

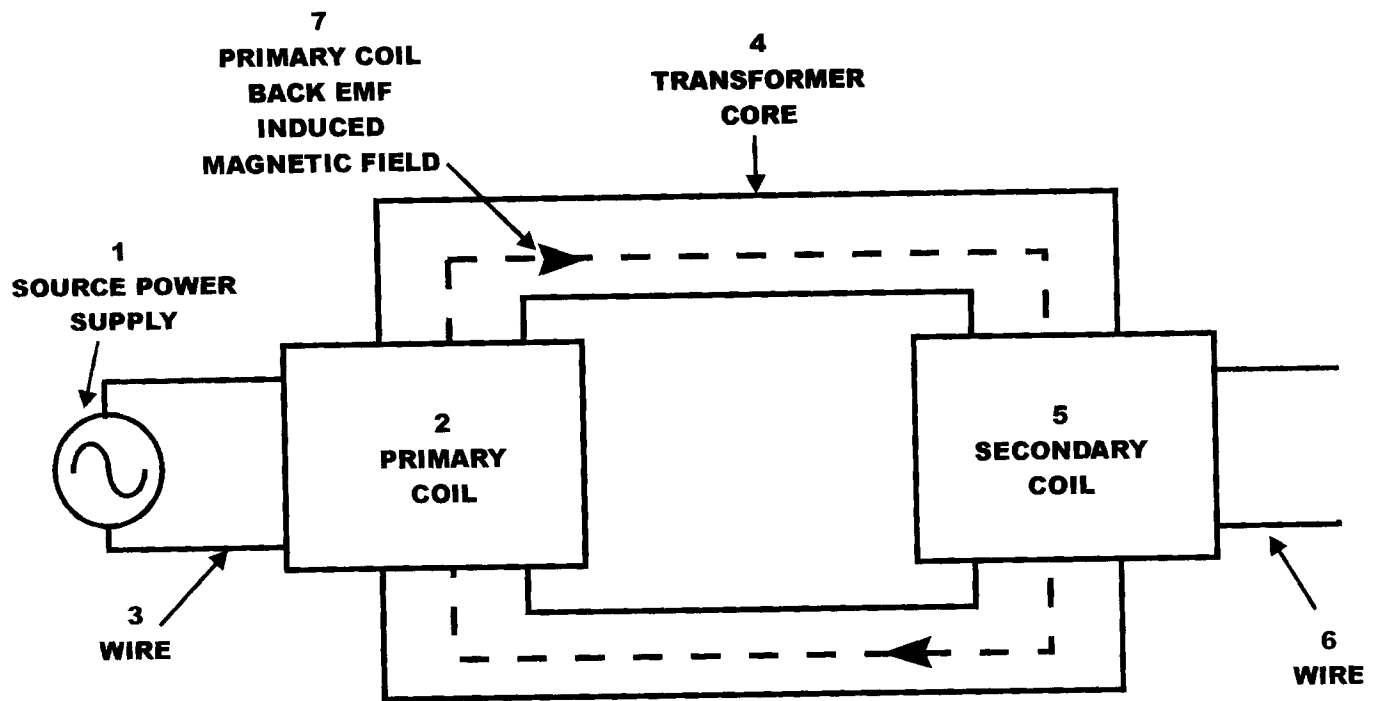


DIAGRAM 1

