Constructing a Capacitor Discharge Tool

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INTRODUCTION

Capacitors are electronic components found in almost every device containing a circuit board. Large capacitors can store enough charge to cause injuries, so they must be discharged properly.

This guide will show you how to make a simple resistor-based capacitor discharge tool.

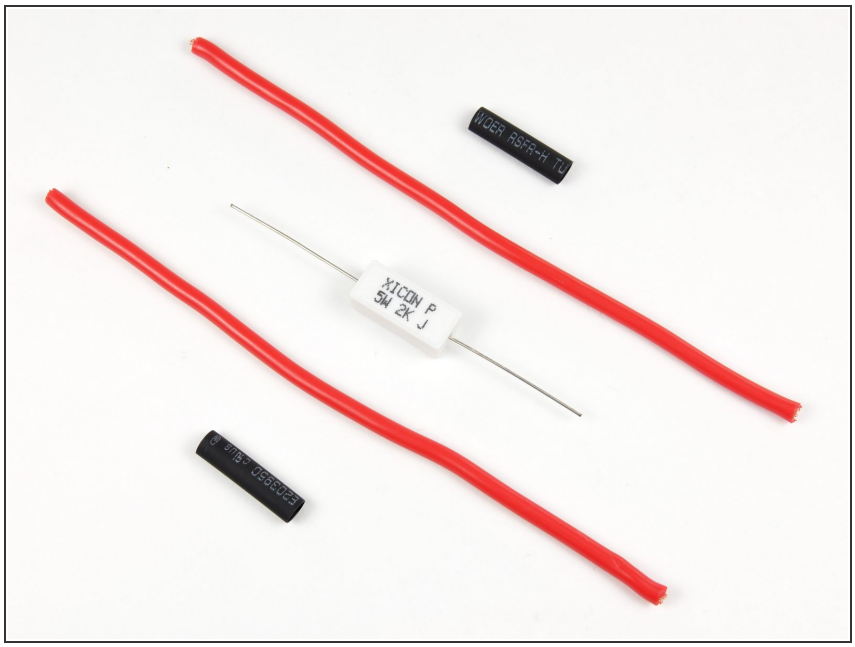
TOOLS:

- Solder (1)
- Soldering Iron (1)
- Wire Stripping/Crimping Tool (1)
- Heat Gun (1)

PARTS:

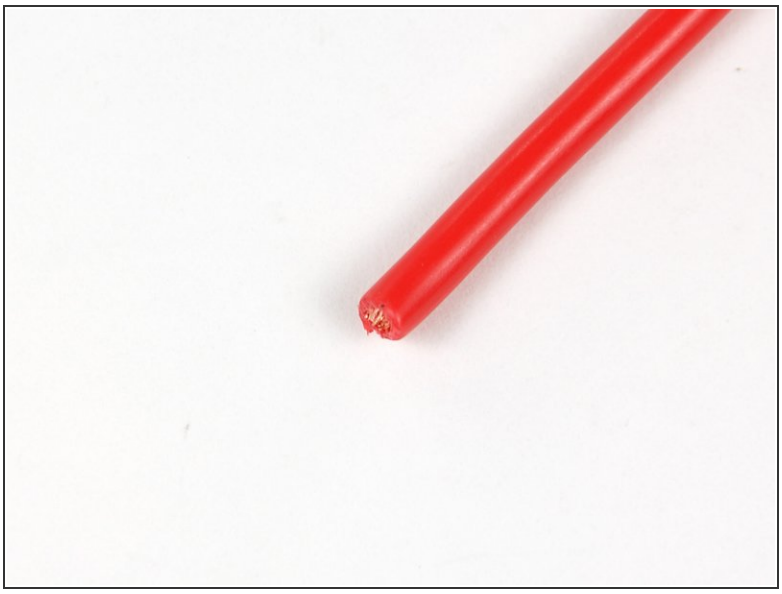
- Heat Shrink Tubing Assortment (1)
- Resistor, 2k ohm 5 watt (1)
- Silicone Wire 12 AWG / 600 V (1)

