



MP ROTATOR®

Landscape Application Guide for Specifiers



Specify



Maintain Matched
Precipitation
Any Arc / Any Radius

THIS GUIDE INCLUDES:

1. MP Rotator Application
2. MP Rotator Models & Performance Information
3. Recommended Layouts Precipitation Rate Calculations
4. Flow Rates at Reduced Radius and Various Arcs
5. MP Rotator Factory Settings
6. MP Rotator Waste Water Application
7. Filtration
8. Stream Heights & Trajectories
9. Uniformity
10. Field Identification

1. MP Rotator Application

General MP Rotator Application Notes:

- The MP Rotator is applied easily in designs by calling out the MP Rotators as the nozzle in a desired spray head body.
- The MP Rotator has a wide operational pressure range. Providing them with pressures over 40 psi will allow them to achieve their maximum radius potential, while lower pressures and radius reduction gives them minimum radius potential. MP Rotator maximum and minimum radii are determined by three factors.

1. Radius Adjustment

- a. Four (4) turns of the radius adjustment screw will take you from maximum radius to the minimum radius for the arc and pressure used.

2. Arc Setting

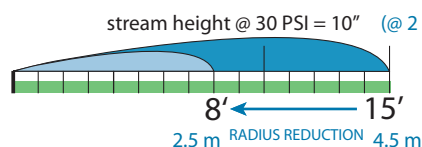
- a. The greater the arc, the greater the available radius reduction. 25% is the maximum recommended radius reduction.

3. Pressure

- a. To achieve maximum radius with an MP Rotator, pressures must be 40 psi or greater.
 - b. To achieve minimum radius, pressures should be minimum. The minimum operating pressure is usually 30 psi, depending on model.
- The MP Rotator is a light application rate sprinkler, applying water at an overall application rate similar to single stream rotors without radius reduction. Irrigation run-times should be set accordingly.
 - In areas where the desired radius could be reached by two MP Rotator models, it is recommended that you use the shorter radius model. This allows the MP Rotator used to operate in a less restrained condition.

2. MP Rotator Models and Performance information

MP CORNER

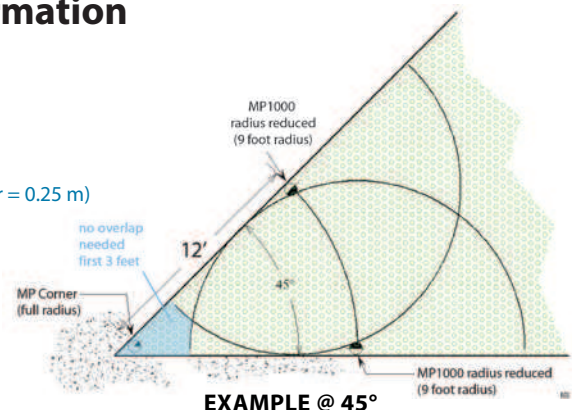


Radius Range: 8-15'

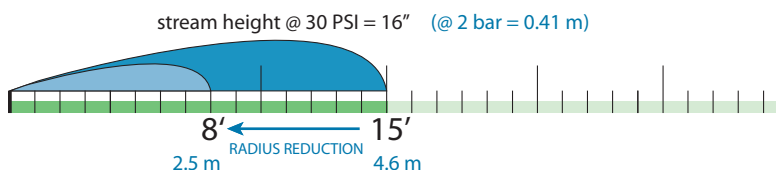
Pressure Range: 30-55 psi

Application Notes:

- The MP Corner is designed for application in areas where less than 90 degrees of arc area necessary.
- The MP Corner does not require adjacent sprinklers to reach into the first 3-5' of coverage.
- The key thought here is to have the adjacent MP Rotators reach back into the corner as far as they can, without causing objectionable over watering of the hard-scape.
- Like all low trajectory sprinklers, the MP Corners' 14 degree maximum stream trajectory angle makes its radius sensitive to riser straightness.



MP1000



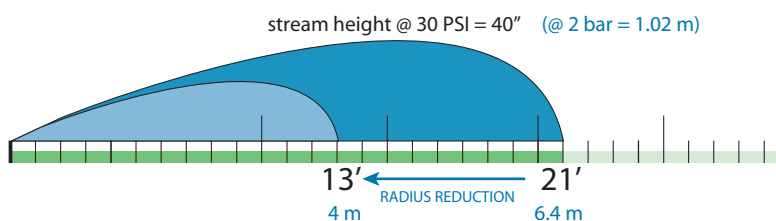
Radius Range: 8-15' including all pressure and radius adjustment influence.

