

## IRRIGATION DESIGN RULES-OF-THUMB

### WATER METER

- Do not exceed 10% static PSI as drop thru meter.
- Do not exceed 75% maximum safe flow thru meter

Meter Size	Max. Flow GPM (with above criteria)
5/8"	15.0
3/4"	22.5
1"	36.0
1 1/2"	65.0
2"	100.0
3"	187.5

### SERVICE LINE

Service line means the line from the main in the street to your water meter. The service line type and size can often be the limiting factor in determining the available flow for your system.

These are two common service lines types with the flow limitations at different velocities. It is not uncommon to allow a much faster velocity in the service line than you allow in the mainline in your design, as the service line is often very short and a simple straight run, without much worry for water hammer.

Size	GPM @ 7.5 FPS		
	Polyethylene	Copper Type K	Sch 40
3/4"	12.5	10.2	12.5
1"	20.2	18.2	20.2
1 1/4"	35.0	28.5	35
1 1/2"	47.6	40.3	47.6
2"	78.5	70.6	78.5
2 1/2"	112.1	109.1	112.1
3"	172.9	155.4	173
4"	298.0		298
6"	676.0		676.4

### REMOTE CONTROL VALVE (RCV)

Maximum flow allowed for valve sizes. It is best for the valve loss to not exceed about 10% of the static pressure in the mainline, i.e., about 5 to 7 psi, with about 6psi loss as recommended high. Different mfgs will have different loss values.

Size	GPM @ PSI Loss	
	Hardie 100	Rainbird PEB
1"	30 @ 4.7	30 @ 5.6
1 1/2"	60 @ 5.5	75 @ 5.4
2"	120 @ 4.5	120 @ 6.0
3"	200 @ 5.2	

### MAIN LINE

#### **Schedule 40**

Flow at a velocity maximum of 5fps.

Size	GPM @ Vel. FPS
3/4"	8.33 @ 5
1"	13.5 @ 5
1 1/4"	24.0 @ 5
1 1/2"	32.0 @ 5

#### **Class 315**

Flow at varied velocities. The larger pipe diameters should have slower water, for less damage to the system with water hammer, etc.

Size	GPM @ Vel. FPS
2"	50 @ 5
2 1/2"	65 @ 4.5      73.5@5.0
3"	90 @ 4.2      108.9@5.0
4"	140 @ 3.9      180@5.0
6"	275 @ 3.5      390@5.0

### RP BACKFLOW DEVICE

The backflow diagram of pressure loss for given flows should be examined, but general conclusions are indicated here:

#### **Febco 825Y**

Size	GPM @ PSI Loss
3/4"	15 @ 9
1"	40 @ 10
1 1/2"	80 @ 9
2"	120 @ 10

#### **Febco 825**

Size	GPM @ PSI Loss
2 1/2"	150 @ 10.5
3"	275 @ 12
4"	400 @ 12

### PRESSURE REQUIRED

Head Type	Design Pressure
Spray	30 psi
Rotors	40 psi minimum, and about 1 to 1.25 psi per ft of radius
Drip	20 psi

Pressure Required is equal to:

Design Pressure plus the loss through:

- Lateral pipes
- Elevation change
- RCV
- Mainline to valve
- Backflow Device
- Water Meter

The loss of the above varies by project, but on a simple project the loss of the above is about 25 psi, so add that to your Design Pressure.