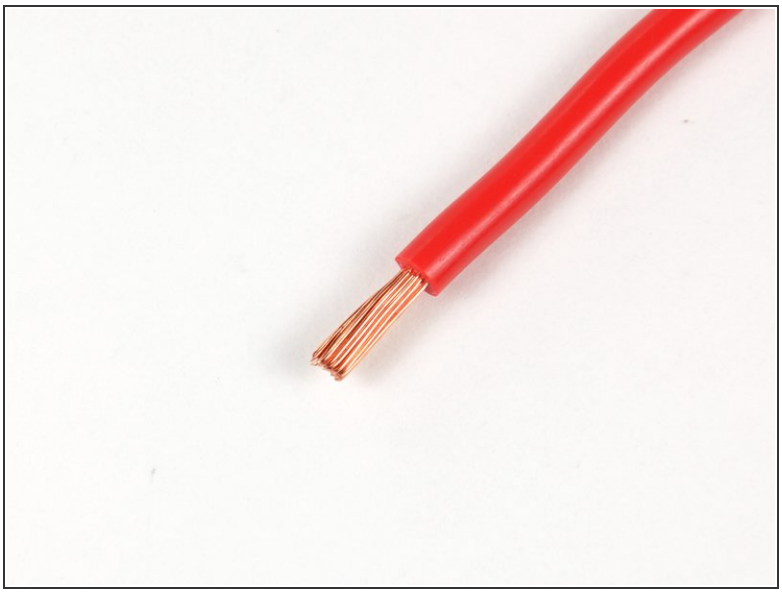
Step 1 — Constructing a Capacitor Discharge Tool



- To construct a capacitor discharge tool, first gather the necessary materials. These include:
  - Two lengths of wire. Minimum wire requirements is 12AWG, 600 volt rating for large electrolytic capacitors used in power supplies, electric motor start circuits and camera flash circuitry
  - A resistor rated to dissipate the amount of thermal energy created when discharging the capacitor. Minimum requirements for resistor is 2k OHM 5w for small capacitors, 20k OHM 5w for large electrolytic capacitors used in power supplies, electric motor start circuits and camera flash circuitry.
  - Shrink tubing

Step 2

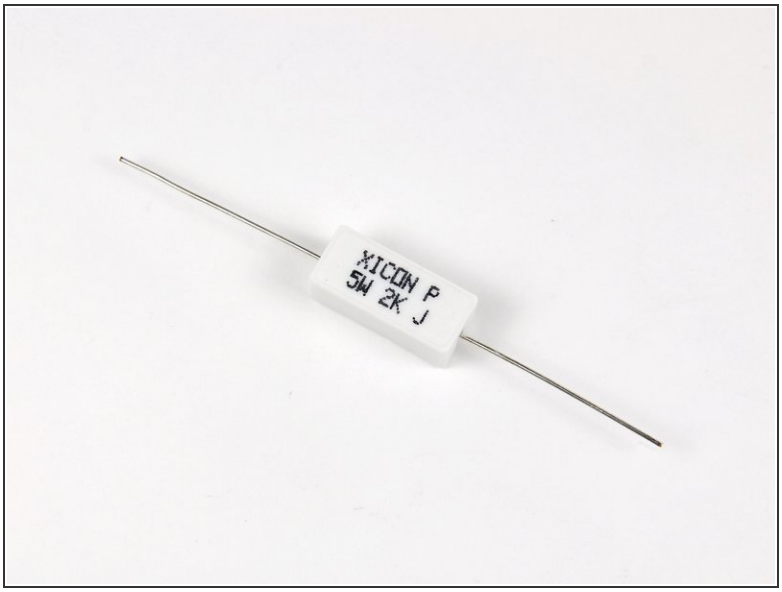


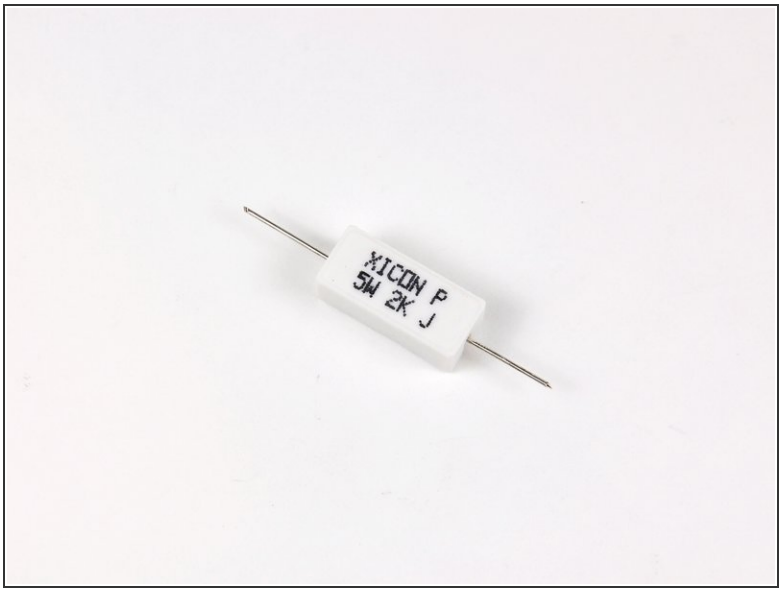


- Begin the process by stripping one side end of each length of wire.