Pressure Range: 30-55 psi

Application Notes:

- The MP1000 is a low trajectory MP Rotator perfect for smaller areas.
- For minimum radius, installation of the MP1000 on a 30 psi regulated pop-up body is recommended.
- The MP1000 does not come in a 210-270 model.

MP2000



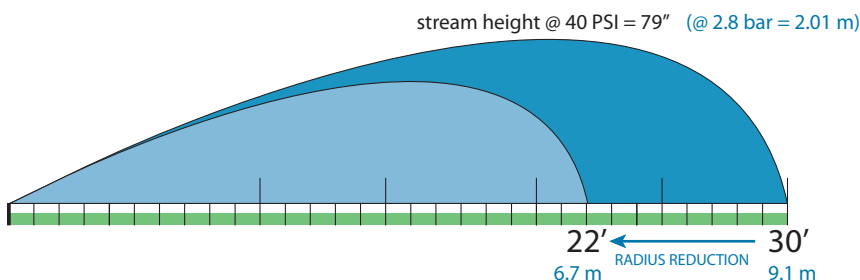
Radius Range: 13'-21' including all pressure and radius adjustment influence.

Pressure Range: 25-55 psi

Application Notes:

- The MP2000 uses about 1/3 of the flow rate of a 15' spray head, and yet has a greater radius and higher uniformity.
- For minimum radius, installation of the MP2000 on a 30 psi regulated pop-up body is recommended.

MP3000



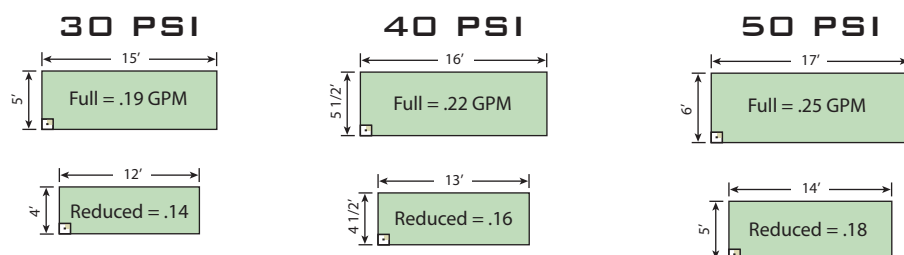
Radius Range: 22'-30' including all pressure and radius adjustment influence.

Pressure Range: 30-55 psi

Application Notes:

- The MP3000 uses about the same flow rate as a 15' spray head, and yet has a much greater radius and higher uniformity.
- To get the maximum radius from the MP3000, provide pressures over 40 psi.
- For minimum radius, provide adjustable zone pressure regulation. Installation of the MP3000 on a 30 psi pressure regulated pop-up body is not recommended if radius reduction is needed.

MP LEFT STRIP



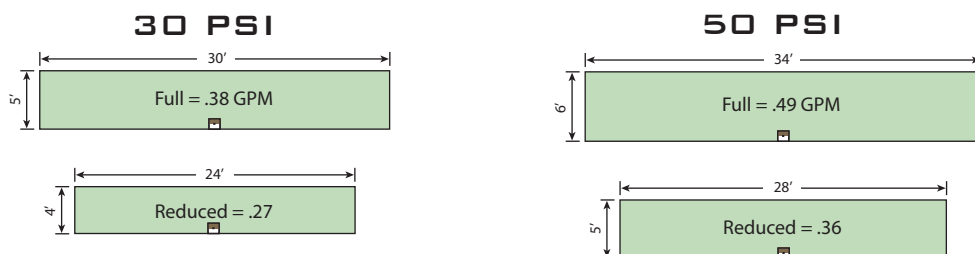
Flow Range: .14 GPM @ 30 PSI (min. radius) — .26 GPM @ 55 PSI (max. radius)

Pressure Range: 30-55 psi

Application Notes:

- All MP Strip models feature matched precipitation even after radius reduction with head to head spacing.
- Any MP Strip model can be used on the same zone with the MP1000, MP2000 or MP3000 and still maintain matched precipitation.
- The reduced flow rate compared to conventional sprays makes longer runs and/or fewer zones possible.
- The MP Left Strip has an adjustable right edge.

