IMPORTANT

READ THIS ENCLOSURE ENTIRELY BEFORE BEGINNING

WEAR EYE AND FACE PROTECTION AT ALL TIMES DURING THIS WORK

NOTE: You may have some parts left over from this kit after completing the rebuild of your vacuum tank. Because some kits are assembled to cover the rebuilding of more than one style of vacuum tank, this is no cause for concern.

SOME ITEMS YOU WILL NEED TO DO THIS JOB CORRECTLY:

1) Permatex 2A, non-hardening Form-A-Gasket /Sealant (available from most NAPA-type stores as a small tube in a carded wall display area)
2) Several acid brushes to apply the Permatex.
3) 5 minute epoxy—2 part clear epoxy (available from most NAPA-type stores as a small tube in a carded wall display area.
4) ONLY if needed : A product such as Eastwood Automotive's Gas Tank Sealer (part# 10087Z). Contact information for Eastwood is given under number 6 in these instructions.
5) ONLY if needed : One trim-style paint brush for applying the Gas Tank Sealer.
6) Brasso brass polish **OR** , just have plain old household-style toothpaste on hand.

IMPORTANT: BEFORE YOU REMOVE THE VACUUM TANK FROM THE VEHICLE, EMPTY ALL GASOLINE FROM IT

NOTE: when removing the vacuum tank from the vehicle, be sure to mark the lines that connect to the vacuum tank and the connections they mate with on the tank so that you will be certain to re-attach the correct lines to the correct fittings.

NOTE: after removing the vacuum tank and before rebuilding it, be sure the gasoline line between the vacuum tank and the vehicle fuel tank is solid and completely clear. You must also be certain that your vehicle's fuel tank does not have sediment, water, or sealant debris in it. Also—be sure that the vented gas tank cap has a clear vent.

1) Open vacuum tank.

2) Carefully grind or file off rivet that holds the float to the valve toggle mechanism. Be careful not to damage any of the associated parts. A replacement rivet is included in this kit. Some tanks have a toggle mechanism that does not have a rivet. If you have this style of tank, skip this step and go to number 3 below.

3) Test float for leaks. The first step in this test is to simply shake the float to see if you hear fuel sloshing around in it. If so, you can be certain the float has a leak in it. Step 2 in this test is to put the float in the refrigerator (not freezer) for about an hour. Remove the float from the refrigerator and immerse it in a plastic container that has at least 110 degree hot water in it. This water is obtainable from a hot water faucet. **DO NOT put this container on a stove or heat it in any way.** Submerge the float completely under the hot water, and carefully observe the float and the surface of the hot water for tiny bubbles-----hot water heats the air in the float, expanding it. Even the smallest leaks will be disclosed by this test method. Take the float out of the container of hot water. Mark the location of any leak(s) you may have found during the test. If the float has any gasoline inside of it, you will need to poke a small hole in it and shake out **ALL** gasoline. Buff the hole and other any leak areas you may have found during the testing with steel wool, and solder this hole, and any other leaks you may have discovered during the test process, with rosin core solder. Use as low a heat as possible while soldering. ALTERNATE METHOD: cover the hole you made with a small piece of aluminum tape, then coat the tape and immediately surrounding area with a thin layer of 5 minute 2 part epoxy. Retest the float in hot water. Repeat this procedure until you are satisfied that are no remaining leaks in the float.

4) Clean the inner and outer tanks thoroughly, inside and out. Before cleaning them, straighten out any dents they may have as carefully as you can. If you choose to bead blast the tanks, use fine glass bead. After blasting, thoroughly clean all residue off tanks.

5) Both inner and outer tanks can form leaks. Test all tanks by filling them with warm water after they have been cleaned. Inspect all tanks carefully for leakage of water through them. Blow-dry all tanks. Solder or 5 minute epoxy any leakage points. If 5 minute epoxy is used, let it cure completely before proceeding with rebuild. Test the flapper valve on inner tank by immersing the empty tank upright in about 8 to 10 inches of water. Valve should close tight enough so no liquid gets past it into the inner tank.

