

TORO.

Count on it.

2014

Residential and Commercial Irrigation Products

International Markets



The Toro Company is a leading worldwide provider of innovative turf, landscape, rental and construction equipment, irrigation and outdoor lighting solutions. Toro's 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 will celebrate 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only Toro threaded but also competitive threaded spray bodies making them perfect for the retrofit market, where many outdated systems are ripe for upgrading to meet today's needs and expectations.



Revolutionary Control Technology

Based on intense market surveys over the globe, Toro identified the today's needs on a irrigation control system for the residential and commercial market, leading to 2 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 by 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 of 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.



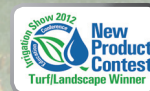
P-220 Valve with Pressure Regulation



Wireless ET Sensor



EVOLUTION™ Controller with Smart Connect™



Precision™ Soil Sensor

TPV Drip Zone Kit



TPV Valve Series with patented DBS Technology™



570Z Sprays with patented X-Flow® Valve-In-Stem Shutoff



DL2000® Subsurface Dripline with patented ROOTGUARD® Technology



Precision™ Series Rotating Nozzles with Planetary Gear Drive



T5 Rotor with patent-pending Air Foil Distribution Technology



Precision™ Series Spray Nozzles with patented H₂O Chip Technology



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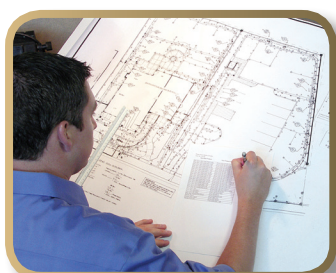
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Fixed Sprays Overview



Model	LPS Series	570Z	570ZLP	570ZXF	570ZPR	570ZPRX
Page Number	8-9	10-11	10-11	12-13	14-15	14-15
Radius	2'-26' (0,6m-7,9m)	2'-26' (0,6m-7,9m)	2'-26' (0,6m-7,9m)	2'-26' (0,6m-7,9m)	2'-17' (0,6m-5,2m)	2'-17' (0,6m-5,2m)
Flow Range	0.05-4.50 GPM (0,19-17,0 LPM)	0.05-4.50 GPM (0,19-17,0 LPM)	0.05-4.50 GPM (0,19-17,0 LPM)	0.05-4.50 GPM (0,19-17,0 LPM)	0.05-3.45 GPM (0,19-13,0 LPM)	0.05-3.45 GPM (0,19-13,0 LPM)
Operating Pressure Range (inlet)	20-50 PSI (1,4-3,5 Bar)	20-75 PSI (1,4-5,2 Bar)	15-75 PSI (1,0-5,2 Bar)	20-75 PSI (1,4-5,2 Bar)	20-75 PSI (1,4-5,2 Bar)	20-75 PSI (1,4-5,2 Bar)
Turf	X	X	X	X	X	X
Shrubs/Ground Cover	X	X	X	X	X	X
Slopes	X	X	X	X	X	X
High Pressure Systems		X		X	X	X
Low Pressure Systems	X		X			
Medians				X	X	X
High Traffic Areas				X	X	X
High Wind					X	X
Pop-up Height To Nozzle	2" (50 mm) 4" (100 mm)	2" (50 mm) 3" (75 mm) 4" (100 mm) 6" (150 mm) 12" (300 mm)	2" (50 mm) 3" (75 mm) 4" (100 mm) 6" (150 mm) 12" (300 mm)	4" (100 mm) 6" (150 mm) 12" (300 mm)	4" (100 mm) 6" (150 mm) 12" (300 mm)	4" (100 mm) 6" (150 mm) 12" (300 mm)
Side Inlet Option		6" (150 mm) 12" (300 mm)	6" (150 mm) 12" (300 mm)	6" (150 mm) 12" (300 mm)	6" (150 mm) 12" (300 mm)	6" (150 mm) 12" (300 mm)
Check Valve Option	X	X	X	X	X	X
Effluent Water Option		X	X	X	X	X
Shrub Model		X	X	X	X	X
*Zero Flush		X	X	X	X	X
*X-Flow® Water Shut-off				X		X
*Built-in Pressure Regulator					X	X
Serviceable Seal		X	X	X	X	X
Warranty	Two years	Two years	Two years	Two years	Five years	Five years



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 16	5'-15' (1,5-4,6m) 4' x 9' (1,2-2,7m) 4' x 15' (1,2-4,6m) 4' x 18' (1,2-5,5m) 4' x 30' (1,2-9,1m)	60°, 90°, 120°, 150°, 180°, 210°, 240°, 270°, 360° and Specialty	0.038-2.4 GPM (0,14-9,08 LPM)	30 PSI (2,0 Bar)
	Precision™ Series Rotating Nozzle Page 20	14'-26' (4,3-7,4m)	45° to 270°, Full-circle	0.38-3.78 GPM (1,43-14,3 LPM)	40-50 PSI (2,8-3,5 Bar)
	MPR Plus Page 22	5'-15' (1,5-4,6m) Specialty Patterns: 2'-30' (0,6m-9,1m)	¼, ⅓, ½, ⅔, ¾, Full and Specialty	0.5-4.58 GPM (1,9-17,3 LPM)	30 PSI (2,0 Bar)
	TVAN Page 24	8'-17' (2,4m-5,2m)	0°-360°	0.7-5.60 GPM (2,65-21,2 LPM)	30 PSI (2,0 Bar)
	Stream Sprays Page 25	13'-22' (4,0m-6,7m)	¼, ½, Full	0.6-2.70 GPM (2,3-10,2 LPM)	30 PSI (2,0 Bar)
	Stream Bubblers Page 25	1.5'-18' (0,5m-5,5m)	¼, ½, Full 2x180, 4x180	0.49-2.02 GPM (1,85-7,64 LPM)	20-30 PSI (1,4-2,0 Bar)
	Flood Bubbler PC Page 26	Circle	Flood	0.25-2.0 GPM (0,94-7,6 LPM)	20-30 PSI (1,4-2,0 Bar)
	500 Series Bubblers Page 26	6'-17' (2,13m-5,2m)	2x60, 4x60, 6x60, 2x180	1.08-3.70 GPM (4,1-14,0 LPM)	20-30 PSI (1,4-2,0 Bar)
	Pressure Compensating Drip Bubbblers Page 28	Pressure compensating	Drip	2.0 and 4.0 GPH (7,6 and 15,1 LPH)	5-50 PSI (0,35-3,5 Bar)

 ***WaterSmart® Feature**

LPS Series Sprays

- 2" (50mm) and 4" (100mm) Pop-up
- Radius: 2'-26' (0,6-7,9m)
- Operating Pressure Range: 20-50 psi (1,4-3,5 Bar)

The Toro® LPS Series meets the demand without sacrificing quality. These fixed sprays feature a durable, compact body with a pressure activated seal that minimizes flow-by during start-up and keeps debris away during retraction.

Features & Benefits

Pressure Activated Seal

Minimizes flow-by during pop-up and keeps debris away from stem during retraction.

Stainless Steel Retraction Spring

This heavy-duty spring ensures positive pop-down.

Easy Grip Top

Unique grip-and-turn adjustment from the top of the nozzle – wet or dry.

Removable Components

Nozzle, screen and internal components are easily removed for flushing and servicing.

Compatible With All 570Z Nozzles

Available with pre-installed Toro Variable Arc Nozzles (TVAN), Precision™ Series spray nozzles (Variable Radius) or Precision™ Series rotating nozzles



Water Management Highlight

Available with Precision™ Series Nozzles and Precision™ Series Rotating Nozzles preinstalled



Specifications

Dimensions

- Body diameter: 1 1/4" (30mm)
- Cap diameter: 1 5/8" (41mm)
- Inlet: 1/2" (13mm) female-threaded

Operating Specifications and Features

- LPS:
 - Radius: 2' – 26' (0,6-7,9m)
 - Operating pressure range: 20-50 psi (1,4-3,5 Bar)
 - Recommended pressure for TVAN nozzles: 30 psi (2,1 Bar)
 - Flow by: 0 at 10 psi (0 at 0,7 Bar) or greater
 - Infinitely adjustable from 0° to 360°
 - Top color-coded nozzles
- PSN (with PCD):
 - Radius: 5'-15' (1,5-4,6m)
 - Operating pressure range: 40-75 psi (2,8-5,2 Bar)
 - Recommended Pressure: 50 psi (3,5 Bar)
 - Flow Rate: 0.06-2.4 GPM (0,2-9,4 LPM)
 - Nozzle trajectory:
 - 5' (1,5m): 5°
 - 8' (2,4m): 10°
 - 10' (3,0m): 15°
 - 12' (3,7m): 20°
 - 15' (4,6m): 27°
 - Corner and Side Strips: 20°
- PRN:
 - Radius: 14'-26' (4,3m-7,9m)
 - Operating pressure range: 20-55 psi (1,4-3,8 bar) maximum: 75 psi (5,2 bar)
 - Recommended pressure for rotating nozzles: 40-50 psi (2,8-3,5 Bar)
 - Flow Rate: 0.4-3.8 GPM (0,6-13,9 LPM)

Options Available

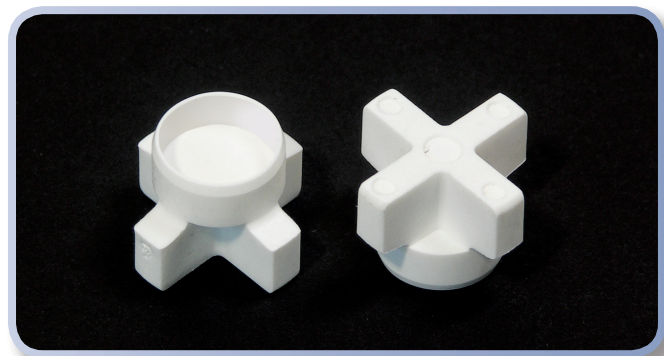
- LPSCV – Check Valve: Maintains up to 7' (2,1m) elevation change

Warranty

- Two years

Optional Check valve

The LPS sprinkler series has an optional check valve rated to hold back 7' (2,1m) of elevation change. This helps to eliminate low head drainage and keeps the lines charged to lessen water hammer potential.



LPS Series Model List

Model	Description
LPS210	2" (50mm) Pop-up w/TVAN10 installed
LPS212	2" (50mm) Pop-up w/TVAN12 installed
LPS215	2" (50mm) Pop-up w/TVAN15 installed
LPS217	2" (50mm) Pop-up w/TVAN17 installed
LPS400	4" (100mm) Pop-up w/o nozzle
LPS408	4" (100mm) Pop-up w/TVAN8 installed
LPS410	4" (100mm) Pop-up w/TVAN10 installed
LPS412	4" (100mm) Pop-up w/TVAN12 installed
LPS415	4" (100mm) Pop-up w/TVAN15 installed
LPS417	4" (100mm) Pop-up w/TVAN17 installed
53877	Multi-Stream PRN (Adjustable) PRN-TA
53878	Multi-Stream PRN (Full) PRN-TF
53892	4" (100mm) LPS Spray w/ Variable Radius Precision™ Series Nozzle, Quarter Circle
53893	4" (100mm) LPS Spray w/ Variable Radius Precision™ Series Nozzle, Half Circle
53894	4" (100mm) LPS Spray w/ Variable Radius Precision™ Series Nozzle, Full Circle

Specifying Information—LPS Series with TVAN

LPS X XX CV			
Description	Body	Nozzle	Options
LPS	X	XX	CV
LPS—LPS Fixed Spray	2—2" Body (50mm) 4—4" Body (100mm)	00—Body Only* 08—8' (2,4m)* 10—10' (3,0m) 12—12' (3,7m) 15—15' (4,6m) 17—17' (5,2m)	CV—Check Valve
Example: A 4" (100mm) Fixed-spray Sprinkler with a 10' (3,0m) nozzle, would be specified as: LPS410			

*4" Only

570Z & 570ZLP Series Sprays

- Shrub, 2" (50mm), 3" (75mm), 4" (100mm), 6" (150mm) and 12" (300mm) Pop-up
- Radius: 2'-26' (0,6-7,9m)
- Operating Pressure Range (570Z): 20-75 psi (1,4-5,2 Bar)
- Operating Pressure Range (570LP): 15-75 psi (1,0-5,2 Bar)

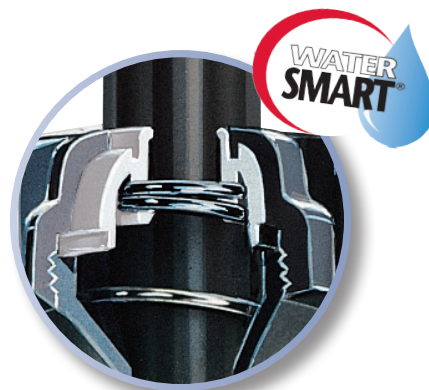
Versatile. Flexible. Reliable. The Toro® 570Z sprinkler embodies all that is required for residential and service contractors wanting to stock just one sprinkler family.



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 570Z Series a spray head for those serious about effective water management.



Enhanced Zero
Flush Seal

Specifications

Dimensions

- Body diameter:
 - 1 $\frac{3}{8}$ " (35mm) on 2P, 3P, 4P, 6P and 6P SI models
 - 1 $\frac{5}{8}$ " (41mm) on 12P
 - 1 $\frac{3}{4}$ " (45mm) on 12P SI
- Cap diameter: 2" (50mm)
- Inlet: $\frac{1}{2}$ " (13mm) female-threaded
- Side inlet: 4 $\frac{3}{4}$ " (120mm) from top of sprinkler to center of side inlet

Operating Specifications

- Radius: 2'-26' (0,6-7,9m)
- Operating pressure range (570Z): 20-75 psi (1,4-5,2 Bar)
- Operating pressure range (570ZLP): 15-75 psi (1,0-5,2 Bar)
- Recommended pressure for spray nozzles: 30 psi (2,1 Bar)
- Recommended pressure for rotating nozzles: 40-50 psi (2,8-3,5 Bar)
- Flow rate: 0.05-4.5 GPM (0,2-17,0 LPM)

Additional Features

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

Options Available

- Check Valve (570CV): maintains up to 10' (3m) 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: 6" (150mm) Riser Extender
- 570-SR-6: 6" (150mm) Stationary Riser $\frac{1}{2}$ " (13mm) male-threaded inlet
- 570-SR-18: 18" (450mm) Stationary Riser $\frac{1}{2}$ " (13mm) male-threaded inlet
- Riser Pull-up Tool (89-6395)
- Adjustment Key (89-7350)

Warranty



570ZLP Series Model List

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

Note: all w/o Nozzle

570Z Series Model List

Model	Description
570Z-2P	2" (50mm) Sprinkler
570Z-3P	3" (75mm) Sprinkler
570Z-4P	4" (100mm) Sprinkler
570Z-4PCOM	4" (100mm) Sprinkler, w/Check Valve
570Z-6P	6" (150mm) Sprinkler
570Z-6PSI	6" (150mm) Sprinkler, Side inlet Body
570Z-6PCOM	6" (150mm) Sprinkler, w/Check Valve
570Z-12P	12" (300mm) Sprinkler
570Z-12PSI	12" (300mm) Sprinkler, Side inlet Body
570Z-12PCOM	12" (300mm) Sprinkler, w/Check Valve
570S	Shrub Adapter

Note: all w/o Nozzle

Specifying Information—570ZLP Series

570X-XXLP-XX-COM-E				
Model	Pop-up Height		Optional	Optional
570X	XXXL		SI	COM
Z—Lawn Pop-up & High Pop	2LP—2" (50mm) 3LP—3" (75mm) 4LP—4" (100mm)	6LP—6" (150mm) 12LP—12" (300mm)	SI—Side Inlet*	COM—Check-O-Matic™**

Example: A 570ZLP Series Sprinkler (low pressure) with a pop-up height of 6" (150mm) and a check valve, you would specify: 570Z-6LP COM

Specifying Information—570Z Series

570X-XXP-XX-COM-E				
Model	Pop-up Height		Optional	Optional
570X	XXP		SI	COM
S—Shrub Z—Lawn Pop-up & High Pop	2LP—2" (50mm) 3LP—3" (75mm) 4LP—4" (100mm)	6LP—6" (150mm) 12LP—12" (300mm)	SI—Side Inlet*	COM—Check-O-Matic™**

Example: A 570Z Series Sprinkler with a pop-up height of 6" (150mm) and a check valve, you would specify: 570Z-6P COM

*Available for 6" (150mm) and 12" (300mm) models.

**Available with non-side inlet models except 2" (50mm) and 3" (75mm).

570ZXF Series Sprays

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

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.



Effluent
Options
Available



Check
Valve
Options
Available

Water Management Highlight

X-Flow Technology Shuts Off Water Waste

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

Features & Benefits

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.

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 10' (3m) elevation change.

Ratcheting Riser

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

Small 2" (50mm) Diameter Cap

Less visible, reducing damage from exposure or vandals.



Patented X-Flow® Shut-off Device



Specifications

Dimensions

- Body diameter:
 - 1 3/8" (35mm) on 4P, 6P and 6P SI models
 - 1 5/8" (41mm) on 12P
 - 1 3/4" (45mm) on 12P SI
- Cap diameter: 2" (50mm)
- Inlet: 1/2" (13mm) female-threaded
- Side inlet: 4 3/4" (121mm) from top of sprinkler to center of side inlet

Operating Specifications

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

Additional Features

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

Options Available

- Check Valve (570CV): maintains up to 10' (3m) 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



570ZXF allows for dry nozzle installations and change outs

570ZXF Series Model List

Model	Description
570S-XF	Shrub Sprinkler, w/Shut-off
570Z-4P XF	4" (100mm) Sprinkler, w/Shut-off
570Z-4P XF COM	4" (100mm) Sprinkler, w/Check Valve and Shut-off
570Z-6P XF	6" (150mm) Sprinkler, w/Shut-off
570Z-6P XF SI	6" (150mm) Sprinkler, Side-inlet Body, w/Shut-off
570Z-6P XF COM	6" (150mm) Sprinkler, w/Check Valve and Shut-off
570Z-12P XF	12" (300mm) Sprinkler, w/Shut-off
570Z-12P XF SI	12" (300mm) Sprinkler, Side-inlet Body, w/Shut-off
570Z-12P XF COM	12" (300mm) Sprinkler, w/Check Valve and Shut-off

Note: All w/o Nozzle

Specifying Information—570ZXF Series

570X-XXP-SI-XF-COM-E					
Model	Pop-up Height		Optional	Optional	Optional
570X	XXP		SI	COM	E
S—Shrub Z—Lawn Pop-up & High-pop	4—4" (100mm) 6—6" (150mm)	12—12" (300mm)	SI—Side Inlet*	COM—Check O-Matic**	E—Effluent
Example: A 570Z XF Series Sprinkler with a pop-up height of 6" (150mm) and a check valve would be specified as: 570Z-6P XF COM					

*Available for 6" (150mm) and 12" (300mm) models.

**Available with non-side inlet models.

570ZPR & 570ZPRX Series Sprays

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

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

Features & Benefits

Patented In-riser Pressure Regulator

Maintains constant 30 psi (2,1 Bar) outlet pressure, which minimizes misting and fogging caused by pressures above 30 psi (2,1 Bar).

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 2" (50mm) Diameter Cap

Less visible, reducing damage from exposure or vandals.

AND FOR 570ZPRX MODELS:

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.



Effluent
Options
Available



Check
Valve
Options
Available

Water Management Highlight

570ZPRX: For Those Serious About Water Management

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



Without Pressure
Regulation



With Pressure
Regulation

Specifications

Dimensions

- Body diameter:
 - 1 3/8" (35mm) on 4P, 6P and 6P SI models
 - 1 5/8" (41mm) on 12P
 - 1 3/4" (45mm) on 12P SI
- Cap diameter: 2" (50mm)
- Inlet: 1/2" (13mm) female-threaded
- Side inlet: 4 3/4" (120mm) from top of sprinkler to center of side inlet

Operating Specifications

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

Additional Features

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

Options Available

- Check Valve (570CV): maintains up to 10' (3,0) 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: 6" (150mm) Riser Extender (35-2636)
- Riser Pull-up Tool (89-6395)
- Adjustment Key (89-7350)

Warranty

- Five years

570ZPR Series Model List

Model	Description
All Models Include Patented In-Riser Pressure Regulator	
570Z-4P PR	4" (100mm) Sprinkler
570Z-4P PR COM	4" (100mm) Sprinkler, w/ Check Valve
570Z-4P PR COM E	4" (100mm) Sprinkler, w/ Check Valve, and Effluent
570Z-6P PR	6" (150mm) Sprinkler
570Z-6P PR COM	6" (150mm) Sprinkler, w/ Check Valve
570Z-6P PR COM E	6" (150mm) Sprinkler, w/ Check Valve and Effluent
570Z-12P PR	12" (300mm) Sprinkler
570Z-12P PR COM	12" (300mm) Sprinkler, w/ Check Valve
570Z-12P PR COM E	12" (300mm) Sprinkler, w/ Check Valve and Effluent
570S-PR	Shrub
570S-PRE	Shrub and Effluent

Note: all w/o Nozzle

570ZPRX Series Model List

Model	Description
All Models Include Pressure Regulation and X-Flow® Shut-off	
570S-PRX	Shrub Sprinkler
570Z-4P PRX	4" (100mm) Sprinkler
570Z-6P PRX	6" (150mm) Sprinkler
570Z-6P SI PRX	6" (150mm) Sprinkler, Side-inlet Body
570Z-12P PRX	12" (300mm) Sprinkler
570Z-12P SI PRX	12" (300mm) Sprinkler, Side-inlet Body
With Check Valve added	
570Z-4P PRX COM	4" (100mm) Sprinkler
570Z-6P PRX COM	6" (150mm) Sprinkler
570Z-12P PRX COM	12" (300mm) Sprinkler
With Effluent Molded Cap added	
570Z-4P PRX E	4" (100mm) Sprinkler
570Z-4P PRX COM E	4" (100mm) Sprinkler, w/Check Valve
570Z-6P PRX E	6" (150mm) Sprinkler
570Z-6P PRX COM E	6" (150mm) Sprinkler, w/Check Valve
570Z-12P PRX E	12" (300mm) Sprinkler
570Z-12P PRX COM E	12" (300mm) Sprinkler, w/Check Valve

Note: all w/o Nozzle

Specifying Information—570ZPR & 570ZPRX Series

570X-XXP-SI-PRX-COM-E					
Model	Pop-up Height	Optional	X-flow	Optional	Optional
570X	XXP	SI	PRX	COM	E
S—Shrub Z—Lawn Pop-up & High-pop	4—4" (100mm) 6—6" (150mm) 12—12" (300mm)	SI—Side Inlet*	PR—Pressure Regulation Only PRX—Pressure Regulation With X-flow™	COM—Check Valve**	E—Effluent
Example: A 570Z PR Series Sprinkler with a pop-up height of 6" (150mm) with a side-inlet option, would be specified as: 570Z-6P SI PR Example: A 570Z PRX Series Sprinkler with a pop-up height of 6" (150mm) with a side-inlet option, would be specified as: 570Z-6P SI PRX					

*Available for 6" (150mm) and 12" (300mm) models.

**Available with non-side inlet models.

PRX models not recommended for use with PCD nozzles.

Precision™ Series Spray Nozzles

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

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' 1"/hr. (25mm/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.



Competitor's High Flow Nozzle:

12H Nozzle at 3,4 Bar = 6,93LPM or 62mm/hr.*



*Based on internal flow rate test data in Riverside, CA.

PSN with PCD Performs Under Pressure!



PSN with PCD Nozzle:

12H Nozzle at 3,4 Bar = 2,80 LPM or 25mm/hr.*

Features & Benefits

Patented H₂O Chip Technology

Using patented H₂O 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 1"/hr (25mm/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 5'-15' (1,5-4,6m).

Pressure-Compensating

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

Design and Retrofit Effectiveness

The lower flow 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 fixed 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 for Irrigation Technology (CIT).



















Pressure Compensation Device

The elastomeric PCD disk opens and closes in response to changes in inlet pressure to maintain optimal performance, when the pressure rises higher than 40 psi (2,8 Bar).



