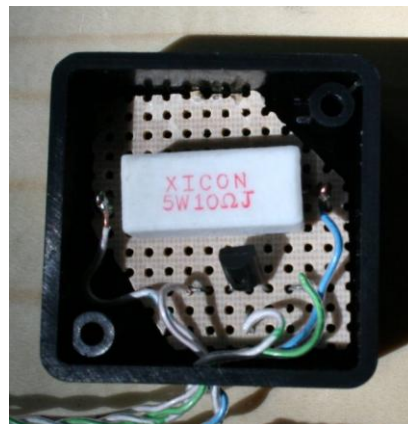
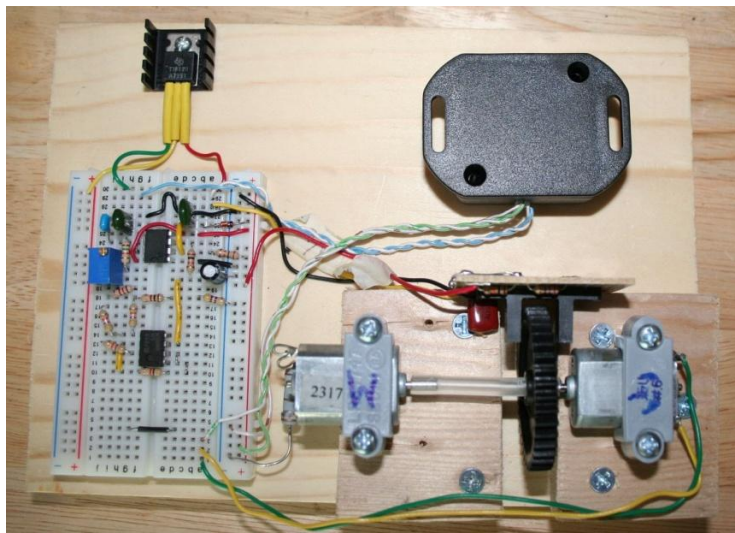


Motor – Generator – Oven Information

Motors and oven are mounted on a pine board. Also included is a TIP120 darlington power transistor on a heat sink, an optical tachometer assembly, and a small solder-less breadboard.



Above: Oven with lid off.

Left: Motor-Generator-Oven Board

Assembly Notes

1. The oven has a removable lid so that it can be cooled when needed.
2. The motors are coupled by a 1/16th inch inner diameter tygon tubing. They must be carefully aligned. The 1.5 inch tubing length reduces friction in the coupling. Motor shafts should be able to move in and out about 1/64th inch, also to reduce friction. Motors are fastened with plastic wire clamps screwed into the pine board.
3. The photo-interrupter wheel is a plastic gear with three holes in it. It has a hole in the center which must be drilled to a size just smaller than the outside diameter of the tygon tubing. Use a drill press for best results. The picture shows the wheel and the photo-interrupter circuit board.
4. Wires should be color coded and the breadboard can be used to make connections.

Main Parts

Digi-Key CNZ1120-ND OPTICAL SWITCH	\$1.86
Jameco 231781 MOTOR,DC,3-9V,0.25A	\$1.75
Jameco162093 GEAR,40 TEETH	\$0.79
Jameco 20601 BREADBOARD, 400 pt.	\$5.95
TIP120 transistor and heat sink	
Resistors: 10 ohm, 5 watt and 1 ohm, 1 watt	
LM35 temperature sensor	
Oven: Hammond 1551PFLBK enclosure	

Circuit Diagram