MP SIDE STRIP



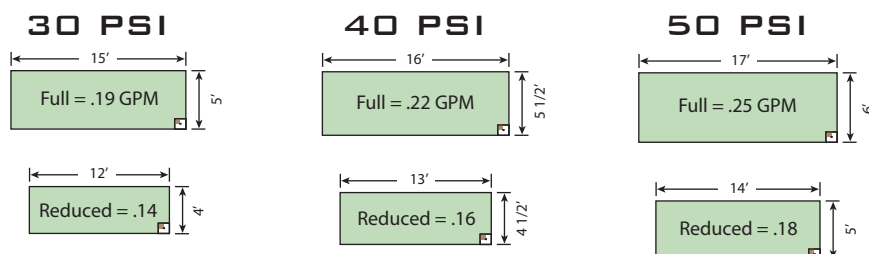
Flow Range: .27 GPM @ 30 PSI (min. radius) — .51 GPM @ 55 PSI (max. radius)

Pressure Range: 30-55 psi

Application Notes:

- All MP Strip models feature matched precipitation even after radius reduction with head to head spacing.
- Any MP Strip model can be used on the same zone with the MP1000, MP2000 or MP3000 and still maintain matched precipitation.
- The reduced flow rate compared to conventional sprays makes longer runs and/or fewer zones possible.
- The MP Side Strip features an adjustable right edge to fit curved strips.

MP RIGHT STRIP



Flow Range: .14 GPM @ 30 PSI (min. radius) — .26 GPM @ 55 PSI (max. radius)

Pressure Range: 30-55 psi

Application Notes:

- All MP Strip models feature matched precipitation even after radius reduction with head to head spacing.
- Any MP Strip model can be used on the same zone with the MP1000, MP2000 or MP3000 and still maintain matched precipitation.
- The reduced flow rate compared to conventional sprays makes longer runs and/or fewer zones possible.
- The MP Right Strip edges are fixed.

3. Recommended MP Rotator Layouts and Placements

While MP Rotators are recommended for use with head to head coverage in either square or triangular layouts, triangular (equilateral) layouts are preferred.

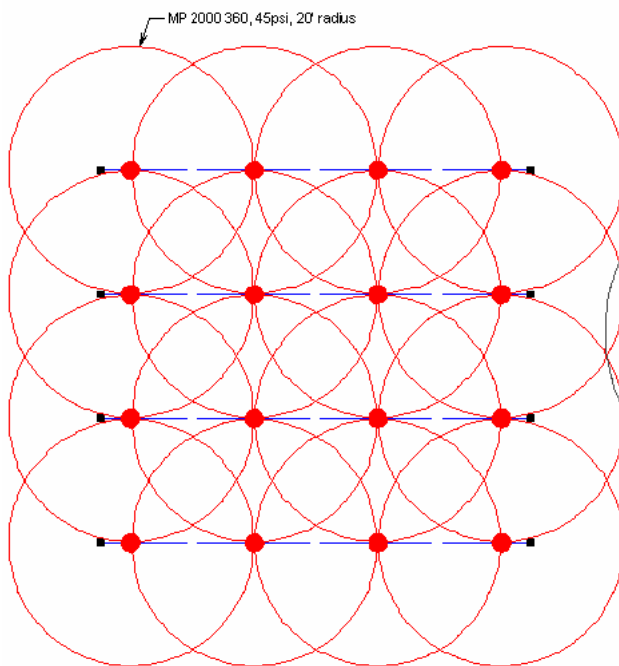
PRECIPITATION RATE CALCULATIONS:

SQUARE LAYOUT APPLICATION RATE IN INCHES PER HOUR

$$= \frac{96.3 \times \text{GPM OF 360 DEGREE SPKR}}{\text{HEAD SPACING} \times \text{ROW SPACING}}$$

