Solenoid: $B = \mu_0 n I.$

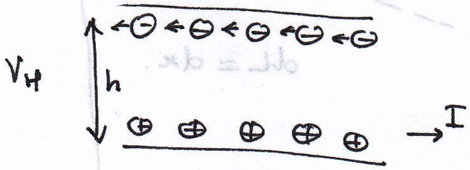
(fig. 26.35)

n ← # of turns per unit length

Toroids: $B = \dfrac{\mu_0 N I}{2\pi r}$ (notice: $n = \dfrac{N}{2\pi r}$).

(fig. 26.38)

Hall effect: (fig. 26.13)



$$\boxed{V_H = \frac{IB}{nqt}} = Eh = v_d B h.$$

$$F = qE = qv_d B \Rightarrow E = v_d B.$$

$$I = nqAv_d \rightarrow v_d = \frac{I}{nq\,ht}.$$

n: #, q: q_e, $A = ht$

$$\rightarrow V_H = \frac{IBh}{nqht}.$$