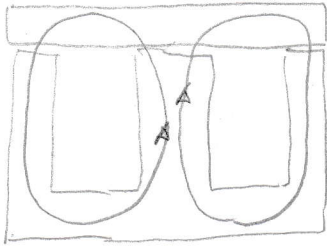


1



$$\int_0 H dl = NI_{max}$$

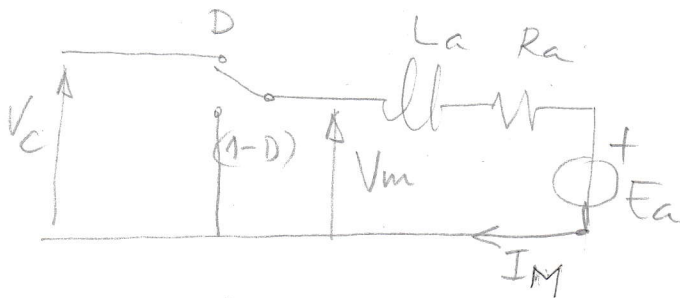
$$2 H_g l_g + H_{Fe} \cdot l_{Fe} = NI_{max}$$

$$B_{sat} = \mu_0 H_g \Rightarrow H_g = \frac{B_{sat}}{\mu_0} = \frac{1,5}{4\pi \cdot 10^{-7}}$$

$$H_g = 795774 \text{ A/m}$$

$$l_g = \frac{NI_{max}}{2 H_g} = \frac{25 \cdot 120}{2 \cdot 795774} = 1,88 \text{ mm}$$

2



a) $V_m = D \cdot V_c = 0,5 \cdot 300 = 150 \text{ V}$

$$V_m = R_a \cdot I_M + E_a \Rightarrow R_a = \frac{V_m - E_a}{I_M} = \frac{150 - 120}{15} = 2 \Omega ;$$

b) $E_a = 120 \text{ V} ;$

$I_M = -15 \text{ A} ;$

$$V_m = R_a I_M + E_a = 2 \cdot (-15) + 120 = 90 ;$$

$$V_m = D V_c = 90 \Rightarrow D = \frac{V_m}{V_c} = \frac{90}{300} = 0,3 = 30\% ; 1-D = 70\%$$

3

$$\vec{V}_S = 300 \angle 45^\circ$$

$$V_a = \frac{2}{3} \hat{V}_S \cos(45^\circ) = 141 \text{ V}$$

$$V_b = \frac{2}{3} \hat{V}_S \cos(45^\circ - 120^\circ) = 51,76 \text{ V}$$

$$V_c = \frac{2}{3} \hat{V}_S \cos(45^\circ - 240^\circ) = -193,2 \text{ V}$$