Performance Data Pressure-Compensating Precision™ Series Spray Nozzles

5' (1,5m) "O" Nozzle						8' (2,4m) "O" Nozzle						10' (3,0m) "O" Nozzle					
Arc	Bar	Radius (m)	Flow (lpm)	Precip Rate (mm/hr)		Arc	Bar	Radius (m)	Flow (lpm)	Precip Rate (mm/hr)		Arc	Bar	Radius (m)	Flow (lpm)	Precip Rate (mm/hr)	
				■	▲					■	▲					■	▲
5Q 	2,1	1,28	0,21	22,17	25,60	8Q 	2,1	2,40	0,52	20,88	24,11	10Q 	2,1	2,95	0,76	19,56	22,58
	3,1	1,49	0,26	27,38	31,62		3,1	2,49	0,64	25,98	29,99		3,1	3,13	0,93	24,12	27,85
	4,1	1,72	0,33	33,90	39,15		4,1	2,56	0,76	30,56	35,29		4,1	3,21	1,09	28,03	32,37
5T 	2,1	1,33	0,36	27,87	32,18	8T 	2,1	2,25	0,71	21,39	24,70	10T 	2,1	2,94	1,05	20,29	23,43
	3,1	1,55	0,44	34,23	39,52		3,1	2,49	0,88	26,74	30,88		3,1	3,13	1,30	25,18	29,08
	4,1	1,66	0,56	43,03	49,69		4,1	2,59	1,03	31,32	36,17		4,1	3,21	1,54	29,83	34,44
5H 	2,1	1,22	0,39	20,21	23,34	8H 	2,1	2,34	1,02	20,63	23,82	10H 	2,1	2,93	1,53	19,72	22,77
	3,1	1,49	0,50	26,08	30,11		3,1	2,44	1,26	25,47	29,41		3,1	3,09	1,85	23,96	27,67
	4,1	1,66	0,62	31,94	36,89		4,1	2,48	1,49	30,05	34,70		4,1	3,18	2,16	27,87	32,18
5TT 	2,1	1,29	0,64	24,94	28,79	8TT 	2,1	2,26	1,36	20,63	23,82	10TT 	2,1	2,89	2,06	19,92	23,01
	3,1	1,54	0,77	29,83	34,44		3,1	2,47	1,68	25,40	29,33		3,1	3,03	2,51	24,33	28,09
	4,1	1,65	0,95	36,67	42,35		4,1	2,59	1,98	29,99	34,63		4,1	3,14	2,93	28,36	32,75
5TQ 	2,1	1,30	0,69	23,84	27,53	8TQ 	2,1	2,31	1,43	19,14	22,10	10TQ 	2,1	2,83	2,09	17,99	20,78
	3,1	1,55	0,85	29,05	33,54		3,1	2,47	1,80	24,22	27,96		3,1	3,06	2,68	22,98	26,53
	4,1	1,70	1,00	34,25	39,55		4,1	2,61	2,08	27,94	32,27		4,1	3,14	3,10	26,66	30,79
5F 	2,1	1,28	0,82	21,19	24,47	8F 	2,1	2,26	1,97	19,86	22,94	10F 	2,1	2,98	3,08	19,88	22,96
	3,1	1,51	1,01	26,08	30,11		3,1	2,37	2,42	24,45	28,23		3,1	3,10	3,79	24,45	28,23
	4,1	1,68	1,19	30,64	35,38		4,1	2,45	2,80	28,27	32,64		4,1	3,19	4,38	28,28	32,65

12' (3,7m) "O" Nozzle						15' (4,6m) "O" Nozzle						Special Patterns					
Arc	Bar	Radius (m)	Flow (lpm)	Precip Rate (mm/hr)		Arc	Bar	Radius (m)	Flow (lpm)	Precip Rate (mm/hr)		Arc	Bar	Radius (m)	Flow (lpm)	Precip Rate (mm/hr)	
				■	▲					■	▲					■	▲
12Q 	2,1	3,46	1,11	19,92	23,00	15Q 	2,1	4,07	1,67	19,12	22,08	4X15 LCS 	2,1	1,2 x 4,5	1,02	22,00	25,41
	3,1	3,72	1,36	24,45	28,23		3,1	4,42	2,09	24,05	27,77		2,8	1,2 x 4,5	1,17	25,26	29,17
	4,1	3,80	1,63	29,20	33,72		4,1	4,52	2,44	27,96	32,29		3,5	1,2 x 4,5	1,21	26,08	30,11
12T 	2,1	3,36	1,44	19,35	22,35	15T 	2,1	4,30	2,20	18,91	21,83	4X15 RCS 	4,1	1,2 x 4,5	1,25	26,89	31,05
	3,1	3,45	1,75	23,60	27,25		3,1	4,47	2,69	23,14	26,72		2,1	1,2 x 9,0	2,12	22,82	26,35
	4,1	3,67	2,06	27,67	31,96		4,1	4,65	3,12	26,84	30,99		2,8	1,2 x 9,0	2,42	26,08	30,11
12H 	2,1	3,25	2,11	18,90	21,83	15H 	2,1	4,03	3,43	19,70	22,75	4X30 SST 	3,5	1,2 x 9,0	2,50	26,89	31,05
	3,1	3,69	2,60	23,32	26,92		3,1	4,18	4,23	24,27	28,02		4,1	1,2 x 9,0	2,57	27,71	31,99
	4,1	3,72	3,02	27,05	31,24		4,1	4,27	4,87	27,96	32,29		2,1	1,2 x 2,7	0,61	24,45	28,23
12TT 	2,1	3,34	3,10	20,88	24,11	15TT 	2,1	4,27	4,48	19,29	22,27	4X9 LCS 	2,8	1,2 x 2,7	0,68	27,50	31,76
	3,1	3,41	3,80	25,55	29,50		3,1	4,43	5,49	23,63	27,29		3,5	1,2 x 2,7	0,72	29,03	33,52
	4,1	3,51	4,39	29,54	34,11		4,1	4,58	6,36	27,38	31,62		4,1	1,2 x 2,7	0,72	29,03	33,52
12TQ 	2,1	3,34	3,27	19,49	22,51	15TQ 	2,1	4,08	4,82	18,40	21,25	4X9 RCS 	2,1	1,2 x 5,4	1,29	25,98	29,99
	3,1	3,52	4,01	23,93	27,64		3,1	4,31	5,91	22,54	26,03		2,8	1,2 x 5,4	1,36	27,50	31,76
	4,1	3,65	4,64	27,70	31,98		4,1	4,49	6,81	26,01	30,04		3,5	1,2 x 5,4	1,44	29,03	33,52
12F 	2,1	3,27	4,38	19,64	22,68	15F 	2,1	4,00	6,78	19,45	22,46	4X18 SST 	4,1	1,2 x 5,4	1,44	29,03	33,52
	3,1	3,63	5,36	24,05	27,77		3,1	4,16	8,25	23,69	27,35						
	4,1	3,70	6,18	27,73	32,02		4,1	4,22	9,55	27,42	31,66						

For low pressures (< 2,8 Bar) or designs requiring non-standard Arcs (60°, 150°, 210°), non-pressure compensating versions of the Precision™ Series Spray nozzles are available by special order. Contact Toro or your local Distributor/Dealer for information.

Precision™ Series Spray Nozzles

Specifications

Operating Specifications (with PCD)

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

Additional Features

- Radius reduction 25% maximum
- Color coded for radius on top of the nozzle
- Precipitation rate ≤ 1"/hour (≤ 25mm/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

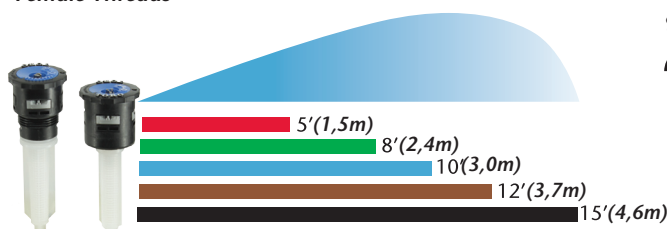
Warranty

- Two years

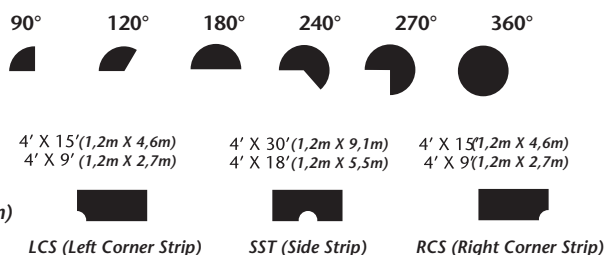
Pressure-Compensating Precision™ Series Nozzle Model List

5' (1,5m) "O" Nozzle			8' (2,4m) "O" Nozzle			10' (3,0m) "O" Nozzle		
Male	Female	Description	Male	Female	Description	Male	Female	Description
O-T-5-QP	O-5-QP	90° Arc	O-T-8-QP	O-8-QP	90° Arc	O-T-10-QP	O-10-QP	90° Arc
O-T-5-TP	O-5-TP	120° Arc	O-T-8-TP	O-8-TP	120° Arc	O-T-10-TP	O-10-TP	120° Arc
O-T-5-HP	5-HP	180° Arc	O-T-8-HP	O-8-HP	180° Arc	O-T-10-HP	O-10-HP	180° Arc
O-T-5-TTP	O-5-TTP	240° Arc	O-T-8-TTP	O-8-TTP	240° Arc	O-T-10-TTP	O-10-TTP	240° Arc
O-T-5-TQP	O-5-TQP	270° Arc	O-T-8-TQP	O-8-TQP	270° Arc	O-T-10-TQP	O-10-TQP	270° Arc
O-T-5-FP	O-5-FP	360° Arc	O-T-8-FP	O-8-FP	360° Arc	O-T-10-FP	O-10-FP	360° Arc
12' (3,7m) "O" Nozzle			15' (4,6m) "O" Nozzle			Special Patterns		
Male	Female	Description	Male	Female	Description	Male	Female	Description
O-T-12-QP	O-12-QP	90° Arc	O-T-15-QP	O-15-QP	90° Arc	O-T-4X9-RCSP	O-4X9-RCSP	Right Corner
O-T-12-TP	O-12-TP	120° Arc	O-T-15-TP	O-15-TP	120° Arc	O-T-4X9-LCSP	O-4X9-LCSP	Left Corner
O-T-12-HP	O-12-HP	180° Arc	O-T-15-HP	O-15-HP	180° Arc	O-T-4X18-SSTP	O-4X18-SSTP	Side Strip
O-T-12-TTP	O-12-TTP	240° Arc	O-T-15-TTP	O-15-TTP	240° Arc	O-T-4X15-RCSP	O-4X15-RCSP	Right Corner
O-T-12-TQ	O-12-TQP	270° Arc	O-T-15-TQP	O-15-TQP	270° Arc	O-T-4X15-LCSP	O-4X15-LCSP	Left Corner
O-T-12-FP	O-12-FP	360° Arc	O-T-15-FP	O-15-FP	360° Arc	O-T-4X30-SSTP	O-4X30-SSTP	Side Strip

5 Radii Available in Male or Female Threads



6 Arcs Plus Side and Corner Strips Available



Specifying Information—Precision™ Series Spray Nozzles

O-X-XXXX-XXXP					
Nozzle	Thread	Radius		Arc	PCD
O	X	XXXX		XXX	P
O—1" Per Hour	T—Toro Male Threaded Nozzle Blank—Female Threaded Nozzle	5—5' (1,5m) 8—8' (2,4m) 10—10' (3,0m) 12— 12' (3,7m) 15—15' (4,6m)	4X15—4'X15* (1,2mX4,6m) 4X30—4'X30* (1,2mX9,1m) 4X9—4'X9' (1,2mX2,7m) 4X18—4'X18' (1,2mX5,5m)	Q—90° T—120° H—180° TT—240° TQ—270° F—360° LCS—Left Corner RCS—Right Corner SST—Side Strip*	P—Pressure Compensating
Example: A female threaded Precision Series Spray with a spray radius of 12' (3,7m) and a 90° arc would be specified as: O-12-QP Example 2: A male threaded Precision Series Spray with a spray radius of 10' (3,0m) and a 180° arc would be specified as: O-T-10-HP					

Precision™ Series H₂FLO™ Variable Radius Nozzles

- Patented H₂O Chip Technology
- Variable Radius: 8' (2,4m) to 15' (4,6m)
- Arc Options: Quarter, Half, and Full
- Male or Female Thread, or pre-installed on 4" (100mm) pop-up LPS Spray

Maximum irrigation efficiency with optimal product versatility:

All the water-saving capabilities of Toro's Precision™ Series Spray Nozzles with the inventory-reducing advantage of true variable radius. Adjustable from 8' (2,4m) to 15' (4,6m) to match multiple sizes of landscape with one nozzle.

Performance Data

Variable Radius Precision™ Series Spray Nozzles @ 2,0 Bar

Quarter Circle

Radius (m)	DU	CU	SC	LPM	Precip.Rate ■ (mm/hr.)
2,4	55	73	1,4	0,9	29,7
3,0	58	75	1,3	1,2	26,9
3,7	54	73	1,3	1,5	25,1
4,6	56	75	1,2	2,2	27,2

Half Circle

Radius (m)	DU	CU	SC	LPM	Precip.Rate ■ (mm/hr.)
2,4	55	73	1,4	2,0	36,1
3,0	58	75	1,3	2,4	29,2
3,7	54	73	1,3	2,9	26,2
4,6	56	75	1,2	4,4	26,4

Full Circle

Radius (m)	DU	CU	SC	LPM	Precip.Rate ■ (mm/hr.)
2,4	55	73	1,4	3,5	33,5
3,0	58	75	1,3	4,5	27,7
3,7	54	73	1,3	6,7	28,7
4,6	56	75	1,2	8,1	24,6



Precision™ Series Sprinkler,
4" (100mm) Pop-Up with Nozzle
53892, 53893, 53894

Variable Radius Nozzle Only (1 per Blister Pack)

Male (Toro) Threaded
Red Cap
53926, 53927, 53928

Female Threaded
Green Cap
53895, 53896, 53897

Variable Radius Precision™ Series Spray Nozzle Model List

Model	Description
4" (100mm) Pop-up w/ pre-installed Variable Radius Precision™ Series Spray Nozzle – 8' (2,4m) to 15' (4,6m), without PCD	
53892	4" (100mm) LPS Spray w/ Variable Radius Precision™ Series Nozzle, Quarter Circle
53893	4" (100mm) LPS Spray w/ Variable Radius Precision™ Series Nozzle, Half Circle
53894	4" (100mm) LPS Spray w/ Variable Radius Precision™ Series Nozzle, Full Circle
Variable Radius Precision™ Series Spray Nozzle – 8' (2,4m) to 15' (4,6m), Toro Thread, without PCD, (1 per Blister Pack)	
53926	Precision™ Series Spray Nozzle, Variable Radius, Toro-thread, Quarter Circle
53927	Precision™ Series Spray Nozzle, Variable Radius, Toro-thread, Half Circle
53928	Precision™ Series Spray Nozzle, Variable Radius, Toro-thread, Full Circle
Variable Radius Precision™ Series Spray Nozzle – 8' (2,4m) to 15' (4,6m), Female Thread, without PCD, (1 per Blister Pack)	
53895	Precision™ Series Spray Nozzle, Variable Radius, Female-thread, Quarter Circle
53896	Precision™ Series Spray Nozzle, Variable Radius, Female-thread, Half Circle
53897	Precision™ Series Spray Nozzle, Variable Radius, Female-thread, Full Circle

Precision™ Series Rotating Nozzles

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

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

Water Management Highlight



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

Features & Benefits

Gear-Driven

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

Fewer Models

Only two male-threaded nozzles and two female-threaded nozzles are required to cover radius range from 14-26' (4,3m-7,9m) and arc range from 45-360°.

Matched Precipitation Rate of 0.55"/hr. (14 mm/hr.)

These nozzles deliver water more slowly and evenly than standard spray nozzles. The precipitation rate of 0.55"/hr. (14 mm/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.

Specifications

Operating Specifications

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

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 = 0.55"/hr. (14 mm/hr.) on square spacing plans
- Maintains precipitation rate as radius is reduced
- Matched precipitation from 14-26' (4,3-7,9m)
- Matched precipitation from 20-75 psi (1,4-5,2 Bar)
- 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, 14-26' (4,3-7,9m), Adjustable from 45°-270°
PRN-TF	Toro Threaded, 14-26' (4,3-7,9m), Full-Circle
Female Threaded	Description
PRN-A	Female Threaded, 14-26' (4,3-7,9m), Adjustable from 45°-270°
PRN-F	Female Threaded, 14-26' (4,3-7,9m), 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)		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 24' (7,3m) radius and a 180° arc would be specified as: PRN-TA A female threaded Precision Series Rotating nozzle with a 20' (6,1m) radius and 360° arc would be specified as: PRN-F		

MPR Plus Spray Nozzles

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

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

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

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

Features & Benefits

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 flow 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: 20-75 psi (1,4-5,2 Bar)
- Recommended pressure: 30 psi (2,1 Bar)
- Flow Rate: 0.05-4.58 GPM (0,2-17,3 LPM)
- Nozzle trajectory:
 - 5' (1,5m): 5°; 8' (2,4m): 10°; 10' (3,0m): 17°;
 - 12' (3,7m): 24°; 15' (4,6m): 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 10', 8' and 5' (3,0m, 2,4m, and 1,5m) radius nozzles
- 4' x 18' (1,2-5,2m) side strip ideal for medians
- 2' x 6' (0,6-1,8m) 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—5' (1,5m)	12—12' (3,7m)	Q—90°	TT—240°	EST—End Strip	PC—Pressure Compensation
8—8' (2,4m)	15—15' (4,6m)	T—120°	Q—270°	CST—Center Strip	
10—10' (3,0m)		H—180°	F—360°	SST—Side Strip	








Example: A 570 MPR Plus Nozzle with a spray of 10' (3,0m), 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

5' (1,5m) Series with 0° Trajectory						
Pattern	Desc.	Pressure			Flow LPM	Radius m
		Bar	kPa	Kg/cm ²		
	S-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
	S-T	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
		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
	S-H	3,0	300	3,06	0,66	1,7
		3,5	350	3,57	0,77	1,8
		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
		1,5	150	1,53	0,44	1,3
	S-TT	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
		2,07-2,76	207-276	2,11-2,82	0,87	1,5
	S-TQ	2,76-5,18	276-518	2,82-5,28	1,02	1,5
		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
	S-F	3,5	350	3,57	1,53	1,8
		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
		1,5	150	1,53	1,03	1,3
		2,0	200	2,04	1,39	1,5
	S-F-PC	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
		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

8' (2,4) Series with 5° Trajectory						
Pattern	Desc.	Pressure			Flow LPM	Radius m
		Bar	kPa	Kg/cm ²		
	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-T	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
		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
	8-H	3,0	300	3,06	1,42	2,6
		3,5	350	3,57	1,53	2,8
		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
		1,5	150	1,53	1,49	2,3
	8-TT	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
		2,07-2,76	207-276	2,11-2,82	1,67	2,4
	8-TQ	2,76-5,18	276-518	2,82-5,28	1,89	2,4
		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
	8-F	3,5	350	3,57	3,35	2,8
		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
		1,5	150	1,53	2,97	2,2
		2,0	200	2,04	3,69	2,4
	8-F-PC	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
		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

10' (3,0m) Series with 12° Trajectory						
Pattern	Desc.	Pressure			Flow LPM	Radius m
		Bar	kPa	Kg/cm ²		
	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-T	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
		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
	10-H	3,0	300	3,06	2,59	3,5
		3,5	350	3,57	2,87	3,7
		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
		1,5	150	1,53	2,34	2,8
	10-TT	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
		2,07-2,76	207-276	2,11-2,82	2,50	3,0
	10-TQ	2,76-5,18	276-518	2,82-5,28	2,84	3,0
		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
	10-F	3,5	350	3,57	4,53	3,4
		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
		1,5	150	1,53	3,25	2,8
		2,0	200	2,04	3,85	3,0
	10-FQ-PC	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
		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

12' (3,0m) Series with 23° Trajectory						
Pattern	Desc.	Pressure			Flow LPM	Radius m
		Bar	kPa	Kg/cm ²		
	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-T	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
		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
	12-H	3,0	300	3,06	3,43	3,9
		3,5	350	3,57	3,70	4,0
		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
		1,5	150	1,53	3,69	3,4
	12-TT	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
		2,07-2,76	207-276	2,11-2,82	3,63	3,7
	12-TQ	2,76-5,18	276-518	2,82-5,28	4,00	3,7
		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
	12-F	3,5	350	3,57	6,86	4,0
		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
		1,5	150	1,53	4,31	3,3
		2,0	200	2,04	5,68	3,6
	12-F-PC	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
		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

15' (4,6m) Series with 27° Trajectory						
Pattern	Desc.	Pressure			Flow LPM	Radius m
		Bar	kPa	Kg/cm²		
	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 2,76-5,18	207-276 276-518	2,11-2,82 2,82-5,28	2,84 3,07
	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 2,76-5,18	207-276 276-518	2,11-2,82 2,82-5,28	3,79 4,16
	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 2,76-5,18	207-276 276-518	2,11-2,82 2,82-5,28	5,68 6,25
	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 2,76-5,18	207-276 276-518	2,11-2,82 2,82-5,28	7,57 8,33
	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	4,9
		3,5	350	3,57	12,98	4,9
		15-TQ-PC	2,07-2,76 2,76-5,18	207-276 276-518	2,11-2,82 2,82-5,28	8,71 9,47
	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 2,76-5,18	207-276 276-518	2,11-2,82 2,82-5,28	11,36 12,49

TVAN Variable Arc Nozzles

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

Quick, easy and infinitely adjustable!

Toro® Variable Arc Nozzles (TVAN) are designed to deliver excellent irrigation efficiency with maximum product versatility.

Features & Benefits

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.

Infinitely 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 identification even when retracted.



Easy Grip Top

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

TVAN Variable Arc Nozzles Model List

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

Specifying Information—TVAN

TVANXX	
Model	Radius
TVAN	XX
TVAN—Toro Variable Arc Nozzle	8—8' (2,4m) Variable Arc Pattern 10—10' (3,0m) Variable Arc Pattern 12—12' (3,7m) Variable Arc Pattern 15—15' (4,6m) Variable Arc Pattern 17—17' (5,2m) Variable Arc Pattern

Example: A TVAN8 nozzle, would be specified as:TVAN8

Specifications

Operating Specifications

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

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

Pattern	Bar	8 Series-Green				10 Series-Blue				12 Series-Brown				15 Series-Black				17 Series-Gray			
		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: 13'-22' (4,0-6,7m)



Specifications

Operating Specifications and Features

- Recommended operating pressure range: 20-75 psi (1,4-5,2 Bar)
- Flow Rate: 0.60 – 2.70 GPM (2,3-10,2 LPM)
- 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/cm ²		
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
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
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

Performance Data 35° Stream Spray—Metric

Pattern	Desc.	Pressure			LPM	Radius meters
		Bar	kPa	Kg/cm ²		
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
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
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

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

Stream Spray Nozzles Model List

Non-Pressure Compensating	
Model	Description
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: 1.5'-18' (0,5-5,5m)



Specifications

Operating Specifications and Features

- Recommended operating pressure range: 10-75 psi (0,7-5,2 Bar)
- Flow Rate: 0.49 – 2.02 GPM (1,9-9,0 LPM)
- 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	☼	2,2	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	☼							0,8	0,5	0,9	0,5	0,9	0,5	0,9	0,5
SB-180	☼	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	☼							1,8	0,8	1,9	0,8	1,9	0,8	1,9	0,8
SB-360	☼	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	☼							2,8	0,5	2,9	0,5	2,9	0,5	2,9	0,5
SB-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	☼							0,8	0,5	0,9	0,5	0,9	0,5	0,9	0,5
SB-4-180	☼	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	☼							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, 2' (0,6m) Radius
SB-180-PC2	180° Arc, 2' (0,6m) Radius
SB-360-PC2	360° Arc, 2' (0,6m) Radius
SB-2-180-PC2	180° Arc, 2 Stream, 2' (0,6m) Radius
SB-4-180-PC2	180° Arc, 4 Stream, 2' (0,6m) Radius

Pressure-compensating Flood Bubblers



Specifications

Operating Specifications and Features

- Recommended operating pressure range: 20-75 psi (1,4-5,2 Bar)
Maximum pressure: 75 psi (5,2 Bar)
- Flow Rate: Adjustable: 0 – 2.0 GPM (0-7,6 LPM);
Fixed Flow: 0.25, 0.50 and 1.0 GPM (0,9; 1,9; 3,8 LPM)
- 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	0.25 GPM (0,9 LPM)
FB-50-PC	0.50 GPM (1,9 LPM)
FB-100-PC	1.00 GPM (3,8 LPM)
FB-200-ADJ-PC2.00	Adjustable GPM (LPM)

500 Series Bubblers



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: 15-75 psi (1,0-5,2 Bar)
 - Stream: 10-75 psi (0,7-5,2 Bar)
- Maximum pressure: 75 psi (5,2 Bar)
- Flow Rate:
 - Flood: 1.7 – 2.7 GPM (6,4-10,2 LPM)
 - Stream: 1.08 – 3.70 GPM (4,1-14,0 LPM)
- Inlet: ½" (13mm) 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	
		Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)
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

Spray Tools and Accessories

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

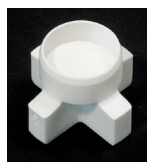
- Lavender molded 570Z Series shrub adapter
- Installs onto a 1/2" (13mm) NPT riser

Serviceable Parts



570SEAL

- Serviceable seal for all 570Z models
- Recommended 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 6" (15cm) extension
- Maximum pressure: 75 psi (5,2 Bar)



570SR-6 and 570SR-18

- 570Z stationary riser
- 1/2" (13mm) male-threaded inlet for installation on pipe fittings
- Maximum pressure: 75 psi (5,2 Bar)
- Height: 6" (15cm), 18" (45cm)

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

Pressure-compensating Drip Bubblers

- 2.0 and 4.0 GPH (7,6 and 15,1 LPH)
- Pressure-Compensating
- Effluent models

Toro's new pressure-compensating ½" (13mm) threaded Drip Bubblers are built to perform in tough environments. Bringing commercial-grade ruggedness to drip irrigation, they're easy to install, virtually maintenance-free, and are a more robust alternative to traditional drip emitters connected to ¼" (6mm) tubing. The innovative design of these Drip Bubblers combines the low flow rates of drip emitters with the ease of ½" (13mm) PVC riser installation. A self-sealing screen eliminates the need for plumber's tape and the chloramine-stabilized silicone diaphragms assure long-term reliability with potable or reclaimed water. Toro continues to set the standard for performance and durability in the world of drip irrigation.

