TORO®

Residential and Commercial Irrigation Products
International Market

ENRICHING THE BEAUTY, PRODUCTIVITY AND SUSTAINABILITY OF THE LAND IS TORO'S MAIN GOAL.

The Toro Company is a leading worldwide provider of innovative turf, landscape, rental and construction equipment, irrigation and outdoor lighting solutions. Toro is present in more than 90 countries. All our relationships are built on integrity and trust, constant innovation, and a commitment to helping customers enrich the beauty, productivity and sustainability of the land.

Building on a Legacy: 1914 - 2014

In 2014, Toro celebrated its 100th anniversary. We are deeply honored to achieve this milestone and grateful to the numerous customers that count on Toro. Though many things have changed over the last ten decades, one thing has remained the same – Toro's unending passion to raise the bar, advance our trade, and provide customers with high-quality, innovative solutions. That's why, even through uncertain times, Toro has continued to invest in a portfolio of Precision™ Irrigation products that upgrade existing systems to the latest, water-saving technology available.

The Toro Precision™ Irrigation Portfolio is:

- Universal – designed to fit multiple manufacturers' equipment
- Simple – no digging, trenching or complicated wiring
- Immediate – as soon as you install, you start using less water (no system adjustments)

New products like the multiple award winning Precision™ Soil Sensor and Precision™ Rotating Nozzles, along with the pressure-compensating Precision™ Spray Nozzles, immediately brings you a more efficient water usage and are designed to fit not only Toro threaded but also competitive threaded spray bodies making them perfect for the retrofit market, where many outdated systems are ripe for upgrading to meet todays needs and expectations.

Revolutionary Control Technology

Based on intense market surveys over the globe, Toro identified the todays needs on a irrigation control system for the residential and commercial market, leading to new highly innovative controllers:

- Toro® EVOLUTION™ - a first-of-its-kind, menu-based controller. Easy-to-experience digital interface, expandability and smart control are the key words. By using simple shortcut menus and several powerful features the Evolution can be tailored to be used by any homeowner, or high demanding contractors to control entire landscapes, including pumps, water features and low voltage landscape lighting.
- Toro® SENTINEL™ - a completely redesigned interface for easier standalone programming, as well as Precision™ ET for ET-based "smart" irrigation allow the Sentinel to operate as both a repeater and base station for Turf Guard® wireless soil sensors, communicating directly with up to 16 sensors per controller (1 per program), continually measuring moisture, temperature, and salinity levels in the soil and adjusting irrigation as needed.

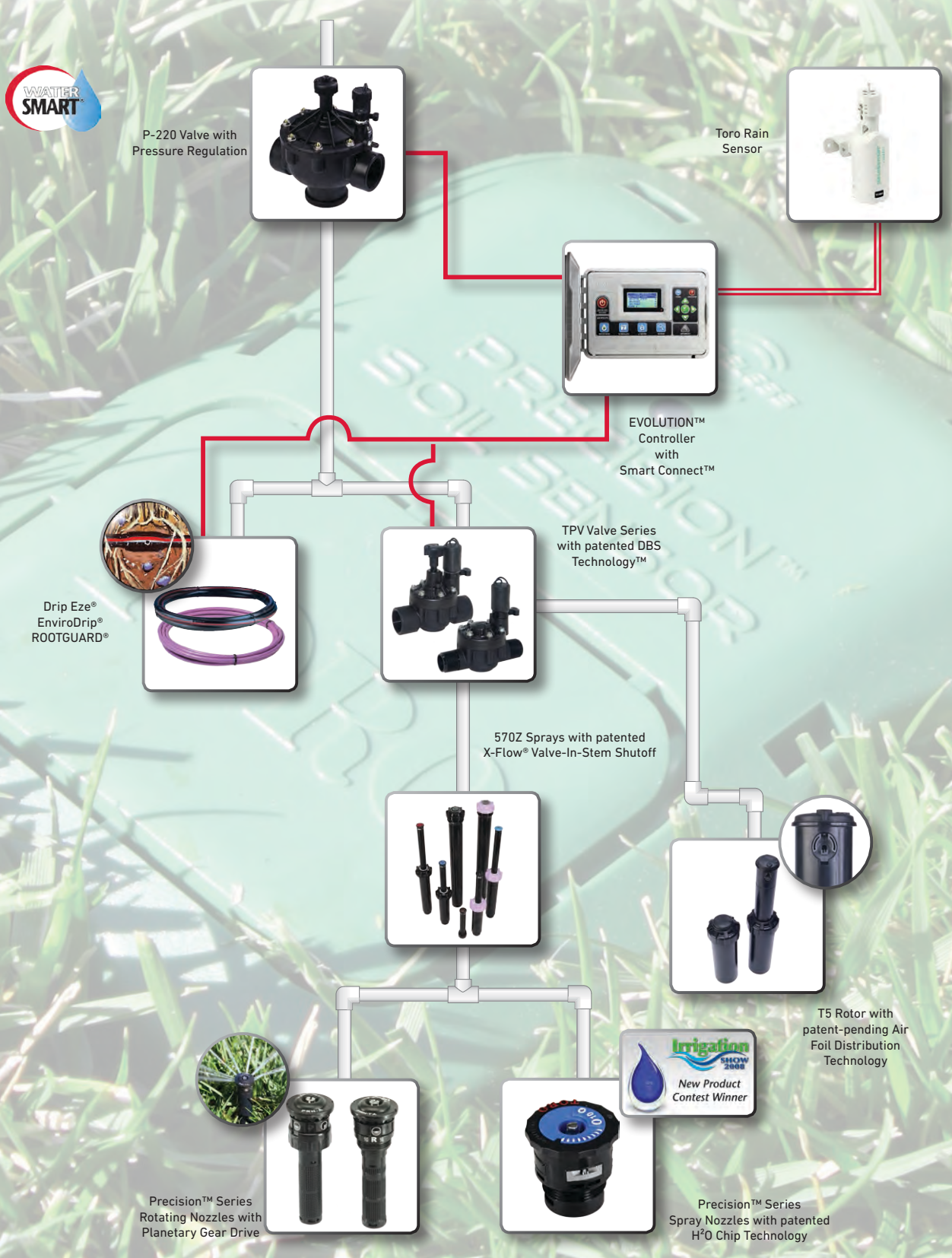
Community

The Toro Giving Program has built a legacy of environmental, educational and community support that is deeply rooted in our culture.

- Provide annual financial support to environmental organizations.
- Host employee activities to renovate parks and restore lakes, rivers and landscapes to their natural beauty.
- Educate individuals of all ages on environmental issues.
- Fund and support environmental and turf management research projects to educate and improve the efficiency the application of water.

ANATOMY OF A SMART IRRIGATION SYSTEM

All the parts of an irrigation system...controller, valves, sprinklers...work together to ensure your customer's plants get proper watering. Replacing just one portion of their system with efficient products helps save water. Over time, replacing all components of their system (or installing a new system) with efficient irrigation products ensures optimum savings.



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Check Valve

Flow Sensor Compatible

RainSensor Compatible

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Legend Feature Symbols - Symbols used in catalog to mark important product features

Turf Guard Compatible

Low Wattage Solenoid

Spike Guard Solenoid

Pressure Regulation

ET-adjust

PSS Compatible

Fixed Sprays Overview

Model	570ZLP	570ZXF	570ZPRX
Page Number	8-9	10-11	12-13
Radius	0,6m-7,9m (2'-26')	0,6m-7,9m (2'-26')	0,6m-5,2m (2'-17')
Flow Range	0,19-17,0 LPM (0.05-4.50 GPM)	0,19-17,0 LPM (0.05-4.50 GPM)	0,19-13,0 LPM (0.05-3.45 GPM)
Operating Pressure Range (inlet)	1,0-5,2 Bar (15-75 PSI)	1,4-5,2 Bar (20-75 PSI)	1,4-5,2 Bar (20-75 PSI)
Turf	X	X	X
Shrubs/Ground Cover	X	X	X
Slopes	X	X	X
High Pressure Systems		X	X
Low Pressure Systems	X		
Medians		X	X
High Traffi Areas		X	X
High Wind			X
Pop-up Height To Nozzle	50mm (2") 75mm (3") 100mm (4") 150 mm (6") 300 mm (12")	100mm (4") 150 mm (6") 300 mm (12")	100mm (4") 150 mm (6") 300 mm (12")
Side Inlet Option	150 mm (6") 300 mm (12")	150 mm (6") 300 mm (12")	150 mm (6") 300 mm (12")
Check Valve Option	X	X	X
Effluen Water Option	X	X	X
Shrub Model	X	X	X
*Zero Flush	X	X	X
*X-Flow® Water Shut-off		X	X
*Built-in Pressure Regulator			X
Serviceable Seal	X	X	X
Warranty	Two years	Two years	Five years

*WaterSmart® Feature

Nozzles Overview

Note: All 570 nozzles work in all Toro® sprays.
Precision Series also offer additional models to fit Irritrol®, Rain Bird®, and Hunter® sprays.

Model	Radius	Arcs	Flow Range	Recommended Operating Pressure
Precision™ Series Spray Nozzles Page 14	1,5-4,6m (5'-15') 1,2-2,7m (4' x 9') 1,2-4,6m (4' x 15') 1,2-5,5m (4' x 18') 1,2-9,1m (4' x 30')	60°, 90°, 120°, 150°, 180°, 210°, 240°, 270°, 360° and Specialty	0,14-9,08 LPM (0.038-2.4 GPM)	2,0 Bar (30 PSI)
Precision™ Series Rotating Nozzle Page 17	4,3-7,9m (14'-26')	45° to 270°, Full-circle	1,43-14,3 LPM (0.38-3.78 GPM)	40-50 PSI (2,8-3,5 Bar)
MPR Plus Page 19	1,5-4,6m (5'-15') Specialty Patterns: 0,6m-9,1m (2'-30')	¼, ⅓, ½, ⅔, ¾, Full and Specialty	1,9-17,3 LPM (0.5-4.58 GPM)	2,0 Bar (30 PSI)
TVAN Page 21	2,4m-5,2m (8'-17')	0°-360°	2,65-21,2 LPM (0.7-5.60 GPM)	2,0 Bar (30 PSI)
Stream Sprays Page 22	4,0m-6,7m (13'-22')	¼, ½, Full	2,3-10,2 LPM (0.6-2.70 GPM)	2,0 Bar (30 PSI)
Stream Bubblers Page 22	0,5m-5,5m (1.5'-18')	¼, ½, Full 2x180, 4x180	1,85-7,64 LPM (0.49-2.02 GPM)	1,4-2,0 Bar (20-30 PSI)
Flood Bubbler PC Page 22	Circle	Flood	0,94-7,6 LPM (0.25-2.0 GPM)	1,4-2,0 Bar (20-30 PSI)
500 Series Bubblers Page 22	2,13m-5,2m (6'-17')	2x60, 4x60, 6x60, 2x180	4,1-14,0 LPM (1.08-3.70 GPM)	1,4-2,0 Bar (20-30 PSI)

**WaterSmart® Feature*

570ZLP Series Sprays

Learn more at **Toro.com**

- **Shrub, 50mm (2”), 75mm (3”), 100mm (4”), 150mm (6”) and 300mm (12”) Pop-up**
- **Radius: 0,6-7,9m (2’-26’)**
- **Operating Pressure Range (570LP): 1,0-5,2 Bar (15-75 psi)**

Versatile. Flexible. Reliable. The Toro® 570Z sprinkler embodies all that is required for residential and service contractors wanting to stock just one sprinkler family.

Features & Benefit

Zero Flush Wiper Seal
Prevents flushing on pop-up allowing more sprinklers on the same line.

One-Piece Check Valve
Easily installed at the factory or in the field Maintains up to 3m (10’) elevation change.

Low Pressure Spring
The low pressure 570ZLP allows for pop-up and retraction at lower pressures.

Ratcheting Riser
For easy and reliable arc adjustment on pop-up models.

Small 50mm (2”) Diameter Cap
Less visible, reducing damage from exposure or vandals.

Water Management Highlight

No Flushing on Pop-Up!
With a pressure-activated wiper seal that flushes only upon retraction, flow-by is eliminated on pop-up reducing water waste and allowing more heads per valve. This zero-flush seal is what makes the 570ZLP Series a spray head for those serious about effective water management.

Enhanced Zero Flush Seal

Specifications

Dimensions

- Body diameter:
  - 35mm (1⅜") on 2P, 3P, 4P, 6P and 6P SI models
  - 41mm (1⅝") on 12P
  - 45mm (1¾") on 12P SI
- Cap diameter: 50mm (2")
- Inlet: ½" female-threaded
- Side inlet: 4¾" from top of sprinkler to center of side inlet

Operating Specifications

- Radius: 0,6-7,9m (2'-26')
- Operating pressure range (570ZLP): 1,0-5,2 Bar (15-75 psi)
- Recommended pressure for spray nozzles: 2,1 Bar (30 psi)
- Recommended pressure for rotating nozzles: 2,8-3,5 Bar (40-50 psi)
- Flow rate: 0,2-17,0 LPM (0.05-4.5 GPM)

Additional Features

- Stainless steel retraction spring
- Low pressure sealing on LP models at 1,0 Bar (15 psi) for low pressure pumps and well systems
- All bodies shipped with flush plug in place

Options Available

- Check Valve (570CV): maintains up to 3m (10') elevation change (not for side-inlet models)
- 570SEAL: Serviceable seal for all 570Z models
- Effluent water indicators:
  - Effluent Shrub Adapter (102-0563)
  - Effluent Snap-on Cap Cover (89-9752)
  - Effluent Molded Cap with seal (102-1211)
- 570-6X: 150mm (6") Riser Extender
- 570-SR-6: 150mm (6") Stationary Riser ½" male-threaded inlet
- 570-SR-18: 450mm (18") Stationary Riser ½" male-threaded inlet
- Riser Pull-up Tool (89-6395)
- Adjustment key (89-7350)

Options Available

- Two years

570ZLP Series Model List	
Model	**Description**
570Z-2LP	570Z, 50mm (2"), Low Pressure
570Z-3LP	570Z, 75mm (3"), Low Pressure
570Z-4LP	570Z, 100mm (4"), Low Pressure
570Z-6LP	570Z, 150mm (6"), Low Pressure
570Z-6LPSI	570Z, 150mm (6"), Low Pressure, Side Inlet
570Z-12LP	570Z, 300mm (12"), Low Pressure
570Z-12LPSI	570Z, 300mm (12"), Low Pressure, Side Inlet

Note: all w/o Nozzle

Specifying Information—570ZLP Series

570Z-XXLP-XX-E				
Model	**Pop-up Height**		**Optional**	**Optional**
570Z	**XXLP**		**SI**	**E**
Z—Lawn Pop-up & High Pop	2LP— 50mm (2") 3LP— 75mm (3") 4LP— 100mm (4")	6LP— 150mm (6") 12LP— 300mm (12")	SI—Side Inlet*	E—Effluent
Example: A 570ZLP Series Sprinkler (low pressure) with a pop-up height of 150mm (6"), you would specify: 570Z-6LP				

**Available for 150mm (6") and 300mm (12") models.*
***Available with non-side inlet models except 50mm (2") and 75mm (3").*

570ZXF Series Sprays

- **Shrub, 100mm (4”), 150mm (6”) and 300mm (12”) Pop-up**
- **Radius: 0,6-7,9m (2’-26’)**
- **Operating Pressure Range: 1,4-5,2 Bar (20-75 psi)**

learn more at **Toro.com**

Convenient and versatile. The Toro® 570ZXF sprinkler has all the versatility and features of the 570Z with the added value of Toro’s patented X-Flow® technology.

Features & Benefit

Patented X-flow® Water Shut-off Devic
Built into the riser and restricts water loss by 99% if the nozzle is removed or damaged, eliminating potential erosion or safety concerns. Allows for “dry” nozzle and filte -replacement or maintenance, while the system is running.

Zero Flush Wiper Seal
Prevents flushing on pop-up allowing more sprinklers on the same line.

Enhanced Retraction Spring and Wiper Seal
Robust retraction spring and enhanced seal material ensures positive pop-up and retraction on all 570Z models.

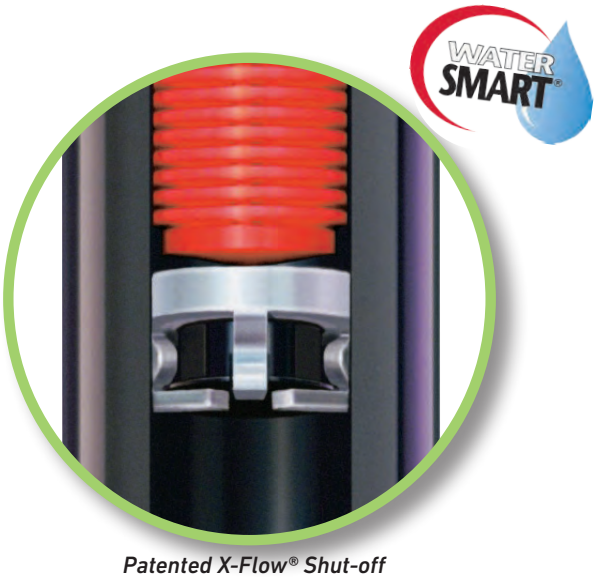
One-Piece Check Valve
Easily installed at the factory or in the field Maintains up to 3m (10’) elevation change.

Ratcheting Riser
For easy and reliable arc adjustment on pop-up models.

Small 50mm (2”) Diameter Cap
Less visible, reducing damage from exposure or vandals.

Water Management Highlight

X-Flow Technology Shuts Off Water Waste
A missing or damaged spray head nozzle can let up to 151liters (40 gallons) of water escape per minute. The patented X-Flow technology is a shut-off device built right into the sprinkle . When accidents or vandalism occur the 570ZXF is there to reduce liability and minimize water waste.



Patented X-Flow® Shut-off Device

Specifications

Dimensions

- Body diameter:
  - 35mm (1⅜") on 4P, 6P and 6P SI models
  - 41mm (1⅝") on 12P
  - 45mm (1¾") on 12P SI
- Cap diameter: 50mm (2")
- Inlet: ½" female-threaded
- Side inlet: 4¾" from top of sprinkler to center of side inlet

Operating Specifications

- Radius: 0,6-7,9m (2'-26')
- Operating pressure range: 1,4-5,2 Bar (20-75 psi)
- Recommended pressure for spray nozzles: 2,1 Bar (30 psi)
- Recommended pressure for rotating nozzles: 2,8-3,5 Bar (40-50 psi)
- Flow rate: 0,2-17,0 LPM (0.05-4.5 GPM)

Additional Features

- Stainless steel retraction spring
- All bodies shipped with flush plug in place

Options Available

- Check Valve (570CV): maintains up to 3m (10') elevation change (on non-side-inlet models)
- 570SEAL: Serviceable seal for all 570Z models
- Effluent water indicators:
  - Effluent Snap-on Cap Cover (89-9752)
  - Effluent Molded Cap with seal (102-1211)
- Riser Pull-up Tool (89-6395)
- Adjustment Key (89-7350)

Warranty

- Two years

Without X-Flow

With X-Flow

570ZXF allows for dry nozzle installations and change outs

XF Series Sprinklers	
Model	**Description**
102-2829	XF 100 mm body only with flow shut off check valve and flush plug
102-2831	XF 150 mm body only with flow shut off check valve and flush plug
102-2834	XF 300 mm body only with fl w shut off check valve and flush plug

Note: All w/o Nozzle

570ZPRX Series Sprays

- **Shrub, 100mm (4”), 150mm (6”) and 300mm (12”) Pop-up**
- **Radius: 0,6-5,2m (2’-17’)**
- **Operating Pressure Range: 1,4-5,2 Bar (20-75 psi)**

Learn more at **Toro.com**

Built-in pressure regulation. The Toro® 570ZPRX features a patented in-riser pressure regulator, bringing another superior feature to the 570Z series. The 570Z PRX sprinkler includes X-Flow® technology combined in a single riser providing unmatched water management.

Features & Benefit

Patented In-riser Pressure Regulator
Maintains constant 2,1 Bar (30 psi) outlet pressure, which minimizes misting and fogging caused by pressures above 2,1 Bar (30 psi).

Zero Flush Wiper Seal
Prevents flushing on pop-up allowing more sprinklers on the same line.

Enhanced Retraction Spring and Wiper Seal
Robust retraction spring and enhanced seal material ensures positive pop-up and retraction on all 570Z models.

Ratcheting Riser
For easy and reliable arc adjustment on pop-up models.

Small 50mm (2”) Diameter Cap
Less visible, reducing damage from exposure or vandals.

Patented X-flow® Water Shut-off Device

Built into the riser and restricts water loss by 99% if the nozzle is removed or damaged, eliminating potential erosion or safety concerns.

Allows for “dry” nozzle and filter-replacement or maintenance, while the system is running.

Without Pressure Regulation

With Pressure Regulation

Water Management Highlight

570ZPRX: For Those Serious About Water Management
By combining the patented X-Flow and pressure-regulation technologies into one riser, the 570PRX stabilizes the performance of the system at 2,1 Bar (30 psi) from the first head to the last ensuring optimum nozzle performance.

Specifications

Dimensions

- Body diameter:
  - 35mm (1⅜") on 4P, 6P and 6P SI models
  - 41mm (1⅝") on 12P
  - 45mm (1¾") on 12P SI
- Cap diameter: 50mm (2")
- Inlet: ½" female-threaded
- Side inlet: 4¾" from top of sprinkler to center of side inlet

Operating Specifications

- Radius: 0,6-5,2m (2' – 17')
- Operating pressure range: 1,4-5,2 Bar (20-75 psi)
- Recommended pressure for spray models: 2,1 Bar (30 psi)
- Note: Precision™ Series Rotating Nozzle radius is 5,2m (17') with 570ZPRX due to constant 2,1 Bar (30 psi) outlet pressures.
- Flow rate: 0,2-13,0 LPM (0.05 – 3.45 GPM)

Additional Features

- Stainless steel retraction spring
- All bodies shipped with flush plug in place

Options Available

- Check Valve (570CV): maintains up to 3,0 (10') elevation change (on non-side-inlet models)
- 570SEAL: Serviceable seal for all 570Z models
- Effluent water indicators:
  - Effluent Snap-on Cap Cover (89-9752)
  - Effluent Molded Cap with seal (102-1211)
- 5706X: 150mm (6") Riser Extender (35-2636)
- Riser Pull-up Tool (89-6395)
- Adjustment Key (89-7350)

Warranty

- Five years

570ZPRX Series Model List

Model	Description
102-0006	PRX Shrub Adaptor Only. 15 mm BSPF Inlet to Toro 570 Nozzle Thread, with Inbuilt Pressure Regulation and Flow Shut-Off Devic
102-0002	100 mm PRX Body Only, Complete with inbuilt Pressure Regulation, Flow Shut-Off Check Valve and Flush Plug
102-0004	150 mm PRX Body Only, (Bottom Inlet), Complete with inbuilt Pressure Regulation, Flow Shut-Off Check Valve and Flush Plug
102-0011	300 mm PRX Body Only, (Bottom Inlet), Complete with inbuilt Pressure Regulation, Flow Shut-Off Check Valve and Flush Plug

Note: all w/o Nozzle

Precision™ Series Spray Nozzles

- **Radius: 1,5-4,6m (5'-15')**
- **Operating Pressure Range: 1,4-5,2 Bar (20-75 psi)**
- **Arc Options: 60°, 90°, 120°, 150°, 180°, 210°, 240°, 270°, 360°**
- **Side & Corner Specialty Patterns**
- **Fit Toro® or Irritrol®, Rain Bird® and Hunter® Spray Bodies**

Watch video to learn more
Toro.com

Toro's Precision™ Series Spray Nozzles are the most complete and efficient spray nozzle line available to help irrigation professionals manage water use, eliminate runoff and reduce customer water bills. The Precision™ Series Spray Nozzles' 25mm/hr. (1"/hr.) precipitation rate ensures that water is applied more slowly and evenly without sacrificing landscape health. These nozzles are available in a wide selection of arcs and radii, as well as male and female threads, making them ideal for large scale installations and retrofits The Precision™ Series Spray Nozzles are now pressure-compensating, further enhancing the best-in-class spray nozzle in the industry.

Features & Benefit

Patented H^2O Chip Technology

Using patented H^2O chip technology – and no moving parts – each Precision™ Series Spray Nozzle creates one or more high frequency oscillating streams to achieve the desired arc and radius with one-third less water usage.

Maximize Irrigation Efficiency

Precision™ Series Spray Nozzles deliver an industry first 25mm/hr (1"/hr) precipitation rate, which better matches soil infiltration rate. This lower precipitation rate, along with high distribution uniformity make this the most efficient nozzle family from 1,5-4,6m (5'-15').

Pressure-Compensating

Pressure-Compensating Precision™ Series Spray Nozzles maintain 25mm/hr. (1"/hr) precipitation rate and minimize misting for inlet pressures of more than 2,8 Bar (40 PSI), minimizing the need for a regulating head, at fraction of the cost.

Design and Retrofit Effectiveness

The lower fl w rate of Precision™ Series Spray Nozzles maximizes design efficiency and saves on overall material costs by using fewer valves and less controller stations. In addition, existing systems with low pressure can be fi ed with a simple retrofit of the existing high-flow nozzle.

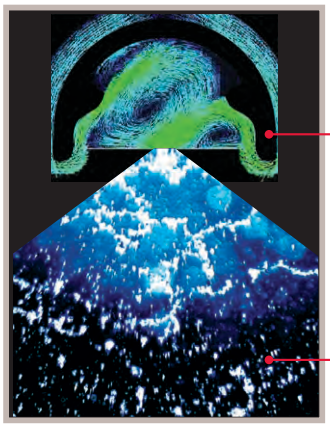
Third-Party Performance Validation

Precision™ Series Spray Nozzles have been tested and validated in the field and at the Center or Irrigation Technology (CIT).

Water Management Highlight

Patented H^2O Chip Technology

On the outside, Precision™ Series Spray Nozzles look like standard spray nozzles, but the performance of the patented H^2O Chip Technology on the inside is unmatched. The H^2O Chips create high-frequency streams of water that oscillate at a rate of 200 cycles per second. The result is a matched precipitation rate of 1 per hour - an industry first - while using up to 35% less water than a standard spray nozzle.

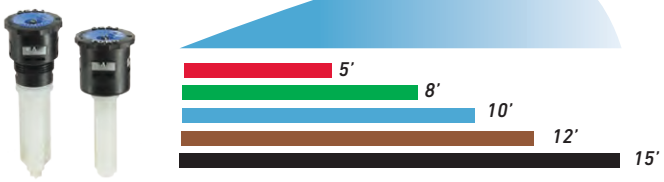


Water enters a specially designed chamber within the H^2O Chip where the water expands and collapses, which creates an oscillating effect

Consistent-sized water droplets exit the Chip in the designed arc pattern and radius, with precise edge definition class-leading distribution uniformity and reduced water usage.

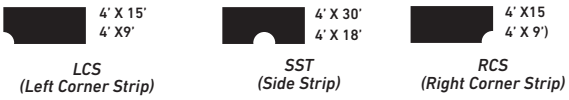
Time Savings

All Precision™ Series Spray Nozzles can be combined on the same zone for greater design and installation fl xibility, which equates to time savings on the job site. Whether a new installation or retrofit p oject, 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



Specifications

Operating Specifications (with PCD)

- Radius: 1,5-4,6m (5'-15')
- Operating pressure range: 2,8-5,2 Bar (40-75 psi)
- Recommended Pressure: 3,5 Bar (50 psi)
- Flow Rate: 0,2-9,6 LPM (0.06-2.4 GPM)
- Nozzle trajectory:
  - 1,5m (5'): 5°
  - 2,4m (8'): 10°
  - 3,0m (10'): 15°
  - 3,7m 12' (): 20°
  - 4,6m (15'): 27°
  - Corner and Side Strips: 20°

Additional Features

- Radius reduction 25% maximum
- Color coded for radius on top of the nozzle
- Precipitation rate ≤ 25mm/hour (≤ 1"/hour)
- Maintains precipitation rate as radius is reduced up to max of 25%
- Matched precipitation rate within radius families
- Matched precipitation rates between radius families
- Screen attached to nozzle for easy insertion into the spray body
- Works on all spray bodies

Warranty

- Two years

Specifying Information—Precision™ Series Spray Nozzles

0-X-XXXX-XXXX-P

Nozzle	Thread	Radius		Arc	
0	X	XXXX		XXX	
0—25mm (1") Per Hour	T—Toro Male Threaded Nozzle Blank—Female Threaded Nozzle	5— 1,5m (5') 8— 2,4m (8') 10— 3,0m (10') 12— 3,7m (12') 15— 4,6m (15')	4X15— 1,2mX4,6m (4'X15') 4X30— 1,2mX9,1m (4'X30') 4X9— 1,2mX2,7m (4'X9') 4X18— 1,2mX5,5m (4'X18')	60—60° Q—90° T—120° 150—150° H—180° 210—210°	TT—240° TQ—270° F—360° -Full Circle LCS—Left Corner RCS—Right Corner SST—Side Strip

Example: A female threaded Precision™ Series Spray with a spray radius of 3,7m (12') and a 90° arc would be specified as: 0-12-QP
Example 2: A male threaded Precision™ Series Spray with a spray radius of 3,0m (10') and a 180° arc would be specified as: 0-T-10-HP

Performance Data Pressure-Compensating Precision™ Series Spray Nozzles

1,5m (5') "O" Nozzle

	Bar	Flow (lpm)	Radius (m)	Precip Rate (mm/hr) ■	Precip Rate (mm/hr) ▲
5-60P ▲	2.8	0.26	1.8	30.5	35.6
	3.4	0.26	1.7	33.0	38.1
	4.1	0.26	1.8	25.4	30.5
	4.8	0.30	2.0	25.4	30.5
5-QP	2.8	0.23	1.4	25.4	30.5
	3.4	0.30	1.6	30.5	35.6
	4.1	0.34	1.7	33.0	38.1
	4.8	0.42	1.9	38.1	43.2
5-TP	2.8	0.26	1.3	25.4	27.9
	3.4	0.42	1.5	33.0	38.1
	4.1	0.57	1.7	43.2	50.8
	4.8	0.72	1.8	50.8	61.0
5-150P	2.8	0.53	1.8	22.9	25.4
	3.4	0.53	1.8	22.9	25.4
	4.1	0.53	1.8	22.9	25.4
	4.8	0.53	1.8	22.9	25.4
5-HP	2.8	0.38	1.3	25.4	30.5
	3.4	0.49	1.5	27.9	33.0
	4.1	0.61	1.6	33.0	38.1
	4.8	0.72	1.8	35.6	40.6
5-210P	2.8	0.61	1.5	27.9	30.5
	3.4	0.68	1.7	25.4	27.9
	4.1	0.76	1.8	22.9	27.9
	4.8	0.79	1.8	25.4	27.9
5-TTP	2.8	0.53	1.3	27.9	33.0
	3.4	0.76	1.5	33.0	38.1
	4.1	0.95	1.6	35.6	43.2
	4.8	1.17	1.8	40.6	45.7
5-TQP	2.8	0.57	1.3	25.4	30.5
	3.4	0.79	1.5	30.5	35.6
	4.1	0.98	1.7	35.6	40.6
	4.8	1.21	1.9	38.1	43.2
5-FP ●	2.8	0.64	1.2	25.4	30.5
	3.4	0.91	1.5	27.9	33.0
	4.1	1.17	1.7	30.5	35.6
	4.8	1.44	1.9	33.0	38.1

2,4m (8') "O" Nozzle

	Bar	Flow (lpm)	Radius (m)	Precip Rate (mm/hr) ■	Precip Rate (mm/hr) ▲
8-60P ▲	2.8	0.41635	2.3	27.9	33.0
	3.4	0.41635	2.3	30.5	33.0
	4.1	0.4542	2.3	33.0	35.6
	4.8	0.5299	2.4	30.5	35.6
8-QP	2.8	0.5299	2.1	27.9	33.0
	3.4	0.64345	2.3	30.5	33.0
	4.1	0.76	2.6	30.5	35.6
	4.8	0.87055	2.8	33.0	35.6
8-TP	2.8	0.76	2.3	25.4	30.5
	3.4	0.9084	2.4	27.9	33.0
	4.1	1.02195	2.6	30.5	35.6
	4.8	1.17335	2.7	33.0	38.1
8-150P	2.8	1.2112	2.4	27.9	33.0
	3.4	1.2112	2.6	25.4	30.5
	4.1	1.2112	2.4	27.9	33.0
	4.8	1.2112	2.4	27.9	33.0
8-HP	2.8	0.9841	2.1	25.4	30.5
	3.4	1.24905	2.3	27.9	33.0
	4.1	1.47615	2.5	30.5	35.6
	4.8	1.7411	2.7	33.0	38.1
8-210P	2.8	1.2869	2.4	22.9	25.4
	3.4	1.4383	2.4	25.4	27.9
	4.1	1.5897	2.4	27.9	33.0
	4.8	1.70325	2.4	30.5	33.0
8-TTP	2.8	1.2869	2.1	25.4	27.9
	3.4	1.62755	2.4	27.9	30.5
	4.1	1.9682	2.6	30.5	35.6
	4.8	2.30885	2.8	33.0	38.1
8-TQP	2.8	1.55185	2.2	25.4	27.9
	3.4	1.8168	2.4	27.9	30.5
	4.1	2.08175	2.6	30.5	35.6
	4.8	2.3467	2.8	33.0	38.1
8-FP ●	2.8	2.08175	2.1	27.9	30.5
	3.4	2.46025	2.3	27.9	30.5
	4.1	2.8009	2.4	27.9	33.0
	4.8	3.1794	2.6	27.9	33.0

