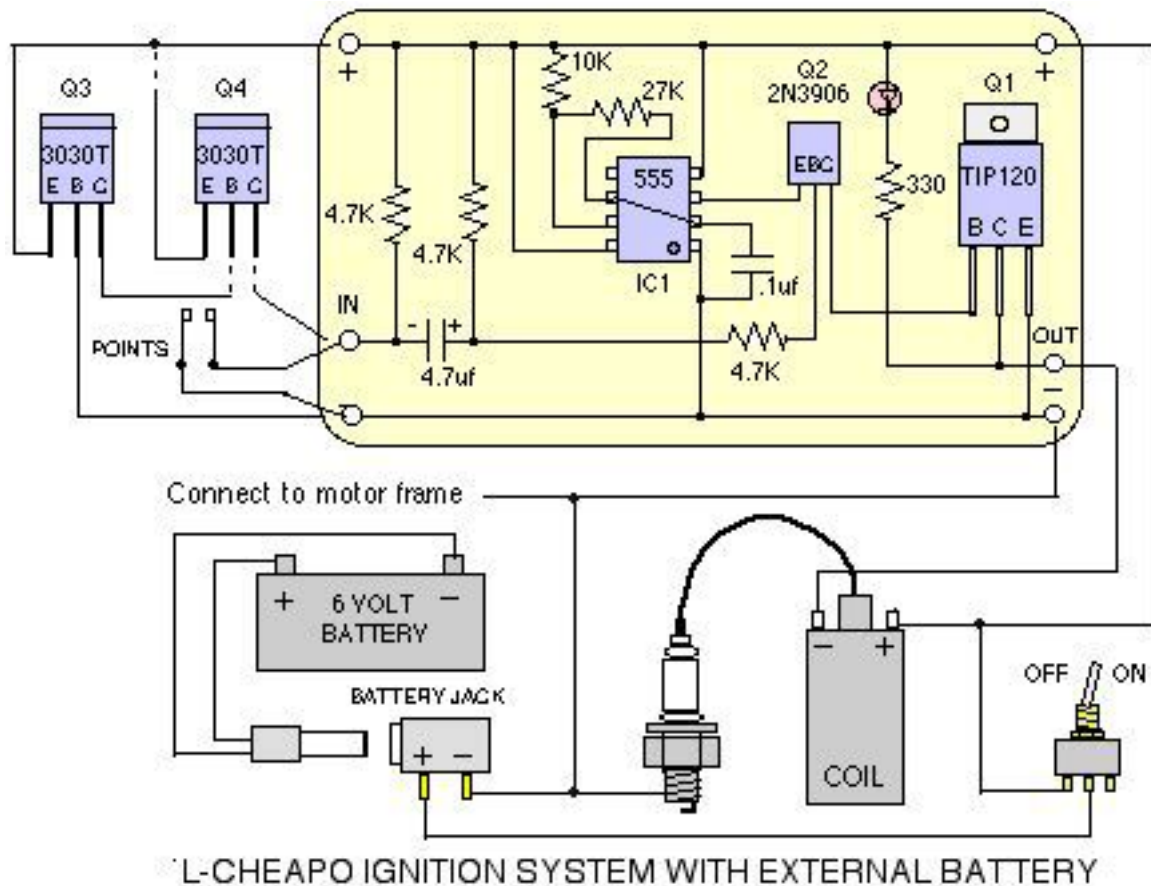
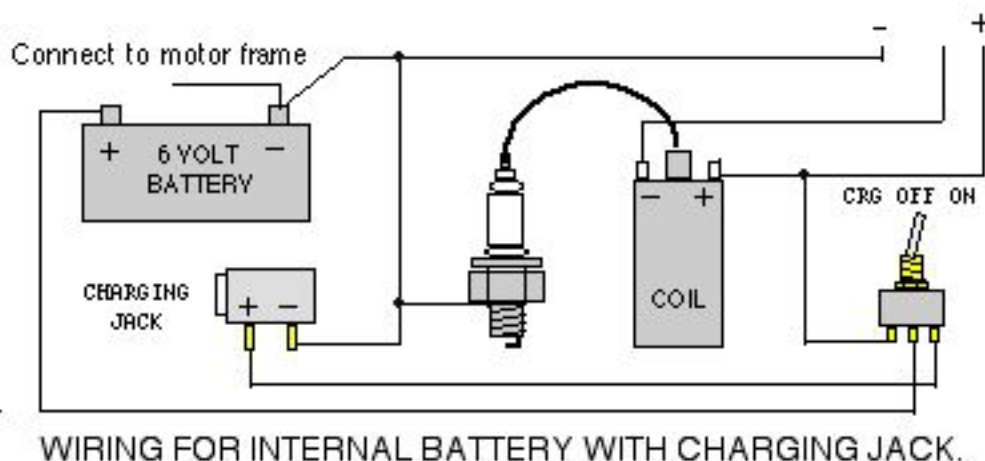


