TORO. Count on it.

2007

Residential/ Commercial Irrigation Specification Catalog

A Commitment To The Future

At the Toro Company we're committed to leading the irrigation industry in the promotion of efficient watering practices, and the creation of products that help conserve water and energy. With these goals in mind, we developed a three-fold strategy focusing on Innovation, Conservation and Education. We call it I.C.E..

Innovation: Since 1914, Toro has continuously found ways to provide the practical products and solutions necessary to efficiently deliver water, often leading to breakthrough technologies that have made irrigation products and systems what they are today…more accurate, efficient, dependable, and affordable. And for these efforts, we have been awarded over 200 United States patents.

Conservation: Toro water-saving solutions extend throughout every product category in this catalog, from pressure compensation sprays, rotors, and valves to climate-based controllers, automatic shutoffs, micro-irrigation and central control. Thoughtfully applied, these WaterSmart® products are helping our world minimize water waste.

Education: Toro educational initiatives demonstrate our commitment to the irrigation industry. In 2006 we sponsored and hosted our first WaterSmart Symposium, dedicated to communicating and sharing Practical WaterSmart solutions that can be integrated into today's irrigation designs. We also fund University programs that are currently researching turf management, recycling and water management solutions that will help preserve our beautiful outdoor landscapes.

Innovation, **C**onservation and **E**ducation. We're confident that with this integrated approach, we can make great progress in the management of one of our most precious resources, and together we can achieve Success without Excess.

WATER SMART®

For more information on Toro visit our website: www.toro.com

CUSTOMER CARE YOU CAN COUNT ON

At Toro, not only do we provide the most efficient water management products; we deliver a superior customer support experience as well. Like our products, Toro's customer support teams have more than exceptional technical skills—they are empowered to solve problems, and always perform in the customer's best interest. Highlighted below are just a few of the many Toro customer care services you can count on.

Toro Technical Support
Our technical support team is truly extraordinary at what they do. Between the five of them, they offer approximately 100 years of irrigation experience that you can depend on. For an excellent support experience, call 1-800-664-4740.

Toro Controller Repair
Did you know that with Toro's Board Exchange Program you can get the replacement controller boards you need immediately? Through your distributor, Controller Repair provides controller boards ready for immediate board exchange to assure that controller downtime is minimal and your landscape and reputation stays protected. For immediate assistance call 1-800-664-4740, Monday - Friday, 7:30 AM to 4:00 PM PST.

Toro Field Service
With some of the most knowledgeable and helpful field service staff in the industry, and our extensive training and Counter-Intelligence programs; Toro Distributors, dealers, and counter personnel are here to assist—before, during, and well after a sale.

Toro NSN
Toro's National Support Network (NSN) is a team of A+ certified technicians and licensed irrigators dedicated to the daily operations and maintenance of computerized central control systems for over 3500 Toro turf irrigation control customers worldwide. Every new computerized central irrigation control system includes Toro NSN support, as well as convenient classroom, web, and computer-based training available at regional locations and at the NSN Training Center. 888-676-8676 or toronsn.com.

Toro Genuine Parts
From the smallest sprinkler part to complete control systems, Toro support can deliver most replacement parts within hours. In fact, Toro offers its customers the highest parts order completion rate in the industry: 98%!

Toro Training
Additionally, Toro offers its customers training and education on new product technology, water management best practices, and provides world-class business skills training for professional contractors to help them increase productivity and improve their bottom line.

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The LPS features a compact body with or without a pre-installed TVAN nozzle in 2" or 4" pop-up heights. The LPS is ideal for residential applications with its small diameter cap that allows it to blend into many landscapes.

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Variable Arc Nozzles (TVANs)

The new and improved, color coded, MPR TVAN adjustable nozzles are available in 8, 10, 12, 15 and 17 feet and are fully adjustable from 0 to 360.

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TR50PSS, TR50XTPSS, TR70PSS & TR70XTPSS

These rotors include all of the customer accepted TR Series features including a 5" pop up and simple adjustment method and have been upgraded with the addition of stainless steel risers for enhanced durability in order to survive in the harshest conditions.

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TDC Series Turf Decoder Controller

The TDC (Toro Decoder Controller) is a two-wire decoder controller built standard with 100 stations and the ability to be upgraded to 200 stations without purchasing a new controller. This new commercial product offering can operate 1, 2, or 4 station decoders and activate up to 20 simultaneous stations, 2.8 miles away from the controller.

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Sentinel Central Control Software

Based on Microsoft's latest .Net Framework, Sentinel software becomes even easier to program and operate. With the addition of more graphical interfaces and the ability to operate multiple weather sources, this true "Water Smart" scheduling software makes programming up to 999 satellites easier than ever before.

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Toro Maintenance Remote (TMR-1)

A maintenance remote designed for convenience and usability. A powerful tool that enables a single operator to perform irrigation checks and operate the system from the field.

Fixed Sprays Overview

	LPS Series	570Z	570XF	570PR	570PRX
Radius	0'-17'	0'-17'	0'-17'	0'-17'	0'-17'
Flow Range	0.05-4.50 GPM	0.05-4.50 GPM	0.05-4.50 GPM	0.05-3.30 GPM	0.05-3.30 GPM
Recommended Operating Pressure	20-50 PSI	20-50 PSI	20-50 PSI	30-70 PSI	30-70 PSI
Applications					
Turf	X	X	X	X	X
Shrubs/Ground Cover	X	X	X	X	X
Slopes	X	X	X	X	X
High Pressure Systems				X	X
Low Pressure Systems	X	X			
Medians	X	X	X		
High Traffic Areas				X	X
High Wind				X	X
Features					
Pop-up Height	2", 4"	2", 3", 4", 6", 12"	4", 6", 12"	4", 6", 12"	4", 6", 12"
Side Inlet Option		6", 12"	6", 12"	6", 12"	6", 12"
Check Valve Option	X	X	X	X	X
Effluent Water Option		X	X	X	X
Shrub Model		X	X	X	X
X-Flow Water Shut-off			X		X
Built-in Pressure Regulator				X	X
Warranty	2 Years	2 Years	2 Years	5 Years	5 Years

Note: All 570 nozzles work in all sprays

Nozzles Overview










	Radius	Arcs	Flow Range	Recommended Operating Pressure
TVAN	8′, 10′, 12′, 15′, 17′	Adjustable	0.7-5.60 GPM	20-50 PSI
MPR Plus	5′, 8′, 10′, 12′, 15′	1/4, 1/3, 1/2, 2/3, 3/4, Full	0.05-4.58 GPM	20-50 PSI
MPR Plus Specialty	Special	4-EST, 4-CST, 9-SST, 4-SST, 2-SST, 4S-SST	0.38-1.55 GPM	20-50 PSI
MPR Plus PC	5′, 8′, 10′, 12′, 15′	1/4, 1/3, 1/2, 2/3 3/4, Full	0.08-1.64 GPM	30-75 PSI
MPR Plus Specialty PC	Special	4-EST, 4-CST, 9-SST 4-SST, 2-SST, 4S-SST	0.09-1.20 GPM	30-75 PSI
Maxi Jets	4′, 5′ 6′	1/4, 1/2, Full, CST	10.5-31.6 GPM	20-50 PSI
Stream Sprays	13′-22′	1/4, 1/2, Full	0.6-2.70 GPM	20-70 PSI
Stream Bubblers	1.5′-7′	1/4″, 1/2″, Full, 2X180, 4x180	0.21-2.02 GPM	10-60 PSI
Flood Bubbler PC	Circle	Flood	0.25-1.90 GPM	30-60 PSI
500 Series Flood Bubbler	6′-10′	2/60, 4/60, 6/60, 2/180	1.08-2.10 GPM	10-40 PSI

570Z Series Fixed Sprays

Turf, Shrubs, Ground Cover
Variable Arc, MPR, Specialty Nozzles
Body Styles: Shrub, 2", 3", 4", 6", 12"

Application: The 570Z is ideal for small landscape areas and intricate designs. The PR and PRX models are ideal for applications with high or varying operating pressure, including long lines and slopes. The X-Flow feature restricts water loss by 99% if damaged.

Specifications

Radius:
0'–17' (0–5,1m)

Maximum operating pressure:
75 psi (5,2 Bar)

Minimum operating pressure:
for COM models: 25 psi (1,7 Bar)

Inlet:
½" (13mm) female-threaded inlet

Dimensions:
Body diameter:
- 1⅜" (35mm) on 2P, 3P, 4P, 6P and 6P-SI models
- 1⅝" (41mm) on 12P models
- 1¾" (44mm) on 12P-SI models

Cap diameter:
2" (50mm)

Side inlet:
4¾" (120mm) from top of sprinkler to center of side inlet

Check Valve (may require field installation):
Optional—maintains up to 10' (3m) elevation change (not available on shrub models)

Installation Tip:

The 570Z XF Series requires the use of the filter basket screen to push down on the X-Flow valve.

With nothing pushing down, water pressure pushes up on the X-Flow valve shutting off the flow.

Features

Operational Features

- Zero-flush seal prevents flushing on pop-up, allowing more sprinklers on the same line
- Various models available featuring patented in-riser pressure regulator and/or X-Flow shut-off device for conservation and maximum irrigation efficiency
- Several body sizes—to satisfy varying installation requirements (such as 12" [300mm] pop-ups for flowerbeds)
- 115 different nozzles provide tremendous versatility
- Low-pressure sealing at 15 psi (1 Bar) for low pressure pumps and well systems
- Ratcheting riser feature for easy and reliable arc adjustment (pop-up models)
- Retraction flushing clears debris for reliable pop-down
- Small, 2" (50mm) diameter cap is less visible, reducing damage from exposure or vandals
- Check valve prevents low-head drainage and keeps laterals charged with water (optional)
- Stainless steel retraction spring
- Recycled water caps available (see page 19)

Installation Features

- Accepts Maxijet® nozzles for low-application-rate irrigation
- All bodies shipped with a flush plug in place for ease of flushing and riser pull up
- Side-inlet models available on 6" (150mm) and 12" (300mm) sprinkler bodies for easier installation and vandal resistance
- Non-side-inlet models available on 6" (150mm) and 12" (300mm) sprinkler bodies
- Variable arc nozzles—SKU reduction

Without X-Flow

With X-Flow

Model Specific—Features and Benefits

570Z Zero-flush Seal

Ideal for small landscape areas and intricate designs.

Flow rate:
0.05–4.5 GPM (0,2–25,4 LPM)

Recommended operating pressure range:
20–50 psi (1,4–3,5 Bar)

Minimum operating pressure—COM models:
25 psi (1,7 Bar)

Two-year warranty

Specifying Information

570X XXP SI COM E

Model	Pop-up Height	Optional	Optional	Optional
S—Shrub Z—Lawn Pop-up & High-pop	2—2" (50mm) 3—3" (76mm) 4—4" (100mm) 6—6" (150mm) 12—12" (300mm)	SI—Side Inlet*	COM—Check-O-Matic**	E—Effluent

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" and 3" (50mm and 76mm).*

570Z XF X-Flow

Eliminates potential erosion or safety issues.

Specifying Information

570X XXP SI XF COM E

Model	Pop-up Height	Optional	Optional	Optional
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, you would specify: **570Z-6P-XF-COM**

**Available for 6" (150mm) and 12" (300mm) models.*
***Available with non-side inlet models.*

570Z PR Pressure Regulating

Ideal for applications with high or varying operating pressures, including master planned communities on central satellite control with high flow alarms.


(no pressure regulator)

The patented in-riser pressure regulator eliminates misting and fogging.


(with pressure regulator)

Flow rate:
0.05–3.30 GPM (0,2–15,0 LPM)

Recommended operating pressure range:
30–70 psi (2–4,8 Bar)

Minimum operating pressure—COM models:
25 psi (1,7 Bar)

PR feature works above 30 psi

Five-year warranty

Specifying Information

570X XXP SI PR COM E

Model	Pop-up Height	Optional	Optional	Optional
S—Shrub Z—Lawn Pop-up & High-pop	4—4" (100mm) 6—6" (150mm) 12—12" (300mm)	SI—Side Inlet	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**

**Available with non-side inlet only.*
PR models not recommended for use with PCD nozzles.

570Z PRX Pressure Regulating and X-Flow

Ideal for applications with high or varying operating pressure, including long lines and slopes.

Specifying Information

570X XXP SI PRX COM E

Model	Pop-up Height	Optional	Optional	Optional
S—Shrub Z—Lawn Pop-up & High-pop	4—4" (100mm) 6—6" (150mm) 12—12" (300mm)	SI—Side Inlet	COM—Check Valve*	E—Effluent

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 with non-side inlet only.*
PRX models not recommended for use with PCD nozzles.

LPS Series

Turf, Shrubs, Ground Cover
Radius: 8′, 10′, 12′, 15′, 17′
Pressure: 20–70 psi
With or Without Nozzle

Application: The LPS features a compact body with or without a pre-installed TVAN nozzle in 2" or 4" pop-up heights. The LPS is ideal for residential applications with its small diameter cap that allows it to blend into many landscapes.

For nozzle performance, see TVAN nozzles on page 12.

Specifications

Radius:
8′–17′ (2,4–5,2m)

Recommended operating pressure range:
20–70 psi (1,4–4,8 Bar)

Flow-by:
0 at 10 psi (0,7 Bar) or greater

Inlet:
½" (13mm) female-threaded

Dimensions:
Body height:
- LPS200: 2" (50mm)
- LPS400: 4" (100mm)

Exposed diameter:
1¼" (32mm)

Check valve:
Optional—maintains up to 7′ (2,1m) elevation change to prevent low-head drainage

Features

- Available with pre-installed Toro Variable Arc Nozzles in five radii or as a body only
- Matched precipitation rate nozzles provide even coverage
- Adjustable arc patterns from 0° to 360°
- Easy to grip nozzles makes adjustments simple—wet or dry
- Riser accepts Toro male thread TVAN or MPR nozzles
- Pressure-activated seal reduces flow-by during pop up and keeps debris away from stem during retraction
- Heavy-duty, stainless steel retraction spring ensures positive pop down
- One-piece molded body adds durability
- Removable nozzle, screen and internal components for ease in flushing and servicing
- Optional check valve part ordered separately (Model No. LPSCV)

Specifying Information

LPS | X | XXX

Description	Body	Nozzle
LPS—LPS Fixed Spray	2—2" (50mm) 4—4" (100mm)	00—Body Only 10—10′ (3,0m) 12—12′ (3,7m) 15—15′ (4,6m) 17—17′ (5,2m)

Example: A 4" LPS Fixed-spray Sprinkler with a 10′ (3,0m) nozzle, would be specified as: **LPS410**

6' 24 GPH | 5' 15 GPH | 4' 10 GPH

Maxijet Microspray Nozzle Assemblies

Ground cover, flowerbeds

Flow rate: 10–31.6 GPH

Pressure: 20–50 psi

Application: Maxijet microspray nozzle assemblies provide maximum versatility in a variety of low-volume applications.