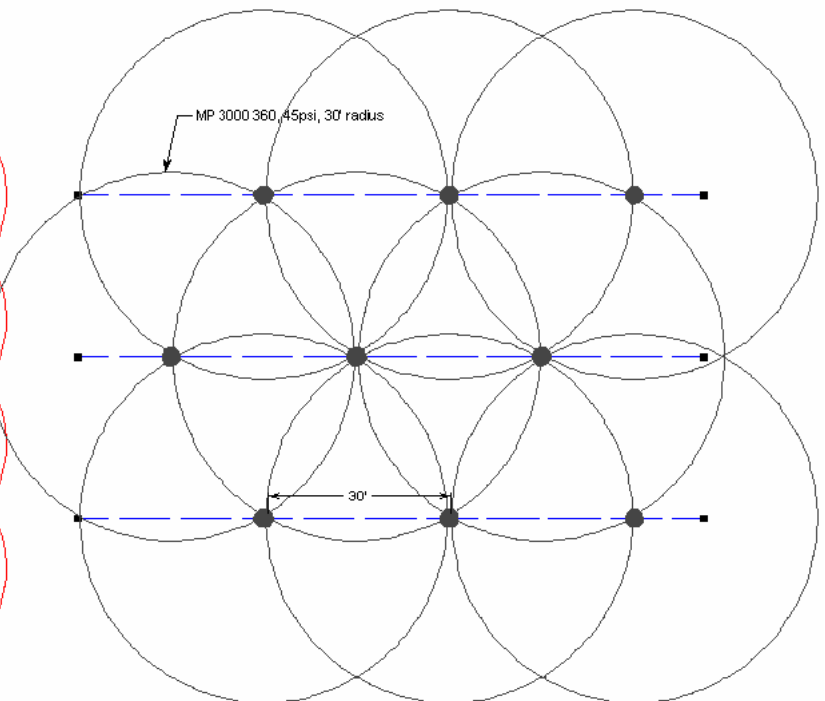
TRIANGULAR LAYOUT APPLICATION RATE IN INCHES PER HOUR

$$= \frac{96.3 \times \text{GPM OF 360 DEGREE SPKR}}{(\text{HEAD SPACING} \times \text{HEAD SPACING}) .866}$$



MP2000 360
45 psi
20' radius
1.56 gpm
20' Head x 20' Row, Rectangular Spacing

20' SQUARE SPACING



MP3000 360
45 psi
30' radius
3.86 gpm
30' Head x 26' Row, Equilateral Triangular Spacing

30' TRIANGULAR SPACING

Example:

$$\frac{96.3 \times 1.56 \text{ GPM}}{20' \times 20'} = \frac{150.23}{400} = .38 \text{ IN/HR}$$

$$\frac{96.3 \times 3.86 \text{ GPM}}{(30 \times 30) .866} = \frac{371.72}{(900) .866} = \frac{371.72}{779.4} = .48 \text{ IN/HR}$$

Note: Equilateral Triangular spacing has a higher application rate due to less area per sprinkler.

4. MP Rotator Flow Rates at Reduced Radius and Various Arc Settings


US units		MP1000				MP2000				MP3000			
Arc	Radius (ft)												
	8	9	10	11		13	14	15		22	23	24	
90	0.07	0.09	0.11	0.14		0.19	0.22	0.26		Use MP2000 90-210. Refer to product literature.	0.60	0.66	
105	0.09	0.11	0.13	0.16		0.23	0.26	0.30			0.71	0.77	
120	0.10	0.12	0.15	0.18		0.26	0.30	0.34			0.81	0.88	
135	0.11	0.14	0.17	0.21		0.29	0.34	0.39			0.91	0.99	
150	0.12	0.15	0.19	0.23		0.32	0.37	0.43			1.01	1.10	
165	0.13	0.17	0.21	0.25		0.35	0.41	0.47			1.11	1.21	
180	0.15	0.19	0.23	0.28		0.39	0.45	0.51		1.11	1.21	1.32	
195	0.16	0.20	0.25	0.30		0.42	0.49	0.56		1.20	1.31	1.43	
210	0.17	0.22	0.27	0.32		0.45	0.52	0.60		1.29	1.41	1.54	
225						0.48	0.56	0.64		1.38	1.51	1.65	
240						0.52	0.60	0.69		1.48	1.61	1.76	
255	The model for these arcs is not available					0.55	0.63	0.73		1.57	1.71	1.87	
270						0.58	0.67	0.77		1.66	1.81	1.98	
360	0.29	0.37	0.46	0.55		0.77	0.90	1.03		2.21	2.42	2.63	

flow in GPM

Metric units

Arc	Radius (meters)												
	2.44	2.75	3.05	3.35		3.96	4.27	4.57		6.71	7.01	7.32	
90	17	21	26	31		44	51	58		Use MP2000 90-210. Refer to product literature.	137	150	
105	19	25	30	37		51	59	68			160	174	
120	22	28	35	42		58	68	78			183	199	
135	25	32	39	47		66	76	88			206	224	
150	28	35	43	52		73	85	97			229	249	
165	30	39	48	58		80	93	107			252	274	
180	33	42	52	63		88	102	117			251	275	299
195	36	46	56	68		95	110	127			272	298	324
210	39	49	61	73		102	119	136			293	320	349
225						110	127	146			314	343	374
240						117	136	156		335	366	399	
255	The model for these arcs is not available					124	144	165		356	389	424	
270						132	153	175		377	412	449	
360	66	84	104	126		175	204	234		503	549	598	

flow in liters per hour

 To achieve the arc and radius of the shaded areas, minimum operating pressures must be used.