Features & Benefits

Easy to Install

Easily threads on to a ½" (13mm) threaded riser. The self-sealing screen eliminates the cost and labor of having to use plumber's tape on every riser.

Easy to Maintain

Self-cleaning mechanism flushes at every startup, ensuring reliable operation and fewer maintenance headaches.

Durable Construction

Commercial-grade plastic and chloramine-stabilized silicone diaphragm provide dependable UV- and chemical-resistant performance in the least forgiving of environments.

Pressure Compensating

Pressure compensating to 2 and 4 GPH (7,6 LPH and 15,1 LPH) over a range of 5-50 PSI (0,35-3,5 Bar).



Effluent Model

Specifications

Operating Range

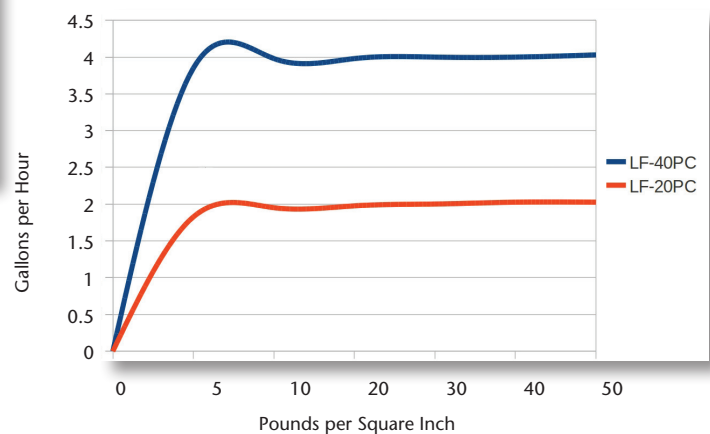
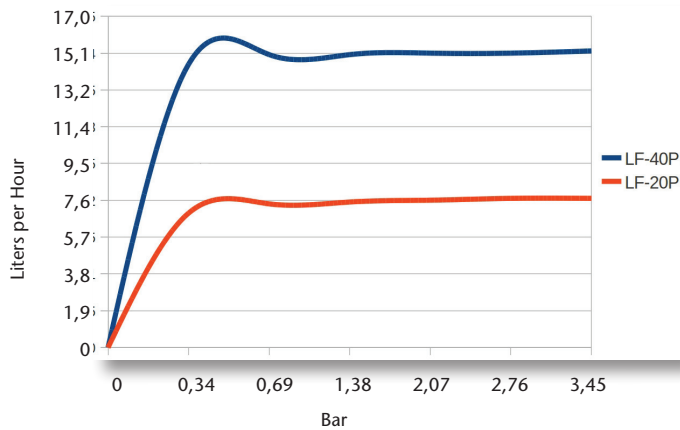
- Flow Rates: 2.0 GPH & 4.0 GPH (7,6 LPH and 15,1 LPH)
- Pressure Compensation: 5 – 50 PSI (0,35-3,5 Bar)
- Minimum Filtration Requirement: 80 Mesh

Operating Specifications

- ½" (13mm) FIPT inlet; diffuser cap outlet
- Self-sealing screen eliminates need for plumber's tape
- Self-cleaning flush at startup minimizes clogging and maintenance
- Flow rate molded into the identification
- Commercial-grade plastic and chloramine-stabilized silicone diaphragm provide dependable UV- and chemical-resistant performance
- Effluent and non-effluent models

Warranty

- Two years



Specifying Information — Drip Bubblers

Model Number	Description
LF20-PC	2.0 GPH (7,6LPH) PC Bubbler
LF40-PC	4.0 GPH (15,1LPH) PC Bubbler
LF20-PCE	2.0 GPH (7,6LPH) PC Bubbler, Effluent
LF40-PCE	4.0 GPH (15,1LPH) PC Bubbler, Effluent

Super Funny Pipe®

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

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.



Features & Benefits

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 8" (20,3cm) and 12" (30,5cm) lengths or just get the individual fittings as needed.



Specifications

Dimensions

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

Operating Specifications and Features

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

Warranty

- Two years

Super Funny Pipe Model List

Model	Description
850-23	20' (6,1m) Length, 3/8" (9,5mm) Polyethylene Pipe
850-24	50' (15,2m) Coil, 3/8" (9,5mm) Polyethylene Pipe
850-25	100' (30,5m) Coil, 3/8" (9,5mm) Polyethylene Pipe

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® Swing Joints

Specifications

Warranty

- Two years

Top pair:

12" and 8" Long x 1/2" (300mm and 200mm Long x 13mm)

Super Funny Pipe Swing Joints Model List	
Model	Description
SPFA-585	8" x 1/2" (200 x 13mm)
SPFA-5875	8" x 3/4" (200 x 20mm)
SPFA-5125	12" x 1/2" (300 x 13mm)
SPFA-51275	12" x 3/4" (300 x 20mm)



Bottom pair:

12" and 8" Long x 3/4"

(300mm and 200mm Long x 20mm)

Super Funny Pipe® Fittings

Specifications

Warranty

- Two years

Super Funny Pipe Fittings Friction Loss Data

Model No.	Description	LPM Flow				
		5	10	15	20	25
850-36	20mm Male Adapter	1,35	4,13	9,55	21,7	37,7
850-35	13mm Male Adapter	0,89	3,08	6,89	16,1	28,2
850-31	13mm Male Elbow	1,87	6,43	13,8	28,7	46,9
850-34	13mm Female Elbow	1,87	6,43	13,8	28,7	46,9
850-32	20mm Male Elbow	2,23	7,42	17,8	7,10	61,4

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

Super Funny Pipe Fittings Model List	
Model	Description
850-20	Coupling
850-31	Male Elbow, 1/2" (13mm)
850-32	Male Elbow, 3/4" (20mm)
850-33	Female Adapter, 1/2" - 3/4" (13-20mm)
850-34	Female Elbow, 1/2" (13mm)
850-35	Male Adapter, 1/2" (13mm)
850-36	Male Coupling, 3/4" (20mm)
850-37	Tee, Barbed Inserts
850-60	Saddle Tee, 3/4" (20mm)
850-61	Saddle Tee, 1" (25mm)



Rotors Overview



Model	Mini 8	300 Multi-Stream	T5	TR50XT	IMPOP
Page Number	34-35	36-37	38-39	40-41	42
Inlet size	½" (13mm)	¾" (20mm)	¾" (20mm)	¾" (20mm)	½" (13mm) ¾" (20mm)
Radius	20'-35' (6,1-10,7m)	15'-33' (4,6-10,1m)	25'-50' (7,6-15,2m)	28'-48' (8,5-14,6m)	32' to 45' (9,8-13,8m)
Flow Range	0.8-3.40 GPM (3,0-12,9 LPM)	0.57-7.54 GPM (2,0-28,0 LPM)	0.76-9.63 GPM (2,8-36,5 LPM)	1.0-9.8 GPM (3,8-37,0 LPM)	1.5-7.5 GPM (5,7-28,2 LPM)
Operating Pressure Range	30-50 PSI (2,0-3,5 Bar)	35-50 PSI (2,4-3,5 Bar)	25-70 PSI (1,7-4,8 Bar)	30-70 PSI (2,0-4,8 Bar)	25-50 PSI (1,7-3,5 Bar)
Artificial Turf					
Shrubs/Ground Cover		X	X	X	
Slopes		X	X	X	
Low Pressure	X		X	X	
High Traffic/Vandal Prone Areas				X	
Rubber Cover for Sports Fields			X	X	
High Wind			X	X	
Normally Open Hydraulic System					
Full Circle	X	X	X	X	X
Part-circle Adjustable	X		X	X	
Part-circle Fixed		X			X
Part/Full Circle In One	X	X	X	X	X
Stainless Steel Riser				X	
*Check Valve	Optional	Optional	Optional	Standard	
Effluent Water Option		X	X	X	
Shrub Model		X	X	X	
High Pop Model		X	X	X	
*Smart-Arc Memory				X	
Below Grade				X	
*Trajectory Adjustment				5°-25°	
*X-Flow Water Shut-off				X	
Standard Pop-up Height	4" (100mm)	2 ¾"-3 ¾" (70-95mm)	5" (127mm)	5" (127mm)	3" (76mm)
Warranty	Two years	Two years	Five years	Five years	Two years



*WaterSmart® Feature



Model	T7	640	TS90	690	TG101
Page Number	44-45	46-48	49-50	50	51-52
Inlet size	1" (25mm)	1" (25mm)	1" (25mm)	1½" (37mm)	2" (50mm)
Radius	46'-83' (14,1 - 25,0m)	47'-67' (14-20m)	53' - 95' (16-29m)	87'-108' (26,5-33m)	91'-178' (27-54m)
Flow Range	6.8 - 30.6 GPM (25,7-115,8 LPM)	6.0-25.0 GPM (22,7-94,6 LPM)	14.0-61.5 GPM (52,9-232,8 LPM)	51.0-82.2 GPM (193,1-311,2 LPM)	42-248 GPM (158,9-938,7 LPM)
Operating Pressure Range	40-100 psi (2,8 - 7,0 Bar)	40-90 PSI (2,8-6,2 Bar)	40-100 PSI (2,8-7,0 Bar)	80-100 PSI (5,5-7,0 Bar)	50-95 PSI (3,5-6,5 Bar)
Artificial turf			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	5" (127mm)	2¾" (60mm)	4" (100mm)	2¼" (57mm)	N/A
Warranty	Five years	Five years	Five years	Three years	Two years

Mini 8 Series

- **Inlet Size:** 1/2" (13mm)
- **Radius:** 20'-35' (6,1-10,7m)
- **Operating Pressure Range:** 30-50 psi (2,0-3,4 Bar)

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 20' (6,1m) and 35' (10,7m), the Mini 8 provides great value and water efficiency for your landscapes.



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

Features & Benefits

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 fixed left stop to the desired position.

Five Interchangeable Nozzles

To cover varying flow and radius requirements (comes pre-installed with a 1.5 nozzle).

Part And Full Circle In One

Offers convenience and reduces inventory requirements.

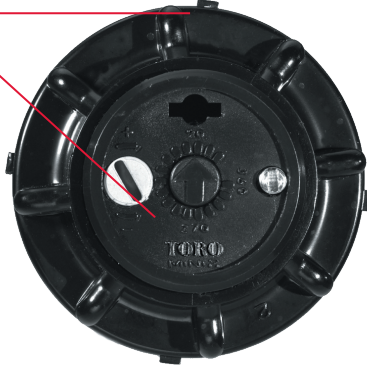
Water Management Highlight

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 setting is visible from the top of sprinkler



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.

Specifications

Dimensions

- Body height: 6" (150mm)
- Pop-up to nozzle height: 3¾" (95mm)
- Exposed diameter: 1¾" (45mm)
- Cap diameter: 2¼" (57mm)
- Inlet: ½" (13mm) female-threaded

Operating Specifications

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

Options Available

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

Warranty

- Two years



Optional Check Valve

Prevents low head drainage and puddling at the sprinkler.

Mini 8 Performance Data—Metric

Nozzle	Bar	LPM	Radius	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, 4" (100mm) 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" (20mm) for Lawn and High-pop; ½"-¾" (13-20mm) for Shrub model
- **Radius:** 15'-30' (4,6-9,2m)
- **Operating Pressure Range:** 35-50 psi (2,4-3,5 Bar)

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.



**Effluent
Options
Available**



**Check
Valve
Options
Available**

Features & Benefits

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

3" (75mm) 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	12" (300mm) Pop-up w/o Nozzle

Water Management Highlight

A Winning Combination of Watering Efficiency and Visual Appeal

The exclusive "fingers of water" application takes a flow 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: 2 3/8" (60mm)
- Cap Diameter: 3" (75mm)
- Height:
 - Lawn Pop-up: 6 1/8" (155mm)
 - High-Pop: 16" (405mm)
- Shrub Base Diameter: 1 3/4" (45mm)

Operating Specifications

- Radius: 15'-30' (4,6-9,2m)
- Flow Rate:
 - Lawn Pop-up and High-pop: 0.57-7.51 GPM (2,1-28,4 LPM)
 - Shrub (COM): 2.07-6.36 GPM (7,8-24,0 LPM)
- Operating Pressure Range: 35-50 psi (2,4-3,5 Bar)
- Trajectory: 3 angles to cover short, medium & large radius
- Pop-up to nozzle:
 - Lawn Pop-up: 2 3/4" (70mm)
 - High-Pop: 11 3/4" (298mm)
- Inlet (Female-threaded):
 - Lawn Pop-up and High-pop: 3/4" (20mm)
 - Shrub: 1/2" to 3/4" (13-20mm)

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	44,1	38,2	12,9	9,7	8,1	7,3	6,5	5,7	4,9	4,0	3,2
	5,0	39,0	33,8	14,1	10,6	8,8	8,0	7,1	6,2	5,3	4,4	3,5
	6,0	31,9	27,6	16,6	12,5	10,4	9,3	8,3	7,3	6,2	5,2	4,2
	7,0	27,0	23,3	19,1	14,3	11,9	10,7	9,6	8,4	7,2	5,9	4,8
	8,0	24,0	20,8	22,2	16,7	13,9	12,5	11,1	9,7	8,3	6,9	5,6
3,5	6,0	36,9	31,9	19,2	14,4	12,0	10,8	9,6	8,4	7,2	6,0	4,8
	7,0	31,3	27,1	22,2	16,7	13,9	12,5	11,1	9,7	8,3	6,9	5,6
	8,0	27,2	23,6	25,2	18,9	15,7	14,2	12,6	11,0	9,4	7,8	6,3
	9,0	24,1	20,9	28,2	21,1	17,6	15,8	14,1	12,3	10,6	8,8	7,0
	10,0	21,6	18,7	31,2	23,4	19,5	17,5	15,6	13,6	11,7	9,7	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	4,9	25,4	8,8	6,6	5,5	4,9	4,4	3,9	3,3	2,8	2,2
	3,5	5,5	25,2	11,0	8,3	6,9	6,2	5,5	4,8	4,1	3,4	2,8
02	2,5	6,5	18,2	11,1	8,3	6,9	6,2	5,5	4,8	4,2	3,5	2,8
	3,5	7,4	16,4	13,0	9,8	8,1	7,3	6,5	5,7	4,9	4,1	3,3
03	2,5	8,6	19,5	20,9	15,7	13,1	11,7	10,4	9,1	7,8	6,5	5,2
	3,5	9,2	20,1	24,6	18,5	15,4	13,8	12,3	10,8	9,2	7,7	6,2
63§	2,5	8,6	9,8	10,5	7,8	6,5	5,9	5,2	4,6	3,9	3,3	2,6
	3,5	9,2	10,1	12,3	9,2	7,7	6,9	6,2	5,4	4,6	3,9	3,9
93§	2,5	8,6	14,7	15,7	11,7	9,8	8,8	7,8	6,9	5,7	4,9	3,9
	3,5	9,2	15,1	18,5	13,9	11,5	10,4	9,2	8,1	6,9	5,8	4,6

Specifying Information— 300 Series Multi-Stream Rotor

3XX-XX-XX-COM-E				
Arc	Body	Nozzle		Optional
3XX	XX	XX		COM
04—90° 05—112° 06—135° 07—157,5° 08—180°	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)
Example: A 300 Series Shrub Sprinkler with a 90° arc and an adjustable nozzle, would be specified as: 304-10-15				E—Effluent

* Available on Lawn Pop-up and Shrub only

** Must be used on High-pop body

T5 Series

- **Inlet Size:** ¾" (20mm)
- **Radius:** 25'-50' (7,6-15,2m)
- **Operating Pressure Range:** 25-70 psi (1,7-4,8 Bar)

The new Toro® T5 Series Rotor has the features to satisfy all your basic irrigation needs while surprising you with a few extras.



**Effluent
Options
Available**



**Check
Valve
Options
Available**

Features & Benefits

5" (127mm) Pop-Up

Easily replaces many competitive 4' (100mm) 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.

Nozzle Tree

The T5 comes with a full nozzle tree of 8 standard nozzles (25°) and 4 low angle nozzles (10°).

Optional Check Valve

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

Top Adjust Arc Set

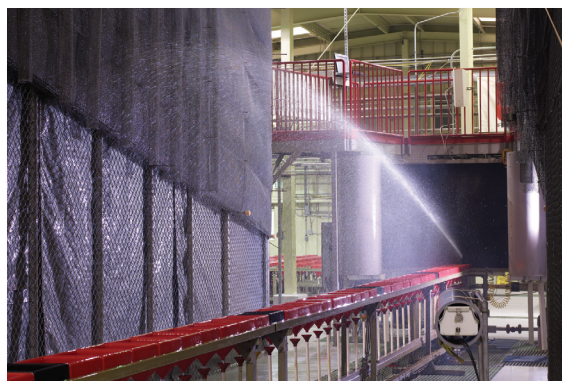
The T5 can be set between a minimum arc set of 40° and a full circle set of 360°. Arc changes are made from the top of the sprinkler while popped up or down by using a small slotted screwdriver.

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	5" (127mm) Lawn Pop-up w/o check valve
T5PCK	5" (127mm) Lawn Pop-up w/ check valve
T5PE	5" (127mm) Lawn Pop-up w/o check valve-effluent
T5S	Shrub w/ check valve
T5HP	High-Pop
T5P-RS	5" (127mm) Lawn Pop-up w/RapidSet
T5PCK-RS	5" (127mm) Lawn Pop-up w/ check valve w/RapidSet



Extensive testing for T5 nozzle efficiency was performed using SPACE calculations



Nozzles

Geometry on the face of the nozzle creates breakup.

Stream straighteners align the water flow behind the nozzle.



Specifications

Dimensions

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

Operating Specifications

- Radius: 25'-50' (7,6-15,2m)
- Flow Rate: 0.76 – 9.63 GPM (2,8-36,5 LPM)
- Operating Pressure Range: 25-70 PSI (1,7-4,8 Bar)
- Trajectory: 25° standard, 10° low angle
- Pop-up to nozzle: 5" (127mm)
- Inlet: ¾" (20mm)
- Factory installed with a #3.0 nozzle

Options Available

- Check valve
- RapidSet™ Arc Adjustment

Warranty

- Five years

T-5 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
1.5 LA	4,5	8,84	0,28	4,7	7,27	8,39
	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
2.0 LA	4,0	9,45	0,41	6,8	9,13	10,55
	4,5	9,45	0,43	7,2	9,67	11,16
	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
3.0 LA	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
	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

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
2.0	4,5	10,97	0,43	7,1	7,09	8,19
	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
2.5	4,0	11,28	0,54	9,0	8,52	9,83
	4,5	11,28	0,59	9,8	9,21	10,64
	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
3.0	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
	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
4.0	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
	1,7	11,28	0,67	11,2	10,54	12,17
	2,0	11,64	0,72	12,1	10,69	12,34
5.0	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
	1,7	11,89	0,85	14,2	12,05	13,92
6.0	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
8.0	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

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

Specifying Information—T5 Sprinkler

T5X-XXXX-XX-X						
Description	Body	Nozzle		Optional	Optional	
T5	P	XXXX		XX	E	
T5—T5	P—Lawn Pop-up S—Shrub HP—High Pop	15—1.5 GPM 20—2.0 GPM 25—2.5 GPM 30—3.0 GPM	40—4.0 GPM 50—5.0 GPM 60—6.0 GPM 80—8.0 GPM	Low Angle Nozzle 10LA—1.0 GPM 15LA—1.5 GPM 20LA—2.0 GPM 30LA—3.0 GPM	CK—Check-O-Matic* RS—RapidSet (w/Lawn Pop-up only)	E—Effluent

Example: A T5 Lawn Pop-up sprinkler with a 2.5 nozzle, would be specified as: T5P-25

TR50XT Series

- **Inlet Size:** ¾" (20mm)
- **Radius:** 28'-48' (8,5-14,6m)
- **Operating Pressure Range:** 30-70 psi (2,0-4,8 Bar)

The Toro® TR50XT Series Rotor is the ultimate sprinkler upgrade! No ¾" (20mm) rotor can match the feature set of TruArc™ adjustments, Smart Arc™ memory return in addition to Toro's patented X-Flow® and Trujectory™ technologies.



Features & Benefits

X-Flow® Water Shutoff Device

Allows one or more sprinklers to be shut-off while all the others on the same line are still running.

Exclusive Trujectory™ Adjustment

Allows fine-tuning of nozzle spray trajectory - make adjustments from 5° to 25° to compensate for wind, low-hanging branches or throwing water from the top of slopes.

TruArc™ For Easy Arc Set

Eliminates "palming" of a sprinkler to check the final arc setting—visual arc set from arrow on cap to arrow on riser.

Smart Arc™ Memory

Safely returns sprinkler to previously set arc if vandalized, and slip clutch assures no damage to gears.

Standard Reversible Check Valve

Prevents low-head drainage, keeping laterals charged with water (maintains up to 8' (2.4m) elevation change).

Below Grade Installation

Allows for maximum safety helping to eliminate the potential for tripping accidents or damage caused by mowers.



Effluent
Options
Available



Check
Valve
Options
Available



SST Riser
Options
Available

Water Management Highlight

Trujectory™: Accurate Arc Adjustment without Switching the Nozzle Set



High



Low

With Toro's Trujectory technology you can adjust anywhere between 5° and 25° without having to change out the nozzle. The easy-to-use design combines the fine-tuning capability that you really want with what your installation requires. Overthrows onto hardscapes are eliminated and the integrity of the stream remains intact since there is no need for a diffuser screw.

Specifications

Dimensions

- Body Diameter:
 - Lawn Pop-up: 2 $\frac{3}{8}$ " (60mm)
 - High-pop: 2 $\frac{1}{2}$ " (64mm)
- Cap Diameter: 3" (75mm)
- Height:
 - Lawn Pop-up: 8" (200mm)
 - High-Pop: 15 $\frac{7}{8}$ " (403mm)

Operating Specifications

- Radius: 28-48' (8,5-14,6m)
- Flow Rate: 1.0– 9.80 GPM (3,8-37,1 LPM)
- Operating Pressure Range: 30-70 psi (2,1-4,8 Bar)
- Trajectory: Adjustable from 5°-25°
- Pop-up to nozzle: 4 $\frac{3}{4}$ " (120mm)
- Inlet: $\frac{3}{4}$ " (20mm) female-threaded
 - $\frac{1}{2}$ " to $\frac{3}{4}$ " (13-20mm) female-threaded on shrub
- $\frac{1}{2}$ " (13mm) below grade installation (except shrub model)

Additional Features

- Cluster, water-lubricated, gear-drive design
- Standard rubber cover
- Large filter screen to prevent clogging
- Factory installed with a #3.0 nozzle
- Left arc indicator on cap (arrow) and on body (hash mark), and right trip indicator on black adjusting band
- Dry mode pull-up slot for convenience
- Arc adjustment from 30°-360°
- Continuous, unidirectional rotation provides uniform water coverage when set at full circle
- Color-coded nozzle tree with 8 interchangeable nozzles
- Stainless steel radius adjustment screw allows up to 25% radius reduction

Warranty

- Five years

TR50XT Series Model List

Model	Description
TR50XT	5" (127mm) Lawn pop-up
TR50XTPE	5" (127mm) Lawn pop-up, Effluent
TR50XTS	Shrub
TR50XTSE	Shrub, Effluent
TR50XTHP	12" (300mm) High-pop
TR50XTHPE	12" (300mm) High-pop, Effluent
TR50XTSS	5" (127mm) Lawn pop-up w/ Stainless Steel Riser
TR50XTSSSE	5" (127mm) Lawn pop-up w/ Stainless Steel Riser, Effluent

TR50XT Performance Data—Metric

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

* ▲ 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 can be reduced 25% with breakup screw.