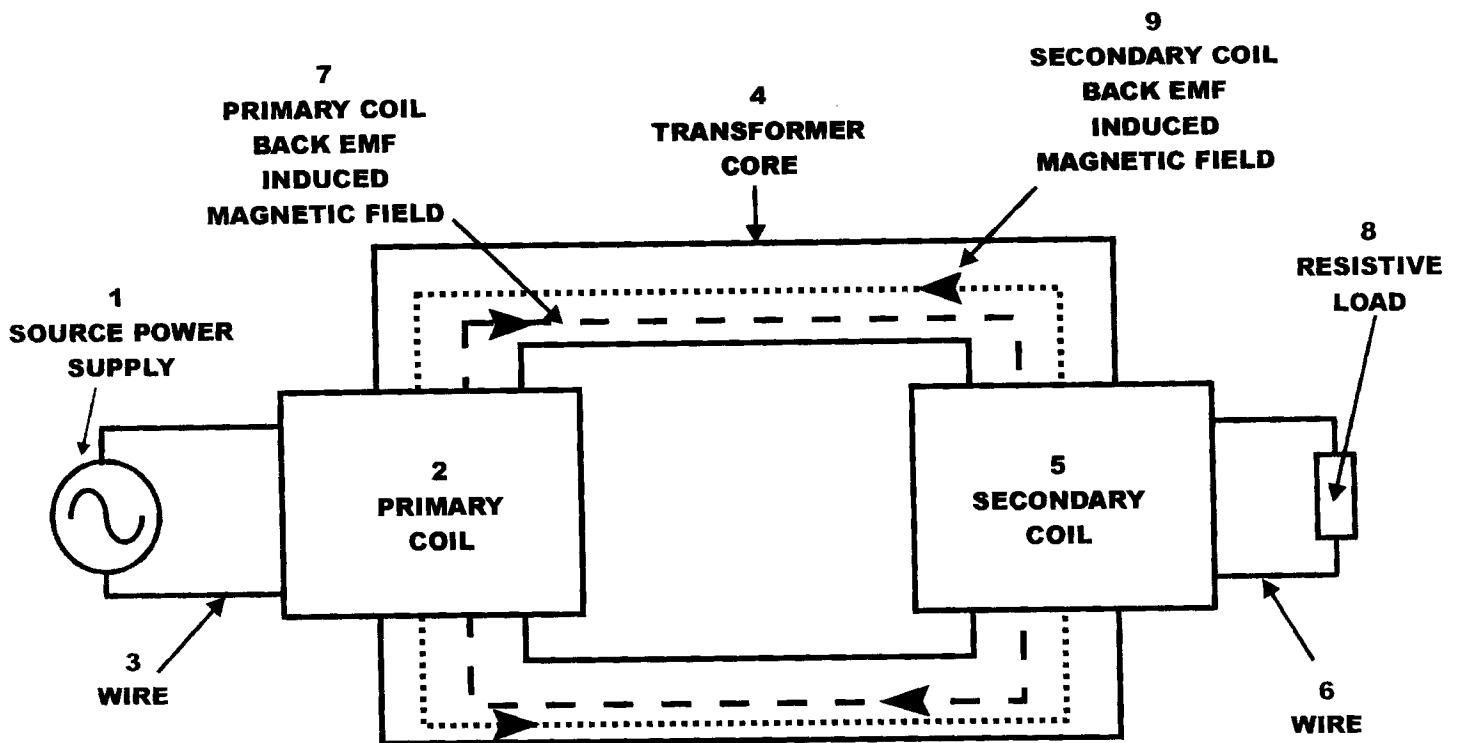


DIAGRAM 2