Note: The flowrates can be used to estimate expected flow from one sprinkler (some values are interpolated).

file:Reduced_rad_flow.pmd, Feb05

5. MP Rotator Factory Settings

For new MP Rotator sprinkler, the approximate arc settings as shipped from the factory are as follows for each model:

MP MODEL	FACTORY SET ARC
90-210	180 degrees
210-270	210 degrees
360	full circle
MP Corner	45 degrees
MP Side Strip	180 degrees
MP Left & Right Strip	90 degrees

6. MP Rotator Waste Water Application

The MP Rotator is an excellent choice for landscape application of reclaimed waste water.

The materials used in the MP Rotator are chemical resistant poly-propylene, poly-urethane, acetyl plastics, Stainless Steel, and EPDM rubber. These are all materials that have proven to have excellent chemical resistance to commonly used waste water conditions in irrigation.

7. Filtration

A basic rule of thumb is to do primary filtration five times smaller than the MP base filter dimensions. The MP filter screens are 20 mesh for the MP3000 and 40 mesh for all the others. A general field practice for the primary filter may then be to use 100 mesh filtration. The MP nozzle dimensions are well above the base filter mesh so that any of the fine clay and silt particles that pass through the filter can go right on through the nozzle.

8. Stream heights and trajectories

Each of the models of the MP Rotators have specific stream trajectories. The table below shows the range of stream trajectories and the height of the highest stream. This will help avoid stream obstruction when the MP Rotator is use under trees and shrubs.

MAXIMUM STREAM HEIGHTS AT DIFFERENT PRESSURES

Model	trajectory*	30 PSI	40 PSI	50 PSI	2.1 kg/cm ²	2.8 kg/cm ²	3.5 kg/cm ²
MP3000	26°	72"	79"	84"	1.8 m	2.0 m	2.1 m
MP2000	25°	40"	45"	50"	1.0 m	1.1 m	1.3 m
MP1000	20°	16"	20"	23"	0.4 m	0.5 m	0.6 m
MP Corner	14°	11"	14"	17"	28 cm	36 cm	43 cm
MP Side Strip	16°	15"	19"	22"	38 cm	48 cm	56 cm
MP Left Strip	16°	14"	18"	21"	36 cm	46 cm	53 cm