Performance rating is based on a zero wind condition.

Radius shown in meters. Data based on 360°.

Specifying Information—TR50XT

TR50XT XX-XX-E				
Description	Body	Nozzle		Optional
TR50XT	XX	XX		E
TR50XT—TR50XT Series Rotor	P—Lawn Pop-up S—Shrub HP—High-pop PSS—Stainless Steel Riser	10—1.0 15—1.5 20—2.0 30—3.0	45—4.5 60—6.0 75—7.5 90—9.0	E—Effluent

Example: A TR50XT Series sprinkler with High-pop and a 6.0 nozzle, would be specified as: **TR50XT-HP-60**

IMPOP Impact Series

- **Radius: 32' to 45' (9,8-13,8m)**
- **Pressure: 25-50 PSI (1,7-3,5 Bar)**

IMPOP Impact Sprinkler is perfect for all flow volumes of medium to large lawn areas.



Water Management Highlight

Reliable Operation in effluent or other “dirty” water applications.

Removable cap for easy servicing and debris removal.

IMPOP Impact Series Model List

Model	Description
IMPOP	3" (76mm) Pop-Up Impact Spray

Note: Nozzles included

Specifying Information— IMPOP Impact Series

IMPOP-XX
Model
IMPOP
IMPOP— 3" (76mm) Pop-Up Impact Spray
Example: A IMPOP Impact Series sprinkler with a preinstalled 3.0 nozzle, you would specify: IMPOP-30

IMPOP Performance & Nozzle Selection Chart – Metric

	90°		120°		180°		270°		360°	
Pressure (Bar)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)	Flow (LPM)	Radius (m)
2,0	5,7	9,7	7,6	10,0	11,0	10,6	14,4	11,6	21,9	11,9
2,5	6,4	10,3	8,0	10,8	12,6	11,4	15,3	12,2	23,6	12,6
3,0	7,5	10,8	8,7	11,6	14,2	12,1	17,1	12,6	25,9	13,3
3,5	8,8	11,0	9,5	12,3	15,3	12,5	19,6	12,8	28,4	13,8

Radius shown in meters. Data based on 360°.

Features & Benefits

Zero Flush Seal

Prevents flushing on pop-up, allowing more sprinklers on the same line

Weighted Spray Guide Arm

Controls stream and prevents side splash onto buildings and walkways

Five interchangeable, color-coded matched precipitation rate nozzles

For easy installation and identification

Unique lip case design

Aids in setting proper installation height, prevents grass from growing into head and minimizes backwash

Specifications

Dimensions

- Cap diameter: 5" (127mm)
- Height: 9³/₈" (238mm)
- Pop-up: 3" (75mm)
- Combination 1/2" (13mm) or 3/4" (20mm) threaded NPT/ BSP bottom inlet or 1/2" (13mm) side inlet

Operating Specifications

- Radius: 32' to 45' (9,8-13,8m)
- Recommended operating pressure: 25-50 PSI (1,7-3,5 Bar)
- Flow rate: 1.5-7.5 GPM (5,7-28,2 LPM)

Additional Features

- Part and full circle arcs in one model
- Removable cap for easy servicing and debris removal
- 3" (75mm) pop-up clears tall grass
- Heavy-duty, high-impact case with sturdy, reinforced ribbed design
- Pressure-activated wiper seal assures reliable pop-up and pop-down
- Radius reduction screw breaks water into smaller droplets for uniform watering.
- Replaces competitive sprinklers, including Rain Bird® AG-5, Orbit® and Lego® sprinklers

Warranty

- Two years

Sports Field Solutions

Challenges of Sports Turf Maintenance:

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.

Toro offers a complete line of professional products from control systems to sprinklers and in-field monitoring systems 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 efficiently, 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.

Sports Field And Artificial Turf Sprinklers:



T7 Series
Radius: 46'-75'
(14,1-22,9m)



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



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



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



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

Sports Field Management Solutions:

Sentinel® Central Control (Page #: 112)

- 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 #: 104)

- 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

For more information and sports field designs using Toro Products visit www.toro.com

T7 Series

- **Inlet Size: 1" (25mm) NPT or BSP**
- **Radius: 46-83' (14,0-25,0m)**
- **Operating Pressure Range: 40-100 psi (2,8 - 7,0 Bar)**

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

Features & Benefits

Top Arc Indication

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

High Efficiency Nozzles

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 (<50' (<15,2m)) applications such as baseball infields.



Effluent
Options
Available



SST Riser
Options
Available

T7 Rotor Model List

Model	Description
• T7P-02	1" (25mm) Rotor, NPT
• T7P-02E	1" (25mm) Rotor, Effluent Indicator, NPT
• T7P-02L	1" (25mm) Rotor, Low Flow, NPT
• T7P-02LE	1" (25mm) Rotor, Low Flow, Effluent Indicator, NPT
• T7PSS-02	1" (25mm) Stainless Steel Rotor, NPT
• T7PSS-02E	1" (25mm) Stainless Steel Rotor, Effluent Indicator, NPT
• T7PSS-02L	1" (25mm) Rotor, Low Flow, NPT
• T7PSS-02LE	1" (25mm) Rotor, Low Flow, Effluent Indicator, NPT
• T7P-52	1" (25mm) Rotor, BSP
• T7P-52E	1" (25mm) Rotor, Effluent Indicator, BSP
• T7P-52L	1" (25mm) Rotor, Low Flow, BSP
• T7P-52LE	1" (25mm) Rotor, Low Flow, Effluent Indicator, BSP
• T7PSS-52	1" (25mm) Stainless Steel Rotor, BSP
• T7PSS-52E	1" (25mm) Stainless Steel Rotor, Effluent Indicator, BSP
• T7PSS-52L	1" (25mm) Rotor, Low Flow, BSP
• T7PSS-52LE	1" (25mm) Rotor, Low Flow, Effluent Indicator, BSP



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

Specifications

Dimensions

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

Operating Specifications

- Precipitation rate: .30 -.55 (7,6 - 14,0mm) inches per hour
- Radius: Low-flow models: 38'-53' (11,6 - 16,2m)
High-flow models: 46'-83' (14,0 - 25,0m);
- Flow rate: Low-flow models: 1.7-13.0 GPM (6,4-49,2 LPM) High-flow models: 6.8-30.5 GPM (25,4-116 LPM)
- Operating pressure range: 40-100 psi (2,8-7,0 Bar)
- Inlet size: 1" (25mm) threaded NPT or 1" (25mm) BSP
- Nozzle trajectory: 25°
- Arc adjustment: 50°-360° (unidirectional at 360°)

Additional Features

- Standard check valve
- Threaded cap-retained riser assembly
- Variable reversing stator
- Two nozzle trees:
Low flow: 6 nozzles (2, 3, 4.5, 6, 7.5 and 9)
High flow: 7 nozzles (7, 9, 12, 16, 20, 24 and 27)
- 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 - High Flow—Metric

Nozzle	Pressure (Bar)	Flow (LPM)	Radius (m)	Precip mm/hr ■	Precip mm/hr ▲
7.0	2,8	25,8	14,1	7,87	8,97
	3,4	28,1	14,8	8,21	9,36
	4,1	30,7	14,9	8,60	9,81
	4,8	33,7	15,3	9,07	10,34
	5,5	36,6	15,8	9,09	10,37
	6,2	38,9	15,8	9,29	10,59
9.0	6,9	41,1	16,3	9,10	10,37
	2,8	28,5	14,4	8,35	9,52
	3,4	31,2	15,4	8,07	9,20
	4,1	33,7	15,3	8,38	9,55
	4,8	37,1	15,8	8,87	10,12
	5,5	39,7	16,4	8,80	10,04
12.0	6,2	42,4	16,3	9,06	10,33
	6,9	44,8	16,5	9,23	10,52
	2,8	37,7	15,3	9,74	11,10
	3,4	39,9	16,3	9,92	11,32
	4,1	43,6	17,3	10,04	11,45
	4,8	47,5	18,0	10,52	11,99
16.0	5,5	51,1	18,2	10,92	12,45
	6,2	54,4	18,5	11,22	12,79
	6,9	57,5	19,2	11,43	13,03
	2,8	50,8	16,0	11,68	13,32
	3,4	56,6	17,4	11,67	13,30
	4,1	59,8	18,3	11,48	13,09
20.0	4,8	64,8	18,6	12,03	13,72
	5,5	69,7	19,4	12,10	13,80
	6,2	74,3	19,6	12,50	14,25
	6,9	78,7	20,0	12,82	14,62
	2,8	61,0	15,8	14,02	15,99
	3,4	69,7	17,5	13,38	15,26
24.0	4,1	74,1	18,6	13,29	15,16
	4,8	79,5	19,4	13,81	15,75
	5,5	85,5	20,2	13,07	14,90
	6,2	90,8	20,7	13,47	15,36
	6,9	95,7	21,4	13,78	15,71
	2,8	58,5	16,4	13,99	15,95
27.0	3,4	67,0	18,4	12,02	13,70
	4,1	74,8	19,4	12,18	13,88
	4,8	81,8	20,2	12,51	14,27
	5,5	88,2	20,8	12,69	14,47
	6,2	94,2	21,3	13,16	15,00
	6,9	99,6	22,0	12,76	14,55
27.0	2,8	73,3	16,8	15,66	17,86
	3,4	83,2	19,6	12,72	14,51
	4,1	90,2	21,6	11,56	13,18
	4,8	97,2	22,0	12,11	13,81
	5,5	103,5	22,3	12,55	14,31
	6,2	109,9	22,7	12,97	14,79
27.0	6,9	115,5	22,9	13,27	15,13

T7 Sports Rotor Nozzle Performance Data - Low Flow—Metric

Nozzle	Pressure (Bar)	Flow (LPM)	Radius (m)	Precip mm/hr ■	Precip mm/hr ▲
2.0	2,8	6,5	12,2	2,78	3,17
	3,4	7,4	12,8	3,15	3,59
	4,1	8,2	12,8	3,32	3,78
	4,8	8,9	12,5	3,61	4,11
	5,5	9,6	12,8	3,88	4,43
	6,2	10,3	12,5	3,94	4,50
3.0	6,9	10,9	12,5	4,19	4,78
	2,8	9,2	12,5	3,91	4,46
	3,4	10,5	12,8	4,23	4,83
	4,1	11,7	12,5	4,51	5,14
	4,8	12,8	12,5	4,92	5,61
	5,5	13,8	12,8	5,05	5,76
4.5	6,2	14,7	12,5	5,15	5,87
	6,9	15,4	13,1	5,37	6,12
	2,8	15,4	11,6	6,89	7,86
	3,4	17,6	12,5	6,77	7,72
	4,1	19,6	12,5	7,52	8,58
	4,8	21,3	12,8	7,82	8,92
6.0	5,5	23,0	12,8	8,43	9,61
	6,2	24,6	13,1	8,59	9,79
	6,9	26,0	13,1	9,10	10,38
	2,8	18,6	13,1	6,51	7,42
	3,4	21,3	14,0	6,51	7,42
	4,1	23,7	14,6	6,66	7,59
7.5	4,8	26,7	15,2	7,18	8,19
	5,5	27,9	14,9	7,51	8,56
	6,2	29,8	15,2	7,70	8,78
	6,9	31,7	15,2	8,19	9,34
	2,8	21,9	13,4	7,30	8,33
	3,4	25,1	14,0	7,66	8,74
9.0	4,1	27,9	14,6	7,82	8,92
	4,8	30,5	15,2	8,20	9,35
	5,5	33,0	15,5	8,54	9,74
	6,2	35,8	15,8	9,26	10,55
	6,9	37,4	15,8	8,95	10,20
	2,8	27,7	13,7	8,85	10,10
9.0	3,4	31,9	14,9	8,60	9,80
	4,1	35,5	15,5	8,83	10,07
	4,8	39,5	16,5	9,08	10,36
	5,5	42,7	16,8	9,11	10,39
	6,2	45,6	16,8	9,74	11,11
	6,9	48,2	17,1	9,94	11,33

Radius shown in meters. 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 L—Low Flow

Example: A low flow T7P sprinkler with a stainless steel riser and effluent rubber cover would be specified as T7PSS-02LS

640 Series

- **Inlet Size: 1" (25mm) NPT or BSP**
- **Radius: 47'-67' (14,0-20,0m)**
- **Operating Pressure Range: 40-90 psi (2,8-6,2 Bar)**

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 & Benefits

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.



Effluent
Options
Available



Check Valve
Options
Available



The 640 installs below grade for increased player safety.

Specifications

Dimensions

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

Operating Specifications

- Radius: 47' – 67' (14-20m)
- Flow Rate: 6.0 – 25.0 GPM (22,7-94,6 LPM)
- Operating Pressure Range: 40-90 psi (2,8-6,2 Bar)
- Trajectory: 27°
- Pop-up to nozzle: 2¾" (60mm)
- Inlet: 1" female-threaded (25mm)
- Below-grade installation: up to ½" (13mm)
- Check-O-Matic maintains up to 15' (4,6m) 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, 360 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 1—90° 2—180° 3—270° 4—360°	0—NPT Thread 5—BSP Thread	1—Normally Open Valve-In-Head 2—Check-O-Matic	0 1 2 3 4	045° 060° 108° 127°	148° 173° 192° 238°	E—Effluent Model







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

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
41	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
	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
42	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
	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
43	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
	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
44	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
	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
44	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
41	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
	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
42	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
	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
43	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
	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
44	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
	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
45	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

TS90 Series

- **Inlet Size:** 1" (25mm) NPT or BSP
- **Radius:** 53'-95' (16,2-29,0m)
- **Operating Pressure Range:** 40-100 psi (2,8-7,0 Bar)

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



Effluent
Options
Available

Features & Benefits

Trajectory 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 flexibility for fine-tuning any 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 Configuration

Provides better distribution uniformity, nozzle flexibility and system efficiency.

Constant-Velocity Drive

Provides reliable rotation speed – from sprinkler to sprinkler.

TurfCup™ for Sports Fields

The optional TurfCup version seamlessly integrates into either natural grass or artificial turf sports fields, enhancing player safety, surface playability and field aesthetics.



Specifications

Dimensions

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

Operating Specifications

- Radius: 53'-95' (16,2-29,0m) at 25° trajectory
- Flow Rate: 14.0-61.5 GPM (52,9-232,8 LPM)
- Precipitation Rate: .56-.60"/hr (14,2-15,2mm/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" (25mm) female-threaded (NPT or BSP)
- Operating pressure range: 40-100 psi (2,8-7,0 Bar)

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 10' (3m) elevation
- Nozzle options: 9 main, 3 intermediate, 1 inner

Options Available

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

Warranty

5 years



TS90 Series Model List

Model	Description
TS90TP-02-14	NPT, Low Flow Nozzles 1-4 Included
TS90TP-02-58	NPT, Medium Flow Nozzles 5-8 Included
TS90TP-52	BSP, Nozzles 1-8 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

Specifying Information—TS90TP

TS90TP XX-X-X			
Arc	Threads	Nozzle	Optional
TS90TP	XX	X	E
TS90TP— TS90TP 1" (25mm) Rotor with Trujectory	02—NPT 52—BSP	1 2 3	4 5 6
		7 8 9	E—Effluent Model

Example: A TS90 Series sprinkler with Trujectory, NPT threads, and with an #8 nozzle would be specified as: **TS90TP-02-8**

690 Series

- **Inlet Size:** 1½" (37mm) NPT
- **Radius:** 87'-108' (26,5-33,0m)
- **Operating Pressure Range:** 80-150 PSI (5,5-10,3 Bar)

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 & Benefits

Artificial Playing Surfaces

Radius and flow 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.

Specifications

Dimensions

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

Operating Specifications

- Radius: 87' – 108' (26,5-33,0m)
- Flow Rate: 51.0 – 82.2 GPM (193,0-311,2 LPM)
- Operating Pressure Range: 80-150 psi (5,5-10,3 Bar)
- Pop-up height to nozzle: ¾" (20mm)
- Inlet: 1½" NPT (38mm)
- Check-O-Matic: Maintains 37' (11,2m) 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 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

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	▲	■	29,3	232	▲	■	30,5	280	▲	■
6,9	690	7,04	27,4	216	19,0	16,5	20,7	278	18,7	16,2	19,9	311	20,8	18,0
					17,2	17,2			17,9	17,9			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°	4—Full-circle	A—150°	1—Normally Open Hydraulic			90		8—80 psi			
2—180°	6—Full-circle, 2-speed (60°-120°)	B—165°	2—Check-O-Matic			91		1—100 psi			
	8—Full-circle, 2-speed (180°-180°)	C—195°	6—Electric			92					
		D—210°									

Example: When specifying a 690 Series Sprinkler with a 180° arc, electric valve-in-head, #91 nozzle, and pressure regulation at 80 psi (5,5 Bars), you would specify: **692-06-918**

TG101 Series

- **Inlet Size: 2" (50mm) NPT or BSP**
- **Radius: 91'-178' (27,7-54,2m)**
- **Operating Pressure Range: 40-95 psi (2,8-6,5 Bar)**

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 turf.



Features & Benefits

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

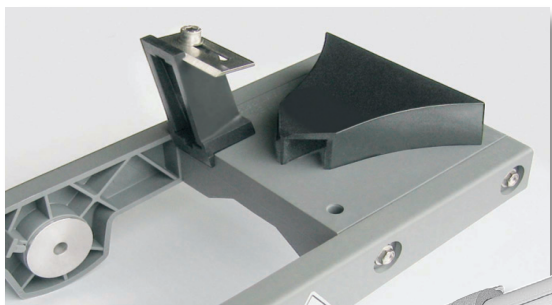
Reduces run-off and over-watering.

Self-adjusting Jet Breaker Device

To vary distribution at lower pressures or to increase close-in watering.

No Maintenance

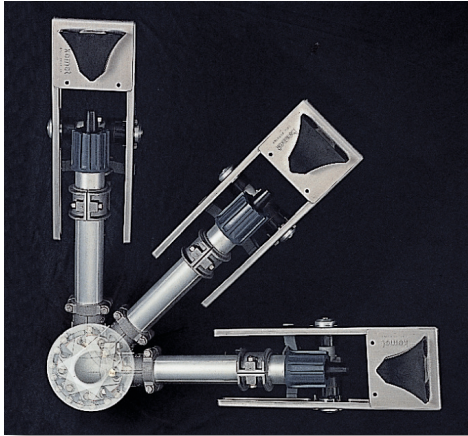
The TG101 is maintenance-free.



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 m³/h l/s		Radius m	Flow m³/h l/s		Radius m	Flow m³/h l/s		Radius m	Flow m³/h l/s		Radius m	Flow m³/h l/s		Radius m	Flow m³/h l/s		Radius m	Flow m³/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

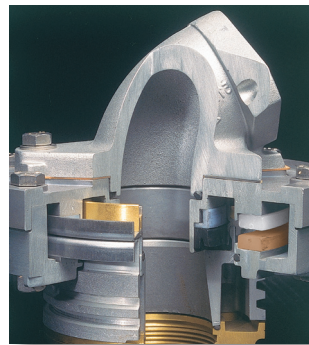
- Radius: 91'-178' (27,7-54,2m)
- Flow Rate: 42-248 GPM (158,9-938,7 LPM)
- Operating Pressure Range: 40-95 PSI (2,5-6,5 Bar)
- Trajectory: 24°
- Two standard nozzle options: 0.63" and 0.87" (16mm and 20mm) (additional range of nozzles available for specialty applications)

Additional Features

- Powerful and efficient stream diffusion
- Standard 2" (50mm) 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.

Specifying Information—TG101

TG101-X-XX			
Description	Nozzle		
TG101	XX		
TG101—TG101 Sprinkler	12—12,0mm	18—18,0mm	24—24,0mm
	14—14,0mm	20—20,0mm	26—26,0mm
	16—16,0mm	22—22,0mm	28—28,0mm

Example: A TG101 sprinkler, part circle with a 16.0 nozzle, would be specified as: **TG101-P-16**

Rotor Accessories

Effluent Water Indicators Installation/Adjustment Tools



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



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



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

Nozzles



T7

102-2633

- Nozzle tree

T5 Nozzle Tree Kit

102-7712

- 20 nozzle trees per bag





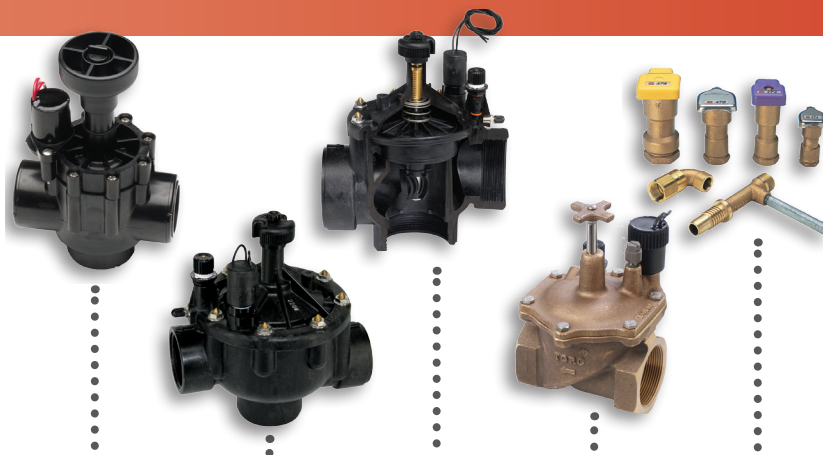
Valves Overview



Model		EZ-Flo® Plus	TPV Series	264 Series	P-150
Page Number		58-59	60-61	62-63	64-65
Flow range		0.25-30 GPM (0,9-113,6 LPM)	0.1- 40 GPM (0,3-151,4 LPM)	0.25-15.0 GPM (0,9-56,8 LPM)	5.0-150 GPM (18,9-567,8 LPM)
Operating Pressure		10-150 PSI Max (0,7-10,3 Bar)	10-175 PSI Max (0,7-12,1 Bar)	10-150 PSI Max (0,7-10,3 Bar)	20-150 PSI Max (1,4-10,3 Bar)
Conditions	Electrically-Activated Systems	X	X	X	X
Sizes	Hydraulically-Activated Systems				
	Pin-Type Systems				
	Effluent Water*	X	X	X	
	3/4" (20mm)	X		X	
Configurations	1" (25mm)	X	X	X	
	1 1/4" (32mm)				
	1 1/2" (40mm)				X
	2" (50mm)				X
	2 1/2" (65mm)				
	3" (80mm)				
Inlet/Outlet	Angle	X			X
	Anti-Siphon	X			
	Inline/Globe	X	X	X	X
	Threaded (Female)	X	X		X
Features	Slip	X	X		
	Male X Male	X	X	X	
	Male X Barb	X	X	X	
	Manual Flow Control	X	X	X	X
	Pressure Regulation*				X
Body Construction	Internal Bleed	X	X		X
	External Bleed (Flush)*	X	X	X	
	Optional DC Latching Solenoid*	X	X		X
	ABS			X	
Warranty	PVC	X	X		
	Glass-filled Nylon			X	X
	Glass-filled Polypropylene	X			
	Brass				
Warranty		Three years	Five years	Two years	Five years



*WaterSmart® Feature



Model		252 Series	P-220 Series	P-220 Scrubber	220 Brass Series	Quick Coupler Series
Page Number		66-67	68-69	70-71	72-73	74
Flow range		5-90 GPM (18,9-340,6 LPM)	5-300 GPM (18,9-1135,6 LPM)	80-300 GPM (302,8-1135,6 LPM)	5.0-350 GPM (19-1324,8 LPM)	
Operating Pressure		10-150 PSI Max (0,7-10,3 Bar)	10-220 PSI Max (0,7-15,2 Bar)	10-220 PSI Max (0,7-15,2 Bar)	10-220 Psi Max (0,7-15,2 Bar)	
Conditions	Electrically-Activated Systems	X	X	X	X	
	Hydraulically-Activated Systems	X				
	Pin-Type Systems					
	Effluent Water	X	X	X	X	X
Sizes	¾" (20mm)					X
	1" (25mm)	X	X		X	X
	1 ¼" (32mm)				X	
	1 ½" (40mm)	X	X		X	
	2" (50mm)	X	X	X	X	
	2 ½" (65mm)				X	
	3" (80mm)		X	X	X	
Configurations	Angle	X	X	X	X	
	Anti-Siphon					
	Inline/Globe	X	X	X	X	
Inlet/Outlet	Threaded (Female)	X	X	X	X	
	Slip					
	Male X Male					
	Male X Barb					
Features	Manual Flow Control	X	X	X	X	
	Pressure Regulation		X	X	X	
	Internal Bleed		X	X		
	External Bleed (Flush)	X	X	X	X	
	Optional DC Latching Solenoid		X	X	X	
Body Construction	ABS	X				
	PVC					
	Glass-filled Nylon	X	X	X		
	Glass-filled Polypropylene					
	Brass				X	X
Warranty		Two years	Five years	Five years	Five years	Two

EZ-Flo® Plus Jar-Top Series

- 3/4" (20mm), 1" (25mm) 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.



