VOLUME

1 U.S. Gallon... 231.0 in^3 / 0.137 ft^3 / 3.785 liters / .00379 $meters^3$ / 0.833 Imp gal / 0.238 42-gal barrel

1 Imperial Gallon..... 1.2 U.S. gal

1 Cubic Foot..... 7.48 U.S. gal / 0.0283 $meter_3$

1 Liter..... 0.2642 U.S. gal

1 Cubic Meter..... 35.314 ft_3 / 264.2 U.S. gal

1 Acre Foot..... 43,560 ft_3 / 325,829 U.S. gal

1 Acre Inch..... 3,630 ft_3 / 27,100 U.S. gal

LENGTH

1 Inch ..... 2.54 centimeters

1 Meter..... 3.28 feet / 39.37 inches

1 Rod..... 16.5 feet

1 Mile ..... 5280 Feet (1.61 Kilometers)

WEIGHT

1 U.S. Gallon of Water..... 8.33 lb

1 Cubic foot of Water..... 62.35 lb

1 Kilogram or Litre ..... 2.2 lb

1 Imperial Gallon.....10.0 lb

CAPACITY

1 Cubic Foot Per Second (2nd foot) (C.F.S.)..... 449 gpm

1 Acre Foot Per Day..... 227 gpm

1 Acre Inch Per Hour..... 454 gpm

1 Cubic Meter Per Minute..... 264.2 gpm

1,000,000 Gal. Per Day..... 595 gpm

HORSEPOWER

1 H.P. Equals...

.746 kilowatts of 746 watts
33,000 ft lbs per minute
550 ft lbs per second

H.P. Input Equals...

Horsepower input to motor
1.34 x kilowatts input to motor

Water H.P. Equals...

Horsepower required to lift water at a definite rate to a given distance assuming 100% efficiency

$$\frac{\text{G.P.M. x total head (in ft.)}}{3960}$$

Brake H.P. Equals...

H.P. delivered by motor
H.P. required by pump
H.P. input x motor efficiency
1.34 x KW input x motor efficiency

$$\frac{\text{Water horsepower}}{\text{Pump efficiency}}$$

$$\frac{\text{G.P.M. x total head (ft.)}}{3960 \text{ x pump efficiency}}$$

$$\frac{\text{G.P.M. x total head (lbs/in2)}}{103{,}000 \text{ x pump efficiency}}$$

HEAD

1 Pound Per Square Inch (p.s.i.)..... 2.31 ft. head of water / 2.04 in. mercury / 0.07 kg/cm2

1 Foot of Water..... 0.433 lb/in2 / .885 in. mercury

1 Inch of Mercury (or vacuum)..... 1.132 ft of water

1 Kilogram Per Square Cm 14.22 lb/in2

1 Atmosphere (at sea level)..... 14.7 lb/in2 / 34.0 ft of water / 10.35 meters of water

1 Meter of Water..... 3.28 feet of water

TO FIND CAPACITY OF A TANK OR CISTERN

(Diameter of Tank In Feet Squared) x .7854 x (Height of Tank In Feet) x 7.48 = Capacity U.S. Gallons

EFFICIENCY

Efficiency Equals ..... $\frac{\text{Power Output}}{\text{Power Input}}$

Motor Efficiency Equals..... $\frac{\text{H.P. Output}}{\text{K.W. input x 1.34}}$

Pump Efficiency Equals..... $\frac{\text{G.P.M. x total head (ft.)}}{103{,}000 \text{ x B.H.P.}}$

ELECTRIC POWER

AC = Alternating Current Power

DC = Direct Current

E = Volts

I = Amperes

W = Watts

KW = Kilowatts

Apparent Power = Volts x amperes = Volt amperes

Apparent Power = E I

Useful Power W = E I x P.F.

Power Factor = ratio of useful power to apparent power

Power Factor = $\frac{W}{e\ i}$ = PF

KW Hr. = Kilowatt Hour

Single Phase Power W = E x I x PF

3 Phase Power W = 1.73 x E x I x PF

Where E = Average voltage between phases

I = Average current in each phase