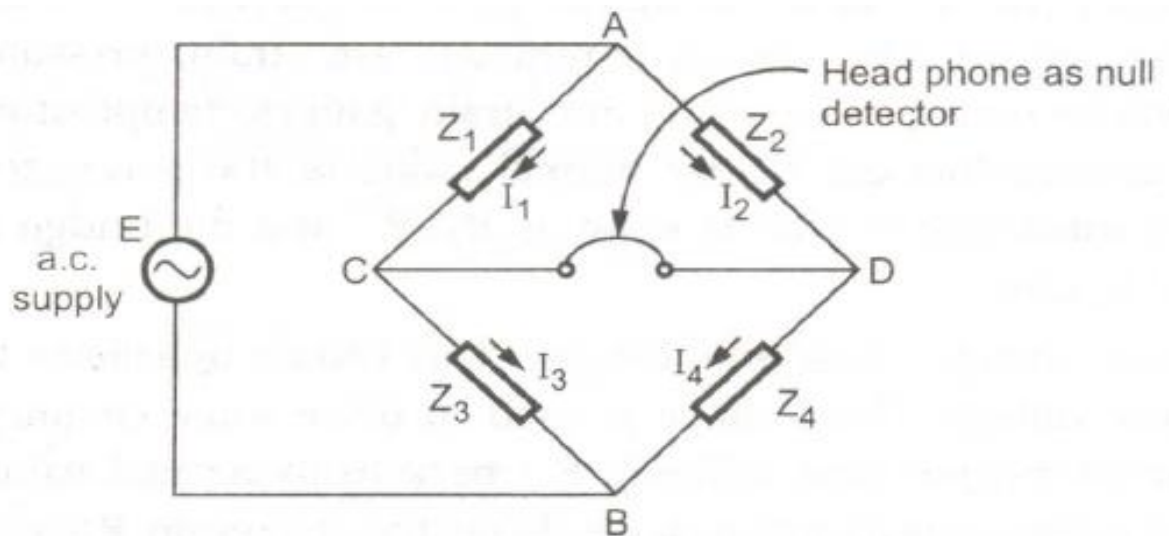


A.C, CAPACITOR COMPARISON AND MAXWELL'S BRIDGE

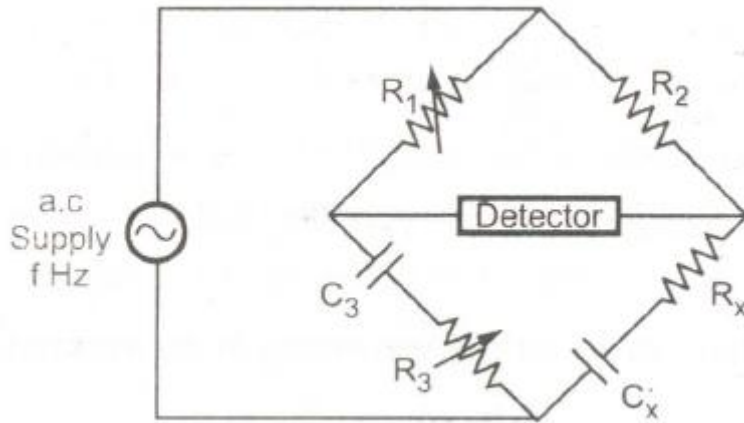
A.C. Bridges:

An a.c. bridge in its basic form consists of four arms, a source of excitation and a balance detector. Each arm consists of an impedance. The source is an a.c. supply which supplies a.c. voltage at the required frequency. For high frequencies, the electronic oscillators are used as the source. The balance detectors commonly used for a.c. bridge are head phones, tunable amplifier circuits or vibration galvanometers. The headphones are used as detectors at the frequencies of 250 Hz to 3 to 4 kHz. While working with single frequency a tuned detector is the most sensitive detector. The vibration galvanometers are useful for low audio frequency range from 5 Hz to 1000 Hz but are commonly used below 200 Hz. Tunable amplifier detectors are used for frequency range of 10 Hz to 100 Hz.