*Effluent
Options
Available*



*DC
Latching
Solenoid
Option*

Features & Benefits

Jar-Top Design

Requires no screws and provides fast and easy servicing.

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 150 psi (10,3 Bar).

In-Line or Anti-Siphon Models

Ample selection for new and retrofit installations.

Optional Flow Control

Adjusts the flow of each zone on a system.

Water Management Highlight



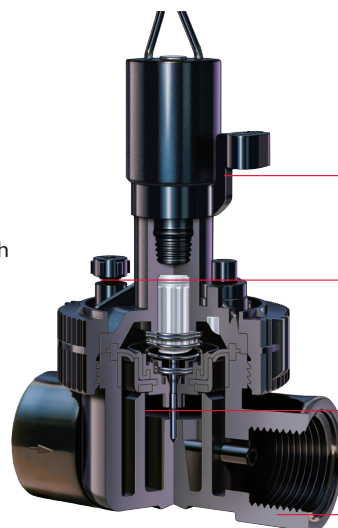
Jar-Top for Ease of Use

No screws mean less time flushing out the system 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.



EZ-Flo® Plus with DC Latching Solenoid

EZ-Flo valves can be ordered with pre-installed DC Latching solenoids providing cost and labor savings. Perfect for use with Toro controllers, especially DDCWP and TDC.



Manual On/Off

External bleed screw for system flushing

Stainless steel metering system

Male or female or slip configurations

Specifications

Dimensions

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

Operating Specifications and Additional Features

- Flow Range:
 - ¾"(20mm): 0.25-20 GPM (0,9-75,7 LPM)
 - 1"(25mm): 0.25-30 GPM (0,9-113,5 LPM)
- Operating Pressure: 10-150 psi (0,68-10,32 Bar)
- 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

EZ-Flo Plus Series Model List

International Models (EZP-)

Model	Description
50Hz Solenoids	
EZP-02-54	1" (25mm), Male X Male, BSP
EZP-22-54	1" (25mm), Male X Male, BSP, w/ Flow Control
EZP-03-54	1" (25mm), Female, BSP
EZP-23-54	1" (25mm), Female, BSP, w/ Flow Control
DC-Latching Solenoid	
EZP-22-94	1" (25mm), Male X Male, BSP, DCLS-P, w/ Flow Control
EZP-23-94	1" (25mm), Female, BSP, DCLS-P, w/ Flow Control
Less Solenoid	
EZP-02-64	1" (25mm), Male X Male, BSP, Less Solenoid
EZP-03-64	1" (25mm), Female, BSP, Less Solenoid
EZP-22-64	1" (25mm), Male X Male, BSP, w/ Flow Control, Less Solenoid

EZ-Flo® Friction Loss Data—Metric

Size	Model	LPM Flow					
		1	19	38	57	76	114
1"(25mm)	Inline	0,14	0,24	0,28	0,31	0,32	0,43
1"(25mm)	Anti-siphon	0,14	0,14	0,31	0,16	0,26	0,56
¾" (20mm)	Anti-siphon	0,14	0,29	0,29	0,33	0,52	—

Specifying Information—EZ-Flo® Plus

EZ F X-X-X-X				
Model	Flow Control	Body Style	Solenoid	Size
EZF	X	X	0X	0X
EZF—EZ-Flo Plus Valve EZP—EZ-Flo Plus Valve, BSP	0—Without Flow Control 2—With Flow Control	0—1" Slip x Slip 1—1" Male x Male NPT 2—1" Male x Male BSP 3—1" Female BSP 5—Male NPT x Barb 6—1" Female NPT 9—Anti-siphon	0—60Hz Solenoid 5—50Hz Solenoid 6—Less Solenoid 9—DCLS-P	3—¾"(20mm) 4—1" (25mm)

Example: A 1" (25mm) EZ-Flo Plus Valve with slip configuration and flow control would be specified as: EZF-20-04

TPV Series

- 1" (25mm) NPT or BSP
- 0.1—40 GPM (0,38-151,4 LPM)
- Electric

The search for a full-featured yet economically priced, residential and commercial valve is over thanks to Toro's newest 1" (25mm) valve offering – the TPV Series. These full-featured, rugged, debris-resistant valves feature flow ranges from 0.1 to 40 GPM (0,38-151 LPM), making them ideal for everything from drip to high-flow residential and light-commercial applications.



Effluent
Options
Available



DC
Latching
Solenoid
Option

Features & Benefits

Tough Double-Beaded, Chloramine and Ozone-Resistant Santoprene® Diaphragm

Ensures a consistent, leak-proof seal all the way up to 175 psi (12,0 Bar).

Patented DBS (Debris Bypass System) Technology™

Metering system ensures proper functionality, even in tough environments.

Multiple Body Styles

Choose from various styles to meet any installation requirement.

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

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

Operating Specifications

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

Additional Features

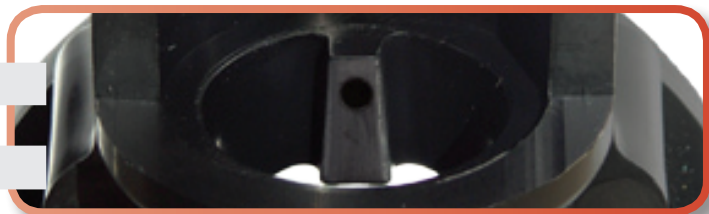
- Rugged, Double-Beaded Santoprene diaphragm
- Patented DBS™ (Debris Bypass System) technology
- Operates in low-flow and landscape drip applications when a filter is installed upstream
- Built with either AC or DC Latching Solenoids
- Manual Operation without the use of a controller—Internal and External 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



Glue Stop™

TPV Slip-by-Slip models include this patented feature, which ensures that the installer cannot block the downstream port of the valve during installation with primer and cement.

TPV Series Model List

BSP Options	
Model	Description
TPV100BSP	1" (25mm) Female x Female, 50Hz/BSP, without Flow Control
TPVF100BSP	1" (25mm) Female x Female, 50Hz/BSP, with Flow Control
TPV100MMBSP	1" (25mm) Male x Male, 50Hz/BSP, without Flow Control
TPVF100MMBSP	1" (25mm) Male x Male, 50Hz/BSP, with Flow Control
TPVF100BSPDC	TPV 1" (25mm) FxF, Electric Globe, with Flow Control, BSP, DCLS-P
TPVF100MMBSPDC	TPV 1" (25mm) MxM, Electric Globe, with Flow Control BSP, DCLS-P

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

Specifying Information—TPV

TPV-X-100-XX-XXX-XX					
Model	Flow Control	Size	Body Style	Threads, Solenoid	Optional
TPV	X	100	XX	XXX	XX
TPV—TPV Valve	F—With Flow Control	100—1" (25mm)	Blank—Female X Female MM—Male X Male S—Slip MB—Male X Barb	Blank—NPT Threads, 60Hz Solenoid BSP—BSP Threads, 50Hz Solenoid	DC—DCLS-P Latching Solenoid

Example: A 1" (25mm) TPV Valve with slip configuration and flow control would be specified as: **TPVF100S**

264 Series

- ¾" (20mm)
- Electric

Heavy duty. Hardworking. The Toro® 264 Series Valves are made to withstand whatever a large residential or light commercial application can dish out.

Features & Benefits

Heavy-Duty Toro Solenoid

Provides dependable operation and long life.

Single-Piece Robust Rubber Diaphragm

For reliable, leak-free closing.

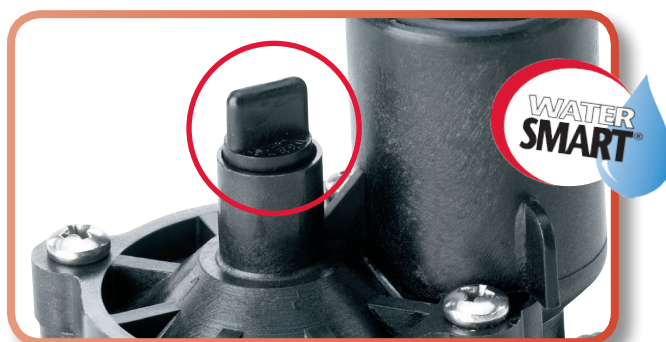
Tough, Glass-Filled Zytel Cap And Body

Durable materials which provide years of reliable operation.



*Effluent
Options
Available*

Water Management Highlight



External Bleed

The external bleed allows perfect manual operation of the valve without electrically charging the solenoid. System flushing can also be accomplished using the external bleed with debris and other material being flushed out of the port.

Specifications

Dimensions

- ¾" (20mm): 3" x 4" (75 x 100mm) H x W

Operating Specifications

- Recommended flow range:
 - ¾" (20mm): 0.25-15.0 GPM (0,9-56,7 LPM)
- Operating Pressure
 - ¾" (20mm): 10-150 psi (0,7-10,3 Bar)
- Solenoid: 24 VAC (50/60 Hz)
 - ¾" (20mm):
 - Inrush: 0.25 amps, 6.00 VA;
 - Holding: 0.19 amps, 4.56 VA
 - Burst Pressure safety rating: 750 psi (51,7 Bar)

Additional Features

- Manual flow control adjustable to zero flow
- Self-cleaning, stainless steel metering pin
- External manual bleed
- 18" (45cm) lead wires (electric)
- Single-piece rubber diaphragm
- Low in-rush solenoid

Options Available

- 89-7855 - Effluent Water Indicator Valve Flow Control Knob

Warranty

- Two years



264 Series Model List	
Model	Description
264-06-03	20 mm (¾") Male x Male, Electric, without Flow Control

264 Series Friction Loss Data—Metric

Size	Model	LPM Flow							
		2	25	50	75	100	125	150	175
20mm (¾")	Electric	<1,0	0,1	0,4	0,7				

Specifying Information—264

264- X6 -0 X		
Valve	Body Style	Size
264	X6	03
264—264 Valve	0—Male Thread x Male Thread	1—¾"
Example: A ¾" electric 264 Series Valve without flow control and Male x Male valve would be specified as: 264-66-03		

Note: DC Latching Solenoid not available.

P-150 Series Plastic Valves

- 1½" and 2" (40 and 50mm), BSP
- Electric Models

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.



Effluent
Options
Available



EZReg® Pressure
Regulation Module

Features & Benefits

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 1" (25mm) valve and it only requires 10 psi (0,7 Bar) 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" (40mm): 7¼" x 3⅝" (184mm x 92mm) H x W
- 2" (50mm): 9½" x 6⅞" (241mm x 156mm) 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: 5-150 GPM (18,9-567,8 LPM)
- Pressure range: 20-150 PSI (1,4-10,3 Bar)

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, 5-30 psi (0,3-2,1 Bar) 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, 18" (457mm) Leads, Captive Plunger
- DCLS-P - Potted DC Latching Solenoid Assembly

Warranty

- Five years

P-150 Series Plastic Valve Model List

Model	Description
P150-23-56	Electric, Globe/Angle, 1½" (40 mm) BSP Plastic Valve, 50 Hz Solenoid
P150-23-58	Electric, Globe/Angle, 2" (50 mm) BSP Plastic Valve, 50 Hz Solenoid
P150-23-96	Electric, Globe/Angle, 1½" (40 mm) BSP Plastic Valve, DCLS-P Solenoid
P150-23-98	Electric, Globe/Angle, 2" (50 mm) BSP Plastic Valve, DCLS-P 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
40mm (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						
50mm (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

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.

Specifying Information – P-150 Series Plastic Valves

P150-23-X-X			
Type	Configuration	Solenoid	Size
P150	23	X	X
P150—P-150 Series Plastic Valve	23—BSP, Electric	5—50 Hz Solenoid 6—Less Solenoid 9—DCLS-P	6—40 mm (1½") 8—50 mm (2")

Example: A 50 mm (2") P-150 Series Plastic Valve with BSP threads and 50 Hz solenoid, would be specified as: P150-23-58

252 Series

- 1" (25mm), 1½" (40mm), 2" (50mm), NPT and BSP
- Electric/Hydraulic
- Globe, Angle

Toro® 252 Series valves are built tough and ready to withstand the harshest conditions in any commercial application. With several configurations to choose from, 252 Series valves are available in electric or hydraulic, 1" (25mm), 1.5" (40mm) and 2" (50mm) globe/angle models with flow control.

Features & Benefits

Heavy-Duty Toro Solenoid

Provides dependable operation and long life.

High-Grade Construction

Made of durable materials to resist wear.

Globe and Angle Configurations

Easy to use in any application.

Fabric-Reinforced Rubber Diaphragm

Provides long-term tear and stretch tolerance.

Water Flow Control Handle

Adjusts the flow of each zone on a system.

Robust ABS Material

Ensures the valve will resist heavy pressure and high flows without damage.



Effluent
Options
Available

Water Management Highlight



External Bleed

The external bleed allows perfect manual operation of the valve without electrically charging the solenoid. System flushing can also be accomplished using the external bleed with debris and other material being flushed out of the port.

Specifications

Dimensions

- 1" (25mm): 6¾" x 4½" (171 x 114mm) H x W
- 1½" (40mm): 7¾" x 6" (197 x 152mm) H x W
- 2" (50mm): 9½" x 7" (241 x 178mm) H x W

Operating Specifications

- Recommended Flow Range:
 - 1" (25mm): 5-20 GPM (18,9-75,7 LPM)
 - 1½" (40mm): 25-70 GPM (94,6-264,9 LPM)
 - 2" (50mm): 60-90 GPM (227,1-340,6 LPM)
- Operating Pressure: 20-150 psi (1,3-10,3 Bar)
- Solenoid: 24 VAC, 50/60 Hz
 - Inrush: 0.30 amps, 7.20 VA
 - Holding: 0.20 amps, 4.80 VA
- Burst pressure safety rating: 750 psi (51,7 Bar)

Additional Features

- Globe and globe/angle built into one valve
- Manual flow control
- External manual bleed
- 24" (60cm) lead wires 1½"(40mm) and 2"(50mm) electric or 18" (45cm) lead wires 1"(25mm) electric
- Self-cleaning, stainless steel metering pin (electric)
- Tough, glass-filled bonnet
- Single-piece diaphragm

Options Available

- 89-7855 – Effluent Water Indicator Valve Flow Control Knob

Warranty

- Two years



Globe and Angle In One Valve

The all-in-one globe and angle configuration allows flexibility in design and installation. Angle installations allow for less friction loss across the piping system while globe configurations are standard in many irrigation systems.

252 Series Model List

Model	Description
252-26-56	1½" (40 mm) Female BSP, Globe/Angle, with Flow Control
252-26-58	2" (50 mm) Female BSP, Globe/Angle, with Flow Control

252 Series Friction Loss Data—Metric

Size	Type	Config.	LPM Flow												
			25	50	75	100	125	150	175	200	250	300	400	500	700
40mm (1½")	Hydraulic	Globe Angle				0,07 0,07	0,09 0,08	0,14 0,10	0,18 0,10	0,23 0,13	0,34 0,25	0,44 0,34	0,78 0,56	1,06 0,93	
50mm (2")	Hydraulic	Globe Angle									0,14 0,07	0,17 0,13	0,27 0,23	0,43 0,30	0,61 0,37
25mm (1")	Electric	Globe Angle	0,2 0,2	0,30 0,26	0,34 0,31	0,42 0,32	0,53 0,40	0,65 0,51							
40mm (1½")	Electric	Globe Angle				0,10 0,09	0,11 0,08	0,14 0,10	0,18 0,12	0,23 0,16	0,32 0,21	0,47 0,33	0,84 0,52	1,20 0,70	
50mm (2")	Electric	Globe Angle									0,14 0,07	0,17 0,13	0,28 0,23	0,45 0,30	0,61 0,37

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 5 psi (0,3 Bar) loss. ■ = Debris-resistant models

Specifying Information—252

252-XX-X-X			
Model	Activation Type	Thread Type	Size
252	XX	X	X
252—252 Series Valve	06—1" Electric 21—Normally Open Hydraulic 26—1½" or 2" Electric	0—NPT 5—BSP	4—1" (25mm) 6—1½" (40mm) 8—2" (50mm)

Example: A 1½" (40mm) electric 252 Series Valve, would be specified as: 252-26-06

Note: DC Latching Solenoid not available.

P-220 Series

- 1" (25mm), 1½" (40mm), 2" (50mm), 3" (75mm) NPT and BSP
- Electric
- Pressure-regulating
- Globe, Angle

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 220 PSI (15,1 Bar).



Features & Benefits

Durable Glass-Filled Nylon

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

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 verification 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" (50mm) & 3" (75 mm) Models

Allows for upstream filtration of water to ensure no clogging occurs inside the valve.

Water Management Highlight



Pressure Regulator

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



Effluent
Options
Available



Pressure
Regulation



DC
Latching
Solenoid
Option

Specifications

Dimensions

- 1" (25mm): 6³/₄" x 3⁵/₈" W (171 x 92mm) H x W
- 1½" (40mm): 7¹/₄" x 3⁵/₈" W (184 x 92mm) H x W
- 2" (50mm): 9¹/₂" x 6¹/₈" W (241 x 156mm) H x W
- 3" (80mm): 10³/₄" x 6¹/₈" W (273 x 156mm) H x W

Operating Specifications

- Flow Range:
 - 1" (25mm): 5-35 GPM (18,9-132,5 LPM)
 - 1½" (40mm): 30-110 GPM (113,6-416,4 LPM)
 - 2" (50mm): 80-180 GPM (302,8-681,4 LPM)
 - 3" (80mm): 150-300 GPM (567,8-1135,6 LPM)
- Operating Pressure:
 - Electric: 10-220 psi (0,7-15 Bar)
- Pressure regulating:
 - Outlet (EZR-30): 5-30 psi ± 3 (0,3-2,0 Bar)
 - Outlet (EZR-100): 5-100 psi ± 3 (0,3-7,0 Bar)
- Inlet: 10-220 psi (0,7-15,0 Bar)
- Minimum pressure differential (between inlet and outlet) for pressure regulation: 10 psi (0,7 Bar)
- Burst pressure safety rating: 750 psi (51,7 Bar)
- Body styles:
 - Globe/Angle: 1", 1½", 2", 3" (25, 40, 50, 75mm) 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, 5-30 psi (0,3-2,1 Bar) 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, 18" (457mm) 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 5 GPM (18,9 LPM) with EZReg

Warranty

- Five years

P-220 Series BSP Thread Model List

Model	Description
P220-23-54	Electric, In-Line 1" (25mm) BSP Plastic Valve, 50 Hz Solenoid
P220-23-56	Electric, In-Line 1½" (40mm) BSP Plastic Valve, 50 Hz Solenoid
P220-23-58	Electric, In-Line 2" (50mm) BSP Plastic Valve, 50 Hz Solenoid
P220-23-50	Electric, Angle 3" (80mm) BSP Plastic Valve, 50 Hz Solenoid
With D.C. Latching Solenoid	
P220-23-94	Electric, In-Line 1" (25mm) BSP Plastic, with DCLS-P latching solenoid pre-installed
P220-23-96	Electric, In-Line 1½" (40mm) BSP Plastic, with DCLS-P latching solenoid pre-installed
P220-23-98	Electric, In-Line 2" (50mm) BSP Plastic, with DCLS-P latching solenoid pre-installed
P220-23-90	Electric, Angle 3" (80mm) BSP Plastic, with DCLS-P latching solenoid pre-installed

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
25mm (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													
40mm (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									
50mm (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					
80 mm (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.

Specifying Information—P220

P220-2X-X-X				
Model	Activation Type	Solenoid	Size	
P220	2X	X	X	
P220—P-220 Series Plastic Valve	23—BSP 26—NPT, Electric 27—NPT, Pressure-regulated EZR-100 (Standard)	0—60 Hz Solenoid 5—50 Hz Solenoid 9—DC Latching Solenoid	4—1" (25mm) 6—1½" (40mm)	8—2" (50mm) 0—3" (75mm)
Example: A 1" (25mm) P-220 Series plastic electric, pressure-regulating valve would be specified as: P220-27-04				

P-220 Scrubber Series

- 2" (50mm), 3" (75mm), NPT and BSP
- Electric
- Pressure-regulating
- Globe, Angle

A true dirty water irrigation valve, able to handle chlorine and other chemicals found in reclaimed and other non-potable water systems.



Features & Benefits

Durable Glass-Filled Nylon

Ensures the P-220 can operate at pressures up to 220 psi (15 Bar).

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 Retrofittable

Diaphragm assembly may be replaced or retrofitted to previous models.

Scrubber
Turbine

Filter Surface



ACT™ System

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



Effluent
Options
Available



Pressure
Regulation



DC
Latching
Solenoid
Option

Specifications

Dimensions

- 2" (50mm): 9½" x 6⅛" (241 x 156mm) H x W
- 3" (75mm): 10¾" x 6⅛" (273 x 156mm) H x W

Operating Specifications

- Flow Range:
 - 2" (50mm) 80-180 GPM (302,8-681,3 LPM)
 - 3" (75mm) 150-300 GPM (567,8-1135,6 LPM)
- Operating Pressure
 - Electric: 20-220 psi (1,4-15,2 Bar)
- Pressure regulating:
 - Outlet (EZR-30): 5-30 psi ± 3 (0,3-2,1 Bar) ± 0,2
 - Outlet (EZR-100): 5-100 psi ± 3 (0,3-7,0 Bar) ± 0,2
- Inlet: 10-220 psi (0,7-15,2 Bar)
- Minimum pressure differential (between inlet and outlet) for pressure regulation: 10 psi (0,7 Bar)
- Body styles:
 - Globe/Angle: 2" (50mm), 3" (75mm) female threads
- 118-5983 Solenoid: 24 VAC (50) Standard
 - Inrush: 60 Hz: 0.34 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 5 GPM (18,9 LPM) with EZReg
- 316 nuclear-grade stainless-steel filter for maximum corrosion resistance

Options Available

- EZR-30 - EZReg, 5-30 psi (0,3-2,1 Bar) Regulator Module
- EZR-100 - EZReg, 5-100 psi (0,3-7,0 Bar) Regulator Module
- EFF-KIT-50 Hz - Effluent Water (Lavender) Solenoid Assembly (24 VAC, 50 Hz) and Warning Tag
- 118-5983: 24 VAC Solenoid Assembly, 50 Hz, 18" (450mm) Leads, Captive Plunger
- DCLS-P - Potted DC Latching Solenoid Assembly

Warranty

- Five years

P-220S Scrubber Series Model List

Model	Description
P220S-23-58	Electric, In-Line 2" (50mm) BSP Plastic, 50 Hz Solenoid, Scrubbing Mechanism
P220S-23-50	Electric, In-Line 3" (75mm) BSP Plastic, 50 Hz Solenoid, Scrubbing Mechanism
P220S-KIT-08	2" (50mm) Scrubber diaphragm assembly kit
P220S-KIT-00	3" (75mm) Scrubber diaphragm assembly kit

P-220S Series Friction Loss Data (Pressure Loss in Bar)—Metric

Size	Configuration	Flow Rate (LPM)											
		300	350	400	450	500	550	600	700	800	900	1000	1100
50 mm	Globe	0,267	0,298	0,386	0,527	0,650	0,650	0,967					
	Angle	0,192	0,283	0,390	0,435	0,530	0,530	0,743					
80 mm	Globe							0,197	0,263	0,379	0,438	0,502	0,676
	Angle							0,156	0,217	0,310	0,340	0,438	0,609

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.

Specifying Information—P220S

P220S-2X-X-X			
Model	Activation Type	Solenoid	Size
P220S	2X	X	X
P220S—P-220S Scrubber Series Plastic Valve	3—BSP, Electric 6—NPT, Electric 7—NPT, Pressure-regulated EZR-100 (Standard)	0—60 Hz Solenoid 5—50 Hz Solenoid 9—DC Latching Solenoid	8—2" (50mm) 0—3" (75mm)

Example: A 2" (50mm) P-220S Series plastic electric, pressure-regulating valve would be specified as: P220S-27-08

220 Brass Series

- 1" (25mm), 1¼" (32mm), 1½" (40mm), 2" (50mm), 2½" (65mm), 3" (75mm)
- Electric
- Pressure-regulating
- Globe, Angle, NPT, BSP

Built for superior performance under pressure, these Toro® heavy-duty brass and stainless steel valves are rugged and reliable. The debris-resistant design is tested and proven under the harshest conditions.

Features & Benefits

Precise Pressure Control Option

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

Dirty Water Resistance

120-mesh, stainless steel filter screen is constantly flushed by the flow, enabling the use of very dirty water without clogging and valve closure failure.

