Distance relays

Contd…

Types of Distance Relay

There are mainly two **types of distance relay-**

- **Definite distance relay**.
- **Time distance relay**.

Definite Distance Relay:

This is simply a variety of balance beam relay. Here one beam is placed horizontally and supported by hinge on the middle. One end of the beam is pulled downward by the magnetic force of voltage coil, fed from potential transformer attached to the line.

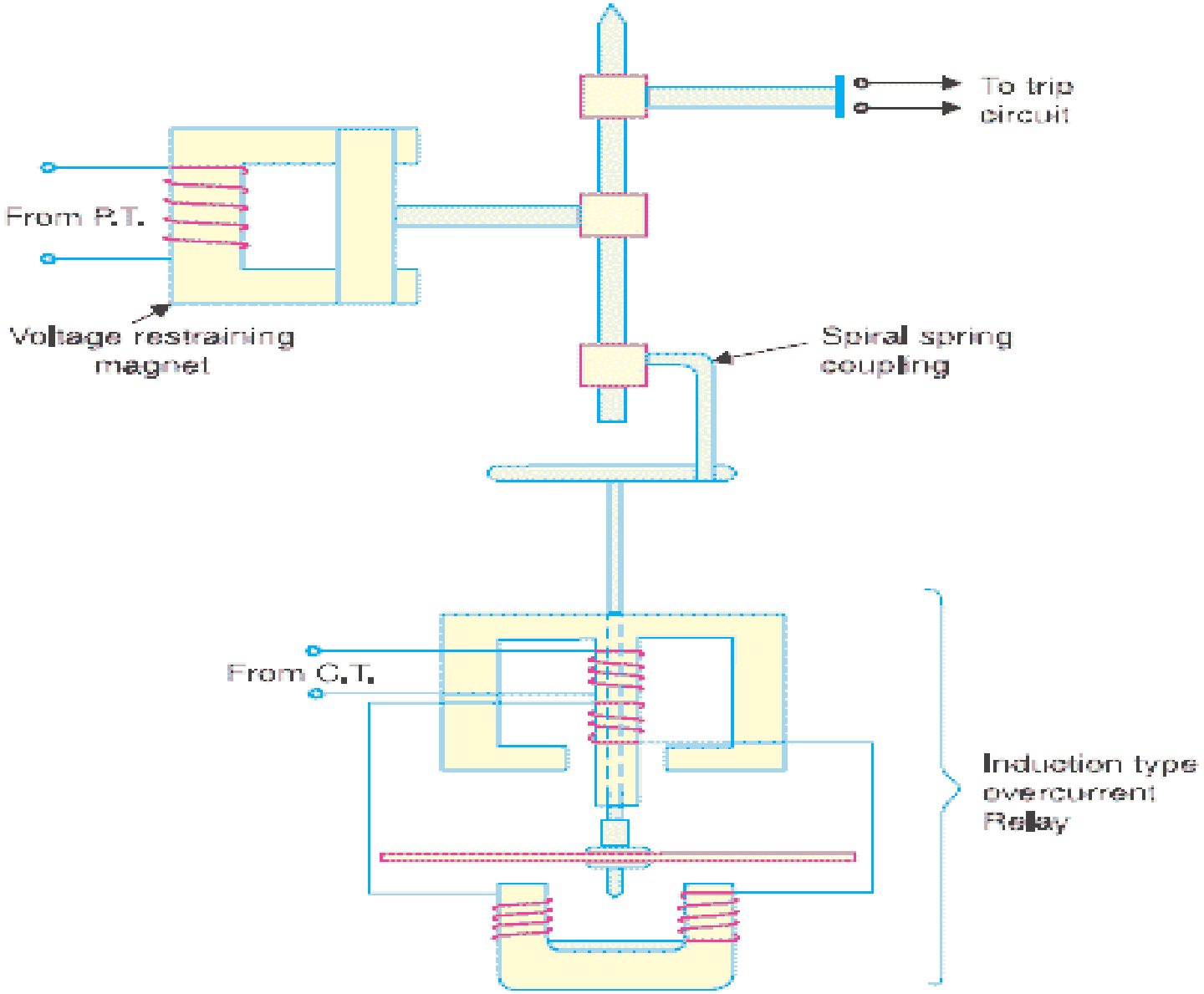
Other end of the beam is pulled downward by the magnetic force of current coil fed from current transformer connected in series with line. Due to torque produced by these two downward forces, the beam stays at an equilibrium position. The torque due to voltage coil, serves as restraining torque and torque due to current coil, serves as deflecting torque.

Time Distance Impedance Relay:

This delay automatically adjusts its operating time according to the distance of the relay from the fault point. The time distance impedance relay not only be operated depending upon voltage to current ratio, its operating time also depends upon the value of this ratio.

$$Operating\ time\ T \propto \frac{Voltage}{Current} \propto Impedance \propto Distance\ along\ transmission\ line$$

The relay mainly consists of a current driven element like double winding type induction over current relay. The spindle carrying the disc of this element is connected by means of a spiral spring coupling to a second spindle which carries the bridging piece of the relay contacts. The bridge is normally held in the open position by an armature held against the pole face of an electromagnet excited by the voltage of the circuit to be protected.


To trip
circuit
From P.T.
Voltage restraining
magnet
Spiral spring
coupling
From C.T.
Induction type
overcurrent
Relay