To ensure a solid solder joint, strip at least .25" of insulation off the wire.

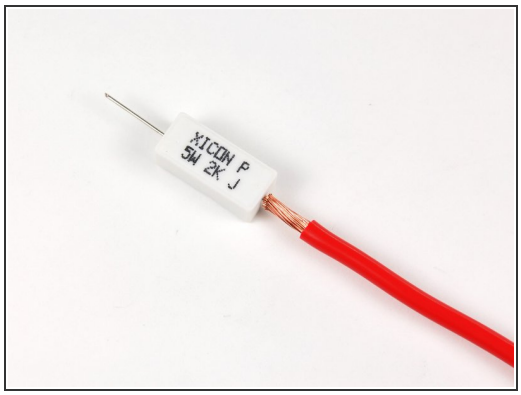
Step 3

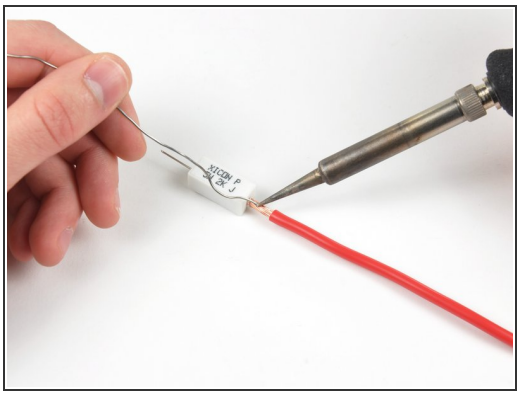
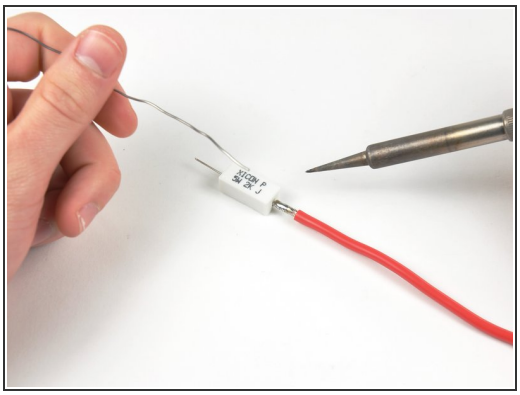




- Next, trim both of the leads leaving the resistor to match the length of insulation stripped off the wires in the previous step.

Step 4



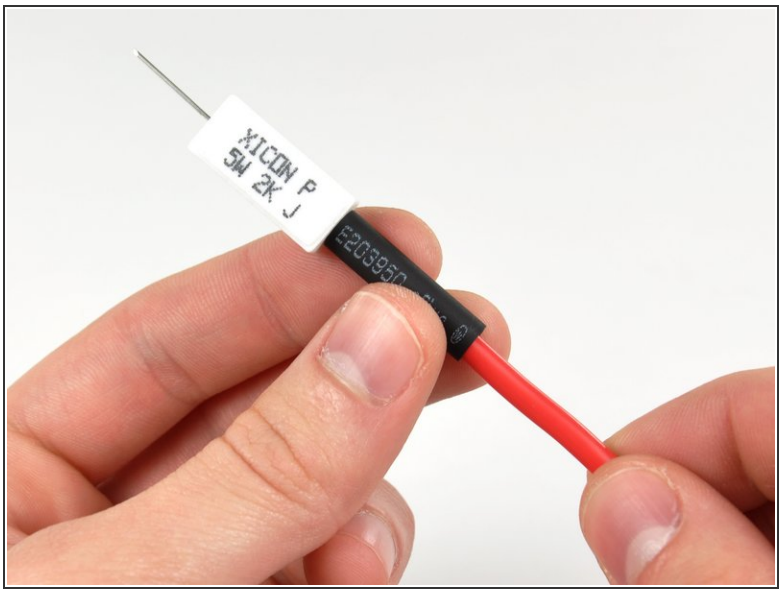
- Join the lead leaving the resistor to the stripped end of the wire by twisting the two together.