3,0m (10') "O" Nozzle

	Bar	Flow (lpm)	Radius (m)	Precip Rate (mm/hr) ■	Precip Rate (mm/hr) ▲
10-60P ▲	2.8	0.61	2.9	25.4	30.5
	3.4	0.68	3.2	25.4	27.9
	4.1	0.76	3.4	25.4	27.9
	4.8	0.83	3.4	27.9	30.5
10-QP	2.8	0.98	2.9	25.4	27.9
	3.4	1.06	3.1	27.9	30.5
	4.1	1.10	3.2	27.9	33.0
	4.8	1.17	3.4	30.5	35.6
10-TP	2.8	1.17	2.9	25.4	27.9
	3.4	1.36	3.1	27.9	30.5
	4.1	1.55	3.2	30.5	35.6
	4.8	1.74	3.4	33.0	38.1
10-150P	2.8	1.78	2.9	30.5	35.6
	3.4	1.85	3.1	27.9	33.0
	4.1	1.93	3.1	30.5	35.6
	4.8	2.01	3.2	27.9	33.0
10-HP	2.8	1.82	3.0	25.4	27.9
	3.4	2.01	3.1	27.9	30.5
	4.1	2.16	3.2	27.9	33.0
	4.8	2.35	3.3	30.5	35.6
10-210P	2.8	2.16	2.9	27.9	30.5
	3.4	2.42	3.1	27.9	30.5
	4.1	2.65	3.1	30.5	33.0
	4.8	2.84	3.1	30.5	35.6
10-TTP	2.8	2.38	2.9	25.4	28.2
	3.4	2.65	3.0	27.9	30.5
	4.1	2.91	3.1	27.9	33.0
	4.8	3.18	3.2	30.5	35.6
10-TQP	2.8	2.69	2.9	25.4	27.9
	3.4	2.91	3.0	25.4	30.5
	4.1	3.10	3.1	27.9	30.5
	4.8	3.33	3.3	27.9	33.0
10-FP ●	2.8	3.60	2.9	25.4	27.9
	3.4	4.01	3.1	27.9	30.5
	4.1	4.39	3.2	27.9	33.0
	4.8	4.81	3.3	30.5	35.6

3,7m (12') "O" Nozzle

	Bar	Flow (lpm)	Radius (m)	Precip Rate (mm/hr) ■	Precip Rate (mm/hr) ▲
12-60P ▲	2.8	1.14	4.0	25.4	30.5
	3.4	1.14	4.0	25.4	30.5
	4.1	1.14	4.0	25.4	30.5
	4.8	1.14	4.0	25.4	30.5
12-QP	2.8	1.29	3.7	25.4	30.5
	3.4	1.48	3.7	27.9	33.0
	4.1	1.63	3.8	30.5	33.0
	4.8	1.82	3.9	30.5	35.6
12-TP	2.8	1.74	3.5	25.4	30.5
	3.4	1.89	3.6	25.4	30.5
	4.1	2.04	3.7	27.9	33.0
	4.8	2.20	3.8	27.9	33.0
12-150P	2.8	2.23	3.7	25.4	27.9
	3.4	2.50	3.5	30.5	33.0
	4.1	2.73	3.7	30.5	33.0
	4.8	2.95	3.7	33.0	38.1
12-HP	2.8	2.65	3.5	25.4	30.5
	3.4	2.84	3.6	25.4	31.0
	4.1	3.03	3.7	27.9	30.5
	4.8	3.22	3.8	27.9	30.5
12-210P	2.8	3.26	3.4	30.5	35.6
	3.4	3.63	3.5	30.5	35.6
	4.1	3.97	3.7	30.5	35.6
	4.8	4.28	3.7	33.0	38.1
12-TTP	2.8	3.41	3.5	25.4	30.5
	3.4	3.90	3.5	27.9	33.0
	4.1	4.39	3.5	30.5	33.0
	4.8	4.88	3.5	30.5	35.6
12-TQP	2.8	3.97	3.5	25.4	30.5
	3.4	4.31	3.6	25.4	30.5
	4.1	4.66	3.7	27.9	33.0
	4.8	5.00	3.8	27.9	33.0
12-FP ●	2.8	5.11	3.5	25.4	27.9
	3.4	5.64	3.6	25.4	30.5
	4.1	6.17	3.7	27.9	33.0
	4.8	6.70	3.8	27.9	33.0

4,6m (15') "O" Nozzle

	Bar	Flow (lpm)	Radius (m)	Precip Rate (mm/hr) ■	Precip Rate (mm/hr) ▲
15-60P ▲	2.8	1.36	4.3	27.9	30.5
	3.4	1.55	4.6	25.4	30.5
	4.1	1.70	4.6	27.9	33.0
	4.8	1.82	4.6	30.5	35.6
15-QP	2.8	2.01	4.3	25.4	30.5
	3.4	2.23	4.4	27.9	30.5
	4.1	2.42	4.5	27.9	33.0
	4.8	2.65	4.6	30.5	33.0
15-TP	2.8	2.73	4.4	25.4	30.5
	3.4	2.91	4.5	25.4	30.5
	4.1	3.10	4.6	27.9	30.5
	4.8	3.29	4.8	27.9	30.5
15-150P	2.8	3.52	4.3	27.9	33.0
	3.4	3.94	4.4	30.5	33.0
	4.1	4.31	4.4	33.0	38.1
	4.8	4.66	4.4	35.6	40.6
15-HP	2.8	4.16	4.4	25.4	30.5
	3.4	4.54	4.4	27.9	30.5
	4.1	4.88	4.3	27.9	33.0
	4.8	5.26	4.2	30.5	33.0
15-210P	2.8	4.66	4.3	25.4	30.5
	3.4	5.45	4.3	30.5	35.6
	4.1	5.90	4.3	33.0	38.1
	4.8	6.43	4.6	30.5	35.6
15-TTP	2.8	5.49	4.4	25.4	30.5
	3.4	5.94	4.5	25.4	30.5
	4.1	6.36	4.6	27.9	30.5
	4.8	6.81	4.7	27.9	33.0
15-TQP	2.8	6.06	4.3	22.9	25.4
	3.4	6.43	4.4	25.4	27.9
	4.1	6.81	4.5	25.4	30.5
	4.8	7.19	4.6	27.9	30.5
15-FP ●	2.8	8.33	4.4	25.4	30.5
	3.4	8.93	4.5	25.4	30.5
	4.1	9.54	4.6	27.9	30.5
	4.8	10.14	4.7	27.9	33.0

Special Patterns

	Bar	Flow (lpm)	Radius (m)	Precip Rate (mm/hr) ■	Precip Rate (mm/hr) ▲
4X30-SSTP	2.8	2.35	1.2x8.5	25.4	27.9
	3.4	2.46	1.2x9.1	25.4	30.5
	4.1	2.54	1.2x9.1	27.9	33.0
	4.8	2.65	1.2x9.1	27.9	33.0
4X15-LCSP	2.8	1.21	1.2x4.5	25.4	30.5
	3.4	1.25	1.2x4.5	27.9	30.5
	4.1	1.29	1.2x4.5	27.9	33.0
	4.8	1.32	1.2x4.5	30.5	33.0
4X15-RCSP	2.8	1.21	1.2x4.5	25.4	30.5
	3.4	1.25	1.2x4.5	27.9	30.5
	4.1	1.29	1.2x4.5	27.9	33.0
	4.8	1.32	1.2x4.5	30.5	33.0
4X18-SSTP	2.8	1.36	1.2x5.5	25.4	27.9
	3.4	1.40	1.2x5.5	25.4	30.5
	4.1	1.44	1.2x5.5	25.4	30.5
	4.8	1.48	1.2x5.5	25.4	30.5
4X9-LCSP	2.8	0.68	1.2x2.7	25.4	27.9
	3.4	0.72	1.2x2.7	27.9	30.5
	4.1	0.76	1.2x2.7	27.9	30.5
	4.8	0.79	1.2x2.7	30.5	33.0
4X9-RCSP	2.8	0.68	1.2x2.7	25.4	30.5
	3.4	0.72	1.2x2.7	27.9	30.5
	4.1	0.76	1.2x2.7	27.9	30.5
	4.8	0.79	1.2x2.7	30.5	33.0

Precision™ Series Rotating Nozzles

- **Radius: 4,3-7,9m (14'-26')**
- **Operating Pressure Range: 1,4-5,2 Bar (20-75 psi)**
- **45°-360° Arc Settings**
- **Fit Toro® or Irritrol®, Rain Bird® and Hunter® Spray Bodies**

Watch video to learn more
Toro.com

Based off the design of the world's leading gear-driven rotor for golf applications, the Precision Series Rotating Nozzle is powered by a proven gear drive and delivers wind resistant, multi-stream, multi-trajectory patterns.

Female-threaded PRN-A

Male-threaded PRN-TA

PRN Adjustment Tool

Female-threaded PRN-F

Male-threaded PRN-TF

Features & Benefit

Gear-Driven
Utilizes a proven planetary gear drive, variable stator and turbine to rotate the nozzle.

Matched Precipitation Rate of 14 mm/hr. (0.55"/hr.)
These nozzles deliver water more slowly and evenly than standard spray nozzles. The precipitation rate of 14 mm/hr. (0.55"/hr.) helps prevent excess run times often set to stay within watering windows.

Consistent Speed of Rotation
The gear drive mechanism delivers a consistent speed of rotation regardless of system pressure and prevents product stalling at low pressure.

Step-Up™ Technology

Step-Up™ Technology is designed to deliver high uniformity with matched precipitation for in-close watering all the way out to the furthest radius point. The unique "steps" create 15 streams, each designed to cover an area of the pattern.

Water Management Highlight

Precision Series Rotating Nozzles supply matched precipitation with any arc and any radius from 4,3m-7,9m (14 to 26'). Water is applied slowly and evenly to reduce runoff and wasted water.

Specifications

Operating Specifications

- Radius: 4,3-7,9m (14'-26')
- Operating pressure range: 1,4-5,2 Bar (20-75 psi)
- Recommended Pressure: 2,8-3,5 Bar (40-50 psi)
- Flow Rate: 1,4-14 LPM (0.17-3.68 GPM)

Additional Features

- 15 unique streams with different trajectories
- Maximum height of 20° trajectory to fight through wind
- Threads onto nearly all sprayheads and shrub adapters (male or female)
- Pre-attached screen for easy installation
- Radius reduction up to 25% by turning set screw 90°
- Color coded to identify adjustable or full circle
- Precipitation rate = 14 mm/hr. (0.55"/hr.) on square spacing plans
- Maintains precipitation rate as radius is reduced
- Matched precipitation from 4,3-7,9m (14-26')
- Matched precipitation from 1,4-5,2 Bar (20-75 psi)
- Adjustable by hand or with included tool
- Consistent speed of rotation not affected by pressure

Warranty

- Five years

Precision Series Rotating Nozzle Model List	
Male Threaded	**Description**
PRN-TA	Toro Threaded, 4,3-7,9m (14-26'), Adjustable from 45°-270°
PRN-TF	Toro Threaded, 4,3-7,9m (14-26'), Full-Circle
Female Threaded	**Description**
PRN-A	Female Threaded, 4,3-7,9m (14-26'), Adjustable from 45°-270°
PRN-F	Female Threaded, 4,3-7,9m (14-26'), Full-Circle

Specification Note:
Proper system flush prior to installation and primary filtration of 100 mesh is necessary to ensure reliable operation of this product.

PRN Visual Arc Adjustment

The unique adjustment method allows for pre-setting of arc by hand or tool before the nozzle is installed. Visual indicators allow the user to quickly adjust the arc pattern to the desired arc from 45-270°. The adjustment band can be adjusted by hand or with the pre-included tool. The tool can be ordered separately as: PRNTOOL

Performance Data Precision™ Series Rotating Nozzles—Metric

Arc	Bar	LPM	Radius	Precip Rate (mm/hr) ■	Precip Rate (mm/hr) ▲	Rotation
45°	1,7	0,64	4,3	17,0	19,59	19,0
	2,1	0,87	4,6	20,0	23,09	17,0
	2,4	0,79	4,9	16,0	18,53	16,0
	3,1	1,06	5,5	16,9	19,52	15,0
	3,8	1,25	5,8	17,9	20,65	14,0
	4,5	1,48	6,7	15,8	18,20	14,0
	5,2	1,63	6,7	17,4	20,07	13,0
90°	1,7	1,63	4,9	16,4	18,97	14,0
	2,1	1,70	5,2	15,2	17,58	13,0
	2,4	2,04	5,8	14,6	16,89	13,0
	3,1	2,65	6,7	14,1	16,33	13,0
	3,8	2,99	7,0	14,6	16,87	13,0
	4,5	3,22	7,6	13,3	15,36	12,0
	5,2	3,48	7,6	14,4	16,62	12,0
120°	1,7	1,82	5,0	13,1	15,12	14,0
	2,1	2,23	5,2	15,0	17,29	12,0
	2,4	2,38	5,6	13,5	15,59	12,0
	3,1	3,48	6,7	13,9	16,10	12,0
	3,8	3,86	7,0	14,1	16,33	11,0
	4,5	4,20	7,3	14,1	16,32	11,0
	5,2	4,47	7,6	13,8	15,99	11,0
180°	1,7	3,14	4,6	18,0	20,83	12,0
	2,1	3,44	5,2	15,4	17,78	12,0
	2,4	4,01	5,8	14,4	16,58	12,0
	3,1	5,22	6,7	13,9	16,10	12,0
	3,8	5,83	7,0	14,2	16,44	11,0
	4,5	6,36	7,6	13,1	15,18	11,0
	5,2	6,85	7,9	13,1	15,12	10,0
240°	1,7	4,24	4,6	18,3	21,08	12,0
	2,1	4,58	4,9	17,3	20,02	12,0
	2,4	5,38	5,8	14,4	16,66	12,0
	3,1	6,47	6,4	14,2	16,42	12,0
	3,8	7,15	6,7	14,3	16,54	12,0
	4,5	7,61	7,0	13,9	16,09	11,0
	5,2	8,33	7,3	14,0	16,18	10,0
270°	1,7	4,09	4,3	17,9	20,69	11,0
	2,1	4,88	4,6	18,6	21,53	11,0
	2,4	5,19	5,5	13,7	15,88	11,0
	3,1	7,08	6,4	13,8	15,92	10,0
	3,8	8,06	6,7	14,3	16,52	10,0
	4,5	8,90	7,3	13,3	15,32	10,0
	5,2	9,84	7,6	13,5	15,62	10,0
360°	1,7	6,85	4,6	19,7	22,71	13,0
	2,1	8,18	5,5	16,3	18,82	13,0
	2,4	8,25	5,9	14,2	16,35	13,0
	3,1	11,13	6,8	14,3	16,54	13,0
	3,8	12,26	7,1	14,6	16,85	11,0
	4,5	13,17	7,4	14,4	16,64	11,0
	5,2	13,93	7,8	13,7	15,85	11,0

Specifying Information—Precision Series Rotating Nozzle

PRN-XX		
Model	**Thread**	**Model**
PRN	**X**	**X**
PRN—Precision Rotating Nozzle	T—Male Thread Blank—Female Thread	A—Adjustable arc F—Full-circle
Example: A male threaded Precision Series Rotating nozzle with a 7,3m (24') radius and a 180° arc would be specified as: PRN-TA A female threaded Precision Series Rotating nozzle with a 6,1m (20') radius and 360° arc would be specified as: PRN-F		

MPR Plus Spray Nozzles

- **Radius: 1,5-4,6m (5'-15')**
- **Operating Pressure Range: 1,4-5,2 Bar (20-75 psi)**
- **Matched Precipitation**
- **Side & Corner Specialty Patterns**
- **Arc Options: 90°, 120°, 180°, 240°, 270°, 360°**
- **Fit Toro® Spray Bodies**

Learn more at **Toro.com**

MPR Nozzles make design and installation easier than ever. Just pick your spacing and choose your arc - the nozzle does everything else.

MPR Plus Spray Nozzle Series Model List

1,5m (5') Nozzle		2,4m (8') Nozzle		3,0m (10') Nozzle	
Model	Description	Model	Description	Model	Description
5Q	90° Arc	8Q	90° Arc	10Q	90° Arc
5T	120° Arc	8T	120° Arc	10T	120° Arc
5H	180° Arc	8H	180° Arc	10H	180° Arc
5TT	240° Arc	8TT	240° Arc	10TT	240° Arc
5TQ	270° Arc	8TQ	270° Arc	10TQ	270° Arc
5F	360° Arc	8F	360° Arc	10F	360° Arc
3,7m (12') Nozzle		**4,6m (15') Nozzle**		**Special Patterns**	
12Q	90° Arc	15Q	90° Arc	4SST	Side Strip 1,2-9,1m (4'x30')
12T	120° Arc	15T	120° Arc		
12H	180° Arc	15H	180° Arc	4EST	End Strip 1,2-4,3m (4'x15')
12TT	240° Arc	15TT	240° Arc		
12TQ	270° Arc	15TQ	270° Arc	4CST	Center Strip 1,2-6,1m (4'x30')
12F	360° Arc	15F	360° Arc		
				9SST	Side Strip 2,7-5,2m (9'x18')
				4SSST	Side Strip 1,2-5,2m (4'x18')
				2SST	Side Strip 0,6-1,8m (2' x 6')

(Note: All above also available in Pressure Compensating (PC) Models

Features & Benefit

Matched Precipitation Rates
Ensure all nozzles (every arc within a family) apply water at approximately the same rate.

Low Flow Rates
Allow for more sprinklers to be placed on the same zone.

Pre-installed Pressure Compensation Device (PCD)
Eliminate fogging, conserve water and provide precise fl w rates (also available without PC Devices).

Complete Selection Of Arcs
Arcs for all radius options – full, 3/4, 2/3, 1/2, 1/3 and 1/4.

Specifications

Operating Specifications

- Operating pressure range: 1,4-5,2 Bar (20-75 psi)
- Recommended pressure: 2,1 Bar (30 psi)
- Flow Rate: 0,2-17,3 LPM (0.05-4.58 GPM)
- Nozzle trajectory:
  1,5m (5'): 5°; 2,4m (8'): 10°; 3,0m (10'): 17°;
  3,7m (12'): 24°; 4,6m (15'): 28°
  Corner and Side Strips: 17°

Additional Features

- Standard and special spray patterns
- Customized screens for each nozzle
- Patterns for small areas: full set of arcs for 3,0m, 2,4m, and 1,5m (10', 8' and 5') radius nozzles
- 1,2-5,2m (4' x 18') side strip ideal for medians
- 0,6-1,8m (2' x 6') for small planter beds and other narrow areas
- Fine-mesh snap-in filter screens for lower flow nozzles
- Five levels of trajectory
- Convenient nozzle packaging – nozzles and screens packed separately
- Adjustment screw allows up to 25% reduction in radius and complete shutoff

Warranty

- Two years

Specifying Information—MPR Plus

XX-XXX-PC					
Radius		**Arc**			**Optional**
XX		XXX			**PC**
5— 1,5m (5') 8— 2,4m (8') 10— 3,0m (10')	12— 3,7m (12') 15— 4,6m (15')	Q—90° T—120° H—180°	TT—240° Q—270° F—360°	EST—End Strip CST—Center Strip SST—Side Strip	PC—Pressure Compensation
Example: A 570 MPR Plus Nozzle with a spray of 3,0m (10'), 180° arc and pressure compensation, would be specified as: 10-H-PC					

Note: To specify a MPR Plus nozzle with a 570Z sprinkler body, attach the body specification before the above nozzle specification.
Note: Do not use PCDs with 570Z PR & 570Z PRX models

Performance Data MPR Plus Spray Nozzles—Metric

1,5m (5') Series with 0° Trajectory

Pattern	Desc.	Pressure			Flow	Radius
		Bar	kPa	Kg/cm²	LPM	m
¼	5-Q	1,5	150	1,53	0,22	1,3
		2,0	200	2,04	0,33	1,5
		2,5	250	2,55	0,41	1,6
		3,0	300	3,06	0,49	1,7
		3,5	350	3,57	0,58	1,8
	5-Q-PC	2,07-2,76	207-276	2,11-2,82	0,34	1,5
		2,76-5,18	276-518	2,82-5,28	0,38	1,5
⅓	5-T	1,5	150	1,53	0,30	1,3
		2,0	200	2,04	0,44	1,5
		2,5	250	2,55	0,55	1,6
		3,0	300	3,06	0,66	1,7
		3,5	350	3,57	0,77	1,8
	5-T-PC	2,07-2,76	207-276	2,11-2,82	0,45	1,5
		2,76-5,18	276-518	2,82-5,28	0,49	1,5
½	5-H	1,5	150	1,53	0,44	1,3
		2,0	200	2,04	0,69	1,5
		2,5	250	2,55	0,81	1,6
		3,0	300	3,06	0,92	1,7
		3,5	350	3,57	1,03	1,8
	5-H-PC	2,07-2,76	207-276	2,11-2,82	0,68	1,5
		2,76-5,18	276-518	2,82-5,28	0,76	1,5
⅔	5-TT	1,5	150	1,53	0,63	1,3
		2,0	200	2,04	0,91	1,5
		2,5	250	2,55	1,06	1,6
		3,0	300	3,06	1,20	1,7
		3,5	350	3,57	1,34	1,8
	5-TT-PC	2,07-2,76	207-276	2,11-2,82	0,87	1,5
		2,76-5,18	276-518	2,82-5,28	1,02	1,5
¾	5-TQ	1,5	150	1,53	0,82	1,3
		2,0	200	2,04	1,06	1,5
		2,5	250	2,55	1,22	1,6
		3,0	300	3,06	1,37	1,7
		3,5	350	3,57	1,53	1,8
	5-TQ-PC	2,07-2,76	207-276	2,11-2,82	0,98	1,5
		2,76-5,18	276-518	2,82-5,28	1,10	1,5
Full	5-F	1,5	150	1,53	1,03	1,3
		2,0	200	2,04	1,39	1,5
		2,5	250	2,55	1,60	1,6
		3,0	300	3,06	1,81	1,7
		3,5	350	3,57	2,03	1,8
	5-F-PC	2,07-2,76	207-276	2,11-2,82	1,33	1,5
		2,76-5,18	276-518	2,82-5,28	1,48	1,5

2,4 (8') Series with 10° Trajectory

Pattern	Desc.	Pressure			Flow	Radius
		Bar	kPa	Kg/cm²	LPM	m
¼	8-Q	1,5	150	1,53	0,69	2,2
		2,0	200	2,04	0,88	2,4
		2,5	250	2,55	0,96	2,5
		3,0	300	3,06	1,02	2,6
		3,5	350	3,57	1,11	2,8
	8-Q-PC	2,07-2,76	207-276	2,11-2,82	0,83	2,4
		2,76-5,18	276-518	2,82-5,28	0,95	2,4
⅓	8-T	1,5	150	1,53	0,92	2,2
		2,0	200	2,04	1,11	2,4
		2,5	250	2,55	1,28	2,5
		3,0	300	3,06	1,42	2,6
		3,5	350	3,57	1,53	2,8
	8-T-PC	2,07-2,76	207-276	2,11-2,82	1,10	2,4
		2,76-5,18	276-518	2,82-5,28	1,33	2,4
½	8-H	1,5	150	1,53	1,49	2,3
		2,0	200	2,04	1,84	2,4
		2,5	250	2,55	2,08	2,5
		3,0	300	3,06	2,29	2,6
		3,5	350	3,57	2,48	2,8
	8-H-PC	2,07-2,76	207-276	2,11-2,82	1,67	2,4
		2,76-5,18	276-518	2,82-5,28	1,89	2,4
⅔	8-TT	1,5	150	1,53	2,21	2,2
		2,0	200	2,04	2,60	2,4
		2,5	250	2,55	2,89	2,5
		3,0	300	3,06	3,13	2,6
		3,5	350	3,57	3,35	2,8
	8-TT-PC	2,07-2,76	207-276	2,11-2,82	2,23	2,4
		2,76-5,18	276-518	2,82-5,28	2,65	2,4
¾	8-TQ	1,5	150	1,53	2,47	2,2
		2,0	200	2,04	2,83	2,4
		2,5	250	2,55	3,11	2,5
		3,0	300	3,06	3,35	2,6
		3,5	350	3,57	3,54	2,8
	8-TQ-PC	2,07-2,76	207-276	2,11-2,82	2,42	2,4
		2,76-5,18	276-518	2,82-5,28	2,65	2,4
Full	8-F	1,5	150	1,53	2,97	2,2
		2,0	200	2,04	3,69	2,4
		2,5	250	2,55	4,16	2,5
		3,0	300	3,06	4,58	2,6
		3,5	350	3,57	4,96	2,8
	8-F-PC	2,07-2,76	207-276	2,11-2,82	3,22	2,4
		2,76-5,18	276-518	2,82-5,28	3,79	2,4

3,0m (10') Series with 17° Trajectory

Pattern	Desc.	Pressure			Flow	Radius
		Bar	kPa	Kg/cm²	LPM	m
¼	10-Q	1,5	150	1,53	1,20	2,8
		2,0	200	2,04	1,48	3,0
		2,5	250	2,55	1,75	3,2
		3,0	300	3,06	2,03	3,5
		3,5	350	3,57	2,30	3,7
	10-Q-PC	2,07-2,76	207-276	2,11-2,82	1,25	3,0
		2,76-5,18	276-518	2,82-5,28	1,40	3,0
⅓	10-T	1,5	150	1,53	1,66	2,8
		2,0	200	2,04	1,93	3,0
		2,5	250	2,55	2,28	3,2
		3,0	300	3,06	2,59	3,5
		3,5	350	3,57	2,87	3,7
	10-T-PC	2,07-2,76	207-276	2,11-2,82	1,67	3,0
		2,76-5,18	276-518	2,82-5,28	1,89	3,0
½	10-H	1,5	150	1,53	2,34	2,8
		2,0	200	2,04	2,65	3,0
		2,5	250	2,55	3,02	3,2
		3,0	300	3,06	3,40	3,4
		3,5	350	3,57	3,79	3,5
	10-H-PC	2,07-2,76	207-276	2,11-2,82	2,50	3,0
		2,76-5,18	276-518	2,82-5,28	2,84	3,0
⅔	10-TT	1,5	150	1,53	2,86	2,8
		2,0	200	2,04	3,57	3,0
		2,5	250	2,55	3,98	3,1
		3,0	300	3,06	4,28	3,3
		3,5	350	3,57	4,53	3,4
	10-TT-PC	2,07-2,76	207-276	2,11-2,82	3,40	3,0
		2,76-5,18	276-518	2,82-5,28	3,79	3,0
¾	10-TQ	1,5	150	1,53	3,25	2,8
		2,0	200	2,04	3,85	3,0
		2,5	250	2,55	4,32	3,1
		3,0	300	3,06	4,74	3,3
		3,5	350	3,57	5,15	3,4
	10-TQ-PC	2,07-2,76	207-276	2,11-2,82	3,75	3,0
		2,76-5,18	276-518	2,82-5,28	4,13	3,0
Full	10-F	1,5	150	1,53	4,45	2,7
		2,0	200	2,04	5,50	3,0
		2,5	250	2,55	5,92	3,1
		3,0	300	3,06	6,41	3,3
		3,5	350	3,57	7,07	3,4
	10-FQ-PC	2,07-2,76	207-276	2,11-2,82	5,04	3,0
		2,76-5,18	276-518	2,82-5,28	5,72	3,0

3,0m (12') Series with 24° Trajectory

Pattern	Desc.	Pressure			Flow	Radius
		Bar	kPa	Kg/cm²	LPM	m
¼	12-Q	1,5	150	1,53	1,58	3,4
		2,0	200	2,04	1,85	3,6
		2,5	250	2,55	2,13	3,8
		3,0	300	3,06	2,31	4,0
		3,5	350	3,57	2,39	4,0
	12-Q-PC	2,07-2,76	207-276	2,11-2,82	1,82	3,7
		2,76-5,18	276-518	2,82-5,28	2,01	3,7
⅓	12-T	1,5	150	1,53	2,26	3,4
		2,0	200	2,04	2,67	3,6
		2,5	250	2,55	3,08	3,8
		3,0	300	3,06	3,43	3,9
		3,5	350	3,57	3,70	4,0
	12-T-PC	2,07-2,76	207-276	2,11-2,82	2,42	3,7
		2,76-5,18	276-518	2,82-5,28	2,65	3,7
½	12-H	1,5	150	1,53	3,69	3,4
		2,0	200	2,04	4,07	3,6
		2,5	250	2,55	4,62	3,8
		3,0	300	3,06	5,25	4,1
		3,5	350	3,57	5,94	4,3
	12-H-PC	2,07-2,76	207-276	2,11-2,82	3,63	3,7
		2,76-5,18	276-518	2,82-5,28	4,00	3,7
⅔	12-TT	1,5	150	1,53	4,46	3,4
		2,0	200	2,04	5,36	3,6
		2,5	250	2,55	5,91	3,8
		3,0	300	3,06	6,40	3,9
		3,5	350	3,57	6,86	4,0
	12-TT-PC	2,07-2,76	207-276	2,11-2,82	4,85	3,7
		2,76-5,18	276-518	2,82-5,28	5,30	3,7
¾	12-TQ	1,5	150	1,53	4,31	3,3
		2,0	200	2,04	5,68	3,6
		2,5	250	2,55	6,10	3,8
		3,0	300	3,06	6,44	3,9
		3,5	350	3,57	6,86	4,0
	12-TQ-PC	2,07-2,76	207-276	2,11-2,82	5,45	3,7
		2,76-5,18	276-518	2,82-5,28	6,06	3,7
Full	12-F	1,5	150	1,53	6,67	3,4
		2,0	200	2,04	8,09	3,6
		2,5	250	2,55	8,67	3,8
		3,0	300	3,06	9,36	3,9
		3,5	350	3,57	10,32	4,0
	12-F-PC	2,07-2,76	207-276	2,11-2,82	7,27	3,7
		2,76-5,18	276-518	2,82-5,28	7,95	3,7

4,6m (15') Series with 28° Trajectory

Pattern	Desc.	Pressure			Flow	Radius
		Bar	kPa	Kg/cm²	LPM	m
¼	15-Q	1,5	150	1,53	2,69	4,3
		2,0	200	2,04	3,15	4,5
		2,5	250	2,55	3,67	4,8
		3,0	300	3,06	4,19	4,9
		3,5	350	3,57	4,71	4,9
	15-Q-PC	2,07-2,76	207-276	2,11-2,82	2,84	4,6
		2,76-5,18	276-518	2,82-5,28	3,07	4,6
⅓	15-T	1,5	150	1,53	3,70	4,2
		2,0	200	2,04	4,11	4,5
		2,5	250	2,55	4,64	4,7
		3,0	300	3,06	5,12	4,7
		3,5	350	3,57	5,53	4,7
	15-T-PC	2,07-2,76	207-276	2,11-2,82	3,79	4,6
		2,76-5,18	276-518	2,82-5,28	4,16	4,6
½	15-H	1,5	150	1,53	5,37	4,1
		2,0	200	2,04	6,14	4,5
		2,5	250	2,55	7,12	4,8
		3,0	300	3,06	7,81	4,9
		3,5	350	3,57	8,13	4,9
	15-H-PC	2,07-2,76	207-276	2,11-2,82	5,68	4,6
		2,76-5,18	276-518	2,82-5,28	6,25	4,6
⅔	15-TT	1,5	150	1,53	7,02	4,3
		2,0	200	2,04	8,17	4,5
		2,5	250	2,55	9,42	4,8
		3,0	300	3,06	10,31	4,9
		3,5	350	3,57	10,80	4,9
	15-TT-PC	2,07-2,76	207-276	2,11-2,82	7,57	4,6
		2,76-5,18	276-518	2,82-5,28	8,33	4,6
¾	15-TQ	1,5	150	1,53	8,28	4,1
		2,0	200	2,04	9,65	4,5
		2,5	250	2,55	10,79	4,7
		3,0	300	3,06	11,89	4,8
		3,5	350	3,57	12,98	4,9
	15-TQ-PC	2,07-2,76	207-276	2,11-2,82	8,71	4,6
		2,76-5,18	276-518	2,82-5,28	9,47	4,6
Full	15-F	1,5	150	1,53	11,29	4,1
		2,0	200	2,04	13,34	4,5
		2,5	250	2,55	15,05	4,8
		3,0	300	3,06	16,40	4,9
		3,5	350	3,57	17,45	4,9
	15-F-PC	2,07-2,76	207-276	2,11-2,82	11,36	4,6
		2,76-5,18	276-518	2,82-5,28	12,49	4,6

Special Patterns

Nozzle Pattern	Pressure			Flow	Special Patterns
	Bar	kPa	Kg/cm²	LPM	W x L (m)
4-EST	1,5	150	1,53	1,48	1,0 x 3,8
	2,0	200	2,04	1,68	1,2 x 4,5
	2,5	250	2,55	1,89	1,4 x 5,1
	3,0	300	3,06	2,10	1,6 x 5,7
	3,5	350	3,57	2,29	1,9 x 6,1
4-EST-PC	2,07-2,76	207-276	2,11-2,82	1,63	1,2 x 4,4
	2,76-5,18	276-518	2,82-5,28	1,89	1,2 x 4,4
4-CST	1,5	150	1,53	2,94	1,0 x 7,6
	2,0	200	2,04	3,35	1,2 x 9,0
	2,5	250	2,55	3,74	1,2 x 9,1
	3,0	300	3,06	4,10	1,2 x 9,3
	3,5	350	3,57	4,43	1,2 x 9,5
4-CST-PC	2,07-2,76	207-276	2,11-2,82	3,26	1,2 x 9,1
	2,76-5,18	276-518	2,82-5,28	3,79	1,2 x 9,1
9-SST	1,5	150	1,53	3,92	2,7 x 5,5
	2,0	200	2,04	4,47	2,7 x 5,5
	2,5	250	2,55	4,97	2,7 x 5,9
	3,0	300	3,06	5,45	2,8 x 6,3
	3,5	350	3,57	5,92	3,1 x 6,8
9-SST-PC	2,07-2,76	207-276	2,11-2,82	4,16	2,7 x 5,5
	2,76-5,18	276-518	2,82-5,28	4,54	2,7 x 5,5
4-SST	1,5	150	1,53	2,63	1,2 x 7,6
	2,0	200	2,04	3,31	1,2 x 9,0
	2,5	250	2,55	3,74	1,2 x 9,5
	3,0	300	3,06	4,10	1,3 x 9,9
	3,5	350	3,57	4,43	1,5 x 10,1
4-SST-PC	2,07-2,76	207-276	2,11-2,82	3,33	1,2 x 9,1
	2,76-5,18	276-518	2,82-5,28	3,79	1,2 x 9,1
2-SST	1,5	150	1,53	0,31	0,6 x 1,6
	2,0	200	2,04	0,34	0,6 x 1,8
	2,5	250	2,55	0,36	0,6 x 2,0
	3,0	300	3,06	0,41	0,7 x 2,1
	3,5	350	3,57	0,46	0,9 x 2,1
2-SST-PC	2,07-2,76	207-276	2,11-2,82	0,34	0,6 x 1,8
	2,76-5,18	276-518	2,82-5,28	0,38	0,6 x 1,8
4S-SST	1,5	150	1,53	1,80	1,2 x 5,2
	2,0	200	2,04	2,05	1,2 x 5,5
	2,5	250	2,55	2,27	1,2 x 5,7
	3,0	300	3,06	2,49	1,3 x 5,8
	3,5	350	3,57	2,71	1,5 x 5,8
4S-SST-PC	2,07-2,76	207-276	2,11-2,82	1,89	1,2 x 5,5
	2,76-5,18	276-518	2,82-5,28	2,23	1,2 x 5,5

Radius shown in meters. = *nozzles with PCDs. All performance specifications are based on the stated working pressure available at the base of the sprinkler.*

TVAN Variable Arc Nozzles

- **Radius: 2,4-5,2m (8'-17')**
- **Operating Pressure Range: 1,4-3,5 Bar (20-50 psi)**
- **Arc Options: 0°-360° (infinitely adjustable)**

Learn more at **Toro.com**

Quick, easy and infinitely adjustable!
Toro® Variable Arc Nozzles (TVAN) are designed to deliver excellent irrigation efficiency with maximum product versatility.

