Stewart

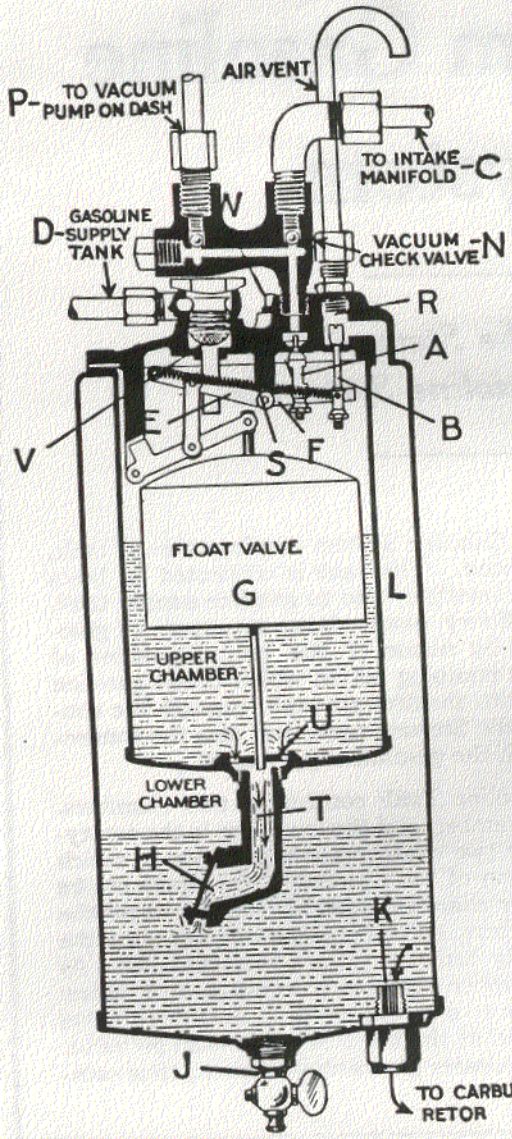
Vacuum Gasoline System

What the Stewart Vacuum Gasoline System is

THE Stewart Vacuum Gasoline System employs a small tank, installed under the hood. This tank is connected by brass tubing to the intake manifold, also to gasoline supply tank, and to carburetor. Every motor draws its supply of gasoline through the carburetor by reason of the pumping action of the pistons. It is this same pumping action which draws gasoline from the main supply tank into the Stewart tank, through the connection of the manifold and the Stewart tank, and also the connection of the Stewart tank with the gasoline supply tank.

The Stewart Vacuum Gasoline Tank consists of two chambers. The upper one is the filling chamber, and the lower one is the emptying chamber. Between these two chambers is a partition in which is placed a valve. The suction of the pistons on the intake stroke creates a vacuum in the upper chamber, and this vacuum closes the valve between the two chambers, and also sucks or pumps up the gasoline from the main supply tank into this upper chamber. As the gasoline flows into this upper chamber it raises a float valve. When this float valve has risen to a certain point it operates a valve which shuts off the suction and at the same time opens an air valve. This admission of outside air releases the vacuum suction, thus caus-

ing the valve leading into the lower chamber to open, and through which the gasoline immediately commences to flow into the lower or emptying chamber. This lower chamber is always open to the outside air, so that nothing can ever prevent the gasoline in this lower chamber from feeding through its connection to the carburetor in a perfect, even, uninterrupted flow.



A is the suction valve for opening and closing the connection to manifold and through which a vacuum is extended from the engine manifold to gasoline tank.

B is the atmospheric valve, and permits or prevents an atmospheric condition in the upper chamber. When the suction valve **A** is open and the suction is drawing gasoline from main reservoir, this atmospheric valve **B** is closed. When the suction valve **A** is closed then the atmospheric valve **B** must be open, as an atmospheric condition is necessary in the upper tank in order to allow the fuel to flow through the flapper valve **H** into the lower chamber.

C is pipe connecting tank to manifold of engine.

D is pipe connecting vacuum tank to main gasoline supply tank.

E is lever to which the two coil springs **S** are attached. This lever is operated by the movement of the float **G**.

F is short lever, which is operated by the lever **E**, and which in turn operates the valves **A** and **B**.

