What To Do If The Model "A" Stops!

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Illustrations:
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1. **Fuel Shutoff Valve**
   Have you remembered to open the fuel shutoff valve?
2. **Gas**
   Do you have gas in your tank?
3. **Gas Tank Caps**
   Some of the very nice and shiny reproduction gas tank caps for the 1930-'31 cars are *not* equipped with a ventilation hole. While being driven, the car will gradually develop a vacuum in the tank causing the gas flow to stop. The car will run fine for a while and then quit. If you wait for a few minutes, (for example, while looking for an electrical fault) it will start again.

   Because of sun/heat, the gas evaporates and pushes gas down into the carburetor. On sunny and warm days you can actually drive the car for long distances on low revs, but it will not tolerate acceleration. This is a difficult fault to find, but if you unscrew the gas tank cap rapidly when the car stops and you hear a "svuppp" sound, you've found the culprit!
4. **Rust in the Gas Tank**
   Most gas tanks contain rust. If a flake comes loose and covers the fuel line opening in the tank, you've got a problem. A temporary solution is to disconnect the gas line either at the carburetor or the sediment bowl, open the fuel valve and blow into the tank. Remember to remove the gas tank cap!

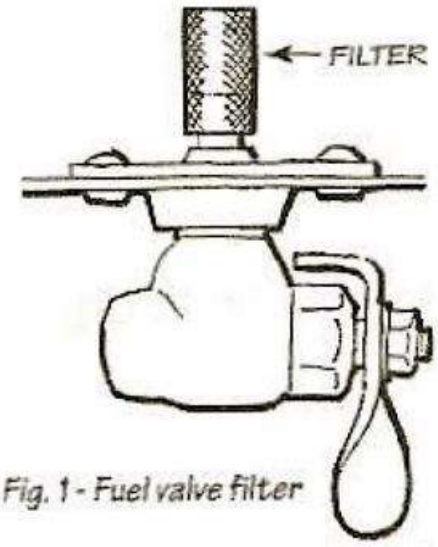

Fig. 1 - Fuel valve filter

A lasting solution is to mount a fuel filter, A-9193-T Gas Tank Screen, in your fuel valve (Figure 1), but keep in mind that this fix does not apply to late 1931s with the gas valve on the outside of the firewall.

Powdered rust may slip past the screen in the carburetor. This screen is often damaged by a gas line that's