Easy Grip Top

The easy grip top makes arc adjustment from 0°-360° a snap

Features & Benefit

Matched Precipitation Rates
Within a given radius family (MPR) ensures all nozzles apply water at approximately the same rate.

Unique Grip And Turn Adjustment
Requires no tools and makes arc setting fast and simple. Adjust from the top of the nozzle – wet or dry.

Infinite y Adjustable From 0° - 360°
The TVAN provides a variety of arc settings to precisely match any terrain and reduces inventory by meeting the needs of any size or shape landscape.

Five Color-coded Nozzles
Allow for quick and easy identifi ation even when retracted.

TVAN Variable Arc Nozzles Model List	
Model	**Description**
TVAN8	2,4m (8') Variable Arc Pattern
TVAN10	3,0m (10') Variable Arc Pattern
TVAN12	3,7m (12') Variable Arc Pattern
TVAN15	4,6m (15') Variable Arc Pattern
TVAN17	5,2m (17') Variable Arc Pattern

Specifying Information—TVAN

TVANXX	
Model	**Radius**
TVAN	**XX**
TVAN—Toro Variable Arc Nozzle	8— 2,4m (8') Variable Arc Pattern 10— 3,0m (10') Variable Arc Pattern 12— 3,7m (12') Variable Arc Pattern 15— 4,6m (15') Variable Arc Pattern 17— 5,2m (17') Variable Arc Pattern
Example: A TVAN8 nozzle, would be specified as:T AN8	

Specifications

Operating Specifications
- Radius: 2,4-5,2m (8' to 17')
- Operating pressure range: 1,4-3,5 Bar (20-50 psi)
- Recommended pressure: 2,1 Bar (30 psi)

Additional Features
- Stainless steel adjustment screw allows up to 25% radius reduction
- Nozzle arc adjustment opens from a fixed left stop position indicated by an arrow on the top
- Compatibility with any female threaded riser made, means one nozzle family can meet all your needs

Warranty
- Two years

Performance Data TVAN Variable Arc Nozzles — Metric

		8 Series-Green				10 Series-Blue				12 Series-Brown				15 Series-Black				17 Series-Gray			
Pattern	Bar	LPM	Radius (m)	Precipitation ▲	Precipitation ■	LPM	Radius (m)	Precipitation ▲	Precipitation ■	LPM	Radius (m)	Precipitation ▲	Precipitation ■	LPM	Radius (m)	Precipitation ▲	Precipitation ■	LPM	Radius (m)	Precipitation ▲	Precipitation ■
90°	1,50	1,30	2,20	74,44	64,46	1,80	2,80	63,63	55,10	3,00	3,40	71,92	62,28	3,90	4,60	51,08	44,23	4,60	4,90	53,10	45,98
	2,00	1,40	2,40	67,36	58,33	1,90	3,00	58,51	50,67	3,10	3,60	66,29	57,41	4,20	4,60	55,01	47,64	5,10	5,20	52,27	45,27
	2,50	1,60	2,60	65,59	56,80	2,30	3,00	70,82	61,33	3,80	3,80	72,93	63,16	4,90	4,80	58,94	51,04	5,80	5,40	55,12	47,74
	3,00	1,80	2,70	68,43	59,26	2,60	3,00	73,90	64,00	4,50	4,10	74,19	64,25	5,60	4,90	64,64	55,98	6,50	5,50	59,55	51,57
	3,50	1,90	2,70	72,23	62,55	2,80	3,00	86,22	74,67	4,80	4,30	71,94	62,30	6,10	4,90	70,41	60,97	7,00	5,50	64,13	55,54
180°	1,50	2,10	2,20	60,12	52,07	3,20	2,50	70,95	61,44	5,20	3,40	62,33	53,98	6,50	4,10	53,58	46,40	7,40	4,40	52,97	45,87
	2,00	2,40	2,40	57,74	50,00	3,60	2,70	64,63	55,97	5,70	3,60	60,94	52,78	7,10	4,50	48,58	42,07	8,00	5,10	42,62	36,91
	2,50	2,60	2,40	62,55	54,17	3,90	2,90	64,26	55,65	6,40	4,00	55,43	48,00	8,00	4,60	52,39	45,37	10,70	5,30	52,78	45,71
	3,00	2,80	2,50	62,08	53,76	4,30	3,00	66,20	57,33	7,10	4,30	53,21	46,08	8,80	4,60	57,63	49,91	10,70	5,30	52,78	45,71
	3,50	2,90	2,80	51,26	44,39	4,70	3,00	72,36	62,67	7,70	4,30	57,71	49,97	9,40	4,60	61,56	53,31	11,60	5,50	53,14	46,02
270°	1,50	3,20	2,20	61,08	52,88	4,50	2,50	66,51	57,59	7,40	3,20	66,76	57,80	8,60	3,80	55,02	47,63	9,90	4,20	51,85	44,89
	2,00	3,50	2,40	56,13	48,60	4,90	2,70	62,09	53,76	8,10	3,90	49,20	42,59	9,90	4,50	45,16	39,10	10,80	5,10	38,36	33,21
	2,50	3,80	2,40	60,95	52,76	5,60	2,90	61,51	53,26	9,40	4,20	49,23	42,62	10,90	4,60	47,59	41,20	12,70	5,20	43,39	37,56
	3,00	4,20	2,50	62,08	53,75	6,20	3,00	63,64	55,10	10,40	4,30	51,96	44,99	11,90	4,70	49,77	43,09	14,20	5,30	46,70	40,43
	3,50	4,60	2,80	54,20	46,93	6,70	3,00	68,77	59,54	10,90	4,30	54,46	47,15	12,90	4,90	49,63	42,97	15,40	5,50	47,03	40,72
360°	1,50	4,20	2,20	60,12	52,07	6,20	2,50	68,73	59,52	8,60	3,00	66,21	57,33	9,90	3,80	47,50	41,14	11,00	5,20	28,19	24,41
	2,00	4,80	2,40	57,74	50,00	6,90	2,70	65,58	56,79	10,00	3,80	47,98	41,55	11,80	4,50	40,37	34,96	12,80	5,50	29,32	25,39
	2,50	5,50	2,60	56,37	48,82	7,90	2,90	65,09	56,36	11,10	3,60	59,34	51,39	12,90	4,60	42,24	36,58	14,20	5,50	32,52	28,17
	3,00	6,10	2,70	57,98	50,21	8,80	3,00	67,75	58,67	12,10	3,50	68,44	59,27	14,00	4,70	43,91	38,03	15,60	5,50	35,73	30,94
	3,50	6,70	2,70	63,68	55,14	9,50	3,00	73,14	63,33	12,90	3,70	65,29	56,54	15,00	4,90	43,29	37,48	17,00	5,50	38,94	33,72

▲ *Precipitation rates are for triangular spacing, shown in millimeters per hour, calculated at 50% of diameter.*
■ *Precipitation rates are for square spacing, shown in millimeters per hour, calculated at 50% of diameter.*
All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Shaded data indicates optimal operating pressure.
Data based on 360°.

Stream Spray Nozzles

- Radius: 4,0-6,7m (13'-22')

Learn more at **Toro.com**

Specifications

Operating Specifications and Features

- Recommended operating pressure range: 1,4-5,2 Bar (20-75 psi)
- Flow Rate: 2,3-10,2 LPM (0.60 – 2.70 GPM)
- Radius adjusts up to 50%
- 10° or 35° Angle
- Non-Rotating

Warranty

- Two years

Performance Data
10° Stream Spray—Metric

Pattern	Desc.	Pressure			LPM	Radius meters
		Bar	kPa	Kg/cm²		
90°	10-SSQ	1,5	150	1,53	2,40	4,4
		2,0	200	2,04	2,95	4,8
		2,5	250	2,55	3,31	5,1
		3,0	300	3,06	3,63	5,3
		3,5	350	3,57	3,93	5,5
	10-SSQ-PC	2,8-3,5	280-350	2,86-3,57	2,65	4,0
		4,1-4,8	410-480	4,18-4,90	2,65	4,6
180°	10-SSH	1,5	150	1,53	3,92	4,4
		2,0	200	2,04	4,47	4,8
		2,5	250	2,55	4,97	5,1
		3,0	300	3,06	5,45	5,3
		3,5	350	3,57	5,92	5,5
	10-SSH-PC	2,8-3,5	280-350	2,86-3,57	5,30	4,0
		4,1-4,8	410-480	4,18-4,90	5,30	4,6
360°	10-SSF	1,5	150	1,53	7,01	4,4
		2,0	200	2,04	7,84	4,8
		2,5	250	2,55	8,71	5,1
		3,0	300	3,06	9,53	5,3
		3,5	350	3,57	10,30	5,5
	10-SSF-PC	2,8-3,5	280-350	2,86-3,57	6,81	4,0
		4,1-4,8	410-480	4,18-4,90	7,57	4,6

Performance Data
35° Stream Spray—Metric

Pattern	Desc.	Pressure			LPM	Radius meters
		Bar	kPa	Kg/cm²		
90°	35-SSQ	1,5	150	1,53	2,40	5,6
		2,0	200	2,04	2,95	6,0
		2,5	250	2,55	3,31	6,3
		3,0	300	3,06	3,63	6,5
		3,5	350	3,57	3,93	6,7
	35-SSQ-PC	2,8-3,5	280-350	2,86-3,57	2,65	5,2
		4,1-4,8	410-480	4,18-4,90	2,65	5,5
180°	35-SSH	1,5	150	1,53	3,92	5,6
		2,0	200	2,04	4,47	6,0
		2,5	250	2,55	4,97	6,3
		3,0	300	3,06	5,45	6,5
		3,5	350	3,57	5,92	6,7
	35-SSH-PC	2,8-3,5	280-350	2,86-3,57	5,30	5,2
		4,1-4,8	410-480	4,18-4,90	5,30	5,5
360°	35-SSF	1,5	150	1,53	7,01	5,6
		2,0	200	2,04	7,84	6,0
		2,5	250	2,55	8,71	6,3
		3,0	300	3,06	9,53	6,5
		3,5	350	3,57	10,30	6,7
	35-SSF-PC	2,8-3,5	280-350	2,86-3,57	6,81	5,2
		4,1-4,8	410-480	4,18-4,90	7,57	5,5

Note: Stream sprays are not recommended for turf applications. Radius shown in meters. Data based on 360°.

Stream Spray Nozzles Model List

Model	Description
Non-Pressure Compensating	
10-SSQ	90° Arc
10-SSH	180° Arc
10-SSF	360° Arc
35-SSQ	90° Arc
35-SSH	180° Arc
35-SSF	360° Arc
Pressure Compensating	
10-SSQ-PC	90° Arc
10-SSH-PC	180° Arc
10-SSF-PC	360° Arc
35-SSQ-PC	90° Arc
35-SSH-PC	180° Arc
35-SSF-PC	360° Arc

Stream Bubbler Nozzles

- Radius: 0,5-5,5m (1.5'-18')

Learn more at **Toro.com**

Specifications

Operating Specifications and Features

- Recommended operating pressure range: 0,7-5,2 Bar (10-75 psi)
- Flow Rate: 1,9-9,0 LPM (0.49 – 2.02 GPM)
- Fits all Toro spray bodies, shrub adapters, risers and riser extenders

Warranty

- Two years

Performance Data 570 Series Stream Bubbler—Metric

Description		Stream Patterns	1 Bar		1,5 Bar		2 Bar		2,5 Bar		3 Bar		3,5 Bar		4 Bar	
			Flow (LPM)	Rad (m)	Flow (LPM)	Rad (m)	Flow (LPM)	Rad (m)	Flow (LPM)	Rad (m)	Flow (LPM)	Rad (m)	Flow (LPM)	Rad (m)	Flow (LPM)	Rad (m)
SB-90		2/60°	2,2	2,7	2,8	3,5	3,2	3,9	3,6	4,3	3,9	4,7	4,3	4,9	4,6	5,4
SB-90-PC2		2/60°							0,8	0,5	0,9	0,5	0,9	0,5	0,9	0,5
SB-180		4/60°	3,8	2,1	4,6	2,9	5,3	3,6	6,0	4,0	6,6	4,5	7,1	4,9	7,5	5,1
SB-180-PC2		4/60°							1,8	0,8	1,9	0,8	1,9	0,8	1,9	0,8
SB-360		6/60°	5,2	1,3	6,4	1,9	7,4	2,4	8,3	2,6	9,0	2,8	9,7	3,1	11,8	3,7
SB-360-PC2		6/60°							2,8	0,5	2,9	0,5	2,9	0,5	2,9	0,5
SB-2-180		2/180°	2,2	2,7	2,8	3,5	3,2	3,9	3,6	4,3	3,9	4,7	4,3	4,9	4,6	5,4
SB-2-180-PC2		2/180°							0,8	0,5	0,9	0,5	0,9	0,5	0,9	0,5
SB-4-180		2/60°x2/60°	3,8	2,1	4,6	2,9	5,3	3,6	6,0	4,0	6.6	4,5	7,1	4,9	7,5	5,1
SB-4-180-PC2		2/60°x2/60°							1,8	0,8	1,9	0,8	1,9	0,8	1,9	0,8

Stream Bubbler Nozzles Model List

Model	Description
Pressure Compensating	
SB-90-PC2	90° Arc, 0,6m (2') Radius
SB-180-PC2	180° Arc, 0,6m (2') Radius
SB-360-PC2	360° Arc, 0,6m (2') Radius
SB-2-180-PC2	180° Arc, 2 Stream, 0,6m (2') Radius
SB-4-180-PC2	180° Arc, 4 Stream, 0,6m (2') Radius

Pressure-compensating Flood Bubblers

Learn more at **Toro.com**

Specifications

Operating Specifications and Features

- Recommended operating pressure range:
  1,4-5,2 Bar (20-75 psi)
  Maximum pressure: 5,2 Bar (75 psi)
- Flow Rate: Adjustable: 0-7,6 LPM (0 – 2.0 GPM);
  Fixed Flow: 0,9; 1,9; 3,8 LPM (0.25, 0.50 and 1.0 GPM)
- Adjustment screw allows up to 25% reduction in radius
- Compatible with shrub adapter, 570Z Series sprinklers, risers and riser extenders

Warranty

- Two years

Performance Data Flood Bubbler—Metric

Pattern	Model No.	2,5 Bar LPM	3 Bar LPM	3,5 Bar LPM	4 Bar LPM
Flood ▯	FB-25-PC	0,95	0,95	0,95	0,95
	FB-50-PC	1,63	1,77	1,89	1,89
	FB-100-PC	3,53	3,66	3,79	3,79
	FB-200-ADJ-PC	7,05	7,32	7,57	7,57

Pressure-compensating Flood Bubblers Model List	
Model	**Description**
FB-25-PC	0,9 LPM (0.25 GPM)
FB-50-PC	1,9 LPM (0.50 GPM)
FB-100-PC	3,8 LPM (1.00 GPM)
FB-200-ADJ-PC2.00	Adjustable GPM (LPM)

500 Series Bubblers

Learn more at **Toro.com**

500 Series Bubblers Model List	
Model	**Description**
511-30	90° Arc, Stream Bubbler
512-30	180° Arc, Stream Bubbler
514-30	360° Arc, Stream Bubbler
516-30	180° Arc, 2-stream Bubbler
514-20	Universal Flood Bubbler

Performance Data Adjustable Flood Bubbler Nozzle—Metric

Pattern	Model No.	Bar	kPa	Kg/cm²	LPM
360° Flood ▯	514-20	1,00	100	1,02	6,32
		1,25	125	1,28	7,14
		1,50	150	1,53	7,84
		1,75	175	1,79	8,38
		2,00	200	2,04	8,93
		2,25	225	2,30	9,28
		2,50	250	3,55	9,65
		2,75	275	3,81	10,20

Specifications

Operating Specifications and Features

- Recommended operating pressure range:
  - Flood: 1,0-5,2 Bar (15-75 psi)
  - Stream: 0,7-5,2 Bar (10-75 psi)
- Maximum pressure: 5,2 Bar (75 psi)
- Flow Rate:
  - Flood: 6,4-10,2 LPM (1.7 – 2.7 GPM)
  - Stream: 4,1-14,0 LPM (1.08 – 3.70 GPM)
- Inlet: ½" female thread
- Attaches directly to risers
- Radius adjusts up to 50%

Warranty

- Two years

Performance Data Adjustable Stream Bubbler—Metric

Model Number	Stream Patterns		1 Bar		1,5 Bar		2 Bar		2,5 Bar		3 Bar	
			Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)
511-30	2/60°		4,84	3,6	5,99	4,4	6,95	4,8	7,62	5,1	8,25	5,3
512-30	4/60°		6,72	2,5	8,30	3,1	9,59	3,3	10,71	3,7	11,81	4,2
514-30	6/60°		8,38	2,1	10,27	2,5	11,89	3,0	13,3	3,2	14,67	3,5
516-30	2/180°		4,84	3,6	5,99	4,4	6,95	4,8	7,62	5,1	8,25	5,3

Effluent Water Indicators

118-1302
- Lavender molded cover for use on 570Z Series pop-up models

102-1211
- Lavender molded cap for use on 570Z Series pop-up models
- Includes wiper seal

102-0563
- Lavender molded 570Z Series shrub adapter
- Installs onto a 13mm (½") NPT riser

Serviceable Parts

570SEAL
- Serviceable seal for all 570Z models
- Reccommended for upgrades

Check Valve 570CV
- Check valve for all the 570Z models
- Install in field to prevent low head drainage

Risers and Extenders

570-6X
- 570Z Extender
- Male-inlet threads install onto any 570Z pop-up sprinkler or shrub adapter to provide a 15cm (6") extension
- Maximum pressure: 5,2 Bar (75 psi)

570SR-6 and 570SR-18
- 570Z stationary riser
- ½" male-threaded inlet for installation on pipe fittings
- Maximum pressure: 5,2 Bar (75 psi)
- Height: 15cm (6"), 45cm (18")

Tools

89-6395
- Riser pull-up and screen removal tool for all 570Z Series models

102-1777
- X-tool for 570Z XF/PRX Series models for easy nozzle removal and assembly

89-7350
- Adjustment tool for all 570Z Series models

PRNTOOL
- PRN Adjustment Tool for Precision™ Series Rotating Nozzles
- Adjusts arc and radius.

PNOZZTOOL
- Robust riser pull-up and screen removal tool
- Retrofit all brands and all spray-head models
- Patent protected

Super Funny Pipe®

- **6,1m (20'), 15,2m (50'), 30,5m (100') Coils**
- **Up to 8,3 Bar (120 psi)**

Toro® Super Funny Pipe is practical and saves time. Whether you are installing a new system or replacing an old sprinkler, Super Funny Pipe makes the job easier.

Learn more at **Toro.com**

Features & Benefit

Flexible, Thick-walled Polyethylene Pipe

Super Funny Pipe is a high-strength poly tubing that solves tough sprinkler installation and replacement problems. It acts as an extension cord between the water line and the sprinkler.

Easy Installation For Problem Areas

One of the most useful and time-saving sprinkler installation aids whether you are installing a new system or replacing an old sprinkler. Also comes pre-assembled as the Super Funny Pipe Swing Joints in 20,3cm (8") and 30,5cm (12") lengths or just get the individual fittings as needed

Specifications

Dimensions

- Wall thickness: 2,5mm ± 0,25 (0.10" ± 0.01)
- Inside diameter: 12,4mm ± 0,13 (0.49" ± 0.005)
- Outside diameter: 17,8mm (0.70")

Operating Specifications and Features

- Maximum pressure: 8,3 Bar (120 psi)
- Cushions sprinklers from external impact
- Connects to sprinklers and Toro fittings

Warranty

- Two years

Super Funny Pipe Friction Loss Data—LPM Flow

LPM	5	10	15	20	25
BAR Loss	0,30	1,02	2,00	3,77	5,58

This chart indicates the amount of pressure loss Bar per meter of Super Funny Pipe at stated flow rates (LPM).

Super Funny Pipe Model List

Model	Description
850-23	6,1m (20') Length, 9,5mm (⅜") Polyethylene Pipe
850-24	15,2m (50') Coil, 9,5mm (⅜") Polyethylene Pipe
850-25	30,5m (100') Coil, 9,5mm (⅜") Polyethylene Pipe

Super Funny Pipe® Swing Joints

Specifications

Warranty

- Two years

Super Funny Pipe Swing Joints Model List

Model	Description
SPFA-585	200 x 13mm (8" x ½")
SPFA-5875	200 x 20mm (8" x ¾")
SPFA-5125	300 x 13mm (12" x ½")
SPFA-51275	300 x 20mm (12" x ¾")

Top pair:
300mm and 200mm Long x 13mm (12" and 8" Long x ½")

Bottom pair:
300mm and 200mm Long x 20mm (12" and 8" Long x ¾")

Rotors Overview

Model	Mini 8	300 Multi-Stream	T5
Page Number	28-29	30-31	32-33
Inlet size	½"	¾"	¾"
Radius	6,1-10,7m (20'-35')	4,6-10,1m (15'-33')	7,6-15,2m (25'-50')
Flow Range	3,0-12,9 LPM (0.8-3.40 GPM)	2,0-28,0 LPM (0.57-7.54 GPM)	2,8-36,5 LPM (0.76-9.63 GPM)
Operating Pressure Range	2,0-3,5 Bar (30-50 PSI)	2,4-3,5 Bar (35-50 PSI)	1,7-4,8 Bar (25-70 PSI)
Artificial Turf			
Shrubs/Ground Cover		X	X
Slopes		X	X
Low Pressure	X		X
High Traffic/Vandal Prone Areas			
Rubber Cover for Sports Fields			X
High Wind			X
Normally Open Hydraulic System			
Full Circle	X	X	X
Part-circle Adjustable	X		X
Part-circle Fixed		X	
Part/Full Circle In One	X	X	X
Stainless Steel Riser			
*Check Valve	Optional	Optional	Optional
Effluent Water Option		X	X
Shrub Model		X	X
High Pop Model		X	X
*Smart-Arc Memory			
Below Grade			
*Trajectory Adjustment			
*X-Flow Water Shut-off			
Standard Pop-up Height	100mm (4")	70-95mm (2 ¾"-3 ¾")	127mm (5")
Warranty	Two years	Two years	Five years

*WaterSmart® Feature

Model	T7	640	TS90	690	TG101
Page Number	35-36	37-39	40-41	42	43-44
Inlet size	1"	1"	1"	1½"	2"
Radius	14,1 - 25,0m (46'-83')	14-20m (47'-67')	16-29m (53' - 95')	26,5-33m (87'-108')	27-54m (91'-178')
Flow Range	25,7-115,8 LPM (6.8 - 30.6 GPM)	22,7-94,6 LPM (6.0-25.0 GPM)	52,9-232,8 LPM (14.0-61.5 GPM)	193,1-311,2 LPM (51.0-82.2 GPM)	158,9-938,7 LPM (42-248 GPM)
Operating Pressure Range	2,8 - 7,0 Bar (40-100 psi)	2,8-6,2 Bar (40-90 PSI)	2,8-7,0 Bar (40-100 PSI)	5,5-7,0 Bar PSI (80-100)	3,5-6,5 Bar (50-95 PSI)
Artificial tur			X	X	X
Shrubs/Ground Cover					
Slopes					
Low Pressure					
High Traffic/Vandal Prone Areas		X			
Rubber Cover for Sports Fields	X	X	X		
High Wind			X	X	
Normally Open Hydraulic System		X		X	
Full Circle	X	X		1 and 2 Speed	
Part-circle Adjustable	X				
Part-circle Fixed		X		90° and 180°	
Part/Full Circle In One	X		X		X
Stainless Steel Riser	X	X			
*Check Valve	Standard	Standard	Standard	X	
Effluent Water Option	X	X	X	X	
Shrub Model					
High Pop Model					
*Smart-Arc Memory	X		X		
Below Grade	X	X	X		
*Trajectory Adjustment			7°-30°		
*X-Flow Water Shut-off					
Standard Pop-up Height	127mm (5")	60mm (2⅜")	100mm (4")	57mm (2¼")	N/A
Warranty	Five years	Five years	Five years	Three years	Two years

**WaterSmart® Feature*

Mini 8 Series

- **Inlet Size: ½"**
- **Radius: 6,1-10,7m (20'-35')**
- **Operating Pressure Range: 2,0-3,4 Bar (30-50 psi)**

Learn more at **Toro.com**

When spray heads won't do the job and a full size rotor is just too much, you need the Mini 8 from Toro®. Designed to fill in that hard to cover area between 6,1m (20') and 10,7m (35'), the Mini 8 provides great value and water efficiency for your landscapes.

Features & Benefit

Top Arc Indication
Ensures easy adjustments from 40° to 360° with visual feedback of arc change by reading the scale.

Stainless Steel Radius Adjustment Screw
Allows up to 25% reduction.

Pressure Activated Seal
The seal and robust trip mechanism offer enhanced reliability.

Ratcheting Riser
Easily shift the riser and fi ed left stop to the desired position.

Five Interchangeable Nozzles
To cover varying fl w and radius requirements (comes pre-installed with a 1.5 nozzle).

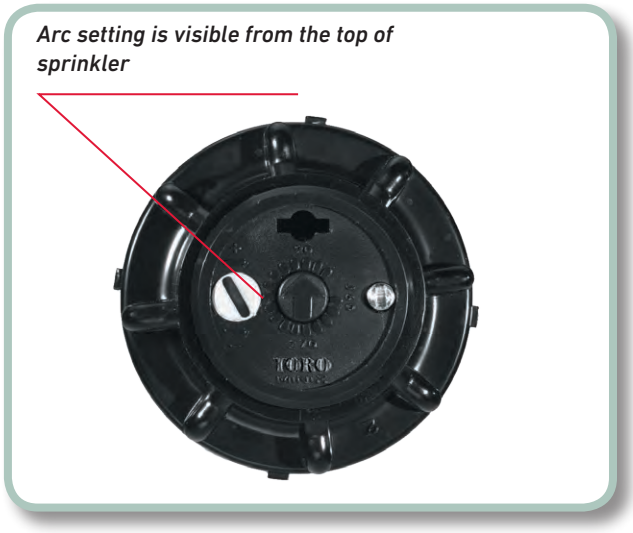
Part And Full Circle In One
Offe s convenience and reduces inventory requirements.

Nozzle Tree—Five interchangeable nozzles – comes pre-installed with a 1.5 nozzle

Water Management Highlight

Not Too Big and Not Too Small. The Mini 8 is Just Right.

With the smaller nozzle set you get lower flows on smaller spaces providing more efficient application and water savings. And compared to sprays, it saves on the number of heads which in turn reduces the number of valves and stations required. No matter how you look at it, the Mini 8 brings together money savings with better water management.



Arc Scale
Use a slotted screwdriver to turn. Read arc change on the arc scale as the screwdriver is turned. The arrow points to the arc degrees.

Optional Check Valve
Prevents low head drainage and puddling at the sprinkler.

Specifications

Dimensions

- Body height: 150mm (6")
- Pop-up to nozzle height: 95mm (3¾")
- Exposed diameter: 45mm (1¾")
- Cap diameter: 57mm (2¼")
- Inlet: ½" female-threaded

Operating Specifications

- Radius: 6,1–10,7m (20'–35')
- Operating pressure range: 2,0-4,1 Bar (30-60 psi)
- Flow Rate: 3,0-12,9 LPM (0.80 – 3.40 GPM)
- Trajectory: 25°

Options Available

- MINI8-CV – Check Valve – maintains up to 8' elevation change (Bag of 25)
- 102-2024 – Adjustment Tool

Warranty

- Two years

Mini 8 Performance Data—Metric

Nozzle	Bar	LPM	Radius	Prec. Rate ▲	Prec. Rate ■
0.75	2,0	3,0	6,1	5,6	4,8
	2,5	3,3	6,3	5,8	5,0
	3,0	3,8	6,5	6,2	5,4
	3,5	4,6	6,7	7,1	6,1
1.0	2,0	4,2	7,9	4,7	4,0
	2,5	4,6	8,1	4,8	4,2
	3,0	5,2	8,3	5,2	4,5
	3,5	5,7	8,6	5,3	4,6
1.5	2,0	4,5	8,8	4,0	3,5
	2,5	5,0	9,0	4,3	3,7
	3,0	5,6	9,3	4,5	3,9
	3,5	6,1	9,5	4,7	4,0
2.0	2,0	5,3	9,1	4,4	3,8
	2,5	6,0	9,3	4,8	4,2
	3,0	6,8	9,4	5,3	4,6
	3,5	7,7	9,4	6,0	5,2
3.0	2,0	8,7	10,3	5,7	4,9
	2,5	9,4	10,6	5,8	5,0
	3,0	10,4	10,7	6,3	5,4
	3,5	11,5	10,7	6,9	6,0

Radius shown in meters. Data based on 360°.

**△ Precipitation rates are for triangular spacing, shown in millimeters per hour, calculated at 50% of diameter.*
**□ Precipitation rates are for square spacing, shown in millimeters per hour, calculated at 50% of diameter.*
All performance specifications are based on the stated working pressure available at the base of the sprinkler.
** Pre-installed nozzle.*

Mini 8 Model List	
Model	**Description**
MINI8-4P	Mini 8 Rotor, 100mm (4") Lawn Pop-up

Specifying Information

MINI8-4P-XX-XX				
Description	**Body**	**Nozzle**		**Optional**
MINI8	**4P**	**XX**		**XX**
MINI8—Mini 8 Rotor	4P—Lawn Pop-up	75—.75 10—1.0 15—1.5	20—2.0 30—3.0	CV—Check Valve
Example: A Mini 8 Series sprinkler with a 3.0 nozzle, would be specified as: **MINI8-4P-30**				

Note: MINI8-CV available in bags of 25.

