# MP ROTATOR®

**Design Guide** High-Efficiency Multi-Stream Nozzle

Hunter®



# Product Introduction

Therefore I I time

#### **Reliable Operation**

Patented double-pop nozzle keeps the sprinkler free of external debris.

#### **Efficient Application**

Multiple rotating streams provide even coverage and wind resistance, eliminating dry spots.



#### **Accurate Adjustments**

Arc and radius can be adjusted while maintaining matched precipitation. Radius can be reduced up to 25%.



#### **Durable**

Removable inlet filter keeps sprinkler free of internal debris.

#### **Easy Installation**

Compatible with all Hunter spray bodies—perfect for retrofits. Use the MP-HT for female-threaded spray bodies.

#### **Pressure Regulation**

For best results, use the pressureregulated Pro-Spray® PRS40.





## MATCHED PRECIPITATION

MP Rotators now come in two precipitation rate options to provide maximum flexibility for your irrigation design.

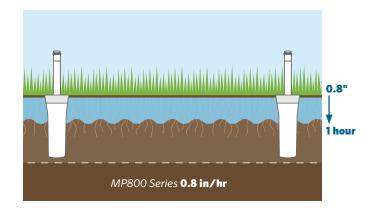
#### **Standard MP Rotator Series Precipitation Rate**

The Standard MP Rotator Series has the slowest precipitation rate in the industry at approximately 0.4 in/hr, preventing runoff in the majority of soil applications, and allowing for gentle hydration of the landscape.

# 0.4" Thour Standard MP Rotator Series 0.4 in/hr

#### **MP800 Series Precipitation Rate**

The MP800 Series has a precipitation rate of approximately 0.8 in/hr, allowing for high-efficiency irrigation of small spaces and medium-grade soils.

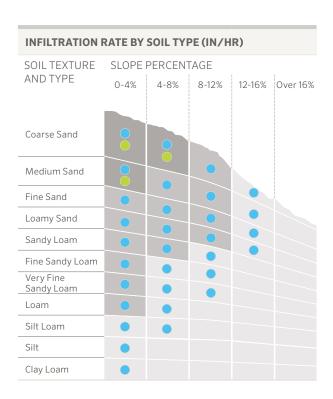


#### **Matching Soil Intake Rates**

Matching your precipitation rate to your soil intake rate will eliminate the hazards of runoff and help conserve water. With two different precipitation rate options with the MP Rotator, you can now choose the best high-efficiency rotary nozzle for your plant material, soil type, and slope.

Water infiltration into the soil is less than:

- $\bigcirc$  1.5 in/hr  $\bigcirc$  1 in/hr  $\bigcirc$  0.5 in/hr
- MP Rotators deliver water slowly, at a rate that typical soils can absorb.
- Standard sprays apply water at a rate much higher than most soils can absorb, causing runoff in most soil types.



## **Application**

#### **1** MP Rotator Application

Specify the MP Rotator as the desired nozzle in a spray head body.

Retrofit spray systems by installing the MP Rotator onto any conventional spray head or shrub adapter.

#### 2 Radius Adjustment

All models of the MP Rotator allow for easy radius adjustment of up to 25% while maintaining automatic matched precipitation.

Turn the nozzle adjustment screw clockwise to reduce the radius or counterclockwise to increase the radius. Four full rotations will maximize the effect. Additional rotations will not affect the performance of the nozzle.

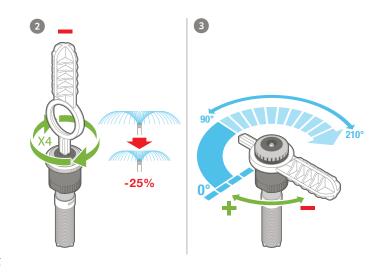
#### Arc Setting

The MP Rotator has a fixed left edge on all  $90^{\circ}$ – $210^{\circ}$  models and  $210^{\circ}$ – $270^{\circ}$  models. Turn the adjustment ring clockwise to increase the arc, and turn the adjustment ring counterclockwise to decrease the arc.

#### 4 Pressure

Optimal performance and uniformity are reached at 40 PSI operating pressure. Use the Pro-Spray PRS40 to achieve pressure regulation of 40 PSI.

To reach the minimum radius, use the Pro-Spray PRS30 for pressure regulation to 30 PSI. To achieve maximum radius, increase the pressure over 40 PSI.