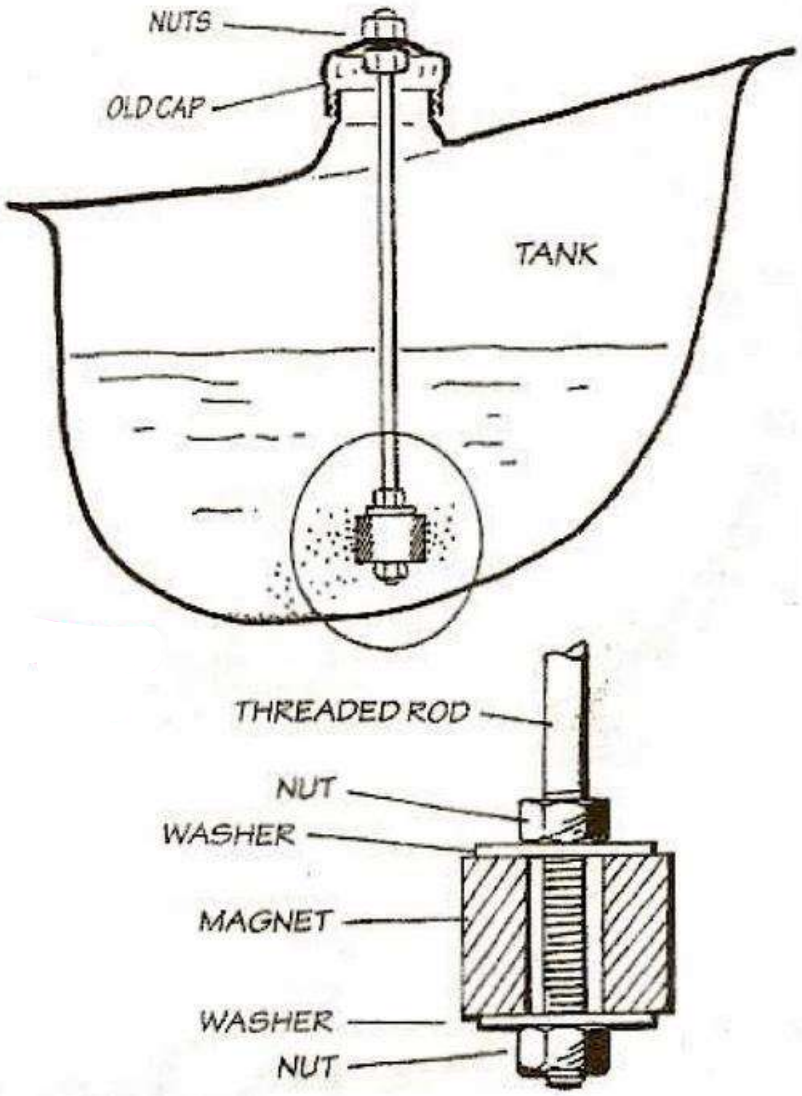

Fig. 2 - Magnet in gas tank attracts loose rust

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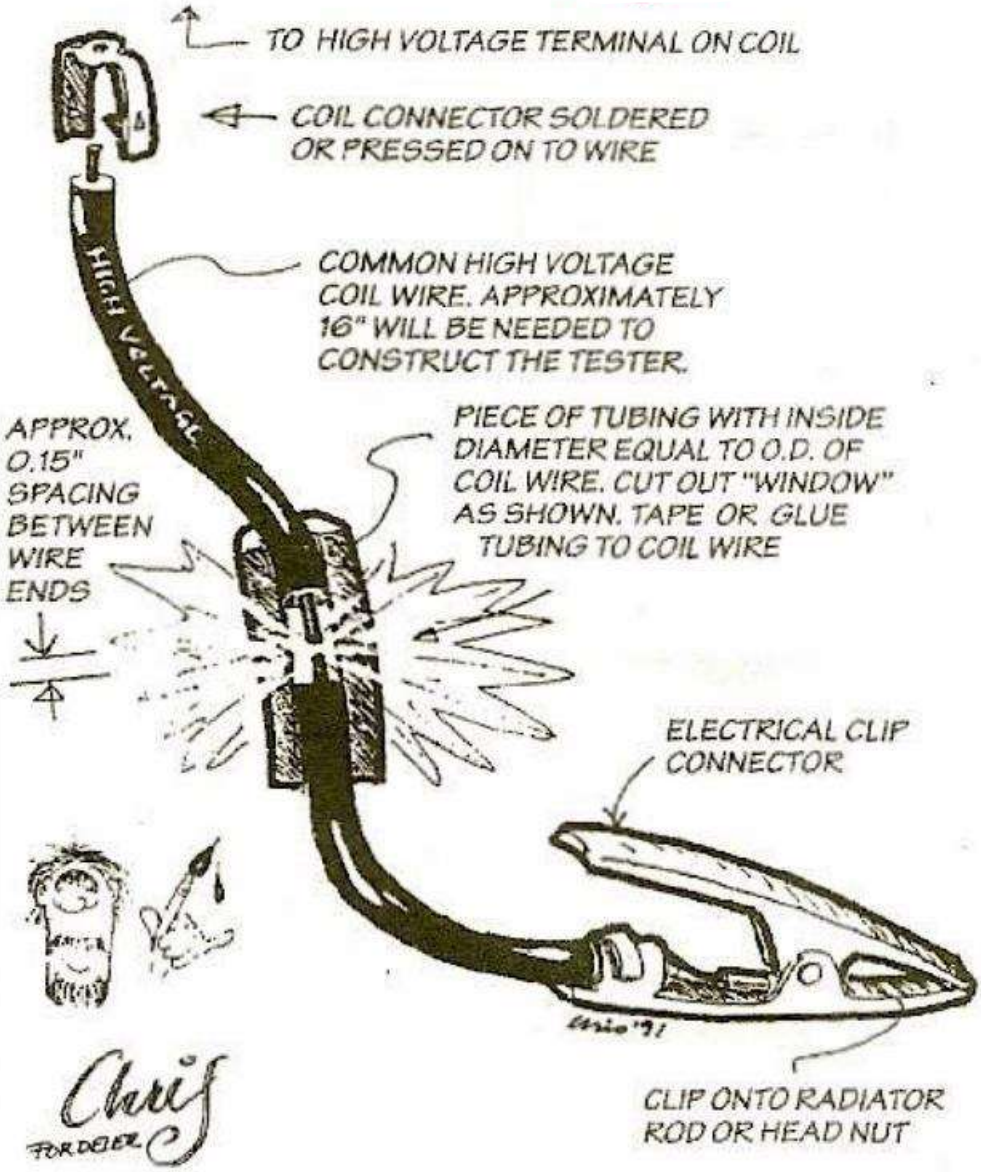
3. Coil

