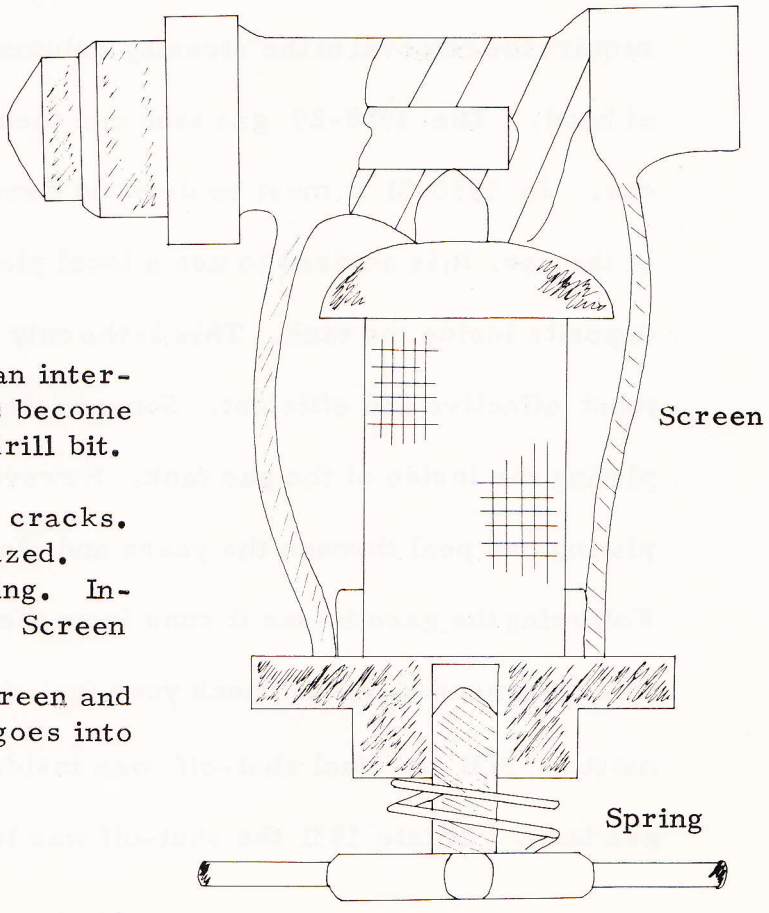
Zenith Carbureton & Fuel Systems Overhaul Booklet

Zenith Carburetor
&
Fuel System Overhaul Booklet

The entire fuel system can cause just as many problems as the ignition system of your "A". Before you proceed on the restoration of this area, it is advisable to first realize the dirt hazard. Since there are no chemicals on the market which can be placed in the gas tank to dissolve rust, grease and dirt deposits and still effectively combine with the gasoline and not have disasterous effects on the internal parts of the engine, it will be necessary to completely remove the gas tank from the car. Even in a restored "A" this is not an impossible feat. Basically it will require the removal of the dash, the wiring to the dash and unclamping of steering column if its attachment is at the bottom of the gas tank. In 1930-31 it will require the removal of the steering column. In 1928-29 it requires removal of hood. The 1928-29 gas tank can then be pulled forward and out of the car. In 1930-31 it must be dropped downward and taken out of the inside of the car. It is advised to use a local plating shop acid dip to dissolve all deposits inside the tank. This is the only method that has been found to be most effective and efficient. Some restorers have gone to the extreme of plating the inside of the gas tank. However, it is not recommended since plating can peal through the years and clog the system.

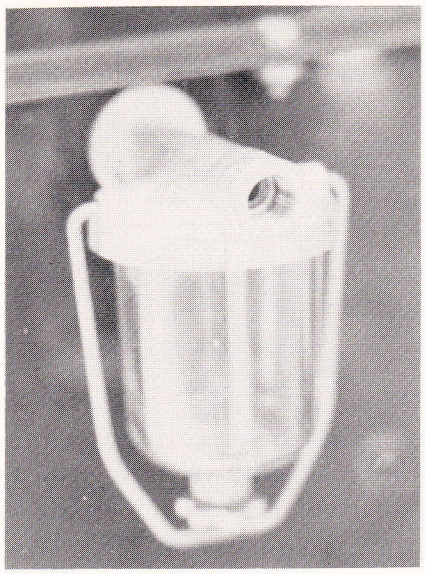
Following the gasoline as it runs from the gas tank down to the carburetor it will be necessary to check your fuel shut-off valve. Through 1928 and most of 1931 the fuel shut-off was inside the car attached directly to the gas tank. In late 1931 the shut-off was located on the outside of the fire-

