UPGRADE IN **THREE EASY STEPS**

1 Identify the number of Zones/Stations that make up your system and label them on the attached Landscape Nozzle Count Sheets (duplicate as needed). Once each Zone has been identified, measure the distance between spray heads for each Zone. This distance between spray heads is the radius (or distance of throw) that each nozzle should achieve to ensure optimum coverage. Ideally, the spray of each nozzle should reach the adjacent heads in all directions; this is known as head-to-head coverage.

2 Identify the thread type and arc of the currently installed nozzles. If the nozzle is Toro brand, it is a Male Thread nozzle; if the nozzle is any other brand aside from Toro, it is a Female Thread nozzle. To identify the arc (or spray pattern) of the nozzle, turn the Zone on and match the nozzle's arc to the pattern in the left column of the Landscape Nozzle Count Sheet. Repeat this procedure for each nozzle in the Zone. Record the number of nozzles throughout the zone based on their radius and arc in the appropriate boxes found on the Landscape Nozzle Count Sheet. For example, if the Zone has four Toro brand nozzles with 90° arcs and a radius of ten feet (10'), write the number "4" in box B3. Repeat this procedure for each zone.

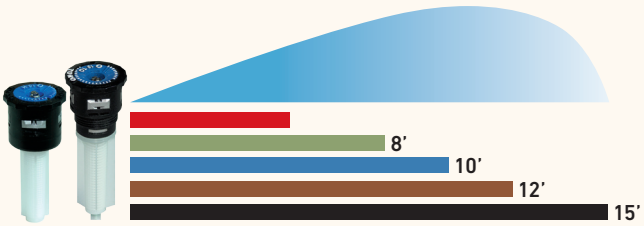
3 Once an accounting of all nozzles across all Zones has been completed, total the numbers entered in each like box across each Zone. Utilize an unused Zone chart to record the total number of nozzles identified across all Zones.

CONGRATULATIONS!

You have just identified the appropriate Precision Series Spray Nozzles needed to make your irrigation system more efficient. Take this completed list with you to your local Authorized Toro Irrigation distributor when purchasing your new nozzles.

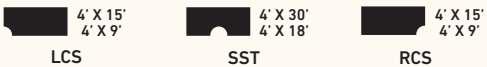
Time Savings

All Precision™ Series Spray Nozzles can be combined on the same zone for greater design and installation flexibility, which equates to time savings on the job site. Whether a new installation or retrofit project, the comprehensive range of Precision™ nozzles meets the needs of any project and all models are available in Toro (Male) and Female threads.



Nine Arcs, Plus Side and Center Strips Available

Side and Corner Strips Available



FAQ PRECISION™ SERIES SPRAY NOZZLES FREQUENTLY ASKED QUESTIONS

1. What should the operating pressure of my zone be when using Toro® Precision™ Series Spray Nozzles?

Precision™ Series Spray Nozzles (PSN) operate best at 30 psi. At this pressure, the likelihood of nozzle misting and overspray are greatly reduced, the wind resistance of droplets is improved, and the nozzles deliver optimal distribution uniformity.

2. The zone's operating pressure is higher than the recommended 30 psi; what are my options?

All models of Precision™ Series Spray Nozzles are also available with factory-installed Pressure Compensating Discs (PCD). In cases where non-PCD Precision™ Series Spray Nozzles are being used, the TORO lettering across the top of the nozzle will be WHITE. Alternatively, PSNs with pressure compensation can be quickly identified by the RED TORO lettering across the top of the nozzle. In cases where a system's operating pressures is 45-55 psi, a PSN with pressure compensation should be used.

In cases where a zone's pressure is in excess of 55 psi, it is recommended that options such as pressure-regulating spray heads or pressure regulation at the valve be employed.

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3. What benefit can the Precision™ Series Spray Nozzles offer in retrofit situations where a zone is suffering from low pressure?

The average flow rate of a Precision™ Series Spray Nozzle is up to 33% less than that of a comparable standard fixed spray nozzle (also known as "MPR nozzles"), yet achieve the same radii and arcs of standard fixed spray nozzles. As such, Precision™ Series Spray Nozzles can be retrofit one-for-one with most widely available MPR nozzles. The lower flow rate of PSNs will have the effect of raising the overall pressure within the zone, which results in the zone performing as designed (e.g., head-to-head coverage); all spray heads popping up to their designed height; and water savings for the end user.

4. What is the ideal spacing for Precision™ Series Spray Nozzles?

Like all spray nozzles or rotors, Precision™ Series Spray Nozzles should be installed such that head-to-head coverage is achieved. Head-to-head coverage suggests the sprays of each nozzle reach the sprinklers directly adjacent to them in all directions.