#### **MP ROTATOR FACTORY SETTINGS**

New MP Rotators are shipped from the factory at the maximum radius setting and with the following arc settings:

MP MODEL	FACTORY SET ARC
90°-210°	180°
210°-270°	210°
360°	Full-circle
MP Corner	45°
MP Side Strip	180°
MP Left Corner Strip	90°
MP Right Corner Strip	90°

MP ROTATOR NOZZLE HEIGHT AND TRAJECTORY			
Nozzle No.	Pressure (PSI)	Degrees of Trajectory	Max. Height of Spray
MP815	40	15°	12"
MP800SR	40	18°	18"
MP1000	40	20°	20"
MP2000	40	26°	45"
MP3000	40	26°	79"
MP3500	40	26°	79"
MP Corner	40	14°	14"
MP Side Strip	40	16°	19"
MP Left Corner Strip	40	16°	18"
MP Right Corner Strip	40	16°	18"

## Layout and Placement

#### **Run Times**

Because the MP Rotator applies less water with increased uniformity, simply doubling the run time used for traditional spray nozzles may supply sufficient water to the landscape while using less water overall.

You can also calculate the run time based on the lower precipitation rate.

Visit www.hunterindustries.com/tools/runtime for more information on run time calculations.

#### **Precipitation Rate Calculations**

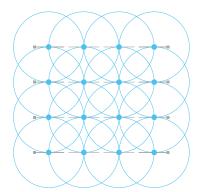
MP Rotators are recommended for use with head-to-head coverage in either square or triangular layouts.

#### **Square Spacing Application Rate**

 $96.25 \times GPM$  of  $360^{\circ}$  sprinkler (Head spacing  $\times$  Row spacing)

Example:

$$\frac{96.25 \times 1.48 \, GPM}{(19' \times 19')} = \frac{142.45}{361} = 0.39 \, in/hr$$



#### 19' Square Spacing

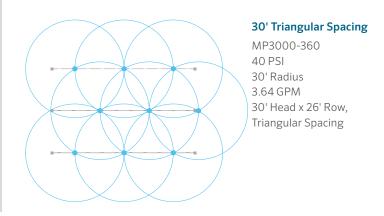
MP2000-360 40 PSI 19' Radius 1.48 GPM 19' Head x 19' Row, Square Spacing

#### **Equilateral Triangular Spacing Application Rate**

96.25 × GPM of 360° sprinkler (Head spacing × Head spacing) 0.866

#### Example:

$$\frac{96.25 \times 3.64 \, GPM}{(30' \times 30') 0.866} = \frac{350.35}{(900) 0.866} = \frac{350.35}{779.4} = 0.45 \, in/hr$$



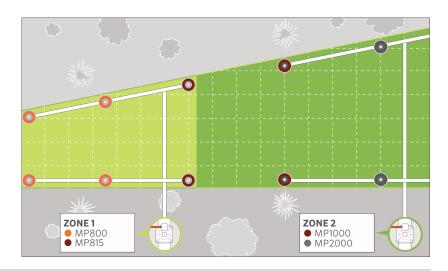
Note: Equilateral triangular spacing has a higher application rate than square spacing due to less area per sprinkler.

#### **Zoning with the MP Rotator**

The standard MP Rotators have a matched precipitation rate of approximately 0.4 in/hr. This means any standard MP Rotator at any arc or radius can be placed on the same zone.

The MP800SR can be configured to work well in head-to-head coverage in either square or triangular layouts. When square spacing is used, the resulting precipitation rate will be approximately 0.8 in/hr.

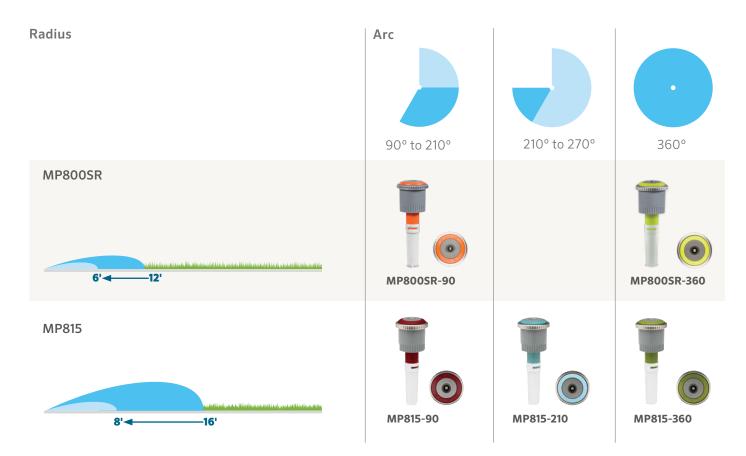
Since this precipitation rate differs from the standard line of MP Rotators, you should zone the MP800 Series separately to maintain matched precipitation within each zone.