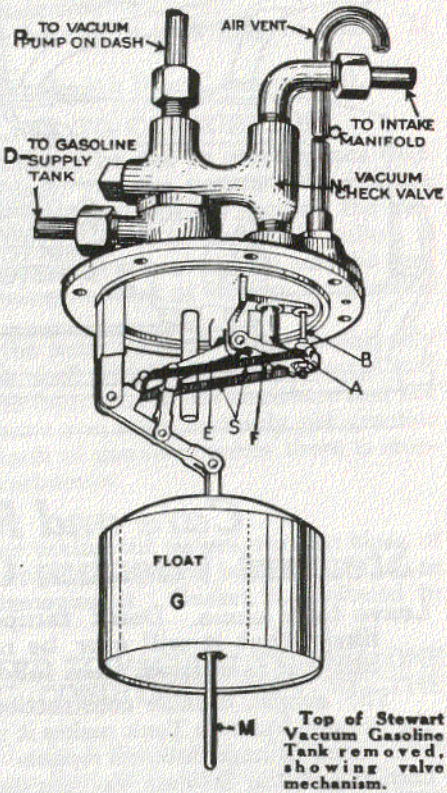
G is the float.

H is flapper valve in the outlet **T**. This flapper valve is held closed by the action of the suction whenever the valve **A** is open, but it opens when the float valve has closed the vacuum valve **A** and opened the atmospheric valve **B**.

J is pet cock for drawing water or sediment out of reservoir. May also be used for drawing off gasoline for priming or cleaning purposes.

K is line to carburetor extended on inside of tank to form pocket for trapping water and sediment, and which may be drawn out through pet cock **J**.

L is channel space between inner and outer shells, and connects with air vent **R**, thus admitting an atmospheric condition in lower chamber at all times, thereby permitting an even, uninterrupted flow of gasoline to carburetor.



Top of Stewart Vacuum Gasoline Tank removed, showing valve mechanism.

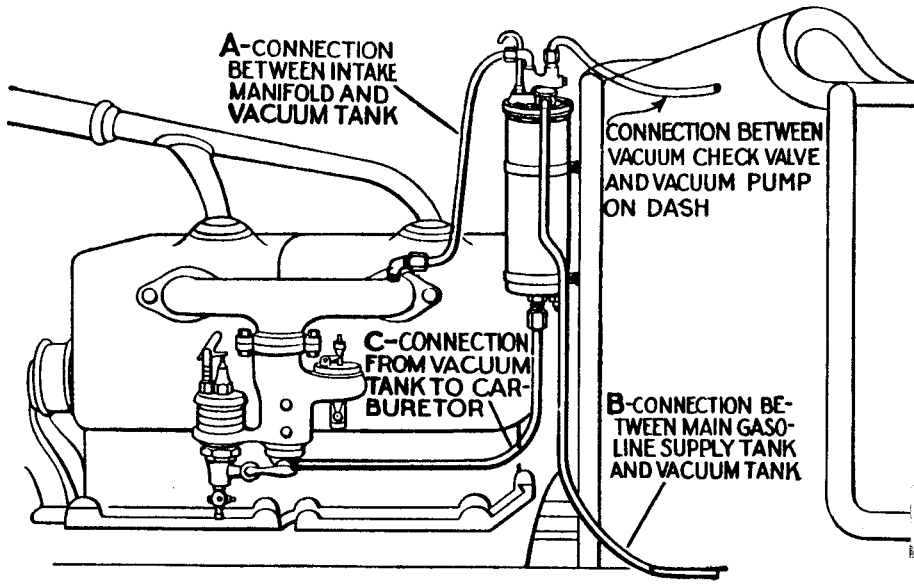
M is the guide for float.

N is vacuum check valve.

P is a line leading to vacuum pump on dash. This vacuum pump, which is installed on the dash, can be used for priming, or for filling the vacuum tank should it ever become empty. It is not necessary to turn over the engine, but merely pull plunger in vacuum pump two or three times, which will create sufficient vacuum in tank to draw gasoline from main supply tank.

R is an air vent over the atmospheric valve. Through this tube the lower or reservoir chamber is continually open to atmospheric pressure, so that the flow of gasoline from this lower chamber to the carburetor is always an even, uninterrupted flow.

T is the outlet located at the bottom of the float reservoir.



Care and Repair of Stewart Vacuum Gasoline System

Leave tank alone. Don't tamper with it. It is not very likely that it will ever be necessary to open the tank, but if it is opened, then follow directions carefully.