wall and could only be accessible by raising the hood. To check the shut-off for leakage, turn it in the off position and blow through one end. If air can seap through the shut-off it will be necessary to replace it. When re-installing the shut-off it is advised to use non-hardening permatex around the threads. This sealant will prevent any leakage. Without a doubt, it is advisable to replace the fuel lines: That which runs from the gas tank to the firewall and from the firewall to the carburetor. These, through the years, have accumulated rust and grease deposits. On those cars having the inside gas shut-off a sediment bowl was mounted on the outside of the firewall under the hood. Originally this was an all cast iron type sediment bowl, many of which have been replaced by the later modern style cast and glass type bowl which may be found in your car today. As like the gas tank, this all cast iron assembly should be dipped in acid.



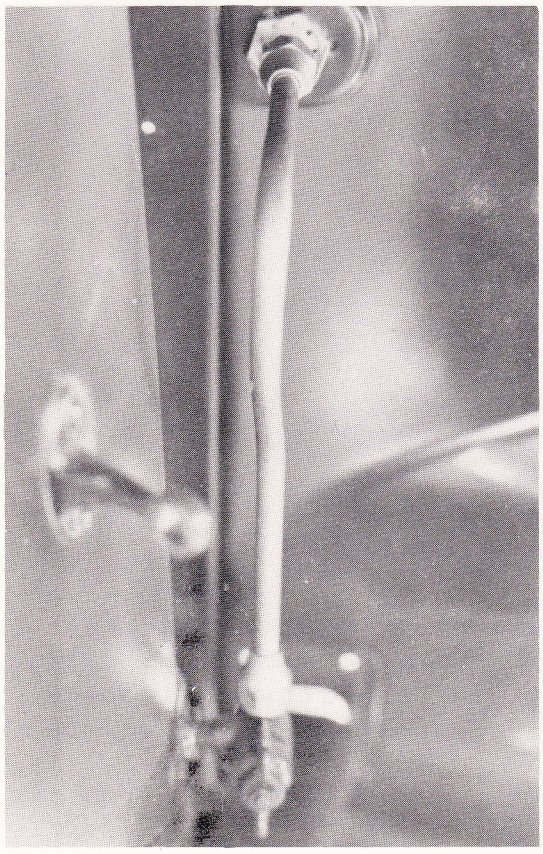
CAST IRON SEDIMENT BOWL REPAIR INSTRUCTIONS:

1. Disassembly & completely clean internally. If old screen ferrule has become stuck, drill out using 9/32" drill bit. Scrape hole clean.
2. Check bowl thoroughly for any cracks. Cracks should be welded or brazed.
3. Replace lead cap washer & spring. Insert screen end in cap recess. Screen is a snug fit at this point.
4. Replace carefully cap with screen and washer being sure ferrule end goes into inlet hole.

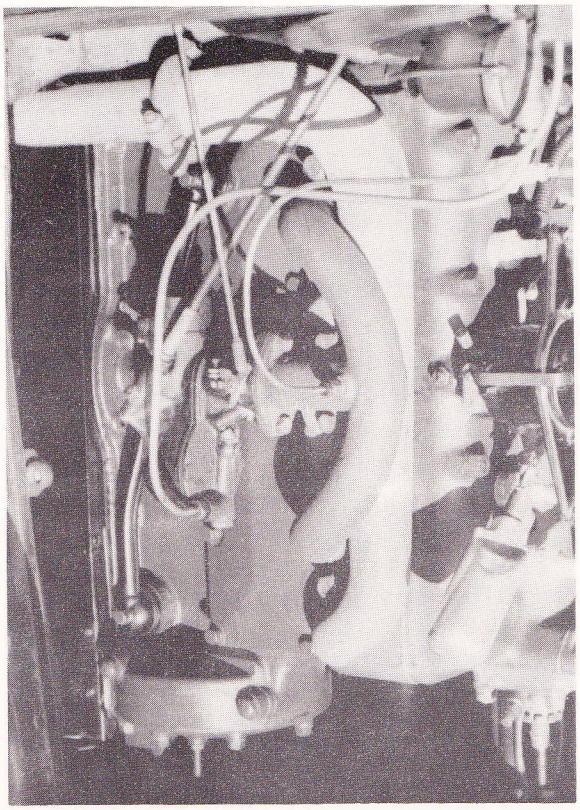


Later style sediment bowl found on many of the cars today. Rather than being cast iron it is made to have a glass assembly as the bowl for settling particles from the gasoline. The advantage over the cast iron type is that it will not rust inside due to condensation and gives a full view of the contents in bowl.