Operational Features

- Compatible with all Toro spray bodies and adapters, these nozzles provide maximum versatility in low-volume applications such as ground cover, flowerbeds and low-water plants
- Nozzle, adapter and pressure-compensating screens are pre-assembled

Installation Features

- Color-coded nozzles and pressure-compensating screens are for easy flow rate identification
- Two-year warranty

Specifications

Flow rate:
10–31.6 GPH (40–119,6 LPH)

Recommended operating pressure:
20–50 psi (1,3–3,5 Bar)

Maximum operating pressure:
50 psi (3,5 Bar)

570Z Series Maxijet Nozzle Assemblies Performance Data

10 GPH Series with 0° Trajectory—U.S. ●

Pattern	Description	psi	GPH	Radius
	MJ-4Q	20	10.5	4.5
		30	12.8	5.0
		40	14.6	5.5
	MJ-4Q-PC	20-50	10.0	4.5
	MJ-4H	20	10.5	4.0
		30	12.8	4.5
		40	14.6	4.5
	MJ-4H-PC	20-50	10.0	4.0
	MJ-4F	20	10.5	4.0
		30	12.8	5.0
		40	14.6	5.0
	MJ-4F-PC	20-50	10.0	3.5
	MJ-4CST	20	10.5	1.5 x 3
		30	12.8	5.5 x 3
		40	14.6	6.0 x 3.5
	MJ-4CST-PC	20-50	10.0	4 x 3

15 GPH Series with 0° Trajectory—U.S. ●

Pattern	Description	psi	GPH	Radius
	MJ-5Q	20	16.0	6.5
		30	19.9	7.0
		40	22.7	7.5
	MJ-5Q-PC	20-50	15.0	5.5
	MJ-5H	20	16.0	6.5
		30	19.9	7.0
		40	22.7	7.5
	MJ-5H-PC	20-50	15.0	5.5
	MJ-5F	20	16.0	4.5
		30	19,9	5.0
		40	22.7	5.0
	MJ-5F-PC	20-50	15.0	5.0
	MJ-5CST	20	16.0	4.5 x 3
		30	19.9	5.5 x 3
		40	22.7	6.5 x 3.5
	MJ-5CST-PC	20-50	15.0	5 x 3

24 GPH Series with 0° Trajectory—U.S. ●

Pattern	Description	psi	GPH	Radius
	MJ-6Q	20	23.5	7.0
		30	29.1	8.0
		40	31.6	8.5
	MJ-6Q-PC	20-50	24.0	6.5
	MJ-6H	20	23.5	5.0
		30	29.1	5.5
		40	31.6	6.0
	MJ-6H-PC	20-50	24.0	5.5
	MJ-6F	20	23.5	5.0
		30	29.1	6.5
		40	31.6	7.5
	MJ-6F-PC	20-50	24.0	5.5
	MJ-6CST	20	23.5	5.5 x 3
		30	29.1	6.5 x 3.5
		40	31.6	7.0 x 3.5
	MJ-6CST-PC	20-50	24.0	6 x 3

Radius shown in feet. Data based on 360°.

40 LPH Series with 0° Trajectory—Metric ●

Nozzle Radius	Pressure Bar	Pressure kPa	Pressure Kg/cm²	Flow LPH	Radius meters
MJ-4Q	1,5	150	1,53	41,3	1,4
	2,0	200	2,04	47,6	1,5
	2,5	250	2,55	52,7	1,6
MJ-4Q-PC	1,5-3,5	150-350	1,53-3,57	37,9	1,4
MJ-4H	1,5	150	1,53	41,3	1,2
	2,0	200	2,04	47,6	1,4
	2,5	250	2,55	52,7	1,4
MJ-4H-PC	1,5-3,5	150-350	1,53-3,57	37,9	1,2
MJ-4F	1,5	150	1,53	41,3	1,3
	2,0	200	2,04	47,6	1,5
	2,5	250	2,55	52,7	1,5
MJ-4F-PC	1,5-3,5	150-350	1,53-3,57	37,9	1,1
MJ-4CST	1,5	150	1,53	41,3	0,5 x 0,9
	2,0	200	2,04	47,6	1,7 x 0,9
	2,5	250	2,55	52,7	1,8 x 1,1
MJ-4CST-PC	1,5-3,5	150-350	1,53-3,57	37,9	1,2 x 0,9

57 LPH Series with 0° Trajectory—Metric ●

Nozzle Radius	Pressure Bar	Pressure kPa	Pressure Kg/cm²	Flow LPH	Radius meters
MJ-5Q	1,5	150	1,53	63,1	2,0
	2,0	200	2,04	73,9	2,1
	2,5	250	2,55	82,0	2,2
MJ-5Q-PC	1,5-3,5	150-350	1,53-3,57	56,8	1,7
MJ-5H	1,5	150	1,53	63,1	2,0
	2,0	200	2,04	73,9	2,1
	2,5	250	2,55	82,0	2,2
MJ-5H-PC	1,5-3,5	150-350	1,53-3,57	56,8	1,7
MJ-5F	1,5	150	1,53	63,1	1,4
	2,0	200	2,04	73,9	1,5
	2,5	250	2,55	82,0	1,5
MJ-5F-PC	1,5-3,5	150-350	1,53-3,57	56,8	1,5
MJ-5CST	1,5	150	1,53	63,1	1,4 x 0,9
	2,0	200	2,04	73,9	1,7 x 0,9
	2,5	250	2,55	82,0	2,0 x 1,1
MJ-5CST-PC	1,5-3,5	150-350	1,53-3,57	56,8	1,5 x 0,9

91 LPH Series with 0° Trajectory—Metric ●

Nozzle Radius	Pressure Bar	Pressure kPa	Pressure Kg/cm²	Flow LPH	Radius meters
MJ-6Q	1,5	150	1,53	92,7	2,2
	2,0	200	2,04	108	2,4
	2,5	250	2,55	116	2,5
MJ-6Q-PC	1,5-3,5	150-350	1,53-3,57	90,8	2,0
MJ-6H	1,5	150	1,53	92,7	1,6
	2,0	200	2,04	108	1,7
	2,5	250	2,55	116	1,8
MJ-6H-PC	1,5-3,5	150-350	1,53-3,57	90,8	1,7
MJ-6F	1,5	150	1,53	92,7	1,6
	2,0	200	2,04	108	1,9
	2,5	250	2,55	116	2,2
MJ-6F-PC	1,5-3,5	150-350	1,53-3,57	90,8	1,7
MJ-6CST	1,5	150	1,53	92,7	1,7 x 0,9
	2,0	200	2,04	108	2,0 x 1,1
	2,5	250	2,55	116	2,1 x 1,1
MJ-6CST-PC	1,5-3,5	150-350	1,53-3,57	90,8	1,8 x 0,9

Radius shown in meters.

Specifying Information

MJ | X | XXX

Description	Radius	Arc
MJ—Maxijet Microspray Nozzle Assemblies	4—4' (1,2m) 6—6' (1,8m) 5—5' (1,5m)	Q—90° F—360° H—180° CST—Center Strip

Example: A 4' (1,2m) radius Maxijet Microspray Nozzle Assembly with a 180° arc, would be specified as: **MJ-4H**

Note: *To specify a Maxijet nozzle with a 570Z sprinkler body, attach the body specification (pg. 9) before the above nozzle specification.*

Variable Arc Nozzles (TVANs)

- All spray head applications
- Radius: 7'–18'
- Pressure: 20–50 psi
- Infinitely adjustable

NEW

Five different nozzles for various radii:

8' (2,4m) Green | 10' (3,0m) Blue | 12' (3,7m) Brown | 15' (4,6m) Black | 17' (5,2m) Gray

Application: The TVAN provides a variety of arc settings to precisely match any terrain with precipitation rates that are comparable to MPR nozzles.

Specifications

Radius:
7'–18' (2,1–5,2m)

Recommended operating pressure range:
20–50 psi (1,4–3,5 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

Operational Features

- Matched precipitation rates within family (MPR) ensure all nozzles apply water at approximately the same rate
- Infinitely adjustable from 0° to 360°
- Color-coded nozzles allow for easy identification
- Exceptional uniform coverage
- Two-year warranty

Installation Features

- Adjustment screw allows up to 25% radius reduction
- Unique grip-and-turn adjustment from the top of the nozzle—wet or dry

Check Out New Precipitation Rates

◀*TVAN's unique grip-and-turn nozzle adjustment feature allows for the perfect spray pattern for your site—wet or dry.*

570 Variable Arc Nozzle Performance Data—U.S.

	8' Series			10' Series			12' Series			15' Series			17' Series		
Pattern	psi	GPM	Rad	psi	GPM	Rad	psi	GPM	Rad	psi	GPM	Rad	psi	GPM	Rad
90°	20	0.32	7	20	0.46	9	20	0.79	11	20	1.00	15	20	1.17	16
	30	0.38	8	30	0.52	10	30	0.81	12	30	1.12	15	30	1.38	17
	40	0.45	9	40	0.65	10	40	1.13	13	40	1.42	16	40	1.64	18
	50	0.51	9	50	0.73	10	50	1.27	14	50	1.59	16	50	1.83	18
180°	20	0.55	7	20	0.81	8	20	1.34	11	20	1.67	13	20	1.90	14
	30	0.64	8	30	0.96	9	30	1.52	12	30	1.90	15	30	2.15	17
	40	0.72	8	40	1.09	10	40	1.81	14	40	2.23	15	40	2.70	17
	50	0.76	9	50	1.22	10	50	2.03	14	50	2.47	15	50	3.03	18
270°	20	0.84	7	20	1.17	8	20	1.91	10	20	2.19	12	20	2.56	13
	30	0.92	8	30	1.32	9	30	2.17	13	30	2.65	15	30	2.90	17
	40	1.07	8	40	1.57	10	40	2.67	14	40	3.03	15	40	3.61	17
	50	1.20	9	50	1.76	10	50	2.86	14	50	3.38	16	50	4.04	18
360°	20	1.08	7	20	1.58	8	20	2.19	9	20	2.51	12	20	2.79	17
	30	1.28	8	30	1.85	9	30	2.69	13	30	3.18	15	30	3.45	18
	40	1.55	9	40	2.23	10	40	3.09	11	40	3.55	15	40	3.95	18
	50	1.75	9	50	2.49	10	50	3.39	12	50	3.94	16	50	4.46	18

Bolded type indicates optimal operating pressure. Radius shown in feet. Data based on 360°.

570 Variable Arc Nozzle Performance Data—Metric

	8' Series			10' Series			12' Series			15' Series			17' Series		
Pattern	Bar	LPM	Rad	Bar	LPM	Rad	Bar	LPM	Rad	Bar	LPM	Rad	Bar	LPM	Rad
90°	1,5	1,3	2,2	1,5	1,8	2,8	1,5	3,0	3,4	1,5	3,9	4,6	1,5	4,6	4,9
	2,0	**1,4**	**2,4**	**2,0**	**1,9**	**3,0**	**2,0**	**3,1**	**3,6**	**2,0**	**4,2**	**4,6**	**2,0**	**5,1**	**5,2**
	2,5	1,6	2,6	2,5	2,3	3,0	2,5	3,8	3,8	2,5	4,9	4,8	2,5	5,8	5,4
	3,0	1,8	2,7	3,0	2,6	3,0	3,0	4,5	4,1	3,0	5,6	4,9	3,0	6,5	5,5
	3,5	1,9	2,7	3,5	2,8	3,0	3,5	4,8	4,3	3,5	6,1	4,9	3,5	7,0	5,5
180°	1,5	2,1	2,2	1,5	3,2	2,5	1,5	5,2	3,4	1,5	6,5	4,1	1,5	7,4	4,4
	2,0	**2,4**	**2,4**	**2,0**	**3,6**	**2,7**	**2,0**	**5,7**	**3,6**	**2,0**	**7,1**	**4,5**	**2,0**	**8,0**	**5,1**
	2,5	2,6	2,4	2,5	3,9	2,9	2,5	6,4	4,0	2,5	8,0	4,6	2,5	9,4	4,2
	3,0	2,8	2,5	3,0	4,3	3,0	3,0	7,1	4,3	3,0	8,8	4,6	3,0	10,7	5,3
	3,5	2,9	2,8	3,5	4,7	3,0	3,5	7,7	4,3	3,5	9,4	4,6	3,5	11,6	5,5
270°	1,5	3,2	2,2	1,5	4,5	2,5	1,5	7,4	3,2	1,5	8,6	3,8	1,5	9,9	4,2
	2,0	**3,5**	**2,4**	**2,0**	**4,9**	**2,7**	**2,0**	**8,1**	**3,9**	**2,0**	**9,9**	**4,5**	**2,0**	**10,8**	**5,1**
	2,5	3,8	2,4	2,5	5,6	2,9	2,5	9,4	4,2	2,5	10,9	4,6	2,5	12,7	5,2
	3,0	4,2	2,5	3,0	6,2	3,0	3,0	10,4	4,3	3,0	11,9	4,7	3,0	14,2	5,3
	3,5	4,6	2,8	3,5	6,7	3,0	3,5	10,9	4,3	3,5	12,9	4,9	3,5	15,4	5,5
360°	1,5	4,2	2,2	1,5	6,2	2,5	1,5	8,6	3,0	1,5	9,9	3,8	1,5	11,0	5,2
	2,0	**4,8**	**2,4**	**2,0**	**6,9**	**2,7**	**2,0**	**10,0**	**3,8**	**2,0**	**11,8**	**4,5**	**2,0**	**12,8**	**5,5**
	2,5	5,5	2,6	2,5	7,9	2,9	2,5	11,1	3,6	2,5	12,9	4,6	2,5	14,2	5,5
	3,0	6,1	2,7	3,0	8,8	3,0	3,0	12,1	3,5	3,0	14,0	4,7	3,0	15,6	5,5
	3,5	6,7	2,7	3,5	9,5	3,0	3,5	12,9	3,7	3,5	15,0	4,9	3,5	17,0	5,5

Bolded type indicates optimal operating pressure. Radius shown in meters. Data based on 360°.

Specifying Information

Model Number	Description
TVAN8	8' Variable Arc Pattern
TVAN10	10' Variable Arc Pattern
TVAN12	12' Variable Arc Pattern
TVAN15	15' Variable Arc Pattern
TVAN17	17' Variable Arc Pattern

Example: A Variable Arc Nozzle with a 10' radius, would be specified as: **TVAN10**

Note: *To specify a TVAN nozzle with a 570Z sprinkler body, attach the body specification (pg. 9) before the above nozzle specification.*

MPR Plus Spray Nozzles

- All spray head applications
- Radius: 0.05–4.58 GPM
- Pressure: 20–50 psi
- Matched precipitation

Application: These MPR Plus nozzles fit any Toro spray body offering excellent performance with lower precipitation rates.