## MP800 Series

#### **Matched Precipitation**

Maximize water savings for tight spaces with the MP800 Series. The MP800 Series offers the benefits of multi-stream, multi-trajectory technology in smaller areas than ever before. The MP800 Series delivers water to distances as short as 6' at a matched precipitation rate of approximately **0.8 in/hr**, less than half that of traditional spray nozzles.



#### **Pressure Ratings**

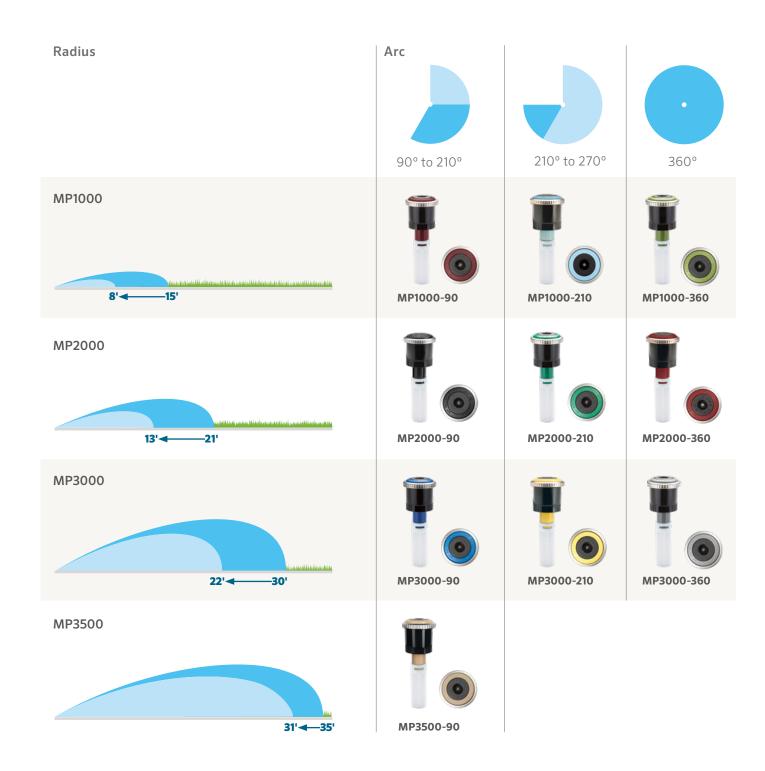
The MP800 Series, just like its larger family of MP Rotators, prefers 40 PSI for optimal performance. This pressure yields optimal results for coverage and distribution uniformity. **However, to achieve the lowest radius setting of 6', you must regulate the inlet pressure to 30 PSI.** Use a Pro-Spray PRS30 to achieve a consistent inlet pressure of 30 PSI.



## MP1000, MP2000, MP3000, MP3500

#### **Matched Precipitation**

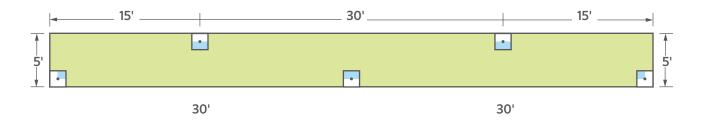
All standard MP Rotators have a matched precipitation rate of approximately **0.4 in/hr** across the radius range of 8' to 35'.