The purpose of the sediment bowl is to allow any foreign particles which may be in the gas tank to drop to the bottom of the bowl before passing on to the carburetor. As with the fuel shut-off, it is advisable to use non-hardening permatex around the gas lines and sediment bowl assembly to prevent leakage of gasoline around the threads.

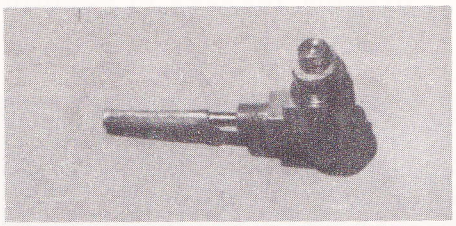


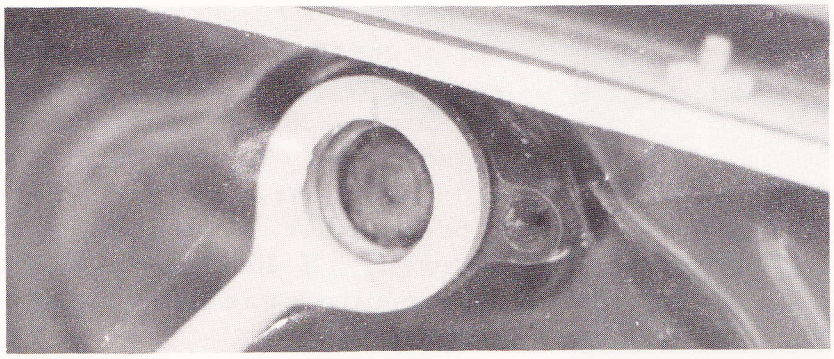
As the gasoline follows its route from the gas tank, it first passes through the fuel shut-off. In most all instances the fuel shut-off is located directly beneath the gas tank on the inside of the car. However, in some late 1931 models, it is located on the outside of the firewall. If located under the gas tank, it will require a gas line running from shut-off to firewall.



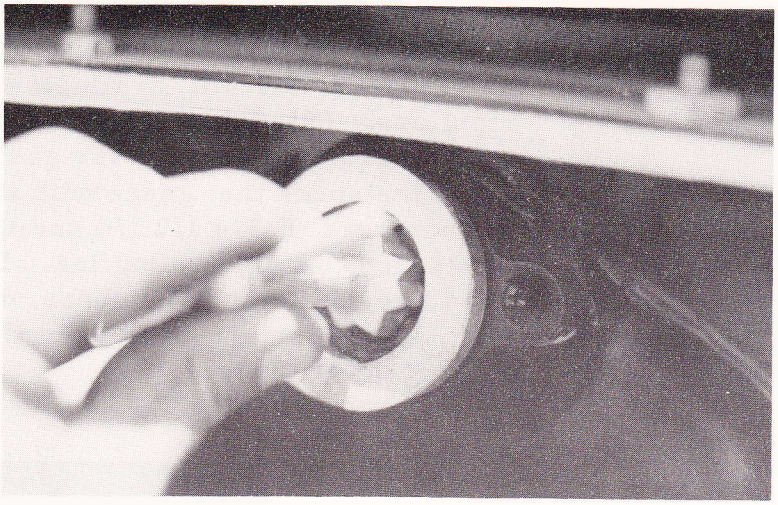
From the firewall the gasoline passes through the sediment bowl, either cast iron or modern glass type as shown above. From that point there is a steel gas line which runs down to the carburetor. You will note that the carburetor on this car is the original Zenith type, an all cast iron construction.

Many restorers that have had problems in their gas tank solve them by inserting a small filter in the top of the fuel shut-off. This filter traps the particles not allowing them to pass into the fuel lines and carburetor. This filter will work for only those shut-offs that are located underneath the gas tank inside the car. It is available from most parts suppliers.