External Downstream Manual Bleed

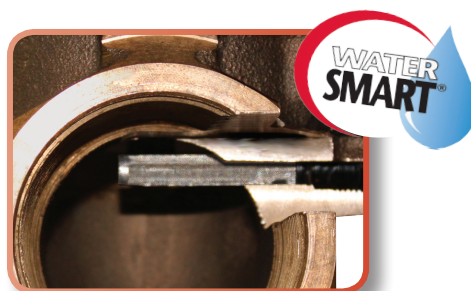
Keeps valve box dry and allows for manually setting pressure regulation.

Spike-Guard™ Solenoid

Reduces wire size requirements, allows twice as many valves to run simultaneously on a transformer and lowers power costs.



Water Management Highlight



Dirty Water Resistance

The 120-mesh, stainless steel filter screen is positioned on the supply side of the water stream. It is constantly flushed by the flow, enabling the use of very dirty water without clogging. Stainless steel construction of both the filter screen and the valve solenoid seat ensure long component life in all types of water and pressures.



Effluent
Options
Available



Pressure
Regulation



DC
Latching
Solenoid
Option

Note: All come with Effluent Sticker and Label. Compatible with DC Latching Solenoid.

Specifications

Dimensions

- 1" (25mm): 5¼" x 5" (133 x 127mm) H x W
- 1½" (32mm): 6½" x 6" (165 x 152mm) H x W
- 1½" (40mm): 6½" x 6" (165 x 152mm) H x W
- 2" (50mm): 7½" x 7" (191 x 178mm) H x W
- 2½" (65mm): 8¾" x 8½" (223 x 216mm) H x W
- 3" (80mm): 8¾" x 8½" (223 x 216mm) H x W

Operating Specifications

- Flow Range:
 - 1" (25mm): 5-40 GPM (18,9-151,4 LPM)
 - 1½" (32mm): 20-100 GPM (75,7-378,5 LPM)
 - 1½" (40mm): 20-130 GPM (75,7-492,1 LPM)
 - 2" (50mm): 30-180 GPM (113,6-681,3 LPM)
 - 2½" (65mm): 60-250 GPM (227,1-946,3 LPM)
 - 3" (80mm): 80-350 GPM (302,8-1324,8 LPM)
- Operating Pressure:
 - Electric: 10-220 psi (1,4-15,2 Bar)
- Pressure regulating:
 - Outlet (EZR-30): 5-30 psi ± 3 (0,3-2,1 Bar) ± 0,2
 - Outlet (EZR-100): 5-100 psi ± 3 (0,3-7,0 Bar) ± 0,2
- Inlet: 10-220 psi (1,4-15,2 Bar)
- Minimum pressure differential (between inlet and outlet) for pressure regulation: 10 psi (1,4 Bar)
- Burst pressure safety rating: 750 psi (51,7 Bar)
- Body styles:
 - Globe valve: 1" (25mm), 1½" (32mm), 1½" (37mm), 2" (50mm) female threads
 - Angle valve: 2½" (67mm), 3" (75mm) female threads
- 118-5983 Solenoid: 24 VAC (50 Hz) Standard
 - Inrush: 0,34 amps
 - Holding: 0,2 amps

Options Available

- EZR-30 - EZReg, 5-30 psi (0,3-2,1 Bar) Regulator Module
- EZR-100 - EZReg, 5-100 psi (0,3-7,0 Bar) Regulator Module
- EFF-KIT-50 Hz - Effluent Water (Lavender) Solenoid Assembly (24 VAC, 50 Hz) and Warning Tag
- 118-5983 - 24 VAC Solenoid Assembly, 60 Hz, 18" (450mm) Leads, Captive Plunger
- DCLS-P - Potted DC Latching Solenoid Assembly

Warranty

- Five years

Additional features

- Diaphragm stem guide
- 316 nuclear-grade stainless-steel stem for maximum corrosion resistance
- Pressure regulator can be installed as a service kit without draining the main line
- Pressure regulates in electric and manual modes, serviceable under pressure
- Forward-flow design for more precise regulation
- Standard, built-in Schrader-type valve for downstream pressure verification
- Anti-vandal dust cap on pressure-regulating models
- No external tubing for either electric or pressure regulating models
- Manual flow control: adjustable to zero flow
- Tough, double-beaded, fabric-reinforced rubber diaphragm

220 Brass Series Model List

Model	Description
50 Hz Solenoid	
220-23-54	Electric, In-Line 1" (25 mm) BSP Brass Valve, 50 Hz Solenoid
220-23-56	Electric, In-Line 1½" (40 mm) BSP Brass Valve, 50 Hz Solenoid
220-23-58	Electric, In-Line 2" (50 mm) BSP Brass Valve, 50 Hz Solenoid
220-23-50	Electric, Angle 3" (75 mm) BSP Brass Valve, 50 Hz Solenoid
Less Solenoid	
220-23-64	Electric, In-Line 1" (25 mm) BSP Brass Valve, Less Solenoid
220-23-66	Electric, In-Line 1½" (40 mm) BSP Brass Valve, Less Solenoid
220-23-68	Electric, In-Line 2½" (65 mm) BSP Brass Valve, Less Solenoid
220-23-60	Electric, Angle 3" (75 mm) BSP Brass Valve, Less Solenoid

220 Brass Series Friction Loss Data—Metric

Model	Type	LPM Flow																			
		25	50	75	100	125	150	200	250	300	350	400	450	500	600	700	800	900	1000	1200	1400
25mm (1")	Electric	0,15	0,13	0,17	0,31	0,41	0,48														
40mm (1½")	Electric			0,32	0,33	0,36	0,37	0,42	0,47	0,55	0,64	0,79	1,02								
50mm (2")	Electric					0,09	0,14	0,15	0,19	0,24	0,35	0,44	0,51	0,59	0,75	1,00					
75mm (3")	Electric									0,16	0,16	0,17	0,17	0,19	0,24	0,33	0,40	0,43	0,46	0,49	0,53

Notes: For optimum performance when designing a system, 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 5 psi loss.

Specifying Information—220 Brass

220-2X-X-X			
Model	Activation Type	Solenoid	Size
220	2X	X	X
220—220 Series Brass Valve	3—BSP, Electric	5—50 Hz Solenoid 6—Less Solenoid	4—1" (25mm) 8—2" (50mm) 6—1½" (40mm) 0—3" (75mm)

Example: A 1" (25mm) BSP, electric 220 Series Brass Valve with 50 Hz Solenoid, would be specified as: 220-23-54

Note: 1", 1½" and 2" —globe configuration.
3"—angle configuration.

Quick Coupler Series

- ¾" (20mm) and 1" (25mm)
- Standard, Vinyl, Effluent

Toro® Quick Coupler valves are designed for durable everyday use in projects requiring quick remote water access to the mainline water supply.



Features & Benefits

Stainless Steel And Brass Construction

Quick Couplers are also available with metal or vinyl covers in locking or non-locking options.

Multiple Models To Choose From

There are a variety of one-piece and two-piece models in ¾" (20mm) and 1" (25mm) sizes, including ACME thread key connections.

Eliminate Tangled Hoses

The 360-degree hose swivel provides movement without hose tangling.

¾" (20mm) Quick Coupling Valves and Accessories Model List

Model	Description
075-SLSC	One-piece, ¾" (20mm) Single Lug, Quick Coupler w/Standard Metal Cover
075-SLK	¾" (20mm) Single Lug Key, with ½" (12mm) Top Pipe Thread Outlet
075-75MHS	¾" (20mm) NPT x ¾" (20mm) MHT Hose Swivel

Quick Coupler Series Friction Loss Data—Metric

Model Number	LPM Flow									
	35	50	75	100	125	150	175	225	275	325
075-SLSC	0,1	0,2	0,4	0,6						
100-2SLLC			0,1	0,2	0,3	0,5				

Note: For optimum sprinkler performance when designing a system, be sure to calculate total friction loss to ensure sufficient downstream pressure. Values listed in bar. Flow rates are recommended not to exceed 0,3 bar loss.

1" Quick Coupling Valves and Accessories Model List

Model	Description
100-SLSC	One-piece, 1" (25mm) Single Lug, Quick Coupler w/Metal Cover
100-SLVC	One-piece, 1" Single Lug, Quick Coupler w/Vinyl Cover
100-SLVLC	One-piece, 1" (25mm) Single Lug, Quick Coupler w/Vinyl Locking Cover
100-2SLVC	Two-piece, 1" (25mm) Single Lug, Quick Coupler w/Vinyl Cover
100-ATLVC	One-piece, 1" (25mm) Quick Coupler w/Acme Thread and Lavender Locking Vinyl Cover
100-2SLLVC	Two-piece, 1" (25mm) Single Lug Quick Coupler w/Lavender Vinyl Locking Cover
100-AK	1" (25mm) Acme Thread, 1" (25mm) Top Pipe Thread Outlet
100-SLK	Single Lug Key, 1" (25mm) Top Pipe Thread Outlet w/Internal ¾" (20mm) NPT Threads
075-MHS	¾" (20mm) NPT x 1" (25mm) MHT Hose Swivel
100-MHS LK	1" (25mm) NPT x 1" (25mm) MHT Hose Swivel Key for Locking Cap

Specifying Information—Quick Couplers

XXX-XX-XX		
Size XXX	Nozzle XX	Optional XX
075—¾" (20mm) 100—1" (25mm)	SL—One-piece, Single Lug 2SL—Two-piece, Single Lug AT—ACME Thread	SC—Standard Cover VC—Vinyl Cover LVC—Effluent Vinyl Cover VLC—Vinyl Locking Cover

Example: A 1" (25mm) one-piece, single lug Quick Coupler Valve with a vinyl locking cover, would be specified as: 100-SLVLC

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
- 18" (0,5m) leads



SGS

- 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

Effluent 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: 5–30 psi (0,3–2,0 Bar)
- EZR-100: 5–100 psi (0,3–7,0 Bar)

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			
	18 AWG (1,0 mm ²)	16 AWG (1,5 mm ²)	14 AWG (2,5 mm ²)	12 AWG (4,0 mm ²)"
18 AWG (1,0 mm ²)	621	768	896	999
16 AWG (1,5 mm ²)	768	993	1219	1420
14 AWG (2,5 mm ²)	896	1219	1578	1938
12 AWG (4,0 mm ²)	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	TTT-9V	TSSCWP	TBCWP	DDC™WP	DDC™
Page Number	78-79	80-81	82-83	84-85	86-87
Number of Stations	1	1	1, 2, 4, 6	2, 4, 6, 8	4, 6, 8
Modular					
*ET-Adjust					
*Flow-Sensing					
TMR-1-Compatible					
Two-wire Decoder					
*RainSensor Compatible			X	X	X
Soil Sensor Compatible					
Number of Programs	1	1	4	3	3
Simultaneous Program Operation					
Number of Start Times	8	8	10	3 Per Program	3 Per Program
Maximum Station Runtime	3 Hours	3 Hours	12 Hours	4 Hours	4 Hours
Days of the Week Programming	X	X	X	X	X
Odd/Even Programming			X	X	X
Interval Programming				X	X
*ET-Optimized Programming					
Valves Per Station		1	1	1	1
Battery-Powered	X	X	X	X	X
Armchair™ Programming				X	X
Optional High-Surge Protection					
Enclosure	Outdoor	Outdoor	Outdoor	Waterproof Indoor/Outdoor	Indoor/Outdoor
Warranty	One Year	Two Years	Two years	Two years	Two years



*WaterSmart® Feature



Model	Evolution	TMC-424E	Custom Command	TDC Series
Page Number	88-93	94-95	96-97	98-99
Number of Stations	4 to 16	4 to 24	9, 12, 15, 18, 24, 36, 48	100-200
Modular	X	X		X
*ET-Adjust	with Smart Connect™	with TriComm™		with TriComm™
*Flow-Sensing		X		
TMR-1-Compatible	X	X	X	X
Two-wire Decoder				X
*RainSensor Compatible	X	X	X	X
Soil Sensor Compatible	X			
Number of Programs	3 Irrigation 3 Auxillary	4	4	10
Simultaneous Program Operation	X	X	X	X
Number of Start Times	4 per Program	16	16	60
Maximum Station Runtime	12 Hours	8 Hours	10 Hours	24 Hours
Days of the Week Programming	X	X	X	X
Odd/Even Programming	X	X	X	X
Interval Programming	X	X	X	X
*ET-Optimized Programming				
Valves Per Station	2	2	2	2
Armchair™ Programming			X	
Optional High-Surge Protection	X	X		X
Enclosure	X	X	Outdoor	Outdoor
Pedestal Option	Indoor / Outdoor	Indoor/Outdoor	X	X
Warranty	Five Years	Five years	Five years	Five years

Electronic Tap Timer

- **¾" or 1" (20mm or 25mm) Connection**
- **Battery Powered**
- **Outdoor**

A durable, battery-operated electronic tap timer from Toro. With multiple programs and an efficient, built-in solenoid and diaphragm valve, the Toro tap timer is a dependable and convenient solution for hose-end irrigation control.

Features & Benefits

Battery-operated

One 9-volt alkaline battery (not included) provides sufficient power to last an irrigation season

Weather-resistant controller, tap connected controller

¾" or 1" (20mm or 25mm) connection with built-in valve

2-minute program back-up

When batteries are temporarily removed for replacement



Water Management Highlight

Simple Programming:

15 different preset watering day combinations simplify initial programming and setup.

Specifications

Operating Specifications and Features

- 3/4" or 1" (20mm or 25mm) tap connection in single model
- One 9V Alkaline battery required (not included)
- Typical battery life of one season (6 months) based on normal use
- Recommended flow rate at 30 PSI (2,0 Bar): 4 GPM (15,1 LPM)
- Maximum flow rate: 10 GPM (40 LPM)
- Operating pressure: 20-102 PSI (1,4-7,0 Bar)
- Maximum operating pressure: 145 PSI (9,9 Bar)
- Recommended operating temperature: 41°F to 100°F (5°C to 38°C)
- RoHS and CE compliant

Additional features

- Large, easy to read LCD
- Connects directly to either a 3/4" or 1" (20mm or 25mm) outdoor water tap or filter
- 7-key touchpad operation
- Convenient 24-hour clock
- 7 day "Select-A-Day" calendar
- Up to 8 start times per day
- Automatic or manual functions
- Manual count-down mode (from 8 hours to 5 minutes)
- External ON/OFF button
- Summer/Winter key used for "daylight savings" adjustment
- 15 different preset watering day combinations
- Bushing contains removable, cleanable filter
- 2 Minute program back up when batteries are temporarily removed
- Battery life indicator

Warranty

- One year



Electronic Tap Timer Series Model List

Model	Description
TTT-9V	Battery Operated Electronic Tap Timer with built-in valve. 9V Battery not included

Specifying Information — Tap Timer

TTT-9V	
Model	Voltage
TTT	9V
TTT — Toro Tap Timer	9V — 9VDC, ROHS

Example: A Toro Tap Timer remote would be specified as: TTT-9V

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

TSSCWP Single Station Waterproof

- **Single Station**
- **Battery-powered**
- **Waterproof**

Flexibility in a single station controller. The Toro Waterproof Single Station Controller: A rugged, battery-powered controller that is ideal for use in remote or isolated single zone areas. Perfect for use with Toro valves sold with DC-latching solenoid pre-installed, including EZ-Flo® Plus, TPV, P-150, and P-220 Series Valves.

Features & Benefits

Fully Waterproof and Submersible

Submersible up to 6.5' (1,9m) for valve box installation.

Operates DC-Latching Solenoid

Controller is compatible with most manufacturers' DC-Latching solenoids.

Battery Powered

One 9-volt alkaline battery (not included) provides sufficient power to last an entire irrigation season.

Self-Diagnostic

Controller will display an error code if the solenoid circuit is shorted. Special circuit verification will not turn on valve if battery power low.

Rain Sensor Compatible

Works with wired, normally closed rain sensors.



Water Management Highlight



Runtime Extension

Manual Operation during Automatic Irrigation will pause irrigation program while Manual Run in progress. Once Manual Run is complete, Automatic Irrigation will resume. This feature allows easy one-time doubling of runtime when additional watering is needed.

Specifications

Operating Specifications and Features

- Operates one DC-Latching Solenoid
- Controller is compatible with all Toro valves accepting latching solenoids (model DCLS-P) and Rain Bird® and Hunter® competitive valve models with DC-Latching solenoids
- Valve-mounted (valve not included)
- Easy-to-use, 4-button keypad
- Programmable 7-Day Calendar Scheduling
- Up to 4 Daily Start Times with Start Time Stacking
- Runtime from 1 minute to 11 Hours, 59 minutes in 1 minute increments
- Accepts Toro TRS Wired RainSensor™ and other normally closed wired rain sensors
- AM/PM or 24-hour Clock
- Low battery indicator visible on LCD screen
- Controller display “sleeps” after 5 minutes without button press for power retention
- Non-Volatile memory (no battery back-up required for program).
- If the 9-Volt battery is removed as part of normal maintenance, the controller will maintain the real time clock and date for 3½ minutes
- Manual run feature
- Manual run during automatic irrigation for extended watering
- Reset button for easy clearing of controller programming
- Self-diagnostic - Displays error code when solenoid circuit is shorted
- Waterproof and weather resistant
- Coiled output cord: 4' (1,2m) extended length
- Special “circuit verification” will not turn on valve if battery power low
- Brownout protection protects programming in the event of a low battery condition
- Maximum distance between TSSCWP controller and a DC-Latching solenoid using 14 AWG (2,5mm²) wire: 12' (3,6m)
- Operating temperature: 14°F to +140°F (-10°C to +60°C)
- TUV/EMC approved. CE Marked

Warranty

- Two years

Add-Ons and Accessories

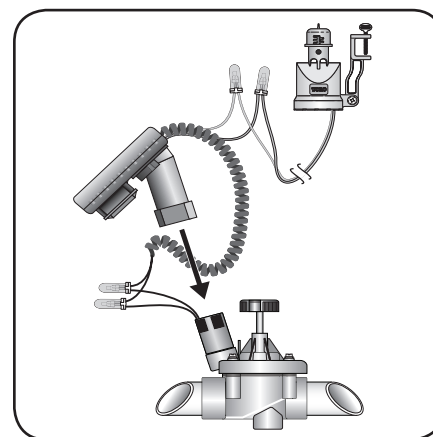
- DCLS-P: DC Latching Solenoid
- TRS: Wired RainSensor™

Dimensions

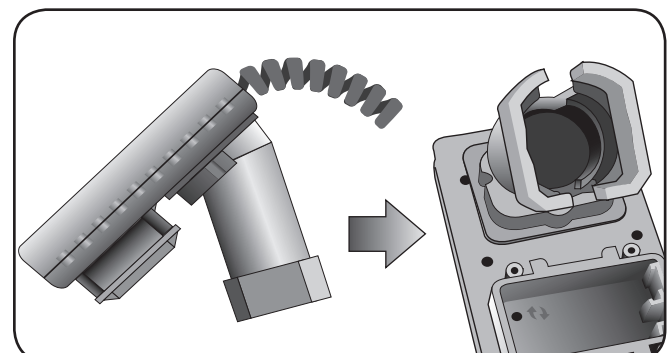
- 2¾" x 4½" x 4" (70mm x 114mm x 102 mm) W x H x D
- Weight (without battery): 0.40 lbs. (0,18 kg)

Electrical Specifications

- Electrical Input:
 - One 9V Alkaline Battery
- Station Output Power:
 - Operates one DC Latching solenoid (compatible with Toro and most competitive DC solenoids)



Compatible with
Toro RainSensor™



Fits Toro, Irritrol®, Rain Bird®, and Hunter®
DC-Latching Solenoids

TSSCWP Model List	
Model	Description
TSSCWP	Single Station Controller, Waterproof, 9V

TBCWP Waterproof Battery Controller

- 1, 2, 4 and 6 Station
- Battery Powered
- Waterproof

The Toro Waterproof Battery Controller: A battery-powered controller that is vandal resistant and perfect for use in areas without standard electrical power. The advanced features of the TBCWP, such as the monthly water budget and calendar options, are easy to activate using the hand held programmer.



Features & Benefits

Control Units Available in 1, 2, 4, and 6 Stations

With infrared and optional radio communication to handheld programmer

Four Independent Programs

With 10 start times per program.

Battery Powered

Two 9-volt alkaline batteries (not included) provide sufficient power to last an entire irrigation season

Fully Waterproof

To IP68 standard, submersible to 6' (1,8 m)

Handheld Programmer

Users able to create up to 99 programs that can be stored and then easily downloaded to any TBC controller. Visual confirmation of sent and received commands

Water Management Highlight

Monthly Season Adjust:

Irrigation run times can be set for the entire year and adjusted using the monthly percent adjust from 0-300% in 10% increments. With easy adjustment for seasonal watering, water savings is enhanced for all around intelligent programming.



RainSensor
Compatible



Specifications

Operating Specifications and Features

- TBCWP Product Dimensions:
3 $\frac{7}{8}$ " x 3 $\frac{3}{8}$ " x 5 $\frac{1}{16}$ " (98mm x 85mm x 132mm)
W x H x D
- TBCWP Product Weight: 1.65 lbs (0,75 kg)
- TBC-HH Product Dimensions:
3" x 2" x 6 $\frac{1}{4}$ " (76mm x 51mm x 159mm) W x H x D
- TBC-HH Product Weight: 0.50 lbs (0,23 kg)
- TBCWP Input Power: two 9-volt DC alkaline batteries (not supplied)
- TBCWP Station Output Power: operates one DC latching solenoid per station (compatible with Toro and most competitive DC solenoids)
- TBC-HH Input Power: one 9-volt DC alkaline battery (not supplied)
- Radio: 1mW, 433,9 mHz
- Operating Temperature: 32°F to 140°F (0°C to 60°C)
- Storage Temperature (excluding battery):
-22°F to 149°F (-30°C to 65°C)
- Maximum distance between TBCWP controller and a DC latching solenoid using 18 AWG (1mm²) wire:
200' (60,9m)
- Communicate 98'-164' (30m-50m) from TBC handheld to control unit with radio preinstalled

Additional features

- Four Programs
- Three scheduling choices by program:
 - Visible seven day calendar
 - 1-31 day interval
 - Odd/even with 365 day calendar and 31st day exclusion
- Station run times from 1 minute to 12 hours in 1 minute increments
- Station delay from 1 to 30 minutes
- Ability to assign rain sensor by program
- Rain delay from 1-14 days
- Manual operation by station or by program
- Low-battery indicator for control units and for handheld programmer on handheld programmer screen
- Non-volatile memory stores program data should batteries lose power
- Special "circuit verification" checks for ample power level in controller before sending an "on" pulse in order to prevent valves from remaining opening
- Backlit display makes TBC handheld easy to read
- Station output short detection allows for faster troubleshooting

Warranty

- Two years

TBC Series Model List

Model	Description
TBC-HH	Toro Battery Controller Handheld Programmer
Toro Battery Controller, Waterproof, with Infrared Port Only	
TBCWP-1	Toro Battery Controller, Waterproof, infrared port, 1 station
TBCWP-2	Toro Battery Controller, Waterproof, infrared port, 2 station
TBCWP-4	Toro Battery Controller, Waterproof, infrared port, 4 station
TBCWP-6	Toro Battery Controller, Waterproof, infrared port, 6 station
Toro Battery Controller, Waterproof, Built-in Radio (1mW, 433,9 mHz) with Infrared Port	
TBCWP-R-1	Toro Battery Controller, Waterproof, built-in radio with infrared port, 1 station
TBCWP-R-2	Toro Battery Controller, Waterproof, built-in radio with infrared port, 2 station
TBCWP-R-4	Toro Battery Controller, Waterproof, built-in radio with infrared port, 4 station
TBCWP-R-6	Toro Battery Controller, Waterproof, built-in radio with infrared port, 6 station
Accessories	
DCLS-P	D.C. Latching Solenoid, fully potted

Wire Run Lengths for TBC

With battery voltage at 9 VDC, maximum recommended wire runs for a 6-station TBC are:

Multi-strand Wire		Distance	
mm ²	AWG	Meters	Feet
1,0	18	60	197
1,5	16	93	305
2,5	14	150	493

Specifying Information — TBC Remote Series

TBC-HH	
Description	Remote
TBC — Toro Battery Controller	HH — Hand Held
Example: A TBC remote would be specified as: TBC-HH	

Specifying Information — TBC Series

TBCWP-X-X			
Description	Communications	Stations	
TBCWP	X	X	
TBCWP — Toro Battery Controller, Waterproof	(blank) — Infrared Port Only R — Built-in Radio with Infrared Port	1 — 1 station 2 — 2 station	4 — 4 station 6 — 6 station
Example: A four station TBCWP controller without a built-in radio would be specified as: TBCWP-4 A four station TBCWP controller with a built-in radio would be specified as: TBCWP-4-R			

Note: Radio models not available in Canada

DDC™WP Series

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

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 & Benefits

Fully Waterproof and Submersible

Submersible up to 6.5' (1,9m) 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

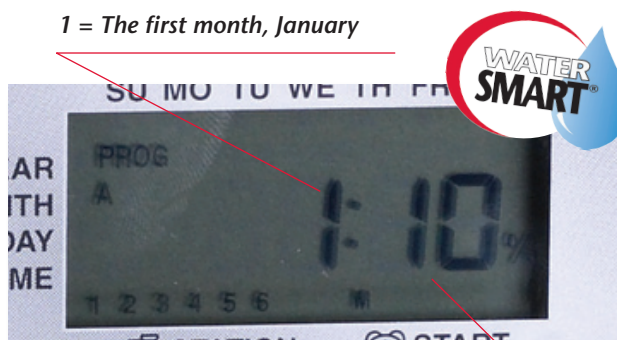
Verifies sufficient voltage level for turning stations off before turning any stations on.

