MP Rotator® Nozzle Written Specifications

**Part 1 – General**

* 1. The MP Rotator is a high-efficiency, multi-stream, multi-trajectory rotary nozzle designed with a viscous drive for rotation. The multiple streams allow for a slow application of water without misting at a high distribution uniformity. Standard MP Rotator nozzles, designated by a black canister, 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. MP800 nozzles, designated by a gray canister, have a matched precipitation rate of approximately 0.8 in/hr (20 mm/hr). MP Rotator nozzles have female threads for installation on male-threaded pop-up sprinklers. Select models have a male-threaded option for installation on female-threaded pop-up sprinklers. Each MP Rotator nozzle shall have a filter screen to prevent internal system debris from entering the nozzle and the patented double-pop feature to prevent external debris from falling into the nozzle. Each MP Rotator nozzle shall be color-coded for easy field identification.

**Part 2 – Parts and Material**

1. MP Rotator nozzles shall be available in the following options:
* Standard MP Rotator nozzles: approximately 0.4 in/hr (10 mm/hr) precipitation rate
* MP-1000-90, MP-1000-210, MP-1000-360 for an 8–15' (2.5–4.5 m) radius when operating at 30–55 PSI (2.1–3.8 bar; 210–380 kPa)
* MP-2000-90, MP-2000-210, MP-2000-360 for a 13–21' (4.0–6.4 m) radius when operating at 25–55 PSI (1.7–3.8 bar; 170–380 kPa)
* MP-3000-90, MP-3000-210, MP-3000-360 for a 22–30' (6.7–9.1 m) radius when operating at 25–55 PSI (1.7–3.8 bar; 170–380 kPa)
* MP-3500-90 for a 31–35' (9.4–10.7 m) radius when operating at 25–55 PSI (1.7–3.8 bar; 170–380 kPa)
* MP-CORNER for an 8-15' (2.5–4.5 m) radius when operating at 25–55 PSI (1.7–3.8 bar; 170–380 kPa)
* MP Rotator Strip nozzles: precipitation rate dependent on layout
* MP-LCS-515, MP-RCS-515, MP-SS-530 for 5' (1.5 m) wide strip models
* MP800 nozzles: approximately 0.8 in/hr (20 mm/hr) precipitation rate
* MP-800SR-90, MP-800SR-360 for 6–12' (1.8–3.5 m) radius when operating at 30–55 PSI (2.1–3.8 bar; 210–380 kPa)
* MP-815-90, MP-815-210, MP-815-360 for 8–15' (2.5–4.9 m) radius when operating at 30–55 PSI (2.1–3.8 bar; 210–380 kPa)
1. Plastic material description
2. The adjustable orifice shall be manufactured from polyurethane and acetal plastic materials for durability and adjustability.
3. The acetal material shall have UV stabilizers for outdoor applications.
4. Metal component materials
5. The radius adjustment screw, arc ring, spring, and internal collar shall be made of stainless steel.
6. The stator that drives the speed of rotation inside the silicone chamber shall be made of brass.
7. Filter screen description
8. Each MP Rotator shall come with a detachable filter screen.
9. The filter screens shall be made of polypropylene.
10. The screen mesh size shall be dependent on the MP Rotator model.
	1. 60 mesh: MP800SR90
	2. 40 mesh: MP1000, MP2000, MP Corner, MP Strips, MP800SR360, MP815
	3. 20 mesh: MP3000, MP3500
11. Color description
	1. Each MP Rotator model shall have its own designated color scheme.
	2. Standard MP Rotator nozzles have a black canister and black top retainer.
12. MP-1000-90 (maroon), MP-1000-210 (light blue), MP-1000-360 (olive)
13. MP-2000-90 (black), MP-2000-210 (green), MP-2000-360 (red)
14. MP-3000-90 (blue), MP-3000-210 (yellow), MP-3000-360 (gray)
15. MP-3500-90 (tan)
16. MP-Corner (turquoise)
17. MP-LCS-515 (ivory), MP-RCS-515 (copper), MP-SS-530 (brown)
	1. The MP800 family has a gray canister and gray top retainer.
18. MP-800SR-90 (orange), MP-800SR-360 (lime green)
19. MP-815-90 (maroon), MP-815-210 (light blue), MP-815-360 (olive)
20. Nozzle threads
21. Models MP1000, MP2000, MP3000, MP3500, MP Corner, MP Strips, MP800SR, and MP815 shall be fit for installation in pop-up bodies having a 5/8-27 UNS male-threaded stem at all common pop-up heights.
22. Models MP1000HT, MP2000HT, MP3000HT, MP Corner HT, and MP Strip HT shall be fit for installation in pop-up bodies having a 5/8-28 UNS female-threaded stem at all common pop-up heights.
23. Viscous drive
24. The viscous fluid used to maintain the rotation speed of the MP Rotator shall be made of a silicone material.
25. The silicone chamber shall be sealed with EPDM rubber seals.
26. The brass stator inside the silicone chamber shall control the rotation speed.
	1. Warranty
27. MP Rotator nozzles shall have a warranty period of three years.

**Part 3 – Function and Operation**

1. Operating pressure
2. MP Rotator nozzles shall operate between 25–55 PSI (1.7–3.8 bar; 170–380 kPa).
3. The recommended operating pressure is 40 PSI (2.8 bar; 280 kPa).
4. Flow rates
5. Flow rates shall depend on the specific MP Rotator model.
6. As the arc and radius are adjusted, the flow rate shall change to maintain matched precipitation.
	1. Radius description
7. The radius of throw shall depend on the specific MP Rotator model.
8. 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.
9. The radius reduction screw shall have a slip clutch mechanism to prevent internal damage if turned past the minimum or maximum radius settings.
10. The radius reduction screw shall reduce the pressure and flow upstream of the adjustable orifice thereby maintaining stream integrity.
11. Arc adjustment
12. 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.
13. The full-circle sprinkler shall irrigate a full 360°.
14. The 45° to 105° model shall not require coverage from adjacent sprinklers closer than 3'
(1 m) from the head.
15. Arc adjustment shall be effective only while the sprinkler is popped up and shall be ineffective when the sprinkler is popped down.
16. The adjustment mechanism shall have a ratcheting action to prevent internal damage when turned past the minimum or maximum arc limits.
	1. Application rate
		1. Models MP1000, MP2000, MP3000, MP3500, MP Corner, and MP Strips 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 irrigated diameter.
		2. Models MP800SR and MP815 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 irrigated diameter.
	2. Double-pop feature
		1. When installed in a pop-up sprinkler body, the MP Rotator rotor shall pop up after the body stem is fully extended; upon decreasing pressure, the MP Rotator rotor shall retract before the retraction of the sprinkler body stem.
		2. MP Rotator nozzles shall pop up at approximately 15 PSI (1.0 bar; 100 kPa).

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