The simple, durable construction used in the manufacture of the Stewart Vacuum Tank makes it unlikely that the car owner will ever need to make internal repairs. If the instructions for care are carried out, the Stewart Vacuum Gasoline System should continue indefinitely to operate perfectly. Before proceeding to repair vacuum tank, make absolutely sure that the trouble is not due to some other cause.

If your vacuum system does not operate satisfactorily, the following suggestions will **enable you to make the necessary adjustment:**

VENT TUBE OVERFLOW. (See R, page 2.)

The air vent allows an atmospheric condition to be maintained in the lower chamber, and also serves to prevent an overflow of gasoline in descending steep grades. If once in a long while a small amount of gasoline escapes, no harm will be done and no adjustment is needed.

However, if the vent tube regularly overflows, it may be found that the air hole in main gasoline tank filler cap is stopped up. If so, clean it out.

GASOLINE LEAKAGE.

If gasoline leaks from system, except from vent tube, it can only do so from one of the following causes:

a. A leak in outer wall of tank may have occurred. If so, soldering up the hole will eliminate trouble.

b. Carburetor connection in bottom of tank may be loose. If so, it should be screwed up tight.

c. There may be leak in tubing length **B** or **C** (see page 4).

FAILURE TO FEED GASOLINE TO CARBURETOR.

Remember that this condition may be due to other causes than the vacuum system. Do not blame vacuum system until you are sure that the fault does not lie elsewhere. After flooding the carburetor, or "tickling the carburetor," as it is commonly called, if gasoline runs out of the carburetor float chamber, you may be sure that the vacuum feed is performing its work of feeding the gasoline to carburetor.

Another test is to take out the inner vacuum tank, leaving only the outer shell. If you fill this shell with gasoline and motor still refuses to run properly, then the fault clearly lies elsewhere and not with the vacuum system—because you must certainly get gasoline feed from this open, elevated tank of gasoline, unless there is stoppage in the connection line to carburetor.

TO REMOVE TOP.

In removing top of tank, after taking out screws, run the blade of a knife carefully around top, between cover and body of tank, so as to separate gasket without damaging it. Gasket is shellaced to make an air-tight joint.

IF FAULTY FEED IS TRACED TO VACUUM SYSTEM, ONE OF THE FOLLOWING CONDITIONS MAY BE THE CAUSE.

a. The float (see **G**, page 3), which should be air-tight, may have developed a leak; thus filling up float with gasoline and making it too heavy to rise sufficiently to close vacuum valve. This allows gasoline to be drawn into manifold, which in turn will choke down the motor.

Proper operation depends upon the float being air-tight.

TO REPAIR FLOAT.

Remove top of tank (to which float is attached) as above directed. Dip the float into a pan of **HOT** water, in order to find out definitely where the leak is. Bubbles will be seen at point where leak occurs. Mark this spot.

Next, punch two small holes, one in the top and the other in the bottom of the float, to permit discharge of the gasoline. Then solder up these holes and the leak. Test the float by dipping in **HOT** water. If no bubbles are seen, the float is air-tight.

In soldering float, be careful not to use more solder than required. Any unnecessary amount of solder will make the float too heavy.

In taking out float and repairing it, take care not to bend the float guide rod. If you do bend the rod, it will strike against guide and retard float, producing the same effect as a leaky float, and allowing gasoline to enter manifold. Also note whether surface of rod is perfectly smooth so that it cannot be retarded by guide.

To overcome the condition of a leaky float temporarily until you can reach a garage, remove plug **W** at the top. In some cases the suction of the motor is sufficient to draw gasoline into tank even with this plug open, but not enough to continue to be drawn into manifold. If, however, you are not able to do this, close up plug **W** with engine running. This will fill tank. After running engine until tank is full remove plug **W** until gasoline gives out. Continue repeating same operations until a repair station or garage is reached, when the leaky float can be remedied.

b. The flapper valve may be out of commission.

A small particle of dirt getting under the flapper valve (see **H**, page 2) might prevent it from seating absolutely air-tight, and thereby render the tank inoperative.

In order to determine whether or not the flapper valve is out of commission, first plug up air vent; then detach tubing from bottom of tank to carburetor. Start motor and apply finger to this opening. If suction is felt continuously then it is evident that there is a leak in the connection between the tank and the main gasoline supply, or else the flapper valve is being held off its seat and is letting air into the tank, instead of drawing gasoline.

