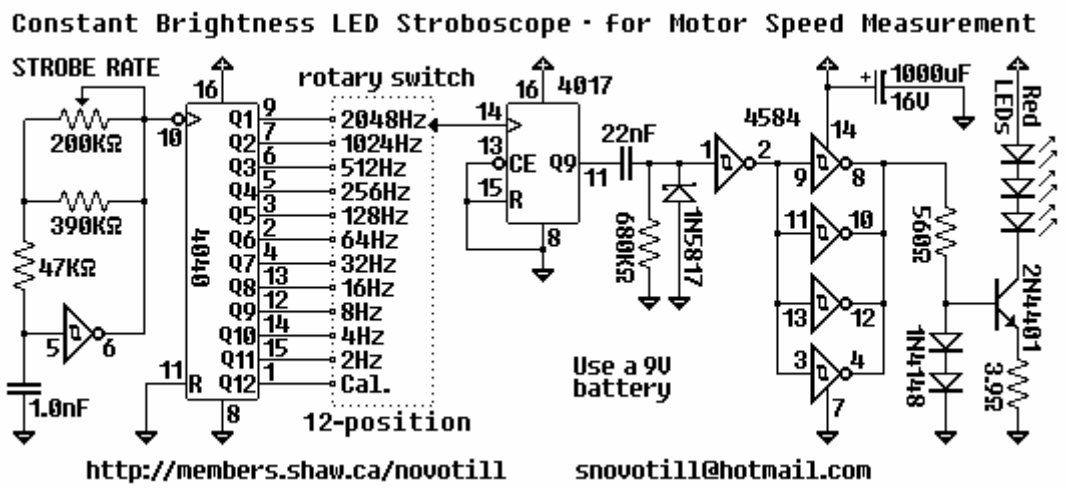

DESCRIPTION: The 4017 ring counter maintains a 10% duty cycle in the LED thereby ensuring constant visual brightness down to 10Hz. Perception of brightness above 10ms no longer depends on pulse width so the 22nF capacitor is used to limit pulse width to 12ms. The oscillator will be reasonably stable down to 7.5V which is already a dead battery. Low duty cycle allows us to hit the LEDs with 150mA of current. Uses ordinary red LEDs in a 3-cluster.

NOTE: Ground the switch and pot case to prevent damage by static.

CALIBRATION: Set rotary switch to 'Cal' position. Adjust the strobe rate potentiometer and mark the 1-flash-per-second position on the dial. Next adjust and mark the 2-flash-per-second point as well as the 0.5-flash-per-second point. Your strobe light is now properly calibrated for all frequencies and rotary switch settings.

USEAGE: Adjust the strobe to the speed of the motor. Read the switch setting and multiply by the potentiometer setting to determine revs per second. For example '128 X 0.75 = 96' revolutions per second.

The rotary switch is available for $5.00USD as of 2003 from DigiKey under part number EG1951-ND or EG1952-ND. It is a real pain to operate this circuit without a proper switch. You can put multiple 4017 ring counters in series to reduce the duty cycle in order to obtain a more focussed strobe image but you will have to increase LED current to maintain the same level of brightness and that will shorten LED life. This circuit can be improved a bit by using a more stable STROBE RATE oscillator or by using a regulator to power the oscillator and associated logic. If you do this you should switch to 74HC class devices.