Symptom: The engine starts with the crank or can be push-started. It will not take full gas or high rpm. It will seldom start using the starter motor.

Remedy: Test the coil with a spark tester. Figure 3 shows a simple, low cost, tester that you can make yourself. Clip the connector to a radiator brace rod or lug nut and plug the high voltage wire into the coil. A weak red spark indicates a nearly dead coil.



It's wise to carry a spare 6V coil in your spare parts kit. Try the nearest auto junk yard and look for a 6V VW Beetle. A used coil should cost you almost nothing. New coils are available from most Model "A" parts suppliers.

4. Stray Currents

When it's dark, you can see blue illuminated lines, either on the outside of the distributor cap or on the coil, where the high voltage travels to ground on an easier path than through the spark plug. With a sharp knife, you can scrape away the charred material in which the current travels. This is only a temporary solution to the problem. Change the coil or distributor as soon as possible.

It may be smart to keep a modified or clear plastic distributor cap in your tool kit (Figure 4). Then you can actually see what happens inside the distributor while trying to start the engine or when the engine is running.

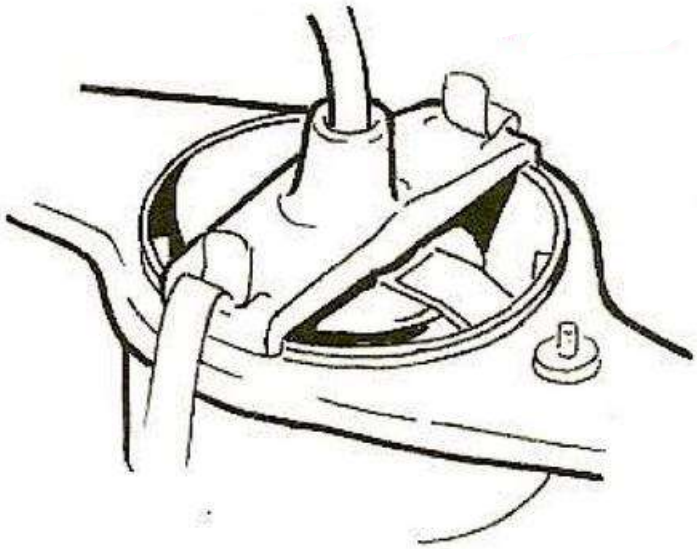


Fig. 4 - Modified cap allows a look inside the distributor

Often you can see stray currents on the inside of the distributor or you can see which plug is misfiring. Check out the corresponding cam lobe on the distributor shaft to see if it's worn more than the others and perhaps doesn't open the points wide enough.