In many cases this troublesome condition of the flapper valve can be remedied by merely tapping the side of the tank, thus shaking loose the particle of dirt or lint which has clogged the valve. If this does not prove effective, remove tank cover, as described on previous page. Then lift out the inner tank. The flapper valve will be found screwed into the bottom of this inner tank.

c. Manifold connection (see **C**, page 2) may be loose, allowing air to be drawn into manifold.

d. Tubing may be stopped up, in lengths **A**, **B** or **C** (see page 4).

e. Gasoline strainer (see **V**, page 2) is a screen located in the line from gasoline tank. This screen collects all foreign substances that might get in the rear tank and be carried through to the carburetor and clog it. If tank fails to work, it may be that this screen is clogged, preventing gasoline from getting into tank. Screen may be easily cleaned by unfastening connection at elbow. This cleaning should be done every three weeks. **If tank should ever**

fail to operate, examine strainer FIRST.

INCREASED GASOLINE CONSUMPTION.

Vacuum feed should show the same rate of gasoline consumption as gravity feed, and a saving over pressure feed. If such a condition does not result in your car, perhaps the cause is:

a. Carburetor may need adjustment.

b. Vent tube may overflow. (See **"Vent Tube,"** page 4.)

c. There may be a leak in tank or tubing—note instructions under **"Vent Tube"** and **"Gasoline Leakage."**

d. If the motor speeds up when the vacuum tank is drawing gasoline from the main supply, it shows that either your carburetor mixture is too rich, or your connections are so loose that it is drawing air into the manifold. There should be no perceptible change of engine speed when the tank is operating.

CARBURETOR TROUBLE.

a. Carburetor trouble cannot be attributed to vacuum system. If gasoline is delivered to carburetor, vacuum feed has done its work.

b. If carburetor pops and spits, carburetor adjustment is needed.

c. If car slows down, or if you cannot get usual speed out of car while running with open throttle, although the car still continues to run, you may be sure the trouble is not due to vacuum system. If all the gasoline in vacuum tank is exhausted the car will stop.

FILLING UP TANK IN STARTING.

To fill the tank, should it ever become entirely empty, close the engine throttle and turn the engine over a few revolutions. This will create sufficient vacuum in the tank to fill it. If the tank has been allowed to stand empty for a considerable time and it does not easily fill when the engine is turned over, this may be caused by dirt or sediment being under the flapper valve **H.** Or, perhaps, the valves are dry. Removing the plug **W** in the top and squirting a little gasoline into the tank will wash the dirt from this valve, and also wet the valves, and cause the tank to work immediately. This flapper valve sometimes gets a black carbon pitting on it, which may tend to hold it from being sucked tight on its seat. In this case the valve should be scraped with a knife.

CLEAN TANK EVERY THREE MONTHS.

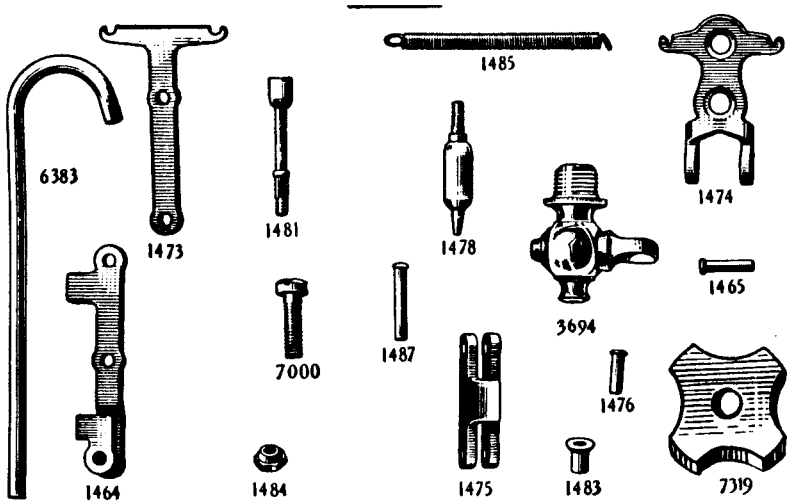
Unless gasoline is filtered through a screen or chamois when filling the main gasoline tank, from which the vacuum tank draws its supply, some dirt or sediment will accumulate in the main tank. Part of this dirt may be drawn into the vacuum tank. This dirt should be removed from the vacuum tank at least once every three months. To clean the tank remove the top of the tank and take out the inner shell or vacuum chamber (note instructions "To Remove Top," on page 5). This will give access to the lower chamber from which the dirt should be removed. **(Don't take tank off of car —you may not be able to get it back in the same position.)**

Price List of Parts

for Stewart Vacuum Gasoline System—Model 113-U.
Furnished on Hudson cars.

