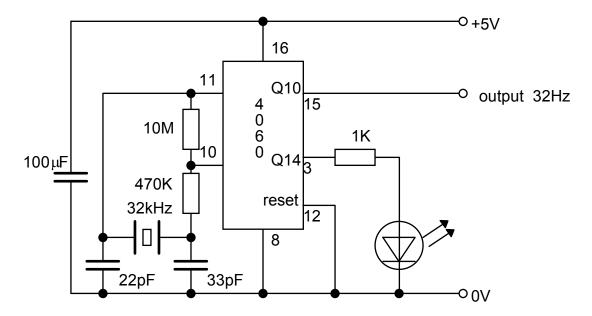
## 32kHz reference oscillator.



This circuit uses the 32kHz crystal from an old watch to produce stable 32Hz pulses for stabilising a high frequency variable frequency oscillator

## Circuit diagram.



The oscillator circuit is based on the standard Colpitts type design. The 22pF and 33pF capacitors were NPO miniature ceramic.

The crystal was found to need very little drive and worked most reliably when a  $470k\Omega$  resistor was used in series with the crystal.

A standard (7805) 5V supply was used to convert the 12V main power supply to 5V.