300 Series Multi-Stream Rotor®

- **Inlet Size: ¾" for Lawn and High-pop; ½"-¾" for Shrub model**
- **Radius: 4,6-9,2m (15'-30')**
- **Operating Pressure Range: 2,4-3,5 Bar (35-50 psi)**

Learn more at **Toro.com**

The 300 Series Multi-Stream Rotor from Toro® combines a highly distinctive way to irrigate with the reliability you've come to expect. Uniquely designed, Multi-Stream Rotors feature multiple rotating streams, a slower precipitation rate and excellent wind resistance.

Features & Benefit

Unique Multiple Rotating Streams
Provide slow, effective watering, plus you can zone your arcs together, saving time and water.

Matched Precipitation Rate Arc Discs
Ensures uniform delivery of water across each square foot of an irrigated area, resulting in high-precision water application.

Choice Of Six Nozzles And Nine Interchangeable Arc Discs
For maximum versatility covering varying landscape needs (4 separate nozzles for high-pops).

Selection Of Pop-up Heights
75mm (3") Lawn Pop-up, shrub and high-pop – to satisfy varying installation requirements.

300 Series arc discs come in 9 different selections

300 Series Multi-Stream Rotor Model List	
Model	**Description**
300-00-00	Lawn Pop-up w/o Nozzle
300-10-00	Shrub w/o Nozzle
300-10-00-COM	Shrub w/o Nozzle with Check Valve
300-12-00	300mm (12") Pop-up w/o Nozzle

Water Management Highlight

A Winning Combination of Watering Efficiency an Visual Appeal

The exclusive "fingers of water" application takes a fl w of water and divides it into smaller streams at different trajectories for a stronger performance all across the landscape. Shorter radii get the coverage needed with enough water still in the main stream to reach longer distances. This also creates a heavier watering stream at the tail end of the spray allowing for greater wind resistance.

Specifications

Dimensions

- Body Diameter: 60mm (2⅜")
- Cap Diameter: 75mm (3")
- Height:
  - Lawn Pop-up: 155mm (6⅛")
  - High-Pop: 405mm (16")
- Shrub Base Diameter: 45mm (1¾")

Operating Specifications

- Radius: 4,6-9,2m (15'-30')
- Flow Rate:
  - Lawn Pop-up and High-pop: 2,1-28,4 LPM (0.57-7.51 GPM)
  - Shrub (COM): 7,8-24,0 LPM (2.07-6.36 GPM)
- Operating Pressure Range: 2,4-3,5 Bar (35-50 psi)
- Trajectory: 3 angles to cover short, medium & large radius
- Pop-up to nozzle:
  - Lawn Pop-up: 70mm (2¾")
  - High-Pop: 298mm (11¾")
- Inlet (Female-threaded):
  - Lawn Pop-up and High-pop: ¾"
  - Shrub: ½" to ¾"
- Large basket filter screen

Options Available

- Recycled Water Indicators:
  - 89-7853 — Omni Nozzle Cover (Use with Part No. 300-15)
  - 89-7854 — High-pop Omni Nozzle Cover (Use w/Part No. 300-25)
  - 89-7889 — Rotor Plug
- Check Valve - maintains up to 8' elevation change (shrub COM only)
- 35-1344 — Locking cap for Lawn Pop-up models (standard on high-pop models)

Warranty

- Two years

300 Series Lawn Pop-up Apex @ 3,5 Bar—Metric

Nozzle	27° Max. Ht. of Spray
01	1,47m
02	1,55m
03	1,8m
63	2,1m
93	1,9m

300 Series: Shrub w/COM (360° Arc Disc) Model Nos. 300-10-00COM —Metric

Nozzle	Bar	LPM	Radius
01	3,5	7,9	4,3
01	5,0	10,8	4,8
02	3,5	9,5	7,0
02	5,0	13,5	7,6
03	3,5	17,4	8,2
03	5,0	23,0	8,8
63	3,5	10,2	8,6
63	5,0	14,0	9,1
93	3,5	14,0	8,9
93	5,0	19,4	9,4
Omni (Min)	3,5	10,2	4,9
Omni (Min)	5,0	14,5	5,4
Omni (Max)	3,5	21,1	9,2
Omni (Max)	5,0	23,8	10

Performance Data Omni™ Adjustable Radius Nozzle Standard—Metric

				360° ●	270° ◔	225° ◔	202,5° ◔	180° ◓	157,5° ◔	135° ◔	112° ◔	90° ◔
Bar	Radius (m)	Precipitation Rate* ▲	■	Flow (at Designated Arcs) (LPM)								
2,5	4,5 5,0 6,0 7,0 8,0	44,1 39,0 31,9 27,0 24,0	38,2 33,8 27,6 23,3 20,8	12,9 14,1 16,6 19,1 22,2	9,7 10,6 12,5 14,3 16,7	8,1 8,8 10,4 11,9 13,9	7,3 8,0 9,3 10,7 12,5	6,5 7,1 8,3 9,6 11,1	5,7 6,2 7,3 8,4 9,7	4,9 5,3 6,2 7,2 8,3	4.0 4,4 5,2 5,9 6,9	3,2 3,5 4,2 4,8 5,6
3,5	6,0 7,0 8,0 9,0 10,0	36,9 31,3 27,2 24,1 21,6	31,9 27,1 23,6 20,9 18,7	19,2 22,2 25,2 28,2 31,2	14,4 16,7 18,9 21,1 23,4	12,0 13,9 15,7 17,6 19,5	10,8 12,5 14,2 15,8 17,5	9,6 11,1 12,6 14,1 15,6	8,4 9,7 11,0 12,3 13,6	7,2 8,3 9,4 10,6 11,7	6,0 6,9 7,8 8,8 9,7	4,8 5,6 6,3 7,0 7,8

Performance Data 300 Series Fixed-Radius Nozzle—Metric

					360° ●	270° ◔	225° ◔	202,5° ◔	180° ◓	157,7° ◔	135° ◔	112° ◔	90° ◔
Nozzle	Bar	Radius (m)	Precipitation Rate* ▲	■	Flow (at Designated Arcs) (LPM)								
01	2,5 3,5	4,9 5,5	25,4 25,2	22,0 21,8	8,8 11,0	6,6 8,3	5,5 6,9	4,9 6,2	4,4 5,5	3,9 4,8	3,3 4,1	2,8 3,4	2,2 2,8
02	2,5 3,5	6,5 7,4	18,2 16,4	15,7 14,2	11,1 13,0	8,3 9,8	6,9 8,1	6,2 7,3	5,5 6,5	4,8 5,7	4,2 4,9	3,5 4,1	2,8 3,3
03	2,5 3,5	8,6 9,2	19,5 20,1	16,9 17,4	20,9 24,6	15,7 18,5	13,1 15,4	11,7 13,8	10,4 12,3	9,1 10,8	7,8 9,2	6,5 7,7	5,2 6,2
63§	2,5 3,5	8,6 9,2	9,8 10,1	8,5 8,7	10,5 12,3	7,8 9,2	6,5 7,7	5,9 6,9	5,2 6,2	4,6 5,4	3,9 4,6	3,3 3,9	2,6 3,9
93§	2,5 3,5	8,6 9,2	14,7 15,1	12,7 13,1	15,7 18,5	11,7 13,9	9,8 11,5	8,8 10,4	7,8 9,2	6,9 8,1	5,7 6,9	4,9 5,8	3,9 4,6

Specifying Information— 300 Series Multi-Stream Rotor

3XX-XX-XX-COM-E

Arc	Body	Nozzle		Optional	
3XX	XX	XX		COM	E
04—90° 05—112° 06—135° 07—157.5° 08—180° 09—202.5° 10—225° 12—270° 16—360°	00—Lawn Pop-up 10—Shrub 12—High- pop	01—Small Radius, 12 Ports 02—Medium Radius, 12 Ports 03—Large Radius, 12 Ports 15—Adjustable Shrub and Lawn Pop-up 21—Small Radius, 12 Ports, High-pop	22—Medium Radius, 12 Ports, High-pop 23—Large Radius, 12 Ports, High-pop 25—Adjustable High-pop 63—Large Radius, 6 Ports, Low Flow 93—Large Radius, 9 Ports	COM—Check-O-Matic (COM available on shrub model only)	E—Effluent
Example: A 300 Series Shrub Sprinkler with a 90° arc and an adjustable nozzle, would be specified as: **304-10-15**					

* Available on Lawn Pop-up and Shrub only
** Must be used on High-pop body

T5 RapidSet® Series

- **Inlet Size: ¾"**
- **Radius: 7,6-15,2m (25'-50')**
- **Operating Pressure Range: 1,7-4,8 Bar (25-70 psi)**

Watch video to learn more
Toro.com

The new Toro® T5 RapidSet® Series Rotor has the features to satisfy all your basic irrigation needs while surprising you with a few extras. The T5 offers an extra inch of pop-up height compared to most competitive units. All lawn models are now available with the optional RapidSet® feature, a quick and easy way to make arc adjustments—with NO TOOLS. For those day-in and day-out installations, the T5 is the only rotor you'll need.

Features & Benefit

127mm (5") Pop-Up
Easily replaces many competitive 100mm (4') units in the same footprint but delivers an extra inch of pop-up.

Standard Rubber Cover
The top of the sprinkler is covered with a heavy duty rubber cover to minimize impact injuries and reduce liability.

Airfoil™ Technology Nozzles
The T5 RapidSet rotor comes with a full set of 8 standard nozzles (25° trajectory) and 4 low angle (10° trajectory) nozzles that utilize patentpending Airfoil technology, which creates a zone of low pressure just below the main stream to gently guide water downward for unmatched uniformity without forcefully washing out newly-laid seeds.

Optional Check Valve
Available with a hold back strength of 2,1m (7') of elevation change.

Top Adjust Arc Set
The T5 can be set between a minimum arc set of 40° and a full circle set of 360°. Arc changes are made from the top of the sprinkler while popped up or down by using a small slotted screwdriver.

RapidSet® Arc Adjustment
Easy tool-free arc adjustment, without any risk to overtorque and damage the interior of the rotor.

T5 Series Model List	
Model	**Description**
T5P-RS	127mm (5") Lawn Pop-up
T5PCK-RS	127mm (5") Lawn Pop-up w/ check valve
T5PE-RS	127mm (5") Lawn Pop-up, Effluent
T5PSS-RS	127mm (5") Lawn Pop-up w/ stainless steel riser
T5PCKSS-RS	127mm (5") Lawn Pop-up w/ stainless steel riser and check valve
T5PCKSSE-RS	127mm (5") Lawn Pop-up w/ stainless steel riser, Effluent
T5PSSE-RS	27mm (5") Lawn Pop-up w/ stainless steel riser, Effluent
T5S-RS	Shrub
T5SE-RS	Shrub, Effluent
T5HP-RS	305mm (12") High Pop-up
T5HPE-RS	305mm (12") High Pop-up, Effluent

Stream straighteners align the water flow behind the nozzle.

Nozzles
Geometry on the face of the nozzle creates breakup.

Specifications

Dimensions

	Lawn Pop	*Shrub*	*HP*
Body Diameter:	57mm (2¼")	57mm (2¼")	57mm (2¼")
Cap Diameter:	67mm (2⅝")	N/A	67mm (2⅝")
Height:	190mm (7½")	196mm (7¾")	429mm (16⅞")

Operating Specifications

- Radius: 7,6-15,2m (25'-50')
- Arc Set: 40–360°
- Flow Rate: 2,8-36 LPM (0.76 – 9.63 GPM)
- Operating Pressure Range: 1,7-4,8 Bar (25-70 psi)
- Trajectory: 25° standard, 10° low angle
- Pop-up to nozzle: 127mm (5")
- Inlet: ¾"
- Factory installed with a #3.0 nozzle

Options

- Check valve
- Stainless Steel riser
- Effluent indicator

Warranty

- Five years

T5 Low Angle Nozzle Performance Data—Metric

Nozzle	Pressure Bar	Radius m.	Flow m³/hr	Flow l/m	Precipitation Rate (mm/hr) ■	▲
1.0 LA	1,7	7,62	0,17	2,8	5,79	6,68
	2,0	7,99	0,19	3,1	5,84	6,74
	2,5	8,53	0,22	3,6	5,93	6,84
	3,0	8,53	0,23	3,8	6,29	7,26
	3,5	8,71	0,25	4,1	6,52	7,53
	4,0	8,84	0,27	4,4	6,82	7,88
	4,5	8,84	0,28	4,7	7,27	8,39
1.5 LA	1,7	8,23	0,25	4,2	7,38	8,52
	2,0	8,60	0,27	4,5	7,38	8,52
	2,5	9,18	0,31	5,2	7,39	8,53
	3,0	9,40	0,34	5,7	7,68	8,87
	3,5	9,45	0,38	6,3	8,41	9,71
	4,0	9,45	0,41	6,8	9,13	10,55
	4,5	9,45	0,43	7,2	9,67	11,16
2.0 LA	1,7	8,84	0,32	5,3	8,14	9,40
	2,0	9,08	0,35	5,8	8,41	9,72
	2,5	9,49	0,40	6,7	8,89	10,27
	3,0	9,71	0,45	7,6	9,64	11,14
	3,5	9,93	0,49	8,2	9,98	11,52
	4,0	10,06	0,52	8,7	10,37	11,98
	4,5	10,06	0,56	9,3	11,00	12,70
3.0 LA	1,7	8,84	0,50	8,3	12,79	14,77
	2,0	9,33	0,54	8,9	12,32	14,23
	2,5	10,10	0,60	10,1	11,84	13,67
	3,0	10,32	0,68	11,3	12,73	14,70
	3,5	10,71	0,74	12,3	12,87	14,86
	4,0	10,97	0,79	13,2	13,17	15,21
	4,5	10,97	0,84	14,0	13,96	16,12

T5 Performance Data—Metric

Nozzle	Pressure Bar	Radius m.	Flow m³/hr	Flow l/m	Precipitation Rate (mm/hr) ■	▲
1.5	1,7	10,06	0,26	4,4	5,16	5,96
	2,0	10,18	0,28	4,7	5,44	6,29
	2,5	10,40	0,32	5,3	5,90	6,82
	3,0	10,62	0,35	5,9	6,27	7,25
	3,5	10,67	0,38	6,3	6,69	7,73
	4,0	10,76	0,40	6,7	6,99	8,07
	4,5	10,97	0,43	7,1	7,09	8,19
2.0	1,7	10,67	0,33	5,5	5,79	6,68
	2,0	10,79	0,36	6,0	6,20	7,16
	2,5	11,01	0,42	7,0	6,89	7,96
	3,0	11,23	0,47	7,8	7,46	8,62
	3,5	11,28	0,51	8,4	7,94	9,17
	4,0	11,28	0,54	9,0	8,52	9,83
	4,5	11,28	0,59	9,8	9,21	10,64
2.5	1,7	10,67	0,40	6,6	6,98	8,07
	2,0	10,79	0,44	7,3	7,53	8,70
	2,5	11,01	0,51	8,5	8,41	9,71
	3,0	11,23	0,57	9,5	8,99	10,39
	3,5	11,28	0,61	10,2	9,62	11,11
	4,0	11,28	0,65	10,9	10,27	11,86
	4,5	11,28	0,69	11,5	10,89	12,58
3.0	1,7	10,97	0,50	8,3	8,30	9,58
	2,0	11,22	0,54	8,9	8,52	9,84
	2,5	11,66	0,60	10,1	8,88	10,25
	3,0	12,10	0,68	11,3	9,25	10,68
	3,5	12,19	0,75	12,6	10,15	11,72
	4,0	12,19	0,82	13,6	11,01	12,72
	4,5	12,19	0,86	14,4	11,61	13,41
4.0	1,7	11,28	0,67	11,2	10,54	12,17
	2,0	11,64	0,72	12,1	10,69	12,34
	2,5	12,27	0,82	13,7	10,92	12,61
	3,0	12,71	0,91	15,2	11,30	13,04
	3,5	12,80	0,98	16,3	11,92	13,77
	4,0	12,89	1,04	17,3	12,49	14,42
	4,5	13,11	1,10	18,4	12,83	14,81
5.0	1,7	11,89	0,85	14,2	12,05	13,92
	2,0	12,13	0,92	15,3	12,50	14,44
	2,5	12,57	1,04	17,3	13,15	15,18
	3,0	13,02	1,14	19,0	13,44	15,51
	3,5	13,46	1,24	20,7	13,73	15,86
	4,0	13,72	1,33	22,2	14,14	16,33
	4,5	13,72	1,39	23,1	14,73	17,01
6.0	1,7	11,89	0,95	15,9	13,50	15,59
	2,0	12,38	1,04	17,4	13,65	15,76
	2,5	13,22	1,21	20,1	13,79	15,92
	3,0	13,88	1,35	22,4	13,96	16,12
	3,5	14,20	1,45	24,2	14,42	16,65
	4,0	14,42	1,55	25,9	14,93	17,24
	4,5	14,63	1,65	27,4	15,39	17,77
8.0	1,7	10,97	1,31	21,8	21,69	25,05
	2,0	11,83	1,43	23,8	20,43	23,59
	2,5	13,26	1,64	27,3	18,65	21,54
	3,0	14,14	1,80	29,9	17,96	20,74
	3,5	14,50	1,95	32,4	18,51	21,37
	4,0	14,81	2,08	34,7	18,99	21,93
	4,5	15,24	2,20	36,7	18,97	21,91

1. Precipitation rates based on half-circle operation
2. ■ square spacing based on 50% diameter of throw
3. ▲ triangular spacing based on 50% diameter of throw

Challenges of Sports Turf Maintenance

Toro offers a complete line of professional products from control systems to sprinklers and in-field monitoring s stems that work together to provide optimal water-management solutions for all your sports field needs We want to help you make your turf the best it can be – that's why Toro is committed to developing advanced and improved products that water more accurately, more efficiency, more dependably, and more affordably. Our efforts don't stop at irrigation though... from mowers to grooming equipment to aerators, Toro provides a complete sports field maintenance solution And, through continued industry efforts like sponsorship of the Sports Turf Managers Association, we look forward to answering your needs as a sports field manager with innovative solutions for years to come.

As a sports field manager, you face unique challenges and goals in landscape maintenance:

Appearance
Making sure your turf looks its best on game day, especially if it will be on national TV.

Playability
Ensuring peak team performance and maximizing player safety, while also minimizing potential liability.

Turf Health
Maintaining your turf in high-usage, short-recovery-window environments.

Water Use
Keeping the field in good condition while keeping your water costs down.

If your fields are surfaced with artificial grass, your irrigation needs are balanced with the goal of no infield disruption of the playing surface:

Wash Down
Ensuring sufficient coverage to clean the entire field

Cool Down
Minimizing playing surface temperatures, especially in summer.

Sports Field And Artificial Turf **Sprinklers**:

T7 Series
Radius: 14,0-22,9m
(46'-75')

640 Series
Radius: 14,0-20,0m
(47'-67')

TS90 Series
Radius: 16,2-29,0m
(53'-95')

690 Series
Radius: 26,5-33,0m
(87'-108')

TG101 Series
Radius: 27,0-54,0m
(91'-178')

Sports Field Management **Solutions**:

Sentinel® Central Control
(Page #: 80)

- PC-based Water Management System
- Weather-based Runtime Adjustment
- Advanced Reporting including Water Use & ET
- Flow Monitoring with Automatic E-mail Alert
- Sophisticated Scheduler / Optimizer Program
- Radio, Ethernet, Internet, & Cellular Communications

Turf Guard® Soil Monitoring System
(Page #: 74)

- Turf Guard® Soil Monitoring System
- Wireless Soil Monitoring
- Soil Moisture, Temperature & Salinity
- Web-based Reporting & Analysis
- Monitor up to 500 Sensors per System
- Ideal for Managing Playability of Sports Fields

- **Inlet Size: 1" NPT or BSP**
- **Radius: 14.0-22.9m (46'-75')**
- **Operating Pressure Range: 2,8 - 7,0 Bar (40-100 psi)**

Learn more at **Toro.com**

The Toro® T7 Rotor is built rugged to withstand the harsh conditions and vandalism present in municipal/government, sports fields an commercial rotor applications.

Features & Benefit

Top Arc Indication
Arc setting indicator on top of the rotor allows for easy wet or dry adjustments from 50°-360°.

High Efficiency Nozzle
Single port design ensures water is evenly distributed across the pattern without putting too much water near the head, which prevents seed from washing away.

Vandal and Abuse Resistance
Smart Arc™ memory safely returns sprinkler to previously set arc if vandalized.

Design Solutions and Safety
Standard check valve to prevent low head drainage. Small exposed diameter reduces possibility of injury on play areas.

Durability
Heavy duty retract spring and water-lubricated gear drive. Wiper seal reduces stick-ups and wiper seal leaks.

Versatility
Also available in low-flow versions for short radius (<15,2m (<50')) applications such as baseball infields

T7 Rotor Model List	
Model	**Description**
• T7P-02	25mm (1") Rotor, NPT
• T7P-02E	25mm (1") Rotor, Effluent Indicator, NPT
• T7PSS-02	25mm (1") Stainless Steel Rotor, NPT
• T7PSS-02E	25mm (1") Stainless Steel Rotor, Effluent Indicator, NPT
• T7P-52	25mm (1") Rotor, BSP
• T7P-52E	25mm (1") Rotor, Effluent Indicator, BSP
• T7PSS-52	25mm (1") Stainless Steel Rotor, BSP
• T7PSS-52E	25mm (1") Stainless Steel Rotor, Effluent Indicator, BSP

Standard rubber cover with arc indicator from 45°-360° simplifies installation and service

Specifications

Dimensions

- Pop-up height to nozzle: 127mm (5")
- Body height: 220mm (8¾")
- Rubber cover diameter: 57mm (2¼")
- Body diameter: 70mm (2¾")

Operating Specifications

- Precipitation rate: 7,6 - 17,4mm per hour
- Radius: 14,0 - 22,9m (46'-75')
- Flow rate: 25-115.8 LPM (6.6-30.6 GPM)
- Operating pressure range: 2,8-7,0 Bar (40-100 psi)
- Inlet size: 1" threaded NPT or 1" BSP
- Nozzle trajectory: 25°
- Arc adjustment: 50°-360° (unidirectional at 360°)

Additional Features

- Standard check valve
- Threaded cap-retained riser assembly
- Variable reversing stator
- Nozzle tree:(7, 9, 12, 16, 20, 24 and 27)gpm
- Slip clutch
- Nozzle support/breakup screw
- Riser pull-up feature on top of nozzle base
- Adjustment/pull up tool supplied
- Locking cap screw

Options Available

- Stainless steel riser
- Effluent indicator

Warranty

- Five years

T7 Sports Rotor Nozzle Performance Data - Metric

Nozzle	Pressure (kPa)	Flow Rate (lpm)	Radius (metres)*	Precip. Rate (mm/hr) ▲*	Precip. Rate (mm/hr) ■*
7.0	280	25.0	14.0	8.8	7.6
	350	28.0	14.3	9.5	8.2
	420	30.7	14.6	9.9	8.6
	490	33.3	14.9	10.3	9.0
	560	35.6	15.5	10.2	8.8
	630	39.0	15.8	10.8	9.3
	690	40.5	16.5	10.4	9.0
9.0	280	28.0	14.3	9.5	8.2
	350	31.4	15.2	9.4	8.1
	420	32.9	15.5	9.4	8.2
	490	35.6	15.8	9.8	8.5
	560	37.5	16.5	9.6	8.3
	630	41.3	16.8	10.2	8.8
	690	43.5	17.1	10.4	9.0
12.0	280	36.0	15.2	10.7	9.3
	350	43.9	15.5	12.6	10.9
	420	48.1	16.2	12.8	11.1
	490	52.2	16.5	13.4	11.6
	560	55.6	16.8	13.7	11.9
	630	59.0	17.1	14.0	12.2
	690	62.5	17.4	14.3	12.4
16.0	280	49.2	16.2	13.1	11.3
	350	57.2	17.1	13.6	11.8
	420	61.3	17.7	13.6	11.8
	490	66.2	18.0	14.2	12.3
	560	71.2	18.6	14.3	12.4
	630	75.7	18.9	14.7	12.7
	690	79.9	19.2	15.0	13.0
20.0	280	60.6	16.2	16.1	13.9
	350	66.2	17.7	14.7	12.7
	420	73.8	18.3	15.3	13.2
	490	78.0	18.6	15.6	13.5
	560	84.0	19.8	14.8	12.8
	630	89.3	20.1	15.3	13.2
	690	93.9	20.4	15.6	13.5
24.0	280	59.8	15.8	16.5	14.3
	350	66.2	18.3	13.7	11.9
	420	73.1	19.2	13.7	11.9
	490	78.3	19.8	13.8	12.0
	560	84.4	20.4	14.0	12.1
	630	90.1	20.7	14.5	12.6
	690	95.8	21.6	14.2	12.3
27.0	280	70.8	16.8	17.5	15.1
	350	88.6	19.8	15.6	13.5
	420	89.3	21.6	13.2	11.4
	490	97.7	21.9	14.0	12.2
	560	103.7	22.3	14.5	12.6
	630	110.1	22.6	15.0	13.0
	690	115.8	22.9	15.4	13.3

* Radius shown in metres. Data based on 360°

Specifying Information—T7 Sprinkler

T7PXX-XXXX			
Descrip.	**Optional**	**Thread**	**Optional**
T7P	SS	XX	E
T7P—Sports Rotor	SS—Stainless Steel Riser	02—NPT Thread 52—BSP	E—Effluent
Example: A T7P sprinkler with a stainless steel riser and effluent rubber cover would be specified as **T7PSS-52E**			

- **Inlet Size: 1" NPT or BSP**
- **Radius: 14,0-20,0m (47'-67')**
- **Operating Pressure Range: 2,8-6,2 Bar (40-90 psi)**

Learn more at **Toro.com**

Considered the most durable, heavy-duty commercial sprinkler available, the Toro® 640 Series is the proven veteran for athletic fields parks, campuses and commercial sites.

Features & Benefit

35 Years of Reliability
Once the 640 Series sprinkler goes in the ground, it stays there. With a stainless steel-encased nozzle assembly and gear drive design.

Normally Open Valve-In-Head Body
Allows individual head control - the only commercial grade Toro rotor available with this feature.

Stainless Steel, Engineering Plastic and Brass Construction
Provide dependable performance in the most demanding environments.

Standard Check Valve
Prevents low-head drainage and keeps laterals charged with water.

The 640 installs below grade for increased player safety.

Specifications

Dimensions

- Body diameter: 63mm (2½")
- Cap diameter: 81mm (3¼")
- Body height: Check-O-Matic – 230mm (9")
- Valve-In-head: 267mm (10½")
- Exposed surface diameter when buried 13mm (½") below grade: 45mm (1¾")

Operating Specifications

- Radius: 14-20m (47' – 67')
- Flow Rate: 22,7-94,6 LPM (6.0 – 25.0 GPM)
- Operating Pressure Range: 2,8-6,2 Bar (40-90 psi)
- Trajectory: 27°
- Pop-up to nozzle: 60mm (2⅜")
- Inlet: 1" female-threaded
- Below-grade installation: up to 13mm (½")
- Check-O-Matic maintains up to 4,6m (15') elevation change
- Selection of five nozzles and 12 arcs
- Adjustment screw allows up to 25% radius reduction

Additional Features

- Standard rubber cover
- Vandal-resistant cap with locking set screw
- Small exposed surface diameter
- Gear-drive design
- Basket filter screen
- Stainless steel retraction spring

Options Available

- 995-100 - Valve-In-Head Snap Ring Pliers
- 995-08 - Valve Removal Tool
- 995-35 - Valve Insertion Tool
- 995-37 - Seal Installation Tool
- 995-42 - Canister Removal Tool
- 996-51 - Cap Removal Tool
- 35-0579 - #41 Fast Rotation Stator
- 35-1011 - #42/43 Fast Rotation Stator
- Effluent option available

Warranty

- Five years

640 Series Sprinklers Performance Data—Metric

27° Nozzle	Maximum Height of Spray
Nozzle Apex @ 3,5 Bar	
40	3,5m
41	4,2m
42	4,1m
Nozzle Apex @ 4,0 Bar	
43	5,7m
Nozzle Apex @ 5,0 Bar	
44	6,0m

640 Series Model List Standard Arcs with Check-O-Matic	
Model	**Description**
Body Package	
640-02	Check-O-Matic, NPT
640-52	Check-O-Matic, BSP
Nozzle/Stator Set	
640-40	#40 Nozzle & Stator
640-41	#41 Nozzle & Stator
640-42	#42 Nozzle & Stator
640-43	#43 Nozzle & Stator
640-44	#44 Nozzle & Stator
640-40E	#40 Nozzle & Stator, Effluent
640-41E	#41 Nozzle & Stator, Effluent
640-42E	#42 Nozzle & Stator, Effluent
640-43E	#43 Nozzle & Stator, Effluent
640-44E	#44 Nozzle & Stator, Effluent
Drive Assemblies	
640-090	Drive Assembly, 90 Degrees
640-180	Drive Assembly, 180 Degrees
640-270	Drive Assembly, 270 Degrees

Specifying Information—640

64X-X-X-4X-XXX-E

Arc	Thread	Valve Type	Nozzle	Special Arc		Optional
X	X	X	X	XXX		E
0—Special Arc	0—NPT Thread	1—Normally Open Valve-In-Head	0	045°	148°	E—Effluent Model
1—90°	5—BSP Thread	2—Check-O-Matic	1	060°	173°	
2—180°			2	108°	192°	
3—270°			3	127°	238°	
4—360°			4			

Example: A 640 Series Sprinkler with a 90° arc, 40 nozzle and a check valve, would be specified as: **641-02-40**

Most 640 sprinklers are available in component parts only. Consult Res/Com Finished Goods Price List for a complete list of sprinklers available as finished goods.