Specifications

Flow rate:
0.05–4.58 GPM (0,2–17 LPM)

Recommended operating pressure range:
20–50 psi (1,4–3,5 Bar)

Maximum operating pressure range:
75 psi (5,2 Bar)

Nozzle Screens

White	Red	Red and Metal
15' (4,6m) Series	8' (2,4m) Series	5' (1,5m) Series
12' (3,7m) Series	4' x 30' SST (1,2 x 9,1m)	2' x 6' (0,6 x 1,8m) SST
10' (3m) Series	4' x 18' SST (1,2 x 5,5m)	10° Stream Spray Series
4' x 30' (1,2 x 9,1m) CST Stream Bubblers		35° Stream Spray Series Flood Bubbler Series
Flat-Spray (Non-MPR)		Flat-spray, Low Gallonage (Non-MPR)
4' x 30' (1,2 x 9,1m) EST		
9' x 18' (2,7 x 5,5m) SST		

Note: *Screens provided with nozzle. Refer to current Parts Breakout Book, (Form No. 490-3043) for more information.*

Apex at 30 psi (2 Bar)

	Maximum Height of Spray				
Nozzle Series	27°	23°	12°	5°	0°
15' (6m)	4' 8" (1,4m)				
12' (3,7m)		3' 7" (1,1m)			
10' (3m)			2' 4" (0,7m)		
8' (2,4m)				2' 2" (0,66m)	
5' (1,5m)					1' 6" (0,46m)

570 Series Flat Spray Low Gallonage—Non-MPR

Pattern	Desc.	psi	GPM	Radius	Prec. Rate △	Prec. Rate □
90°	FSQ-LG	20	0.38	6	4.07	4.70
		30	0.47	6	5.03	5.81
		40	0.51	7	4.01	4.63
		50	0.58	7	4.56	5.27
	FSQ-LG-PC	40-50	0.41	6	4.39	5.07
		60-70	0.50	7	3.93	4.54
180°	FSH-LG	20	0.37	5	2.85	3.29
		30	0.46	5	3.54	4.09
		40	0.53	6	2.84	3.27
		50	0.60	7	2.36	2.72
	FSH-LG-PC	40-50	0.44	6	2.35	2.72
		60-70	0.50	6	2.68	3.09
360°	FSF-LG	20	0.91	6	2.43	2.81
		30	1.14	6	3.05	3.52
		40	1.34	7	2.63	3.04
		50	1.50	7	2.95	3.40
	FSF-LG-PC	40-50	1.19	7	2.34	2.70
		60-70	1.33	7	2.61	3.02

Note: Performance is based on 6" above finished grade.
**△ Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
□ Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.
Radius shown in feet.

Operational Features

- 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 PCDs eliminate fogging, conserve water and provide precise flow rates (also available without PCDs)
- Standard and special spray patterns for varying applications
- Customized screens developed for each nozzle for better filtration
- Patterns for small areas: full set of arcs for 10' (3m), 8' (2,4m) and 5' (1,5m) radius nozzles
- 4' x 18' (1,2 x 5,5m) side strip ideal for medians
- 2' x 6' (0,6 x 1,8m) for small planter beds and other narrow areas
- Fine-mesh, snap-in filter screens, prevent clogging of lower gallonage nozzles
- Two-year warranty

Installation Features

- Complete selection of arcs for all radius options—full, ¾, ⅔ , ½, ⅓ and ¼
- Five levels of trajectory
- Convenient nozzle packaging—nozzles and screens packed separately in attached bags
- Adjustment screw allows up to 25% reduction in radius and complete shutoff

Specifying Information

XX XXX PC

Radius	Arc		Optional
5—5' (1,5m)	Q—90°	F—360°	PC—Pressure Compensation
8—8' (2,4m)	T—120°	EST—End Strip	
10—10' (3,0m)	H—180°	CST—Center Strip	
12—12' (3,7m)	TT—240°	SST—Side Strip	
15—15' (4,6m)	TQ—270°		

Example: A 570 MPR Plus Nozzle with a spray of 10' (3m), 180° arc and pressure compensation, would be specified as: **10-H-PC**

Note: *To specify an MPR Plus nozzle with a 570Z sprinkler body, attach the body specification (pg. 9) before the above nozzle specification.*

Performance Data—U.S.

MPR Plus Spray Nozzles

5' Series with 0° Trajectory

Pattern	Desc.	psi	GPM	Radius	Prec. Rate* △	Prec. Rate* □
90°	5-Q	20	0.05	4	1.40	1.21
		30	**0.09**	**5**	**1.61**	**1.40**
		40	0.12	6	1.78	1.54
		50	0.15	6	1.86	1.62
	5-Q-PC	30-40	0.09	5	1.61	1.40
		40-75	0.10	5	1.79	1.55
120°	5-T	20	0.07	4	1.47	1.27
		30	**0.12**	**5**	**1.61**	**1.40**
		40	0.16	6	1.78	1.54
		50	0.20	6	1.86	1.62
	5-T-PC	30-40	0.12	5	1.61	1.40
		40-75	0.13	5	1.79	1.55
180°	5-H	20	0.10	4	1.40	1.21
		30	**0.19**	**5**	**1.70**	**1.47**
		40	0.23	6	1.70	1.47
		50	0.27	6	1.68	1.45
	5-H-PC	30-40	0.18	5	1.61	1.40
		40-75	0.20	5	1.79	1.55
240°	5-TT	20	0.15	4	1.57	1.36
		30	**0.25**	**5**	**1.68**	**1.45**
		40	0.30	6	1.66	1.44
		50	0.35	6	1.63	1.41
	5-TT-PC	30-40	0.23	5	1.54	1.34
		40-75	0.27	5	1.81	1.57
270°	5-TQ	20	0.20	4	1.86	1.61
		30	**0.29**	**5**	**1.73**	**1.50**
		40	0.34	6	1.68	1.45
		50	0.40	6	1.66	1.44
	5-TQ-PC	30-40	0.26	5	1.55	1.34
		40-75	0.29	5	1.73	1.50
360°	5-F	20	0.25	4	1.75	1.51
		30	**0.38**	**5**	**1.70**	**1.47**
		40	0.45	6	1.66	1.44
		50	0.53	6	1.65	1.43
	5-F-PC	30-40	0.35	5	1.57	1.36
		40-75	0.39	5	1.75	1.51

8' Series with 5° Trajectory

Pattern	Desc.	psi	GPM	Radius	Prec. Rate* △	Prec. Rate* □
90°	8-Q	20	0.17	7	1.55	1.34
		30	**0.24**	**8**	**1.68**	**1.45**
		40	0.26	9	1.61	1.39
		50	0.29	9	1.60	1.39
	8-Q-PC	30-40	0.22	8	1.54	1.33
		40-75	0.25	8	1.75	1.51
120°	8-T	20	0.23	7	1.58	1.36
		30	**0.30**	**8**	**1.57**	**1.36**
		40	0.36	9	1.67	1.45
		50	0.40	9	1.66	1.44
	8-T-PC	30-40	0.29	8	1.52	1.32
		40-75	0.35	8	1.84	1.59
180°	8-H	20	0.37	8	1.47	1.27
		30	**0.50**	**8**	**1.75**	**1.51**
		40	0.58	9	1.80	1.56
		50	0.65	9	1.80	1.56
	8-H-PC	30-40	0.44	8	1.54	1.33
		40-75	0.50	8	1.75	1.51
240°	8-TT	20	0.56	7	1.92	1.66
		30	**0.70**	**8**	**1.84**	**1.59**
		40	0.80	9	1.86	1.61
		50	0.88	9	1.82	1.58
	8-TT-PC	30-40	0.59	8	1.55	1.34
		40-75	0.70	8	1.84	1.59
270°	8-TQ	20	0.63	7	1.92	1.66
		30	**0.76**	**8**	**1.77**	**1.53**
		40	0.86	9	1.78	1.54
		50	0.93	9	1.71	1.48
	8-TQ-PC	30-40	0.64	8	1.49	1.29
		40-75	0.70	8	1.63	1.41
360°	8-F	20	0.74	7	1.69	1.46
		30	**1.00**	**8**	**1.75**	**1.51**
		40	1.16	9	1.80	1.56
		50	1.30	9	1.80	1.56
	8-F-PC	30-40	0.85	8	1.49	1.29
		40-75	1.00	8	1.75	1.51

10' Series with 12° Trajectory

Pattern	Desc.	psi	GPM	Radius	Prec. Rate* △	Prec. Rate* □
90°	10-Q	20	0.30	9	1.66	1.44
		30	**0.40**	**10**	**1.79**	**1.55**
		40	0.50	11	1.85	1.60
		50	0.60	12	1.86	1.62
	10-Q-PC	30-40	0.33	10	1.48	1.28
		40-75	0.37	10	1.66	1.43
120°	10-T	20	0.42	9	1.74	1.51
		30	**0.52**	**10**	**1.75**	**1.51**
		40	0.65	11	1.80	1.56
		50	0.75	12	1.75	1.51
	10-T-PC	30-40	0.44	10	1.48	1.28
		40-75	0.50	10	1.68	1.45
180°	10-H	20	0.60	9	1.66	1.44
		30	**0.71**	**10**	**1.59**	**1.38**
		40	0.85	11	1.57	1.36
		50	0.99	12	1.65	1.43
	10-H-PC	30-40	0.66	10	1.48	1.28
		40-75	0.75	10	1.68	1.45
240°	10-TT	20	0.71	9	1.47	1.27
		30	**0.97**	**10**	**1.63**	**1.41**
		40	1.10	11	1.67	1.45
		50	1.19	11	1.65	1.43
	10-TT-PC	30-40	0.89	10	1.49	1.29
		40-75	1.00	10	1.68	1.45
270°	10-TQ	20	0.82	9	1.51	1.31
		30	**1.04**	**10**	**1.55**	**1.34**
		40	1.20	11	1.62	1.41
		50	1.35	11	1.66	1.44
	10-TQ-PC	30-40	0.99	10	1.48	1.28
		40-75	1.09	10	1.63	1.41
360°	10-F	20	1.11	9	1.72	1.49
		30	**1.49**	**10**	**1.67**	**1.44**
		40	1.61	11	1.63	1.42
		50	1.85	11	1.71	1.48
	10-F-PC	30-40	1.33	10	1.49	1.29
		40-75	1.51	10	1.69	1.46

12' Series with 23° Trajectory

Pattern	Desc.	psi	GPM	Radius	Prec. Rate* △	Prec. Rate* □
90°	12-Q	20	0.40	11	1.48	1.28
		30	**0.50**	**12**	**1.55**	**1.35**
		40	0.60	13	1.64	1.42
		50	0.63	13	1.67	1.44
	12-Q-PC	30-40	0.48	12	1.49	1.29
		40-75	0.53	12	1.65	1.43
120°	12-T	20	0.57	11	1.58	1.37
		30	**0.72**	**12**	**1.68**	**1.45**
		40	0.87	13	1.87	1.62
		50	0.97	13	1.93	1.67
	12-T-PC	30-40	0.64	12	1.49	1.29
		40-75	0.70	12	1.63	1.41
180°	12-H	20	0.95	11	1.76	1.52
		30	**1.09**	**12**	**1.69**	**1.47**
		40	1.30	13	1.72	1.49
		50	1.55	14	1.77	1.53
	12-H-PC	30-40	0.96	12	1.49	1.29
		40-75	1.05	12	1.63	1.41
240°	12-TT	20	1.12	11	1.55	1.35
		30	**1.45**	**12**	**1.69**	**1.46**
		40	1.63	13	1.75	1.52
		50	1.80	13	1.79	1.55
	12-TT-PC	30-40	1.28	12	1.49	1.29
		40-75	1.40	12	1.63	1.41
270°	12-TQ	20	1.05	11	1.42	1.23
		30	**1.55**	**12**	**1.61**	**1.39**
		40	1.65	13	1.58	1.36
		50	1.80	13	1.59	1.38
	12-TQ-PC	30-40	1.44	12	1.49	1.29
		40-75	1.60	12	1.66	1.44
360°	12-F	20	1.67	11	1.54	1.34
		30	**2.19**	**12**	**1.70**	**1.47**
		40	2.35	13	1.68	1.46
		50	2.70	13	1.79	1.55
	12-F-PC	30-40	1.92	12	1.49	1.29
		40-75	2.10	12	1.63	1.41

15' Series with 27° Trajectory

Pattern	Desc.	psi	GPM	Radius	Prec. Rate* △	Prec. Rate* □
90°	15-Q	20	0.68	14	1.55	1.34
		30	**0.85**	**15**	**1.69**	**1.46**
		40	1.04	16	1.82	1.57
		50	1.23	16	2.15	1.86
	15-Q-PC	30-40	0.75	15	1.49	1.29
		40-75	0.81	15	1.61	1.40
120°	15-T	20	0.95	14	1.75	1.52
		30	**1.10**	**15**	**1.64**	**1.42**
		40	1.30	16	1.82	1.57
		50	1.45	16	2.03	1.75
	15-T-PC	30-40	1.00	15	1.49	1.29
		40-75	1.10	15	1.64	1.42
180°	15-H	20	1.37	13	1.79	1.55
		30	**1.65**	**15**	**1.66**	**1.44**
		40	2.02	16	1.77	1.53
		50	2.14	16	1.87	1.62
	15-H-PC	30-40	1.50	15	1.49	1.29
		40-75	1.65	15	1.64	1.42
240°	15-TT	20	1.78	14	1.59	1.38
		30	**2.20**	**15**	**1.64**	**1.42**
		40	2.66	16	1.74	1.51
		50	2.84	16	1.86	1.61
	15-TT-PC	30-40	2.00	15	1.49	1.29
		40-75	2.20	15	1.64	1.42
270°	15-TQ	20	2.10	13	1.85	1.61
		30	**2.60**	**15**	**1.72**	**1.49**
		40	3.00	16	1.86	1.61
		50	3.40	16	1.98	1.72
	15-TQ-PC	30-40	2.30	15	1.53	1.32
		40-75	2.50	15	1.66	1.44
360°	15-F	20	2.85	13	1.89	1.63
		30	**3.60**	**15**	**1.79**	**1.55**
		40	4.20	16	1.84	1.59
		50	4.58	16	2.00	1.73
	15-F-PC	30-40	3.00	15	1.49	1.29
		40-75	3.30	15	1.64	1.42

Special Patterns

Pattern	Desc.	psi	GPM	Special Patterns Width	Special Patterns Length	Prec. Rate*
	4-EST	20	0.38	3'	x 12'	2.03
		30	**0.45**	**4'**	**x 15'**	**1.44**
		40	0.53	5'	x 18'	1.13
		50	0.60	6'	x 20'	0.96
	4-EST-PC	30-40	0.43	4'	x 15'	1.38
		40-75	0.50	4'	x 15'	1.61
	4-CST	20	0.75	3'	x 24'	2.01
		30	**0.90**	**4'**	**x 30'**	**1.44**
		40	1.04	4'	x 30'	1.67
		50	1.16	4'	x 31'	1.80
	4-CST-PC	30-40	0.86	4'	x 30'	1.38
		40-75	1.00	4'	x 30'	1.61
	9-SST	20	1.00	9'	x 18'	1.19
		30	**1.20**	**9'**	**x 18'**	**1.43**
		40	1.38	9'	x 20'	1.48
		50	1.55	10'	x 22'	1.36
	9-SST-PC	30-40	1.10	9'	x 18'	1.31
		40-75	1.20	9'	x 18'	1.43
	4-SST	20	0.65	4'	x 24'	1.30
		30	**0.90**	**4'**	**x 30'**	**1.44**
		40	1.04	4'	x 32'	1.56
		50	1.16	5'	x 33'	1.35
	4-SST-PC	30-40	0.88	4'	x 30'	1.41
		40-75	1.00	4'	x 30'	1.61
	2-SST	20	0.08	2'	x 5'	1.54
		30	**0.09**	**2'**	**x 6'**	**1.44**
		40	0.10	2'	x 7'	1.38
		50	0.12	3'	x 7'	1.10
	2-SST-PC	30-40	0.09	2'	x 6'	1.44
		40-75	0.10	2'	x 6'	1.61
	4S-SST	20	0.46	4'	x 17'	1.30
		30	**0.55**	**4'**	**x 18'**	**1.47**
		40	0.63	4'	x 19'	1.60
		50	0.71	5'	x 19'	1.44
	4S-SST-PC	30-40	0.50	4'	x 18'	1.34
		40-75	0.59	4'	x 18'	1.58

Radius shown in feet. Data based on 360°.

