

# FORMULAS AND CONVERSION FACTORS

## Precipitation Rates

Equilateral Triangular Spacing

### U.S.

P.R.=  $\frac{\text{GPM of 360} \times 96.3}{(\text{in/hr}) (\text{Head Spacing})^2 \times .866}$

### Metric

P.R.=  $\frac{m^3/hr \text{ of } 360 \times 1000}{(mm/hr) m^2 \times .866}$

Square/Rectangular Spacing

P.R.=  $\frac{\text{GPM of 360} \times 96.3}{(\text{in/hr}) \text{Head Spacing} \times \text{Row Spacing}}$

P.R.=  $\frac{m^3/hr \text{ of } 360 \times 1000}{(mm/hr) \text{Head Spacing} \times \text{Row Spacing}}$

## Horsepower

H.P.=  $\frac{\text{GPM} \times \text{Total Dynamic Head}}{3,960 \times \text{Pump Efficiency}}$   
(expresses as a decimal)

## Station Run Time

(min/hr)

S.R.T.=  $\frac{\text{Total Weekly Req'd (inch/wk)} \times 60 \text{ (min/hr)}}{(\text{min/wk}) \text{ Precipitation Rate (in/hr)}}$

S.R.T.=  $\frac{\text{Total Weekly Req'd (mm/wk)} \times}{(m/wk) \text{ Precipitation Rate (mm/hr)}}$

## Pipe Velocity

V=  $\frac{0.408 \times \text{Flow (GPM)}}{(\text{ft/sec}) (\text{Inside Pipe Diameter in Inches})^2}$   
Do not exceed 5' per second.

V=  $\frac{1273.24 \times \text{Flow (l/sec)}}{(m/sec) (\text{Inside Pipe Diameter in Millimeters})^2}$

To Convert	From	To	Multiply By
AREA	acres	feet <sup>2</sup>	43560
	acres	meters <sup>2</sup>	4046.8
POWER	kilowatts	horsepower	1.3410
FLOW	feet <sup>3</sup> / minutes	meters <sup>3</sup> / second	0.0004719
	feet <sup>3</sup> / second	meters <sup>3</sup> / second	.02832
	gallons/ minute	meters <sup>3</sup> / hour	.22716
	gallons/ minute	liters/ minute	3.7854
	gallons/ minutes	liters/ second	.06309
	meters <sup>3</sup> / hour	liters/ minute	16.645
meters <sup>3</sup> / hour	liters/ second	.2774	

To Convert	From	To	Multiply By
LENGTH	feet	inches	12
	inches	centimeters	2.540
	feet	meters	.30481
	kilometers	miles	.6214
	miles	meters	1609.34
	millimeters	inch	.03937
PRESSURE	PSI	kilopascals	6.89476
	PSI	bars	.068948
	bars	kilopascals	100
	PSI	feet of head	2.31
VELOCITY	feet/second	meters/second	.3048
VOLUME	gallons	meters <sup>3</sup>	.003785
	gallons	liters	3.785