

BLOWN FUSE INDICATOR

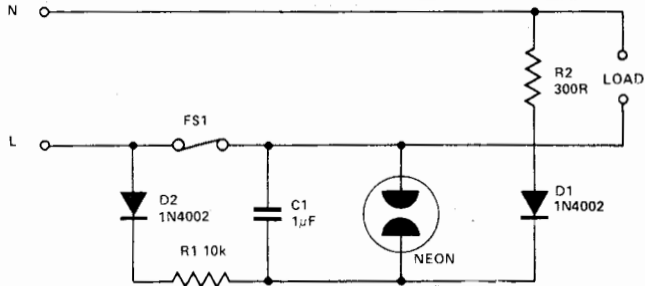
Most power supplies contain at least one fuse and a neon pilot light. With the addition of two diodes, two resistors and a capacitor, the neon light can serve a dual purpose.

As shown in the circuit diagram, if the fuse is OK, the neon functions as a normal mains indicator. However, when the fuse blows, the neon indicates the fact by flashing on and off.

When the fuse is OK, the diode D2 acts as a rectifier and applies current

to the neon, D1 acts as a blocking diode, thus preventing a short. In this mode the light is continuously on. When the fuse blows, D2 blocks while

D1 rectifies. R1 and C1 are the timing components that control the neon flash rate. R2 and the forward resistance of D1 increase neon life.



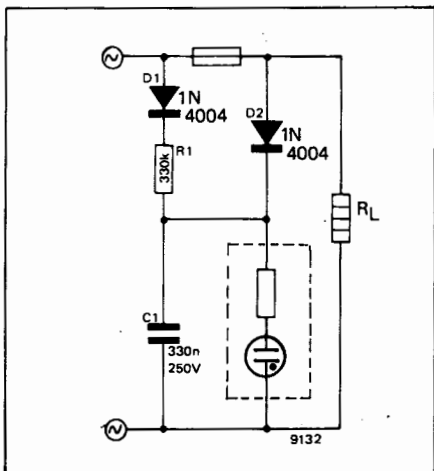
fuse indicator

In this circuit, the neon indicator lamp shows whether or not the power is on and whether or not the fuse is blown.

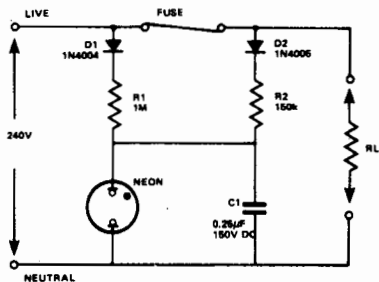
As long as the power is on and the fuse is intact, the neon lamp will draw current through the fuse, D2 and the built-in series resistor. It will burn brightly to indicate that all is well.

If the fuse is blown, however, current can only flow through D1 and R1. This current will charge C1 until the ignition voltage of the neon lamp is reached. The lamp will light up. It will now draw enough current to discharge C1 until the extinction voltage is reached, whereupon the lamp will go out again. C1 recharges through R1, and the cycle repeats. The result is that the neon lamp will flash continuously as long as the power is on.

The only critical points in this circuit are the resistors. The value of R1 must be so large that current flowing through this resistor into the neon lamp is insufficient to keep it ignited. On the other hand, the built-in series resistor should be small enough to discharge C1 fairly rapidly but not so small that the lamp will 'burn out' when fed directly through D2 (actually, a neon lamp doesn't burn out - it can progressively darken as the electrode material 'migrates' to the inside of the glass envelope).



FUSE FAILURE INDICATOR



The circuit is built around the neon indicator which is normally used to show that power is being supplied to mains-driven equipment. When the fuse is intact, the neon is lit steadily as normal. However, should the fuse blow or be removed, the indicator flashes at a suitable rate, drawing the attention of the operator.