## Side Strip and Corner Models

#### **Side Strip Precipitation Example**

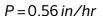
The precipitation rate of the MP Strips is dependent on the layout of the system. The following is an example of a potential design and associated precipitation rate:



#### **Precipitation Rate Using Total Area Method**

$$P = \frac{96.25 \times Total \, Flow \, (GPM)}{Total \, Area \, (ft)}$$

$$P = \frac{96.25 \times (0.22 + 0.44 + 0.44 + 0.44 + 0.22)}{5' \times 60'}$$





MPLCS515 (Left Strip)



MPSS530 (Side Strip)



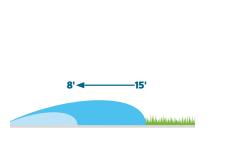
MPRCS515 (Right Strip)

#### **MP Corner**

The MP Corner is specially designed to provide extra coverage in tight corners so that neighboring heads do not need to reach into the corner to provide head-to-head coverage, avoiding unnecessary overspray onto non-target areas.



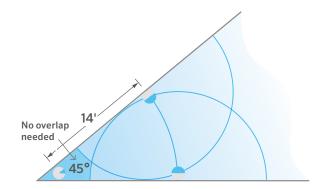
**MPCorner** 





45°-105°





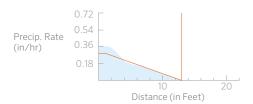
## Uniformity

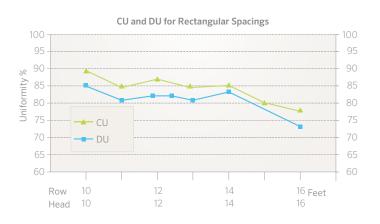
#### **Uniformity Samples**

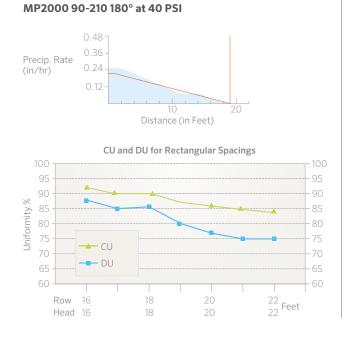
The various streams of the MP Rotator allow it to target all areas of the landscape evenly when properly installed, yielding superior uniformity over traditional spray nozzles. Several independent studies demonstrate this difference and other efficiency benefits of the MP Rotator. Read more at **hunterindustries.com/site-studies**.

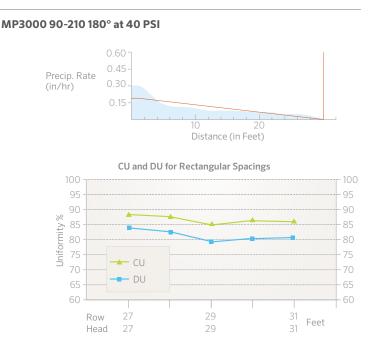
Below is a sampling of MP Rotator profiles and associated uniformities. These uniformity examples result from tests performed indoors in controlled conditions. On-site conditions will affect actual uniformity, and the uniformity data may change due to continuing product development.

#### MP1000 90-210 180° at 40 PSI









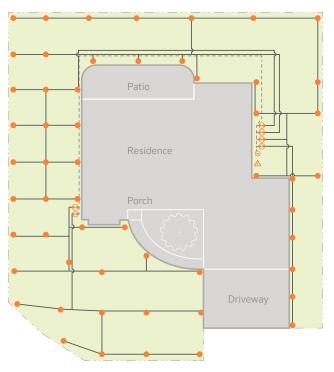
## Cost and Water Savings

#### **Lower System Cost**

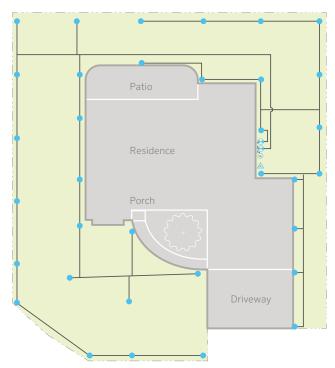
A design with MP Rotators uses far less material and equipment than a traditional spray design, resulting in an overall reduced project cost. Due to the lower flow rates, more heads can be run at once, reducing the number of valves needed.

Learn more about how the MP Rotator provides material and labor savings in this residential site study: http://hunter.direct/mprotatorss.

#### **Design Using Traditional Sprays**



#### **Design Using MP Rotators**



IRRIGATION SYSTEM COST COMPARISON			
Materials Needed	With Sprays		
Valves	6		
Mainline	150'		
Laterals	800'		
Sprinklers	55		
Controller	6-Station		
Wire	175'		
SPRAY COST	\$\$\$\$		

IRRIGATION SYSTEM COST COMPARISON			
Materials Needed	With MP Rotators		
Valves	2		
Mainline	15'		
Laterals	600'		
Sprinklers	34		
Controller	4-Station		
Wire	20'		
MP ROTATOR COST	\$\$		

## Filtration Recommendations and Wastewater Applications

#### **Filtration Guidelines**

You should use primary filtration when operating with dirty water.