6) ONLY IF NEEDED: Coat the inner and outer surfaces of the inner tank and the inner surface of the outer tank (do not coat any gasket mating surfaces) with a product such as Eastwood Automotive's Gas Tank Sealer (part #10087Z). (Eastwood's USA phone number is 1-800-345-1178. If you are calling from outside the USA, their phone number is (610) 640-1450. Their FAX number is (610) 644-0560. Their website is located at:www.eastwood.com). Let sealer dry completely before proceeding with rebuild.

8) Clean the orfice of the vacuum check valve (see figure 1) with #18 **COPPER** wire. (This valve is brass. Copper wire is used, because copper is softer than brass and will not harm it). If someone has enlarged the orfice of this valve beyond .040" (#60 drill), solder the orfice closed with rosin core solder, and re-drill to .040.

9) Most floats have a stem at the bottom. This stem inserts into phenolic bushing at the tank bottom. If this bushing has excessive wear in your tank, replace it with the one included in the kit.

10) Two different springs are included in this kit. If one or both of these style springs are in your vacuum tank, replace them with the new ones provided in the kit.

11) Replacement screws are provided in this kit. Be sure to use them.

12) Carefully coat all vacuum tank fittings where they connect to the tank with a film of Permatex 2A before installing.

13) With the pot metal head removed, lap the existing brass vacuum (suction) and vent valves (see figure 1) with Brasso or toothpaste. After lapping, clean the area well to flush out the Brasso or toothpaste. To re-seat a bakelite flapper valve (see figure 1), smear the seating surfaces with toothpaste, and carefully move the flapper valve back and forth to lap. After lapping, clean the area well to flush out the toothpaste. Then, test the valves to be sure they are sealing and opening properly. This is easily done with a parts washer that pumps cleaning liquid through a flexible arm nozzle.

14) Carefully clean the gasoline inlet fuel screen (see figure 1), if any. When replacing the hex fitting above this screen, thinly apply Permatex 2A to the mating surface. Tighten carefully to avoid cracking the potmetal head.

15) (This operation pertains ONLY to those tanks with a dual spring-loaded toggle mechanism. If you have the non spring-loaded toggle mechanism on your tank, simply insert the float tang through the valve tangs in the same manner they were attached and check for free float travel in both directions). Reinstall the float with the rivet provided, being careful not to bend or damage any of the associated parts. With the float installed, test the valve toggle mechanism. To do this, hold the tank top and float assembly in front of you with the float hanging freely. Push up on the float until it is in its uppermost position and the toggle mechanism toggles. Let the float come back down with its own weight—do not pull it down. The float should travel to its downmost position, and the toggle mechanism should toggle. If it does not, remove each toggle spring and stretch it SLIGHTLY. Make sure that both springs are the same length. Reinstall the springs and repeat the above test until the toggle mechanism toggles with only the weight of the float. If the float in your tank is the type that has an alignment shaft at the bottom, be sure this shaft goes into its guide at the bottom of the tank as you assemble it. You will know that it has if you hold the tank together and rock it upside down, then right side up. If the float alignment shaft is properly inserted, you will hear the float traveling through its full travel distance inside the tank when you do this test.

16) Apply a light film of grease to the gasket mating surfaces on the potmetal head and to the mating surfaces of the new gaskets themselves, to allow for future disassembly without damage to the gaskets. Reassemble tank sections, being **VERY** careful not to block the vent port on the rim of the outer tank with the inner tank head or gasket.

17) Paint the exterior of the tank with at least two coats of high-quality laquer or enamel. Follow this with at least two coats of high-quality clear coat. Let dry completely before proceeding.

18) When installing the rebuilt vacuum tank on the vehicle, apply a coating of Permatex 2A to all male thread surfaces of all lines before inserting and tightening. Tighten lines securely. **DO NOT** overtighten.