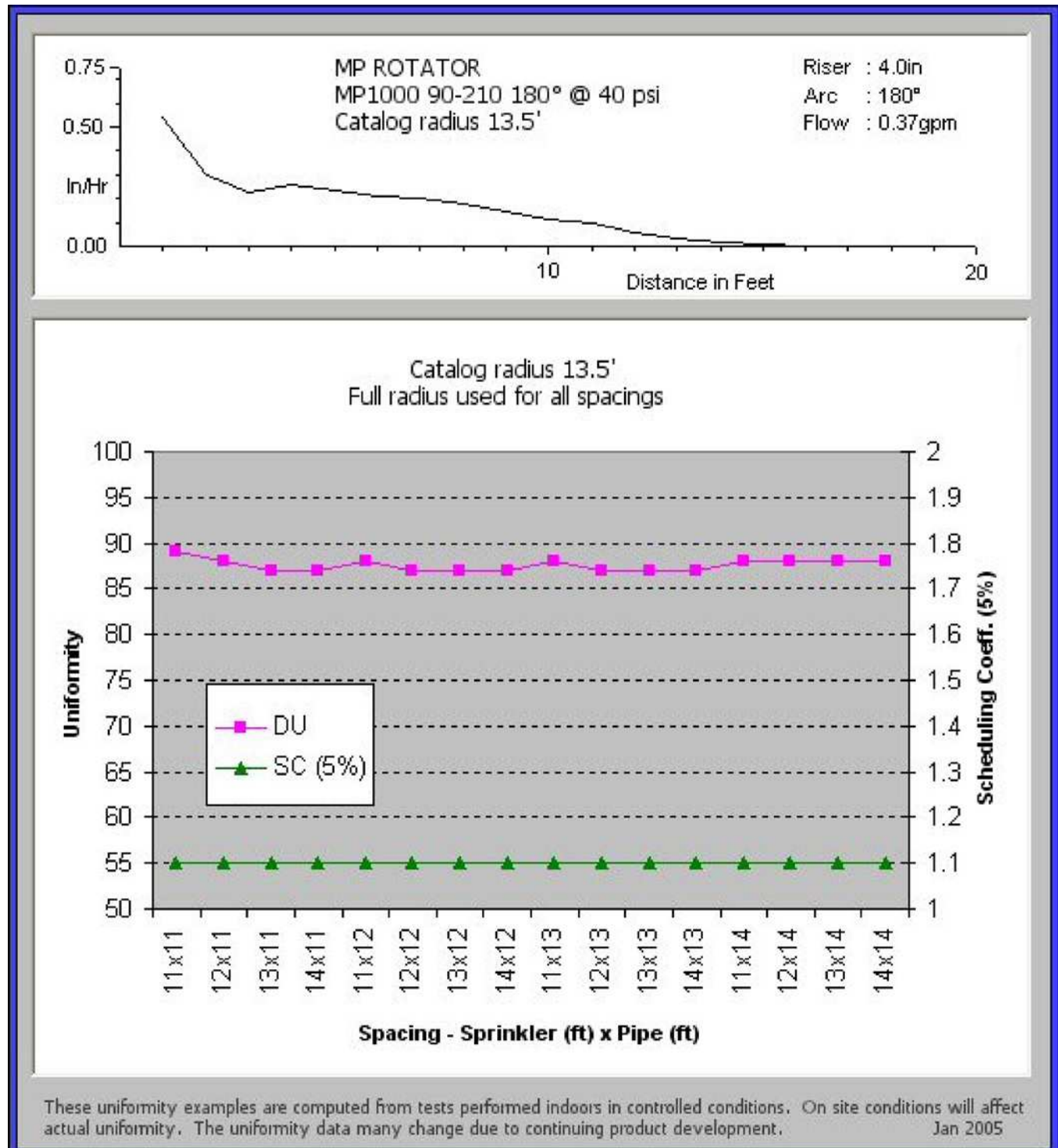
*The sprinkler has several stream trajectories. This column shows the trajectory of the highest stream. Stream heights are to the apex of the highest stream. The stream heights are affected by both pressure and throttle setting of the RADIUS ADJUSTMENT screw. The values shown are for a full-open radius setting. The highest point along the stream's trajectory occurs at 60-80% of the radius of the sprinkler.

9. Uniformity

The streams of the MP Rotator allow it to target specific areas and tasks for the streams as they leave the MP Rotator. Much study has been done on this subject, and can be referenced for additional information. Additional uniformity information can also be viewed at www.mprotator.com.