5. Spark plugs

It's not enough that the spark plugs fit the hole in the engine. There's also such a thing as heat range, even on ancient plugs used in ancient engines. Some after-market spark plugs are very good, some are very bad. Some are very much influenced by gas mixture and will be covered in soot very quickly. Others will burn clean and still others will short circuit with oily soot round the center electrode.

ELECTRICAL SYSTEM (LOW VOLTAGE PROBLEMS)

In February 1929, the Model "A's" electrical wiring was altered. The black wire to the terminal box was relocated so that the ignition current flowed through the ammeter. This is a wise change to make on cars produced before February '29. Then you can see on your ammeter if you have current to your coil through the breaker points. The ammeter needle will show "Discharge" every time the points close, and return to "0" when they open.

Remember that coil polarity *greatly* influences spark intensity. The Model "A" has a positive ground system. If you use a modern coil, check this out. The (+) pole goes to the ignition lock, the (-) pole connects via the short black wire to the terminal box (Fig. 5). You can buy a tester called the ***Spark Lite***[1] that you insert between the high tension wire and the distributor. A light indicates if the polarity is correct. If not, swap the red and black wires at the coil.

1. Condenser

The most frequent source of trouble, the condenser is mounted in such a way that it almost fries in the heat from the exhaust manifold. Install a new one of the short-proof variety. Always carry two spare ones in your tool box and *always* have four extra screws for the condenser taped to the spares. A hot engine, trembling hands, a gravel road... guess where the screws go?

Always discard the old condenser. Nothing is more frustrating than replacing a bad one with another bad one! It might also be a good idea to install a heat shield between the condenser and the exhaust manifold.

2. Point gap (0.015" - 0.018") (0,4 mm)

The point gap will often change during driving. Today's points seem to have a weak fiber rubbing block (the part