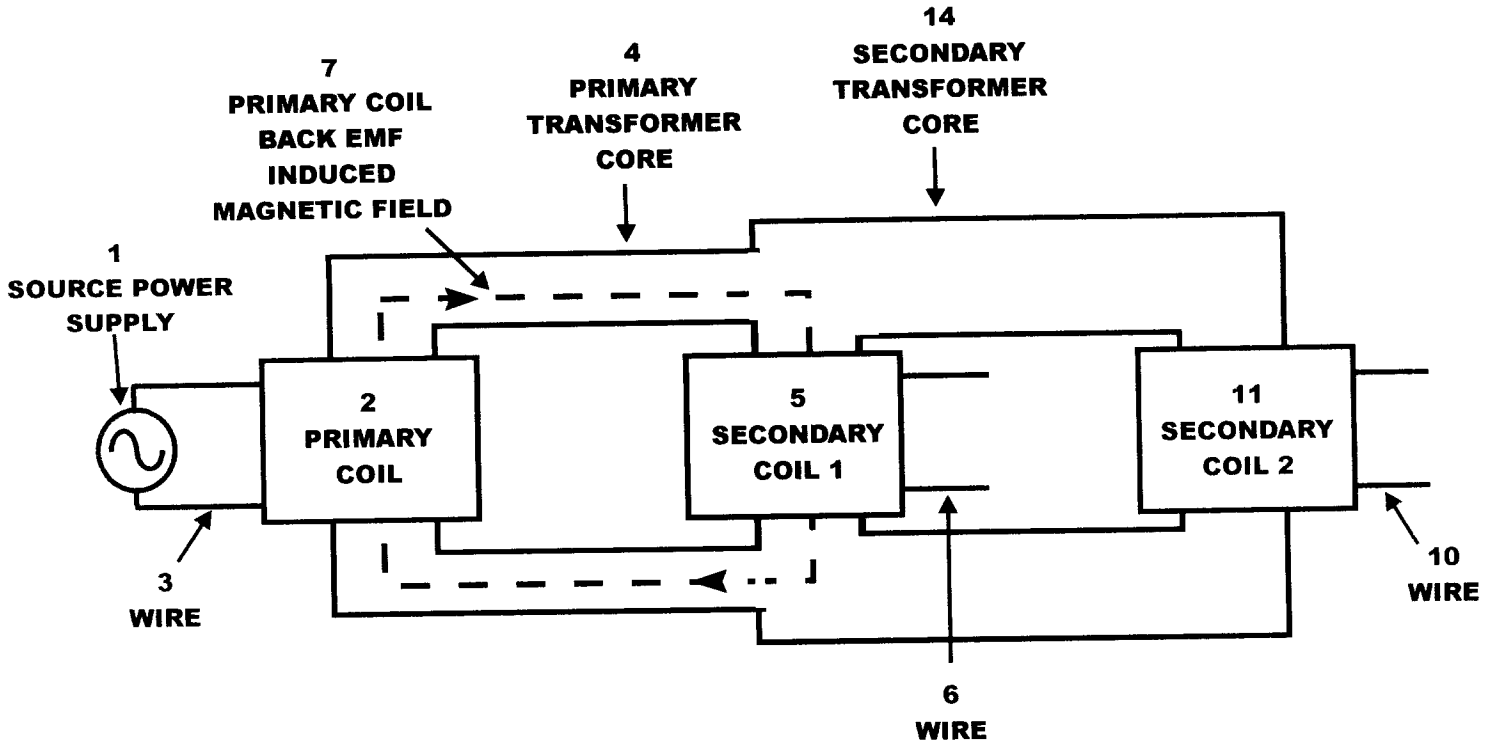


DIAGRAM 3

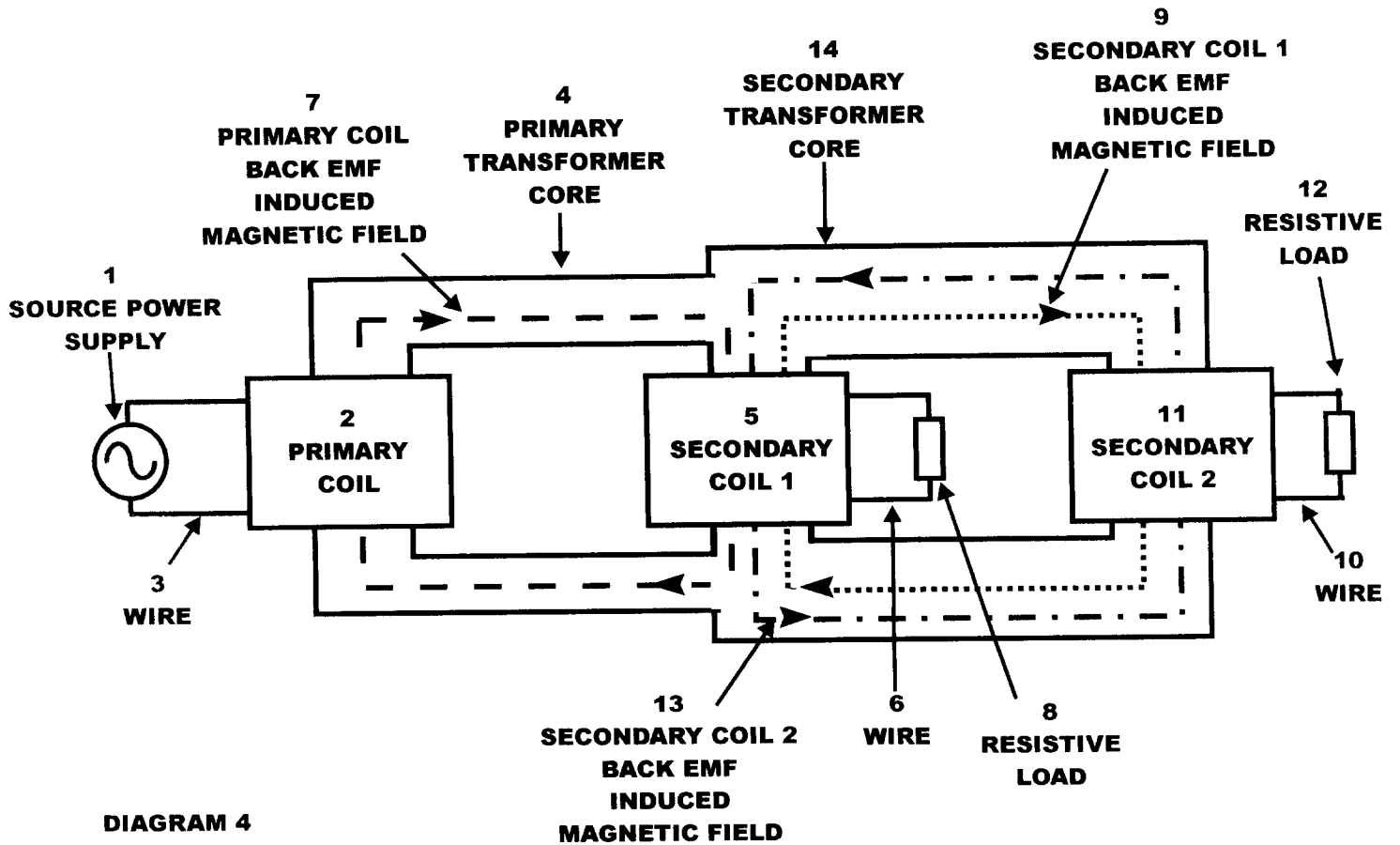
