Triac Variable Speed Motor Control (BT136) Repair

The Triac is an insanely common, high failure rate part in household appliances. Sewing machine speed control foot pedals, appliance speed controls.

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INTRODUCTION

Repair some very common small appliances that use the BT136 Triac (Variac) as a speed/voltage controller.

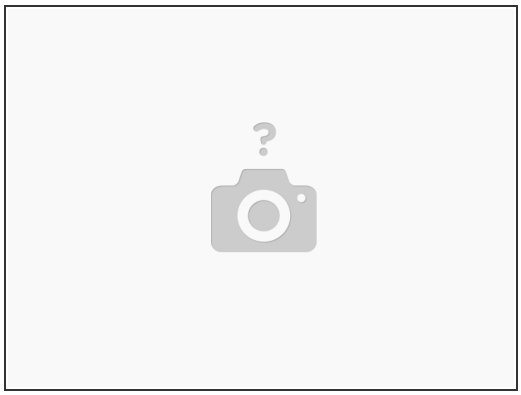
TOOLS:

- screwdrivers, small soldering iron, utility scissors (1)

PARTS:

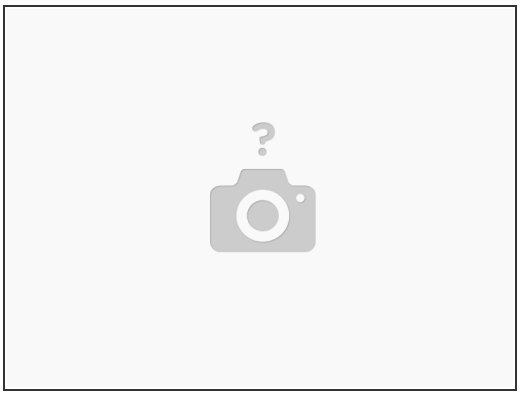
- BT136 Triac, heavy aluminum foil, two-part structural epoxy (JB Weld Steel or similar), rosin core solder wire, de-soldering wick, non-corrosive soldering flux (for electronics) (1)

Step 1 — Trouble Shooting (is it really broken)



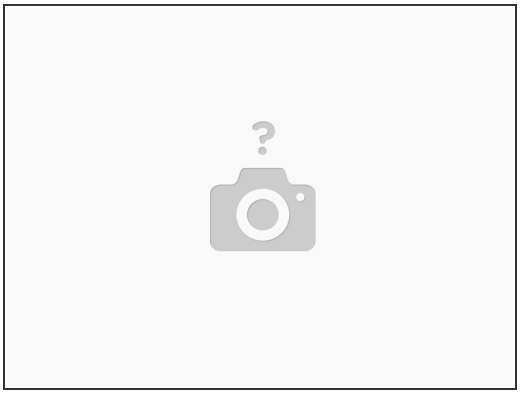
- Open the appliance far enough so that the output leads from the controller board are visible leading to the motor. Determine that a Triac is present on the PC board.
- Using a VOM, test for voltage across the motor on the output of the controller board. The voltage should range from about the same as the voltage at the wall socket at its maximum and zero when the device is turned off. From "off" to maximum the voltage should increase with increase in the position of the speed selector.
- If the BT136 triac is present on the PC board AND there is no voltage present across the motor connections in any any position of the selector... The problem is almost always a problem with the triac.

Step 2 — Remove the dead triac



- Remove the PC board from the device.
- Set the board up in a clamp, vice or alligator clips to keep it stationary while you work.
- Note the orientation of the existing triac before you remove it.
- De-solder and remove the triac and wick out any solder in the contact points.
- Clean the flux and solder bits from the PC board taking care not to damage any of the components, traces or mounting points. A soft bristled toothbrush and rubbing alcohol work well.

Step 3 — To Hack, or Not to Hack



- This step is optional... You may wish to fix the underlying problem to prevent future overheating.
- Using scissors or sheetmetal shears, cut a few strips of stout aluminum foil about 3/8" (about 1 cm).

To reassemble your device, follow these instructions in reverse order.