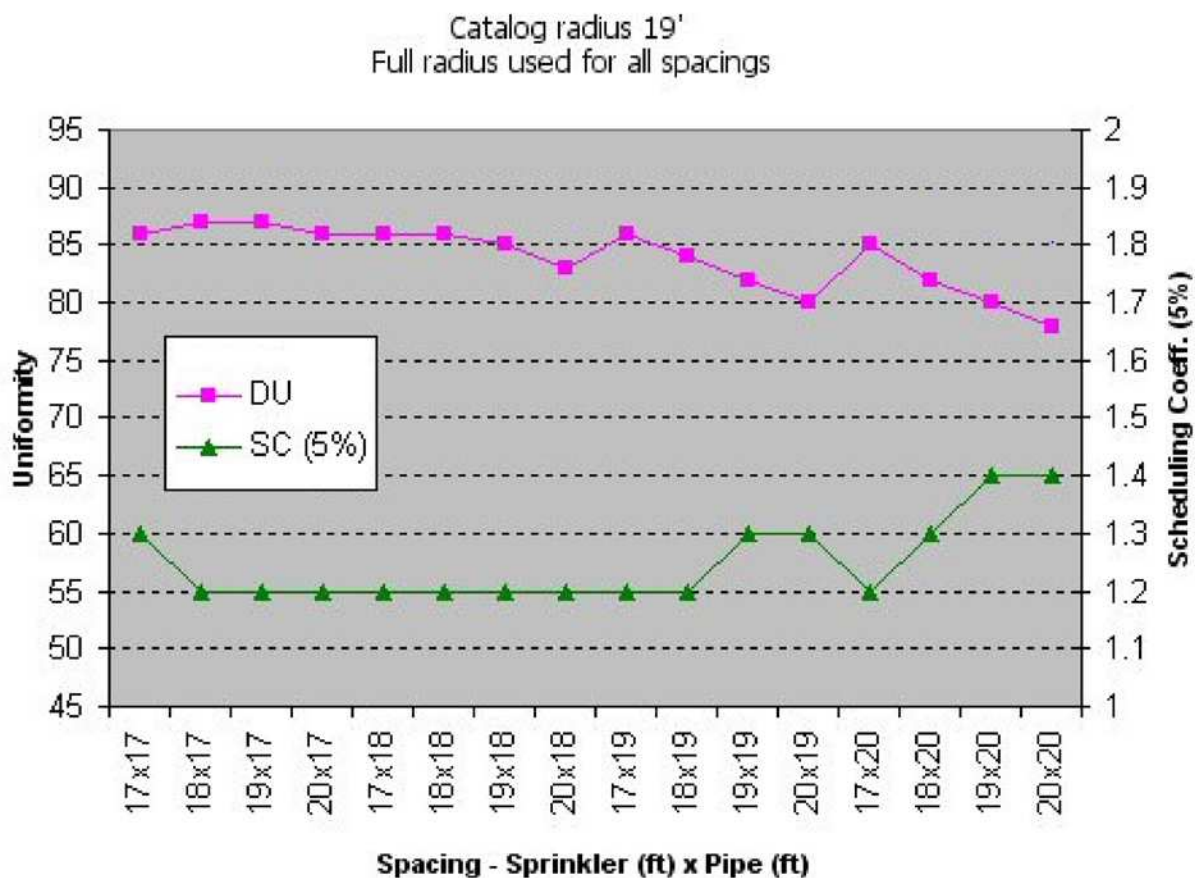
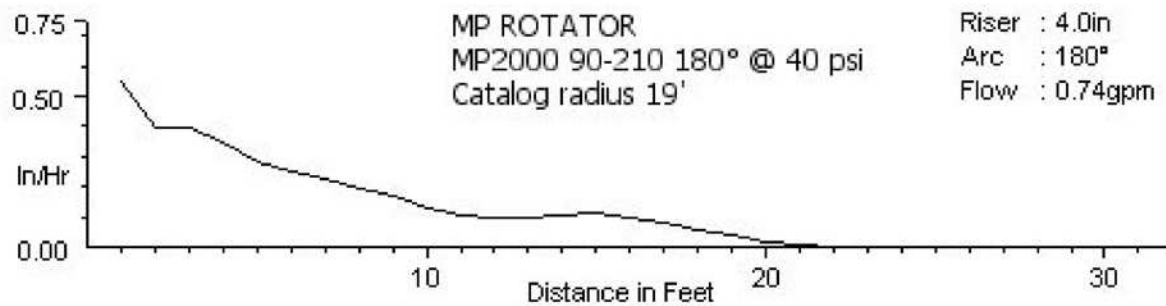
Here are a sampling of MP Rotator profiles and calculated uniformities.

MP1000 90-210, set to 180 degree arc @ 40 PSI



Example of chart use: an 11'x 12' spacing would have Distribution Uniformity of about 88% and a Scheduling Coefficient of 1.1.

