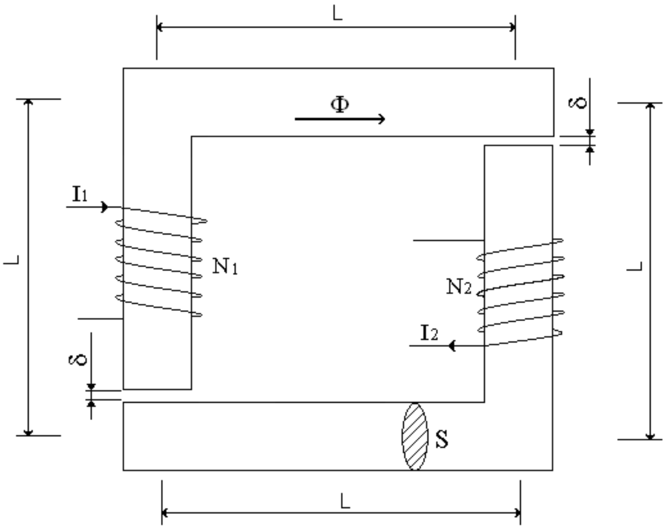
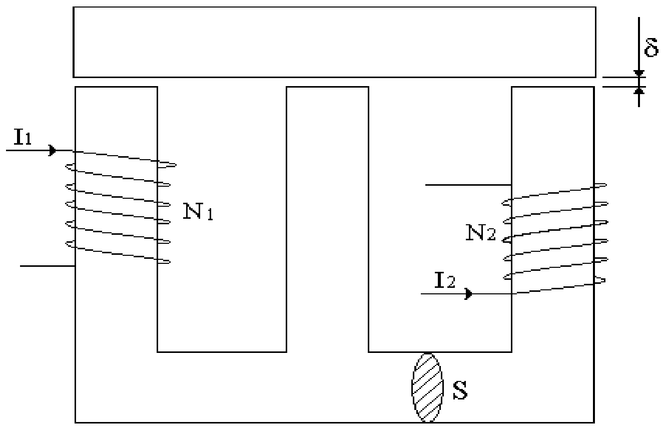
The figure shows a magnetic circuit. Find the self and mutual inductances of the two windings and the magnetic flux Φ. Consider a thickness δ for the air gaps, a length L for the columns and a constant iron normal section S. N_1=100; N_2=200; δ=1mm; L=100mm; S=100cm^2; μ_0=1.257 10^{-6} H/m, μ_{Fe}=2000, i_1=2A, i_2=3A

R: L_1=57 mH; L_2=228mH; M_{12}=M_{21}=114 mH, Φ=4.57mWb.



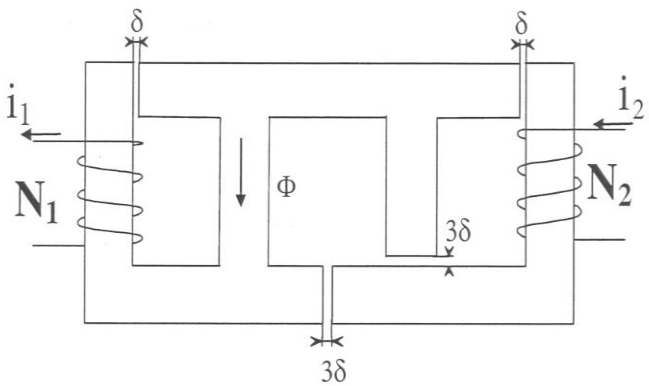
The figure shows a magnetic circuit. Find the self and mutual inductances of the two windings considering infinitive the relative permeability of the ferromagnetic material. Consider a thickness δ for the air gaps and a constant normal section S for the branches of the magnetic circuit. N_1=150; N_2=210; δ=6mm; S=20cm^2; μ_0=1.257 10^{-6} H/m.

R: L_1=6.284 mH; L_2=12.32 mH; M_{12}=M_{21}=-4.4 mH.



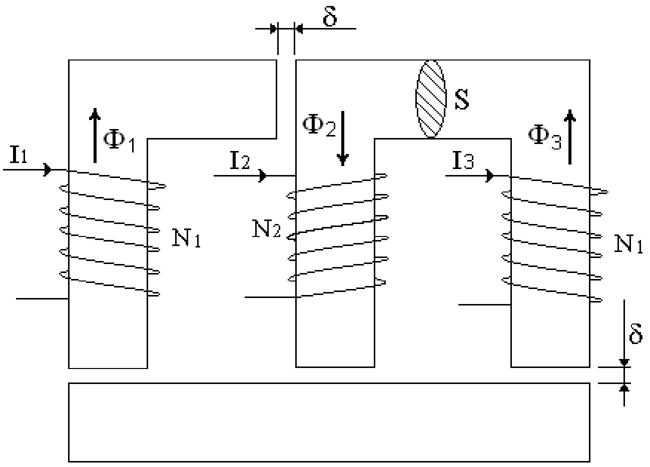
The figure shows a magnetic circuit. Find the self and mutual inductances of the two windings considering infinitive the relative permeability of the ferromagnetic material and the magnetic flux Φ. Consider a thickness δ and 3δ for the air gaps and a constant normal section S for the branches of the magnetic circuit. N_1=120; N_2=200; δ=0.8mm; S=160cm^2; μ_0=1.257 10^{-6} H/m; i_1=1.2A, i_2=4A.

R: L_1=0.36mH; L_2=0.4mH; M_{12}=M_{21}=0mH; Φ=-7.6mWb.



The figure shows a magnetic circuit. Find the three magnetic fluxes Φ_1, Φ_2 and Φ_3, which flow through the three vertical columns considering infinitive the relative permeability of the ferromagnetic material. Find the self and mutual inductances of the three windings. Consider a thickness δ for the air gaps and a constant normal section S for the branches of the magnetic circuit.

N_1=150; N_2=100; N3=200; δ=2mm; S=4cm^2; μ_0=1.257 10^{-6} H/m; i_1=1A, i_2=3A, i_3=4A.



R: Φ_1=-10µWb; Φ_2=133µWb; Φ_3=143µWb; L_1=2.26mH; L_2=1.5mH; L_3=6mH; M_{12}=M_{21}=0.754mH; M_{13}=M_{31}=-1.51mH; M_{23}=M_{32}=2mH;.