In ordering, be sure to specify part number in order to avoid error

1464	Float Lever		$ .20
1465	Float Lever Pin	doz.	.04
1473	Spring Lever		.20
1474	Valve Stem Lever		.20
1475	Lever Connecting Link		.10
1476	Connecting Link Pin	doz.	.04
1478	Vacuum Valve Stem		.15
1480	Pipe Plug		.09
1481	Atmospheric Stem		.15
1483	Valve Stem Sleeve		.08
1484	Valve Stem Nut		.04
1485	Valve Tension Spring		.20
1487	Valve Stem Lever Pin	doz.	.04
2389	¼-inch Split Lock Washer	doz.	.05
2762	Vacuum Check Valve		.25
2764	Reservoir Outlet Bushing		.30
2807	Bracket Screw Nuts	doz.	.10
3416	Float Assembly		1.50
3686	Top Cover Assembly		2.00
3694	Drain Pet Cock		.30
3779	Band Bracket		.25
3830	Cover Gasket		.10
3913	Flapper Valve Assembly		1.00
3981	Gasoline Strainer Assembly		.60
4975	Outside Shell Assembly		1.50
6383	Vent Tube Extension		.25
6384	Vent Tube Extension Connection		.25
7000	Cover Screws	doz.	.10
7003	Bracket Screws		.05
7319	Fibre Float Stem Guide		.05
7485	Inner Shell Assembly		1.00
8355	Auxiliary Vacuum Check Valve		1.00



STEWART VACUUM GASOLINE SYSTEM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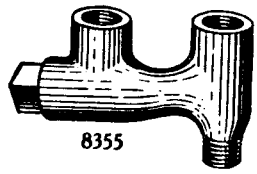
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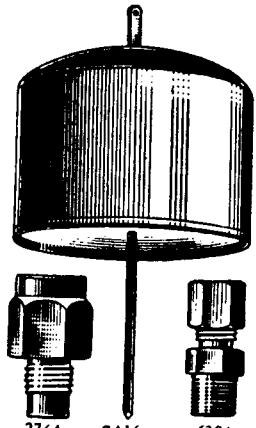


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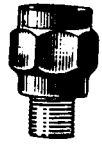
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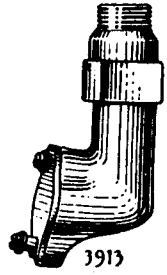
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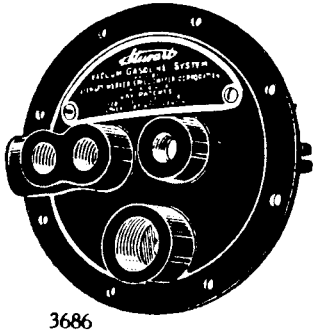
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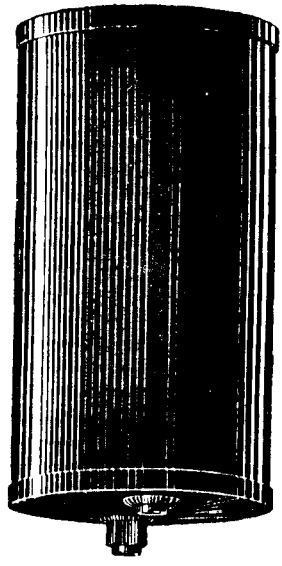
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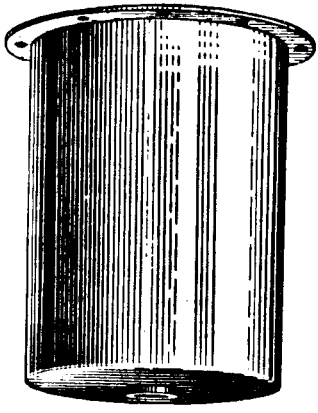
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