MODEL "A" WIRING DIAGRAM

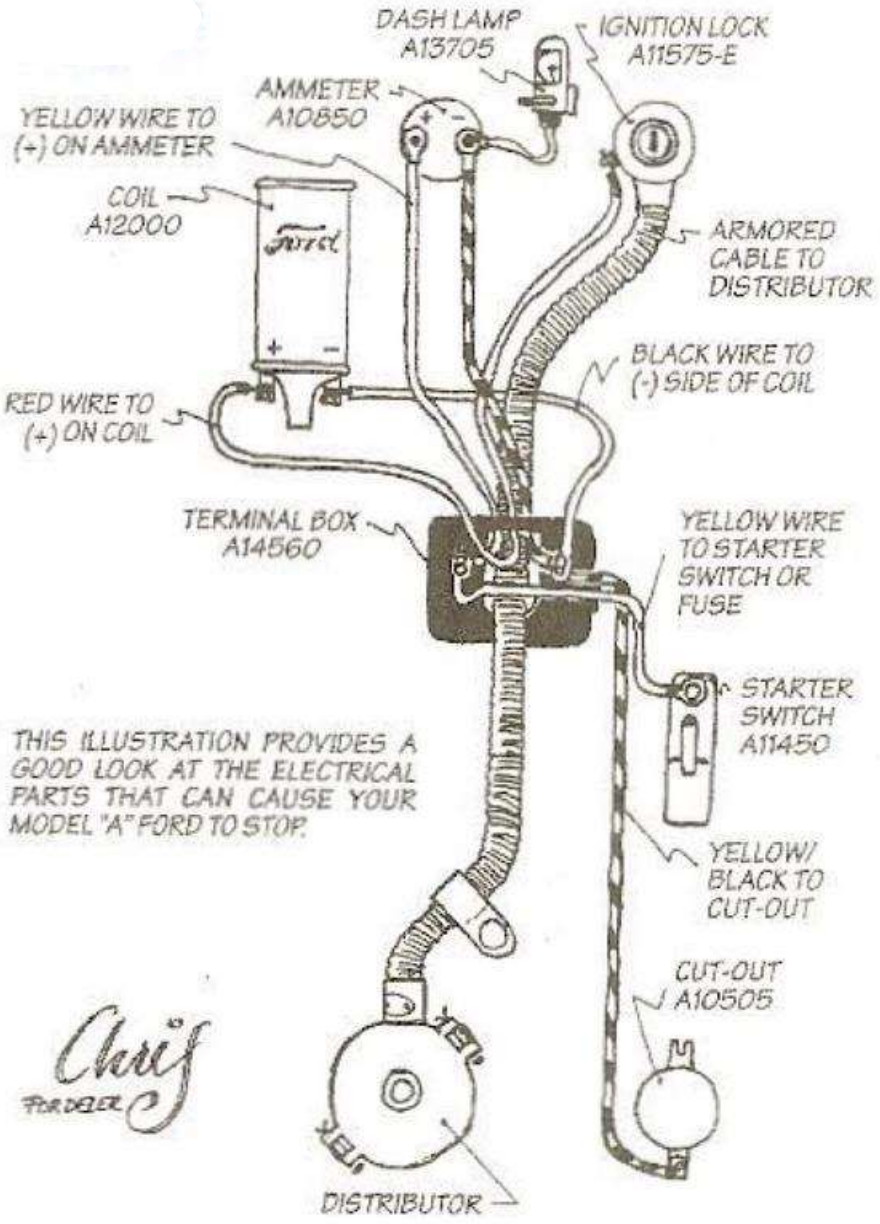


Fig. 5 - The Model "A" electrical system

that rides against the cam), and it wears away quickly, rendering the point opening too small. I've even seen a rubbing block that fractured and disintegrated leaving nothing for the cam to move! Remember to put heat resistant grease on your cam at least once a year!

3. Burned points

A big crater in one point and a big build-up on the other indicates a mismatch between coil and condenser. Change both parts.

4. No current to the points (Is the ignition ON?)

No movement of the ammeter needle when you crank the engine.

a. Check the fuse (if you have one).

- Fuse might be corroded in the fuse clips. (clean it!)
- Fuse might be blown (change it!)
- Fuse wire might have come loose inside the fuse. Too much heat causes solder to melt. Try pulling the fuse apart. If it comes apart, change it!
- Due to loose rivets, some new fuse holders make poor contact between the fuse clips and the wire attachment lugs under the clip. Solder the clips to the lugs before the fuse holder stops you!

b. With the points "open," short circuit the points with a screwdriver.

You should get a spark at the screwdriver, and if the spark-tester is connected, you should have a clear blue spark there as well.

c. Short circuit the points in the closed position.

If you now get a spark, the points are covered with an corroded insulating layer, and you'll have to file them clean.

When the engine is cranked, either with the starter motor or handcrank, you should have a small spark at the points and a clear blue spark in the spark tester.

5. The ammeter shows discharge all the time

If the ammeter shows a continuous discharge when the ignition is on, you have a short circuit somewhere between the coil and distributor. As a temporary measure to get you going when this happens, it's a good idea to carry an old cut-off ignition cable in the car to use as an emergency jumper cable (Figure 6).

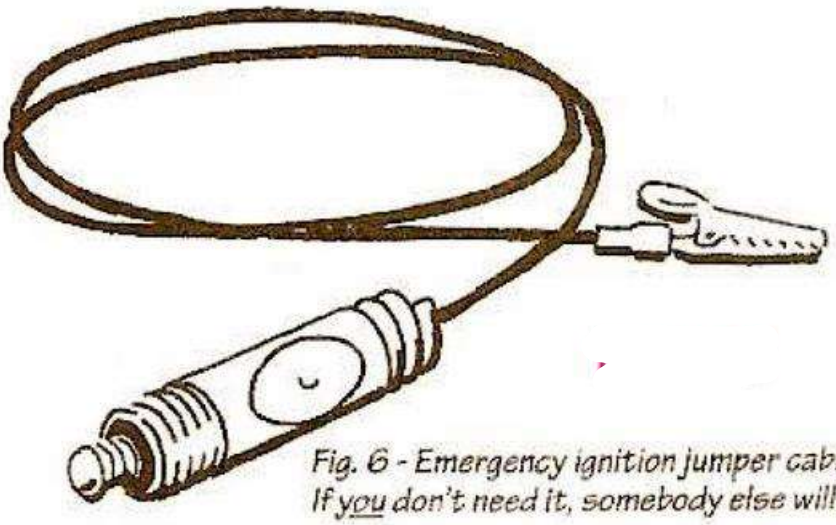


Fig. 6 - Emergency ignition jumper cable. If you don't need it, somebody else will!