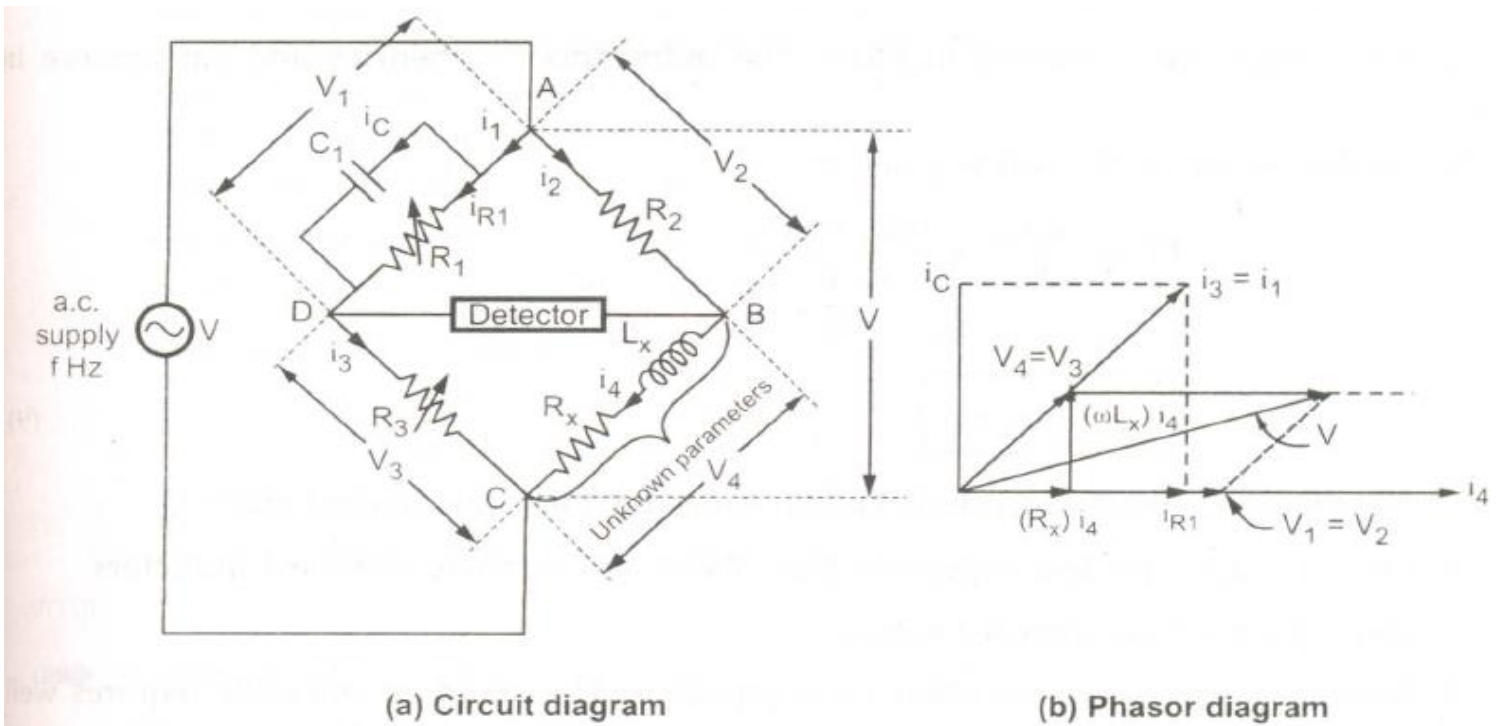


Capacitance Comparison Bridge:

In the capacitance comparison bridge the ratio arms are resistive in nature. The impedance Z_3 consists of the known standard capacitor C_3 in series with the resistance R_3 . The resistance R_3 is variable, used to balance the bridge. The impedance Z_4 consists of the unknown capacitor C_x and its small leakage resistance R_x .



Maxwell's bridge can be used to measure inductance by comparison either with a variable standard self inductance or with a standard variable capacitance. These two measurements can be done by using the Maxwell's bridge in two different forms.



(a) Circuit diagram

(b) Phasor diagram