A general rule is to use primary filtration that is five times the mesh rating of the nozzle filter. For example, if the nozzle filter is 20 mesh, the primary filter should be 100 mesh.

Field testing has shown that the MP800SR runs well in dirty water conditions with the use of a 120-mesh primary filtration system.

NOZZLE FILTER SIZES			
Nozzle	Screen Size (mesh)		
MP1000	40		
MP2000	40		
MP3000	20		
MP3500	20		
MP Strips and Corner	40		
MP800SR-90	60		
MP800SR-360	40		
MP815	40		



Hunter's HY filters with 150-mesh size are a great solution for zone-specific MP800SR arrangements.

#### **Reclaimed Wastewater**

The MP Rotator is an excellent choice when using reclaimed wastewater. The materials used in the MP Rotator are chemical-resistant polypropylene, polyurethane, acetal plastics, stainless steel, and EPDM rubber. These materials are designed to withstand the chemicals and conditions commonly used in wastewater irrigation.

## MP800 Series

#### MP ROTATOR PERFORMANCE DATA MP ROTATOR PERFORMANCE DATA MP800SR MP815 Radius: 6' to 12 Radius: 8' to 16' Adjustable Arc and Full-Circle Adjustable Arc and Full-Circle Orange and Gray: 90° to 210° Maroon and Gray: 90° to 210° Lime Green and Gray: 360° Lt. Blue and Gray: 210° to 270° Olive and Gray: 360° **MAX RADIUS** MIN RADIUS Radius Flow Flow Arc Pressure Precip in/hr Radius Flow Arc Pressure Radius Flow Flow Precip in/hr GPM PSI ft GPH ft **GPM** PSI ft. GPM **GPH** 30 8 0.17 9.6 0.90 1.04 6 0.13 30 14 0.42 25.2 0.83 0.95 90° 90° 35 9 0.21 11 4 0.89 1.03 7 0.15 35 15 0.46 27.6 0.79 0.91 10 40 15 0.49 29.4 0.84 0.97 40 0.23 13.8 0.83 0.96 8 0.16 11 15.0 8 0.18 45 16 0.52 31.2 0.78 0.90 45 0.25 0.80 0.92 50 16 0.55 33.0 0.83 50 11 16.2 0.79 9 0 19 0.96 0.270.92 55 12 0.80 55 16 0.58 34.8 0.87 1.01 0.28 16.8 0.93 10 0.20 30 8 0.33 19.2 0.88 1.02 6 0.26 30 13 0.75 45.0 0.85 0 99 180° 180° 35 9 0.38 22.2 0.85 0.99 7 0.29 35 14 0.86 51.6 0.84 0.98 40 10 0.42 25.2 0.81 0.93 8 0.32 40 15 0.93 55.8 0.80 0.92 45 11 27.6 0.77 8 0.36 45 15 0.96 57.6 0.82 0.95 0.46 0.88 50 11 0.48 28.8 0.76 0.88 9 0.38 50 16 1.06 63.6 0.80 0.92 55 16 1.11 66.6 0.83 0.96 55 12 0.50 30.0 0.73 0.84 10 0.40 30 8 0.35 22.2 0.80 0.93 6 0.30 30 13 0.88 52.8 0.86 0.99 210° 210° 35 35 9 7 0.34 14 0.96 57.6 0.81 0.93 0.38 26.4 0.77 0.89 40 15 1.10 66.0 0.81 0.93 29.4 8 0.37 40 10 0.43 0.81 0.91 45 15 69.6 0.85 0.98 45 10 0.82 1.16 0.45 31.8 0.95 8 0.42 50 16 124 74 4 0.80 0.92 50 0.49 9 11 33.6 0.73 0.85 0.44 1.30 55 16 78 O 0.84 0.97 55 12 0.56 34.8 0.70 0.81 10 0.47 8 0.66 37.8 0.89 1.03 6 0.47 30 13 1.14 68 4 0.87 1.00 30 360° 270° 35 35 9 0.71 42.0 0.80 0.92 7 0.52 14 1.24 74 4 0.81 0.94 40 10 46.8 0.79 0.91 8 40 15 1.40 84.0 0.80 0.92 0.78 0.56 45 10 45 15 1.47 88.2 0.84 0.97 0.85 51.0 0.78 0.90 8 0.59 92.4 0.89 50 11 0.88 52.8 0.73 0.85 9 0.63 50 16 1.54 0.77 96.6 0.93 55 12 0.98 58.8 0.70 0.81 10 0.70 55 16 1.61 0.81 30 13 1.52 91.2 0.87 1.00 360° 35 14 1.70 102.0 0.83 0.96 Due to its precipitation rate of approximately 0.8 in/hr, we strongly 40 15 1.87 112.2 0.80 0.92 recommend zoning the MP800 Series separately from the Standard 45 15 2 00 120.0 0.86 0.99 MP Rotator Series. 50 16 2.13 127.8 0.80 0.92 55 16 2.26 135.6 0.85 0.98