Disconnect the red wire from the coil. Remove the distributor, unscrew the ignition cable, and reinstall the distributor. Screw in the emergency jumper cable and connect the alligator clip directly to the coil where the red wire was connected. You've just done to your own car what a thief would have done 50 years ago!

a. Pigtail wire

The little bugger that connects the points on the upper distributor plate to the lower plate is often worn and frequently squeezed by the spring inside the distributor. Or even worse, you've incorrectly installed the fiber washers under the breaker points where the pigtail wire connects.

Change the wire. It must have many strands and be very pliable. Remember, it flexes every time you adjust your ignition. Removing the pigtail wire and fitting a new "wireless" lower plate might also be a good idea.

b. Short circuit inside an old armored cable

A common fault experienced with original ignition locks/cables. Correct temporarily by installing the spare jumper wire as described above.

c. Instrument panel

There's not much room behind the instrument panel and the danger of a short circuit is great. Wires trapped behind the speedometer might be worn through with vibration.

Nuts on the ammeter can work loose causing heat and electrical failure.

d. Distributor ground

If the screw/locking nut which secures the distributor to the head works loose, you might partially lose the ground connection to the distributor. Sometimes the car runs, sometimes it doesn't. Check to make sure that you can see no movement between the distributor body and head when the engine is cranked. This is especially important if you don't have the 2-piece distributor shaft installed.

e. Cleanliness

All points of electrical contact (screws, rivets, nuts etc.) must be clean. Dirt generally conducts electricity and can cause havoc.

f. Contact Resistance

The more spaghetti wiring you have, the more possible sources of failure you've created. Loose screws and corroded contacts create high resistance connections and are frequent causes of accidental stops along the road. This especially true in 6V electrical systems.

g. Ammeter/current/changing

Loose connections on the ammeter or in the terminal box can create heat. The ammeter or the terminal box can become so hot that the bakelite nuts on the ammeter actually disintegrate from the heat.

h. Battery

Have you checked the water level, or do you have the Sahara Desert inside the battery case? The battery can easily boil dry from an incorrectly adjusted charging system. Remember that moving the adjustable brush on the generator against rotation increases the charging rate, and vice versa.

Corroded battery terminals are often forgotten because of difficult access. Hot soapy water and a small brush, goggles, and rubber gloves work magic!

LOW VOLTAGE PROBLEMS - MECHANICAL FAULTS

1. **Are you sure you've turned the ignition ON?**
2. **Worn out bushings in the distributor**

Worn bushings will cause point gap to vary and it will be

impossible to adjust the points properly.

Install new bushings and change over to a two piece distributor shaft. The two piece shaft will easily compensate for an incorrectly machined cylinder head. With a one piece shaft, a few degrees of misalignment and you have a problem.

3. Unevenly worn cam

One cam lobe can be worn more than the other three. Check the point gap on all four lobes to be sure. Some years ago, cams with wrong angles were sold. Do you have one of these?

4. Loose distributor

Does your distributor move or perform a little dance? Check the locking screw/nut and make sure that you have a two piece distributor shaft (see #2 above).

5. Timing gears

Is your gear so worn that perhaps a tooth is missing? Check ignition timing using the timing pin in the timing cover. When the pin settles into the hole in the fiber timing gear, the distributor rotor should point to spark plug terminal #1, which is towards the right head-lamp.

THINGS TO REMEMBER

1. Work lights

If you have a 6 volt work light, you can connect one lead to either terminal box wingnut (both nuts are "live.") Connect the other wire to a head nut or any other bare metal.