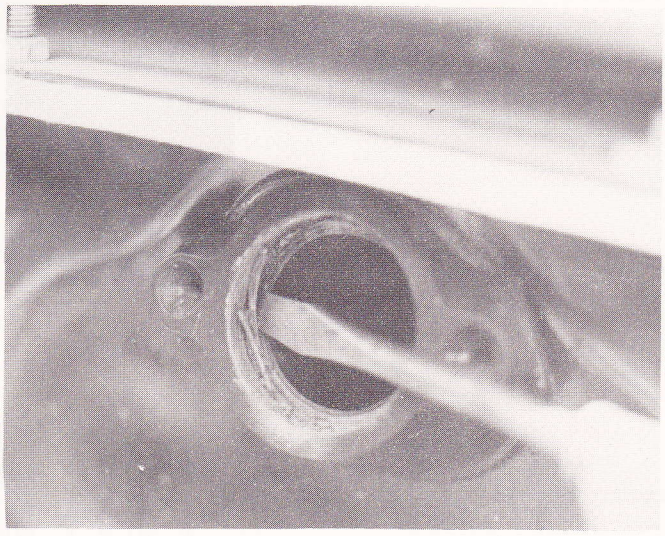




During the restoration of the gas tank it will be necessary for you to remove the gas gauge and replace the nuts with chrome ones. There are special economical tools available on the market to remove this gauge without damaging the nuts. It will be necessary to first clamp the wrench to the outer nut, holding it in position.

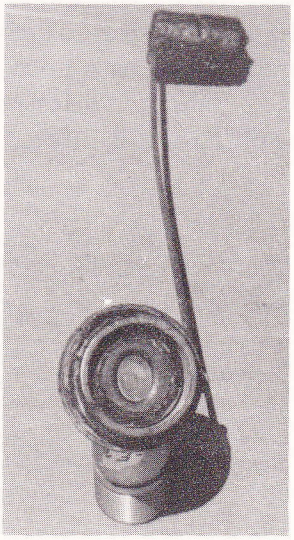


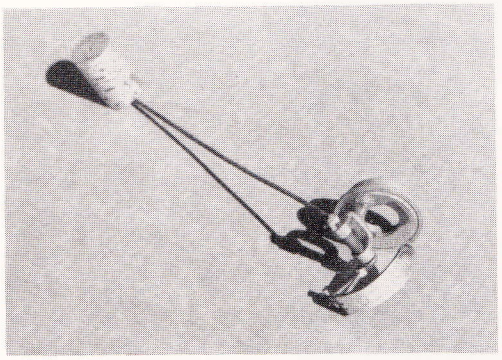
Holding the outer nut in place, a special star shaped tool can be inserted to remove the inner nut. Once the inner nut has been removed, then the outer nut can then be removed. The gas gauge can then be pulled out of the tank through the hole.



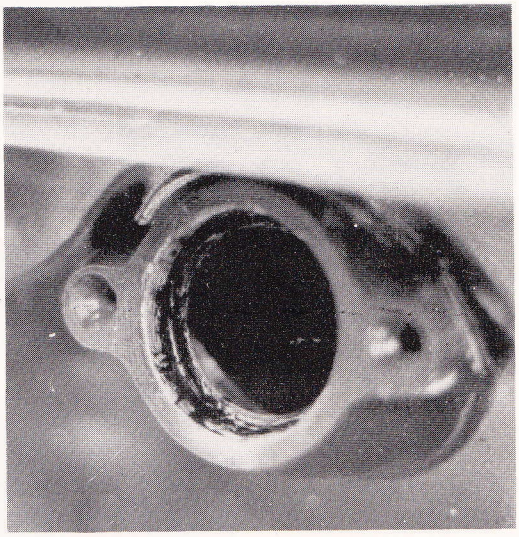
It will be necessary to remove all old gasket material and accumulation of dirt from opening. Be careful not allowing any of these particles to drop into the gas tank.

The gas gauge has an accumulation of dirt. Soak the gauge in kerosene to remove the particles.

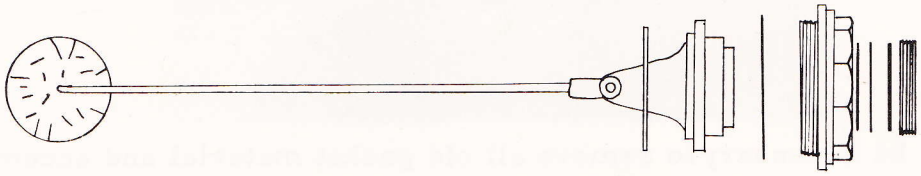




It is a wise investment to purchase a gas gauge rebuilding kit available from most suppliers. This kit usually will provide new cork, seals and nuts for the gas gauge. In most instances the gauge with the lettering and numbers F 3/4 1/2 1/4 and 0 can easily be cleaned by lightly buffing. If you would like to re-color these numbers, do so. However, use a laquer base paint that gasoline will not deteriorate.