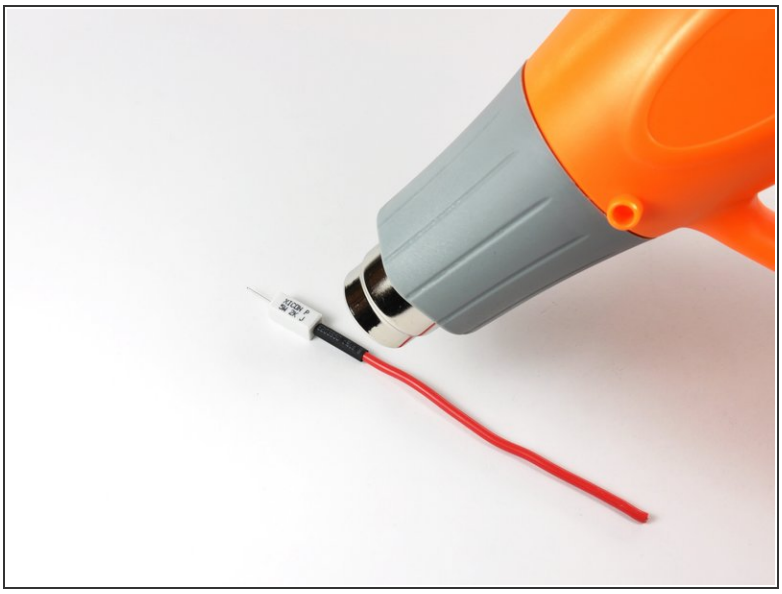
The wire we are using is quite thick, so we inserted the resistor lead down the center of the conductor portion of the wire and twisted the wire against it as tightly as possible.

- Solder the wire to the resistor.

It is essential that enough solder flows through the wire to create a permanent bond between the two pieces.

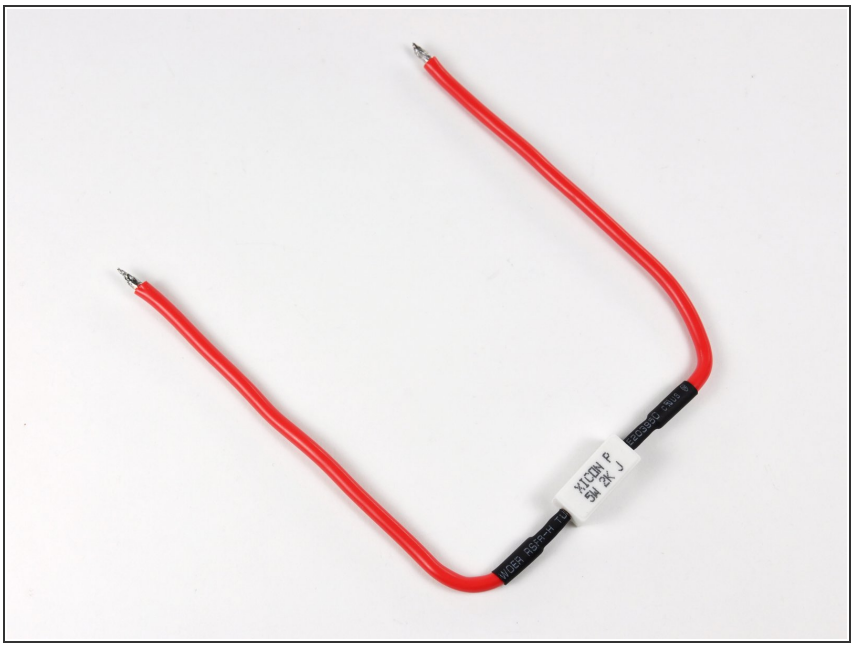
Step 5





- Slide a section of shrink tubing up the wire, making sure to completely cover up the solder joint and any exposed wire.
- Use a heat gun or lighter to shrink the tubing over the joint, making sure it is positioned to cover all exposed wire.

Step 6



- Repeat the above process for the other side of the resistor.
- To complete the discharge tool, strip the ends of the wires.

To discharge from small points, it may be helpful to cut the exposed ends of wire into a point shape and solder them to maintain the shape. Alternatively, the probes commonly used on multimeters can be soldered to the wires to create a more precise discharge tool.

For large electrolytic capacitors used in power supplies, electric motor start circuits, and camera flash units, you may want to solder one end to a large alligator clip and the other to a well insulated screwdriver.