2. Cylinder firing order is: 1243 (not 1342!)

3. Air leaks

A worn throttle plate shaft in the carburetor can leak air around the shaft. It then becomes difficult to adjust the carburetor to run properly at both idling speed and driving speed.

Air leaking around the gasket between the intake manifold and engine or manifold and carburetor happens often. If you spray some "Quick Start" fluid towards the suspected gasket and the engine rpm changes, you've found the problem.

4. Incorrect timing cover/timing pin

Some engines have accidentally been rebuilt with a Model "B" timing cover. "A" and "B" covers look similar but the timing pin is in a different location, an endless source of fun before you realize what's wrong!

5. Terminal box nuts

Sometimes the nuts inside the terminal box work loose. This can cause all sorts of funny electrical problems. Check these two nuts every time you change oil or oil your distributor.

6. Fuse/fuse holders

If you've installed a fuse in your electrical system, spend a few pennies once a year and change it even if the fuse appears to be OK. Corrosion may damage the fuse inside, causing an unstable problem to appear.

And of course, you've soldered the fuse holder terminals, haven't you? Rivets work loose with temperature changes!

7. Horns

A common cause of trouble when the fuse blows is a short circuit in the horn.

In most electrical circuits, current flows from a battery to a switch that connects or disconnects the load (light/motor/radio, etc.) which is always grounded. However, the Model "A" horn circuit is different. The horn is always connected to the electrical system (is always "live") and the horn switch connects/disconnects the ground wire.

So if a wire works loose inside the always vibrating horn, you'll have a short circuit. It may be difficult to locate, because the loose wire can rattle and vibrate on and off of the painted surfaces making an intermittent contact.

MODIFICATIONS

Many after-market designs can be found. Modified bottom plates are available to eliminate the distributor's pig-tail wire, you can buy a modern top plate with modern points and condenser, and you can file the post which electrically connects the points to make point changing easier (Fig. 7). Some of these modifications or gadgets are better than others, but an original system in good order worked then and will work today!