= nozzles with PCDs.

Bolded type indicates optimal operating pressure.

***△** *Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*

□ *Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Performance Data—Metric

MPR Plus Spray Nozzles

5 Series with 0° Trajectory

Pattern	Desc.	Pres. Bar	Pres. kPa	Pres. Kg/cm2	Flow LPM	Radius m
1/4	5-Q	1,5	150	1,53	0,22	1,3
		2,0	200	2,04	0,33	1,5
		2,5	250	2,55	0,41	1,6
		3,0	300	3,06	0,49	1,7
		3,5	350	3,57	0,58	1,8
	5-Q-PC	2,07-2,76	207-276	2,11-2,82	0,34	1,5
		2,76-5,18	276-518	2,82-5,28	0,38	1,5
1/3	5-T	1,5	150	1,53	0,30	1,3
		2,0	200	2,04	0,44	1,5
		2,5	250	2,55	0,55	1,6
		3,0	300	3,06	0,66	1,7
		3,5	350	3,57	0,77	1,8
	5-T-PC	2,07-2,76	207-276	2,11-2,82	0,45	1,5
		2,76-5,18	276-518	2,82-5,28	0,49	1,5
1/2	5-H	1,5	150	1,53	0,44	1,3
		2,0	200	2,04	0,69	1,5
		2,5	250	2,55	0,81	1,6
		3,0	300	3,06	0,92	1,7
		3,5	350	3,57	1,03	1,8
	5-H-PC	2,07-2,76	207-276	2,11-2,82	0,68	1,5
		2,76-5,18	276-518	2,82-5,28	0,76	1,5
2/3	5-TT	1,5	150	1,53	0,63	1,3
		2,0	200	2,04	0,91	1,5
		2,5	250	2,55	1,06	1,6
		3,0	300	3,06	1,20	1,7
		3,5	350	3,57	1,34	1,8
	5-TT-PC	2,07-2,76	207-276	2,11-2,82	0,87	1,5
		2,76-5,18	276-518	2,82-5,28	1,02	1,5
3/4	5-TQ	1,5	150	1,53	0,82	1,3
		2,0	200	2,04	1,06	1,5
		2,5	250	2,55	1,22	1,6
		3,0	300	3,06	1,37	1,7
		3,5	350	3,57	1,53	1,8
	5-TQ-PC	2,07-2,76	207-276	2,11-2,82	0,98	1,5
		2,76-5,18	276-518	2,82-5,28	1,10	1,5
360°	5-F	1,5	150	1,53	1,03	1,3
		2,0	200	2,04	1,39	1,5
		2,5	250	2,55	1,60	1,6
		3,0	300	3,06	1,81	1,7
		3,5	350	3,57	2,03	1,8
	5-F-PC	2,07-2,76	207-276	2,11-2,82	1,33	1,5
		2,76-5,18	276-518	2,82-5,28	1,48	1,5

8 Series with 5° Trajectory

Pattern	Desc.	Pres. Bar	Pres. kPa	Pres. Kg/cm2	Flow LPM	Radius m
1/4	8-Q	1,5	150	1,53	0,69	2,2
		2,0	200	2,04	0,88	2,4
		2,5	250	2,55	0,96	2,5
		3,0	300	3,06	1,02	2,6
		3,5	350	3,57	1,11	2,8
	8-Q-PC	2,07-2,76	207-276	2,11-2,82	0,83	2,4
		2,76-5,18	276-518	2,82-5,28	0,95	2,4
1/3	8-T	1,5	150	1,53	0,92	2,2
		2,0	200	2,04	1,11	2,4
		2,5	250	2,55	1,28	2,5
		3,0	300	3,06	1,42	2,6
		3,5	350	3,57	1,53	2,8
	8-T-PC	2,07-2,76	207-276	2,11-2,82	1,10	2,4
		2,76-5,18	276-518	2,82-5,28	1,33	2,4
1/2	8-H	1,5	150	1,53	1,49	2,3
		2,0	200	2,04	1,84	2,4
		2,5	250	2,55	2,08	2,5
		3,0	300	3,06	2,29	2,6
		3,5	350	3,57	2,48	2,8
	8-H-PC	2,07-2,76	207-276	2,11-2,82	1,67	2,4
		2,76-5,18	276-518	2,82-5,28	1,89	2,4
2/3	8-TT	1,5	150	1,53	2,21	2,2
		2,0	200	2,04	2,60	2,4
		2,5	250	2,55	2,89	2,5
		3,0	300	3,06	3,13	2,6
		3,5	350	3,57	3,35	2,8
	8-TT-PC	2,07-2,76	207-276	2,11-2,82	2,23	2,4
		2,76-5,18	276-518	2,82-5,28	2,65	2,4
3/4	8-TQ	1,5	150	1,53	2,47	2,2
		2,0	200	2,04	2,83	2,4
		2,5	250	2,55	3,11	2,5
		3,0	300	3,06	3,35	2,6
		3,5	350	3,57	3,54	2,8
	8-TQ-PC	2,07-2,76	207-276	2,11-2,82	2,42	2,4
		2,76-5,18	276-518	2,82-5,28	2,65	2,4
360°	8-F	1,5	150	1,53	2,97	2,2
		2,0	200	2,04	3,69	2,4
		2,5	250	2,55	4,16	2,5
		3,0	300	3,06	4,58	2,6
		3,5	350	3,57	4,96	2,8
	8-F-PC	2,07-2,76	207-276	2,11-2,82	3,22	2,4
		2,76-5,18	276-518	2,82-5,28	3,79	2,4

10 Series with 12° Trajectory

Pattern	Desc.	Pres. Bar	Pres. kPa	Pres. Kg/cm2	Flow LPM	Radius m
1/4	10-Q	1,5	150	1,53	1,20	2,8
		2,0	200	2,04	1,48	3,0
		2,5	250	2,55	1,75	3,2
		3,0	300	3,06	2,03	3,5
		3,5	350	3,57	2,30	3,7
	10-Q-PC	2,07-2,76	207-276	2,11-2,82	1,25	3,0
		2,76-5,18	276-518	2,82-5,28	1,40	3,0
1/3	10-T	1,5	150	1,53	1,66	2,8
		2,0	200	2,04	1,93	3,0
		2,5	250	2,55	2,28	3,2
		3,0	300	3,06	2,59	3,5
		3,5	350	3,57	2,87	3,7
	10-T-PC	2,07-2,76	207-276	2,11-2,82	1,67	3,0
		2,76-5,18	276-518	2,82-5,28	1,89	3,0
1/2	10-H	1,5	150	1,53	2,34	2,8
		2,0	200	2,04	2,65	3,0
		2,5	250	2,55	3,02	3,2
		3,0	300	3,06	3,40	3,4
		3,5	350	3,57	3,79	3,5
	10-H-PC	2,07-2,76	207-276	2,11-2,82	2,50	3,0
		2,76-5,18	276-518	2,82-5,28	2,84	3,0
2/3	10-TT	1,5	150	1,53	2,86	2,8
	2,0	200	2,04	3,57	3,0	
	2,5	250	2,55	3,98	3,1	
		3,0	300	3,06	4,28	3,3
		3,5	350	3,57	4,53	3,4
	10-TT-PC	2,07-2,76	207-276	2,11-2,82	3,40	3,0
		2,76-5,18	276-518	2,82-5,28	3,79	3,0
3/4	10-TQ	1,5	150	1,53	3,25	2,8
		2,0	200	2,04	3,85	3,0
		2,5	250	2,55	4,32	3,1
		3,0	300	3,06	4,74	3,3
		3,5	350	3,57	5,15	3,4
	10-TQ-PC	2,07-2,76	207-276	2,11-2,82	3,75	3,0
		2,76-5,18	276-518	2,82-5,28	4,13	3,0
360°	10-F	1,5	150	1,53	4,45	2,7
		2,0	200	2,04	5,50	3,0
		2,5	250	2,55	5,92	3,1
		3,0	300	3,06	6,41	3,3
		3,5	350	3,57	7,07	3,4
	10-FQ-PC	2,07-2,76	207-276	2,11-2,82	5,04	3,0
		2,76-5,18	276-518	2,82-5,28	5,72	3,0

12 Series with 23° Trajectory

Pattern	Desc.	Pres. Bar	Pres. kPa	Pres. Kg/cm2	Flow LPM	Radius m
1/4	12-Q	1,5	150	1,53	1,58	3,4
		2,0	200	2,04	1,85	3,6
		2,5	250	2,55	2,13	3,8
		3,0	300	3,06	2,31	4,0
		3,5	350	3,57	2,39	4,0
	12-Q-PC	2,07-2,76	207-276	2,11-2,82	1,82	3,7
		2,76-5,18	276-518	2,82-5,28	2,01	3,7
1/3	12-T	1,5	150	1,53	2,26	3,4
		2,0	200	2,04	2,67	3,6
		2,5	250	2,55	3,08	3,8
		3,0	300	3,06	3,43	3,9
		3,5	350	3,57	3,70	4,0
	12-T-PC	2,07-2,76	207-276	2,11-2,82	2,42	3,7
		2,76-5,18	276-518	2,82-5,28	2,65	3,7
1/2	12-H	1,5	150	1,53	3,69	3,4
		2,0	200	2,04	4,07	3,6
		2,5	250	2,55	4,62	3,8
		3,0	300	3,06	5,25	4,1
		3,5	350	3,57	5,94	4,3
	12-H-PC	2,07-2,76	207-276	2,11-2,82	3,63	3,7
	2,76-5,18	276-518	2,82-5,28	4,00	3,7	
2/3	12-TT	1,5	150	1,53	4,46	3,4
		2,0	200	2,04	5,36	3,6
		2,5	250	2,55	5,91	3,8
		3,0	300	3,06	6,40	3,9
		3,5	350	3,57	6,86	4,0
	12-TT-PC	2,07-2,76	207-276	2,11-2,82	4,85	3,7
		2,76-5,18	276-518	2,82-5,28	5,30	3,7
3/4	12-TQ	1,5	150	1,53	4,31	3,3
		2,0	200	2,04	5,68	3,6
		2,5	250	2,55	6,10	3,8
		3,0	300	3,06	6,44	3,9
		3,5	350	3,57	6,86	4,0
	12-TQ-PC	2,07-2,76	207-276	2,11-2,82	5,45	3,7
		2,76-5,18	276-518	2,82-5,28	6,06	3,7
360°	12-F	1,5	150	1,53	6,67	3,4
		2,0	200	2,04	8,09	3,6
		2,5	250	2,55	8,67	3,8
		3,0	300	3,06	9,36	3,9
		3,5	350	3,57	10,32	4,0
	12-F-PC	2,07-2,76	207-276	2,11-2,82	7,27	3,7
		2,76-5,18	276-518	2,82-5,28	7,95	3,7

15 Series with 27° Trajectory

Pattern	Desc.	Pres. Bar	Pres. kPa	Pres. Kg/cm2	Flow LPM	Radius m
1/4	15-Q	1,5	150	1,53	2,69	4,3
		2,0	200	2,04	3,15	4,5
		2,5	250	2,55	3,67	4,8
		3,0	300	3,06	4,19	4,9
		3,5	350	3,57	4,71	4,9
	15-Q-PC	2,07-2,76	207-276	2,11-2,82	2,84	4,6
		2,76-5,18	276-518	2,82-5,28	3,07	4,6
1/3	15-T	1,5	150	1,53	3,70	4,2
		2,0	200	2,04	4,11	4,5
		2,5	250	2,55	4,64	4,7
		3,0	300	3,06	5,12	4,7
		3,5	350	3,57	5,53	4,7
	15-T-PC	2,07-2,76	207-276	2,11-2,82	3,79	4,6
		2,76-5,18	276-518	2,82-5,28	4,16	4,6
1/2	15-H	1,5	150	1,53	5,37	4,1
	2,0	200	2,04	6,14	4,5	
		2,5	250	2,55	7,12	4,8
		3,0	300	3,06	7,81	4,9
		3,5	350	3,57	8,13	4,9
	15-H-PC	2,07-2,76	207-276	2,11-2,82	5,68	4,6
		2,76-5,18	276-518	2,82-5,28	6,25	4,6
2/3	15-TT	1,5	150	1,53	7,02	4,3
	2,0	200	2,04	8,17	4,5	
		2,5	250	2,55	9,42	4,8
		3,0	300	3,06	10,31	4,9
		3,5	350	3,57	10,80	4,9
	15-TT-PC	2,07-2,76	207-276	2,11-2,82	7,57	4,6
		2,76-5,18	276-518	2,82-5,28	8,33	4,6
3/4	15-TQ	1,5	150	1,53	8,28	4,1
		2,0	200	2,04	9,65	4,5
		2,5	250	2,55	10,79	4,7
		3,0	300	3,06	11,89	4,8
		3,5	350	3,57	12,98	4,9
	15-TQ-PC	2,07-2,76	207-276	2,11-2,82	8,71	4,6
		2,76-5,18	276-518	2,82-5,28	9,47	4,6
360°	15-F	1,5	150	1,53	11,29	4,1
		2,0	200	2,04	13,34	4,5
		2,5	250	2,55	15,05	4,8
		3,0	300	3,06	16,40	4,9
		3,5	350	3,57	17,45	4,9
	15-F-PC	2,07-2,76	207-276	2,11-2,82	11,36	4,6
		2,76-5,18	276-518	2,82-5,28	12,49	4,6

Special Patterns—Metric

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

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

Stream Spray Nozzles

Ground cover, narrow beds
Flow rate: 0.60–2.70 GPM
Pressure: 20–50 psi
10 or 35 degree angle

Stream Spray Nozzle

Application: With their low-application rates, these nozzles are perfect for irrigating small ground cover areas, narrow beds, shrubs and slow-absorbing soils to prevent runoff.

Specifications

Flow rate:
0.60–2.70 GPM (2,7–10,2 LPM)

Recommended operating pressure:
20–50 psi (1,4–3,5 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

Operational Features

- Multiple stream pattern selections meet the needs of a wide range of landscape areas
- 10 degree low angle for better wind resistance
- Low application rate for slope and tight soils
- Pressure-compensating spray nozzles available to maintain approximately 30 psi (2 Bars) performance at pressures exceeding 30 psi (2 Bars)
- Two-year warranty

Installation Features

- Radius adjusts up to 50%

10° Stream Spray Performance Data—U.S.