Monthly Watering Schedule

Monthly preset option – ideal for automatic runtime adjustments.

Water Management Highlight

1 = The first month, January



10 = 100%. 140% would be designated as 14

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

- 5 $\frac{3}{4}$ " x 5" x 2" (146mm x 127mm x 50mm) W x H x D
- Weight: 23.3 oz. (660,5 grams) without 9V battery

Operating Specifications and Additional Features

- Operating temperature: 32°F to 140°F (0°C to 60°C)
- 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 6.5' (1,9m) per IP-68

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

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
	Feet (meters)
18 AWG (1,0mm ²)	197 (60m)
16 AWG (1,5mm ²)	305 (93m)
14 AWG (2,5mm ²)	493 (150m)
12 AWG (4,0mm ²)	820 (250m)

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

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 & Benefits

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

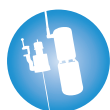
Monthly preset option — ideal for system start-up or shutdown in advance

Self-diagnostic circuit breaker

Identifies irrigation faults

Multi-lingual Display

User selectable multi-language overlays



*Rain Sensor
Compatible*

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

Additional features

- Large LCD display
- 3 Start Times per Program
- Key locking outdoor cabinet provides vandal 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-4-220	4-Station, Indoor, 220 VAC Plug-In Transformer, Exclusive Digital Dial
DDC-6-220	6-Station, Indoor, 220 VAC Plug-In Transformer, Exclusive Digital Dial
DDC-8-220	8-Station, Indoor, 220 VAC Plug-In Transformer, Exclusive Digital Dial
Outdoor Digital Dial Controllers	
DDC-4-220-OD	4-Station, Outdoor, 220 VAC, Exclusive Digital Dial
DDC-6-220-OD	6-Station, Outdoor, 220 VAC, Exclusive Digital Dial
DDC-8-220-OD	8-Station, Outdoor, 220 VAC, Exclusive Digital Dial
Accessories	
102-4738	220 VAC, 500mA spare plug-in transformer for Indoor DDC models
102-4741	220 VAC, 500mA spare internal transformer for Outdoor DDC models

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

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 & Benefits

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.



RainSensor
Compatible



Remote
Ready



PSS-KIT
Compatible



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



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

Dimensions

- 11 1/4" x 7 3/4" x 4 1/2" (286mm x 197mm x 114 mm)
W x H x D
- Weight: 4.5 lbs. (2,0 kg)

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 by zone
- Timed water off from 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

Optional Accessories

European Wireless Versions (868 mHz)

- EVO-SC-EU: Smart Connector™ *Coming soon.*
- PSS-SEN-EU: Precision™ Soil Sensor Probe
- EVO-WS-EU: ET/Weather Sensor. *Coming soon.*
- EVO-HH-EU: Maintenance Remote. *Coming soon.*

Warranty

- Five years

Evolution Series Model List

Model	Description
• EVO-4ID-EU • EVO-4OD-EU	4-station Indoor Controller, 220V, Europe 4-station Outdoor Controller, 220V, Europe
Add-ons and Accessories	
Model	Description
• EMOD-4 • EMOD-12 • EVO-SC-EU	4-station Expansion Module 12-station Expansion Module Smart Connector™ Europe 868 mHz

Specifying Information

EVO-4XX-YY-ZZ-SC[EU]				
Description	Cabinet Type	Power	Module	Connector Options
EVO-4	XX	YY	ZZ	-SC or -SC-EU
EVO-4 – Evolution Controller, 4-station Base	ID – Indoor OD – Outdoor	Blank – 120V/60Hz EU – 220V/50Hz	00 – No Modules 04 – One 4-station Module 44 – Two 4-station Modules 12 – One 12-station Module	SC – Smart Connector™, 915 mHz SC-EU – Smart Connector™ Europe, 868 mHz

Example: A 16-station Evolution controller in an indoor cabinet with the Smart Connector would be specified as EVO-4ID-12-SC

Evolution Accessories

Controller Interface

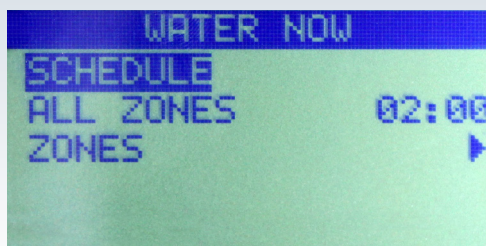
The Evolution controller's interface is a system of informative yet easy-to-understand screens that are quickly accessible using the controller's shortcut buttons.



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.

Smart Connect™ Add-On Devices

Simply plugging the Smart Connector™ into the Evolution controller allows it to communicate wirelessly with a number of add-on devices, providing a great opportunity to upgrade with a number of different water-saving and time-saving options.



Wireless ET Sensor

Uses live temperature and solar measurements as well as historical weather data for your location to calculate the amount of water needed from the irrigation system.

Coming soon.



Handheld Remote

Makes maintenance checks a snap, allowing you to run sprinklers or schedules from up to 1000 feet (300 m) away.

Coming soon.



Toro® Precision™ Soil Sensor

Up to three soil sensors can be used (one per schedule) to monitor the moisture level in the soil and prevent over- and underwatering. With up to a 500 feet (150 m) wireless range, there's no digging required to install.



Software*

Programming can be transferred from your computer to the controller in seconds using a standard USB drive.

*Smart Connector not required for software programming capability.

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 different 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 & Benefits

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.



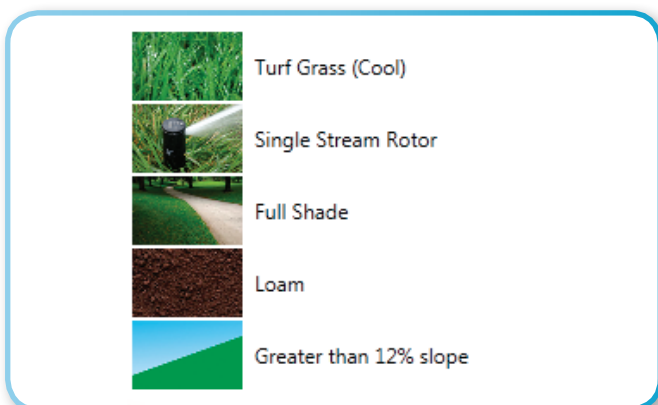
Zones Screen

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 system. This data is then used to create a fully customized and optimized irrigation schedule for the controller.

TMC-424E Series

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

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.



Rain Sensor
Compatible



Flow Sensor
Compatible



TMR-1
Compatible



PSS-KIT
Compatible

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

- 10¾" x 10¼" x 4 ⅝" (273mm x 260mm x 117mm)
W x H x D
- Weight: Indoor—7.5 lbs. (3,4 kg);
Outdoor—7.1 lbs. (3,2 kg)

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 0-200% 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

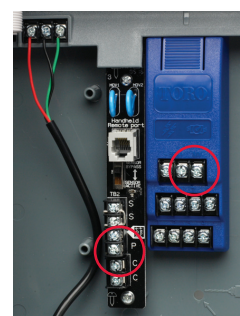
- TRS: Wired RainSensor
- 53853: Wired Rain/Freeze Sensor
- TWRS/TWRFS: Wireless RainSensor or Wireless Rain/Freeze Sensor
- TMR-1: Maintenance Remote
- TFS: Flow Sensor

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-ID-50H*	Modular, Indoor, 220VAC/50Hz
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

Specifying Information—TMC-424E

TMC-424E-XX-XXX-XX-XX-XX			
Model	Type	Power	Module Description
TMC-424E	XX	XXX	XX-XX-XX
TMC-424E—Toro Controller	ID—Indoor OD—Outdoor	50H—220 VAC/50Hz (blank)—120 VAC/60Hz	4—4-station, Standard-Surge 4H—4-station, High-Surge 4F—4-station, High-Surge and Flow-Sensing 8—8-station, Standard-Surge 8H—8-station, High-Surge 8F—8-station, High-Surge and Flow-Sensing

Example: A 16-station TMC-424E controller in an indoor cabinet with one flow monitor would be specified as: TMC-424E-ID-8F-8

* Note: Base model comes with one TSM-4 (4-station) included.

Custom Command™ Series

- 9-, 12-, 15-, 18-, 24-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 & Benefits

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.

Hand-Held Remote Compatible

Compatible with the Toro TMR-1 Maintenance Remote for ease of use, troubleshooting, and field maintenance operation.



**Rain Sensor
Compatible**



**TMR-1
Compatible**



**PSS-KIT
Compatible**



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

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.



Specifications

Dimensions

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

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
- 53853: Wired Rain/Freeze Sensor
- TWRS/TWRFS: Wireless RainSensor or Rain/Freeze Sensor
- TMR-1: Maintenance Remote

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-P9-50H	9-station
CC-P12-50H	12-station
CC-P15-50H	15-station
CC-P18-50H	18-station
CC-P24-50H	24-station

Specifying Information—Custom Command

CC-PXX-XXX				
Model	Cabinet	Description		Power
CC	P	XX		XXX
CC—Custom Command	P—Plastic	9—9-stations 12—12-stations 15—15-stations	18—18-stations 24—24-stations	(blank)—120 VAC/60Hz 50H—230 VAC/50Hz

Example: A 12-station Custom Command Controller with an internal transformer and metal cabinet would be specified as: CC-P12

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 & Benefits

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.



Rain Sensor
Compatible



TMR-1
Compatible

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.

Stainless Steel Pedestal Option



With Toro's EICON Special Build division, TDC units may be ordered with a stainless steel pedestal. To order please specify CDEC-PED-100 or CDEC-PED-200.

Specifications

Dimensions

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

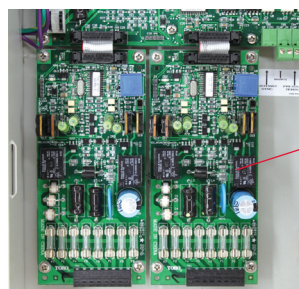
Electrical Specifications

- 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 15,000 ft (4572m)
- Wiring—two wire path: Jacketed, twisted pair 16 AWG to 8,450 ft (2576m)
- Wiring—decoder to solenoid: Standard pair 14 AWG to 400 ft (122m)

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 2.8 miles (4,5 km) 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

Modular Design



Upgrade Module

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.

Optional Accessories

DEG-SG-LINE 102-4339SK	Decoder, Line Surge Protector 100 Station Expansion Board (Daughterboard)
TRS 53853	Wired RainSensor Wired Rain/Freeze Sensor
TWRS/TWRFS	Wireless RainSensor or Wireless Rain/ Freeze Sensor
TMR-1-KIT	Toro Maintenance Remote

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
DEC-ISP-1	1 station decoder
DEC-ISP-2	2 station decoder

Specifying Information—DECODERS

Model	Description
DEC	XXX
DEC-ISP-1	Single Station Decoder w/ integrated surge protection
DEC-ISP-2	Two Station Decoder w/ integrated surge protection

Specifying Information—SURGE PROTECTION

Model	Description
DEC-SG-LINE	Decoder, line surge protector*

*One per 1500 Feet (457m)

Specifying Information—TDC Series

CDEC-XXX-XXX		
Model	Cabinet	Description
CDEC	XXX	XXX
CDEC—2-wire Controller w/remote hook up	SA—Wall Mount Metal Cabinet PED—Stainless Steel Pedestal*	100—100 Stations 200—200 stations

Example: A TDC Controller with 200 stations would be specified as: CDEC-SA-200

*Order through EICON

Sensors and Remote Overview



Model	PSS-KIT	Turf Guard®	TWRFS	TWRS	TRS
Page Number	102-103	104-105	106	106	107
Transmission Range (Line-Of-Sight)	Up To 500' (152m)	Up To 500' (152m), unlimited with repeater	Up To 500' (152m)	Up To 500' (152m)	
Rain Sensing*			X	X	X
Soil Moisture Sensing*	X				
Freeze Sensing*	X	X	X		
Flow Sensing*		X			
Dual Sensing		X			
Salinity Sensing		X			
Works With All 24V Controllers	X		X	X	X
Communicates With Multiple Receivers	X	X	X	X	
Adjusts Irrigation Based On Amount Of Water Needed	X	With Sentinel®			
Replaceable Battery	X	X	X	X	
Automatic Resetting Bypass	X		X	X	
Cycle Delay Feature	X	With Sentinel®			
Power Failure Protection	X	X	X	X	
Signal Strength Indicator On Receiver	X		X	X	
Signal Strength Indicator On Sensor	X				
Multiple Mounting Options	X	X	X	X	X
Flow Range					
Diameter					
Warranty	2 Years	1 Year of NSN	5 Years	5 Years	



*WaterSmart® Feature



Model	TFS
Page Number	109
Transmission Range (Line-Of-Sight)	
Rain Sensing*	
Soil Moisture Sensing*	
Freeze Sensing*	
Flow Sensing*	X
Dual Sensing	
Salinity Sensing	
Works With All 24V Controllers	
Communicates With Multiple Receivers	
Adjusts Irrigation Based On Amount Of Water Needed	
Replaceable Battery	
Automatic Resetting Bypass	
Cycle Delay Feature	
Power Failure Protection	
Signal Strength Indicator On Receiver	
Signal Strength Indicator On Sensor	
Multiple Mounting Options	
Flow Range	1.2-500 GPM (4,5-1892,7 LPM)
Diameter	½" (13mm); ¾" (20mm); 1" (25mm); 1½" (37mm); 2" (50mm); 3" (75mm); 4" (100mm)
Warranty	2 Years

Model	TMR-KIT
Page Number	108
Transmission Range (Line-Of-Sight)	Up to 1.5 miles (2,4 km)
# Of Programmable Addresses/Pins	Up to 999
Maximum Stations To Control	99
Independent Control Of Master Valve Or Pump	
Turn Transmitter On Or Off	X
Turn Station On Or Off	X
Manual Station Advance	X
Pause Or Un-Pause Current Station	X
2-Minute Test Run	X
Turn On Specific Program	
Compatible With All 24V Controllers	
Connector Harnesses Available For Permanent Mount	X
Individual Receivers Available For Permanent Mount	X
Two-Way Voice Transmission	
Carrying Case Included	X
Battery Requirement For Transmitter	4 each, AA
Warranty	2 years



*WaterSmart® Feature

Precision™ Soil Sensor

- Works with Nearly All Irrigation Controllers
- Up to 500' (152,4m) Range

Leveraging Toro sensing technology used on high-end commercial sites and world-class golf courses around the globe, the Toro Precision Soil Sensor reduces water waste by continuously measuring moisture levels in the soil and determining when to allow your controller to water, maximizing the efficiency of your irrigation system. Communication between the sensor probe and receiver is completely wireless, so installation is quick and easy with no digging required.

Features & Benefits

Works with Nearly All Irrigation Controllers

Can be installed on any irrigation controller, including competitive models.

Prevents Overwatering

Continuously measures soil moisture levels and determines when to allow your irrigation controller to water, making sure just the right amount of water is applied.

No Digging Required

Communication between the sensor probe and the receiver is completely wireless, with up to a 500' range (line of sight). Installation doesn't disturb the soil, giving you accurate moisture readings starting as soon as the sensor is put in the ground.

Automatic Calibration

The sensor will automatically detect the soil type and adjust all calculations accordingly.

Freeze Detection

The only soil sensor to offer freeze detection that prevents irrigation when temperatures approach freezing.



Specifications

Dimensions

- Probe body: 5" x 3¾" x ¾" (127mm x 95mm x 19mm)
- Probe spikes: 4¾" (121mm)
- Receiver body: 3" x 3¾" x 1½" (76mm x 95mm x 38mm)

Electrical Specifications

- Receiver input power: 24 VAC
- Probe: Three AA batteries

Temperature Specifications

- Operating (Probe): 14°F to 170°F (-10°C to 77°C)
- Operating (Receiver): 14°F to 140°F (-10°C to 60°C)
- Storage: -22°F to +149°F (-30°C to 65°C)

Operating Specifications and Additional Features

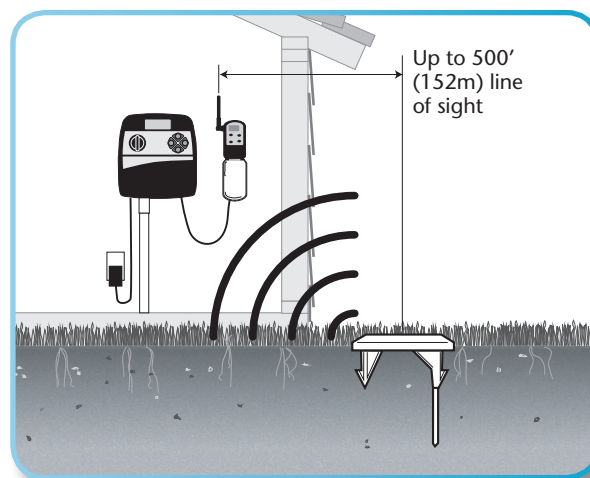
- Sensor receiver hooks up to irrigation controller's sensor port (if available) or is wired into common wire
- Up to 500' (152.4m) range, line of sight
- One sensor per receiver
- Adjustable moisture threshold in 1% increments allows the user to set the desired moisture level
- Sensor automatically determines soil type and adjusts calculations accordingly
- Freeze detection prevents irrigation when temperatures approach freezing
- Smart bypass overrides the sensor for a user-defined length of time (especially useful during system winterization)
- If the sensor is tripped while the irrigation controller is in the middle of a watering program, the optional "Cycle Delay" feature ensures all subsequent zones in the irrigation program have a chance to get watered before the sensor halts watering
- Multi-color LED on the sensor probe indicates radio signal strength
- Sensor probe's ultra-slim ¾" (1.9cm) profile allows it to avoid being damaged by mowing equipment
- Extra long stainless-steel electrodes measure over 4 inches (10cm) down into the soil profile
- Sensor probe's support stakes hold sensor firmly in place when installed
- Easily replaceable batteries last up to 2 years with alkaline batteries (longer with lithium)

Warranty

- Two years

How It Works

- There are two components to the system – a battery-powered wireless sensor probe and a receiver that wires into any irrigation controller's sensor port.
- Once installed, the sensor calculates field capacity for your soil (or the maximum amount of water the soil can hold after excess water has drained away) and sets that as "100%".
- Any time the moisture level in the soil exceeds field capacity, the irrigation controller is prevented from watering until the moisture level falls below the level set in the receiver (default is 50% of field capacity, adjustable by the user).



Easy Installation



1. Hook up the receiver to your irrigation controller

2. Install the batteries to power up the sensor probe



3. Place the probe in the ground

Specifying Information— Toro Precision Soil Sensor

Model	Description
PSS-KIT	Precision Soil Sensor (Probe + Receiver) - (915 MHz)
PSS-KIT-EU	Precision Soil Sensor (Probe + Receiver) - European Version - (868 MHz)

Turf Guard® Soil Monitoring System

- **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 your flushing reduced soil salts. Know when and how much water to flush with.

Monitor Daily Soil Temperatures

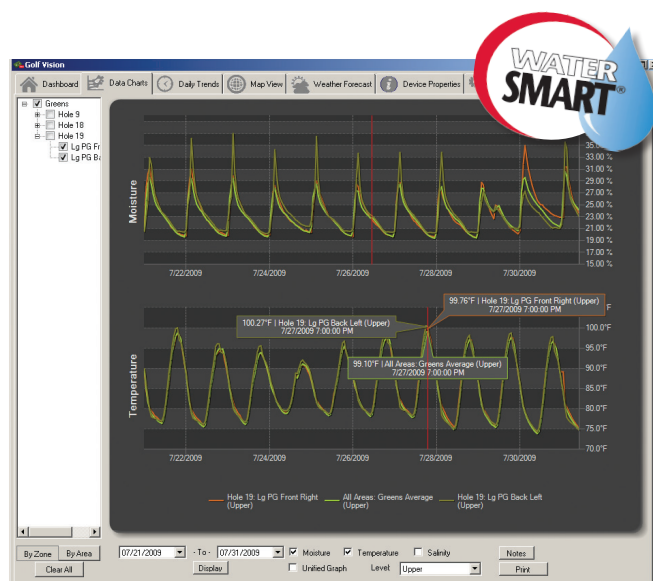
Predict peak soil temperatures early in the day to start remediation activities before an emergency. Schedule fungicide applications and pesticides for optimal effectiveness. Understand evaporation rates and syringing needs.

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: 2" x 3 5/8" x 6 1/8" (50mm x 92mm x 156mm)
- Spikes: 1 3/4" x 3/16" (44mm x 5mm)
- Installation Hole Diameter: 4 1/4" (108mm)

Electrical Specifications

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

Temperature Specifications

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

Sensing

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

Communication

- Repeater Range: Up to 5,000' (1524m) line-of-sight
- Buried Sensor Range: Up to 500' (152,4m) 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
- Measures two distinct depths in the soil profile
- 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.

Two distinct depths in the soil profile—Critical root zone level and a second 4.5 (115mm) inches lower

Independent measurements from each depth.

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.



Specifying Information—Turf Guard

Model		Description
U.S.	EU	
TG-S2-R	TG-S2-R-EU	Turf Guard Sensor With Replaceable Battery Repeater-Internal Mount Repeater-External Mount Base Station Power Supply
TG-R-INT	TG-R-INT-EU	
TG-R-EXT	TG-R-EXT-EU	
TG-B	TG-B-EU	
TG-PS	TG-PS-EU	

Wireless RainSensor™

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

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: 1 3/4" x 3 1/2" x 1 3/4" (44mm x 89mm x 44mm) W x H x D
- Receiver: 2" x 4" x 1 3/4" (51mm x 102mm x 44mm) W x H x D
- Weight: 0.78 lbs. (0,4 kg) 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: -20° F to 120° F (-28°C–49°C)
- Housing material: Weather and UV resistant engineered polymer
- Transmitting range: up to 500' (152,4m) (line-of-sight) with adjustable antenna
- Sensor: maintenance free hygroscopic disks; adjustable rain sensitivity: 1/8" to 3/4" (3mm-20mm)
- 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 (TWRF5 only)
- Five year easy to replace, standard coin batteries
- Versatile mounting options – one-piece Quick-Clip™ gutter bracket or 1/2" (13mm) conduit adapter
- Can control multiple receivers/controllers with one sensor transmitter

Warranty

- Five years

Features & Benefits

Smart Bypass™

Allows for system override at any time and resets automatically.

Rain/Freeze Combination

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

Water Management Highlight

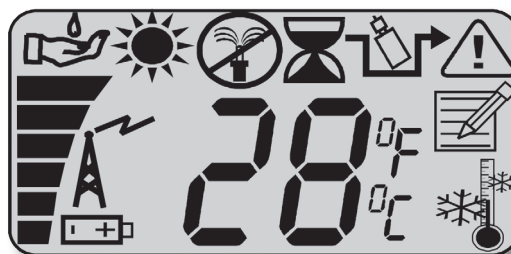


Water Conservation Modes

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

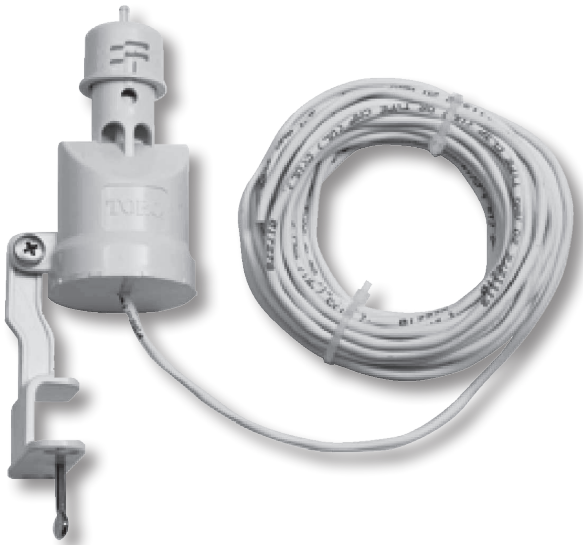
Specifying Information—Wireless RainSensor

Model	Description
TWRS-I	Toro Wireless RainSensor, 433,92 MHz
TWRF5-I	Toro Wireless Rain/Freeze Sensor, 433,92 MHz

Wired RainSensor™

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

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.



