

SOLUTIONS

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CALCULATION TABLES FOR DC AND AC MACHINES

To Find	Direct Current	ALTERNATING CURRENT		
		Single-Phase	Two-Phase* Four Wire	Three-Phase
Amperes when Horse-power is known	$\frac{H.P \times 746}{E \times \% EFF}$	$\frac{H.P \times 746}{E \times \% EFF \times P.F}$	$\frac{H.P \times 746}{2 \times E \times \% EFF \times P.F}$	$\frac{H.P \times 746}{1.73 \times E \times \% EFF \times P.F}$
Amperes when Kilowatts is known	$\frac{K.W \times 1000}{E}$	$\frac{K.W \times 1000}{E \times P.F}$	$\frac{K.W \times 1000}{2 \times E \times P.F}$	$\frac{K.W \times 1000}{1.73 \times E \times P.F}$
Amperes when K.V.A is Known		$\frac{K.V.A \times 1000}{E}$	$\frac{K.V.A \times 1000}{2 \times E}$	$\frac{K.V.A \times 1000}{1.73 \times E}$
Kilowatts	$\frac{I \times E}{1000}$	$\frac{I \times E \times P.F}{1000}$	$\frac{I \times E \times 2 \times P.F}{1000}$	$\frac{I \times E \times 1.73 \times P.F}{1000}$
K.V.A		$\frac{I \times E}{1000}$	$\frac{I \times E \times 2}{1000}$	$\frac{I \times E \times 1.73}{1000}$
Horse-power (output)	$\frac{I \times E \times \% EFF}{746}$	$\frac{I \times E \times \% EFF \times P.F}{746}$	$\frac{I \times E \times 2 \times \% EFF \times P.F}{746}$	$\frac{I \times E \times 1.73 \times \% EFF \times P.F}{746}$

I = Amperes · E = Volts · % EFF = per cent efficiency · P.F = Power Factor .8 · K.W = Kilowatts
 K.V.A = Kilo-Volt-Amperes · H.P = Horse Power
 * For three wire, two phase circuits the current in the common conductor is 1.41 times that in either of the other two conductors.