SPACING & PRECIPITATION RATES

Spacing

- Equilateral triangular spacing is recommended for most uniform distribution; square spacing may be necessary where borders are prevalent and must be protected from over-throw
- Wind effect on sprinkler distribution must be compensated for by the proper spacing of sprinkler heads; maximum rotary sprinkler spacings are commonly based on diameter of coverage and wind velocity (see deration table below)

Wind Deration for Rotary Sprinklers

- Diameters of coverage shown in tables are for still air
- Head Spacing = Diameter of coverage (selected from Perf. Table) x Deration factor (listed below)
- Spacing with wind deration as follows:

Wind		Multiply Diameter in Table by:	
mph	km/h	■	▲
5	8	.55	.50
10	16	.50	.45

Precipitation Rates

Calculating Precipitation Rates

Depending upon the construction of the irrigation system, the precipitation rate may be calculated by either a “sprinkler spacing” or a “total area” method.

Sprinkler Spacing Method

The precipitation rate should be calculated for each individual zone.

If all sprinkler heads on the same zone have the same spacing, flow rate, and arc of coverage, use one of the following formulas:

Any Arc and Any Spacing:

$$\text{P.R. (in/hr)} = \frac{\text{GPM (for any Arc)} \times 34.650}{\text{Degrees of Arc} \times \text{Head Spacing (ft)} \times \text{Row Spacing (ft)}}$$

$$\text{P.R. (mm/hr)} = \frac{m^3/hr \text{ (for any Arc)} \times 360.000}{\text{Degrees of Arc} \times \text{Head Spacing (m)} \times \text{Row Spacing (m)}}$$

Equilateral Triangular Spacing:

$$\text{P.R. (in/hr)} = \frac{\text{GPM of 360 Arc} \times 96.25}{(\text{Head Spacing})2 \times 0.866}$$

$$\text{P.R. (mm/hr)} = \frac{m^3/hr \text{ of 360 Arc} \times 1.000}{(\text{Head Spacing})2 \times 0.866}$$

Total Area Method

The precipitation rate for a “system” is the average precipitation rate of all sprinklers in an area, regardless of the spacing, flow rate, or arc for each head. The Total Area Method calculates all the flows of all of the heads in any given area.

$$\text{P.R. (in/hr)} = \frac{\text{Total GPM} \times 96.25}{\text{Total Area}}$$

$$\text{P.R. (mm/hr)} = \frac{m^3/hr \times 1.000}{\text{Total Area}}$$

Metric Note

To convert from Bars to kPa, use 1 Bar = 100 kPa

To convert m3/hr to l/s use 1 m3/hr = 16,67