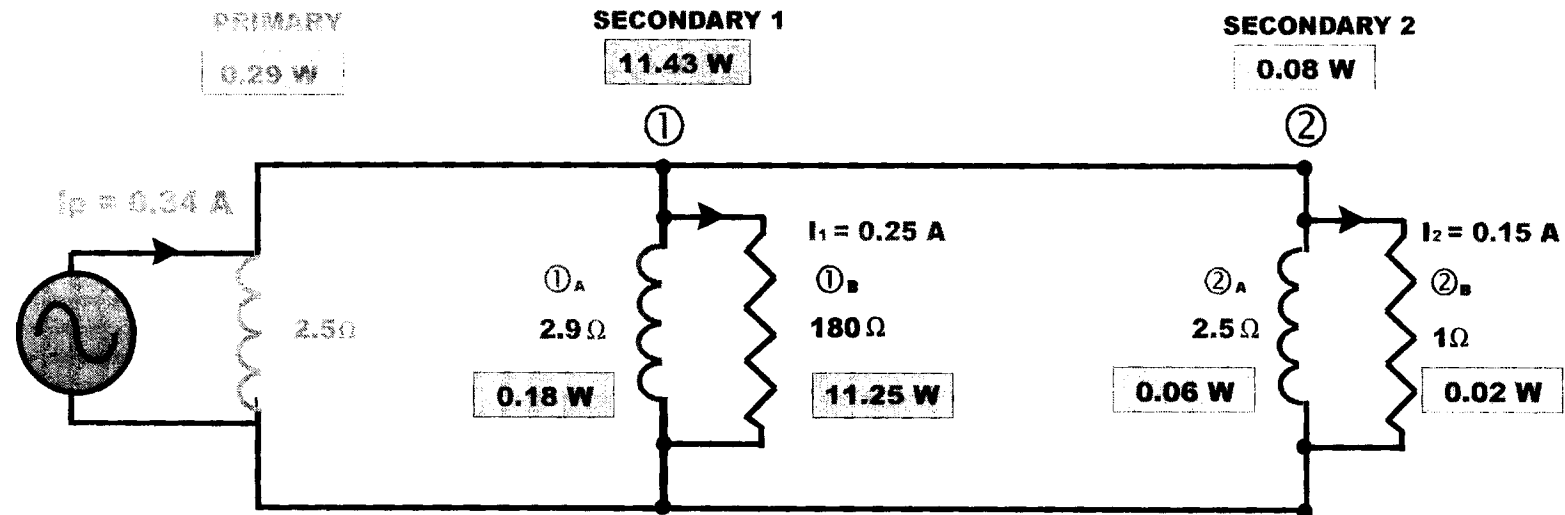


