



"RELIABLE PUMPS – GREAT SERVICE"

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<b>Equations</b>			
<b>Electric Motor</b>			
<b>To Find:</b>	<b>Given:</b>	<b>Single Phase</b>	<b>Three Phase</b>
Kilowatts (kW)		$\frac{\text{Volts} * \text{Amps} * PF}{1000}$	$\frac{1.73 * \text{Volts} * \text{Amps} * PF}{1000}$
Kilovolt-Ampere (kVA)		$\frac{\text{Volts} * \text{Amps}}{1000}$	$\frac{1.73 * \text{Volts} * \text{Amps}}{1000}$
Horsepower (hp)		$\frac{\text{Volts} * \text{Amps} * Eff * PF}{746}$	$\frac{1.73 * \text{Volts} * \text{Amps} * Eff * PF}{746}$
Amps	Hp	$\frac{Hp * 746}{\text{Volts} * Eff * PF}$	$\frac{Hp * 746}{1.73 * \text{Volts} * Eff * PF}$
Amps	kW	$\frac{kW * 1000}{V * PF}$	$\frac{kW * 1000}{1.73 * \text{Volts} * PF}$
Amps	kVA	$\frac{kVA * 1000}{\text{Volts}}$	$\frac{kVA * 1000}{1.73 * \text{Volts}}$
<b>Hydraulic Power</b>			
<b>To Find:</b>	<b>Given:</b>	<b>Horsepower (hp)</b>	<b>Kilowatts (kW)</b>
Power	Head	$\frac{\text{Feet} * \text{Flow Rate} * SG}{3956}$	$\frac{9.81 * \text{Meters} * \text{Flow Rate} * SG}{1000}$
Power	Pressure Drop	$\frac{psi * \text{Flow Rate}}{1714}$	$\frac{kPa * \text{Flow Rate}}{1000}$
Power	Work*	$\frac{\text{Work} * \text{Flow Rate} * SG}{3956}$	$\frac{\text{Work} * \text{Flow Rate} * SG}{1000}$

\* For Horsepower (hp) Work units are ( $\frac{ft-lbf}{lbm}$ ); for Kilowatts (kW) Work units are ( $\frac{J}{kg}$ )

- Flow Rate for Horsepower (hp) is Gallons/Minute (gpm)
- Flow Rate for Kilowatts (kW) is Liters/Second (L/s)