

Engineering Information

Approximate Power Consumption of Electrical Apparatus

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USEFUL 3-PHASE FORMULAE	
Phase current in 3-phase star = Line current	
Phase current in 3-phase Delta = Line current/1.732	
h.p x 746	
KW - KVA x POWER factor = $\frac{1000 \times \text{efficiency}}{1000}$	
Line amps x Line Volts; x 1.732 x p.f.	
$\frac{1000}{\text{KW}} = \frac{\text{h.p.} \times 746}{\text{Line Volts} \times 1.732 \times \text{p.f.}}$	
Line amps = $\frac{\text{KW} \times 1000}{\text{Line Volts} \times 1.732 \times \text{p.f.}}$	
Line Volts x 1.732 x efficiency x p.f.	
$\text{h.p.} = \frac{\text{KW} \times 1000 \times \text{efficiency}}{746} = \frac{\text{KVA} \times 1000 \times \text{efficiency} \times \text{p.f.}}{746}$	
= $\frac{\text{Line amps} \times \text{Line Volts} \times 1.732 \times \text{efficiency} \times \text{p.f.}}{746}$	
Single phase Currents = $\frac{\text{h.p.} \times 746 \times 100}{\text{Line volts} \times \text{p.f.} \times \text{efficiency}}$	
Drop in 3-phase circuit = 1.732 x Line amps x Resistance of 1 core	

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APPROXIMATE POWER CONSUMPTION OF ELECTRICAL APPARATUS	
Kettles :	Toaster :
1 Pint 280 W	1 Slice 550 to 550 W
1 Pint 324 to 425 W	3 Slice 1750 W
2 Pints 450 to 650 W	5 Slice 2500 W
3 Pints 750 to 1000 W	
4-8 Pints 1000 to 1500 W	
Iron :	Soldering Irons :
3 lb 250 W	0.5 lb 60 W
4 lb 275 to 300 W	1 lb 120 W
5 lb 350 to 450 W	1.5 lb 200 W
6 lb 450 to 500 W	2 lb 275 W
7 lb 500 to 650 W	3 lb 450 W
12 lb 600 to 700 W	Immersion heaters :
20 lb 750 to 850 W	6 in long 200 to 500 W
	7 in long 500 to 750 W
Small motors :	10 in long 800 to 1000 W
Drilling 9/16" hole 200 to 250 W	16 in long 14 to 2000 W
7/8" hole 350 to 400 W	
1" hole 750 W	Ovens :
1.5" hole 1500 W	14 x 14 x 12 in inside 1500 W
	12 x 12 x 16 in inside 1750 W
	14 x 14 x 16 x in inside 2000 W
Grinding :	Vaccum Cleaner :
6" x 3/4" Wheel 750 W	Domestic 200 W
8" x 3/4" Wheel 1250 W	High power 300 to 600 W
10" x 3/4" Wheel 2300 W	
Hair drier : 550 W	
In order to get the time required to boil in minutes.	
Pints = $\frac{\text{Watts}}{3850}$ (approx)	

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