DIAGRAM 4



$$E = 49.8 \text{ V}$$

$$I_p = 0.34$$

$$60 \text{ Hz}$$

$$R_p = 2.5 \Omega$$

$$Z_p = 146.5 \Omega$$

$$S_p = 49.8 \times 0.34$$

$$= 16.9 \text{ VA}$$

$$P_p = I^2 R = 0.34^2 \times 2.5 \Omega$$

$$= 0.29 \text{ W}$$

Power Factor, $\cos \theta$

$$= \frac{\text{true power}}{\text{apparent power}}$$

$$= \frac{0.29}{16.9}$$

$$= 0.017 \text{ or } 89.0^\circ$$

$$\text{TOTAL PRIMARY POWER} = 0.29 \text{ W}$$

S1 - A

$$P_{1A} = I^2 R$$

$$= (0.25)^2 \times 2.9$$

$$= 0.18 \text{ W}$$

S1 - B

$$P_{1B} = I^2 R$$

$$= (0.25)^2 \times 180$$

$$= 11.25 \text{ W}$$

$$PS1_T = P_{S1A} + P_{S1B}$$

$$= 0.18 + 11.25$$

$$= 11.43 \text{ W}$$

S2 - A

$$P_{2A} = I^2 R$$

$$= (0.15)^2 \times 2.5$$

$$= 0.06 \text{ W}$$

S2 - B

$$P_{2B} = I^2 R$$

$$= (0.15)^2 \times 1$$

$$= 0.02 \text{ W}$$

$$PS2_T = P_{S2A} + P_{S2B}$$

$$= 0.06 + 0.02$$

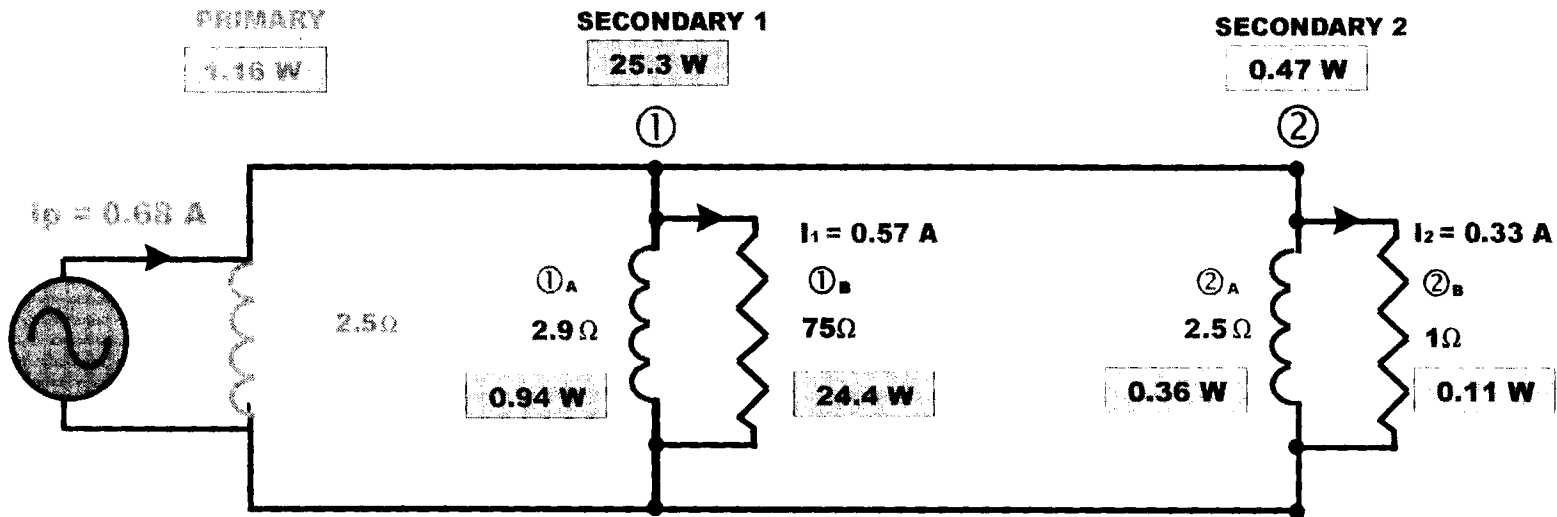
$$= 0.08 \text{ W}$$

$$\text{TOTAL SECONDARY POWER} = PS1 + PS2$$

$$= 11.43 \text{ W} + 0.08 \text{ W}$$

$$= 11.51 \text{ W}$$

180 OHM SECONDARY EQUIVALENT CIRCUIT



$$E = 49.3 \text{ V}$$