640 Series Performance Data—Metric

Nozzle	Pressure (Bar)	Flow (LPM)	Radius (M)	360°		270°		238°		192°		180°		173°	
				▲	■	▲	■	▲	■	▲	■	▲	■	▲	■
40	3,0	23,6	14,6	7,62	6,60	10,16	8,81	11,53	9,99	14,29	12,38	15,24	13,21	15,86	13,74
	3,5	25,5	15,3	7,62	6,60	10,16	8,81	11,53	9,99	14,29	12,38	15,24	13,21	15,86	13,74
	4,0	27,1	15,8	7,52	6,55	10,02	8,74	11,37	9,91	14,10	12,29	15,04	13,11	15,65	13,64
	4,5	29,2	16,0	8,01	6,74	10,68	8,98	12,11	10,19	15,01	12,63	16,01	13,47	16,66	14,02
	5,0	30,9	16,2	8,19	6,92	10,92	9,23	12,39	10,47	15,36	12,98	16,38	13,84	17,05	14,40
	5,5	32,6	16,5	8,38	7,11	11,18	9,48	12,68	10,76	15,72	13,34	16,76	14,22	17,44	14,80
	6,0	34,7	16,7	8,56	7,29	11,41	9,72	12,95	11,03	16,05	13,67	17,12	14,58	17,81	15,17
41	3,0	36,9	15,2	11,15	9,72	14,87	12,95	16,87	14,70	20,91	18,22	22,30	19,43	23,20	20,22
	3,5	38,8	16,2	10,20	8,91	13,60	11,88	15,43	13,48	19,12	16,70	20,40	17,82	21,22	18,54
	4,0	41,0	16,4	10,57	9,04	14,09	12,06	15,98	13,68	19,81	16,95	21,13	18,08	21,99	18,82
	4,5	43,6	16,6	11,06	9,53	14,74	12,71	16,72	14,42	20,73	17,87	22,11	19,06	23,01	19,83
	5,0	46,1	16,8	11,24	9,72	14,99	12,95	17,00	14,70	21,07	18,22	22,48	19,43	23,39	20,22
	5,5	48,1	17,1	11,43	9,91	15,24	13,21	17,29	14,98	21,43	18,57	22,86	19,81	23,78	20,61
	6,0	49,9	17,3	11,61	10,08	15,48	13,45	17,56	15,25	21,76	18,91	23,22	20,17	24,15	20,98
42	3,0	46,6	16,2	12,27	10,74	16,36	14,33	18,56	16,25	23,00	20,15	24,54	21,49	25,53	22,36
	3,5	49,1	16,8	12,00	10,45	15,99	13,94	18,14	15,81	22,49	19,60	23,99	20,90	24,96	21,75
	4,0	52,5	17,0	12,70	10,87	16,93	14,49	19,21	16,44	23,81	20,38	25,40	21,74	26,43	22,62
	4,5	53,7	17,2	12,46	11,06	16,61	14,74	18,85	16,72	23,36	20,73	24,92	22,11	25,93	23,01
	5,0	57,0	17,7	12,45	11,18	16,59	14,90	18,83	16,90	23,34	20,96	24,89	22,35	25,90	23,26
	5,5	59,8	17,7	13,21	11,43	17,61	15,24	19,98	17,29	24,77	21,43	26,42	22,86	27,48	23,78
	6,0	62,5	17,7	13,92	11,96	18,56	15,95	21,05	18,10	26,10	22,43	27,84	23,93	28,96	24,89
43	3,0	51,7	17,4	11,85	10,33	15,80	13,77	17,92	15,62	22,22	19,36	23,70	20,65	24,66	21,49
	3,5	55,2	18,0	11,76	10,22	15,68	13,62	17,79	15,45	22,05	19,16	23,52	20,43	24,47	21,26
	4,0	58,4	17,9	12,65	10,87	16,87	14,49	19,13	16,44	23,72	20,38	25,30	21,74	26,32	22,62
	4,5	62,0	18,3	12,95	11,18	17,27	14,90	19,59	16,90	24,29	20,96	25,91	22,35	26,96	23,26
	5,0	66,2	19,0	12,57	11,18	16,76	14,90	19,02	16,90	23,57	20,96	25,15	22,35	26,16	23,26
	5,5	69,3	19,2	12,95	11,18	17,27	14,90	19,59	16,90	24,29	20,96	25,91	22,35	26,96	23,26
	6,0	72,2	19,4	13,31	11,53	17,75	15,38	20,13	17,44	24,96	21,62	26,62	23,06	27,70	24,00
44	3,0	65,7	17,3	15,14	13,20	20,18	17,59	22,90	19,96	28,38	24,74	30,28	26,39	31,50	27,46
	3,5	70,8	18,3	14,52	12,74	19,35	16,98	21,96	19,27	27,22	23,88	29,03	25,48	30,21	26,51
	4,0	73,8	18,5	14,88	13,16	19,85	17,54	22,51	19,90	27,91	24,67	29,77	26,31	30,97	27,38
	4,5	80,2	18,9	15,37	13,46	20,50	17,95	23,25	20,36	28,83	25,24	30,75	26,92	31,99	28,01
	5,0	84,0	19,4	15,75	13,46	21,00	17,95	23,82	20,36	29,53	25,24	31,50	26,92	32,77	28,01
	5,5	88,6	19,8	15,75	13,46	21,00	17,95	23,82	20,36	29,53	25,24	31,50	26,92	32,77	28,01
	6,0	92,8	20,2	15,75	13,64	21,00	18,19	23,82	20,63	29,53	25,57	31,50	27,28	32,77	28,38

Nozzle	Pressure (Bar)	Flow (LPM)	Radius (M)	148°		127°		108°		90°		60°		45°	
				▲	■	▲	■	▲	■	▲	■	▲	■	▲	■
40	3,0	23,6	14,6	18,54	16,06	21,60	18,72	25,40	22,01	30,48	26,42	45,72	39,62	60,96	52,83
	3,5	25,5	15,3	18,54	16,06	21,60	18,72	25,40	22,01	30,48	26,42	45,72	39,62	60,96	52,83
	4,0	27,1	15,8	18,29	15,94	21,31	18,58	25,06	21,84	30,07	26,21	45,11	39,32	60,15	52,43
	4,5	29,2	16,0	19,48	16,39	22,70	19,10	26,69	22,46	32,03	26,95	48,04	40,42	64,06	53,90
	5,0	30,9	16,2	19,93	16,84	23,22	19,62	27,31	23,07	32,77	27,69	49,15	41,53	65,53	55,37
	5,5	32,6	16,5	20,39	17,30	23,76	20,16	27,94	23,71	33,53	28,45	50,29	42,67	67,06	56,90
	6,0	34,7	16,7	20,82	17,73	24,26	20,66	28,53	24,30	34,24	29,16	51,36	43,74	68,48	58,32
41	3,0	36,9	15,2	27,12	23,63	31,61	27,54	37,17	32,39	44,60	38,86	66,90	58,29	89,20	77,72
	3,5	38,8	16,2	24,81	21,67	28,91	25,25	33,99	29,70	40,79	35,64	61,19	53,45	81,58	71,27
	4,0	41,0	16,4	25,70	22,00	29,95	25,63	35,22	30,14	42,27	36,17	63,40	54,25	84,53	72,34
	4,5	43,6	16,6	26,89	23,18	31,34	27,02	36,85	31,77	44,22	38,13	66,33	57,19	88,44	76,25
	5,0	46,1	16,8	27,34	23,63	31,86	27,54	37,47	32,39	44,96	38,86	67,44	58,29	89,92	77,72
	5,5	48,1	17,1	27,80	24,10	32,40	28,08	38,10	33,02	45,72	39,62	68,58	59,44	91,44	79,25
	6,0	49,9	17,3	28,24	24,53	32,90	28,58	38,69	33,61	46,43	40,34	69,65	60,50	92,86	80,67
42	3,0	46,6	16,2	29,84	26,13	34,78	30,46	40,89	35,81	49,07	42,98	73,61	64,47	98,15	85,95
	3,5	49,1	16,8	29,18	25,42	34,00	29,63	39,98	34,84	47,98	41,81	71,97	62,71	95,96	83,62
	4,0	52,5	17,0	30,89	26,44	36,00	30,82	42,33	36,24	50,80	43,48	76,20	65,23	101,60	86,97
	4,5	53,7	17,2	30,30	26,89	35,32	31,34	41,53	36,85	49,83	44,22	74,75	66,33	99,67	88,44
	5,0	57,0	17,7	30,27	27,18	35,28	31,68	41,49	37,25	49,78	44,70	74,68	67,06	99,57	89,41
	5,5	59,8	17,7	32,13	27,80	37,44	32,40	44,03	38,10	52,83	45,72	79,25	68,58	105,66	91,44
	6,0	62,5	17,7	33,86	29,10	39,46	33,91	46,40	39,88	55,68	47,85	83,52	71,78	111,35	95,71
43	3,0	51,7	17,4	28,82	25,12	33,59	29,27	39,50	34,42	47,40	41,30	71,09	61,95	94,79	82,60
	3,5	55,2	18,0	28,61	24,85	33,34	28,96	39,20	34,06	47,04	40,87	70,56	61,30	94,08	81,74
	4,0	58,4	17,9	30,77	26,44	35,86	30,82	42,16	36,24	50,60	43,48	75,90	65,23	101,19	86,97
	4,5	62,0	18,3	31,51	27,18	36,72	31,68	43,18	37,25	51,82	44,70	77,72	67,06	103,63	89,41
	5,0	66,2	19,0	30,58	27,18	35,64	31,68	41,91	37,25	50,29	44,70	75,44	67,06	100,58	89,41
	5,5	69,3	19,2	31,51	27,18	36,72	31,68	43,18	37,25	51,82	44,70	77,72	67,06	103,63	89,41
	6,0	72,2	19,4	32,37	28,05	37,73	32,69	44,37	38,44	53,24	46,13	79,86	69,19	106,48	92,25
44	3,0	65,7	17,3	36,82	32,10	42,91	37,40	50,46	43,98	60,55	52,78	90,83	79,17	121,11	105,56
	3,5	70,8	18,3	35,31	30,98	41,15	36,11	48,39	42,46	58,06	50,95	87,10	76,43	116,13	101,90
	4,0	73,8	18,5	36,21	32,00	42,19	37,30	49,61	43,86	59,54	52,63	89,31	78,94	119,08	105,26
	4,5	80,2	18,9	37,39	32,75	43,58	38,16	51,24	44,87	61,49	53,85	92,24	80,77	122,99	107,70
	5,0	84,0	19,4	38,31	32,75	44,64	38,16	52,49	44,87	62,99	53,85	94,49	80,77	125,98	107,70
	5,5	88,6	19,8	38,31	32,75	44,64	38,16	52,49	44,87	62,99	53,85	94,49	80,77	125,98	107,70
	6,0	92,8	20,2	38,31	33,18	44,64	38,66	52,49	45,47	62,99	54,56	94,49	81,84	125,98	109,12

Precipitation Rate Data in mm/HR

* ▲ *Precipitation rates are for triangular spacing, shown in millimeters per hour, calculated at 50% of diameter.*
* ■ *Precipitation rates are for square spacing, shown in millimeters per hour, calculated at 50% of diameter.*

All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in meters. Data based on 360°.
Note: For the 640, differing arcs cannot be valved together.

TS90 Series

- **Inlet Size: 1” NPT or BSP**
- **Radius: 16,2-29,0m (53’-95’)**
- **Operating Pressure Range: 2,8-7,0 Bar (40-100 psi)**

Learn more at **Toro.com**

For big open spaces, the Toro TS90 provides unparalleled features and performance in a single fully adjustable rotor.

Features & Benefit

Trujectory Adjustment from 7° to 30°
Fine tunes nozzle spray height, helps provide true head-to-head coverage, and compensates for windy conditions.

Part- And Full-Circle In One Sprinkler
No need to inventory multiple models or service parts

Back Nozzle Capable
Perfect for perimeter of sports fields Provides the fl xibility for fine-tuning a y watering requirement.

Ratcheting Riser
Allows you to adjust the riser position in the body with no disassembly. Simply pull up the riser and ratchet it to the precise position you want to water.

Three Nozzle Configu ation
Provides better distribution uniformity, nozzle fl xibility and system efficien .

Constant-Velocity Drive
Provides reliable rotation speed – from sprinkler to sprinkler.

Specifications

Dimensions

- Body Height: 254mm (10")
- Overall Height: 317mm (12½")
- Retracted Height: 216mm (8½")
- Pop-Up Height: 100mm (4")
- Exposed Cap Diameter: 57mm (2¼")

Operating Specifications

- Radius: 16,2-29,0m (53'-95') at 25° trajectory
- Flow Rate: 52,9-232,8 LPM (14.0-61.5 GPM)
- Precipitation Rate: 14,2-15,2mm/hr (.56-.60"/hr.)
- Arc: Full- & Part-circle in one
  - Full-circle: 360° unidirectional clockwise rotation
  - Part-circle: 40°-330°
- Rotation Speed: 3 minutes ± 30 seconds
- Inlet: 1" female-threaded (NPT or BSP)
- Operating pressure range: 2,8-7,0 Bar (40-100 psi)

Additional Features

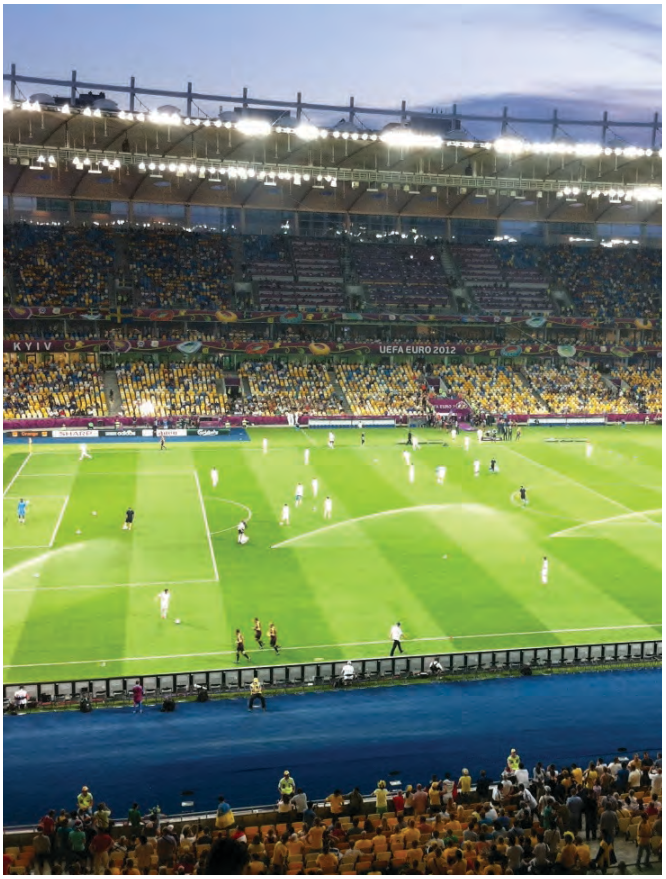
- Full set of color-coded nozzles that thread directly into the front.
- Rubber cover and below grade installation
- Check Valve standard – maintains up to 3m (10') elevation
- Nozzle options: 9 main, 3 intermediate, 1 inner

Options Available

- Effluent Indicator available: part number 118-0063
- Main Nozzle Tool: 16mm (5/8" hex socket or Toro Part 995-99
- Intermediate and Trajectory tool: 8mm (5/16") hex socket or Toro Part 995-105

Warranty

- 5 years



TS90 Series Model List	
Model	**Description**
TS90TP-52	25mm BSPF, Nozzles 1-9 included.

TS90TP Nozzle Performance Data—Metric

Nozzle Set		Stator	3,4 Bar		4,1 Bar		4,8 Bar		5,5 Bar		6,2 Bar		6,9 Bar	
Number	Main/Intermediate		Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)
1	Yellow/Blue	102-1939 Yellow	16,2	53	16,5	58	16,8	62	16,8	66	16,5	70	17,1	74
2	Blue/Red		16,8	71	18,0	78	18,6	84	18,0	89	18,0	95	18,9	100
3	Brown/Orange		-	-	17,4	86	18,3	93	18,6	99	19,2	105	20,7	110
4	Orange/Orange		-	-	-	-	22,6	124	24,4	133	24,7	140	25,0	147
5	Green/Blue	102-1940 White	-	-	-	-	-	-	24,1	143	25,0	151	25,6	158
6	Gray/Blue		-	-	-	-	-	-	25,0	150	26,2	159	26,5	167
7	Black/Orange		-	-	-	-	-	-	24,4	165	26,5	175	25,6	184
8	Red/Blue		-	-	-	-	-	-	26,2	184	26,8	195	26,8	205
9	Beige/Blue	102-1941 White	-	-	-	-	-	-	25,9	208	27,7	221	29,0	233

690 Series

- **Inlet Size: 1½" NPT**
- **Radius: 26,5-33,0m (87'-108')**
- **Operating Pressure Range: 5,5-10,3 Bar (80-150 PSI)**

Learn more at **Toro.com**

For nearly 40 years the 690 series has set the standard for durability and reliability in commercial applications. Extremely rugged, the 690 Series is constructed of brass, stainless steel and engineering plastics for unmatched performance in the most demanding environments.

Features & Benefit

Artificial Playing Surfaces
Radius and fl w capabilities are perfect for cooling and rinsing artificial playing surfaces such as football fields

Electric Valve In Head Models
Provide individual head control that ensures run times can match differing soil, turf and terrain watering requirements, pressure regulation to ensure all nozzles perform at the same pressure and manual ON-OFF-auto control at the head.

Fixed Arc Drives
Nine fixed arc drive assemblies ensure positive retention of the coverage area with no arc drift

Balanced Application Rate
Used in single or double row applications these sprinklers operate at a slower speed over the non-overlap area and a faster speed over the overlapped areas to provide a balanced application rate.

690 Series Model List	
Model	**Description**
690	90° Part-circle sprinkler
691	180° Part-circle sprinkler
694	Full-circle sprinkler
696	2-speed (60°-120°) sprinkler
698	2-speed (180°-180°) sprinkler

Specifications

Dimensions
- Body diameter: 254mm (10")
- Body height: 405mm (16")

Operating Specifications
- Radius: 26,5-33,0m (87' – 108')
- Flow Rate: 193,0-311,2 LPM (51.0 – 82.2 GPM)
- Operating Pressure Range: 5,5-10,3 Bar (80-150 psi)
- Pop-up height to nozzle: 20mm (¾")
- Inlet: NPT (1½")
- Check-O-Matic: Maintains 11,2m (37') of elevation
- Electric Valve-in-head Solenoid: 24V ac, 50/60 Hz
  - Inrush: 60 Hz, 0.30 amps
  - Holding: 60 Hz, 0.20 amps
- All internal components serviceable from the top

Warranty
- Three years

690 Series Performance Data—Metric

Base Pressure			Nozzle Set 90				Nozzle Set 91				Nozzle Set 92			
Bar	kPa	Kg/cm²	Rad.	LPM	Prec. Rate*| ▲	■	Rad.	LPM	Prec. Rate*| ▲	■	Rad.	LPM	Prec. Rate*| ▲	■
5,5	550	5,61	26,5	193	19,0	16,5	29,3	232	18,7	16,2	30,5	280	20,8	18,0
6,9	690	7,04	27,4	216	19,9	17,2	30,5	278	20,7	17,9	32,9	311	19,9	17,2

Specifying Information—690

69X-0X-XX-X					
Arc			**Valve-In-Head Type**	**Nozzle**	**Pressure Regulation***
69X			**0X**	**XX**	**X**
1—90° 2—180°	4—Full-circle 6—Full-circle, 2-speed (60°–120°) 8—Full-circle, 2-speed (180°–180°)	A—150° B—165° C—195° D—210°	1—Normally Open Hydraulic 2—Check-O-Matic 6—Electric	90 91 92	8—80 psi 1—100 psi
Example: When specifying a 690 Series Sprinkler with a 180° arc, electric valve-in-head, #91 nozzle, and pressure regulation at 5,5 Bars (80 psi), you would specify: **692-06-918**					

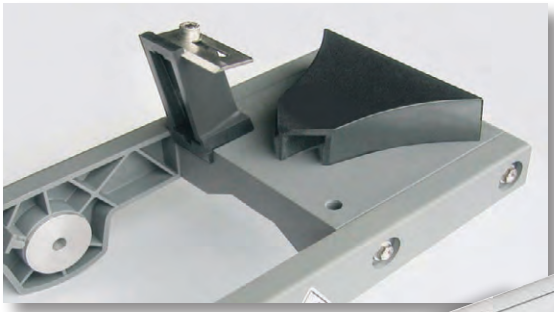
*Electric models only. Note: not all configurations available, refer to the Toro Irrigation pricelist for a complete list of available models.

TG101 Series

Learn more at **Toro.com**

- **Inlet Size: 2" BSP**
- **Radius: 27,7-54,2m (91'-178')**
- **Operating Pressure Range: 2,8-6,5 Bar (40-95 psi)**

The Toro® TG101 large-radius, gun-style sprinkler is ideal for applications that require long distance throw, such as irrigation solely from the perimeter of sports fields or for cleaning and cooling artificial tur .



Features & Benefit

Innovative Drive System
Adjusts automatically, ensuring steady rotation and uniform coverage at varying pressures.

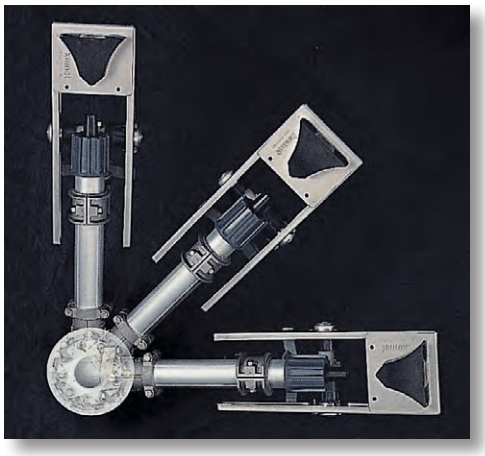
Excellent Uniformity
Using a single nozzle design (spreader nozzles not required).

Dispersed Jet Upon Start-up
Reduces run-off and ver-watering.

Self-adjusting Jet Breaker Device
To vary distribution at lower pressures or to increase close-in watering.

No Maintenance
The TG101 is maintenance-free.

Energy Savings
The great versatility of the gun is further increased with the dynamic intermittent jet-breaker. It allows energy savings and reduction of system operating costs by running an irrigation system at lower pressures.



TG101 Model List	
Model	**Description**
TG101	Large Radius Gun-Style Sprinkler, BSP

Distribution
The unique drive system allows a better stream diffusion This greatly reduces furrows and run-off

Adjustable Brake Force
The self-adjusting system adapts its brake force to the existing system pressure. This is essential for uniform water application.

TG101 Performance Data — 24° Trajectory—Metric

Pressure Bar	Nozzle 12mm			Nozzle 14mm			Nozzle 16mm			Nozzle 18mm			Nozzle 20mm			Nozzle 22mm			Nozzle 24mm		
	Flow m^3/h	l/s	Radius m	Flow m^3/h	l/s	Radius m	Flow m^3/h	l/s	Radius m	Flow m^3/h	l/s	Radius m	Flow m^3/h	l/s	Radius m	Flow m^3/h	l/s	Radius m	Flow m^3/h	l/s	Radius m
2,0				10,6	2,96	26,0	13,9	3,86	27,9	17,6	4,89	29,7	29,7	6,04	31,5	26,3	7,30	33,1	31,3	8,69	34,7
2,5				11,9	3,31	28,3	15,5	4,32	30,4	19,7	5,47	32,4	24,3	6,75	34,3	29,4	8,17	36,1	35,0	9,72	37,8
3,0	9,6	2,66	27,9	13,0	3,62	30,3	17,0	4,73	32,6	21,6	5,99	34,7	25,6	7,39	36,7	32,2	8,95	38,7	38,3	10,65	40,5
3,5	10,4	2,87	29,5	14,1	3,91	32,1	18,4	5,11	34,5	23,3	6,47	36,8	28,7	7,99	38,9	34,8	9,66	41,0	41,4	11,50	43,0
4,0	11,1	3,07	31,1	15,1	4,18	33,8	19,7	5,46	36,3	24.9	6,91	38,7	30,7	8,54	41,0	37,2	10,33	43,1	44,3	12,29	45,2
4,5	11,7	3,26	32,5	16,0	4,44	35,3	20,9	5,80	38,0	26,4	7,33	40.5	32,6	9,05	42,8	39,4	10,96	45,1	46,9	13,04	47,3
5,0	12,4	3,44	33,8	16,8	4,68	36,8	22,0	6,11	39,5	27,8	7,73	42,1	34,4	9,54	44,6	41,6	11,55	46,9	49,5	13,74	49,2
5,5	13,0	3,60	35,1	17,7	4,91	38,1	23,1	6,41	41,0	29,2	8,11	43,7	36,0	10,01	46,2	43,6	12,11	48,7	51,9	14,42	51,0
6,0	13,6	3,76	36,3	18,4	5,12	39,4	24,1	6,69	42,4	30,5	8,47	45,1	37,6	10,46	47,8	45,5	12,65	50,3	54,2	15,06	52,7
6,5	14,1	3,92	37,4	19,2	5,33	40,6	25,1	6,96	43,6	31,7	8,81	46,5	39,2	10,88	49,3	47,4	13,17	51,9	56,4	15,67	54,4

Note: Products may not be available in all regions. Please consult your Toro regional manager for availability.

Specifications

Operating Specifications

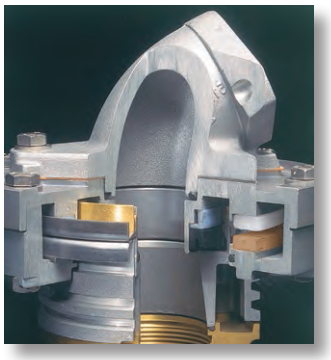
- Radius: 27,7-54,2m (91'-178')
- Flow Rate: 158,9-938,7 LPM (42-248 GPM)
- Operating Pressure Range: 2,5-6,5 Bar (40-95 PSI)
- Trajectory: 24°
- Two standard nozzle options: 16mm and 20mm (0.63" and 0.87") (additional range of nozzles available for specialty applications)

Additional Features

- Powerful and efficient stream diffusion
- Standard 50mm (2") NPT thread connection
- High-quality, durable construction
- Full or part-circle operation in one unit
- Adjustable rotation speed

Warranty

- Two years



No maintenance
The TG101 gun is maintenance-free. The modern design avoids the use of ball bearings, which can seize at contact with moisture, cause failure.

Rotor Accessories

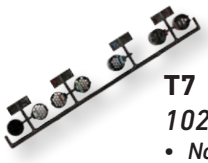
Effluen Water Indicators

300 Series
89-7853
- *Lavender cover for 300 Series Omni nozzle*
- *Use with part no. 300-15 (Omni Nozzle)*

89-7854
- *Lavender cover for 300 Series Omni nozzle high-pop models*
- *Use with part no. 300-25 (Omni Nozzle)*

89-7889
- *Lavender plug for 300 Series with fixed-radius nozzles*

Nozzles



T7
102-2633
- *Nozzle tree*

T5 Nozzle Tree Kit
102-7712
- *20 nozzle trees per bag*

Installation/Adjustment Tools

Mini 8 Series
102-2024
- *Adjustment tool for Mini 8*

T5|T7 Rotor Tool
102-6527

T5 Rotor Check Valve Kit
102-7714
- *20 valve seals per bag*

T5 Effluent Cap
118-3832

640 Series
995-07
- *VIH pliers for 640 Series models*

995-08
- *Valve removal tool for 640 Series models*
- *Designed for quick removal of valve assembly from body*

995-42
- *Canister removal tool for 640 Series models*

996-51
Cap removal tool for 640 Series models

995-37
- *Seal installation tool for 640 Series models*

995-35
- *Valve insertion tool for 640 Series models*
- *Designed for accurate one-step insertion of valve assembly and snap ring*

Valves Overview

Model		EZ-Flo® Plus	TPV Series	P-150	P-220 Series	P-220 Scrubber
Page Number		47	48	49	50-51	52-53
Flow range		0,9-113,6 LPM (0.25-30 GPM)	0,3-151,4 LPM (0.1- 40 GPM)	18,9-567,8 LPM (5.0-150 GPM)	18,9-1135,6 LPM (5-300 GPM)	302,8-1135,6 LPM (80-300 GPM)
Operating Pressure		0,7-10,3 Bar Max (10-150 PSI)	0,7-12,1 Bar Max (10-175 PSI)	1,4-10,3 Bar Max (20-150 PSI)	0,7-15,2 Bar Max (10-220 PSI)	0,7-15,2 Bar Max (10-220 PSI)
Conditions	Electrically-Activated Systems	X	X	X	X	X
	Hydraulically-Activated Systems					
	Pin-Type Systems					
	Effluent Water*		X		X	X
Sizes	¾" - 20x27 - DN20					
	1" - 26x34 - DN25	X	X		X	X
	1¼" - 33x42 - DN32					
	1½" - 40x49 - DN40			X	X	X
	2" - 50x60 - DN50			X	X	X
	2½" - 66x76 - DN65					
	3" - 80x90 - DN80				X	X
Configurations	Angle	X		X	X	X
	Anti-Siphon	X				
	Inline/Globe	X	X	X	X	X
Inlet/Outlet	Threaded (Female)	X	X	X	X	X
	Slip	X	X			
	Male X Male	X	X			
	Male X Barb	X	X			
Features	Manual Flow Control	X	X	X	X	X
	Pressure Regulation*			X	X	X
	Internal Bleed	X	X	X	X	X
	External Bleed (Flush)*	X	X		X	X
	Optional DC Latching Solenoid*	X	X	X	X	X
Body Construction	ABS					
	PVC	X	X			
	Glass-filled Nylon			X	X	X
	Glass-filled Polypropylene	X				
	Brass					
Warranty		Three years	Five years	Five years	Five years	Five years

*WaterSmart® Feature

EZ-Flo® Plus Jar-Top Series

- 1" (NPT or BSP)
- Electric

The name says it all – EZ. Easy to install and easy to service, these Toro® valves are easy to choose. Perfect for residential applications, EZ-Flo Plus valves are available in a broad range of configurations providing the flexibility you need.

Learn more at **Toro.com**

Specifications

Dimensions

- Female Globe:
  130 x 75 x 101mm (5⅛" x 3" x 4") H x W x L
- Male Globe:
  130 x 75 x 140mm (5⅛" x 3" x 5½") H x W x L
- Anti-Siphon: 152 x 75 x 175mm (6" x 3" x 6⅞")
  H x W x L

Operating Specifications and Additional Features

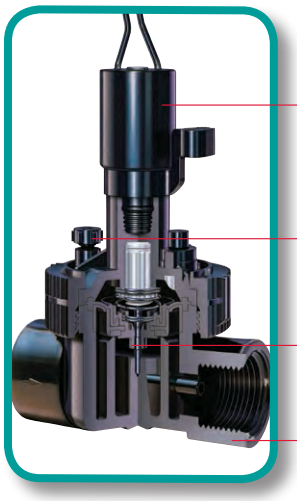
- Flow Range:
  - 1": 0,9-113,5 LPM (0.25-30 GPM)
- Operating Pressure: 0,68-10,32 Bar (10-150 psi)
- Encapsulated solenoid (118-5983) with captured hex plunger, assembly (24 VAC)
- Inrush current, 0.34 amps
- Holding current, 0.2 amps
- Available with or without flow control

Options Available

- DCLS-P — Potted DC Latching Solenoid
- EFF-KIT-50Hz— Effluent Solenoid Assembly and Tag

Warranty

- Three years



Features & Benefit

Jar-Top Design

No screws mean less time flushing out the s stem on start-up. Cleaning the diaphragm area is uncomplicated as it requires no tools. EZ-Flo Plus valves are simple to service – it's that easy.

PVC, Glass-Filled Nylon and Stainless Steel Construction

Provides longer life span and leak protection in nearly any environment.

Double-beaded, Chloramine and Ozone-Resistant Santoprene® Diaphragm

Ensures a consistent, leak-proof seal all the way up to 10,3 Bar (150 psi.

Optional Flow Control

Adjusts the flow of each zone on a system.

EZ-Flo Plus Series Model List	
Model	**Description**
50Hz Solenoids	
EZP-03-54 EZP-23-54 EZP-00-54	1", Female, BSP 1", Female, BSP, w/ Flow Control 1", Female Slip x slip
DC-Latching Solenoid	
EZP-23-94	1", Female, BSP, DCLS-P, w/ Flow Control

EZ-Flo® Friction Loss Data—Metric

Size	Model	LPM Flow					
		1	19	38	57	76	114
1"	Inline	0,14	0,24	0,28	0,31	0,32	0,43
1"	Anti-siphon	0,14	0,14	0,31	0,16	0,26	0,56

TPV Series

- 1" NPT or BSP
- 0,38-151,4 LPM (0.1—40 GPM)
- Electric

Learn more at **Toro.com**

The search for a full-featured yet economically priced, residential and commercial valve is over thanks to Toro's newest 1" valve offering – the TPV Series. These full-featured, rugged, debris-resistant valves feature fl w ranges from 0,38 to 151 LPM (0.1 to 40 GPM), making them ideal for everything from drip to high-flow residential and light-commercial applications.

Features & Benefit

Tough Double-Beaded, Chloramine and Ozone-Resistant Santoprene® Diaphragm
Ensures a consistent, leak-proof seal all the way up to 12,0 Bar (175 psi).

Patented DBS (Debris Bypass System) Technology™
Metering system ensures proper functionality, even in tough environments.

Wide Range of Flows and Pressure
One valve for all site specific needs.

Robust Solenoid Design
Ensures reliable opening and closing.

Water Management Highlight

DBS Technology™ (Debris Bypass System)

DBS is a patented vibrating metering pin and diaphragm assembly that allows for small particles to pass through the valve without clogging.

Specifications

Dimensions

- 130 x 70 x 127mm (5⅛" x 2¾" x 5") H x W x L

Operating Specifications

- Flow Range: 0,38-151,4 LPM (0.1-40 GPM)
- Operating Pressure: Electric; 0,7-12,0 Bar (10-175 psi)
- Burst pressure safety rating: 68,9 Bar (1000 psi)
- Solenoid: 24 VAC (50 Hz) Standard (118-5983)
  - Inrush: 0.34 amps
  - Holding: 0.2 amps

Additional Features

- Operates in low-flow and landscape drip applications when a filter is installed upstream
- Built with either AC or DC Latching Solenoids
- Manual Operation without the use of a controller—Internal and External Bleed
- Captured hex/Phillips screws
- Optional flow control allows precise zone adjustment and manual shutoff
- Encapsulated solenoid with captured hex plunger assembly
- Removable flow control handle to ensure vandal-resistance
- Slip models feature patented Glue Stop™
- Self-aligning bonnet permits fast and easy servicing
- Large directional flow arrows

Options Available

- EFF-Kit-50Hz - Recycled Water Solenoid Assembly and Watering Tag
- DCLS-P - Potted DC Latching Solenoid Assembly

Warranty

- Five years

TPV Series Model List

Model	Description
TPV100BSP	1" Female x Female, 50Hz/BSP, w/o Flow Control
TPVF100BSP	1" Female x Female, 50Hz/BSP, w/ Flow Control

TPV Friction Loss Data—Metric

LPM Flow	0,38	0,94	18,9	37,8	56,8	75,7	113,6	151,4	189,3
Bar Loss	0,14	0,14	0,24	0,27	0,21	0,23	0,48	0,90	1,34

P-150 Series Plastic Valves

- 1½" and 2", BSP
- Electric Models

Learn more at **Toro.com**

1½" and 2" in-line globe/angle valves for light commercial applications. The P-150 Series valves are the "value" work horses of plastic valves.

Features & Benefit

Heavy-duty glass-filled nylon (GFN) and stainless-steel construction

Globe/Angle configuration
Rated at 10 Bar (150 psi) with flows from 20 to 568 LPM (5 to 150 GPM)

Filter-controlled Water
To resist contamination of solenoid port. Filter serviceable from top of valve.