19) **IMPORTANT**: Vehicles equipped with vacuum tanks have vented filler gas caps. The vents in these caps **MUST** be clear to the outside atmosphere. If this vent is blocked, you will get improper vacuum tank and/or engine operation. **ALSO**: If this vent is blocked and the vehicle gas tank is empty or near empty, gas tank collapse can be caused from engine vacuum. **MAKE SURE THIS VENT IS CLEAR.**

20) **CAUTION: because of the design of vehicles that vacuum tanks were used on, the vacuum tanks can leak gasoline under certain circumstances under normal operation. (For example: if the vehicle is driven down a steep incline with the gas tank full, the level of gasoline in the tank may become even with or slightly elevated with respect to the vacuum tank head. This will allow an unchecked flow of gasoline into the vacuum tank----whether or not the engine is running). Under these circumstances, this excess gasoline will flow out of the vacuum tank air vent tube (see figure 1). Many vehicle makes had the vacuum tank mounted on the same side of the engine as the engine exhaust manifold.**

THIS IS VERY DANGEROUS, BECAUSE GASOLINE FLOWING OUT OF THE VACUUM TANK AIR VENT TUBE (SEE FIGURE 1), BECAUSE OF THE CIRCUMSTANCES MENTIONED ABOVE, CAN IGNITE ON THE HOT MANIFOLD. IF YOU HAVE ONE OF THESE VACUUM TANKS MOUNTED ON THE SAME SIDE AS THE ENGINE EXHAUST MANIFOLD, MAKE ABSOLUTELY

CERTAIN THAT THE VACUUM TANK AIR VENT TUBE (SEE FIGURE 1) HAS BEEN MODIFIED BY A COMPETENT MECHANIC, SO THAT GASOLINE CANNOT FLOW OUT OF IT ONTO THE ENGINE EXHAUST MANIFOLD, OR ANY OTHER WARM OR HOT ENGINE OR NON-ENGINE PARTS. EVEN IF YOU HAVE A VACUUM TANK THAT IS *NOT* MOUNTED ON THE ENGINE EXHAUST MANIFOLD SIDE OF THE ENGINE, MAKE ABSOLUTELY CERTAIN THAT THE VACUUM TANK AIR VENT TUBE (SEE FIGURE 1) *DOES NOT ALLOW* GASOLINE TO FLOW ONTO ANY WARM OR HOT ENGINE OR NON-ENGINE PARTS. HAVE A COMPETENT MECHANIC MODIFY THE VACUUM TANK AIR VENT TUBE, IF NECESSARY. WHEN MODIFYING THIS TUBE, *DO NOT* MAKE ITS END LOWER THAN THE TOP OF THE VAC TANK, OR IT WILL SIPHON GASOLINE OUT OF THE VACUUM TANK.

21) When reinstalling your rebuilt vacuum tank, always install an in-line gas filter in the gas line between the gas tank and the vacuum tank. The best type of filter to use is one with a transparent plastic body, so that the accumulation of sediment and water is visible. The best location to install the filter is near the gasoline tank (**NOT** the vacuum tank).

FROM THIS POINT FORWARD, BE SURE YOU ARE WORKING WITH TWO PEOPLE----ONE TO BE IN THE CAR IN CONTROL OF THE STARTER SWITCH, AND ANOTHER TO BE NEAR THE VACUUM TANK PERFORMING THE FOLLOWING CHECKS---- ALSO, BE *CERTAIN* TO HAVE THE PROPER CLASS FIRE EXTINGUISHER CLOSE BY. *GASOLINE VAPORS ARE EXPLOSIVE:*