Pattern	Desc.	psi	GPM	Radius	Prec. Rate* △	□
90°	10-SSQ	20	0.60	14	1.36	1.18
		30	0.80	16	1.39	1.20
		40	0.92	17	1.42	1.23
		50	1.03	18	1.41	1.22
	10-SSQ-PC	40-50	0.70	13	1.84	1.60
		60-70	0.70	15	1.38	1.20
180°	10-SSH	20	1.00	14	1.13	.98
		30	1.20	16	1.04	.90
		40	1.38	17	1.06	.92
		50	1.55	18	1.06	.92
	10-SSH-PC	40-50	1.40	13	1.84	1.60
		60-70	1.40	15	1.38	1.20
360°	10-SSF	20	1.80	14	1.02	.88
		30	2.10	16	.91	.79
		40	2.42	17	.93	.81
		50	2.70	18	.93	.80
	10-SSF-PC	40-50	1.80	13	1.18	1.03
		60-70	2.00	15	.99	.86

35° Stream Spray Performance Data—U.S.

Pattern	Desc.	psi	GPM	Radius	Prec. Rate* △	□
90°	35-SSQ	20	0.60	18	.82	.71
		30	0.80	20	.89	.77
		40	0.92	21	.93	.80
		50	1.03	22	.95	.82
	35-SSQ-PC	40-50	0.70	17	1.08	.93
		60-70	0.70	18	.96	.83
180°	35-SSH	20	1.00	18	.69	.59
		30	1.20	20	.67	.58
		40	1.38	21	.70	.60
		50	1.55	22	.71	.62
	35-SSH-PC	40-50	1.40	17	1.08	.93
		60-70	1.40	18	.96	.83
360°	35-SSF	20	1.80	18	.62	.54
		30	2.10	20	.58	.51
		40	2.42	21	.61	.53
		50	2.70	22	.62	.54
	35-SSF-PC	40-50	1.80	17	.69	.60
		60-70	2.00	18	.69	.59

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

10° Stream Spray Performance Data—Metric

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

35° Stream Spray Performance Data—Metric

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

Note: *Stream sprays not recommended for turf applications.*

Specifying Information

XX XXX XX

Angle	Pattern	Pressure Compensating
10° 35°	SSQ—90° SSH—180° SSF—360°	PC—If applicable

Example: A Stream Spray Nozzle with a 10° angle, 180° pattern and pressure compensation, would be specified as: **10-SSH-PC**

Note: *To specify a Stream Spray nozzle with a 570Z sprinkler body, attach the body specification (pg. 9) before the above nozzle specification.*

Stream Bubbler Nozzles

Stream Bubbler Nozzle

- Ground cover, shrubs
- Flow rate: 0.49–2.02 GPM
- Pressure: 10–60 psi
- Five configurations

Application: Multiple stream pattern selections meet the needs of a wide range of landscape areas.

Operational Features

- Multiple stream pattern selections meet the needs of a wide range of landscape areas
- Pressure-compensating bubbler nozzles available to maintain constant 30 psi (2 Bars) performance at pressures exceeding 30 psi (2 Bars)
- Two-year warranty

Installation Features

- Fit all Toro fixed-spray sprinklers, shrub adapters, risers and extenders
- Radius reduction up to 25%

Specifications

Flow rate:
0.49–2.82 GPM (2,2–9,1 LPM)

Recommended operating pressure:
10–40 psi (0,7–2,82 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

Stream Bubbler Nozzle Performance Data—U.S.

Pattern	Description	10 psi GPM	10 psi Rad	20 psi GPM	20 psi Rad	30 psi GPM	30 psi Rad	40 psi GPM	40 psi Rad	50 psi GPM	50 psi Rad	60 psi GPM	60 psi Rad
2/60°	SB-90	0.49	7	0.70	11	0.86	13	1.00	15	1.12	16	1.23	18
2/60°	SB-90-PC2					0.21	1.5	0.22	1.5	0.23	1.5	0.24	1.5
4/60°	SB-180	0.84	5	1.18	9	1.43	12	1.66	14	1.86	16	2.02	17
4/60°	SB-180-PC2					0.46	2.5	0.49	2.5	0.50	2.5	0.51	2.5
6/60°	SB-360	1.18	3	1.63	6	2.00	8	2.29	9	2.55	10	2.82	11
6/60°	SB-360-PC2					0.74	1.5	0.75	1.5	0.76	1.5	0.77	1.5
2/180°	SB-2-180	0.49	7	0.70	11	0.86	13	1.00	15	1.12	16	1.23	18
2/180°	SB-2-180-PC2					0.21	1.5	0.22	1.5	0.23	1.5	0.24	1.5
2/60x2/60°	SB-4-180	0.84	5	1.18	9	1.43	12	1.66	14	1.86	16	2.02	17
2/60x2/60°	SB-4-180-PC2					0.46	2.5	0.49	2.5	0.50	2.5	0.51	2.5

Radius shown in feet. Data based on 360°.

Stream Bubbler Nozzle Performance Data—Metric

Pattern	Description	1 Bar 100 kPa/1,02 Kg/cm² LPM	1 Bar RAD	1,5 Bar 150 kPa/1,53 Kg/cm² LPM	1,5 Bar RAD	2 Bar 200 kPa/2,04 Kg/cm² LPM	2 Bar RAD	2,5 Bar 250 kPa/2,55 Kg/cm² LPM	2,5 Bar RAD	3 Bar 300 kPa/3,06 Kg/cm² LPM	3 Bar RAD	3,5 Bar 350 kPa/3,57 Kg/cm² LPM	3,5 Bar RAD	4 Bar 400 kPa/4,08 Kg/cm² LPM	4 Bar RAD
2/60°	SB-90	2,7	2,21	3,5	2,76	3,9	3,19	4,3	3,59	4,7	3,94	4,9	4,27	5,4	4,57
2/60°	SB-90-PC2							0,5	0,82	0,5	0,85	0,5	0,87	0,5	0,90
4/60°	SB-180	2,1	3,76	2,9	4,63	3,6	5,32	4,0	5,96	4,5	6,55	4,9	7,09	5,1	7,53
4/60°	SB-180-PC2							0,8	1,81	0,8	1,87	0,8	1,90	0,8	1,92
6/60°	SB-360	1,3	5,23	1,9	6,42	2,4	7,43	2,6	8,26	2,8	9,01	3,1	9,73	3,7	11,77
6/60°	SB-360-PC2							0,5	2,82	0,5	2,85	0,5	2,88	0,5	2,91
2/180°	SB-2-180	2,7	2,21	3,5	2,76	3,9	3,19	4,3	3,59	4,7	3,94	4,9	4,27	5,4	4,57
2/180°	SB-2-180-PC2							0,5	0,82	0,5	0,85	0,5	0,87	0,5	0,90
2/60°x2/60°	SB-4-180	2,1	3,76	2,9	4,63	3,6	5,32	4,0	5,96	4,5	6,55	4,9	7,09	5,1	7,53
2/60°x2/60°	SB-4-180-PC2							0,8	1,81	0,8	1,87	0,8	1,90	0,8	1,92

Radius shown in meters.

Specifying Information

Model Number	Description
SB-90	90° Pattern
SB-180	180° Pattern
SB-360	360° Pattern
SB-2-180	180° Pattern, 2-stream
SB-4-180	180° Pattern, 4-stream
SB-90-PC2	90° Pattern, Pressure-compensating
SB-180-PC2	180° Pattern, Pressure-compensating
SB-360-PC2	360° Pattern, Pressure-compensating
SB-2-180-PC2	180° Pattern, 2-stream, Pressure-compensating
SB-4-180-PC2	180° Pattern, 4-stream, Pressure-compensating

Example: A Pressure-compensating, 2-stream Stream Bubbler with a 180° pattern, would be specified as: **SB-2-180-PC2**

Note: *To specify a Stream Bubbler nozzle with a 570Z sprinkler body, attach the body specification (pg. 9) before the above nozzle specification.*

Pressure-compensating Flood Bubblers

- Trees and large shrubs
- Adjustable or Fixed Flow
- Retracts into pop-up
- Pressure compensating

Application: Ideal for use in irrigating trees and large shrubs.

Specifications

Flow rate:

Adjustable: 0–2.0 GPM (1,1–9,0 LPM)
Fixed Flow: 0.25, 0.50 and 1.0 GPM (0,9, 1,9 and 3,7 LPM)

Recommended operating pressure range:

20–50 psi (1,4–3,5 Bar) (PC maintains 30 psi maximum)

Maximum operating pressure:

75 psi (5,2 Bar)

Operational Features

- Retracts into pop-up for greater vandal resistance
- Built-in pressure compensation

Installation Features

- Compatible with shrub adapter, 570 Series sprinklers, risers and riser extenders
- Two-year warranty

Pressure-compensating Flood Bubbler

Flood Bubbler Performance Data—U.S.

Pattern	Model No.	GPM @ 40 psi	GPM @ 50 psi	GPM @ 60 psi
Flood ●	FB-25-PC	0.25	0.25	0.25
	FB-50-PC	0.45	0.50	0.50
	FB-100-PC	0.95	1.00	1.00
	FB-200-ADJ-PC	1.90	2.00	2.00

Note: *Pressure compensation option is shown in shaded area.*

Flood Bubbler Performance Data—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

Note: *Pressure compensation option is shown in shaded area.*

Specifying Information

Model Number	Description
FB-25-PC	.25 GPM
FB-50-PC	.50 GPM
FB-100-PC	1.00 GPM
FB-200-ADJ-PC2.00	Adjustable GPM

Example: A Pressure-compensating Flood Bubbler Nozzle with adjustable gallonage, would be specified as: **FB-200-ADJ-PC2.00**

Note: *To specify a Flood Bubbler nozzle with a 570Z sprinkler body, attach the body specification (pg. 9) before the above nozzle specification.*

500 Series Bubblers

- Trees and large shrubs
- Adjustable flow
- Serviceable Screen

Application: Ideal for use in irrigating trees and large shrubs.

Specifications

Flow rate:

1.08–3.70 GPM (4,9–16,8 LPM)

Recommended operating pressure range:

20–50 psi (1,4–3,5 Bar)

Maximum operating pressure:

75 psi (5,2 Bar)

Inlet:

½" (13mm) female-threaded

Features

- Two-year warranty

514-20
Adjustable Flood Bubbler

500 Series Adjustable Stream Bubbler Nozzle Performance Data—U.S.

Pattern	Model No.	10 psi GPM	10 psi Rad	20 psi GPM	20 psi Rad	30 psi GPM	30 psi Rad	40 psi GPM	40 psi Rad
2/60°	511-30	1.08	10	1.52	14	1.87	16	2.10	17
4/60°	512-30	1.50	7	2.11	10	2.58	11	2.98	13
6/60°	514-30	1.89	6	2.61	8	3.20	10	3.70	11
2/180°	516-30	1.08	10	1.52	14	1.87	16	2.10	17

Radius shown in feet. Data based on 360°.

500 Series Adjustable Stream Bubbler Nozzle Performance Data—Metric

Pattern	Model No.	1 Bar 100 kPa 1,02 Kg/cm² LPM	1 Bar 100 kPa 1,02 Kg/cm² Rad	1,5 Bar 150 kPa 1,53 Kg/cm² LPM	1,5 Bar 150 kPa 1,53 Kg/cm² Rad	2 Bar 200 kPa 2,04 Kg/cm² LPM	2 Bar 200 kPa 2,04 Kg/cm² Rad	2,5 Bar 250 kPa 2,55 Kg/cm² LPM	2,5 Bar 250 kPa 2,55 Kg/cm² Rad	3 Bar 300 kPa 3,06 Kg/cm² LPM	3 Bar 300 kPa 3,06 Kg/cm² Rad
2/60°	511-30	3,6	4,84	4,4	5,99	4,8	6,95	5,1	7,62	5,3	8,25
4/60°	512-30	2,5	6,72	3,1	8,30	3,3	9,59	3,7	10,71	4,2	11,81
6/60°	514-30	2,1	8,38	2,5	10,27	3,0	11,89	3,2	13,30	3,5	14,67
2/180°	516-30	3,6	4,84	4,4	5,99	4,8	6,95	5,1	7,62	5,3	8,25

Radius shown in meters.

Adjustable Flood Bubbler Nozzle Performance Data—U.S.

Pattern	Model No.	psi	GPM
360° Flood ●	514-20	15	1.70
		20	2.00
		25	2.20
		30	2.40
		35	2.50
		40	2.70

Adjustable Flood Bubbler Nozzle Performance Data—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

Specifying Information

Model Number	Description
511-30	90° Pattern
512-30	180° Pattern
514-30	360° Pattern
516-30	180° Pattern, 2-stream
514-20	Universal Flood Bubbler

Example: An Adjustable Stream Bubbler Nozzle with a 90° pattern, would be specified as: **511-30**

570Z Tools and Accessories

Recycled Water Indicators

89-5818
- Lavender snap-on cover for use on 570Z Series shrub adapters

102-0562
- Lavender molded cover for-use on 570Z Series pop-up models

102-1211 570Z
102-5470 570Z PR
102-5471 570Z PR COM
- Lavender cap assembly (includes seal)
- All 570Z PRX can be ordered with factory assembled effluent cap

570S-E
- Lavender molded 570Z Series shrub adapter
- Installs onto a ½"

Risers and Extenders

570-6X
- 570Z extender
- Male-inlet threads install onto any 570Z pop-up sprinkler or shrub adapter to provide a 6" (150mm) extension
- Maximum pressure: 75 psi (5,2 Bar)

570-SR-6 and 570SR-18
- 570Z stationary riser
- ½" (13mm) male-threaded inlet for installation on pipe fittings
- Maximum pressure: 75 psi (5,2 Bar)
- Height: 6" (150mm)
  18" (450mm)

Tools

89-6395
- 570Z extender
- Riser pull-up tool for 570Z Series models

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

89-7350
- Adjustment tool for 570Z Series models

Super Funny Pipe®

850-23: 20' (6m) length

850-24: 50 (15,2m) length

850-25: 100 (30,4m) length

- Provides easy installation for problem areas
- Flexible, thick-walled (0.10) polyethylene pipe
- Inside diameter: 0.495 ± 0.005
- Outside diameter: 0.70
- Working pressure: 120 psi (8,2 bar)

Super Funny Pipe Friction Loss Data—U.S.

	GPM Flow						
GPM	1	2	3	4	5	6	7
PSI Loss	0.01	0.02	0.06	0.09	0.15	0.21	0.27

This chart indicates the amount of pressure loss (psi) per foot of Super Funny Pipe at stated flow rates (GPM).

Super Funny Pipe Friction Loss Data—Metric

	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 (kPa) per foot of Super Funny Pipe at stated flow rates (LPM).

Super Funny Pipe® Flex Assemblies

Super Funny Pipe Flex Assemblies

Model	Description
SPFA-585	8" x ½" Super Funny Pipe Flex Assembly
SPFA-5875	8" x ¾" Super Funny Pipe Flex Assembly
SPFA-5125	12" x ½" Super Funny Pipe Flex Assembly
SPFA-51275	12" x ¾" Super Funny Pipe Flex Assembly

Super Funny Pipe® Fittings

850-36:
¾" Male x ⅜" Coupling

850-33:
½"–¾" Female Adapter

850-31:
½" Male x ⅜" Elbow

850-35:
½" Male x ⅜" Coupling

850-32:
¾" Male x ⅜" Elbow

850-20:
⅜" x ⅜" Coupling

850-34:
½" Female x ⅜" Elbow

850-37:
Tee, Barbed Inserts *(no clamps required)*

Super Funny Pipe Fittings Friction Loss Data—U.S.