Precise pressure control option with compact EZReg® dial-design
Serviceable under pressure – no need to shut down system

Pressure regulates in electric and manual modes
Serviceable under pressure

Water Management Highlight

Pressure Regulator

The EZReg® module can regulate with flows of only 19 l/min (0,3 Bar) with a 25mm (1") valve and it only requires 0,7 Bar (10 psi) differential to operate. The pressure regulator can be easily and quickly installed—even under pressure, with no danger of water geysers.

Specifications

Dimensions
- Body styles:
- Globe/angle valve: 1½" and 2" (40mm and 50mm) BSP female threads
- Dimensions:
- 1½": 184mm x 92mm (7¼" x 3⅝") H x W
- 2": 241mm x 156mm (9½" x 6⅛") H x W

Operating Specifications
- Solenoid: 50Hz (24 VAC)
- Inrush volt-amp: 50Hz (24 VAC) - 7,2 VA
- Inrush current: .3 amps
- Holding volt-amps: 50Hz (24 VAC) - 4,8 VA
- Holding current: .2 amps
- Flow range: 18,9-567,8 LPM (5-150 GPM)
- Pressure range: 1,4-10,3 Bar (20-150 PSI)

Additional Features
- Non-rising, manual flow control handle; adjustable to zero flow
- Manual internal bleed
- Rugged Santoprene, double beaded diaphragm
- Forward flow design for precise pressure regulation
- No external tubing for either electric or pressure regulating models
- Encapsulated solenoid with captured hex plunger assembly
- Purple solenoid models available for effluent applications
- Positive O-ring seal on inlet plug
- Unique 3-way SS bonnet screws accept Phillips or hex driver tools
- Slow closing design reduces water hammer

Options Available
- EZR-30 - EZReg, 0,3-2,1 Bar (5-30 psi) Regulator Module
- EZR-100 - EZReg, 0,3-7,0 Bar (5-100 psi) Regulator Module
- EFF-KIT-50Hz - Effluent Water (Lavender) Solenoid Assembly (24 VAC, 50 Hz) and Warning Tag
- 118-5983 - 24 VAC Solenoid Assembly, 50 Hz, 18" (457mm) Leads, Captive Plunger
- DCLS-P - Potted DC Latching Solenoid Assembly

Warranty
- Five years

P-150 Series Plastic Valve Model List

Model	Description
EU-P150-23-56	Electric, Globe/Angle, 1½" BSP Plastic Valve, 50 Hz Solenoid
EU-P150-23-58	Electric, Globe/Angle, 2" BSP Plastic Valve, 50 Hz Solenoid

Note: all w/o Nozzle

P-150 Series Friction Loss Data—Metric (LPM Flow)

Size	Configuration	80	100	120	140	160	180	200	250	300	350	400	450	500	550	600
1.5"	Globe Angle	0,22 0,21	0,21 0,21	0,21 0,22	0,17 0,15	0,18 0,13	0,20 0,13	0,31 0,19	0,46 0,26							
2"	Globe Angle					0,22 0,18	0,22 0,17	0,20 0,14	0,19 0,13	0,26 0,16	0,34 0,24	0,42 0,24	0,42 0,26	0,52 0,32	0,62 0,37	0,74 0,43

Flow rates are recommended not to exceed 0,35 Bar loss. Values shown in Bar.
For kPa values, multiply tabular values by 100. For Kg/cm2 values, multiply tabular values by 1,02.
Note: For optimum performance when designing a system, be sure to calculate total friction loss to ensure sufficient downstream pressure. For optimum regulation performance, size regulating valves toward the higher flow ranges.

P-220 Series

- 1", 1½", 2", 3" NPT and BSP
- Electric
- Pressure-regulating
- Globe, Angle

Learn more at **Toro.com**

For proven reliability in the field the Toro® P-220 Series valves deliver. Constructed of heavy-duty, glass-filled nylon material, these valves are ready to consistently withstand pressures up to 15,1 Bar (220 PSI).

Features & Benefit

Durable Glass-Filled Nylon
Ensures the P-220 can operate at pressures up to 15,1 Bar (220 psi).

Precise Pressure Control Option
Compact EZReg® dial-design technology (factory or field installed - no need to remove solenoid).

Internal And External Manual Bleed
Keeps valve box dry and easy to use.

Schrader Valve Pre-Installed
Simple verifi ation of downstream pressure.

Optional Spike-Guard™ Solenoid
Reduces wire size requirements, allows twice as many valves to run simultaneously on a transformer, and lowers power costs.

Filter Screen On 2" & 3" Models
Allows for upstream filt ation of water to ensure no clogging occurs inside the valve.

Water Management Highlight

Pressure Regulator
The EZReg® module can regulate with flows of only 0,3 Bar (5 GPM) with a 25mm (1") valve and it only requires 0,7 Bar (10 psi) differential to operate. The pressure regulator can be easily and quickly installed—even under pressure, with no danger of water geysers.

Specifications

Dimensions

- 1": 171 x 92mm W (6¾" x 3⅝") H x W
- 1½": 184 x 92mm W (7¼" x 3⅝") H x W
- 2": 241 x 156mm W (9½" x 6⅛") H x W
- 3": 273 x 156mm W (10¾" x 6⅛") H x W

Operating Specifications

- Flow Range:
  - 1": 18,9-132,5 LPM (5-35 GPM)
  - 1½": 113,6-416,4 LPM (30-110 GPM)
  - 2": 302,8-681,4 LPM (80-180 GPM)
  - 3": 567,8-1135,6 LPM (150-300 GPM)
- Operating Pressure:
  - Electric: 0,7-15 Bar (10-220 psi)
- Pressure regulating:
  - Outlet (EZR-30): 0,3-2,0 Bar (5-30 psi ± 3)
  - Outlet (EZR-100): 0,3-7,0 Bar (5-100 psi ± 3)
- Inlet: 0,7-15,0 Bar (10-220 psi)
- Minimum pressure differential (between inlet and outlet) for pressure regulation: 0,7 Bar (10 psi)
- Burst pressure safety rating: 51,7 Bar (750 psi)
- Body styles:
  - Globe/Angle: 25, 40, 50, 75mm (1", 1½", 2", 3") female threads
- 118-5983 Solenoid: 24 VAC (50 Hz)
  - Inrush: 50 Hz: 0.34 amps
  - Holding: 50 Hz: 0.2 amps

Options Available

- EZR-30 - EZReg, 0,3-2,1 Bar (5-30 psi) Regulator Module
- EZR-100 - EZReg, 5-100 psi (0,3-7,0 Bar) Regulator Module
- EFF-KIT-50Hz - Effluent Water (Lavender) Solenoid Assembly (24 VAC, 50 Hz) and Warning Tag
- 118-5983 - 24 VAC Solenoid Assembly, 50 Hz, 457mm (18") Leads, Captive Plunger
- DCLS-P - Potted DC Latching Solenoid Assembly

Additional features

- Tough glass-filled nylon and stainless steel construction
- Internal and External bleed
- Pressure regulates in electric or pressure-regulating models
- No external tubing for either pressure-regulating model
- Standard, built-in Schrader-type valve for downstream pressure verification
- Flow control independent of solenoid
- Self-aligning bonnet to ensure correct installation
- Self-cleaning, stainless steel metering rod
- Low-flow capability down to 18,9 LPM (5 GPM) with EZReg
- Low-power requirement for longer wire runs

Warranty

- Five years

P-220 Series BSP Thread Model List

Model	Description
P220-23-54	Electric, In-Line 1" BSP Plastic Valve, 50 Hz Solenoid
P220-23-56	Electric, In-Line 1½" BSP Plastic Valve, 50 Hz Solenoid
P220-23-58	Electric, In-Line 2" BSP Plastic Valve, 50 Hz Solenoid
P220-23-50	Electric, Angle 3" BSP Plastic Valve, 50 Hz Solenoid

P-220 Series Friction Loss Data*—Metric

Size	Configuration	LPM Flow																					
		40	60	80	100	120	140	160	180	200	250	300	350	400	450	500	550	600	700	800	900	1000	1100
1"	Globe Angle	0,29 0,29	0,25 0,35	0,25 0,21	0,26 0,20	0,32 0,21	0,43 0,29	0,55 0,38	0,69 0,49	0,82 0,61													
1½"	Globe Angle					0,12 0,09	0,14 0,10	0,18 0,13	0,23 0,17	0,28 0,22	0,43 0,34	0,62 0,48	0,85 0,65	1,11 0,85									
2"	Globe Angle											0,14 0,08	0,20 0,12	0,25 0,15	0,32 0,19	0,40 0,24	0,48 0,29	0,54 0,32					
3"	Globe Angle																	0,18 0,14	0,24 0,19	0,32 0,26	0,41 0,34	0,52 0,43	0,65 0,54

Note: For optimum performance when designing a system, be sure to calculate total friction loss to ensure sufficient downstream pressure.
For optimum regulation performance, size regulating valves toward the higher flow ranges. Flow rates are recommended not to exceed 0,3 Bar loss.
Values shown in Bar. For kPa values, multiply tabular values by 100. For Kg/cm2 values, multiply tabular values by 1,02.
** Data taken with EZReg pressure regulation device installed. Data remains the same with or without pressure regulation.*

P-220 Scrubber Series

- 1", 1½", 2", 3", NPT and BSP
- Electric
- Pressure-regulating
- Globe, Angle

Learn more at **Toro.com**

A true dirty water irrigation valve, able to handle chlorine and other chemicals found in reclaimed and other non-potable water systems. Constructed of heavy-duty, glass-filled nylon and EPDM rubber materials, these valves resist clogging and feature a patent-pending active scrubbing mechanism (ACT™ System) to actively fight sand algae and other particles from blocking the proper metering through the valve.

Features & Benefit

Durable Glass-Filled Nylon
Ensures the P-220 can operate at pressures up to 15,1 Bar (220 psi).

Active Cleansing Technology (ACT™)
Industry's first active scrubber valve cleans continuously whereas competitive valves only clean on opening and closing.

Fabric-reinforced EPDM Diaphragm and EPDM Seat
Designed to work in virtually all water applications.

Rugged Internal Plastic and Stainless Steel Parts
Scrubber fan, nut and metering system are designed with marine and aerospace plastics and metals which make them resistant to water treated with chlorines and ozones.

Precise Pressure Regulation Option
Compact EZReg® dial-design technology ensures precise downstream pressure for optimizing sprinkler head performance.

Completely Serviceable and Retrofitable
Diaphragm assembly may be replaced or retrofitted to previous models.

Pressure Regulator

The EZReg® module can regulate with flows of only 0,3 LPM (5 GPM) with a 1" valve and it only requires 0,7 Bar (10 psi) differential to operate. The pressure regulator can be easily and quickly installed—even under pressure, with no danger of water geysers.

Scrubber Turbine

Filter Surface

ACT™ System

Patent-pending Active Cleansing Technology – in which the turbine is constantly rotating to clean the metering/filt ation area. This ensures that dirt, algae, chlorines, chloramines and water treated with ozone will not impede valve performance.

Specifications

Dimensions

- 1": 171 x 92mm (6¾" x 35⁄8") H x W
- 1½": 184 x 92mm (7¼" x 35⁄8") H x W
- 2": 241 x 156mm (9½" x 6⅛") H x W
- 3": 273 x 156mm (10¾" x 6⅛") H x W

Operating Specifications

- Flow Range:
  - 1": 19-151 LPM (5 to 40 GPM)
  - 1½": 114-416 LPM (30 to 100 GPM)
  - 2": 302,8-681,3 LPM (80-180 GPM)
  - 3": 567,8-1135,6 LPM (150-300 GPM)
- Operating Pressure
  - 1" & 1½" Models: 0,7 to 15,2 Bar (10 to 220 psi)
  - 2" & 3" Models: 1,4 to 15,2 Bar (20 to 220 psi)
- Pressure regulating:
  - Outlet (EZR-30): 0,3-2,1 Bar ± 0,2 (5-30 psi ± 3)
  - Outlet (EZR-100): 0,3-7,0 Bar ± 0,2 (5-100 psi ± 3)
- Inlet: 0,7-15,2 Bar (10-220 psi)
- Minimum pressure differential (between inlet and outlet) for pressure regulation: 0,7 Bar (10 psi)
- Body styles:
  - Globe/Angle: 50mm (2"), 75mm(3") female threads
- 118-5983 Solenoid: 24 VAC (50) Standard
  - Inrush: 60 Hz: 0.4 amps
  - Holding: 50 Hz: 0.2 amps

Additional features

- Tough glass-filled nylon and stainless steel construction
- Internal and External bleed
- Pressure regulates in electric or pressure-regulating models
- No external tubing for either pressure-regulating model
- Standard, built-in Schrader-type valve for downstream pressure verification
- Flow control independent of solenoid
- Self-aligning bonnet to ensure correct installation
- Self-cleaning, stainless steel metering rod
- Low-flow capability down to 18,9 LPM (5 GPM) with EZReg
- 316 nuclear-grade stainless-steel filter for maximum corrosion resistance

Options Available

- EZR-30 - EZReg, 0,3-2,1 Bar (5-30 psi) Regulator Module
- EZR-100 - EZReg, 0,3-7,0 Bar (5-100 psi) Regulator Module
- EFF-KIT-60 Hz - Effluent Water (Lavender) Solenoid Assembly (24 VAC, 60 Hz) and Warning Tag
- 118-5983: 24 VAC Solenoid Assembly, 60 Hz, 457mm (18") Leads, Captive Plunger
- DCLS-P - Potted DC Latching Solenoid Assembly
- SGS -12 - Spike Guard™ Solenoid: 50/60 Hz (24 VAC)

Warranty

- Five years

P-220 Scrubber Series Model List	
Model	**Description**
P220S-23-54	P-220S, 1" BSP with ACT™ System
P220S-23-56	P-220S, 1½" BSP with ACT™ System
P220S-23-58	P-220S, 2" BSP with ACT™ System
P220S-23-50	P-220S, 3" BSP with ACT™ System

P-220 Series Friction Loss Data—Metric

Size	Config.	LPM Flow																					
		40	60	80	100	120	140	160	180	200	250	300	350	400	450	500	550	600	700	800	900	1000	1100
1"	Globe	0,32	0,33	0,21	0,42	0,74																	
	Angle	0,29	0,32	0,18	0,38	0,65																	
1½"	Globe			0,08	0,12	0,19	0,29	0,44	0,60	0,77	0,97	1,19	1,41										
	Angle			0,07	0,11	0,18	0,26	0,36	0,48	0,64	0,81	0,99	1,20										
2"	Globe									0,27	0,30	0,30	0,45	0,54	0,64	0,69	0,84						
	Angle									0,19	0,25	0,39	0,39	0,44	0,51	0,62	0,68						
3"	Globe																0,18	0,23	0,35	0,41	0,46	0,53	0,76
	Angle																0,14	0,18	0,32	0,30	0,38	0,48	0,67

Flow rates are recommended not to exceed 0,35 Bar loss.
Values shown in Bar. For kPa values, multiply tabular values by 100. For Kg/cm2 values, multiply tabular values by 1,02.
Note: For optimum performance when designing a system, be sure to calculate total friction loss to ensure sufficient downstream pressure. For optimum regulation performance, size regulating valves toward the higher flow ranges.

Valve Accessories

Solenoids

DCLS-P

- *Potted DC latching solenoid for Toro valves used with EZ-Flo Plus, TPV, P-150, P-220 or 220 Series brass valves*

118-5982 (60 Hz)
118-5983 (50 Hz)

- *Solenoid assembly for EZ-Flo Plus, TPV, P-150, P-220 or 220 Series brass valves*
- *Captive hex plunger assembly*
- *0,5m (18") leads*

SGS-12

- *Spike Guard Solenoid compatible with EZ-Flo Plus, TPV, P-150, P-220 or 220 Series brass valves*
- *24 Vac, 50/60 Hz*
- *Inrush 0.2A*
- *Holding: 0.1A*
- *20,000 volts lightning rating*

LWS

- *Low Wattage Solenoid compatible with EZ-Flo Plus, TPV, P-150, P-220 or 220 Series brass valves*
- *24 Vac, 50/60 Hz*
- *Inrush 0.2A*
- *Holding: 0.1A*

Effluen Water Indicators

89-7855

- *Effluent flow-control knob for 254/264, 250/260 and 252 Series valves*

EFF-Kit-60Hz
EFF-Kit-50Hz

- *Effluent solenoid with warning tag for EZ-Flo Plus, TPV, P-150, P-220 or 220 Series brass valves*
- *Captive hex plunger assembly, 0.40 amp inrush, 0.20-amp-holding*

RWSG-Kit

- *Effluent sticker and tag for use with Spike Guard solenoids*

1088501

- *Effluent tag for use with Toro or competitive valves*

EZReg™ Pressure-Regulation Options

EZR-30 and EZR-100

- *Pressure-regulator module for use with P-150, P-220 and 220 Series valves*
- *Precise pressure control with dial design*
- *EZR-30: 0,3–2,0 Bar (5–30 psi)*
- *EZR-100: 0,3–7,0 Bar (5–100 psi)*

Valve Wire Sizing Chart – SGS & LWS

Maximum One-way Distance (in Meters) Between Controller and Valve using Spike Guard™ or Low Wattage Solenoid*

Ground Wire	Control Wire			
	1,0 mm2 (18 AWG)	1,5 mm2 (16 AWG)	2,5 mm2 (14 AWG)	4,0 mm2 (12 AWG)
1,0 mm2 (18 AWG)	621	768	896	999
1,5 mm2 (16 AWG)	768	993	1219	1420
2,5 mm2 (14 AWG)	896	1219	1578	1938
4,0 mm2 (12 AWG)	999	1420	1938	2511

** 24 VAC Solenoid. Pressure: 10,3 bar. Voltage Drop: 4 V. Minimum Operating Voltage: 20 V. Amperage (peak) 0,12 A.*

Controller Overview

Model	DDC™WP	DDC™	Evolution	TMC-212 indoor	TMC-424E	Custom Command	TDC Series
Page Number	56-57	58-59	60-64	65-66	67-68	69	70
Number of Stations	2, 4, 6, 8	4, 6, 8	4 to 16	2 to 12	4 to 24	9, 12, 15, 18, 24, 36, 48	100-200
Modular			X		X		X
*ET-Adjust			with Smart Connect™				
*Flow-Sensing					X		
Two-wire Decoder							X
*RainSensor Compatible	X	X	X	X	X	X	X
Soil Sensor Compatible			X				
Number of Programs	3	3	3	3	4	4	10
Simultaneous Program Operation			X		X	X	X
Number of Start Times	3 Per Program	3 Per Program	4 per Program	4 per Program	16	16	60
Maximum Station Runtime	4 Hours	4 Hours	12 Hours	4 Hours	8 Hours	10 Hours	24 Hours
Days of the Week Programming	X	X	X	X	X	X	X
Odd/Even Programming	X	X	X	X	X	X	X
Interval Programming	X	X	X	X	X	X	X
*ET-Optimized Programming							
Valves Per Station	1	1	2	2	2	2	2
Battery-Powered	X						
Armchair™ Programming	X	X				X	
Optional High-Surge Protection			X		X		X
Enclosure	Waterproof Indoor/Outdoor	Indoor/ Outdoor	Indoor / Outdoor	Indoor	Indoor/ Outdoor	Outdoor	Outdoor
Pedestal Option						X	X
Warranty	Two years	Two years	Five Years	Two Years	Five years	Five years	Five years

*WaterSmart® Feature

DDC™WP Series

- 2-, 4-, 6- and 8-Stations
- Battery-powered
- Indoor and Outdoor

Learn more at **Toro.com**

Looking for a rugged waterproof controller ideal for remote or isolated installations? Toro's DDCWP Series controller provides all that and more. Using the new potted DC latching solenoid, the DDCWP is battery-operated using two 9V batteries.

Features & Benefit

Fully Waterproof and Submersible
Submersible up to 1,9m (6.5') per IP-68 standards, allowing contractors to mount up to an 8-station controller in a valve box.

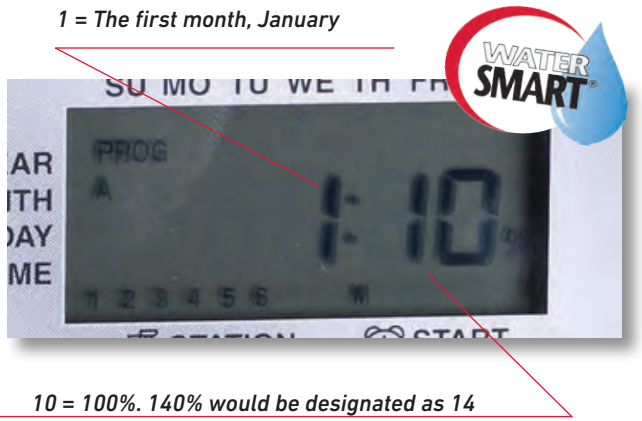
Operates DC Latching Solenoids
Controller is compatible with most manufacturers' DC Latching solenoids.

Exclusive "Digital Dial" Technology
Simple programming functions.

Unique Power Feature
Verifies sufficient voltage level for turning stations off before turning any stations on.

Monthly Watering Schedule
Monthly preset option – ideal for automatic runtime adjustments.

Water Management Highlight



Monthly % Adjust

DDCWP adjusts annual irrigation run time during initial controller set up. Options include from 0-200% and January to December scheduling. With easy adjusting for seasonal watering, water savings is enhanced for all-around intelligent programming.

Specifications

Dimensions

- 146mm x 127mm x 50mm (5¾" x 5" x 2") W x H x D
- Weight: 660,5 grams (23.3 oz.) without 9V battery

Operating Specifications and Additional Features

- Operating temperature: 0°C to 60°C (32°F to 140°F)
- Operates using two x 9V alkaline batteries (not supplied)
- Operates one latching solenoid per station and one latching solenoid-equipped master valve
- Controller is compatible with all Toro valves accepting latching solenoids (model DCLS-P or equivalent) and competitive valve models/latching solenoids
- Accepts Toro TRS Wired RainSensor™, Wired Rain/Freeze and other normally-closed sensors
- Low-battery indicator visible on LCD screen
- Three independent programs and three start times per program
- Three scheduling choices by program
- Seven-day calendar
- 1 to 7-day interval
- Odd/even with 365-day calendar and 31st day exclusion
- Station run times from one minute to four hours in one-minute increments
- Seasonal adjust by month from 0-200% in 10% increments
- Manual operation by station or program
- Self-diagnostic circuit breaker skips shorted stations
- Up to five-year program retention with on-board coin battery saves time of day and all programming features

Warranty

- Two years

EZ-Flo® Plus and P-220 valves shown with the DCLS-P Latching solenoid which provide cost and labor savings

Battery Cap

Easy installation of two 9V batteries with the simple screw on/off lid. The battery cap provides a dependable leak-proof seal allowing submersion up to 1,9m (6.5') per IP-68

Wire Run Lengths for DDCWP

With battery voltage at 9 VDC, maximum recommended wire runs for an 8-station DDCWP are:

Multi-strand Wire	Distance Meters (Feet)
1,0mm² (18 AWG)	60m (197)
1,5mm² (16 AWG)	93m (305)
2,5mm² (14 AWG)	150m (493)
4,0mm² (12 AWG)	250m (820)

DDCWP Series Model List

Model	Description
DDCWP-2-9V	2-station
DDCWP-4-9V	4-station
DDCWP-6-9V	6-station
DDCWP-8-9V	8-station

Specifying Information—DDCWP

DDCWP-X-9V			
Description	**Stations**		**Voltage**
DDCWP	**XX**		**XX**
DDCWP—Digital Dial Waterproof Controller	2—2 Stations 4—4 Stations	6—6 Stations 8—8 Stations	9V—9 Volt
Example: An 8 station DDCWP controller would be specified as: DDCWP-8-9V			

DDC™ Series Residential Controller

- 4, 6 and 8 Station
- Digital Dial Technology
- Indoor and Outdoor

Learn more at **Toro.com**

The DDC features an exclusive, patented virtual dial interface that guides a user through simple programming functions. Although compact in size, several large features are packed into the DDC – making it extremely affordable for any residential application.

Features & Benefit

Toro exclusive "digital dial" technology
Simulates the simplicity of a mechanical dial

3 independent programs
Easily identified within "digital dial" interface

Water Budget: 0 to 200% in 10% increments
Monthly preset option — ideal for system start-up or shutdown in advance

Self-diagnostic circuit breaker
Identifies irrigation faults

Multi-lingual Display
User selectable multi-language overlays

Water Management Highlight

Monthly Season Adjust:
Irrigation run times can be set and then pre-adjusted for entire year from 0-200% in 10% increments by month. With easy adjusting for seasonal watering, water savings is enhanced for all around intelligent programming.

Specifications

Operating Specifications and Features

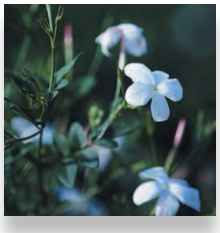
- Indoor:
  - Weight without 9-volt battery: 280 grams (9 ounces)
  - Dimensions:
    127mm x 146mm x 40mm (5" x 5¾" x 1½")
    H x W x D
  - 500mA class 2 transformer
- Outdoor:
  - Weight without 9-volt battery:
    1,14 kilos (2.5 lbs)
  - Dimensions:
    220mm x 178mm x 89mm (8⅝" x 7" x 3½")
    H x W x D
- Input power:
  - 120 VAC, 60 Hz (Plug-in transformer, UL/cUL approved)
  - 220 VAC, 50 Hz (Plug-in transformer, CE Mark)
  - 0.50 amps (60 W) maximum
- Station Output Power:
  - 24 VAC
  - 0.25 amps (6 VA) per station maximum
  - 0.25 amps (6 VA) pump start/master valve
  - 0.50 amps (12 VA) total load

Additional features

- Large LCD display
- 3 Start Times per Program
- Key locking outdoor cabinet provides vandel resistance
- 1 to 240 minute run times with delay between stations
- Multiple watering days options:
  - 7 day calendar
  - 14 day interval
- Odd/Even day watering, with 31st day exclusion
- Manual programs start for programs stored in controller memory
- Built-in Rain delay with sensor terminal hookups
- Arm-Chair programming with 9-volt battery power source
- Programmable Master Valve
- Convenient program review feature
- Program retention with on board coin battery
- Default program if loss of power occurs
- Quick reference card for programming assistance
- CE, EMC, C-Tick, UL and cUL approved
- Accepts Toro TWRS or TWRFS wireless rain/freeze sensor
- Program review feature
- Self diagnostic circuit breaker
- 365 day calendar

Warranty

- Two years


DDC Series 220 VAC Model List	
Model	**Description**
Indoor Digital Dial Controllers	
DDC-4-240	4-Station, Indoor, 240 VAC Plug-In Transformer, Exclusive Digital Dial
DDC-6-240	6-Station, Indoor, 240 VAC Plug-In Transformer, Exclusive Digital Dial
DDC-8-240	8-Station, Indoor, 240 VAC Plug-In Transformer, Exclusive Digital Dial
Outdoor Digital Dial Controllers	
DDC-4-240-ODC	4-Station, Outdoor, 220 VAC, Exclusive Digital Dial
DDC-6-240-ODC	6-Station, Outdoor, 220 VAC, Exclusive Digital Dial
DDC-8-240-ODC	8-Station, Outdoor, 220 VAC, Exclusive Digital Dial

Specifying Information DDC™ Series

DDC-X-XXX-XX			
Description	**Stations**	**Power Supply**	**Cabinet**
DDC	**X**	**XXX**	**XX**
DDC — Digital Dial Controller	4 — 4 Station 6 — 6 Station 8 — 8 Station	120 — 120 VAC 220 — 220 VAC	(blank) — Indoor AC Model OD — Outdoor AC Model*
Example: An 8- station indoor DDC controller with 220 Va.c. plug-in transformer, would be specified as: DDC-8-220			

** Outdoor model available as 220 VAC, Europe only*

Evolution™ Series Controller

- 4- to 16-Stations
- Computer Programmable
- Indoor and Outdoor
- Modular

Learn more at
www.toroevolution.com

Introducing the next generation in controllers!
With an intuitive interface and exclusive features for "smart" control, the new Toro® Evolution™ is an easy choice for residential and light-commercial applications.

Features & Benefit

Revolutionary Interface

The Evolution™ controller's user interface was designed with the customer in mind. Shortcut buttons provide quick access to standard functions while the advanced menu leverages the experience and knowledge of the irrigation professional, all shown on a graphics display that navigates similar to many modern consumer electronic devices.

Easy Upgrade to Integrated Smart Control

An optional Smart Connector™ plugs into the timing mechanism, enabling it to wirelessly communicate directly with a number of add-on devices—including a weather sensor, handheld remote, and up to three soil sensors.

Computer-programmable with USB Drive

Simple-to-use software allows you to program everything at a computer. Use a standard USB drive to transfer programming to one or more controllers in a matter of seconds. The USB drive also provides controller logging functionality to save an operation log for diagnostic purposes.

12-station configuration with (2) 4-station modules

16-station configuration with (1) 12-station module

Dimensions

- 286mm x 197mm x 114 mm (11¼"x 7¾" x 4½")
  W x H x D
- Weight: 2,0 kg (4.5 lbs.)

Electrical Specifications

- Electrical input power:
  - 220/240 VAC, 50 Hz
  - 30 VA (internal and external plug-in type transformer)
  - CE compliant
- Station output power:
  - 24 VAC
  - 0.75 amps per station maximum
  - 0.75 amps pump/master valve
  - 1.0 amps total load
- Surge Protection:
  - 6,0 KV common mode; 1,0 KV normal mode

Operating Specifications

- 4 to 16 stations, Modular
  - 4 Stations Fixed in base unit
  - 4- and 12-station hot-swappable modules
- One irrigation schedule in the default "standard" mode
- Up to six schedules in "advanced" mode
  - Three irrigation schedules, four start times per schedule
  - One fixed output auxiliary schedule
  - Two virtual auxiliary schedules for wireless control
- Three scheduling choices:
  - Seven-day calendar
  - 1 to 30-day interval with up to seven day exclusions
  - Odd/even days with up to seven day exclusions
- Station run times from one minute to twelve hours
- Cycle and soak by station
- Simultaneous operation of up to three zones
- Monthly season adjust by schedule
- Programmable "no irrigation" water restrictions
- Automatic split cycle when season adjust >100%
- Grow-in schedule settable up to 90 days
- Station-delay from 1 second to 60 minutes
- Pump start delay from 1 to 60 seconds
- Master valve on/off y zone
- Timed water off f om 1 to 14 days
- Quick select 30, 60, or 90 second manual run times

Operating Specifications (continued)

- Compatible with normally closed rain sensors
- Review feature to show planned irrigation
- Customizable zone and schedule names
- Automatic short detection for circuit protection
- Advanced diagnostics and alerts including current draw
- Operation of two solenoids per station
- Non-volatile memory does not require battery and holds programming for up to five years
- Status LED provides rapid indication of alerts
- 9V battery-powered timing mechanism for "armchair" programming
- Smart Connector™ upgrades controller for wireless smart or handheld remote control
- Evolution software lets users program on a computer and transfer programming via a USB drive
- Outdoor key-lock cabinet manufactured out of durable UV-resistant plastic
- Indoor model includes internal transformer with wall plug pigtail

Warranty

- Five years

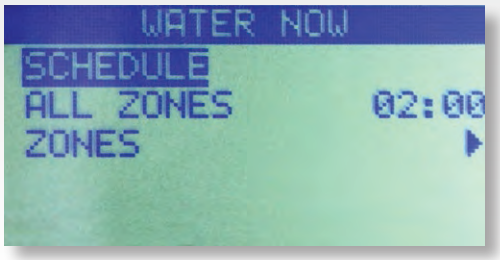
Evolution Series Model List	
Model	**Description**
• EVO-4OD-EU	4-station Outdoor Controller, 220V, Europe
Add-ons and Accessories	
Model	**Description**
• EMOD-4 • EMOD-12	4-station Expansion Module 12-station Expansion Module

Controller Interface

The Evolution controller's interface is a system of informative yet easy-to-understand screens that are quickly accessible using the controller's shortcut buttons.

Standard Functions

The **Standard** menu gives the basic user access to the most fundamental functions of the controller, such as manual watering, setting watering days and start times for a single schedule, and adjusting the amount of irrigation, all directly accessible through dedicated shortcut buttons.

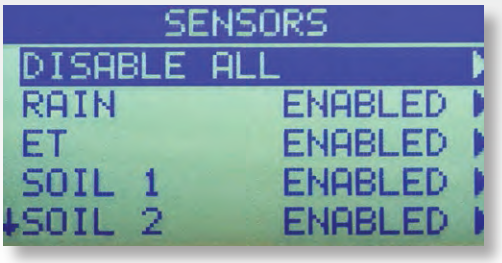


For example, the **Water Now Screen** allows the user to begin watering with as few as just two button presses, with the option of starting a specific schedule, specific zone or watering all zones in series.

Another example is the **Review Screen**, which is an at-a-glance summary showing which days the controller is going to water in the next seven days for the schedule you select.

Advanced Functions

The **Advanced** menu gives the experienced user access to the full power of the Evolution controller, including the ability to set up multiple irrigation and auxiliary schedules, create custom grow-in schedules, and configure any "smart" add-on devices - all operations that may otherwise overwhelm a basic user.