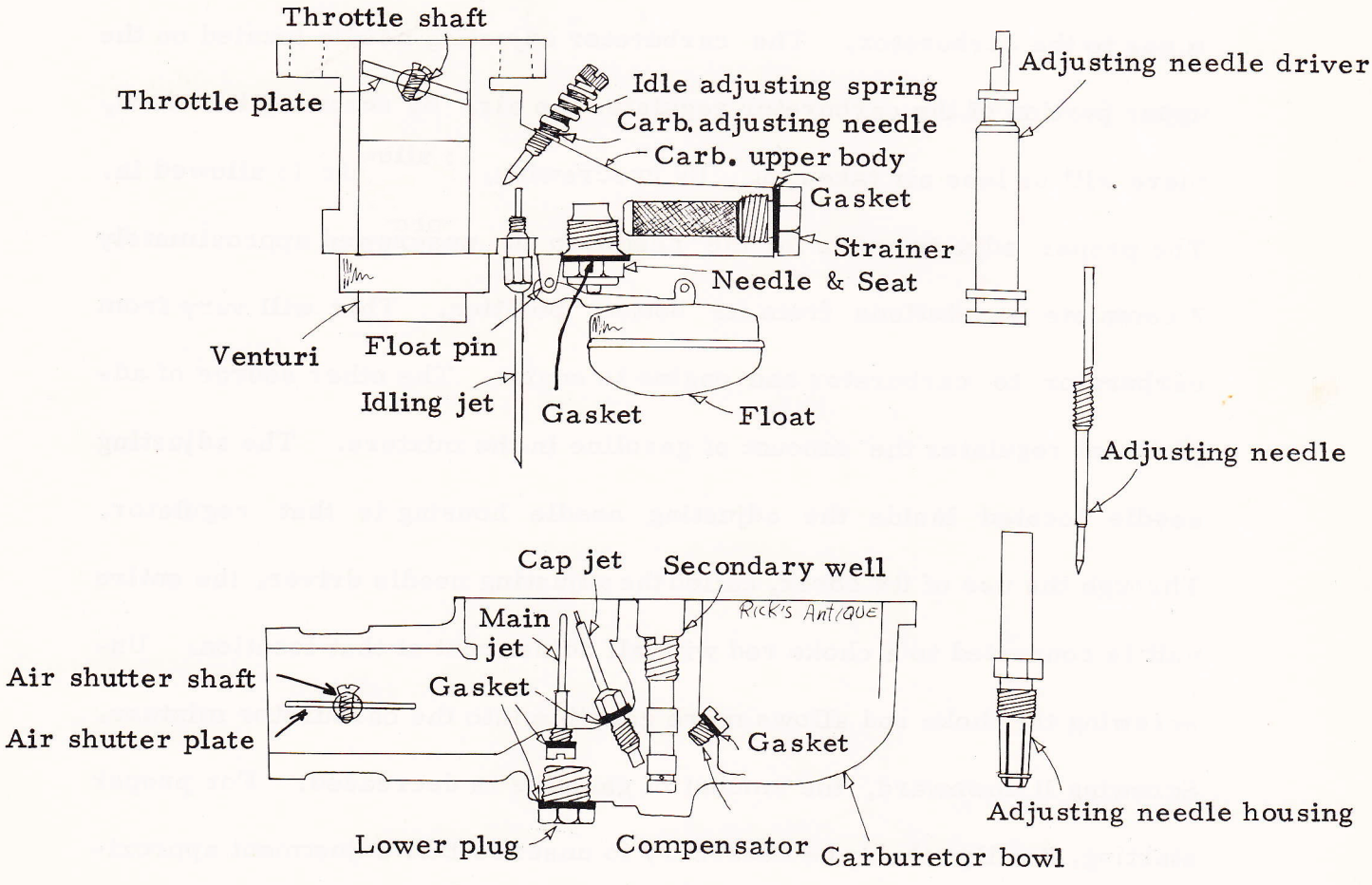
Upon reinstallation of the nuts and gauge, it is advisable as discussed with the fuel lines and shut-off to use a small amount of non-hardening permatex around the threads and seals. This will prevent any possibility of leakage and provide a good seal.