Model No.	Description	GPM Flow						
		1	2	3	4	5	6	7
850-36	¾" Male Adapter	0.04	0.10	0.23	0.43	0.80	1.37	1.86
850-35	½" Male Adapter	0.03	0.06	0.18	0.31	0.60	1.00	1.41
850-31	½" Male Elbow	0.05	0.15	0.36	0.62	1.13	1.62	2.37
850-34	½" Female Elbow	0.05	0.15	0.36	0.62	1.13	1.62	2.37
850-32	¾" Male Elbow	0.06	0.18	0.41	0.80	1.42	2.20	3.05

This chart indicates the amount of pressure loss (psi) per foot of Super Funny Pipe at stated flow rates (GPM).

Super Funny Pipe Fittings Friction Loss Data—Metric

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	7,1	61,4

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

Rotors Overview

	Mini-8	IMPOP	300 Series	Super 700	Super 800	V-1550	
Radius	20′-35	32′-45′	15′-43′	21′-52′	28′-50′	25′-55′	
Inlet size	1/2″	1/2″ & 3/4″	3/4″	3/4″	3/4″	3/4″	
Flow Range	0.8-3.40 GPM	0.57-7.5 GPM	0.57-10.81 GPM	1.06-9.0 GPM	0.5-10.0 GPM	0.85-11.62 GPM	
Recommended Operating Pressure	30-50 PSI	25-50 PSI	35-50 PSI	25-50 PSI	30-50 PSI	25-50 PSI	
Applications							
Turf	X	X	X	X	X	X	
Shrubs/Ground Cover			X	X	X	X	
Slopes			X	X	X		
Low Pressure	X	X		X	X	X	
High Traffic/Vandal Prone Areas							
Rubber Cover for Sports Fields				Optional	X	X	
High Wind				X	X	X	
Normally Open Hydraulic System							
Features							
Full Circle	X	X	X	X	X	X	
Part-circle Adjustable	X	X		X	X	X	
Part-circle Fixed			X				
Part/Full Circle In One	X	X	X		X	X	
Stainless Steel Riser							
Check Valve	Optional		Optional	Optional*	Optional	Standard	
Effluent Water Option		X	X	X	X	X	
Shrub Model			X	X	X	X	
High Pop Model			X	X	X	X	
Smart-Arc Memory					X	X	
Below Grade							
Trajectory Adjustment				High, Medium, Low	High, Low	Adjustable	
X-Flow Water Shut-off							
Standard Pop-up Height	4″	3″	2 3/4″—3 3/4″	3″	4 1/2″	2 5/8″—4″	
Warranty	2 Years	2 Years	2 Years	2 Years	5 Years	2 Years	

** Commercial Model Only*

	TR50P	TR50XT	TR70P	TR70XT	2001	640
	30′-52′	20′-47′	43′-71′	33′-71′	48′-71′	47′-67′
	3/4″	3/4″	1″	1″	1″	1″
	0.8-10.2 GPM	1.0-9.8 GPM	7.5-29.6 GPM	6.7-27.0 GPM	5.6-31.3 GPM	6.0-25.0 GPM
	30-70 PSI	30-70 PSI	40-100 PSI	40-100 PSI	40-60 PSI	40-60 PSI
	X	X	X	X	X	X
	X	X				
	X	X				
	X	X				
	X	X	X	X	X	X
	X	X	X	X	X	X
		X		X		
						X
	X	X	X	X	X	X
	X	X	X	X	X	
						X
	X	X		X		
	X	X	X	X	X	X
	Standard	Standard	Standard	Standard	Standard	Standard
	X	X	X	X	X	X
	X	X				
	X	X				
	X	X	X	X	X	
	X	X	X	X		X
		5-25°		5-25°		
		X		X		
	5″	5″	5″	5″	3 3/4″	2 3/8″
	5 Years	5 Years	5 Years	5 Years	5 Years	5 Years

Mini 8 Series

Turf
Radius: 20'–35'
Flow rate: 0.80–3.40 GPM
Pressure: 30–50 psi

Application: Ideal for residential and commercial applications. Mini 8 provides value and water efficiency when your landscape area is too large for sprays, but too small for a full-size rotor.

Specifications

Nozzle Performance

Lawn Pop-up
Apex @ 40 psi (2,8 Bar)

Nozzle	25° Max. Height of Spray
0.75	3' 11" (0,95m)
1.0	5' 1" (1,55m)
1.5	6' 7" (2,04m)
2.0	7' 6" (2,32m)
3.0	7' 6" (2,32m)

Radius:
20'–35' (6,1–10,7m)

Flow rate:
0.80–3.40 GPM (3,0–11,5 LPM)

Recommended operating pressure range:
30–50 psi (2,4–3,5 Bar)

Maximum operating pressure:
60 psi (4,4 Bar)

Inlet:
½" (13mm) female-threaded

Pop-up to nozzle:
3¾" (95mm)

Dimensions:
Body diameter: 1¾" (44mm)
Cap diameter: 2¼" (57mm)
Height: 6" (150mm)

Operational Features

- Top arc indication ensures easy adjustments from 40°–360°
- Part- and full-circle arcs in one sprinkler offer convenience and reduce-inventory requirements
- Pressure activated seal and robust trip mechanism for enhanced reliability
- Trajectory: 25°
- Two-year warranty

Installation Features

- Five interchangeable nozzles (1.5 nozzle preinstalled)
- Stainless steel radius adjustment screw allows up to 25% reduction
- Check Valve option for field installation
- Ratcheting riser for easy arc adjustment
- ½" inlet—covers smaller radius requirements
- 5 interchangeable nozzles—to cover varying flow requirements

Visible arc indication from the top of spinkler

Mini 8 Performance Data—U.S.

Nozzle	psi	GPM	Radius	Prec. Rate* △	□
.75	30	0.8	20	0.21	0.18
	40	0.9	21	0.22	0.19
	50	1.0	22	0.23	0.20
1.0	30	1.0	26	0.15	0.13
	40	1.1	27	0.17	0.15
	50	1.3	28	0.18	0.16
1.5	30	1.3	29	0.12	0.15
	40	1.5	30	0.19	0.16
	50	1.7	31	0.20	0.17
2.0	30	1.7	30	0.21	0.18
	40	2.0	31	0.23	0.20
	50	2.3	31	0.27	0.23
3.0	30	2.6	34	0.25	0.22
	40	3.0	35	0.27	0.24
	50	3.4	35	0.31	0.27

Radius shown in feet. Data based on 360°.

Mini 8 Performance Data—Metric

Nozzle	bar	LPM	Radius
.75	2,0	3,0	6,1
	2,5	3,3	6,3
	3,0	3,8	6,5
	3,5	4,6	6,7
1.0	2,0	4,2	7,9
	2,5	4,6	8,1
	3,0	5,2	8,3
	3,5	5,7	8,6
1.5	2,0	4,5	8,8
	2,5	5,0	9,0
	3,0	5,6	9,3
	3,5	6,1	9,5
2.0	2,0	5,3	9,1
	2,5	6,0	9,3
	3,0	6,8	9,4
	3,5	7,7	9,4
3.0	2,0	8,7	10,3
	2,5	9,4	10,6
	3,0	10,4	10,7
	3,5	11,5	10,7

Radius shown in meters.

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

Specifying Information

MINI8 | 4P | XX | XX

Description	Body	Nozzle		Optional
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: Mini 8-CV available in bags of 25.

IMPOP Series

IMPOP

Turf
Radius: 32'–45'
Flow rate: 1.50–7.50 GPM
Pressure: 25–50 psi

Application: Heavy-duty construction combined with a host of convenient features makes this rotor ideal for a broad range of residential and light commercial applications.

Operational Features

- Double-weighted splash arm to slow rotation and maximize radius
- Straight flow-through path ensures low pressure loss and positive action—even in very dirty water conditions
- Part- and full-circle arcs in one sprinkler offer convenience and reduce inventory requirements
- Effluent model for use with reclaimed water situations
- Filter screen to prevent clogging
- Two-year warranty

Installation Features

- Five interchangeable, color-coded nozzles for easy installation and identification to cover varying flow requirements
- Removable cap for easy servicing and debris removal

Specifications

Radius:
32'–45' (9,7—13,7m)

Flow rate:
1.50–7.50 GPM (5,6–34,1 LPM)

Recommended operating pressure range:
25–50 psi (1,7–3,5 Bar)

Maximum operating pressure:
60 psi (4,4 Bar)

Trajectory:
18°

Pop-up to nozzle:
3" (75mm)

Inlet:
Combination ½" (13mm) or ¾" (20mm) female-threaded

Dimensions:
Body diameter: 2½"–5" (64–127mm)
Cap diameter: 4" (100mm)
Height: 9 3/16" (236mm)

IMPOP Performance Data—U.S.

Nozzle	Color	psi	GPM	Radius	Prec. Rate* △	Prec. Rate* □
1.5	Orange ●	30	1.5	32	0.16	0.14
		40	1.8	35	0.16	0.14
		50	2.3	36	0.20	0.17
2.0	Red ●	30	2.0	33	0.20	0.18
		40	2.2	37	0.18	0.15
		50	2.5	40	0.17	0.15
3.0	Black ●	30	2.9	35	0.26	0.23
		40	3.6	39	0.26	0.23
		50	5.0	41	0.26	0.23
4.0	Blue ●	30	3.8	38	0.29	0.25
		40	4.2	41	0.28	0.24
		50	5.1	42	0.32	0.28
6.0	Green ●	30	5.8	39	0.42	0.37
		40	6.5	43	0.39	0.34
		50	7.5	45	0.41	0.36

Radius shown in feet. Data based on 360°.

IMPOP Performance Data—Metric

Nozzle	Color	Bar	LPM	Radius
1.5	Orange ●	2,0	5,7	9,7
		2,5	6,4	10,3
		3,0	7,5	10,8
		3,5	8,8	11,0
2.0	Red ●	2,0	7,6	10,0
		2,5	8,0	10,8
		3,0	8,7	11,6
		3,5	9,5	12,3
3.0	Black ●	2,0	11,0	10,6
		2,5	12,6	11,4
		3,0	14,2	12,1
		3,5	15,3	12,5
4.0	Blue ●	2,0	14,4	11,6
		2,5	15,3	12,2
		3,0	17,1	12,6
		3,5	25,9	13,3
6.0	Green ●	2,0	21,9	11,9
		2,5	23,6	12,6
		3,0	25,9	13,3
		3,5	28,7	13,8

Radius shown in meters.

Specifying Information

IMPOP XX X

Description	Nozzle	Optional
IMPOP Impact Sprinkler	15—1.5 20—2.0 30—3.0 40—4.0 60—6.0	E—Effluent

Example: An IMPOP Series sprinkler with a 3.0 nozzle, would be specified as: **IMPOP-30**

Stream Rotor® Series 300, 340 and XP-300

Turf, Ground cover
Radius: 15'–43'
Flow rate: 0.57–10.81
Pressure: 35–50 psi

Application: Ideal for medium to large lawn and ground cover and light commercial applications. They deliver matched precipitation rates with precise proportional flow so they'll provide uniform coverage every time.

Operational Features

- Unique "fingers of water" provide slow, effective watering and visual appeal
- Matched precipitation rates on nozzles ensure uniform water coverage
- Interchangeable arc plates and nozzles for maximum versatility covering varying arc requirements
- Selection of body styles: lawn, shrub and high pop—to satisfy varying installation requirements (such as slopes with shrub sprinklers)
- Effluent and check valve options—for safety in reclaimed water situations and to prevent low-head drainage. Check valve maintains up to 8' (2,4m) elevation change
- Large basket filter screen to prevent clogging
- Durable engineering plastic and stainless steel construction
- Locking cap available for lawn pop-up models (Part No. 35-1344, standard on high-pop models)
- Recycled water indicators available (see page 47)
- Two-year warranty

Specifications (All Models)

Lawn Pop-up, Shrub and High-pop

Recommended operating pressure:
35–50 psi (2,4–3,5 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

300 Series

Specifications

Nozzle Performance

Trajectory:
27°

Lawn Pop-up
Apex @ 50 psi (3,5 Bar)

	27°
Nozzle	Max. Ht. of Spray
01	4' 10" (1,47m)
02	5' 1" (1,55m)
03	5' 11" (1,8m)
63	7' 0" (2,1m)
93	6' 3" (1,9m)

High Pop

Pop-up to nozzle:
11¾" (290mm)

Dimensions:
Body diameter: 2⅜" (59mm)
Cap diameter: 3" (75mm)
Height: 16" (405mm)

Inlet (female-threaded):
¾" (20mm) (bottom & side)
(Side Inlet: 7" [175mm] from top of sprinkler to center)

Lawn Pop-up

Radius:
15'–30' (4,6–9,2m)

Flow rate:
0.57–7.51 GPM (2,5–28 LPM)

Pop-up to nozzle:
2¾" (70mm)

Dimensions:
Body diameter: 2⅜" (59mm)
Cap diameter: 3" (75mm)
Height: 6⅛" (157mm)

Inlet (female-threaded):
¾" (20mm)

Shrub

Flow rate (COM, 360° Arc Disc):
2.07–6.36 GPM
(7,9–23,8 LPM)

Base diameter:
1¾" (45mm)

Inlet (female-threaded):
½" (13mm) to ¾" (20mm)

Choice of six nozzles and nine interchangeable arc discs for varying landscape needs.

Specifying Information

3XX | XX | XX | COM | E

Arc	Body	Nozzle	Optional	Optional
04—90° 05—112° 06—135° 07—157.5° 08—180° 09—202.5° 10—225° 12—270° 16—360°	00—Lawn Pop-up 10—Shrub 12—High-pop	01—Small Radius, 12 Ports 02—Medium Radius, 12 Ports 03—Large Radius, 12 Ports 15—Adjustable Shrub & 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 GPM* 93—Large Radius, 9 Ports, Low GPM*	COM—Check-O-Matic* *(COM not available on high pop models)*	E—Effluent

Example: A 300 Series Shrub Sprinkler with a 90° arc and an adjustable nozzle, would be specified as: **304-10-15**

** Not available on high-pop models*

340 Series

Choice of six nozzles and nine interchangeable arc discs for varying landscape needs.

