Motor Formulas

V = Volts
A = Amperes
R = Ohms
P = Watts
PF = Power factor (Motor)
Eff = Efficiency (Motor)
HP = Horsepower
BHP = Break Horsepower (Motor)
r = running
np = nameplate

Max. Motor sheave **= Existing Motor sheave Dia. X** $\sqrt[3]{\frac{Max.BHP}{ExsistingEstimatedBHP}}$

Ohm's Law: $V = A \times R$ $R = \frac{V}{A}$ $A = \frac{V}{R}$

Single Phase: $P = V \times A \times PF$ $V = \frac{P}{A \times PF}$ $A = \frac{P}{V \times PF}$

$$BHP = \frac{V \times A \times Effiency \times PowerFactor}{746}$$

Estimated BHP from Amps and Volts:

$$BHP = nameplate(np)HP \times \frac{read,Volts \times readAmps}{np,V \times np,A}$$

$$BHP = nameplate(np)HP \times \frac{(read,Amps - 0.5np,Amps)}{0.5npA} \times \frac{read,Volts}{np,Volts}$$

Estimated BHP = $\frac{read,Amps \times read,Volts}{745.7}$

or BHP = **Name plate BHP x** $\frac{read,Volts \times read,Amps}{Volts \times Amps}$

Estimated BHP from Amps, Volts, Efficiency, Power Factor, and % of load:

$$\text{Single phase BHP} = \frac{read,Amps \times read,Volts \times Effiency \times PowerFactor}{745.7}$$

$$\text{Three phase BHP} = \frac{1.732 \times Amps \times Volts \times Effiency \times PowerFactor \times \%ofLoad}{745.7}$$