$$I_p = 0.68$$

$$60 \text{ Hz}$$

$$R_p = 2.5 \Omega$$

$$Z_T = 72.5 \Omega$$

$$E I_p = 49.3 \times 0.68$$

$$= 33.5 \text{ VA}$$

$$P_p = I_p^2 R = 0.68^2 \times 2.5 \Omega$$

$$= 1.16 \text{ W}$$

$$\text{Power Factor, } \cos \theta$$

$$= \frac{\text{true power}}{\text{apparent power}}$$

$$= \frac{1.16}{33.5}$$

$$= 0.035 \text{ or } 88.0^\circ$$

$$\cos \theta = 0.035 \text{ or } 88.0^\circ$$

$$\text{TOTAL PRIMARY POWER} = 1.16 \text{ W}$$

$$\text{S1 - A}$$

$$P_{1A} = I^2 R$$

$$= (0.57)^2 \times 2.9$$

$$= 0.94 \text{ W}$$

$$\text{S1 - B}$$

$$P_{1B} = I^2 R$$

$$= (0.57)^2 \times 75$$

$$= 24.4 \text{ W}$$

$$PS1_T = P_{S1A} + P_{S1B}$$

$$= 0.94 + 24.4$$

$$= 25.3 \text{ W}$$

$$\text{S2 - A}$$

$$P_{2A} = I^2 R$$

$$= (0.33)^2 \times 2.5$$

$$= 0.36 \text{ W}$$

$$\text{S2 - B}$$

$$P_{2B} = I^2 R$$

$$= (0.33)^2 \times 1$$

$$= 0.11 \text{ W}$$

$$PS2_T = P_{S2A} + P_{S2B}$$

$$= 0.36 + 0.11$$

$$= 0.47 \text{ W}$$

$$\text{TOTAL SECONDARY POWER} = PS1 + PS2$$

$$= 25.3 \text{ W} + 0.47 \text{ W}$$

$$= 25.8 \text{ W}$$

75 OHM SECONDARY EQUIVALENT CIRCUIT