Specifying Information

34XX | XX | XX | COM | E

Arc	Body	Nozzle	Optional	Optional
04—90° 05—112.5° 06—135° 07—157.5° 08—180° 09—202.5° 10—225° 12—270° 16—360°	00—Lawn Pop-up 10—Shrub 12—High-pop	01—Small Radius, 12 Ports 02—Medium Radius, 12 Ports 03—Large Radius, 12 Ports 15—Adjustable (Omni) 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 (Omni) Nozzle, High-pop 63—Large Radius, 6 Ports, Low GPM 93—Large Radius, 9 Ports, Low GPM	COM—Check-O-Matic* *(COM not available on high pop models)*	E—Effluent

Example: A 180° 340 Series Lawn Pop-up with a 180° arc and an adjustable Omni nozzle, would be specified as: **3408-00-15**

** COM is standard on lawn pop-up models and optional on shrub models (not available on high pop models).*

Specifications

Nozzle Performance

Trajectory:
27°

Lawn Pop-up
Apex @ 50 psi (3,5 Bar)

Nozzle	27° Max. Ht. of Spray	
01	4' 10"	(1,47m)
02	5' 1"	(1,55m)
03	5' 11"	(1,8m)

High Pop

Pop-up to nozzle:
11¾" (290mm)

Dimensions:
Body diameter: 2⅞" (72mm)
Cap diameter: 3" (75mm)
Height: 16" (405mm)

Inlet (female-threaded):
¾" (20mm) (bottom & side)
(Side Inlet: 7" [175mm] from top of sprinkler to center)

Lawn Pop-up

Radius:
15'–33' (4,6–10m)

Flow rate:
0.57–7.54 GPM (2,5–28,5 LPM)

Pop-up to nozzle:
3¾" (95mm)

Dimensions:
Body diameter: 2⅜" (59mm)
Cap diameter: 3" (75mm)
Height: 7" (180mm)

Inlet (female-threaded):
¾" (20mm)

Check valve (Standard):
Maintains up to 8' (2,4m) elevation change

Shrub

Flow rate (COM, 360° Arc Disc):
2.07–6.36 GPM (7,9–23,8 LPM)

Base diameter:
1¾" (45mm)

Inlet (female-threaded):
½" (13mm) to ¾" (20mm)

XP-300 Series

Specifications

Nozzle Performance

Trajectory:
28°

Lawn Pop-up
Apex @ 50 psi (3,5 Bar)

Nozzle	28° Max. Ht. of Spray	
05	9' 3"	(2,8m)
07	9' 1"	(2,7m)
09	9' 1"	(2,7m)
10	9' 6"	(2,9m)

High Pop

Pop-up to nozzle:
12½" (313mm)

Dimensions:
Body diameter: 2⅞" (72mm)
Cap diameter: 3" (75mm)
Height: 16" (405mm)

Inlet (female-threaded):
¾" (20mm) (bottom & side)
(Side Inlet: 7" [175mm] from top of sprinkler to center)

Lawn Pop-up

Radius:
28'–43' (8,8–13m)

Flow rate:
1.01–10.81 GPM (3,82–41 LPM)

Pop-up to nozzle:
3¾" (95mm)

Dimensions:
Body diameter: 2⅜" (59mm)
Cap diameter: 3" (75mm)
Height: 6⅛" (157mm)

Inlet (female-threaded):
¾" (20mm)

Shrub

Flow rate (COM, 360° Arc Disc):
3.25–10.52 GPM (12,5–38,3 LPM)

Base diameter:
1¾" (45mm)

Inlet (female-threaded):
½" (13mm) to ¾" (20mm)

XP-300 High-pop Nozzle & Collar Assembly

A spacing collar must be used on the high-pop to ensure proper retraction.

Exclusive arc discs and rotating nozzle control the pattern of water and rate of distribution to provide matched precipitation rates.

Note: High-pop models use nozzles with collar assembly (Part No. 35-5460 and 35-2049).

Choice of four nozzles, 11 interchangeable arc discs and a 28'–43' radius Adjustment screw allows up to 25% radius reduction on two main streams

Specifying Information

XP | XX | XX | XX | COM | E

Arc		Body	Nozzle	Optional	Optional
04—90° 05—115° 06—140° 07—165° 08—180° 09—190°	10—210° 11—225° 12—250° 13—270° 14—360°	S—Shrub P—Lawn Pop-up HP—High-pop*	- 05 (For service only order: 35-5460) 07 09 10	COM—Check-O-Matic§ *(COM not available on high pop models)*	E—Effluent

Example: An XP-300 Series lawn pop-up sprinkler with a 180° arc and 09 nozzle, would be specified as: **XP300P-H-09**

** Models use high-pop nozzles with collar. (Order Part No. 35-5460 and 35-2049.) §Available with shrub models only.*

300/340 Series Stream Rotor®

300 Series: 300-15 and 300-25 Omni™ Adjustable-radius Nozzle Performance Chart—U.S.

				90°	112°	135°	157.5°	180°	202.5°	225°	270°	360°
		Prec. Rate*										
psi	Radius	△	□	GPM								
35	15	1.69	1.46	0.85	1.06	1.28	1.49	1.70	1.91	2.13	2.55	3.41
35	18	1.37	1.19	1.00	1.24	1.50	1.75	2.00	2.25	2.50	3.00	4.00
35	21	1.15	1.00	1.15	1.42	1.72	2.01	2.29	2.58	2.86	3.44	4.58
35	24	0.99	0.86	1.29	1.60	1.94	2.26	2.58	2.91	3.23	3.88	5.17
35	26	0.95	0.82	1.44	1.79	2.16	2.52	2.88	3.24	3.60	4.32	5.76
50	18	1.60	1.38	1.16	1.44	1.74	2.04	2.33	2.62	2.91	3.49	4.65
50	21	1.35	1.17	1.34	1.66	2.01	2.35	2.68	3.02	3.35	4.02	5.36
50	24	1.17	1.02	1.52	1.88	2.28	2.66	3.04	3.42	3.80	4.56	6.08
50	27	1.04	0.90	1.70	2.10	2.55	2.97	3.40	3.82	4.24	5.09	6.79
50	30	0.93	0.80	1.88	2.33	2.82	3.29	3.75	4.23	4.69	5.63	7.51

*△ *Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
□ *Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*
Radius shown in feet. Data based on 360°.

300 Series: 300-15 and 300-25 Omni™ Adjustable-radius Nozzle Performance Chart—Metric

				90°	112°	135°	157,5°	180°	202,5°	225°	270°	360°
Pressure			Radius	Flow (at Designated Arcs)								
Bar	kPa	Kg/cm²	meters	LPM								
2,5	250	2,55	4,5	3,2	4,0	4,9	5,7	6,5	7,3	8,1	9,7	12,9
			5,0	3,5	4,4	5,3	6,2	7,1	8,0	8,8	10,6	14,1
			6,0	4,2	5,2	6,2	7,3	8,3	9,3	10,4	12,5	16,6
			7,0	4,8	5,9	7,2	8,4	9,6	10,7	11,9	14,3	19,1
			8,0	5,6	6,9	8,3	9,7	11,1	12,5	13,9	16,7	22,2
3,5	350	3,57	6,0	4,8	6,0	7,2	8,4	9,6	10,8	12,0	14,4	19,2
			7,0	5,6	6,9	8,3	9,7	11,1	12,5	13,9	16,7	22,2
			8,0	6,3	7,8	9,4	11,0	12,6	14,2	15,7	18,9	25,2
			9,0	7,0	8,8	10,6	12,3	14,1	15,8	17,6	21,1	28,2
			10,0	7,8	9,7	11,7	13,6	15,6	17,5	19,5	23,4	31,2

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

340 Series: 300-15 Omni™ Adjustable-radius Nozzle Performance Chart—U.S.

				90°	112.5°	135°	157.5°	180°	202.5°	225°	270°	360°
		Prec. Rate*										
psi	Radius	△	□	GPM								
35	15	1.53	1.33	0.78	0.97	1.16	1.36	1.55	1.74	1.94	2.33	3.10
35	18	1.32	1.14	0.96	1.20	1.44	1.68	1.93	2.17	2.41	2.89	3.85
35	22	1.06	0.92	1.16	1.44	1.73	2.02	2.31	2.60	2.89	3.47	4.62
35	26	0.88	0.76	1.34	2.01	1.67	2.34	2.68	3.01	3.34	4.01	5.35
35	28	0.86	0.75	1.52	1.90	2.28	2.66	3.04	3.42	3.80	4.56	6.08
50	18	1.28	1.11	0.94	1.17	1.40	1.64	1.87	2.10	2.34	2.81	3.74
50	22	1.08	0.93	1.17	1.47	1.76	2.05	2.35	2.64	2.93	3.52	4.69
50	26	0.93	0.80	1.41	1.76	2.12	2.47	2.82	3.17	3.53	4.23	5.64
50	29	0.87	0.75	1.65	2.06	2.47	2.88	3.30	3.71	4.12	4.94	6.59
50	33	0.77	0.67	1.89	2.36	2.83	3.30	3.77	4.24	4.71	5.66	7.54

*△ *Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
□ *Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*
Radius shown in feet. Data based on 360°. § Low gallonage.

340 Series: 300-15 Omni™ Adjustable-radius Nozzle Performance Chart—Metric

				90°	112,5°	135°	157,5°	180°	202,5°	225°	270°	360°
Pressure			Radius	Flow (at Designated Arcs)								
Bar	kPa	Kg/cm²	meters	LPM								
2,5	250	2,55	4,5	2,87	3,57	4,30	5,02	574	6,45	7,17	8,61	11,5
			5	3,25	4,05	4,88	5,70	6,51	7,32	8,14	9,76	13,0
			6	3,96	4,93	5,94	6,93	7,92	8,91	9,90	11,9	15,7
			7	4,57	5,68	6,85	7,99	9,13	10,3	11,4	13,7	18,3
			8	5,16	6,42	7,74	9,03	10,3	11,6	12,9	15,5	20,6
			8,5	5,70	7,09	8,55	9,97	11,4	12,8	14,2	17,1	22,8
3,5	350	3,57	5,5	3,55	4,41	5,32	6,21	7,10	8,00	8,87	10,6	14,2
			6	3,91	4,87	8,87	6,85	7,83	8,81	9,78	11,7	15,7
			7	4,65	5,79	6,97	8,14	9,30	10,5	11,6	14,0	18,6
			8	5,40	6,71	8,09	9,44	10,8	11,1	13,5	16,2	21,6
			9	6,38	7,94	9,57	11,2	12,8	14,4	16,0	19,2	25,5
			10	7,11	8,85	10,7	12,4	14,2	16,0	17,8	21,3	28,4

All performance specifications are based on the stated working pressure available at the base of the sprinkler.
§ Low flow.

300/340 Series: Fixed-radius Nozzle Performance Chart—U.S.

				90°	112°	135°	157.5°	180°	202.5°	225°	270°	360°
			Prec. Rate*									
Nozzle	psi	Radius	△	□	GPM							
01	35	16	0.99	0.86	0.57	0.71	0.86	1.00	1.14	1.28	1.43	1.71	2.28
	50	18	0.99	0.86	0.72	0.90	1.08	1.26	1.44	1.62	1.80	2.16	2.88
02	35	21	0.73	0.63	0.72	0.90	1.08	1.26	1.44	1.62	1.80	2.16	2.88
	50	24	0.66	0.57	0.85	1.06	1.28	1.49	1.71	1.92	2.13	2.56	3.41
03	35	28	0.77	0.67	1.36	1.69	2.04	2.38	2.72	3.05	3.39	4.07	5.43
	50	30	0.80	0.69	1.61	2.01	2.42	2.82	3.23	3.63	4.03	4.84	6.45
63§	35	28	0.39	0.33	0.68	0.85	1.02	1.19	1.36	1.53	1.70	2.04	2.72
	50	30	0.40	0.35	0.81	1.00	1.21	1.41	1.62	1.82	2.02	2.42	3.23
93§	35	28	0.58	0.50	1.02	1.27	1.53	1.78	2.04	2.29	2.54	3.05	4.07
	50	30	0.60	0.52	1.21	1.51	1.82	2.12	2.42	2.72	3.03	3.63	4.84

*△ *Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
□ *Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*
All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in feet. Data based on 360°.
§ Low gallonage.

300/340 Series: Fixed-radius Nozzle Performance Chart—Metric

						90°	112°	135°	157,5°	180°	202,5°	225°	270°	360°
	Pressure			Radius	Radius	Flow (at Designated Arcs)								
Nozzle	Bar	kPa	Kg/cm²	300 Series	340 Series	LPM								
01	2,5	250	2,55	4,9	4,9	2,20	2,76	3,31	3,86	4,41	4,96	5,51	6,61	8,81
	3,5	350	3,57	5,5	5,5	2,75	3,44	4,13	4,82	5,51	6,20	6,88	8,26	11,0
02	2,5	250	2,55	6,5	4,9	2,77	3,45	4,15	4,84	5,53	6,23	6,92	8,30	11,1
	3,5	350	3,57	7,4	5,5	3,25	4,07	4,88	5,69	6,50	7,32	8,13	9,76	13,0
03	2,5	250	2,55	8,6	4,9	5,22	6,52	7,83	9,13	10,4	11,7	13,1	15,7	20,9
	3,5	350	3,57	9,2	5,5	6,15	7,69	9,23	10,8	12,3	13,8	15,4	18,5	24,6
63§	2,5	250	2,55	8,6	4,9	2,61	3,27	3,92	4,58	5,23	5,88	6,54	7,84	10,5
	3,5	350	3,57	9,2	5,5	3,08	3,85	4,62	5,39	6,16	6,93	7,70	9,24	12,3
93§	2,5	250	2,55	8,6	4,9	3,91	4,89	5,67	6,85	7,82	8,80	9,78	11,7	15,7
	3,5	350	3,57	9,2	5,5	4,62	5,77	6,93	8,08	9,23	10,4	11,5	13,9	18,5

All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in meters.
§ Low flow.

300/340 Series: Shrub w/COM—U.S. (360° Arc Disc) (Model Nos. 300-10-00COM & 340-10-15COM)

Nozzle	psi	300 Ser. GPM	340 Ser. GPM	Radius
01	50	2.07	2.07	14
01	75	2.95	2.95	16
02	50	2.48	2.48	23
02	75	3.69	3.69	25
03	50	4.55	4.55	27
03	75	6.24	6.24	29
63	50	2.66	2.66	28
63	75	3.82	3.82	30
93	50	3.64	3.64	29
93	75	5.29	5.29	31
Omni (Min)	50	2.67	2.67	16
Omni (Min)	75	3.95	3.95	18
Omni (Max)	50	5.08	5.55	30
Omni (Max)	75	6.36	6.36	33

300/340 Series: Shrub w/COM—Metric (360° Arc Disc) (Model Nos. 300-10-00COM & 340-10-15COM)

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

The performance data in this catalog show average values obtained while testing in an enclosed, zero-wind facility. All precipitation rates are based on a full-circle application of the nozzle to maximum radius.

Your results will vary depending on both your spacing requirements and environmental conditions.

To obtain precipitation rates for a ½ circle sprinkler, multiply the chart values by 2. For a ¼ circle sprinkler, multiply the chart values by 4.

XP-300 Series Stream Rotor®

XP-300 Series Performance Chart—U.S.

