MOTOR TERMS

Approximate Rules of Thumb		Mechanical Formulas
At 1800 rpm, a motor develops 3 lb-ft per hp.	At 230 volts, a 3-phase motor draws 2.5 amp per hp.	Torque in lb-ft = HP x 5250/RPM
At 1200 rpm, a motor develops 4.5 lb-ft per hp.	At 230 volts, a single-phase motor draws 5 amp per hp.	HP = Torque x RPM/5250
At 575 volts, a 3-phase motor draws 1 amp per hp.	At 115 volts, a single-phase motor draws 10 amp per hp.	RPM = 120 x Frequency/No. of Poles
At 460 volts, a 3-phase motor draws 1.25 amp per hp.		

Average Efficiencies and Power Factors of Electric Motors

kW	Efficiency %			Power Factor			Full Load Amps on 3ph 415V
	Full Load	3/4 Load	1/2 Load	Full Load	3/4 Load	1/2 Load	
0.75	74	73	69	0.72	0.65	0.53	2.0
1.5	79	78.5	76	0.83	0.78	0.69	3.2
3	82.5	82	80.5	0.85	0.80	0.73	6.0
5.5	84.5	84.5	83.5	0.87	0.82	0.75	10.5
7.5	85.5	85.5	84.5	0.87	0.83	0.76	14
11	87	87	85.5	0.88	0.84	0.77	20
18.5	88.5	88.5	87	0.89	0.85	0.79	33
30	90	89.5	88	0.89	0.86	0.80	52
45	91	90.5	89	0.89	0.86	0.80	77
75	92	91.5	90	0.90	0.87	0.81	126

Required Value	Direct Current	Single Phases	Two-Phase 4-Wire	Three Phase
HP Output	I x E x Eff/746	I x E x Eff x PF/748	I x E x Eff x PF/746	I x E x 1.73 x Eff x PF/746