This is the order of assembly for the gas gauge, nuts and new gaskets. From right to left they are as follows: Chrome inner gas gauge nut, cork seal, round lens, cork seal, outer gas gauge nut, large inner seal, gas gauge, brass shim which was used on some models (re-use old shim, if present), and the end cork.

The original carburetor was the Zenith design. It was a cast iron assembly which has proven to be very tempermental and can easily be clogged with dirt. The Zenith was also noted for gasoline leakage caused by the fuel valve located inside the carburetor, its shut-off is activated by the rising of the float. Many times this shut-off will not seat properly and will permit gas to continually seap into the carburetor after the float chamber is full, thus causing an overflow. This overflow runs out the back of the carburetor. It is highly recommended to always shut-off the gasoline while the car is not in use. This problem can easily be solved by the installation of a special shut-off valve which is available thru some parts supply companies. These will be advertised as being a replacement for the original.

ZENITH CARBURETOR REBUILDING KIT

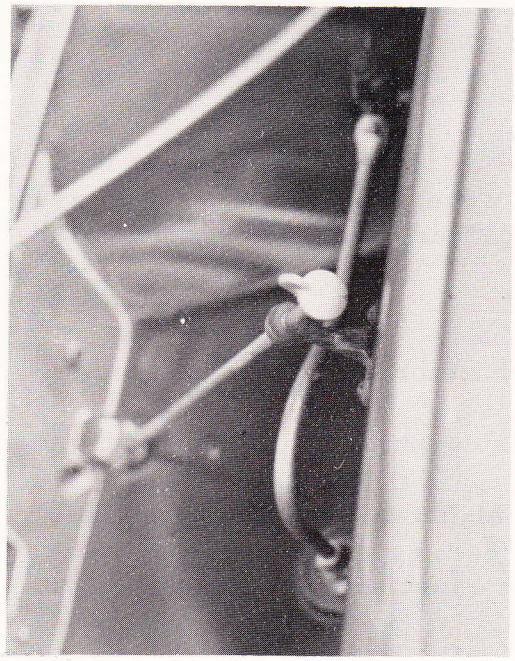


To achieve peak performance from your Zenith carburetor, it will be necessary to replace all gaskets and jets including the float. The float assembly itself, as previously mentioned, can cause a great deal of trouble. To properly set the float, the center lines of the float must be perfectly parallel with the base of the upper portion of the carburetor. By holding the upper portion of the carburetor upside down you can then bend the float into correct position.

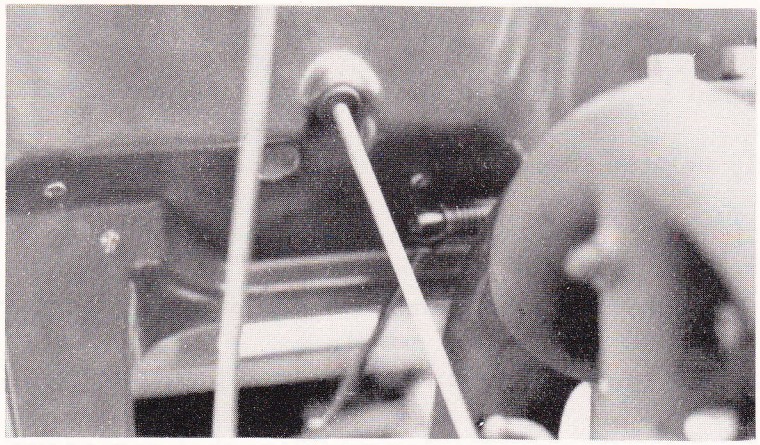
There are two types of needle & seats, better known as the fuel valve for the carburetor: The original style and the replacement utilizing two steel balls instead of the steel needle as originally used. The latter does the best job in preventing leakage and fuel overflow in the carburetor bowl.