For example, the **Apply Sensors Screen** allows the user to easily view and configure all the sensors available to the controller, including rain, ET, and soil.

The **Grow In Screen** allows the user to set up a grow-in schedule for a user-defined period of time (up to 90 days), after which the controller will default back to its normal irrigation schedule(s).

Other Examples

The **Home Screen** displays the current time and date, what zones are scheduled to water next, or if currently watering, what zone(s) are currently watering and how much time is remaining, as well as any alerts – in the absence of any alerts, the screen will display "SYSTEM OK."

The **Local Service Message Screen** allows the contractor to input a custom message with their name and contact information into the controller from the software via a USB drive so it is visible to the homeowner when they press the "Help" button.

Evolution™ Series Software

Simple programming made even easier! The Evolution™ programming software makes the already easy-to-program Evolution™ series controller even easier to program by allowing you to set up irrigation and auxiliary schedules at your computer and transfer everything to the controller in seconds using a standard USB drive. Managing multiple controllers for diffe ent installation locations is a much more manageable task with this powerful tool, allowing you to create a "homeowner" database of schedules for an unlimited number of controllers.

Features & Benefit

An Even Easier Way to Program

Whether you're at your desk or in your truck on a laptop, the optional Evolution software allows you to program the Evolution controller using the power of a PC on most Windows-based operating systems (XP, or Windows® 7 or 8).

Quick Uploading with USB

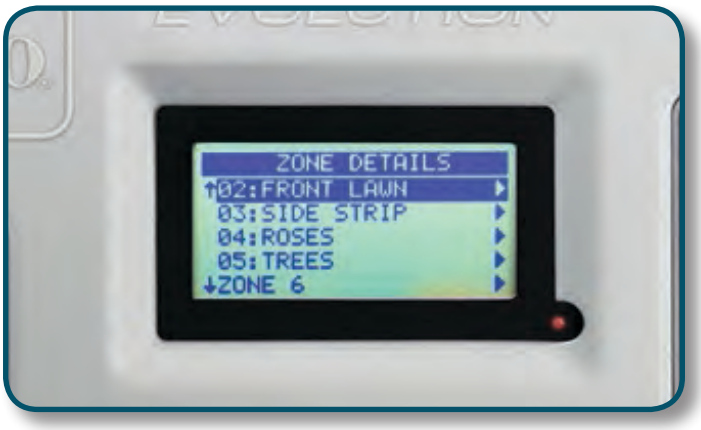
Once you're done programming on the computer, transferring the information to the controller is easy with a USB drive—making it simple to create, save, and load different schedules for multiple controllers – there's no limit!

Standard and Advanced Modes

Just like the Evolution controller itself, the Evolution software can tailor itself to your needs and be only as advanced as you want it to be. Standard mode covers the basics for a single schedule while advanced mode provides additional scheduling options, such as ET-based programming and creating more than one schedule.

Backup & Troubleshooting

The Evolution software gives you the ability to store programming for multiple controllers on your computer, making field changes as easy as emailing updated programming to your customer. The Evolution system also provides controller logging functionality that saves an operation log to the USB drive for later analysis and troubleshooting via the software.



Expanded Customization

The software also allows you to enter custom names for schedules and zones (such as “Shrubs” or “Front Yard” instead of “Zone 1”), as well as contact information that the homeowner can access in the “contractor message screen” any time they press the “Help” button on the controller.

Zones Screen

In advanced mode, this screen is where you enter the characteristics of each of the zones on the system, including the type of plant, soil, sprinkler, slope, and amount of sun exposure, to create the most efficient irrigation schedule possible. You also have the option of loading custom photos to represent each zone.

Review Screen

Similar to the review screen in the controller itself, this “at-a-glance” view of upcoming irrigation events graphically displays on a calendar when watering is scheduled to occur and for how long. You can zoom in and out on any section of the calendar and click on a segment of any schedule to see details of which zone is scheduled to water at that time.

Simple Setup

A simple wizard walks you through the schedule setup process step-by-step, allowing you to select the different features specific to each zone on the s stem. This data is then used to create a fully customized and optimized irrigation schedule for the controller.

TMC-212 Indoor

- 2- to 12-Stations
- Indoor
- Modular

Learn more at **Toro.com**

Designed for flexibility, the Toro® TMC-212 is the ideal controller choice for residential applications. With station count modularity from 2 -12 stations.

Features & Benefits

Station Count Modularity
For flexibility and reduced inventory— modular from 2 to 12 stations in 2-station increments.

Automatic Short Detection
For circuit protection and faster troubleshooting.

Non-Volatile Memory
Requires no batteries and holds programming for up to five years.

Scheduling Flexibility
Three independent programs and four start times per program.

Pump Start Compatibility
Pump Delay and Well Recovery/Station Delay with Pump-enabled Option.

EPA WaterSense® approved when used with Irritrol® Climate Logic®

Water Management Highlight

Auto-split on

Season Adjust > 100%

The TMC-212 is designed to help minimize the potential for runoff When Season Adjust is set > 100%, the TMC-212 will automatically split station runtimes in half and run two cycles of the program to minimize the effects of extended runtimes and allow for absorption.

Two-station Modules
Two-station modules provide station count flexibility and cost-effectiveness.

TSM-02 Standard

Specifications

Dimensions

- 203 W x 216 H x 51mm D (8" x 8 ½" x 2")
- Weight: 1,5 kg (3 lbs. 4 oz.)

Electrical Specifications

- Electrical input power:
  - 120 VAC/220 VAC
  - 18 VA maximum (indoor models)
  - UL, CUL Listed
- Station output power:
  - 24 VAC
  - 0.50 amps per station maximum
  - 0.50 amps pump/master valve
  - 0.70 amps total load
- Surge Protection:
  - 6.0 KV common mode; 600 V normal mode

Operating Specifications

- Three programs, four start times per program
- Station run times from one minute to four hours
- Three Scheduling choices
  - Seven-day calendar
  - 1- to 7-day interval with day exclusion
  - Odd/even days with day exclusion
- Programmable well recovery/station delay from 1 to 60 seconds or 1 to 60 minutes
- Pump start delay from 1 to 60 seconds
- Master valve on/off by program
- Automatic split cycle when season adjust is greater than 100%
- Program stacking
- Rain delay from one to seven days
- Hot-swappable station modules
- Compatible with normally open or normally closed rain sensors
- Operation of two solenoids per station (up to 0.50 amps per station max)

Optional Accessories

- PSS-KIT - Precision™ Soil Sensor Kit
- TRS – Wired RainSensor
- TWRS-1/TWRFS-1 – Wireless RainSensor or Wireless Rain/Freeze Sensor
- TMR-1 – Maintenance Remote

Warranty

- Three years

Advanced Features

Pump Start Delay provides settable time delay between activation of MV/PS and first valve to allow for main pressurization. Well Recovery/ Station Delay provides settable time delay between stations to allow for slow-closing valves or well refill with selectable MV/PS Energized during delay.

TMC-212 Series Model List	
Model	**Description**
TMC-212-ID TMC-212-ID-220	4-station, Indoor, 120 VAC 4-station, Indoor, 220 VAC
Station Modules - ***Base model includes 4 stations (2 modules)***	
Model	**Description**
TSM-02	2-station Expansion Module

TMC-424E Series

- 4- to 24-Stations
- Indoor and Outdoor
- Modular
- Flow-Sensing

Learn more at **Toro.com**

The TMC-424E Series takes modularity to a whole new level. Toro's advanced modular technology combines sophisticated features with simple operation to provide a customizable controller.

Features & Benefits

Station Count Modularity
Station count modularity from 4 to 24 stations using 4- or 8-station modules for flexibility.

Two Levels of Surge Protection
Standard or High Surge modules provide options to meet regional lightning protection needs.

Flow-Sensing
Monitor and react to system leaks or breaks.

Up to 4 Master Valve or Pump Start Connections
Options for connection of up to four Master Valve or Pump Start Relays utilizing TSM-4F or TSM-8F modules.

Run Times In Minutes or Seconds
Ability to set run times for less than a minute provides efficient watering for planter box, misting cycle, nursery, or syringe cycle needs.

Armchair Programming
Removable Timing Mechanism can be powered by 9V battery allowing for easy and comfortable programming.

Water Management Highlight

Flow-Sensing for Greater Water Savings

With flow-sensing capability that monitors up to three independent flow sensors, the controller consistently monitors for problems and takes action as needed to isolate breaks or system issues.

Specifications

Dimensions

- 273mm x 260mm x 117mm (10¾" x 10¼" x 4 5⁄8") W x H x D
- Weight: Indoor– 3,4 kg (7.5 lbs.); Outdoor– 3,2 kg (7.1 lbs.)

Electrical Specifications

- Input power:
  - 120 VAC, 60 Hz or 220/240 VAC, 50 Hz
  - 30 VA (internal and external plug-in type transformer)
  - UL, CUL-listed
- Station output power:
  - 24 VAC (60 Hz)
  - 0.50 amps (12 VA) per station maximum
  - 0.50 amps (12 VA) pump/master valve
  - 1.20 amps total load
- Surge Protection:
  - Standard: 6.0 KV common mode; 600 V normal mode
  - High Surge: 6.0 KV common mode; 6.0 KV normal mode

Specifications and Features

- Four programs with 16 total start times
- Three Scheduling choices
  - Seven-day calendar
  - 1- to 31-day interval with day exclusion
  - Odd/even days with day exclusion
- Station run times in minutes or seconds
- Programmable well recovery/station delay from 1 to 60 seconds or 1 to 60 minutes
- Pump start/master valve settable by program and station
- Operate up to three programs simultaneously
- Rain delay from one to 14 days and water budgeting from 1-200% in 10% increments
- Hot-swappable station modules
- Review feature quickly recaps all program information
- Short detection for faster troubleshooting
- Valve Test mode for quick system checks
- Multi-language capability (English, Spanish, French, Italian, German and Portuguese)
- Program erase
- 12/24-hour real-time clock
- Non-volatile memory

Optional Accessories

- TRS: Wired RainSensor
- TWRS-1/TWRFS-1: Wireless RainSensor or Wireless Rain/Freeze Sensor
- TFS: Flow Sensor

Warranty

- Five years

Up to 4 Master Valve/PS Connections

One on controller terminal block and 3 flow-sensing modules. Any station can be assigned to any MV. Options for a single station to activate both a controller and flow module MV/PS connection (e.g., MV and Booster Pump activation).

TMC-424E Series 220 VAC Model List	
Model	**Description**
TMC-424E-OD-50H*	Modular, Outdoor, 220VAC/50Hz
Base models include TSM-4 (4-station Module)	
Station Modules - ***Base model includes 4 stations***	
Model	**Description**
TSM-4	4-station Expansion Module
TSM-4H	4-station Expansion Module, High-Surge
TSM-4F	4-station Expansion Module, Flow-Sensing
TSM-8	8-station Expansion Module
TSM-8H	8-station Expansion Module, High-Surge
TSM-8F	8-station Expansion Module, Flow-Sensing

Custom Command™ Series

- **9, 12, 15, 18, 24, 36, 48 Stations**
- **Wall- or Pedestal-Mount**

With the highest surge protection in its price range, the Toro® Custom Command offers durability and performance in one rugged commercial-grade controller.

Features & Benefit

Versatile Runtimes
Run times from one minute to ten hours in one-minute increments meet the needs of standard or drip applications.

Independent Programs
Four fully independent programs and 16 start times that can run concurrently with start time overlap protection within each program.

High Surge Protection
Highest surge protection in its price range for lightning-prone areas.

Water Management Highlight

Wired RainSensor or Wireless Rain/Freeze sensors will stop irrigation when it rains or when temperature drops below a user-defined point.

WATER SMART®

EPA WaterSense® approved when used with Irritrol® Climate Logic®

Specifications

Dimensions
- 292 x 149 x 219mm (11½" x 5⅞" x 8⅝") W x H x D
- Weight: 3,6 kg (8 lbs)

Electrical Specifications
- Input Power
  - 120 VAC, 60 Hz or 230 VAC, 50 Hz
  - 50VA
- UL, CUL Listed
- Station output power
  - 24 VAC (60 Hz)
  - 0,50 amps (12 VA) per station maximum
  - 0,50 amps (12 VA) pump/master valve
  - 1,25 amps (30 VA) total load

Operating Specifications
- Three selectable watering schedules:
  - Seven-day calendar
  - Odd/even days with day exclusion
  - 31-day interval
- 365-day calendar with automatic compensation for leap year
- Rain delay from one to seven days
- Program stacking for simultaneous operation of one to four programs
- Season % Adjust by month
- Individual station manual start and manual start by program
- Independent program erase for each program
- Master valve/pump start operation selectable by program
- Available in 9, 12, 15, 18, 24, 36 and 48 station models
- Non-volatile memory retains programmed information in event of power failure
- Self-diagnostic circuit breaker that identifies and overrides faulty stations

Optional Accessories
- TRS: Wired RainSensor
- TWRS-1/TWRFS-1: Wireless RainSensor or Rain/Freeze Sensor

Warranty
- Five years

High-Surge Protection

With the highest surge protection in its competitive price range, a self-diagnostic circuit breaker and a five-year warranty, this controller withstands the test of time.

Custom Command Series 230 VAC Model List	
Wall-Mount Plastic Cabinet	
Model	**Description**
CC-P12-50HC	12-station
CC-P15-50HC	15-station
CC-P18-50HC	18-station
CC-P24-50HC	24-station
Wall-Mount Metal Cabinet	
CC-M36-50H	36-station
CC-M48-50H	48-station

TDC Series *(Toro Decoder Controller)*

- **100-200 Stations**
- **1, 2 or 4-Station Decoders**

For an energy efficient, highly cost-effective way to irrigate large commercial installations, you'll want the TDC Series from Toro®. Using a two-wire path to communicate to buried decoders, the TDC system eliminates high costs associated with traditional valve wiring, trenching and trouble-shooting.

Features & Benefit

New ISP Decoders
Industry leading surge protections up to 20 KV means less grounding in the field than competitive products.

Advanced Diagnostics
The TDC provides true two-way communication with each decoder in the field thus providing communication verification to decoders in the field as well as shorted or open solenoid conditions, making troubleshooting a breeze.

Low-Power Operating Costs
The TDC Decoders operate DC Latching Solenoids which utilize no power when valves are in operation.

Water Budget
Water budget by controller, by program and by station (Season Adjust) 0 to 250% in 1% increments.

Simple, Intuitive Programming
Installation and future servicing are quick and simple thanks to the large LCD display and the industry's most intuitive interface.

Key-locking, Front-Entry, Metal Cabinet
TDC offers a key-locking cabinet in both the outdoor and indoor model controllers. Constructed from heavy-duty powder-coated metal, this is a wall-mount cabinet that provides superior weather and vandalism resistance.

Modular Design
The base model of the TDC offers 100 stations with capability to easily add another module allowing up to 200-station control. This is ideal for phased projects. Independently fused wire paths (4 per 100 stations = 8 for 200 stations) provide protection to the controller in the event of a short in field wiring

Learn more at **Toro.com**

Specifications

Dimensions
- Cabinet: 356mm x 330mm x 152mm (14" x 13" x 6") W x H x D

Electrical Specifications
- Input Power: 120 VAC or 220/240 VAC (50/60 Hz)
- Station Output Power: Up to 38 VAC maximum; 3 amps maximum output
- Wiring-two wire path: Jacketed, twisted pair 14 AWG to 4572m (15,000 ft)
- Wiring-two wire path: Jacketed, twisted pair 16 AWG to 2576m (8,450 ft)
- Wiring-decoder to solenoid: Standard pair 14 AWG to 122m (400 ft)

Operating Specifications
- 20 KV surge protection with proper grounding of 10 Ohms or less at the controller
- 10 independent irrigation programs
- Six start times per program
- Day of the week programming, odd/even, interval (1-31 days)
- 0-255% adjust by controller, by program, by station
- Day Exclusion (remove a day from standard program)
- Programmable master valve and pump start, by station
- Manual start of each station or entire program
- Non-volatile memory retains programming
- Self-diagnostics circuit breaker skips shorted/open stations
- Two-way confirmation of decoder activation
- Activate up to 20 solenoids at up to 4,5 km (2.8 miles) away
- Programmable rain delay up to 31 days
- Water window calculator
- 10-digit alpha-numeric zone identification
- Remote-Ready and RainSensor-compatible
- Upgradeable to Sentinel® Central Control
- Utilizes DC latching solenoids for valve control

Optional Accessories

DEG-SG-LINE	Decoder, Line Surge Protector
118-2749SK	100 Station Expansion / Replacement Board (new style blue daughterboard)
102-7693SK	100 Station Expansion / Replacement Board (old style green daughterboard)
TRS	Wired RainSensor
TWRS-1/TWRFS-1	Wireless RainSensor or Wireless Rain/ Freeze Sensor

Warranty
- Five years

TDC Series Model List

Metal Wall Mount	
Model	**Description**
CDEC-SA-100	Turf Stand-Alone Decoder Controller, D.C. latching, 100 station output
CDEC-SA-200	Turf Stand-Alone Decoder Controller, D.C. latching, 200 station output
Two-Wire Station Decoders	
Model	**Description**
CDEC-ISP-1	1 station decoder w/ integrated surge protection
CDEC-ISP-2	2 station decoder w/ integrated surge protection
CDEC-ISP-4	4 station decoder w/ integrated surge protection

Sensors and Remote Overview

Model	Turf Guard®	TWRFS-1	TWRS-1	TRS	TFS
Page Number	72-74	74	74	75	76
Transmission Range (Line-Of-Sight)	Up To 152m (500'), unlimited with repeater	Up To 152m (500')	Up To 152m (500')		
Rain Sensing*		X	X	X	
Soil Moisture Sensing*	X				
Freeze Sensing*	Soil	Freeze			
Flow Sensing*					X
Dual Sensing	X				
Salinity Sensing	X				
Works With All 24V Controllers		X	X	X	
Communicates With Multiple Receivers	X				
Adjusts Irrigation Based On Amount Of Water Needed	With Sentinel®				
Replaceable Battery	X	X	X		
Automatic Resetting Bypass		X	X		
Cycle Delay Feature	With Sentinel®				
Power Failure Protection	X	X	X		
Signal Strength Indicator On Receiver		X	X		
Signal Strength Indicator On Sensor					
Multiple Mounting Options		X	X	X	
Flow Range					4,5-1892,7 LPM (1.2-500 GPM)
Diameter					½"; ¾"; 1"; 1½"; 2"; 3"; 4"
Warranty	1 Year of NSN	5 Years	5 Years		2 Years

*WaterSmart® Feature

Turf Guard® Soil Monitoring System

Learn more at **Toro.com**

- **Soil Moisture**
- **Salinity**
- **Temperature**
- **Web-based Interface**

The Toro® Turf Guard Wireless Soil Monitoring system helps you improve your turf, soil and water efficiency. The system is a revolutionary technology that lets you know what's going on beneath the surface of your turf, so you can make timely, more-informed adjustments.

Features & Benefits

Monitor Moisture Levels And Adjust Irrigation

Reduce water usage and improve playability without risking turf quality. Promote root growth by avoiding over watering. Detect dry areas before it impacts the turf's health.

Track Salt Build-up And Schedule Flushing

Take the guesswork out of monitoring and managing salinity levels. Get positive confirmation that our flushing reduced soil salts. Know when and how much water to flush with

Monitor Daily Soil Temperatures

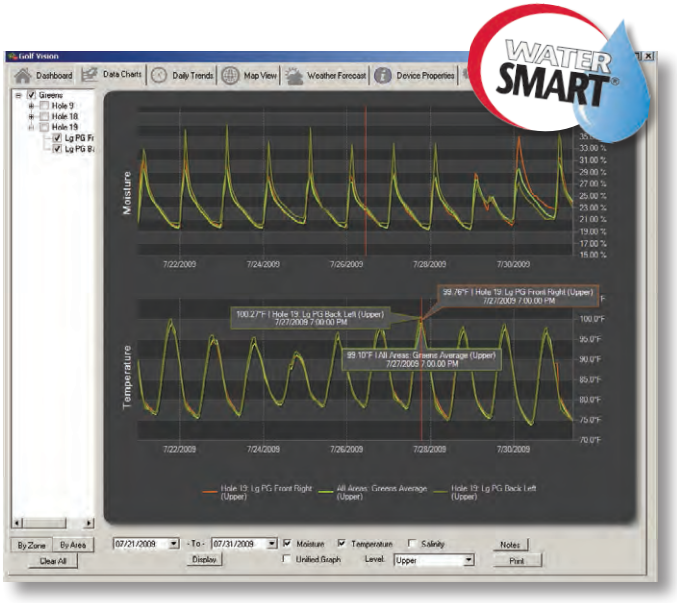
Predict peak soil temperatures early in the day to start remediation activities before an emergency. Schedule fungicide applications and pesticides for optimal effectiveness. Understand evaporation rates and syringing needs.

Wireless Network

No wires between the repeaters and the sensors, or the sensor and the probes means that sensors can be installed anywhere on your turf without disrupting play. Install sensors in other areas without having to trench or pull wires.

Water Management Highlight

No need to guess at how much water to apply for flushing an area, let Turf Guard tell you when enough water has been applied to push the salts out of the root zone. Don't wonder if you need to irrigate an area tonight, let Turf Guard tell you if the area is in an acceptable moisture level range.



Specifications

Dimensions

- Body: 50mm x 92mm x 156mm (2" x 3⅝" x 6⅛")
- Spikes: 44mm x 5mm (1¾" x 3/16")
- Installation Hole Diameter: 108mm (4¼")

Electrical Specifications

- Input Power:
  - Repeater: <.02A @ 6 VDC
  - Base Station: <.1A @ 120 VAC, 60 Hz or 220 VAC, 50 Hz

Temperature Specifications

- Operating: 0°C to 60°C (32°F to 140°F)
- Storage: -30°C to 82°C (-22°F to 180°F)

Sensing

- -17°C (0.1°F) Temperature resolution
- 0.1% Volumetric soil moisture content resolution
- 0.1 dS/m Soil conductivity resolution (Salinity)

Communication

- Repeater Range: Up to 1524m (5,000') line-of-sight
- Buried Sensor Range: Up to 152,4m (500') line-of-sight
- 900 MHz ISM Band FHSS Communication (U.S. Model)
- 869,4-869,65 MHz (EU Model)
- Additional licensing not required

Operating Specifications and Additional Features

- Password Protected Web-based Interface
- Data Display available in Sentinel® Software Interface
- Immediately ready for operation after installation
- Advanced MESH routing technology overcomes obstacles
- Repeater can plug into standard 120V/230V outlet
- Durable sensor housing is resistant to aeration damage
- Supports up to 500 sensors per system
- Expected sensor battery life of 3 years, field replaceable
- Sensor reading sent every 5 minutes
- Automatic network configuration and failure recovery
- Graphical system overview displays sensor data-at-a-glance
- Plots trends and compares historical and current readings
- Move quickly from system-wide averages to individual sensor readings

Warranty

- Comes with 1 year of NSN support (extended support plans available)

How it works:

Multiple sensors buried in a site at critical root zone levels.

Above-ground relays installed on or in existing irrigation controller enclosures.

Wireless MESH networking links all sensors to central computer

Moisture, Temperature and Salinity readings displayed in your office

Sensor

Measures soil moisture, temperature, and salinity.

Repeater

Can run off of a standard 120V/230V outlet

Multiple sensors can be run through just one repeater, no configuration required.

Base Station

Connects to Internet in the office.

Web-based Interface

View current sensor readings and historical data remotely from any Web-connected computer or Web-enabled Mobile Phone or PDA.

Turf Guard Model List

Model	Description
AU	
TG-S2-R-AU	Turf Guard Sensor With Replaceable Battery
TG-R-INT-AU	Repeater-Internal Mount
TG-R-EXT-AU	Repeater-External Mount
TG-TGB-AU	Base Station
TG-PS-AU	Power Conversion Board
TG-S2-BAT	Replacement Battery

Wireless RainSensor™

- **Rain or Rain/Freeze Sensor**
- **152,4m (500') Range**

Learn more at **Toro.com**

No wires. No hassle. Just reliable rain sensing that provides optimum water savings. Toro® innovative wireless technology provides easy to use, advanced features for prompt reaction when it starts to rain.

Specifications

Dimensions

- Transmitter: 44mm x 89mm x 44mm (1¾" x 3½" x 1¾") W x H x D
- Receiver: 51mm x 102mm x 44mm (2" x 4" x 1¾") W x H x D
- Weight: 0,4 kg (0.78 lbs.) product and carton

Electrical Specifications

- Transmitter Power: Two replaceable lithium cells
- (CR2032-3V)
- Receiver Power Source: 22-28 VAC/VDC, 100mA (from existing timer or optional transformer)
- Relay contacts output: Normally-opened or normally-closed; 3A @ 24VAC
- FCC, IC, AVA, UL, CUL, CE and C-tick approved

Specifications and Features

- Operating temperature: -28°C–49°C (-20° F to 120° F)
- Housing material: Weather and UV resistant engineered polymer
- Transmitting range: up to 152,4m (500') (line-of-sight) with adjustable antenna
- Sensor: maintenance free hygroscopic disks; adjustable rain sensitivity: 3mm-20mm (1/8" to 3/4")
- Low battery indicator
- Signal strength indicator/scale
- Rain delay feature that works intelligently with the rain sensor (unlike most controller-based rain delays)
- Fail-safe modes in the event of loss of communications or failed sensor
- Real-time outside temperature displayed on the LCD (TWRFS only)
- Five year easy to replace, standard coin batteries
- Versatile mounting options – one-piece Quick-Clip™ gutter bracket or ½"(13mm) conduit adapter
- Can control multiple receivers/controllers with one sensor transmitter

Warranty

- Five years

Features & Benefit

Smart Bypass™

Allows for system override at any time and resets automatically.

Rain/Freeze Combination

Features digital programmable accuracy – a fi st in the industry – The Freeze shutoff an be set from 2° to 7°C (35° to 45°F) in 0,5°C (2°F) increments.

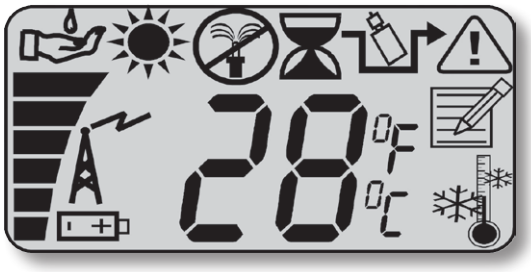
Water Management Highlight

Water Conservation Modes

Selectable water conservation modes delay resumption of irrigation by intelligently extending beyond mechanical reset time and can save you up to 30%* more water.

* Savings vary based on sensor setting, watering schedule and other conditions.

First LCD In A Wireless Rainsensor



Provides informative system feedback including outside temperature, and transmitter signal strength and battery life

Wireless RainSensor Model List

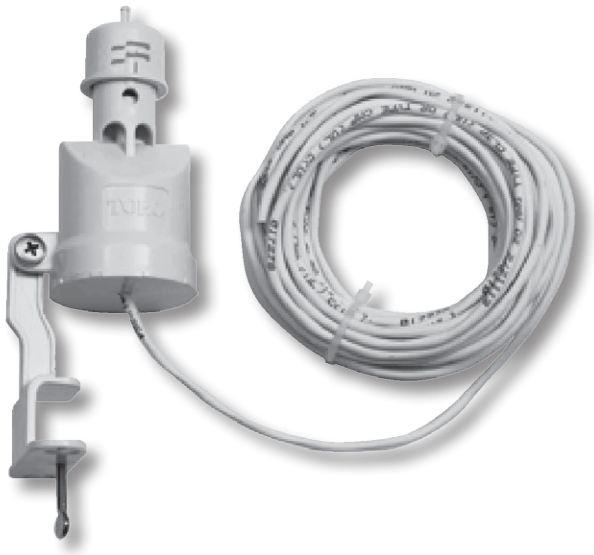
Model	Description
TWRS-I	Toro Wireless RainSensor, 433,92 MHz
TWRFS-I	Toro Wireless Rain/Freeze Sensor, 433,92 MHz

Wired RainSensor™

- **Wired Rain and Rain/Freeze Sensor**
- **Normally-Open or Normally-Closed**

Learn more at **Toro.com**

When it rains sometimes all you need is a simple sensor that ensures the job gets done. With multiple set-points for adjustable rain sensitivity and maintenance-free sensing disks, Toro's TRS provides the reliability required.



Features & Benefit

Compatible With All Toro And Other Manufacturers' Controllers

Universal Normally Open and Normally Closed operation for compatibility with all controllers that are designed to accept a sensor device.

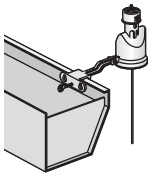
Maintenance Free Hygroscopic Discs

Industry standard sensing discs with adjustable rain shut-off indexes at 3mm (1/8"), 6mm (1/4"), 13mm (1/2") and 20mm (3/4") of rain.

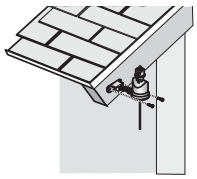
25 (7,6m) Feet Of UV-Resistant Cable

Includes 7,6m (25 feet) of white outdoor-rated, UV-resistant cable.

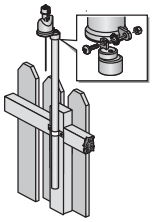
Three Mounting Options



Quick Clip gutter bracket



Wall mount



Conduit adapter

Specifications

Dimensions

- Transmitter: 44mm x 89mm x 44mm (1¾" x 3½" x 1¾") W x H x D
- Weight: 0,4 kg (0.80 lbs) product and carton

Specifications and Features

- Relay contacts output, normally open or normally closed: 3A, 24 VAC
- Operating temperature: -28°C to 49°C(-20° F to 120° F)
- Low profile design and UV-resistant housing for sensor
- No special tools required for installation

Warranty

- Two years

Wired Rain/Freeze Sensor

New Wired Rain/Freeze Sensor automatically suspends irrigation when the temperature drops below 2,8°C (37° F) saving piping networks and irrigation components.

Wired RainSensor Model List

Model	Description
TRS 53853	Toro Wired RainSensor Toro Wired Rain/Freeze Sensor

TFS *(Flow Sensors)*

- ½" , ¾" ,1" , 1½" , 2" , 3", 4" BSP Thread
- 4,5-1892,7 LPM (1.2 GPM to 500 GPM)

Learn more at **Toro.com**

Features & Benefit

Effective Flow Monitoring Even In Flows Less Than 19 LPM (5 GPM)

Effective in ranges from 4,5-1892,7 LPM (1.2 GPM to 500 GPM). Teamed with the Toro TMC-424, 13mm, 20mm, 25mm (½", ¾" and 1") sensors provide a cost-effective flow monitoring and alarm system.

Compatible With Competitive Controllers

In addition to the TORO compatible controllers – TDC+, TMC-424E, TIS-PRO and Sentinel® – these flow sensors work with any controller or control system compatible with frequency output flow sensors (pulses per second proportional to flow velocity).

