

# MP Rotator<sup>®</sup> Nozzle Written Specifications

## Part 1 – General

- 1.1 The MP Rotator is a high-efficiency, multi-stream, multi-trajectory rotary nozzle designed with a viscous drive for rotation. The multiple streams shall allow for a slow application of water without misting at a high distribution uniformity.
- A. MP Rotator Standard Nozzles, designated by a black canister, shall have a matched precipitation rate of approximately 0.4 in/hr (10 mm/hr) across any arc and radius to better match soil intake rates and prevent runoff.
  - B. MP Rotator MP800 Nozzles, designated by a gray canister, shall have a matched precipitation rate of approximately 0.8 in/hr (20 mm/hr).
  - C. MP Rotator Strip Nozzles shall target 5' (1.5 m) narrow strip spaces, with the precipitation rate dependent on the system layout.
  - D. MP Rotator Nozzles shall have female threads for installation on male-threaded, pop-up sprinklers. Select models shall have a male-threaded option for installation on female-threaded, pop-up sprinklers.
  - E. Each MP Rotator Nozzle shall have a filter screen to prevent internal system debris from entering the nozzle and a patented double-pop feature to prevent external debris from falling into the nozzle.
  - F. Each MP Rotator Nozzle shall be color-coded for easy field identification.

## Part 2 – Parts and Materials

### 2.1 Parts

MP Rotator Nozzles shall be available in the following options:

- A. MP Rotator Standard Nozzles: approximately 0.4 in/hr (10 mm/hr) precipitation rate
  - 1. MP-1000-90, MP-1000-210, MP-1000-360 for an 8' to 15' (2.5 m to 4.5 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)
  - 2. MP-2000-90, MP-2000-210, MP-2000-360 for a 13' to 21' (4.0 m to 6.4 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)

3. MP-3000-90, MP-3000-210, MP-3000-360 for a 22' to 30' (6.7 m to 9.1 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)
  4. MP-3500-90 for a 31' to 35' (9.4 m to 10.7 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)
  5. MP-CORNER for an 8' to 15' (2.5 m to 4.5 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)
- B. MP Rotator MP800 Nozzles: approximately 0.8 in/hr (20 mm/hr) precipitation rate
1. MP-800SR-90, MP-800SR-360 for 6' to 12' (1.8 m to 3.5 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)
  2. MP-815-90, MP-815-210, MP-815-360 for 8' to 16' (2.5 m to 4.9 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)
  3. MP-820-90, MP-820-210, MP-820-360 for 15' to 24' (4.6 m to 7.3 m) radius when operating at 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa)
- C. MP Rotator Strip Nozzles: precipitation rate dependent on layout
1. MP-LCS-515, MP-RCS-515, MP-SS-530 for 5' (1.5 m) wide strip models

## 2.2 Materials

- A. Plastic material description
1. The adjustable orifice shall be manufactured from polyurethane and acetal plastic materials for durability and adjustability.
  2. The acetal material shall have UV stabilizers for outdoor applications.
- B. Metal component materials
1. The radius adjustment screw, arc ring, spring, and internal collar shall be made of stainless steel.
  2. The stator that drives the speed of rotation inside the silicone chamber shall be made of brass.
- C. Filter screen description
1. Each MP Rotator Nozzle shall come with a detachable filter screen.

2. The filter screen shall be made of polypropylene.
3. The screen mesh (or micron) size shall be dependent on the MP Rotator Nozzle model.
  - a. 60 mesh (250 microns): MP-800SR-90
  - b. 40 mesh (420 microns): MP-1000, MP-2000, MP-CORNER, MP Strips, MP-800SR-360, MP-815
  - c. 20 mesh (840 microns): MP-3000, MP-3500, MP-820

D. Color description

1. Each MP Rotator Nozzle model shall have its own designated color scheme.
2. MP Rotator Standard Nozzles shall have a black canister and black top retainer.
  - a. MP-1000-90 (maroon), MP-1000-210 (light blue), MP-1000-360 (olive)
  - b. MP-2000-90 (black), MP-2000-210 (green), MP-2000-360 (red)
  - c. MP-3000-90 (blue), MP-3000-210 (yellow), MP-3000-360 (gray)
  - d. MP-3500-90 (tan)
  - e. MP-CORNER (turquoise)
3. MP Strip Nozzles shall have a black canister and black top retainer.
  - a. MP-LCS-515 (ivory), MP-RCS-515 (copper), MP-SS-530 (brown)
4. MP Rotator MP800 Nozzles shall have a gray canister and gray top retainer.
  - a. MP-800SR-90 (orange), MP-800SR-360 (lime green)
  - b. MP-815-90 (maroon), MP-815-210 (light blue), MP-815-360 (olive)
  - c. MP-820-90 (black), MP-820-210 (green), MP-820-360 (red)

