom line on the gauge.



Q-TIPS

2. Wash the U-tube with wood alcohol and refill with the proper liquid until it registers with the lower line on the gauge. Many times when improper liquids are used they destroy the U-tube so that the dash unit must be replaced. When washing a U-tube, shims or small metal strips may be found in the brass side. Always replace the ones that are removed or else the gauge will not read correctly. These shims vary in thickness so that the ones that are removed must be replaced.

SYMPTOM B.-Gauge reading too low.

Cause-1. Not enough liquid in the U-tube. 2. Improper liquid in the U-tube.

REMEDY-1. Add liquid with a medicine dropper or a small machine oil can until the liquid registers with the lower line on the gauge. 2. Wash U-tube as described under A2.

SYMPTOM C.-Gauge gives no reading or gives a reading while driving but drops after the car stands for about an hour.

CAUSE-Leak in air line or tank unit.

REMEDY-Disconnect air line at both ends and inspect for flaws or dirt. Hold finger over one end and suck on the other end. If the suction created will hold the tongue for one minute, the air line does not leak. If the air line and connections are ok, the tank unit should be replaced.

SYMPTOM D.-Gauge reading unsteady.

CAUSE-Insufficient air entering tank or vent hole stopped with water or dirt. Remedy-Remove gasoline filler cap and see that there is a vent hole in it and that it is open. Do not replace the cap until all the operations described below have been made. Disconnect the air line from the dash unit and check the level of the liquid in the dash unit as described in A and B. Use a hand tire pump with the metal connection removed. The gauge manufacturer recommends a hand pump in preference to a power pump to prevent the possibility of moisture entering the tube with the air. Push the hose tube over the air line at the dash and give fifty full strokes with the pump. This insures the line being dry and will remove any water or dirt from the tank unit. If, while this is being done, the level in the dash unit has dropped, the dash unit leaks and should be replaced. Connect the air line, making sure that it is tight at both ends. Drive the car to get a reading. If it does not hold its reading, check as described under C.

If you need to replace the line from the gas tank to the dash unit you can get replacement line, with fittings, from one of the vintage Ford parts dealers. Ask for a kit that fits a four door car and you will get enough tube. A full kit also comes with the fluid.

DO YOU HAVE THOSE VAPOR LOCK BLUES?
Roger Gibb

Did any of you experience vapor lock when you were driving your Packard this past Summer? Did you have more trouble this last Summer than in the past? Your experience was probably due to several factors: 1) Winter gas vs. Summer gas 2) Reformulated gasoline with some form of alcohol.

Let's discuss Item #1: Fuels are formulated to accommodate varying climatic conditions in order to vaporize properly. Winter fuels are formulated to vaporize more rapidly and if you have a tankful of Winter gasoline or if the supplies in your area have not been changed to less volatile fuels, you stand a good chance of experiencing "early season vapor lock."

Item #2: With the federal mandate to "clean up exhaust emissions" gasoline is being reformulated all over the U.S. with various additives, including alcohol. These new fuels have many more "high end" components and as a result are much more volitile and prone to vapor lock. Many of the gas pumps are not marked to let you know.

What can you do to help eliminate this problem? First, some basics:

1) Do you have a correct vented gas cap?

2) Are the rubber hoses in the fuel system in good condition? A defective hose could collapse internally or a small crack could allow air to be sucked in.

3) Is the filter clean? Replace the fuel filter every year, particularly with the great possibility of rust in our old fuel tanks.

4) Are the factory installed heat shields in place? The fuel pump shield is often missing.

5) Is there insulation on the fuel line from the pump to the carburetor? Most straight 8's had this.

6) Are fuel lines routed away from heat sources, such as exhaust pipes, wherever possible?

7) Have you found any "gummy" mixture in your fuel system? Earlier gas tank coatings may not be compatible with new fuels containing alcohol.

8) Is your "add-on electric fuel pump" designed for "pull-through" operation when turned off?

Fuel Pumps:

Standard mechanical Check your engine mounted pump for proper pressure and volume.

Add-on electric --Great for priming the carburetor without excessively "grinding the starter"

Should be an auxiliary pump (pull-through without being on)

Mounted as close to the fuel tank as possible so that it pushes fuel

Check the inlet screen on the pulse-type pumps — they can clog

If you have done all of the above and still have some problems, you can use what I've done to several of my cars very successfully — install a fuel return system. Since the mid 60's, automobiles have used this type of system. Fuel is flowing constantly in the inlet line and in a small bleed off line back to the tank. The fuel returns under the fuel in the tank. This keeps relatively cool fuel flowing constantly and minimizes air or vapor pockets — vapor locks. Fuel filters with either end or side bleeds are available anywhere. Shown below are two configurations:

Fram: G3583
Purolator: F21117 (old #GF11-17)
AC: GF423
Motorcraft: FG13
Wix: 33040

Fram: G3499
Purolator: F20030 (old #GF3O)
AC: GF480
Motorcraft: FG797
Wix: 33054

The filter should be mounted close to the carburetor inlet with a short rubber fuel hose and clamps. The 1/4" bleed line should be run back to the fuel tank. Easily bent steel tubing such as Bund-Flex works great. The tubing should be secured to the existing fuel line with tie wraps, or clamped independently to the frame. Careful installation should eliminate the possibility of chafing. The 1/4" drain plug location is where I put a fitting to return the fuel into the tank. It is important to return the fuel under the fuel in the tank to minimize vapor build up. Remember -- when working with gasoline, never work in a confined space with an open flame or a possible spark source, such as a compressor, light switch or heater (water or home).

I have used a fuel return system on several of my cars for many years with excellent results.

One last thing — When you see that long hill ahead on a hot day, turn on your electric pump before you start up the hill — it's easier to prevent vapor lock than it is to correct it.

Happy Packarding!

Editors note: Thanks Roger. Vapor Lock can occur even when the engine temperature is normal. The new fuels have a lower boiling point and one can add Marvel Mystery Oil or kerosene to increase the boiling temperature. Marvel Mystery Oil is also a good product for an upper cylinder lubricant, 8 ozs. per 20 gals. seems to work well. If you just want one gal. of Kerosene without going to a fuel station ACE sells an odorless 1-K Grade fuel under the ACE number 12030. 16 ozs. per 20 gals. seems to help.