#### PERFORMANCE DATA NOTE FOR ALL CHARTS:

**Bold** = Recommended Pressure.

The MP Rotator is designed to maintain matched precipitation after radius adjustment. Optimal pressure for the MP Rotator is 40 PSI. This can be achieved easily by using the MP Rotator with the Pro-Spray PRS40 Spray Body, pressure regulated at 40 PSI.

## MP1000, MP2000, MP3000, MP3500

#### MP ROTATOR PERFORMANCE DATA MP1000 MP2000 MP3000 Radius: 8' to 15' Radius: 13' to 21' Radius: 22' to 30' Adjustable Arc and Full-Circle Adjustable Arc and Full-Circle Adjustable Arc and Full-Circle Black: 90° to 210° Maroon: 90° to 210° Blue: 90° to 210° Lt. Blue: 210° to 270° Green: 210° to 270° Yellow: 210° to 270° Olive: 360° Red: 360° Gray: 360° Pressure Radius Flow Flow Precip in/hr Radius Flow Flow Precip in/hr Radius Flow Flow Precip in/hr $\Delta rc$ PSI ft. **GPM GPH** ft. **GPM GPH** ft. **GPM** GPH $\blacksquare$ 25 17 0.34 20.4 0.45 0.52 25 0.71 42 6 0 44 0.51 90° 0.45 0.52 0.1710.2 0.38 0.45 0.52 0.40 30 22.8 45 6 0.46 35 13 0.19 0.43 0.50 19 0.40 0.43 0.49 28 49.2 0.40 11.4 24.0 0.82 0.46 40 14 0.21 12.6 0.41 0.48 20 0.43 25.8 0.41 0.48 30 0.86 51.6 0.37 0.42 45 14 0.23 13.8 0.45 0.52 21 0.46 27.6 0.40 0.46 30 0.90 54.0 0.39 0.44 50 15 0.25 15.0 0.43 0.49 21 0.47 28.2 0.41 0.47 30 0.95 57.0 0.41 0.47 55 15 0.27 16.2 0.46 0.53 21 0.48 28.8 0.42 0.48 30 1.01 60.6 0.43 0.50 25 16 0.6 36.0 0.45 0.52 25 144 86.4 0.44 0.51 180° 12 0.34 20.4 0.45 0.52 17 0.64 38.4 0.43 0.49 27 1.58 94.8 0.42 30 0.48 35 13 0.38 22.8 0.43 0.50 18 0.71 42.6 0.42 0.49 28 1.70 102.0 0.42 0.48 40 0.42 25.2 0.41 0.48 19 0.77 46.2 0.41 30 109.2 0.39 14 0.47 1.82 0.45 45 14 0.44 26.4 0.43 0.50 20 0.85 51.0 0.41 0.47 30 1.93 115.8 0.41 0.48 50 15 0.50 30.0 0.43 0.49 21 0.40 30 2 04 0 44 0.91 546 0.46 122 4 0.50 55 15 0.51 30.6 0.44 0.50 0.95 57.0 0.41 0.48 30 2.13 127.8 0.46 0.53 25 16 0.72 43.2 0.46 0.54 25 1.68 100.8 0.44 0.51 210° 30 12 0.40 24.0 0.46 0.53 17 0.75 45.0 0.43 0.49 27 1.84 110.4 0.42 0.48 35 13 0.45 27.0 0.44 0.51 18 0.81 48.6 0.41 0.48 28 1.99 119.4 0.42 0.48 40 14 0.49 29.4 