On the Zenith carburetor you can adjust both the amount of incoming air & gas to the carburetor. The carburetor adjusting needle located on the upper portion of the carburetor regulates the air. By screwing it inward, there will be less air taken in. By unscrewing, more air is allowed in. The proper adjustment is for the needle to be unscrewed approximately 2 complete revolutions from its bottom position. This will vary from carburetor to carburetor and engine to engine. The other source of adjustment regulates the amount of gasoline in the mixture. The adjusting needle located inside the adjusting needle housing is that regulator. Through the use of its cover, called the adjusting needle driver, the entire unit is connected to a choke rod with all adjustment at that location. Unscrewing the choke rod allows more gasoline into the carburetor mixture. Screwing it downward, the amount of gasoline is decreased. For proper starting, it will probably be necessary to unscrew this adjustment approximately 1-2 turns. Once the engine has begun to warm up, this opening

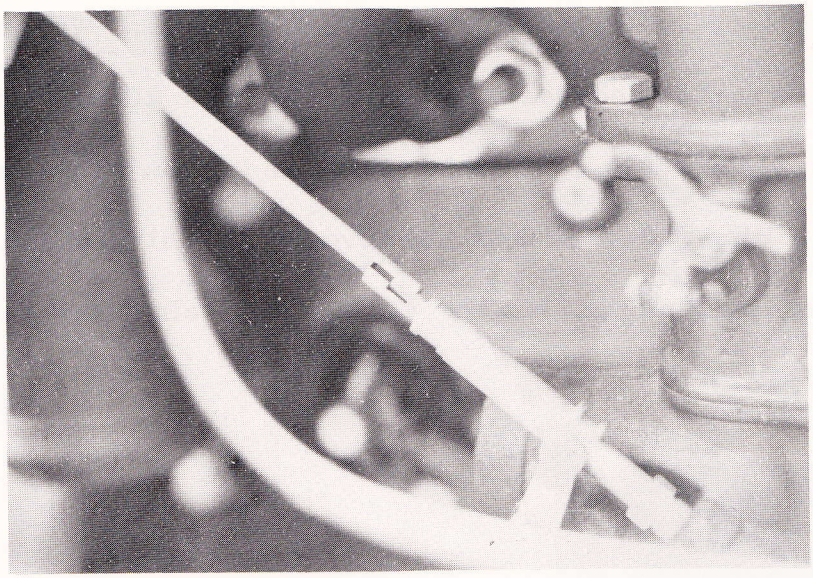
should be decreased to approximately 1/4 of a turn. When first starting your car, it will be necessary to choke the engine allowing more gasoline to reach the cylinders to create fire within the engine. This can be accomplished by pulling upward on the choke lever which will close the air shutter plate while engaging the starter. This action being necessary for only a few seconds.



Choke lever which is a long rod extending from the carburetor to the inside of the engine with a chrome knob on the end. It is secured in position by a bracket extending at the base of the tank on the passenger side. Note the rubber grommet at the bracket. There is also a similar rubber grommet located at the firewall.



As the choke rod extends downward through the firewall it will pass through a rubber grommet and extend onward to the carburetor. In this photograph also note the long extension leg from the accelerator assembly with a small ball on the end. As later described, the end of this rod will be attached to the small arm and ball coming off the top of the carburetor in the foreground.



Connection between the carburetor and the adjusting needle driver is made at this point. Note the interlocking notches. There is to be a steel sleeve shown below that encloses the rod and the driver to make this connection permanent.

Quite often through the years the Zenith carburetor was discarded and replaced with the Tillotson carburetor. This carburetor has been found to be extremely efficient in operation and is highly recommended today for better gas mileage and overall performance especially if you plan on tour driving your "A".

TROUBLESHOOTING THE CARBURETOR:

As mentioned above, if you should have a carburetor leak, it will either be directly related to overflow or the possibility of deterioration of gaskets. Gaskets, if bad, should be replaced.

It should be noted that the float assembly should be parallel to the top of the carburetor when placed in an inverted position.

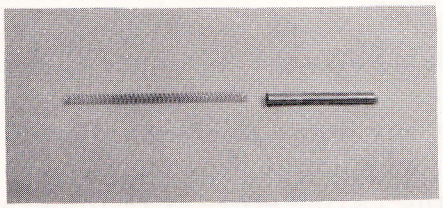
Usually the only other particular problem that can occur in the carburetor is the accumulation of dirt. If it should clog the high speed jet, the intermediate or idling jet, then the engine will not perform and will stall-out at those particular speeds respectively. As an example - if the high speed

jet should be clogged with dirt, the engine will respond properly for idling and initial acceleration, however when power is needed, the extra supply of gas will not be available thru the high speed jet and the engine will stall. The same being true if any other jets should be clogged.