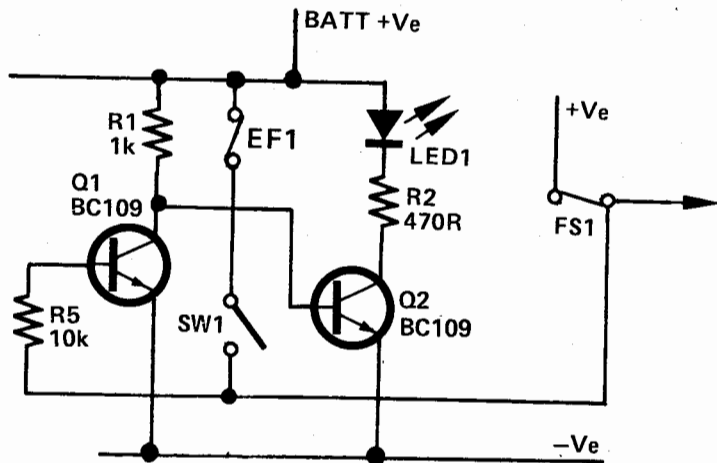
Effectively, the circuit is a simple modification to a neon relaxation oscillator. Under normal conditions, the time-constant of the RC network is such that the flash-rate of the neon is not detectable by the eye. The removal of the link between the anodes of D1 and D2, however, increases the time-constant and the neon flashes can be clearly seen. The specified component values give a frequency of approximately 2Hz.

An advantage of the circuit is that it will operate regardless of load impedance. Points to note: component values are not critical, but because the capacitor charges up to the striking voltage of the neon, diode D2 must have a PIV rating greater than peak mains plus this voltage. D1 can be rated at peak mains or greater. The types specified are suitable easily-obtained devices. Also, built-in resistors in certain types of neon indicator supplied for use at common supply voltages must either be removed or 'shorted'. The resistors should be $\frac{1}{2}$ W.

BLOWN FUSE INDICATOR

Base current for Q1 is taken from the 'earthy' side of FS1. Q1 will conduct its collector voltage falling to zero. Q2 base will also be zero, switching LED 1 off.

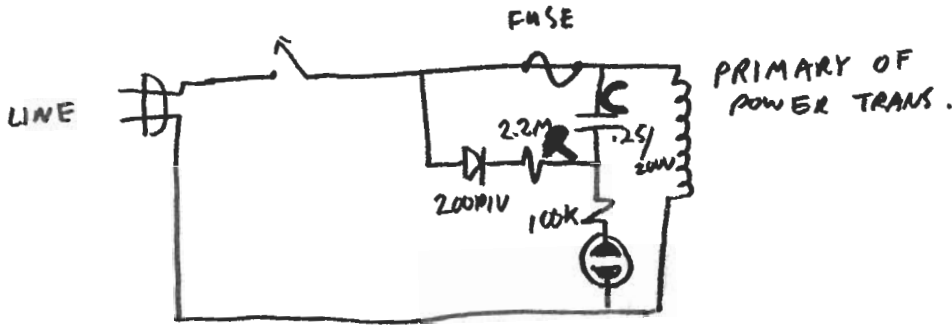
If FS1 were to 'blow' or cease to exist, depart for its maker, have a rest, go to sleep, peg out, become inoperative, deceased, out of order, or duff, kick the bucket, bite the dust, pass away, self destruct, become no longer intact, or cease to conduct in any way, due to war, flood, corrosion or act of God etc., Q1 would switch off, causing its collector to rise to 12 V, switching Q2 and LED 1 on. R2 is the current limit resistor for LED 1. SW1 will bypass FS1 via emergency fuse 1, until FS1 can be replaced.



FUSE MONITOR

TESTED ^{LINE}
 2-12-1973 ⁷

CAUSES PILOT LAMP TO FLASH WHEN FUSE BLOWS.



DOES NOT AFFECT NORMAL PILOT LIGHT OPERATION,

*Time depends on R & C
 Good combinations - 2.2M & .27mF
 10M & .068mF*

TIME DEPENDS ON

R & C GOOD COMBINATIONS

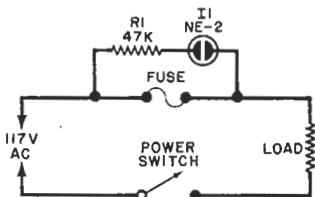
- | | |
|------|--------|
| R | C |
| 2.2M | .27mF |
| 10M | .068mF |



Tips & Techniques

BLOWN-FUSE INDICATOR

This simple circuit will enable you to tell at a glance whether you have blown a fuse—without removing the fuse from its holder. As long as the fuse is good, no



current will flow through $R1$ and $I1$, an NE-2 neon bulb. If the fuse blows, the ac takes the alternate path through $R1$ and $I1$. A 47,000-ohm, $\frac{1}{2}$ -watt resistor is used to limit current through $I1$ to a safe value. Mount $I1$ in any convenient (but visible) location.—*Ross Thompson, Listowell, Ontario, Can.*