0.41 0.48 19 0.86 51.6 0.39 0.45 30 2.12 127.2 0.39 0.45 45 14 0.51 30.6 0.43 0.50 20 0 91 54 6 0.38 0.43 30 2 25 135.0 0.41 0.48 50 15 0.57 34.2 0.42 0.48 21 0.98 58.8 0.37 0.42 30 2.37 142.2 0.43 0.50 55 15 0.59 35.4 0.43 0.50 21 1.01 60.6 0.38 0.44 30 2.49 149.4 0.46 0.53 0.87 25 16 52.2 0.44 0.50 25 2.19 131.4 0.45 270° 30 12 0.48 28.8 0.43 0.49 17 0.95 57.0 0.42 0.49 27 2.37 142.2 0.42 0.48 35 13 0.53 31.8 0.40 0.46 18 1.03 618 0.41 0.47 28 2 55 153.0 0.420.4840 14 0.63 37.8 0.41 0.48 19 1 10 66.0 0.39 0.45 30 2 73 163.8 0.39 0.45 45 14 0.67 40.2 0.44 0.51 20 1.17 70.2 0.38 0.43 30 2.89 173.4 0.41 0.48 50 15 21 1.23 0.72 43.2 0.41 0.47 73.8 0.36 0.41 30 3.06 183.6 0.44 0.50 55 15 0.75 45.0 0.43 0.49 21 1.30 78.0 0.38 0.44 30 3.22 193.2 0.46 0.53 2.88 25 16 72 0 0.45 0.52 25 172.8 0.44 0.51 360° 12 0.69 41 4 3.15 30 0.46 0.53 17 128 76.8 0.43 0.49 27 189 0 0.42 0.48 35 13 0.77 46.2 0.44 0.51 18 1.37 82 2 0.41 0.47 28 3.40 204.0 0.42 0.48 40 14 0.84 50.4 0.41 0.48 19 1.48 88.8 0.39 0.46 30 3.64 218.4 0.39 0.45 45 14 0.88 52.8 0.43 20 1.57 94.2 0.38 0.44 30 3.86 231.6 0.41 0.48 50 15 0.98 58.8 0.42 0.48 21 100.8 0.37 0.42 30 4.07 244.2 0.44 0.50 1.68 0.50 55 60.6 0.43 1.74 104.4 0.38 0.44 30 4.27 256.2 0.46 0.53 MP3500 90° MP3500 180° MP3500 210° Radius: 31' to 35 Radius: 31' to 35' Radius: 31' to 35 Adjustable Arc Adjustable Arc Adjustable Arc Light Brown: 90° Light Brown: 180° Light Brown: 210° Pressure Radius Flow Flow Precip in/hr Radius Flow Flow Precip in/hr Radius Flow Flow Precip in/hr GPH PSI **GPM GPH GPM GPH** ft. ft. ft. **GPM** 0.42 132.6 0.39 0.45 2.59 155.4 0.39 25 1.04 62.4 33 2.21 0.45 30 34 67.8 0.38 0.43 34 2.24 134.4 0.37 0.43 2.84 170.4 0.41 1.13 34 0.47 35 34 1.21 72.6 0.40 0.47 34 2.65 159.0 0.44 34 3.08 184.8 0.44 0.51 35 40 1.28 76.8 0.40 0.46 35 2.86 171.6 0.45 0.52 35 3.29 197.4 0.44 0.51 35 35 186.0 0.49 0.56 35 3 54 212 4 0.48 0.55 45 138 82.8 0.43 0.50 3 10 50 35 1.43 85.8 0.45 0.52 35 3.21 192.6 0.50 0.58 35 3.76 225.6 0.51 0.59 55 35 1.50 90.0 0.470.54 35 3.28 196.8 0.52 0.60 35 3.94 236.4 0.53 0.61