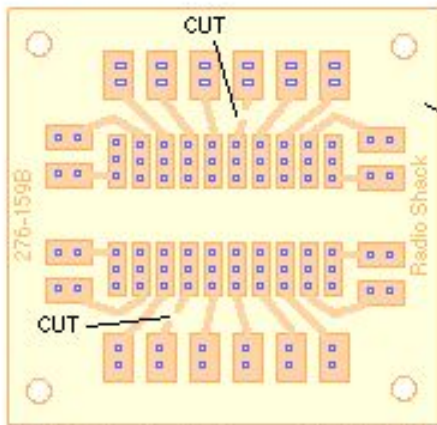
L-CHEAPO IGNITION SYSTEM

This 6 volt circuit is a real battery saver. If your motor stops with current flowing to the coil, it times out in less than one second and current stops flowing. If you are using it on a hit-'n'-miss motor you can save even more battery by adding Q4 to sense when the exhaust valve is closed. Q3 and Q4 are used instead of points. Q3 and Q4 are Hall-effect transistors and are operated by the passing of a small magnet. You can set the timing by the led or by removing the spark plug and watching the spark (the plug threads need to be touching the motor frame). Below is a list of parts and where to find them. (Do not use a soldering iron larger than 30 Watts). How to solder.



If you wish to use points instead of a Hall-effect sensor, connect your points to ground and the IN connection on the circuit board. The spark will fire when the points close.

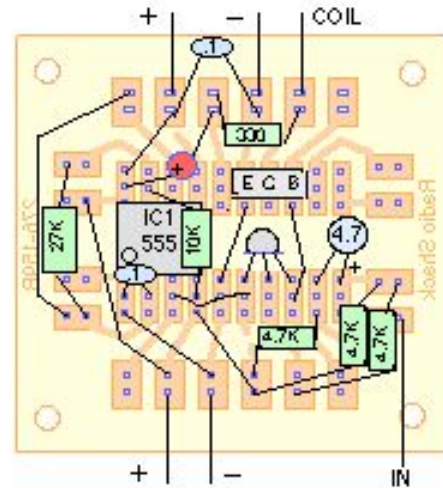




Radio Shack PC board #276-159
Bottom View turned over top to bottom

If you don't have a moto tool Break off the end of an old hacksaw blade and use the sharp end to saw open the board lands.

A common mistake is to solder IC1 in reversed. If you use a socket for IC1 it will be easy to repair.



Radio Shack PC board #276-159
Top View (see through)

Above is the layout for L-CHEAPO Ignition system. When your points make, you see only one hot spark but in reality this circuit is pumping out two to eight sparks depending on the speed of your motor.

- | | |
|----------------------------------|-------------------------|
| 1 - Transistor Q1 TIP120 | 1 - Capacitor 4.7uf |
| 3 - Resistors 4.7K Ohm | 2 - Capacitor .1uf |
| 1 - Transistor Q2 2N3906 | 1 - Led (Red) |
| 1 or 2 Hall Trans. Q3 & Q4 3030T | 1 - Switch Mini SPDT |
| 1 - Timer IC1 555 | 1 - Battery Jack 2.5mm |
| 1 - Resistor 330 Ohm | 1 - 8 Pin IC Socket |
| 1 - Resistor 27K Ohm | 1 - Coil 6 Volt Picture |
| 1 - Resistor 10K Ohm | |

IF YOU HAVE NOT SOLDERED ELECTRONIC CIRCUIT BOARDS BEFORE PLEASE READ THIS

Irons from 15W to 30W are good for most printed circuit board work. Anything larger in wattage and you may damage either the component or the board. For myself I like a 20W iron for printed circuit boards. Soldering guns are not suitable for circuit board work. The best solder for electronics is a thin rosin core solder (60/40 .040" or smaller). Never use acid core solder on electronics.

The surface of the component leads and circuit board need to be clean for good solder joints. If any surfaces looks dull or dirty, clean with a small piece of steel wool. If the leads on a part are sticky from glue residue use a little paint thinner to clean.

Bend the component leads as necessary and insert on the board. To hold the part in place while you are soldering, you may want to bend the leads on the bottom of the board slightly. Sometimes a little paper tape on the component side of the board helps.

Apply a very small amount of solder to the tip of the iron. This helps conduct the heat to the component and board. Next, lay the iron tip so that it rests against both the component lead and the board (this is where you will see how important a small soldering tip is). It takes one or two seconds to heat the component enough to solder. Next touch the tip of the solder to the component lead and solder pad, but not the tip of the iron (this only works well if the board is tinned). If you are not working with a tinned board apply the solder where the board pad, lead and iron meet. If everything is hot enough, the solder will flow freely around the lead and pad.

Helpful Tips

1 - A cold joint is a joint in which the solder does not make good contact with the component lead or circuit board. Cold joints occur when the component lead or board moves before the solder is cooled. Cold joints make poor electrical connections. You can recognize a cold joint by the dull gray colour of the solder. Good solder joints are shinny.

2 - If you need to clean up a messy solder joint or replace a part you can use Solder-wick to remove old solder. Solder-wick works great and you can find it at Radio Shack under the name Desoldering Braid Part #64-2090.

3 - Keep your iron tip clean. Use a damp sponge to clean the tip between soldering components.

4 - Solder small parts first and large parts last. This will make assembly easier.

5 - Heat sinks help prevent damage to components like ICs and transistors. Clipping a small alligator clip to a component lead makes a good heat sink.