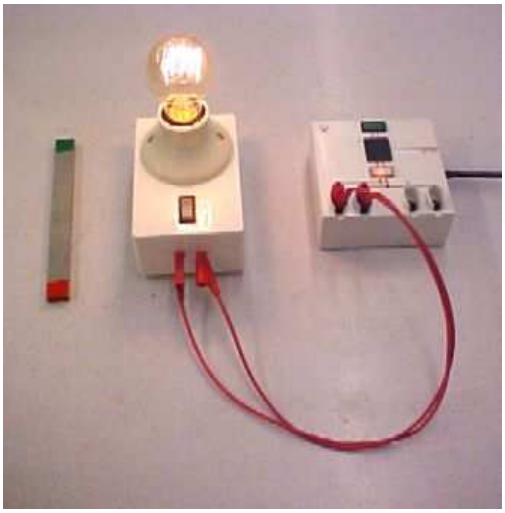
Lorentz force (1)

Aim: To show that a current in a magnetic field experiences a force.

Subjects: 5H40 (Force on Current Wires)

Diagram:



Equipment:

- Spiral filament lamp.
- Safety connector to mains (220V/50Hz).
- Bar magnet.

Lorentz force (1)

Presentation: The lamp is connected to the mains and the filament is glowing. The filament can be seen clearly.

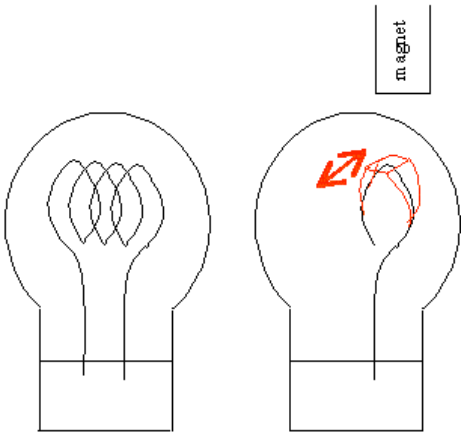


Figure 1

The bar magnet approaches the lamp and the individual turns of the spiral filament show themselves as broadened bands (see Figure 1). The filament performs a fast reciprocating motion

Explanation: The reciprocating motion of the filament indicates that a force is acting and that it is acting to and fro."To and fro" is caused by the constantly changing direction of the current (50Hz).

Sources:

- Biezeveld, H. and Mathot, L., Scoop, Natuurkunde voor de bovenbouw, part 4/5 vwo, pag. 200 and 210
- Mansfield, M and O'Sullivan, C., Understanding physics, pag. 486-487