## MP Specialty

#### MP ROTATOR PERFORMANCE DATA

#### MP Corner

Radius: 8' to 15' Adjustable Arc

Turquoise: 45° to 105°

Arc	<b>Pressure</b> PSI	Radius ft.	<b>Flow</b> GPM	<b>Flow</b> GPH
45°	25			
43	30	12	0.17	10.2
	35	13	0.18	10.8
	40	14	0.19	11.4
	45	14	0.21	12.6
	50	14	0.22	13.2
	55	15	0.23	13.8
000	25	11	0.31	18.6
90°	30	12	0.34	20.4
	35	13	0.36	21.6
	40	14	0.39	23.4
	45	14	0.41	24.6
	50	15	0.43	25.8
	55	15	0.46	27.6
105°	25	11	0.36	21.6
105	30	12	0.39	23.4
	35	13	0.42	25.2
	40	14	0.45	27.0
	45	14	0.48	28.8
	50	15	0.51	30.6
	55	15	0.53	31.8

#### MP ROTATOR PERFORMANCE DATA

MPLCS515: Ivory, MP Left Corner Strip
 MPRCS515: Copper, MP Right Corner Strip
 MPSS530: Brown, MP Side Strip

	Pressure PSI	Radius ft.	<b>Flow</b> GPM	<b>Flow</b> GPH
	30	4 x 14	0.19	11.4
MP Left	35	5 x 15	0.21	12.6
Corner	40	5 x 15	0.22	13.2
Strip	45	5 x 15	0.23	13.8
эшр	50	6 x 16	0.25	15.0
_	55	6 x 16	0.26	15.6
MP	30	4 x 14	0.19	11.4
Right	35	5 x 15	0.21	12.6
Corner	40	5 x 15	0.22	13.2
	45	5 x 15	0.23	13.8
Strip	50	6 x 16	0.25	15.0
	55	6 x 16	0.26	15.6
MP Side Strip	30	4 x 28	0.38	22.8
	35	5 x 30	0.41	24.6
	40	5 x 30	0.44	26.4
	45	5 x 30	0.47	28.2
	50	6 x 32	0.49	29.4
	55	6 x 32	0.51	30.6

Strip pattern radius can be adjusted by 25%.

MP Strips can be used with both the Standard MP Rotator Series and the MP800 Series depending on the layout.

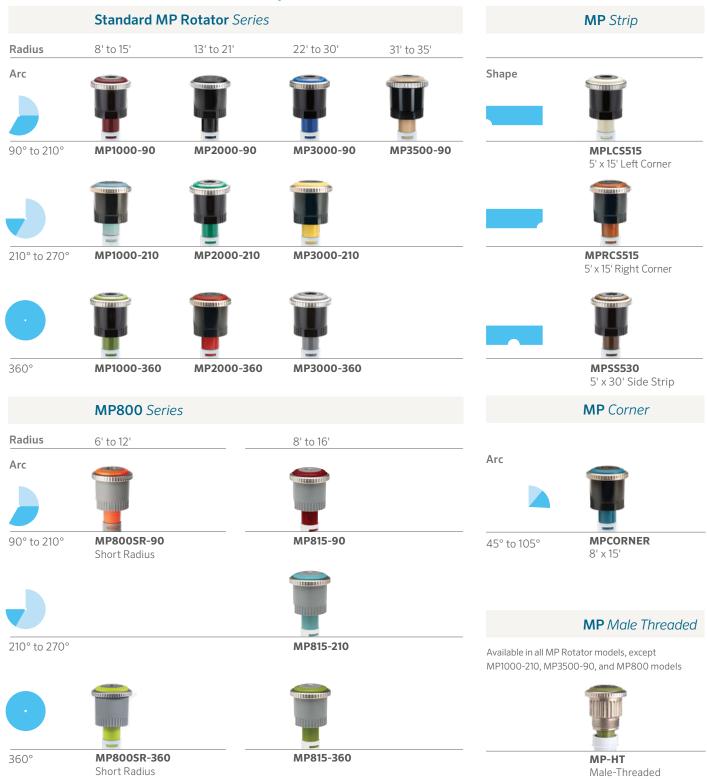
#### PERFORMANCE DATA NOTE FOR ALL CHARTS:

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## Field Identification

#### MP Rotator models are color-coded for easy field identification.





Helping our customers succeed is what drives us. While our passion for innovation and engineering is built into everything we do, it is our commitment to exceptional support that we hope will keep you in the Hunter family of customers for years to come.

Gregory R. Hunter, CEO of Hunter Industries

Website hunterindustries.com | Customer Support 1-800-383-4747 | Technical Service 1-800-733-2823



