Systecore Inc.
5975 Dixie Hwy
Saginaw, Michigan 48601
1-989-746-0700 FAX 1-989-746-0777
Serving Michigan and Northern Ohio

Formulas	Symbols
$GPM = \frac{0.002 \times Lb/Hr}{Sp.\ Gr.}$	GPM = gallons per minute
	CFS = cubic feet per second
$GPM = \frac{Lbs./Hr.}{500 \times Sp.\ Gr.}$	Lb. = pounds
$GPM = 449 \times CFS$	Hr. = hours
	BBL = barrel (42 gallons)
$GPM = 0.7 \times BBL/Hr.$	Sp.Gr. = specific gravity
$H = \frac{2.31 \times psi}{Sp.\ Gr.}$	H = head in feet
	psi = pounds per square inch
$H = \frac{1.134 \times In.\ Hg.}{Sp.\ Gr.}$	In. Hg. = inches of mercury
$h_v = \frac{V^2}{2g} = .0155 \times V^2$	h_v = velocity head in feet
	V = velocity in feet per second
$V = \frac{GPM \times 0.321}{A} - \frac{GPM \times 0.409}{(I.D.)}$	g = 32.16 ft/sec^2 (acceleration of gravity)
	A = area in square inches
$BHP = \frac{GPM \times H \times Sp.\ Gr.}{3960 \times EFF.} = \frac{GPM \times psi}{1715 \times Eff.}$	I.D. = inside diameter in inches
$Eff. = \frac{GPM \times H \times Sp.\ Gr.}{3960 \times BHP}$	BHP = brake horsepower

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$$\text{Sp. Gr} = \frac{141.5}{131.5 \; x \; degrees \; A.P.I.}$$

$$N_c = \frac{187.7}{\sqrt{f}}$$

$$f = \frac{PL^3}{mEI}$$

$$N_s = \frac{N\sqrt{GPM}}{H^{3/4}}$$

$$H = \frac{V^2}{2g}$$

$$v = \frac{N \; x \; D}{229}$$

$$\text{DEG. C} = (DEG.\ F - 32) \times 5/9$$

$$\text{DEG. F} = (DEG.\ C \; x \; 9/5) + 32$$

Eff. = pump efficiency expressed as a decimal

N_s = specific speed

N = speed in revolutions per minute

v = peripheral velocity of an impeller in feet per second

D = Impeller in inches

Nc = critical speed

f = shaft deflection in inches

P = total force in pounds

L = bearing span in inches

m = constant usually between 48 and 75 for pump shafts

E = modules of elasticity, psi - 27 to 30 million for steel