22) **STARTING THE ENGINE:** be certain all fittings have been properly sealed and tightened, as in number 18 above. Leave the carburetor throttle **CLOSED** (ie: don't touch the gas pedal or its linkage at the carburetor). (If the car has been run recently before you removed the vacuum tank for rebuilding, there will probably be as enough fuel in the carburetor fuel bowl, so the engine will start when the starter is engaged. If this is the case, as soon as the engine starts, the intake manifold vacuum will draw fuel into the rebuilt vacuum tank. If the car has not been run recently, the carburetor fuel bowl will probably be dry. To fill it, you will need to draw fuel into the vacuum tank. From here, it will feed into the carburetor fuel bowl. To draw fuel into the vacuum tank, you will need to crank the engine. This may take a bit of cranking, so be prepared to recharge the vehicle's battery, if it is not fully charged before you perform this operation). With one person in the car, controlling the starter switch, and with the carburetor throttle **CLOSED**, crank the engine. (If it becomes evident that the engine is not going to start after excessive cranking, check to see if your vacuum tank has a removable filler plug, located at the top of the tank in the

potmetal head. If it does, you may "prime" the tank by removing the filler plug and carefully pouring some gasoline through a funnel into the tank through the filler plug hole. Be sure to securely replace the filler plug before attempting to start the engine). As soon as the engine starts, check all tank surfaces, lines, and fittings for gasoline leaks. If any leaks are discovered, shut off the engine and the ignition key, and leave them both off until all leaks have been permanently repaired. **NEVER CHECK FUEL SUPPLY BY CRANKING OR RUNNING AN ENGINE WITH A GASOLINE LINE DISCONNECTED. THIS CREATES A SEVERE FIRE/EXPLOSION HAZARD.**

A TROUBLESHOOTING SECTION FOLLOWS, SHOULD YOU BE HAVING PROBLEMS GETTING YOUR REBUILT VACUUM TANK TO PERFORM PROPERLY:

A) CHECKING VACUUM TANK OPERATION WITH A VACUUM GUAGE: if your vacuum tank has a gasoline filler plug on its potmetal head, install a fitting nipple. Affix a low-scale vacuum or pressure/vacuum gauge to this nipple. This guage will monitor the vacuum in the inner tank. Start the engine, and let it idle. During the fill cycle of the tank, with the engine idling, the guage should read 14 inches mercury vacuum, or more. It will not read as high as actual engine intake manifold vacuum (usually 17 inches of mercury), because of air and/or vapor flow out of the vacuum tank through the vacuum line. When the inner tank is full and the valves toggle, the vacuum reading on the gauge should immediately drop to zero (which is atmospheric pressure). After about 4 minutes of idling, the valves should toggle to begin another vacuum cycle, so the gauge should again read 14 inches of mercury vacuum or more. The guage will climb slowly to this reading, because of restriction by the check valve. If you change engine speeds during this test, the vacuum readings will vary widely. It is best to do this test at idle.

If the vacuum fill cycles at engine idle occur much more frequently than 4 minute intervals, there is a chance that the flapper valve is leaking, or that there is a leak in the inner tank below gasoline level. (if any gasoline is drawn from the outer tank to the inner tank during the vacuum fill cycle, there will be a greater than normal drop in outer tank gasoline level. If this problem exists, when the vacuum fill cycle ends, the gasoline levels in the two tanks will equalize, so the float will toggle the valves for another fill cycle, and on and on. This will cause poor vacuum tank performance and little or no engine power).

B) PROBLEM: ENGINE STOPS-----NO GASOLINE IN CARBURETOR.

POSSIBLE CAUSES:

1) Air leak in gasket that seals head and inner tank.
2) Vent valve (see figure 1) not seating, due to corrosion/dirt, etc.
3) Plugged vent hole in vehicle gas tank gas cap.
4) Fuel filter screen located in the gasoline inlet in the potmetal head is clogged (see figure 1).
5) Vacuum or gasoline line is cracked and/or blocked.
6) Air inleakage at various fittings.
7) Cracked potmetal boss on head--possibly overlooked during rebuild or caused by overtightening of line when installing it after rebuilding.
8) Head and/or gasket improperly installed on the outer tank, blocking the vent port on the rim of the outer tank.
9) Flapper valve (see figure 1) not seating due to dirt, improper lapping during rebuilding, etc.
10) Broken bakelite flapper valve (see figure 1).
11) Leak in inner tank.
12) One or both springs broken/improperly connected.