E. Nozzle threads

1. Models MP-1000, MP-2000, MP-3000, MP-3500, MP-CORNER, MP Strips, MP-800SR, MP-815, and MP-820 shall be fit for installation in pop-up bodies having a  $\frac{3}{8}$ "-27 UNS male-threaded stem at all common pop-up heights.
2. Models MP-1000-HT, MP-2000-HT, MP-3000-HT, MP Corner HT, and MP Strip HT shall be fit for installation in pop-up bodies having a  $\frac{5}{8}$ "-28 UNS female-threaded stem at all common pop-up heights.

F. Viscous drive

1. The viscous fluid used to maintain the rotation speed of the MP Rotator Nozzle shall be made of a silicone material.
2. The silicone chamber shall be sealed with EPDM rubber seals.
3. The brass stator inside the silicone chamber shall control the rotation speed.

2.3 Warranty

- A. MP Rotator Nozzles shall have a warranty period of three years.

**Part 3 – Function and Operation**

3.1 Operating pressure

- A. MP Rotator Nozzles shall operate between 30 to 55 PSI (2.1 to 3.8 bar; 210 to 380 kPa).
- B. The recommended operating pressure shall be 40 PSI (2.8 bar; 280 kPa).

3.2 Flow rates

- A. Flow rates shall depend on the specific MP Rotator Nozzle model.
- B. As the arc and radius are adjusted, the flow rate shall change to maintain approximate matched precipitation.

3.3 Radius description

- A. The radius of throw shall depend on the specific MP Rotator Nozzle model.
- B. At the recommended 40 PSI (2.8 bar; 280 kPa) operating pressure, full- or part-circle sprinklers shall be capable of radius reduction up to 25% using a stainless steel radius adjustment screw.

- C. The radius reduction screw shall have a slip clutch mechanism to prevent internal damage if turned past the minimum or maximum radius settings.
- D. The radius reduction screw shall reduce the pressure and flow upstream of the adjustable orifice, thereby maintaining stream integrity.

### 3.4 Arc adjustment

- A. Depending on the model selected, the part-circle sprinkler shall have an infinitely adjustable arc from 45° to 105°, 90° to 210°, or 210° to 270° using the stainless steel arc ring.
- B. The full-circle sprinkler shall irrigate a full 360°.
- C. The 45° to 105° model shall not require coverage from adjacent sprinklers closer than 3' (1 m) from the head.
- D. Arc adjustment shall be effective only while the sprinkler is popped up and shall be ineffective when the sprinkler is retracted.
- E. The adjustment mechanism shall have a ratcheting action to prevent internal damage when turned past the minimum or maximum arc limits.

### 3.5 Application rate

- A. Models MP-1000, MP-2000, MP-3000, MP-3500, and MP-CORNER shall produce and maintain a matched precipitation rate no greater than 0.6 in/hr (15 mm/hr) throughout the arc adjustment range and radius adjustment range, with a radius reduction up to 25%, when spaced at 50% of the irrigated diameter.
- B. Models MP-800SR, MP-815, and MP-820 shall produce and maintain a matched precipitation rate no greater than 1.0 in/hr (25 mm/hr) throughout the arc adjustment range and radius adjustment range, with a radius reduction up to 25%, when spaced at 50% of the irrigated diameter.
- C. The precipitation rate of MP Rotator Strip Nozzles shall be dependent on layout, reaching approximately 0.5 in/hr (13 mm/hr) with triangular or single-row spacing and 1.0 in/hr (25 mm/hr) with rectangular spacing.

### 3.6 Double-pop feature

- A. When installed in a pop-up sprinkler body, the MP Rotator Nozzle shall pop up after the body stem is fully extended; upon decreasing pressure, the rotor shall retract before the retraction of the sprinkler body stem.

B. MP Rotator Nozzles shall pop up at approximately 15 PSI (1.0 bar; 100 kPa).

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