

ELECTRICAL MEASUREMENT & MEASURING INSTRUMENTS

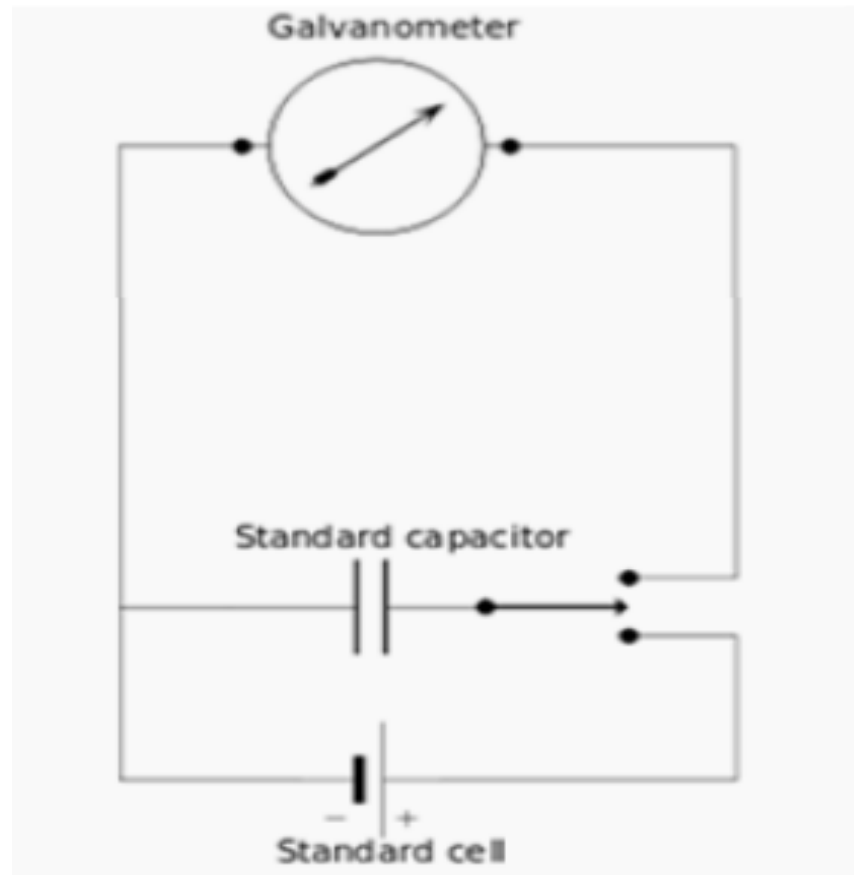
UNIT 4 Part (ii)

MAGNETIC MEASUREMENT

BALLISTIC GALVANOMETER

- **A ballistic galvanometer is a type of sensitive galvanometer, commonly a mirror galvanometer.**
- The moving part has a large moment of inertia,
- Thus giving it a long oscillation period.
- It can be either of the moving coil or moving magnet type.

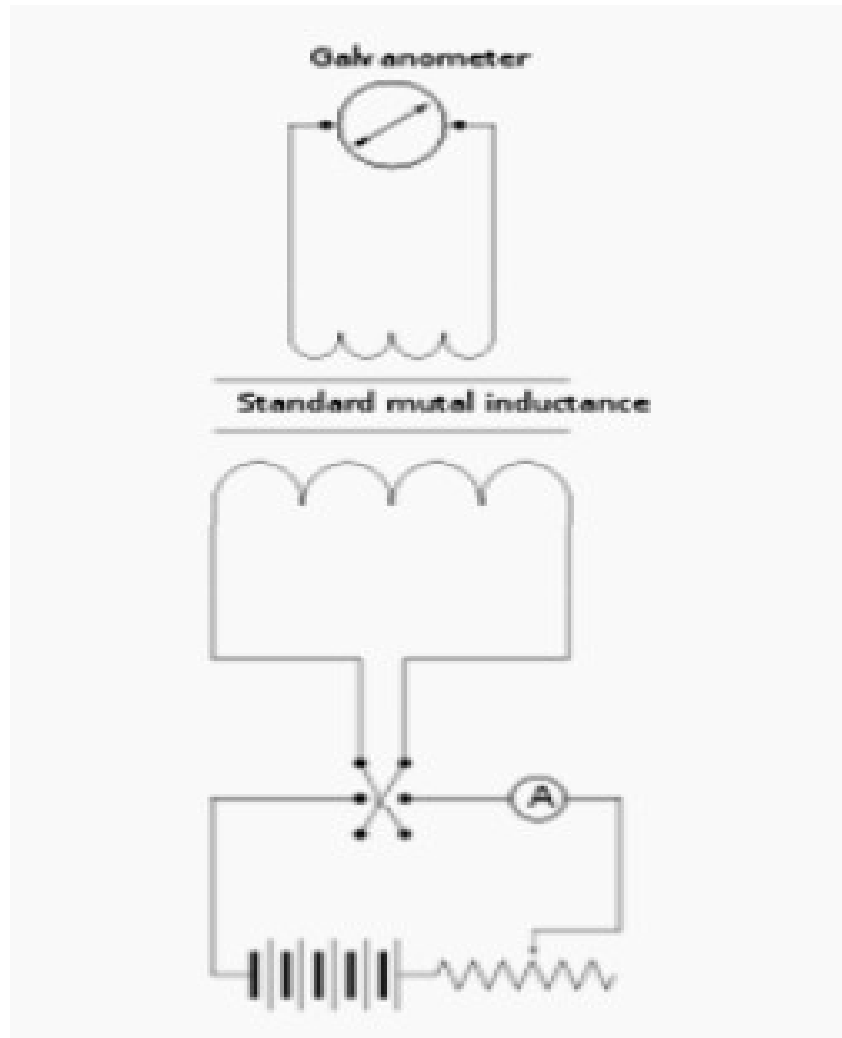
Circuit Diagram



Grassot Fluxmeter

- The discharge time through the regular ballistic galvanometer must be shorter than the period of oscillation. For some applications, especially those involving inductors, this condition cannot be met. The Grassot fluxmeter solves this.
- Its construction is similar to that of a ballistic galvanometer, but its coil is suspended without any restoring forces in the suspension thread or in the current leads.
- The core (bobbin) of the coil is of a non-conductive material. When an electric charge is connected to the instrument, the coil starts moving in the magnetic field of the galvanometer's magnet, generating an opposing e.m.f. and coming to a stop regardless of the time of the current flow.
- The change in the coil position is proportional only to the quantity of charge. The coil is returned to the zero position by the reversing of the current or manually.

Circuit Diagram



Working Principle

- Assume that the controlling torque is negligibly small and also that air damping and friction are negligible.
- In this case, the flux meter would remain in its deflected position indefinitely.
- Actually the pointer returns very slowly to zero, but readings may be taken by observing the difference in deflection at the beginning and end of the change in flux to be measured without waiting for the pointer to return to zero.