MP2000 90-210, set to 180 degree arc @ 40 PSI

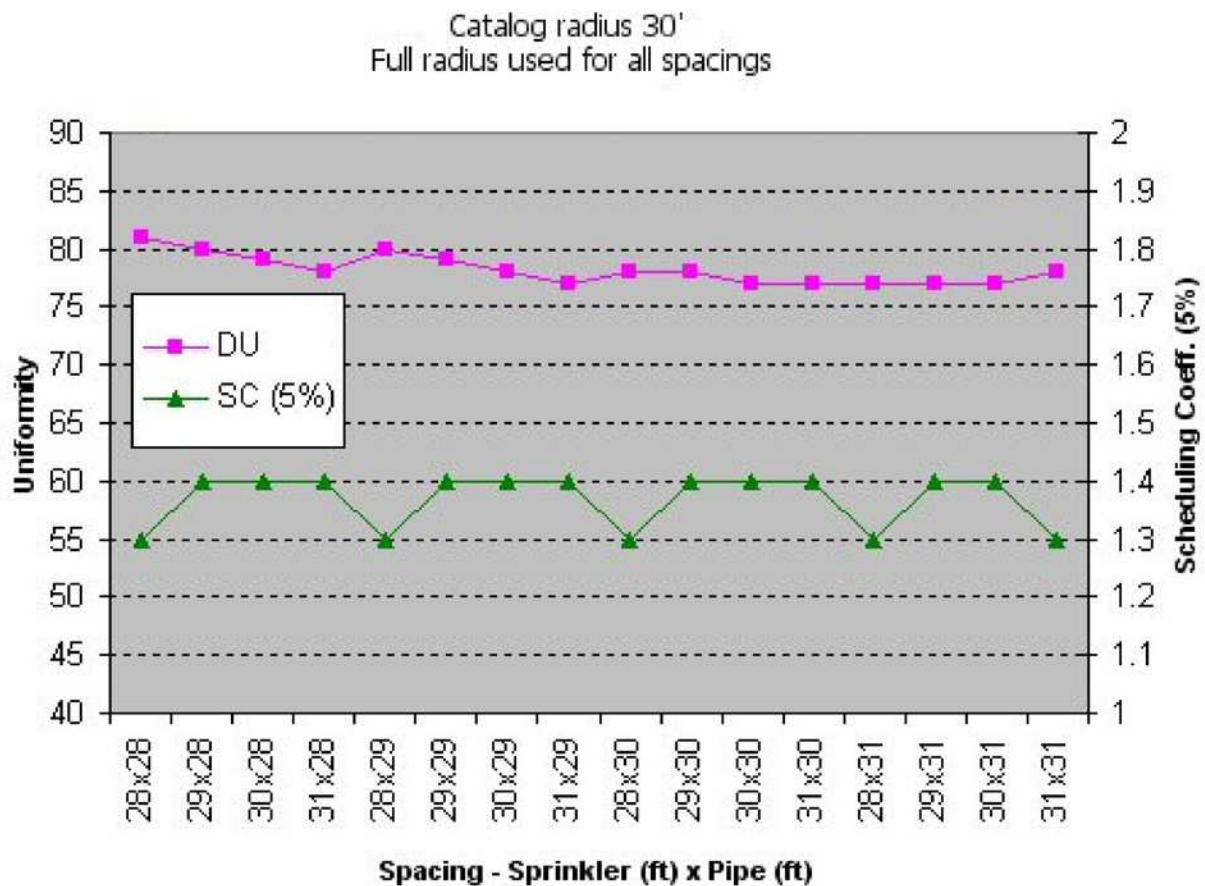
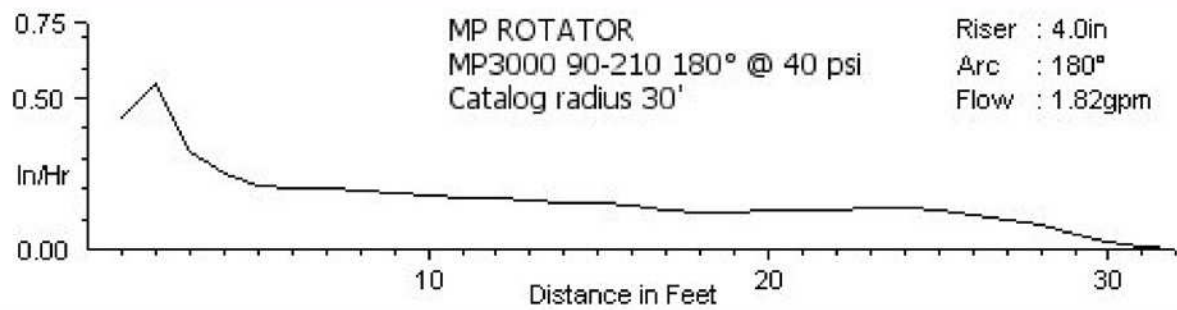


These uniformity examples are computed from tests performed indoors in controlled conditions. On site conditions will affect actual uniformity. The uniformity data may change due to continuing product development.

Jan 2005

Example of chart use: a 20' x 18' spacing would have Distribution Uniformity of about 83% and a Scheduling Coefficient of 1.2.

MP3000 90-210, set to 180 degree arc @ 40 PSI



These uniformity examples are computed from tests performed indoors in controlled conditions. On site conditions will affect actual uniformity. The uniformity data may change due to continuing product development.

Jan 2005

Example of chart use: a 30' x 30' spacing would have Distribution Uniformity of about 77% and a Scheduling Coefficient of 1.4.

10. Field identification

MP Rotator models are color-coded for easy field identification during a walk-through.



MP1000 90-210°	MP2000 90-210°	MP3000 90-210°	MP LEFT STRIP	MP CORNER 45-105°
	MP2000 210-270°	MP3000 210-270°	MP SIDE STRIP	
MP1000 360°	MP2000 360°	MP3000 360°	MP RIGHT STRIP	

Note: At the time of printing – some of the models in production are color-coded on the stem only.