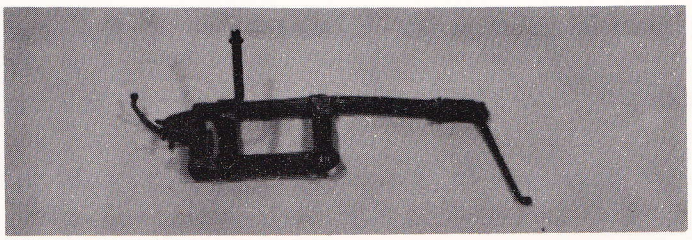
During restoration of the carburetor, it is imperative that the proper fuel & air mixture reaches the cylinders. There is some potential of excessive air being sucked through the system up ot the cylinders, thus giving an improper ratio. It is highly advisable to check the play between the throttle shaft and its openings in the carburetor. Should there be any play in this shaft, it will be necessary to re-drill it using a 19/64" drill bit and installing an oversized shaft. This will prevent air from passing through the worn shaft and openings. Also check around the connections between the intake manifold and carburetor. Make sure the gasket if in good condition and retains a good seal. Another potential spot is in the connection between the intake manifold and the engine. This gasket too must be uniform and not allow air leaks.

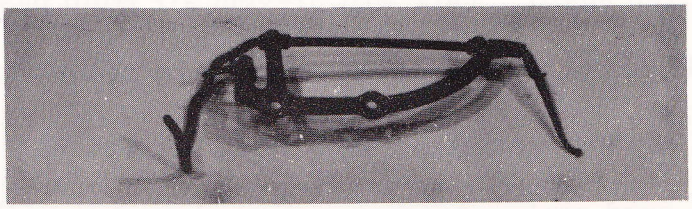
It is recommended to use regular gasoline in your "A" as it was designed for this. The higher octane gasolines can give more power but will burn at a higher temperature, possibly causing your engine to run a few degrees higher. This can endanger the valves because they have not been designed to run at higher temperatures.

As discussed previously, if your carburetor becomes clogged with dirt, the only remedy will be to dismantle it and clean it. This will require the installation of all new gaskets.

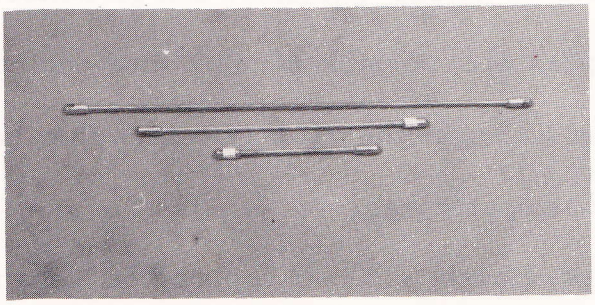


Order of assembly of choke rod spring and sleeve to interlock the choke rod and adjusting needle driver.





There are two types of accelerator assemblies on the Model A: The early 1928 (top) and the late 1928-31 (bottom). Both assemblies serve the same function and mount in behind the engine between the firewall.



These three rods found under the hood on your "A" attach (from top to bottom): the spark rod lever arm on the steering column to the distributor, the accelerator assembly arm to the carburetor, and the throttle rod lever arm on the steering column to the accelerator assembly.

PARTS NEEDED TO COMPLETE YOUR RESTORATION:

1. FUEL TANK WELT. All black, 1/8" bead with 1-1/2" flap, exactly like original. When in place, this was painted the same color as body.

2. CAULKING SEAL. For around fuel tank.

3. GAS TANK FILTER. Fits inside gas tank at inside gas shut-off.

4. GAS LINES. Formed from steel tubing with brass fittings. Gas tank to firewall, inside the car & firewall to carburetor, outside the car.

5. GAS GAUGE TOOL SET. Tool set to remove the inner & outer nuts.

6. GAS GAUGE REBUILDING SET. Gaskets, lens and special coated cork float.

7. GAS GAUGE NUTS. Inner & outer.

8. INTAKE & EXHAUST MANIFOLD GASKETS. Asbestos graphite construction.

9. ZENITH CARBURETOR REPAIR KIT. Zenith carburetor overhaul kit.

10. CARBURETOR NEEDLE SEAT "NO LEAK". Stops the flooding, rough idle, fire hazard, hard starting hot or cold, and carburetor dripping after you turn off the ignition key.

11. CHOKE ROD ASSEMBLY. With spring and sleeve included.

12. CHOKE ROD GROMMET SET. 3 pieces - upper & lower grommets & special metal washer.

13. CONTROL RODS. Throttle rod - 6", Accelerator rod - 10-9/16", and Spark rod - 17-5/16".