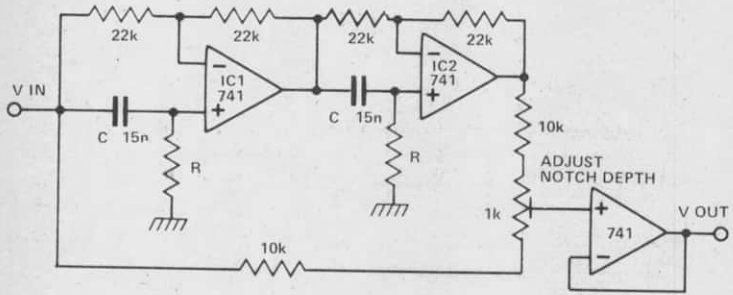


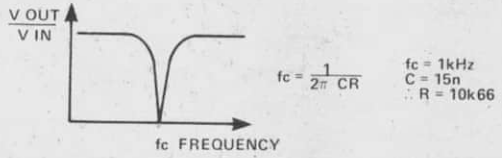


$$fc = \frac{1}{2\pi CR}$$

fc = 1kHz
C = 15n
∴ R = 10k66

## ALL-PASS NOTCH FILTER

Sometimes when processing analogue signals a constant tone causes a nuisance and so an active filter is called upon to 'notch' it out. The filter can be tuned so that its notch is at exactly the same frequency as the unwanted signal so that it can be selectively attenuated. This method is sometimes used to remove mains hum. The circuit works as follows IC1 and 2 are a pair of all-pass filters. These filters have a flat frequency response, but their phase changes with frequency. Their overall maximum phase shift is 360°, a phase shift of 180° occurring at a frequency of 1/2CR Hz. At this frequency the signals are inverted. Thus, by mixing the phase delayed signal with the original, cancellation can be produced which forms a notch in the frequency response. The preset is used to get the deepest notch available. The operating frequency can be changed by varying the two resistors R. For instance for 50 Hz operation, R should be:—

$$10.66\text{k} \times \frac{1000}{50} = 213.2\text{ k}$$

Nearest E12 fit is 220 k