5. At what rate do Precision™ Series Spray Nozzles deliver water?

All PSNs have a Matched Precipitation Rate* of 1" (one inch) per hour. This means that at the same pressure, all Precision™ Series Spray Nozzle models will deliver water at nearly the same rate. Having nozzles – particularly nozzles within the same zone – operating at the same precipitation rate is integral to ensuring the same amount of water is being delivered across the entire zone.

**Matched Precipitation Rate is widely accepted as X"/hour 10 percent.*

6. How long should I be running my system once I have installed Precision™ Series Spray Nozzles?

The proper run time on a system is a function of a combination of variables. These variables include, but are not limited to, geographic location, soil type and topography, local water/irrigation ordinances, and plant material or turf type. With that said, due to the improved efficiency of PSNs, a system or zone that has been upgraded on a one-for-one basis with standard fixed spray nozzles should not see any degradation in landscape health – even in cases where no changes to run times have been made. Further, due to their lower flow rate, a one-for-one swap out will deliver instant water savings for the end user.

7. What steps can I take to help mitigate sediment and dirt impeding nozzle performance?

Due to the nature of how Precision™ Series Spray Nozzles operate, it is recommended that proper steps be taken to prevent the clogging and premature failure of the nozzles.

All Precision™ Series Spray Nozzles include a factory-installed screen filter, but an upstream filter is recommended in cases where non-potable or effluent water is being used. A filter size of 100 mesh (150 microns) is appropriate for all Precision™ Series Spray Nozzles. In cases where PSNs are being used in settings with particularly sandy soil, it is recommended that check valves are used on all heads, as this helps mitigate a vacuum effect ('suck back') that can seen at the nozzle openings. This is most apparent on laterals and zones that see a change in elevation: a vacuum is drawn on the higher elevation heads as water drains from the lower heads, resulting in dirt and muddy sediment being pulled into the nozzles.

Spray heads with integrated check valves are widely available, as are after-market check valve adapters.

LANDSCAPE NOZZLE COUNT SHEET

ZONE/STATION _____

Zone description (e.g., East side turf area)

	Male Thread Nozzles *(i.e., Toro® brand nozzles)*					**Female Thread Nozzles** *(e.g., Irritrol®, Hunter®, or Rain Bird®*)*					
	5'	**8'**	**10'**	**12'**	**15'**	**5'**	**8'**	**10'**	**12'**	**15'**	
60°											**A**
PSN Replacement	O-T-5-60P	O-T-8-60P	O-T-10-60P	O-T-12-60P	O-T-15-60P	O-5-60P	O-8-60P	O-10-60P	O-12-60P	O-15-60P	
90°											**B**
PSN Replacement	O-T-5-QP	O-T-8-QP	O-T-10-QP	O-T-12-QP	O-T-15-QP	O-5-QP	O-8-QP	O-10-QP	O-12-QP	O-15-QP	
120°											**C**
PSN Replacement	O-T-5-TP	O-T-8-TP	O-T-10-TP	O-T-12-TP	O-T-15-TP	O-5-TP	O-8-TP	O-10-TP	O-12-TP	O-15-TP	
150°											**D**
PSN Replacement	O-T-5-150P	O-T-8-150P	O-T-10-150P	O-T-12-150P	O-T-15-150P	O-5-150P	O-8-150P	O-10-150P	O-12-150P	O-15-150P	
180°											**E**
PSN Replacement	O-T-5-HP	O-T-8-HP	O-T-10-HP	O-T-12-HP	O-T-15-HP	O-5-HP	O-8-HP	O-10-HP	O-12-HP	O-15-HP	
210°											**F**
PSN Replacement	O-T-5-210P	O-T-8-210P	O-T-10-210P	O-T-12-210P	O-T-15-210P	O-5-210P	O-8-210P	O-10-210P	O-12-210P	O-15-210P	
240°											**G**
PSN Replacement	O-T-5-TTP	O-T-8-TTP	O-T-10-TTP	O-T-12-TTP	O-T-15-TTP	O-5-TTP	O-8-TTP	O-10-TTP	O-12-TTP	O-15-TTP	
270°											**H**
PSN Replacement	O-T-5-TQP	O-T-8-TQP	O-T-10-TQP	O-T-12-TQP	O-T-15-TQP	O-5-TQP	O-8-TQP	O-10-TQP	O-12-TQP	O-15-TQP	
360°											**I**
PSN Replacement	O-T-5-FP	O-T-8-FP	O-T-10-FP	O-T-12-FP	O-T-15-FP	O-5-FP	O-8-FP	O-10-FP	O-12-FP	O-15-FP	
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	

**Hunter and Rain Bird are registered trademarks of Hunter Industries and Rain Bird Corporation respectively.*

(Detach)