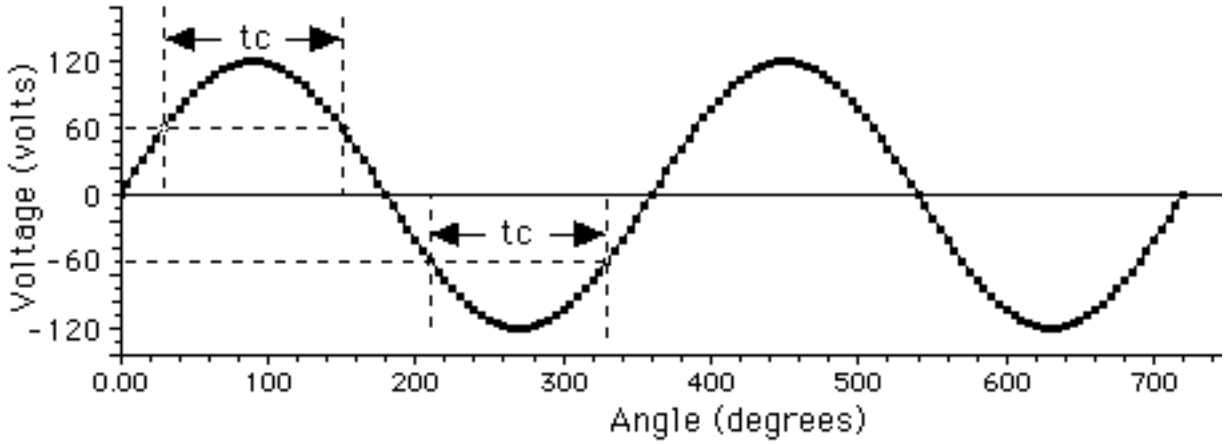
CAPE-tech NEON FLASHER

The CAPE-tech neon flasher is made by connecting an NE-2H bulb in series with a 10 k□ resistor to an electric line cord. The resistor is placed in series with the neon bulb in order to decrease the voltage across the bulb and to reduce the current that flows through the bulb. See diagram #1 below:

< diagram #1 >

When the neon flasher is plugged in, the neon light flashes at 120 hertz. There is a threshold voltage across the electrodes above which the NE-2 bulb conducts and glows. Some students may think that the flash rate is 60 hertz; however, you may point out that the bulb flashes twice during each 60-hertz voltage cycle. See diagram #2.

The duration of the flash (t_C) is determined by the time that the voltage across the bulb is greater than the threshold voltage.



< Diagram #2 >

OPERATION: With the room lights dimmed, swing the neon flasher in a vertical circle at a constant rate. Count the number of light blinks in a fixed angle (e.g., 90 degrees). Also determine the frequency of the swing neon light bulb. Combine the data as shown in the sample calculation below:

SAMPLE DATA:

20 flashes observed in 90 degrees
45 revolution in 30 seconds.

SAMPLE CALCULATION:

$$\frac{20 \text{ flashes}}{90^\circ} \times \frac{360^\circ}{1 \text{ rev.}} \times \frac{45 \text{ rev.}}{30 \text{ seconds}} = 120 \text{ hertz}$$