EASY POINT CHANGE

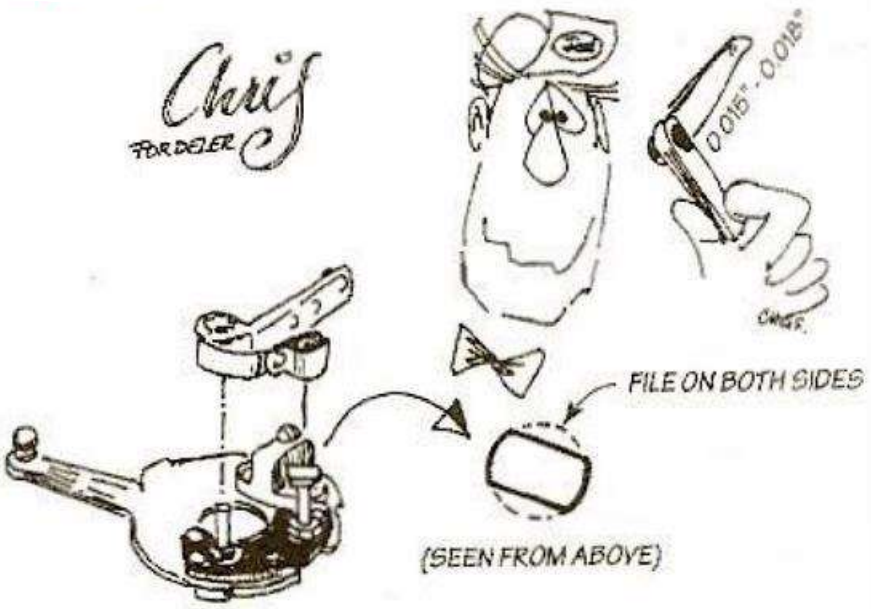


Fig. 7 - This simple modification makes point changing easier

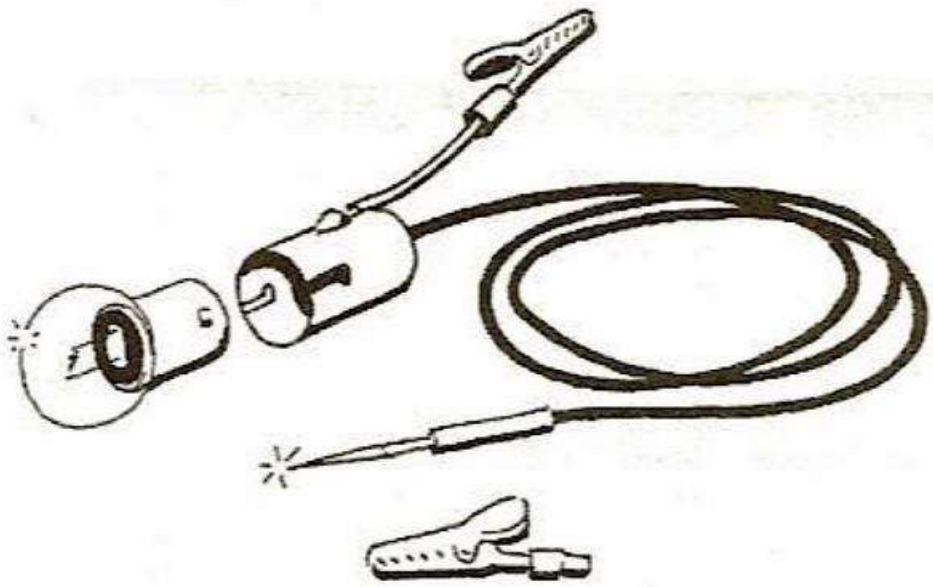
LOCKED STARTER MOTOR

Lastly, a very common Model "A" phenomenon; you push the starter button, the engine goes "clunk" and is stuck. Everything is quiet and dead. You can't push-start or crank the engine, but whatever you do, DO NOT LOOSEN THE STARTER MOTOR!

Try to put car in 3rd gear and rock it back and forth with emphasis on the backward movement. If this doesn't solve the problem with a "click," remove the floor mat, the gear shift/hand brake cover, and unscrew the cover on the clutch housing. Using a crowbar or a very big screwdriver, rotate the engine in the reverse direction (the flywheel should move to the right when you look into the hole in the cover.) Some force may be needed before you hear the blessed "click." *Caution!* Place a wooden block between the cast iron housing and the crowbar so you don't damage the housing. You really don't need to overhaul the starter at this time because it will probably be another three years before it happens again!

USEFUL TOOLS

- Screwdrivers (small/large)
- Small adjustable wrench
- Pliers
- Spark tester
- Feeler gauge
- Point file
- Test lamp with both alligator and sharp needle connectors (Figure 8). The needles are used to penetrate the insulation on a wire to determine if it's "live" without damaging the wire.
- Thin fence wire (Everybody says that fence wire is a necessity for repairing the Model "A," but I've only seen it used once - to keep a broken exhaust pipe off the road. But if you don't carry some, you're bound to need it.)
- Small unbreakable container (cut-off laundry detergent bottle or milk/juice container)
- Crowbar (or a very large screwdriver)
- Wooden block (size of a cigarette packet)



USEFUL SPARE PARTS

- Complete and tested distributor
- Complete and tested carburetor (drive with the Zenith, keep your Tillotson as spare!)
- Modified distributor cover or plastic cover (Figure 4)
- Lower part of ignition cable (the one that screws into the distributor) with wire and alligator clip (Figure 6)
- Condenser
- Ignition points
- Patience

(Author's note: I've never needed any of this stuff myself, but if I had charged rent for the times my little tool/spare parts bag helped others, I'd be a rich man! Remember: The best way to avoid rain is to carry an umbrella!)

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[1]***Spark Lite*** is manufactured by ***Nu-Rex***, P.O. Box 9332, Akron, OH 44305 and is available from most full-line Model "A" parts suppliers.