Wired Rain/Freeze Sensor

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

Features & Benefits

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.

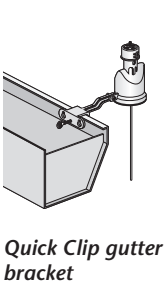
Maintenance Free Hygroscopic Discs

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

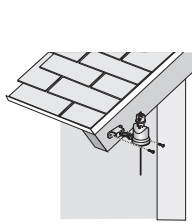
25 (7,6m) Feet Of UV-Resistant Cable

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

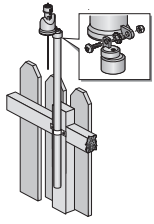
Three Mounting Options



Quick Clip gutter bracket



Wall mount



Conduit adapter

Specifications

Dimensions

- Transmitter: 1 3/4" x 3 1/2" x 1 3/4" (44mm x 89mm x 44mm) W x H x D
- Weight: 0.80 lbs (0,4 kg) product and carton

Specifications and Features

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

Warranty

- Two years

Specifying Information—Wired RainSensor

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

TMR-1 (Maintenance Remote)

- **1.5 Mile (2,4 km) Range**
- **Large LCD**



This is irrigation maintenance at its easiest! The Toro® TMR-1 is a maintenance remote system that allows a single operator to perform irrigation checks and fully operate the system from up to 1.5 miles (2,4 km) away.

Features & Benefits

Professional-Grade Hand Held Remote

Up to 1.5 mile (2,4 km) line-of-sight range. Weather resistant.

Toro Exclusive All Stations Cycle (ASC) Function

Provides one-start system operation for walk-throughs, maximizing productivity – 2-minute runtimes per station.

Quick-Connect System (For Toro Controllers)

Allows receiver to easily be moved from one controller to another; circular connector can be bracket-mounted or mounted using 1/2" (13mm) conduit.

Multi-Controller/Multi-Site Capability

Programmable address allowing selection of up to 999 different remote receivers at controllers.

Specifications

Dimensions

- Receiver size: 12" x 3" (305 x 76mm) with antenna
- Transmitter size: 12" x 3" (305 x 76mm) with antenna

Electrical Specifications

- Receiver input voltage: 22-26 VAC input
- Transmitter DC Operating voltage: 4-6V DC (AA Batteries included)
- Transmitter operates on 4 AA NiMH rechargeable batteries or 4 AA standard alkaline batteries
- Battery charger: Dual rate 12-hour charger
- Receiver operates off of the 24 VAC power from the controller
- FCC, UL-listed, CE compliant

Controller Compatibility

- Toro: TMC-212, TMC-424E, Custom Command, TDC

Operating Specifications

- Frequency:
 - MURS designated channels – U.S. USE ONLY (151.82, 151.88, 151.94, 154.57, 154.6 MHz)
 - Europe: 869,5 MHz
- Automatic detection and avoidance of busy channels
- Operating temperature range: -10° to 60° C
- Up to 1.5 miles (2,4 km) line-of-sight range and typically 0.5 mile (0,8 km) in obstructed areas
- Intuitive, easy-to-use keypad
- Large, easy-to-read LCD display
- Remotely controls up to 500 stations
- Battery life indicator
- Circular connector comes standard with 5' (1,5m) cable
- Simple, intuitive command set
- Default run time is 10 minutes
- Display shows countdown of time left to run
- Ergonomic design and removable belt clip

Warranty

- Two years

Specifying Information—TMR-1

TMR-1-XXX-X		
Model	Description	Region
TMR-1	XXX	X
TMR-1—Toro Maintenance Remote	KIT—Complete Kit: Transmitter, Receiver, Circular Connector/ Cable Assembly, Batteries, Carrying Case CC—Circular Connector	Blank— U.S. MURS designated frequencies, 0.5 W E—Europe: 869,5 MHz, 450 MW

Example: A complete TMR-1 Maintenance Remote Kit would be specified as: TMR-1-KIT

TFS (Flow Sensors)

- 1/2" , 3/4" , 1" , 1 1/2" , 2" , 3" , 4" BSP Thread
(13mm, 20mm, 25mm, 37mm, 50mm, 75mm, 100mm)
- 1.2 GPM to 500 GPM (4,5-1892,7 LPM)



Features & Benefits

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

Effective in ranges from 1.2 GPM to 500 GPM (4,5-1892,7 LPM). Teamed with the Toro TMC-424, 1/2", 3/4" and 1" (13mm, 20mm, 25mm) 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:
 - 1/2", 3/4" and 1" (13, 20 and 25mm): up to 150 psi (10,3 Bar)
 - 1 1/2", 2", 3" and 4" (37, 50, 75, and 100mm): up to 100 psi (6,8 Bar)
- Temperature Rating: Up to 140° F (60° C)
- Flow Range (Velocity):
 - 1/2", 3/4" and 1" (13, 20 and 25mm): 2'-20' (0,6-6,0m) per second
 - 1 1/2", 2", 3" and 4" (37, 50, 75, and 100mm): 0.5'-30' (0,1-9,1m) per second
- Tee:
 - 1/2", 3/4" and 1" (13, 20 and 25mm): Schedule 40 PVC
 - 1 1/2", 2", 3" and 4" (37, 50, 75, and 100mm): Schedule 80 PVC
- Sensor Housing: Potted, PPS
 - Impeller:
 - 1/2", 3/4" and 1" (13, 20 and 25mm): 300SST
 - 1 1/2", 2", 3" and 4" (37, 50, 75, and 100mm): 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-BSP	1/2" (13mm) Flow Sensor	1.2-12 GPM (4,5-45 LPM)
• TFS-075-BSP	3/4" (20mm) Flow Sensor	2.7-28 GPM (10,2-65 LPM)
• TFS-100-BSP	1" (25mm) Flow Sensor	5-50 GPM (18,9-189 LPM)
• TFS-150-BSP	1 1/2" (37mm) Flow Sensor	5-100 GPM (18,9-379 LPM)
• TFS-200-BSP	2" (50mm) Flow Sensor	10-200 GPM (38-757 LPM)
• TFS-300-BSP	3" (75mm) Flow Sensor	20-300 GPM (76-1135 LPM)
• TFS-400-FLG	4" (100mm) Flow Sensor	40-500 GPM (151-1892 LPM)

TFS Series Flow Sensor Performance Data

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

Specifying Information—TFS

TFS-XXX-XXX			
Model	Configuration		XXX
TFS	XXX		XXX
TFS—Flow Sensor	050—1/2" (13mm) Plastic Tee 075—3/4" (20mm) Plastic Tee 100—1" (25mm) Plastic Tee 150—1 1/2" (37mm) Plastic Tee	200—2" (50mm) Plastic Tee 300—3" (75mm) Plastic Tee 400—4" (100mm) Plastic Tee	BSP—BSP Threaded Inlet FLG—Flanged Inlet 4" Only

Central Control Overview



Model	Sentinel® Central Control
Page Number	112-113
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 Included	Two years

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



Model	Small Metal Wall Mount (24 VAC Terminals)	Stainless Steel Wall Mount (24 VAC Terminals)	Stainless Steel Pedestal (24 VAC Terminals)	Plastic Pedestal (24 VAC Terminals)	Two-Wire Satellite (Multiple Enclosures)
Number Of Stations	12, 24, 36, 48, 96 with MapTo	12, 24, 36, 48, 96 with MapTo	12, 24, 36, 48, 96 with MapTo	12, 24, 36, 48, 60, 72, 84, 96	204
Modular		X	X	X	X
MapTo Option	X	X	X	X	X
*ET-Adjust	X	X	X	X	X
*Flow Sensing Compatible	X	X	X	X	X
Remote (SHHR) Compatible	X	X	X	X	X
*RainSensor Compatible	X	X	X	X	X
Number Of Programs	16	16	16	16	16
Simultaneous Program Operation	Up to 2 Amps	Up to 2 Amps	Up to 2 Amps	Up to 2 Amps	16
Number Of Start Times	8 per Program	8 per Program	8 per Program	8 per Program	8 per Program
Max Station Runtime	4 Hours 15 Minutes	4 Hours 15 Minutes	4 Hours 15 Minutes	4 Hours 15 Minutes	4 Hours 15 Minutes
Days Of The Week Programming	X	X	X	X	X
Odd/Even Programming	X	X	X	X	X
Interval Programming	X	X	X	X	X
*Flow Monitoring	X	X	X	X	X
*Water Use Logging	X	X	X	X	X
Valves Per Station	2	2	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	Level 1, Level 3 & Level 4	ISP Decoders + Line Surge Protectors
Warranty	Five years	Five years	Five years	Five years	Five years

Sentinel® Central Control

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

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 satellites from one location, users have a water management tool that provides reliability, accuracy and water savings.



iPhone® and iPad® Connectivity



Turf
Guard®
Option



ET Adjust

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.

Features & Benefits

Simple To Use

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

Features For Water Management

ET-based watering, flow 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

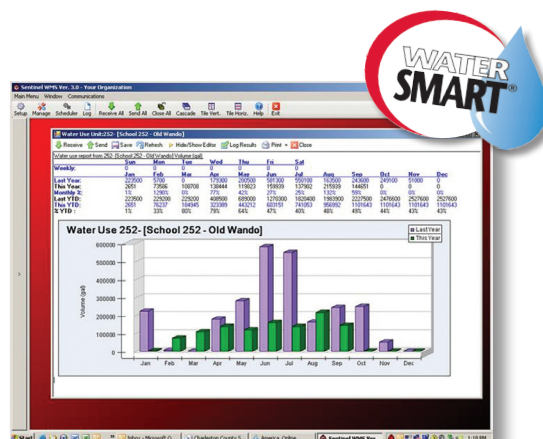
Stores irrigation programs in the computer while allowing irrigation control at the satellite level, ensuring the loss of a component does not result in the loss of irrigation across the system.

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

Four Choices Of Central Packages

Software only; 2) Software and computer; 3) Software and radio communication interface; 4) Central computer, software and radio communication interface.



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

Distributed Intelligence



Each Sentinel® controller is a fully intelligent unit with program data stored at both the field satellite 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-0-1	Software, Peripheral Hardware w/2 years of NSN Support
SGIS-1-0	Software, Computer Equip, Peripheral Hardware w/2 years of NSN Support

NSN Support Extension Models

Model	Description
SSE-T-1	1-year Extension for SGIS-0-1 of SGIS-1-T
SSE-T-3	3-year Extension for SGIS-0-1 of SGIS-1-T
SSE-C-1	1-year Extension for SGIS-1-0 or SGIS-1-C (w/computer warranty)
SSE-C-3	3-year Extension for SGIS-1-0 or SGIS-1-C (w/computer warranty)

Specifying Information—Sentinel Central

SGIS-X-X	
Description	Optional
SGIS	-X-X
SGIS—Sentinel Central Control Irrigation System	1-T—Software Only w/2 Years of NSN Telephone Support for Software 1-C—Software and Computer w/2 Years of NSN Telephone Support 0-1—Software, Peripheral Hardware w/2 Years of NSN Telephone Support 1-0—Software, Computer Equipment, Peripheral Hardware w/2 Years of NSN Telephone Support (with computer warranty)

Sentinel® Controllers

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

Toro® Sentinel field satellites 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.



Remote Ready



Flow Sensor Compatible



Turf Guard® Option

Cabinet choices



WS1
Powder-coated, wall-mount enclosure



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



PS1
16-gauge stainless steel, top-entry, pedestal-mount enclosure with backplate and junction box

Features & Benefits

Flow Sensing

Reads, displays and reacts to under and over flow 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

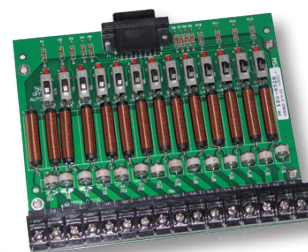
Allows for changes in the field to be uploaded to the central computer and audible confirmation of hand held radio to satellite commands.

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

Electrical Specifications

- Input power:
 - 120 VAC, 60 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: 14° to 140°F (-10° to 60°C)
- Options from Level 1 to Level 4 surge protection offer multiple choices to meet regional lightning 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: Turf Guard Base Station Module for Sentinel Satellite Connectivity
- TG-S2-R: Turf Guard Soil Sensor
- TS-U2: Toro Sentinel UHF Radio for Two-Way Communication with Central
- TS-XTND: Toro Sentinel Long-Range XTEND Radio for Wireless Outputs

Warranty

- Five years

Sentinel Satellite Model List

Model	Description
• TS	Sentinel Satellite Assembly with Keypad

Specifying Information—Sentinel

TS-XX-XXX-XX-XX				
Configuration	Station Count	Enclosure	Communication to Central	Power Supply
TS-X	XX	XXX	XX	XX
TS—Conventional Toro Sentinel Satellite	12—12-station 24—24-station 36—36-station 48—48-station	WS1—Powder-coated Wall Mount (Small) PP1—Plastic Pedestal Mount (Large) PS1—Stainless Steel Pedestal Mount (Large)	NR—No Radio U2—Maxon Radio	(Blank)—120V/60Hz 50H—220-240V/50Hz

Example: A 24-station Sentinel satellite in a powder-coated wall-mount cabinet would be specified as: TS24WS1

NOTE: Maxon® radio for wireless communication to the central and handheld is sold separately

Sentinel® Two-Wire Controllers

- Up to 204 Stations
- Remote Ready
- Flow Sensor Ready
- 1-, 2- or 4-station Decoders

Easy to install and expand – a highly cost-effective field controller for large central control installations. Using a two-wire path to communicate to decoders, the Sentinel Two-Wire controller eliminates high costs associated with traditional valve wiring.



Remote Ready



Flow Sensor Compatible



Turf Guard® Option

Specifications

Dimensions

- Small wall-mount:
14" x 13" x 6" (355mm x 330mm x 152mm) W x H x D
- Stainless steel pedestal-mount:
17 1/8" x 34 1/2" x 8 5/8" (435mm x 876mm x 219mm) W x H x D
- Plastic Pedestal-mount:
17" x 40" x 16" (432mm x 106mm x 406mm) W x H x D
- Weight:
 - Small Metal Wall-mount: 21 lbs (9,5 kg)
 - Stainless steel wall-mount: 47 lbs (21,3 kg)
 - Stainless steel pedestal-mount: 64 lbs (29,0 kg)
 - Plastic Pedestal: 60 lbs (27,2 kg)

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 15,000 ft (4572m)
- Wiring two-wire path: Jacketed, twisted pair 16 AWG to 8,450 ft (2575,5m)
- Wiring decoder to solenoid: Jacketed, twisted pair 14 AWG to 400 ft (121,9m)

Specifications and Features

- 100 Station base model expandable to 204 stations
- Operates Valves with DC-Latching Solenoids
- 16 programs, eight start times per program
- 6-week or 365-day scheduling calendar
- Station runtimes from one minute to 4 hours and 15 minutes
- Global adjustment from 0-255%
- Handheld remote ready
- Two sensor inputs included for rain sensors or other switch sensors
- Multi-language display: English, Spanish, French and Italian
- Operating Temperature: 14° to 140° F (-10°C to 60°C)

Optional Accessories

- TRS: Wired RainSensor
- TWRS/TWRFS: Wireless RainSensor or Wireless Rain/Freeze Sensor
- TFS: Flow Sensors
- SHHR: Hand Held Remote

Warranty

- Five years

Sentinel 2-Wire Controller Model List

Model	Description
• ESBTW	Eicon Special Build Two-Wire Controller
Two-Wire Station Decoders	
Model	Description
• ESB-DDC-1	1-station w/ integrated surge protection (Operates up to two solenoids)
• ESB-DDC-2	2-station w/ integrated surge protection (Operates up to four solenoids)
• ESB-DDC-4	4-station w/ integrated surge protection (Operates up to eight solenoids)
• ESB-TWD-ISP	Sentinel two wire DC inline surge protection

Specifying Information— Sentinel 2-Wire Controller

TSD-XXX-XX-XX			
Station Count	Enclosure	Communication to Central	Power Supply
TSD	XXX	XX	XX
TSD—Toro Sentinel Satellite Assembly, Two-Wire (Decoder)	PP1—Plastic Pedestal, Green PS1—Stainless Steel Pedestal WS2—Medium Painted Enclosure (two-wire only)	NR—No Radio U2—Maxon Radio	(Blank)—120V/60Hz 50H—220-240V/50Hz

Example: A two-wire Sentinel satellite in a powder-coated wall-mount cabinet would be specified as: **TSDWS2**

NOTE: Maxon® radio for wireless communication to the central and handheld is sold separately.

Hand Held Remote

The Toro® Sentinel® remote allows users to conduct irrigation checks, and fully operate the system without opening a field satellite 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):
- 2⅜" x 1¾" x 11" (60mm x 44mm x 279mm) 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: 2 to 3 miles (3,2 to 4,8 km)

Warranty

- Two years



Specifying Information—Hand Held Remote

Model	Description
SHHR	Sentinel Hand Held Radio

Retro Link

The Sentinel® Retro-Link assembly unit allows an existing Irritrol® MC-E or Rain Bird® ESP-MC controller to be upgraded to a Sentinel field satellite. Retro-Link is 100% compatible with the Sentinel central control software.

Specifications

Dimensions

- 5½" x 5½" x 1½" (140mm x 140mm x 279mm) W x H x D

Specifications and Features

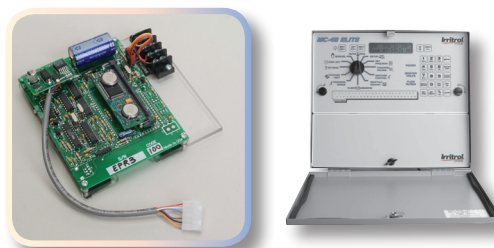
- Flow sensor, ET gauge or rain sensor capabilities
- Non-volatile memory in case of a power outage
- 100% compatibility with the Sentinel central control software
- Optional hand-held control with a Sentinel hand-held unit
- Provides the convenience of remote manual control
- Multiple hand-helds can be used on one-site

Accessories

- SHHR: Sentinel Hand Held Remote

Warranty

- Two years



Sentinel Retro Link Model List

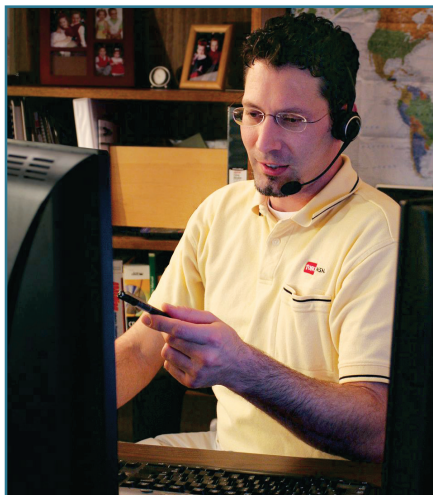
Model	Description
RLS-IR	Sentinel Retro-Link Assembly (Irritrol MC-E)
RLS-RB	Sentinel Retro-Link Assembly (Rain Bird ESP-MC)

Specifying Information—Retro Link

ESB-RLS-U-2-XX				
Configuration		Communications		Assembly
ESB	RLS	U	2	XX
ESB—Eicon Special Build	RLS—Sentinel Retro-Link	U—UHF	2—2-way	IR—Irritrol MC-E RB—Rain Bird ESP-MC

For information, ordering, or quotes, contact:
EICON Division • The Toro Company • 7304 S. Alton Way, Suite M, Centennial, Colorado 80112
PHONE: (303) 290-1881 FAX: (303) 290-9546

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.



Specifications

Support for the Sentinel® Central Control

- Every Sentinel central package comes standard with 2-years NSN support
- Unlimited 24-hour toll-free support with 24/7/365 emergency paging
- 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
- For more information on products, services or training, contact:

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Features & Benefits

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.

Note: NSN Features vary based on the Sentinel product offering purchased. Contact Toro Sales for details.



Specifying Information—NSN/Sentinel Support Extensions

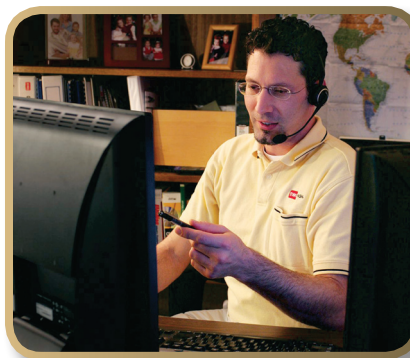
SSE-X-X	
Description	Optional
SSE	X-X
SSE—Toro NSN Support for Sentinel Subscription Extensions*	T-1— 1-year Extension for SGIS-0-1 or SGIS-1-T T-3— 3-year Extension for SGIS-0-1 or SGIS-1-T C-1— 1-year Extension for SGIS-1-0 or SGIS-1-C (w/computer warranty) C-3— 3-year Extension for SGIS-1-0 or SGIS-1-C (w/computer warranty)

*1- and 3-year NSN extensions can be purchased up-front in conjunction with SGIS packages to provide the end-user with an additional one or three years of NSN support. For example, a customer can order the SGIS-1-0 and the SSE-C-3 which would equal five years of NSN support. These extensions are for original purchases only; existing plan renewals are still purchased through Toro NSN.

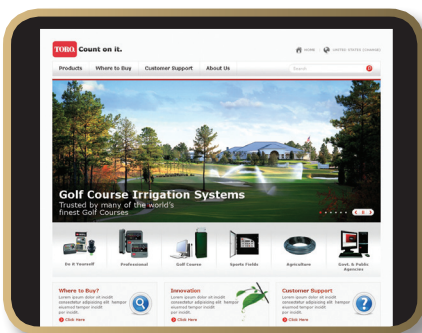




Toro Technical Support
intlirrigation.support@toro.com



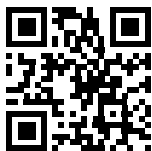
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www.toro.com



Electronic ResCom Catalog



Toro Evolution Series Microsite



Electronic Landscape Drip

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) =	$\frac{\text{m}^3/\text{hr of 360} \times 1000}{(\text{head spacing}^2) \times .866}$
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) =	$\frac{\text{m}^3/\text{hr of 360} \times 1000}{\text{Head Spacing} \times \text{Row Spacing}}$
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. =	$\frac{\text{GPM} \times \text{Ft. of Head}}{3960 \times \text{Pump Efficiency}}$ (expressed as a decimal)	H.P. =	$\frac{\text{LPM} \times \text{Meters of Head}}{3433 \times \text{Pump Efficiency}}$ (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/	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	0,8	1,0
16	1,3	1,5
14	2,1	2,5
12	3,3	4,0
10	5,0	6,0
8	8,5	10,0
6	13,3	16,0
4	21,5	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

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

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 evenly 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

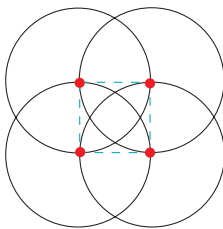
Sprinkler Spacing

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)

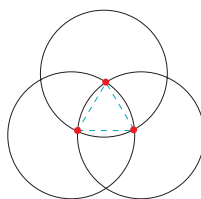
Square-spaced sprinklers in pattern:

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



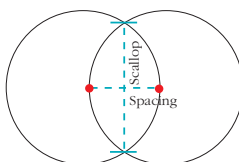
Triangular-spaced sprinklers in pattern:

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



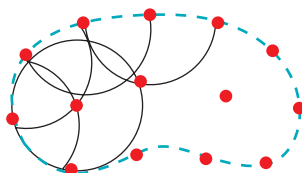
Single row:

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



Area and flow:

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



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

Wire Sizing

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:

$$R = \frac{150 \times Vd}{F \times I}$$

where R = allowable wire resistance per 300 meters.

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

$$R = \frac{150 \times 4}{815 \times .3} = 2.45 \text{ ohm/300m}$$

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



Lined area for notes.

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.

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.

One Year Warranty

The following products are covered by this warranty for one year from date of installation:

TTT-9V Controller
Lawnmaster II

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.

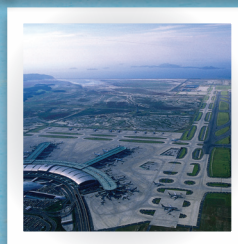
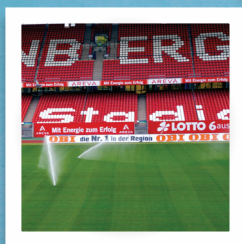
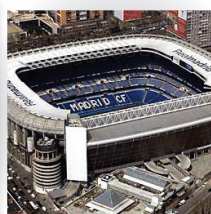
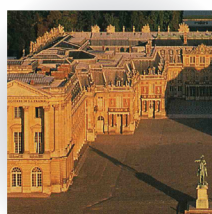
Lightning Protection Warranty

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®**Count on it.**

We reserve the right to improve our products and make changes in the specifications and designs without notice and without incurring obligation.

Products depicted in this brochure are for demonstration purposes only. Actual products offered for sale may vary in design and features.

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