Specifications

Specifications and Features

- Simple impeller-based design
- Potted electronics designed for valve box or underground applications
- Sensor pre-installed in tee
- Removable sensor design for easy replacement without removal of tee
- Socket end tee
- Output: 2-wire, unscaled pulse–pulse width 5msec +/- 25%
- Frequency: 3.2 to 200 Hz
  - Pressure Rating:
    13, 20 and 25mm (½", ¾" and 1"):
    up to 10,3 Bar (150 psi)
  - 37, 50, 75, and 100mm (1½", 2", 3" and 4"):
    up to 6,8 Bar (100 psi)
- Temperature Rating: Up to 60° C) (140° F
- Flow Range (Velocity):
  - 13, 20 and 25mm (½", ¾" and 1"):
    0,6-6,0m (2'-20') per second
  - 37, 50, 75, and 100mm (1½", 2", 3" and 4"):
    0,1-9,1m (0.5'-30') per second
- Tee:
  - 13, 20 and 25mm (½", ¾" and 1"): Schedule 40 PVC
  - 37, 50, 75, and 100mm (1½", 2", 3" and 4"):
    Schedule 80 PVC
- Sensor Housing: Potted, PPS
  - Impeller:
    13, 20 and 25mm (½", ¾" and 1"): 300SST
    37, 50, 75, and 100mm (1½", 2", 3" and 4"):
    Glass-filled nylon
- Shaft: Tungsten Carbide
- Bearing: UHMWPE
- Wires: 18AWG direct burial shielded cable

Warranty

- Two years

TFS Series Model List

Model	Description	Suggested Operating Range:
• TFS-050	½" Flow Sensor	4,5-45 LPM (1.2-12 GPM)
• TFS-075	¾" Flow Sensor	10,2-65 LPM (2.7-28 GPM)
• TFS-100	1" Flow Sensor	18,9-189 LPM (5-50 GPM)
• TFS-150	1½" Flow Sensor	18,9-379 LPM (5-100 GPM)
• TFS-200	2" Flow Sensor	38-757 LPM (10-200 GPM)
• TFS-300	3" Flow Sensor	76-1135 LPM (20-300 GPM)
• TFS-400	4" Flow Sensor	151-1892 LPM (40-500 GPM)

TFS Series Flow Sensor Performance Data

Sensor Model	TFS-050	TFS-075	TFS-100	TFS-150	TFS-200	TFS-300	TFS-400
Size	13mm (1/2")	20mm (3/4")	25mm (1.0")	37mm (1.5")	50mm (2.0")	75mm (3.0")	100mm (4.0")
K Value	00.78	0.1563	0.26112	1.699	2.8249	8.309	13.74283
Offse	0.9	0.9	1.2	-3.016	0.1435	0.227	0.23707

Central Control Overview

Model	Sentinel® Central Control
Maximum Number of Satellites	999 (total)
Maximum Stations Per Satellite	204
Number of Programs	16 per Satellite
Ability To Make Program Changes In Field	X
Programming By Time	X
Programming By Water Volume	X
*Automatic ET-Based Runtime Adjustment	X
Programmable Valve Sequence	X
*Flow Optimization	X
Alarms & Reports	X
Station Operation Recording	X
*Water Use Recording	X
*Historical Water Use Comparison	Daily, Weekly, Yearly
Importing Maps	X
Software Only Option	X
Software + Computer Option	X
Windows® Compatible	X
Toro NSN® Support Inlcuded	Two years

Model	Small Metal Wall Mount (24 VAC Terminals)	Stainless Steel Wall Mount (24 VAC Terminals)	Plastic Pedestal (24 VAC Terminals)
Number Of Stations	12, 24, 36, 48, 96 with MapTo	12, 24, 36, 48, 96 with MapTo	12, 24, 36, 48, 60, 72, 84, 96
Modular		X	X
MapTo Option	X	X	X
*ET-Adjust	X	X	X
*Flow Sensing Compatible	X	X	X
Remote (SHHR) Compatible	X	X	X
*RainSensor Compatible	X	X	X
Number Of Programs	16	16	16
Simultaneous Program Operation	Up to 2 Amps	Up to 2 Amps	Up to 2 Amps
Number Of Start Times	8 per Program	8 per Program	8 per Program
Max Station Runtime	4 Hours 15 Minutes	4 Hours 15 Minutes	4 Hours 15 Minutes
Days Of The Week Programming	X	X	X
Odd/Even Programming	X	X	X
Interval Programming	X	X	X
*Flow Monitoring	X	X	X
*Water Use Logging	X	X	X
Valves Per Station	2	2	2
Multiple Levels Of High Surge Protection	Level 1, Level 3 & Level 4	Level 1, Level 3 & Level 4	Level 1, Level 3 & Level 4
Warranty	Five years	Five years	Five years

*WaterSmart® Feature

Sentinel® Central Control

- **Central Control Software**
- **PC-based**
- **ET-based Watering**

Learn more at **Toro.com**

Sentinel Central Control from Toro® is a powerful system that literally "stands guard" over large irrigation sites. With the ability to control up to 999 field sate lites from one location, users have a water management tool that provides reliability, accuracy and water savings.

Features & Benefit

Simple To Use
Microsoft® Windows-based software – daily operations and scheduling are made quick and easy.

Features For Water Management
ET-based watering, fl w sensing and optimization, water usage report with historical comparison.

Smartphone and Tablet Connectivity
The new Sentinel WMS software package also includes iPhone® and iPad® connectivity for remote programming and alerts on ALL new systems.

Multiple Communication Options
Communication options like radio, telephone, fiber optics cellular, and Ethernet can be mixed and matched to meet system requirements.

Distributed Programming
Stores irrigation programs in the computer while allowing irrigation control at the satellite level, ensuring the loss of a component does not result in the loss of irrigation across the system.

Toro NSN® Support
All centrals come with a minimum of two years of NSN support – unlimited 24-hour toll-free support with 24/7/365 emergency paging

iPhone® and iPad® Connectivity

Water Management Highlight

Water savings – ET-based
(multiple weather station options)

Effective ET-based system management can lead to water savings of 25% to 30% per year. As an additional source of savings, pipeline breaks, malfunctioning valves, and missing heads are automatically detected and shut down, preventing excessive water loss.

Specifications

Specifications and Features

- Control up to 999 field satellites
- Group controllers into "systems" for system-wide adjustments:
  - Rain Days
  - Percent Adjust
  - ET-Adjustment from shared weather source
- Field changes to controller programs can be uploaded to computer
- Support for the System Administration
  - Set system, program and satellite descriptions
  - Map valve positions on site maps
  - Mark special dates on on-screen calendar
- Alarm reporting of any system component failure, including communications, over/under-flow conditions, electrical problems or power failure
- Extensive reporting features:
  - Run time reports
  - Water usage
  - Alarms
  - Logging of system changes
- Water use, rain and ET accumulation
- Flow optimizing to maintain optimum flow and shorten water window
- Ability to redefine valve sequence without physically changing wire terminations in field satellite
- Information overview by group and satellite
- System status indications for individual field satellite
- On-line help screens
- Map-based feedback on system status
- Standard telephone modem or internet connection allows for remote access to central software via pcAnywhere™

Warranty

- Two year extendable by continuous NSN subscription

Sentinel Communications Options
Narrowband Radio (450-470 MHz)
Ethernet/Internet
Cell Enabled Data Modem
Landline Telephone
Spread Spectrum Radio (900 MHz)
Fiber Optics

Distributed Intelligence

Each Sentinel® controller is a fully intelligent unit with program data stored at both the field sate lite and within the central computer. In the event a computer or master controller goes off line there will be no loss of irrigation. True two-way communication allows programming changes to occur at the on-site field controller and uploaded to the central computer. Protection from unauthorized changes is ensured as the controller program can be easily compared to the program saved in the central computer.

Sentinel Central Model List	
Central Software/Computer Models	
Model	**Description**
SGIS-1-T	Software Only w/2 years of NSN Support
SGIS-1-C	Software and computer w/2 years of NSN Support
SGIS-1-0	Software, Computer Equip, Peripheral Hardware w/2 years of NSN Support

Sentinel® Controllers

- Modular to 48 Stations
- 96 Stations with MapTo
- Remote Ready
- Flow Sensor Ready

Learn more at **Toro.com**

Toro® Sentinel field sate lites are commercial grade, modular units that do the irrigation control work in the field Designed to operate in both stand-alone and central mode.

The newly-redesigned satellite controller offers a number of new features and enhancements, including a completely-redesigned interface for easier standalone programming that incorporates a large backlit graphical display, new shortcut buttons for frequently-used functions, as well as a number of other additions.

Cabinet choices

WS1
Powder-coated, wall-mount enclosure

PP1
Double-sided, plastic, top-entry pedestal-mount enclosure with dual backplates and junction box

Features & Benefit

Flow Sensing
Reads, displays and reacts to under and over fl w situations and track water usage. No additional circuit boards are required.

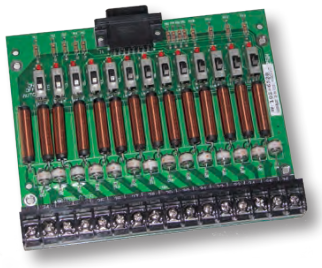
Weather Based Irrigation
Sentinel waters according to ET values by using one or a number of onsite weather stations.

Manual Station Outputs
Flip the toggle switch to manually operate stations.

True Two-Way Communication
Allows for changes in the field to be uploaded to the central computer and audible confirmation of hand held radio to satellite commands.

Advanced Troubleshooting
The new satellite controller has significantly more internal memory, allowing for extensive event logging and data storage, making it easier to diagnose issues in the field

Modular
Modular in 12-station increments, up to 48-stations.



Water Management Highlight

The new satellite controller can easily be upgraded to operate with Turf Guard® wireless soil sensors, communicating directly with up to 16 sensors per controller (1 per program), continually measuring moisture, temperature and salinity levels in the soil, and adjusting irrigation as needed.

Specifications

Dimensions

- Small wall-mount:
  260 x 387 x 133mm (10¼" x 15¼" x 5¼") W x H x D
- Stainless steel pedestal-mount:
  435 x 876 x 219mm (17⅛" x 34½" x 8⅝") W x H x D
- Plastic Pedestal-mount:
  432 x 1016 x 406mm (17" x 40" x 16") W x H x D
- Weight:
  - Small Metal Wall-mount: 9,5 kg (21 lbs)
  - Stainless steel pedestal-mount: 29,0 kg (64 lbs)
  - Plastic Pedestal: 27,2 kg (60 lbs)

Electrical Specifications

- Input power:
  - 120 VAC/60 Hz
  - 220-240 VAC/50 Hz
- Station output power:
  - 24 VAC
  - 1.0 amps per station maximum
  - 2.0 amps total load
- Surge protection: Level 4, 24 V output boards, 20 KV @ 10 KVA
- UL Listed

Specifications and Features

- 16 programs
- Eight start times per program
- 6-week scheduling calendar
- Station runtimes from one minute to 4 hours and 15 minutes
- Global adjustment from 0-255%
- Flow sensor ready
- Handheld remote ready
- Turf Guard ready
- Two sensor inputs included for rain sensors or other switch sensors

Specifications and Features (cont.)

- Ability to connect to a laptop to download large station count programs
- Upgrade to a central computer system without additional field satellite hardware or costs
- Program single or multiple stations to operate sequentially or start a program or multiple programs with just a few keystrokes
- Ability to read open- or closed-contact switches in any station count configuration
- Current monitor will disable a station if excessive amp draw is detected
- Non-volatile memory will retain all programming and real-time data for 10 years
- Multi-language display: English, Spanish, French, and Italian
- Operating temperature: -10° to 60°C(14° to 140°F)
- Options from Level 1 to Level 4 surge protection offer multiple choices to meet regional lighting protection needs: Level 4 surge rated to 20 KV @ 10 KVA

Optional Accessories

- TRS: Wired RainSensor
- TWRS/TWRFS: Wireless RainSensor or Wireless Rain/Freeze Sensor
- TFS: Flow Sensors
- SHHR: Hand Held Remote
- TS-TGB-AU: Turf Guard Base Station Module for Sentinel Satellite Connectivity

Warranty

- Five years

Specifying Information—Sentinel

TS-XXX-XX-XXX-NR-50HC

Configuration	Wireless Range	Station Count	Enclosure	Communication to Central	Power Supply
TS	XXX	XX	XXX	NR	50HC
TS— Conventional Toro Sentinel Satellite	WSR— Short Range Wireless WLR— Long Range Wireless Blank— wired	12—12-station 24—24-station 36—36-station 48—48-station	WS1—Powder-coated Wall Mount (Small) PP1— Plastic Pedestal Mount (Large) PP2— Sand Stone Plastic Pedestal Mount Enclosure PS1— Stainless Steel Pedestal Mount (Large)	NR—No Radio	50HC—220-240V/50Hz

Example: A 24-station wired Sentinel Controller in a powder-coated wall-mount cabinet would be specified as: **TS24WS1NR50HC**

NOTE: Maxon® radio for wireless communication to the central and handheld is sold separately and comes with an installation kit and manual to install on site.
NOTE II: When required to mount Maxon® radio and antenna, a note on the purchase offer is requested.

Hand Held Remote

The Toro® Sentinel® remote allows users to conduct irrigation checks, and fully operate the system without opening a field sate lite enclosure or needing a second person. This remote also serves as a two-way voice radio, allowing easy communication with other crew members.

Specifications

Dimensions

- Transmitter size (with antenna):
- 60mm x 44mm x 279mm (2⅜" x 1¾" x 11") W x H x D

Specifications and Features

- Simple command set
- Accesses controller and satellite features from the field
- Direct access to controllers (central control software not required)
- Two-way voice communication capability
- System On and Off command activation
- Five-watt radio
- 120 selectable and programmable channels
- Range: 3,2 to 4,8 km (2 to 3 miles)

Warranty

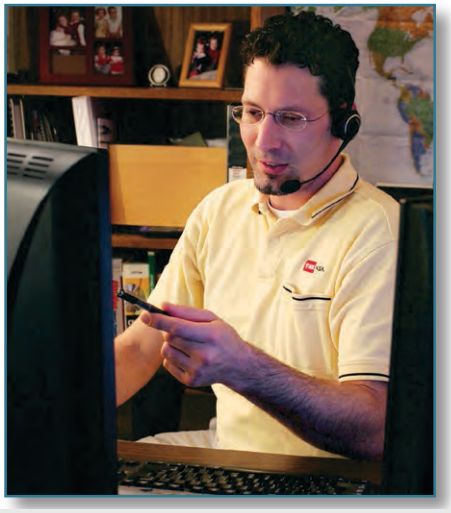
- Two years

Specifying Information—Hand Held Remote

Model	Description
SHHR	Sentinel Hand Held Radio

NSN® National Support Network

Isn't it nice to know someone's got you covered? Available day or night, you can count on the Toro® National Support Network (NSN) team for total operational confidence



Support for the Sentinel® Central Control

- Every Sentinel central package comes standard with 2-years NSN support
- Unlimited 24-hour support Technical assistance by email with next business day response
- Remote PC assistance where connectivity is available
- Support of Microsoft® operating system software when purchased from NSN
- NSN lab for field issue duplication and diagnostics
- Technical bulletins
- Remote data storage for duration of subscription period
- Extended warranty on central hardware components with continuous subscription

Features & Benefit

24-Hour, Seven-Day, 365 Support

Worldwide, Toro NSN is always available to answer your questions, troubleshoot your system and solve your problems. And if needed, our rapid central computer and component replacement service ensures minimal disruption to the operation of your irrigation system

The Confidence Of Working With The Best In The Business

NSN has a diagnostic lab on-site for each irrigation platform, all field hardware, plus ancillary products. The lab is used to duplicate field issues and investigate causes and solutions as part of Toro's commitment to continuous improvement. NSN is dedicated to irrigation—we know your business and expectations.

New System Support, Flexible Options To Renew

Every new Sentinel offering includes Toro NSN support. To protect your Toro investment long-term, choose a renewal option that gives you exactly what you need for continued reliable, cost-effective support and extended warranty, including equipment upgrades to keep your technology current and powerful.

TORO NSN.

Formulas and Conversion Factors

Formulas				
Precipitation Rates	U.S. (spacing in feet)		Metric (spacing in meters)	
Equilateral Triangular Spacing	P.R. (in/hr) =	$\frac{(\text{GPM of 360}) \times 96.25}{(\text{Head Spacing})^2 \times .866}$	P.R.(mm/hr) =	$\frac{m^3/hr \text{ of } 360 \times 1000}{(\text{head spacing}^2) \times ,866}$
Square/Rectangular Spacing	P.R. (in/hr) =	$\frac{(\text{GPM of 360}) \times 96.25}{\text{Head Spacing} \times \text{Row Spacing}}$	P.R.(mm/hr) =	$\frac{m^3/hr \text{ of } 360 \times 1000}{\text{Head Spacing} \times \text{Row Spacing}}$
Area and Flow	P.R. (in/hr) =	$\frac{(\text{Total GPM of Zone}) \times 96.25}{\text{Total Irrigated Square Feet of Zone}}$	P.R.(mm/hr) =	$\frac{(\text{Total LPM of Zone}) \times 60}{\text{Total Irrigated } m^2 \text{ of Zone}}$
Horsepower	H.P. =	$\frac{\text{GPM x Ft. of Head}}{3960 \times \text{Pump Efficiency (expressed as a decimal)}}$	H.P. =	$\frac{\text{LPM x Meters of Head}}{3433 \times \text{Pump Efficiency (expressed as a decimal)}}$
Station Run Time	S.R.T. (min/wk) =	$\frac{\text{Total Weekly Req'd (inch/wk)} \times 60 \text{ (min/hr)}}{\text{Precipitation Rate (in/hr)}}$	S.R.T. (min/wk) =	$\frac{\text{Total Weekly Req'd (mm/wk)} \times 60 \text{ (min/hr)}}{\text{Precipitation Rate (mm/hr)}}$
Pipe Velocity	V (ft/sec) =	$\frac{0.4085 \times \text{Flow (GPM)}}{(\text{Inside Pipe Diameter in Inches})^2}$	V (m/sec) =	$\frac{1273 \times \text{Flow (liters/sec)}}{(\text{Inside Pipe Diameter in Millimeters})^2}$
Slope	S =	$\frac{\text{Rise (Feet)}}{\text{Run (Feet)}}$	S =	$\frac{\text{Rise (Meters)}}{\text{Run (Meters)}}$
Scheduling Coefficient	S.C. =	$\frac{\text{Average Precipitation Rate (in/hr)}}{\text{Lowest Precipitation Rate (in/hr)}}$	S.C. =	$\frac{\text{Average Precipitation Rate (mm/hr)}}{\text{Lowest Precipitation Rate (mm/hr)}}$

To Convert	From	To	Multiply By
Area	acres	$feet^2$	43560
	acres	$meters^2$	4046.8
	$meters^2$	$feet^2$	10.764
	$feet^2$	$inches^2$	144
	$inches^2$	$centimeters^2$	6.452
	hectares	$meters^2$	10,000
	hectares	acres	2.471
Power	kilowatts	horsepower	1.3410
Flow	$feet^3$/minutes	$meters^3$/second	0.0004719
	$feet^3$/second	$meters^3$/second	0.02832
	$yards^3$/minute	$meters^3$/second	0.01274
	gallons/minute	$meters^3$/hour	0.22716
	gallons/minute	liters/minute	3.7854
	gallons/minutes	liters/second	0.06309
	$meters^3$/hour	liters/minute	16.645
	$meters^3$/hour	liters/second	0.2774
	liters/minute	liters/second	60
Length	feet	inches	12
	inches	centimeters	2.540
	feet	meters	0.30481
	kilometers	miles	0.6214
	miles	feet	5280
	miles	meters	1609.34
	millimeters	inch	0.03937

To Convert	From	To	Multiply By
Pressure	psi	kilopascals	6.89476
	psi	bars	0.068948
	bars	kilopascals	100
	psi	feet of head	2.31
Velocity	feet/second	meters/second	0.3048
Volume	$feet^3$	gallons	7.481
	$feet^3$	liters	28.32
	$meters^3$	$feet^3$	35.31
	$meters^3$	$yard^3$	1.3087
	$yards^3$	$feet^3$	27
	$yards^3$	gallons	202
	acres/feet	$feet^3$	43,560
	gallons	$meters^3$	0.003785
	gallons	liters	3.785
	imperial gallons	gallons	1.833

Conductor size-AWG/Metric

AWG Size	Area (mm^2)	Nearest Metric Size
18	0,82	1,0
16	1,31	1,5
14	2,08	2,5
12	3,31	4,0
10	5,26	6,0
8	8,36	10,0
6	13,29	16,0
4	21,14	25,0

Drip Equations

Number of Emitters per Plant

$$\text{Emitters per plant} = \frac{\text{canopy area (square meters)} \times 0.75}{\text{wetted area per emitter (square meters)}}$$

Wetted Area per Emitter		
Soil Type	Diameter (meters)	Area (meters^2)
Sand	0,6-0,9	0,3-0,7
Sandy Loam	0,9-1,4	0,7-1,5
Loam	0,9-1,5	0,7-1,9
Clay-Loam	1,2-1,8	1,2-2,6
Clay	1,5-2,1	1,9-3,5

Flow per zone

$$\text{Flow per zone (lpm)} = \frac{\text{total number of drippers x dripper fl w rate (lph)}}{\text{60 (minutes)}}$$

Precipitation Rate for Evenly Spaced Single Laterals and Emitters

Precipitation Rate for Drip Laterals (mm/hr)							
Emitter Flow (lph)	Emitter Spacing (cm)	Spacing Between Drip Laterals (cm)					
		15	31	46	61	76	91
1,9	31	41,1	20,6	13,7	10,2	8,1	6,9
1,9	46	27,4	13,7	9,1	6,9	5,6	4,6
1,9	61	20,6	10,2	6,9	5,1	4,1	3,3
3,8	31	79,0	39,6	26,4	19,8	15,7	13,2
3,8	46	52,6	26,4	17,5	13,2	10,4	8,9
3,8	61	39,6	19,3	13,2	9,9	7,9	6,6

Precipitation Rate Formula

$$\text{Precipitation Rate (mm/hr)} = \frac{10\,000 \times \text{Emitter Flow (lph)}}{\text{Lateral Spacing (cm)} \times \text{Emitter Spacing (cm)}}$$

Note: this formula applies to evenlty spaced drip irrigation and emitters

Precipitation Rate for a Single Lateral

Precipitation Rate for a Single Row of Dripline in a Contained Landscape (mm/hr)						
Emitter Flow (lph)	Emitter Spacing (cm)	Width of Contained Landscape (m)				
		0,3	0,6	0,9	1,2	1,5
1,9	31	20,6	10,2	6,9	5,1	4,1
1,9	46	13,7	6,9	4,6	3,3	2,8
1,9	61	10,2	5,1	3,3	2,5	2,0
3,8	31	39,6	19,8	13,2	9,9	7,6
3,8	46	26,4	13,2	8,9	6,6	5,3
3,8	61	19,8	9,9	6,6	4,8	4,1

Precipitation Rate Formula

$$\text{Precipitation Rate (mm/hr)} = \frac{10\,000 \times \text{Emitter Flow (lph)}}{\text{Lateral Spacing (cm)} \times \text{Emitter Spacing (cm)}}$$

Thermal Effects on Drop Hose and Dripline

For recurring, ambient temperatures above 73°F (23°C), multiply pressure rating of selected tubing by the appropriate FACTOR from the table below. Result will be the temp-corrected maximum pressure rating for the tubing selected. For temperatures not shown but between 73°F (23°C) and 140°F (60°C), interpolate to obtain the temp-corrected maximum pressure. Use this information to select the appropriate pressure regulator to assure tubing life expectancy and warranty coverage

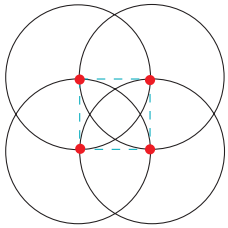
°F	°C	Factor
73	23	1,00
80	27	0,92
90	32	0,81
100	38	0,70
110	43	0,60
120	49	0,45
130	54	0,32
140	60	0,18

Precipitation Rate and Sprinkler Spacing

Sprinkler Spacing
The Toro Company does not recommend designing for 0 mph wind conditions.
Design in consideration of the worst wind conditions.

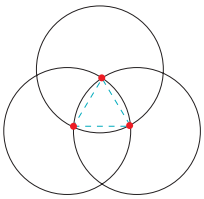
Precipitation Rate Formulas (mm/hr)

Square-spaced sprinklers in pattern:



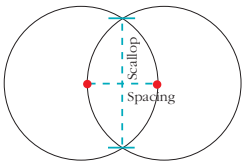
$$\frac{m^3/hr \text{ of full circle} \times 1000}{(Spacing)^2}$$

Triangular-spaced sprinklers in pattern:



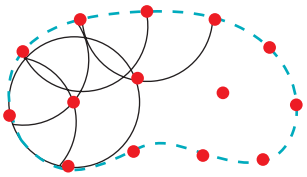
$$\frac{m^3/hr \text{ of full circle} \times 1000}{(Spacing)^2\ (0.866)}$$

Single row:



$$\frac{m^3/hr \text{ of full circle} \times 1000}{(Spacing)\ (Scallop)}$$

Area and flow:



$$\frac{\text{Total } m^3/hr \text{ of full circle} \times 1000}{\text{Total irrigated square meters of zone}}$$

Recommended Sprinkler Spacing in Wind			
Wind	**Square Spacing**	**Triangular Spacing**	**Single Row**
No Wind	55%	60%	50%
7 kph (4 mph)	50%	55%	50%
13 kph (8 mph)	45%	50%	45%
Toro does not recommend designing for 0 KPH wind conditions. Design in consideration of the worst wind conditions.			

Maximum Precipitation Rates (Metric)								
Maximum Precipitation Rates: Millimeters Per Hour								
Soil Texture	**0 to 5% slope**		**5 to 8% slope**		**8 to 12% slope**		**12% + slope**	
	Cover	**Bare**	**Cover**	**Bare**	**Cover**	**Bare**	**Cover**	**Bare**
Coarse sandy soils	50,8	50,8	50,8	38,1	38,1	25,4	25,4	12,7
Coarse sandy soils over compact subsoils	44,5	38,1	31,8	25,4	25,4	19,1	19,1	10,2
Light sandy loams uniform	44,5	25,4	31,8	20,3	25,4	15,2	19,1	10,2
Light sandy loams over compact subsoils	31,8	19,8	25,4	12,7	19,1	10,2	12,7	7,6
Uniform silt loams	25,4	12,7	20,3	10,2	15,2	7,6	10,2	5,1
Silt loams over compact subsoil	15,2	7,6	12,7	6,4	10,2	3,8	7,6	2,5
Heavy clay or clay loam	5,1	3,8	3,8	2,5	3,0	2,0	2,5	1,5

The maximum PR values listed above are as suggested by the United States Department of Agriculture.
The values are average and may vary with respect to actual soil condition and condition of ground cover

Method of Wire Sizing for Electrical Components of an Automatic Irrigation System

Data Needed

- Maximum current draw of the electrical unit (valve or controller) in amperes (I)
- Distance in meters (one way) to the electrical unit (F)
- The allowable voltage drop in the wire without affecting functions of the electrical unit (Vd)

Steps

1. Calculate the maximum allowable wire resistance per 300 meters with the following formula:

$$R = \frac{152 \times Vd}{F \times I}$$

where R = allowable wire resistance per 305 meters (1000').

2. Select the wire size from Chart #2 which has a resistance less than that calculated in the above formula.

Example: A valve with a minimum operating voltage of 20 volts and inrush current of 0.30 amps is to be located 815m from a controller. The controller minimum output voltage is 24 V ac.

The allowable voltage drop
(Vd) = 24 – 20 = 4 volts
The distance to valve (F) = 815m
The current draw (I) = 0.3 amps

$$R = \frac{152 \times 4}{815 \times .3} = 2.45 \text{ ohm/300m}$$

From Chart #2 we find that #14 AWG wire has slightly too much resistance. Therefore, choose #12 AWG copper wire.

The accompanying charts are useful for quick and easy selection of wire sizes for valves with standard and optional solenoids. Chart #3 is set up to provide maximum wire runs given a standard 24 V ac valve with a minimum operating voltage of 20 volts and a controller output of 24 V. ac Chart #4 is a multiplier factor for determining maximum wire runs for other controller output voltages and optional solenoids.

Example: Determine maximum wire run to a valve with model 24 V ac-D solenoid and controller output voltage of 26 volts and #14 control and ground wire.

From Chart #3 we find a length of 789m with #14 ground and control wire. From Chart #4 the multiplier factor at 26 V ac controller output with a model 24 V ac-D solenoid is 4.33. Therefore, the maximum wire distance to the valve is: 4.33 x 789m = 3416m.

** This assumes control wire and ground wire are the same size.*

Minimum Operating Voltages at Various Static Pressures (standard 24 V ac solenoid)

Chart 1

Minimum Solenoid Operating Voltage Under Various Line Pressure		
Line Pressure	Voltage (Internal Bleed Configurations)	Voltage (External Bleed Configurations)
200 psi (13,8 Bar)	21,1	
175 psi (12,1 Bar)	20,2	
150 psi (10,3 Bar)	19,1	20,0
125 psi (8,6 Bar)	18,2	19,1
100 psi (6,9 Bar)	17,1	18,2
75 psi (5,2 Bar)	16,1	17,3
50 psi (3,4 Bar)	16,0	16,4

Chart 2

Copper Wire Resistance of Various Sizes		
Sizes AWG	Sizes mm^2	Resistance at 20°C Ohms per 300m
4	25,0	0,25
6	16,0	0,39
8	10,0	0,63
10	6,0	1,00
12	4,0	1,59
14	2,5	2,53
16	1,5	4,04
18	1,0	6,41

Chart 3

Maximum One-way Distance (m) Between Controller and Valve (standard 24 VAC solenoid) †							
	Valve Wire Sizing						
Ground Wire	Control Wire						
	18 AWG (1,0mm^2)	16 AWG (1,5mm^2)	14 AWG (2,5mm^2)	12 AWG (4,0mm^2)	10 AWG (6,0mm^2)	8 AWG (10,0mm^2)	6 AWG (16,0mm^2)
18 AWG (1,0mm^2)	311	384	448	500	539	567	588
16 AWG (1,5mm^2)	384	497	610	710	796	856	902
14 AWG (2,5mm^2)	448	610	789	969	1131	1265	1366
12 AWG (4,0mm^2)	500	710	969	1256	1539	1798	2009
10 AWG (6,0mm^2)	539	796	1131	1539	1993	2448	2859
8 AWG (10,0mm^2)	567	856	1265	1798	2448	3170	3892
6 AWG (16,0mm^2)	588	902	1366	2009	2859	3892	5041

† Solenoid Model: 24 V ac Pressure: 10,3 Bar Voltage Drop: 4 V Min. Op. Voltage: 20 V Amperage (peak): 0.3A

Multiplier Factor for Various Controller Output Voltages and Optional Low-voltage Solenoids

Chart 4

Controller Output Voltage	24-Volt Solenoids		
	24 VAC	24 Vac-D	24 VDC
28	2,00	5,77	5,45
27	1,75	5,05	4,77
26	1,50	4,33	4,09
25	1,25	3,61	3,41
24	1,00	2,88	2,73
23	,75	2,16	2,05
22	,50	1,44	1,36

Chart 5

Controller Output Voltage	12-Volt Solenoids		
	12 VAC	12 Vac-D	12 VDC
16	,58	2,50	1,96
15	,50	2,08	1,63
14	,41	1,67	1,30
13	,33	1,25	,98
12	,25	,83	,65
11	,17	,42	,33

Toro Limited Warranty for Irrigation Products

The Toro Company and its affiliate, Toro Warranty Company, pursuant to an agreement between them, jointly warrants to the owner, each new piece of irrigation product (featured in the current catalog at date of installation) against defects in material and workmanship for a period described herein, provided they are used for irrigation purposes under manufacturer's recommended specifications.

During the warranty period, we will repair or replace, at our option, any part found to be defective. Your remedy is limited solely to the replacement or repair of defective parts. This warranty does not apply (i) to Acts of God (e.g., lightning, flooding, etc.) unless specifically listed under the Extended Lightning Protection Warranty provided herein; or (ii) to products not manufactured by Toro when used in conjunction with Toro products; or (iii) where equipment is used or installation is performed in any manner contrary to Toro's specifications and instructions, or where equipment is altered or modified.

Return the defective part to your irrigation contractor or installer, or your local distributor.

Neither Toro nor Toro Warranty Company is liable for indirect, incidental or consequential damages in connection with the use of equipment, including but not limited to: vegetation loss, the cost of substitute equipment or services required during periods of malfunction or resulting non-use, property damage or personal injury resulting from installer's actions, whether negligent or otherwise.

All implied warranties, including those of merchantability and fitness for use, are limited to the duration of this express warranty.

Australian Consumer Warranty Statement

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and for compensation for any other reasonably foreseeable loss or damage. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure.

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Warranty Periods

The following stated warranty periods are subject to change without notice at any time by The Toro company and may not reflect warranty period at the time of purchase. Please contact your Toro Representative or Toro Distributor for current warranty period information.

Standard Warranty

Toro Irrigation Division products are covered by this warranty for a period of two years from the date of installation, except as otherwise noted.

Extended Three-year Warranty

The following products are covered by this warranty for three years from date of installation:
TMC-212 Series
DDC™WP controller
EZ-Flo® Plus Series valves.

Extended Five-year Warranty

The following products are covered by this warranty for five years from date of installation: 570Z PR and 570Z PRX Series fixed sprays; Precision Rotating Nozzle, Super 800 Series, TR50XT Series, 2001® Series, T5 Series, T7 Series, TS90 and 640 Series rotors; TPV Series, P-220 Series and 220 Brass Series valves; TMC-424E Series, TDC controller and Custom Command Series controllers; and TWRS Wireless RainSensor™ Series (receiver and transmitter).

Sentinel® Series Product Warranty

All Sentinel centrals, with the exception of centrals covered by the Toro National Support Network (NSN®), and Sentinel hand held remotes are covered by this warranty for a period of two years from date of installation.

All Sentinel Series satellites are covered by this warranty for a period of five years from date of installation.

Lightning Protection Warranty

In addition to the extended five-year warranty, the Toro TMC-424E installed with High Surge Modules and Custom Command Series controllers are specifically warranted against lightning-related damage for a period of five years from date of installation when properly installed and grounded in accordance with the installation instructions.

Grounding

The Toro Warranty for Irrigation Controllers is void if controller is not properly grounded per instruction manual. A good ground source is a mandatory component of overall surge protection for Toro Irrigation Control Systems. Grounding electrode(s) should be placed at each automatic controller or controller group locations. The resistance to the grounding electrode should not exceed 10 Ohms when measured with a Megger Earth Resistance Testing instrument or equivalent. It is the responsibility of the installer to connect all electronic irrigation equipment for which he is responsible to earth ground in accordance with local Electrical Code. Even with optimum grounding, neither Toro nor Toro Warranty Company are liable for product failures due to acts of God (i.e., lightning, flooding, etc.) and these failures are not covered by warranty.

Toro is always there to help you care for your landscapes the way you want, when you want, better than anyone else.

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GB 200-6414

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