C) **PROBLEM: ENGINE RUNS TOO RICH, SMOKY EXHAUST, ETC.**

POSSIBLE CAUSES:

1) This problem is caused by gasoline being drawn into the engine through the vacuum line. It can be caused by:

A) Leaking float, causing no shut-off of the vacuum inlet valve.
B) Fiber float stem guide bushing in the bottom of the inner tank has broken, jamming the toggle mechanism.
C) Brass seat of vacuum inlet valve has come loose from the underside of the potmetal head.
D) Vacuum inlet valve has dirt or corrosion on sealing surfaces.

NOTE: GASOLINE IS VERY FLAMMABLE, AND, AS YOU KNOW, OLD CARS AND BOATS ARE PRONE TO THEIR SHARE OF LEAKAGE PROBLEMS. THE SAFEST ACTION YOU CAN TAKE TO PROTECT YOUR CLASSIC VEHICLE FROM DESTRUCTION BY FIRE, IS TO ALWAYS CARRY A PROPER CLASS, LARGE FIRE EXTINGUISHER IN THE VEHICLE. THIS CAN ALSO PREVENT CATASTROPHIC PERSONAL INJURIES AND DEATH.

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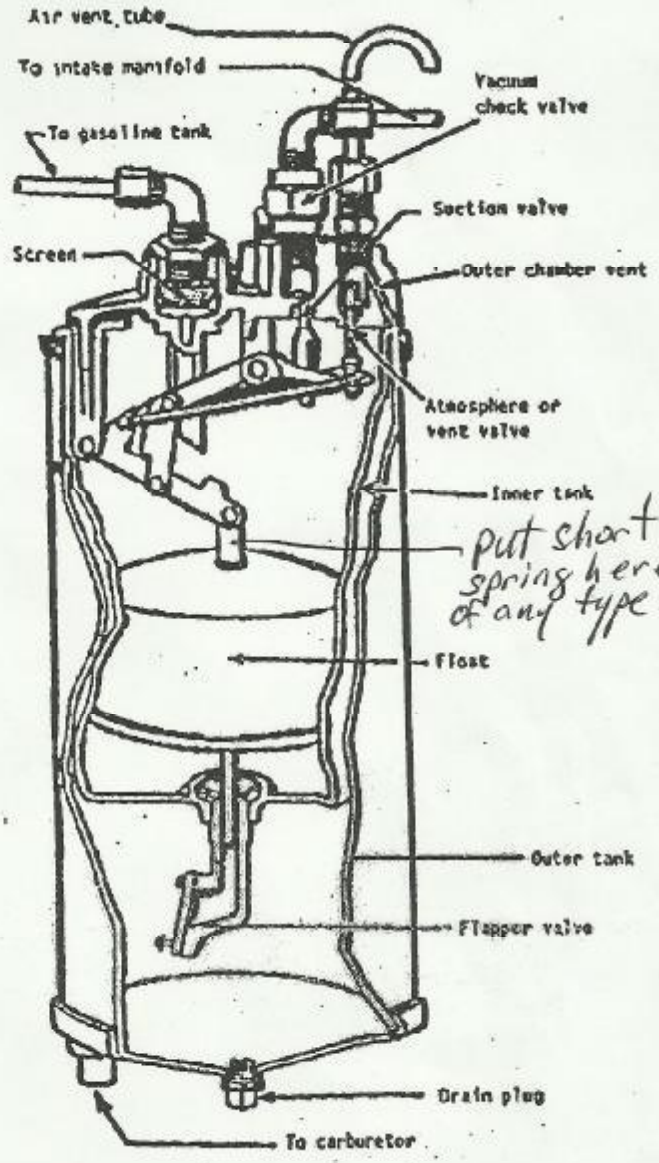
Air vent tube
To intake manifold
Vacuum check valve
To gasoline tank
Suction valve
Screen
Outer chamber vent
Atmosphere or vent valve
Inner tank
put short compression spring here if no spg of any type is already here.
Float
Outer tank
Flapper valve
Drain plug
To carburetor

FIGURE 1