Nozzle	psi	Radius	Prec. Rate* △	Prec. Rate* □	90°	115°	140°	165°	180°	195°	210°	225°	250°	270°	360°
					GPM										
05**	35	28	.57	.50	1.01	1.29	1.57	1.85	2.02	2.19	2.36	2.53	2.81	3.03	4.04
	40	29	.56	.48	1.08	1.38	1.68	1.98	2.16	2.34	2.52	2.70	3.00	3.24	4.23
	50	30	.60	.52	1.21	1.54	1.88	2.21	2.42	2.62	2.82	3.02	3.35	3.62	4.83
	60	31	.61	.53	1.32	1.69	2.06	2.42	2.65	2.87	3.09	3.31	3.67	3.97	5.29
07	35	36	.49	.42	1.43	1.82	2.22	2.62	2.85	3.08	3.31	3.60	3.93	4.28	5.70
	40	38	.47	.41	1.54	1.96	2.39	2.82	3.07	3.32	3.56	3.87	4.24	4.61	6.14
	50	40	.48	.41	1.71	2.19	2.67	3.15	3.43	3.70	3.97	4.32	4.73	5.14	6.85
	60	41	.49	.43	1.87	2.39	2.91	3.44	3.74	4.03	4.33	4.71	5.15	5.60	7.47
09	35	38	.53	.46	1.74	2.22	2.71	3.19	3.47	3.75	4.03	4.37	4.79	5.21	6.94
	40	39	.54	.47	1.86	2.38	2.90	3.42	3.72	4.01	4.31	4.68	5.13	5.57	7.43
	50	41	.55	.48	2.10	2.68	3.27	3.85	4.19	4.53	4.86	5.28	5.78	6.29	8.38
	60	43	.56	.48	2.32	2.96	3.61	4.26	4.63	5.00	5.37	5.83	6.39	6.95	9.26
10	35	37	.65	.56	1.99	2.54	3.10	3.66	3.98	4.29	4.61	5.01	5.49	5.96	7.95
	40	39	.63	.54	2.15	2.75	3.35	3.95	4.29	4.63	4.98	5.41	5.92	6.44	8.58
	50	41	.65	.56	2.44	3.12	3.81	4.49	4.88	5.27	5.66	6.15	6.73	7.32	9.76
	60	42	.68	.59	2.70	3.50	4.22	4.97	5.41	5.84	6.27	6.81	7.46	8.11	10.81

**△ Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
□ Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.
All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in feet. Data based on 360°.
*** Available for service only.*

XP-300 Series Performance Chart—Metric

Nozzle	Bar	kPa	Kg/cm²	Radius	90°	115°	140°	165°	180°	195°	210°	225°	250°	270°	360°
					LPM										
05**	2,5	250	2,55	8,6	3,9	5,0	6,1	7,1	7,8	8,4	9,1	9,7	10,8	11,7	15,5
	3,0	300	3,06	8,9	4,3	5,4	5,5	7,8	8,5	9,2	9,9	9,9	11,8	12,8	16,8
	3,5	350	3,57	9,2	4,6	5,9	7,2	8,4	9,2	10,0	10,7	10,7	12,8	13,8	18,4
	4,0	400	4,08	9,4	4,9	6,3	7,7	9,0	9,8	10,7	11,5	11,5	13,7	14,8	19,7
07	2,5	250	2,55	11,1	5,5	7,0	8,6	10,1	11,0	11,9	12,8	12,8	15,2	16,5	22,0
	3,0	300	3,06	11,8	6,0	7,7	9,4	11,1	12,1	13,1	14,0	14,0	16,7	18,1	24,2
	3,5	350	3,57	12,2	6,5	8,3	10,2	12,0	13,1	14,1	15,1	15,1	18,0	19,6	26,1
	4,0	400	4,08	12,4	7,0	8,9	10,8	12,8	13,9	15,0	16,1	16,1	19,2	20,9	27,8
09	2,5	250	2,55	11,7	6,7	8,5	10,4	12,3	13,4	14,4	15,5	15,5	18,5	20,1	26,7
	3,0	300	3,06	12,1	7,3	9,4	11,5	13,5	14,7	15,9	17,0	17,0	20,3	22,0	29,4
	3,5	350	3,57	12,5	8,0	10,2	12,5	14,7	16,0	17,3	18,5	18,5	22,1	24,0	32,0
	4,0	400	4,08	13,0	8,6	11,0	13,4	15,8	17,2	18,6	19,9	19,9	23,7	25,8	34,4
10	2,5	250	2,55	11,4	7,7	9,8	12,0	14,1	15,3	16,6	17,8	17,8	21,2	23,0	30,7
	3,0	300	3,06	12,1	8,5	10,9	13,3	15,7	17,0	18,4	19,8	19,8	23,5	25,5	34,0
	3,5	350	3,57	12,5	9,3	11,9	14,5	17,1	18,6	20,1	21,6	21,6	25,7	27,9	37,2
	4,0	400	4,08	12,7	10,0	13,0	15,7	18,5	20,1	21,7	23,3	23,3	27,7	30,1	40,1

All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in meters.
***Available for service only.*

XP-300 Series Shrub w/COM—U.S.
(360° Arc Disc)
(Model Nos. XP300SCOM)

Nozzle	psi	GPM	Radius
05	50	3.25	28
05	75	5.15	35
07	50	5.02	35
07	75	7.18	42
09	50	5.77	36
09	75	9.14	44
10	50	6.64	37
10	75	10.52	47

XP-300 Series Shrub w/COM—Metric
(360° Arc Disc)
(Model Nos. XP300SCOM)

Nozzle	Bar	LPM	Radius
05	3,5	12,5	8,6
05	5,0	18,8	10,5
07	3,5	19,2	10,7
07	5,0	26,3	12,6
09	3,5	22,2	11,0
09	5,0	33,3	13,2
10	3,5	25,6	11,4
10	5,0	38,3	14,0

Super 700 Series

Turf, ground cover, planting beds, slopes
Radius: 21'–52'
Flow rate: 1.06–9.0 GPM
Pressure: 25–50 psi

Application: These precision-engineered, gear-driven sprinklers are an extremely popular choice for high performance at a terrific value. Fits all medium to large residential and commercial applications.

Specifications

Lawn Pop-up & Commercial

Radius:
26'–55' (7,9–16,7m)

Flow rate:
1.06–9.0 GPM
(3,7–34,0 LPM)

Recommended operating pressure:
25–50 psi (1,7–3,5 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

Pop-up to nozzle:
3" (75mm)

Inlet:
¾" (20mm) NPT
female-threaded

Dimensions:
Body diameter: 2⅛" (59mm)
Cap diameter: 3" (75mm)
Height: 7" (180mm)

Check Valve (Standard):
Maintains up to 10' (3m)
elevation change (S700C)

Shrub

Radius:
23'–55' (7,0–16,7m)

Flow rate:
1.36–9.10 GPM
(4,9–33,7 LPM)

Recommended operating pressure:
25–50 psi (1,7–3,5 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

Inlet:
½" to ¾" (13–20mm) NPT
female-threaded

Shrub (cont.)

Dimensions:
Body diameter: 1¾" (45mm)
Cap diameter: 3" (75mm)
Height: 5⅛" (130mm)

Check Valve (Optional):
Maintains up to 8' (2,4m)
elevation change

High Pop

Radius:
26'–55' (7,9–16,7m)

Flow rate:
1.06–9.0 GPM
(3,7–34,0 LPM)

Recommended operating pressure:
25–50 psi (1,7–3,5 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

Pop-up to nozzle:
10½" (270mm)

Inlet:
¾" (20mm) female-threaded bottom and side inlets (Side inlet: 7" [180mm] from top of cap to center of side inlet)

Dimensions:
Body diameter: 2⅛" (60mm)
Cap diameter: 3" (75mm)
Height: 16½" (420mm)

Check Valve (Standard):
Maintains up to 10' (3m)
elevation change

Operational Features

- Unique nozzle exchange in the popped down position—for ease of installation and nozzle changeouts
- Full-circle and adjustable part-circle (40°–330°) models available for convenience
- Check valve prevents low-head drainage and keeps laterals charged with water (standard on commercial and high-pop models and optional on lawn and shrub models)
- Stainless steel riser sleeve (S700C)
- Locking cap (S700C, high-pop)
- Side-inlet body (high-pop)
- Gear-drive design for longer life
- Basket filter screen to prevent clogging
- Stainless steel retraction spring
- Wiper seal
- Small surface diameter
- Durable engineering plastic and stainless steel construction
- Effluent water identification plug available (see page 47)
- Two-year warranty

Installation Features

- Adjustment screw allows up to 25% radius reduction
- Balanced precipitation rate nozzles for even water coverage
- Lockable arc adjustment
- At-grade installation for safety
- Selection of body styles—lawn, shrub, high pop and commercial—to satisfy varying installation requirements (such as slopes with shrub heads)
- 14 interchangeable color-coded nozzles—balanced within trajectory range—to cover varying flow requirements and different trajectories
- Trajectory:
  - Standard angle: 25°
  - Low angle: 15° (1.0–4.5 only)
  - Flat angle: 7° (1.0–3.0 only)

Specifying Information

S700XX | XC | XX | XA | COM | E

Body	Arc	Nozzle	Angle	Optional	Optional
P—Lawn C—Commercial HP—High-pop S—Shrub Body	PC—Part-circle FC—Full-circle	15—1.5 20—2.0 30—3.0 45—4.5 60—6.0 75—7.5 90—9.0	SA—Standard Angle 25° LA—Low Angle 15° (1–4.5 Only) FA—Flat Angle 7° (1–3.0 Only)	COM—Check-O-Matic*	E—Effluent

Example: A Super 700 Series High-pop Sprinkler with a 360° arc and #3.0 flat-angle nozzle, would be specified as: **S700HP-FC-30-FA**

**COM is standard on commercial and high-pop models and optional on lawn and shrub models.*

Super 700 Series Nozzle Performance Data—U.S.

Nozzle Size & Color	psi	25°—Standard Angle GPM	Radius	Prec. Rate* □	Prec. Rate* △	15°—Low Angle GPM	Radius	Prec. Rate* □	Prec. Rate* △	7° Flat Angle GPM	Radius	Prec. Rate* □	Prec. Rate* △
1.5 Orange	25	1.06	33	0.09	0.11	1.06	30	0.11	0.13	1.06	26	0.15	0.17
	30	1.18	34	0.10	0.11	1.18	31	0.12	0.14	1.18	27	0.16	0.18
	35	1.29	34	0.11	0.12	1.29	32	0.12	0.14	1.29	28	0.16	0.18
	40	1.40	35	0.11	0.13	1.40	33	0.12	0.14	1.40	29	0.16	0.19
	45	1.50	36	0.11	0.13	1.50	34	0.12	0.14	1.50	30	0.16	0.19
	50	1.59	37	0.11	0.13	1.59	35	0.12	0.14	1.59	31	0.16	0.18
	55	1.67	37	0.12	0.14	1.67	36	0.12	0.14	1.67	32	0.16	0.18
	60	1.75	38	0.12	0.13	1.75	37	0.12	0.14	1.75	33	0.15	0.18
2.0 Red	25	1.68	34	0.14	0.16	1.68	31	0.17	0.19	1.68	27	0.22	0.26
	30	1.84	35	0.14	0.17	1.84	32	0.17	0.20	1.84	28	0.23	0.26
	35	2.00	36	0.15	0.17	2.00	33	0.18	0.20	2.00	29	0.23	0.26
	40	2.12	37	0.15	0.17	2.12	34	0.18	0.20	2.12	30	0.23	0.26
	45	2.25	38	0.15	0.17	2.25	35	0.18	0.20	2.25	31	0.23	0.26
	50	2.37	39	0.15	0.17	2.37	36	0.18	0.20	2.37	32	0.22	0.26
	55	2.47	40	0.15	0.17	2.47	37	0.17	0.20	2.47	33	0.22	0.25
	60	2.57	41	0.15	0.17	2.57	38	0.17	0.20	2.57	34	0.21	0.25
3.0 Black	25	2.11	35	0.17	0.19	2.11	32	0.20	0.23	2.11	28	0.26	0.30
	30	2.37	36	0.18	0.20	2.37	33	0.21	0.24	2.37	29	0.27	0.31
	35	2.60	37	0.18	0.21	2.60	34	0.22	0.25	2.60	30	0.28	0.32
	40	2.83	38	0.19	0.22	2.83	35	0.22	0.26	2.83	31	0.28	0.33
	45	3.03	39	0.19	0.22	3.03	36	0.23	0.26	3.03	32	0.28	0.33
	50	3.23	40	0.19	0.22	3.23	37	0.23	0.26	3.23	32	0.30	0.35
	55	3.40	41	0.19	0.22	3.40	38	0.23	0.26	3.40	33	0.30	0.35
	60	3.57	42	0.19	0.23	3.57	39	0.23	0.26	3.57	34	0.30	0.34
4.5 Blue	25	3.37	38	0.22	0.26	3.37	34	0.28	0.32				
	30	3.70	39	0.23	0.27	3.70	35	0.29	0.34				
	35	4.00	40	0.24	0.28	4.00	36	0.30	0.34				
	40	4.28	42	0.23	0.27	4.28	38	0.29	0.33				
	45	4.55	43	0.24	0.27	4.55	39	0.29	0.33				
	50	4.80	44	0.24	0.28	4.80	40	0.29	0.33				
	55	5.00	45	0.24	0.27	5.00	41	0.29	0.33				
	60	5.20	46	0.24	0.27	5.20	42	0.28	0.33				
6.0 Green	25	3.85	39	0.24	0.28								
	30	4.35	42	0.24	0.27								
	35	4.80	43	0.25	0.29								
	40	5.22	44	0.26	0.30								
	45	5.62	45	0.27	0.31								
	50	6.00	47	0.26	0.30								
	55	6.30	48	0.26	0.30								
	60	6.60	49	0.26	0.31								
7.5 Beige	25	5.00	42	0.27	0.32								
	30	5.58	43	0.29	0.34								
	35	6.11	45	0.29	0.34								
	40	6.60	47	0.29	0.33								
	45	7.07	49	0.28	0.33								
	50	7.50	51	0.28	0.32								
	55	7.88	52	0.28	0.32								
	60	8.25	53	0.28	0.33								
9.0 Dark Gray	25	5.41	44	0.27	0.31								
	30	6.05	45	0.29	0.33								
	35	6.64	47	0.29	0.33								
	40	7.19	49	0.29	0.33								
	45	7.70	51	0.29	0.30								
	50	8.15	53	0.28	0.32								
	55	8.58	54	0.28	0.33								
	60	9.00	55	0.29	0.33								

Radius shown in feet. Data based on 360°.

Super 700 Series Nozzle Performance Data—Metric

Nozzle Size & Color	Pressure Bar	kPa	Kg/cm²	Flow LPM	25°—Standard Angle Radius	Prec. Rate* □	Prec. Rate* △	15°—Low Angle Radius	Prec. Rate* □	Prec. Rate* △	7° Flat Angle Radius	Prec. Rate* □	Prec. Rate* △
1.5 Orange	1,5	150	1,53	4.0	10.1	39.7	45.8	9.1	48.0	55.4	7.9	63.9	73.8
	2,0	200	2,04	4.5	10.4	41.6	48.0	9.4	50.0	57.8	8.2	66.0	76.2
	2,5	250	2,55	4.9	10.4	45.5	52.5	9.8	51.3	59.3	8.5	67.1	77.4
	3,0	300	3,06	5.7	11.0	47.2	54.5	10.4	52.9	61.1	9.1	67.9	78.4
	3,5	350	3,57	6.0	11.3	47.3	54.7	10.7	52.9	61.1	9.4	67.4	77.9
	4,0	400	4,08	6.6	11.6	49.4	57.0	11.3	52.1	60.2	10.1	65.5	75.6
2.0 Red	1,5	150	1,53	6.4	10.4	59.2	68.4	9.4	71.2	82.3	8.2	93.9	108.5
	2,0	200	2,04	7.0	10.7	61.2	70.7	9.8	73.2	84.6	8.5	95.6	110.4
	2,5	250	2,55	7.6	11.0	62.9	72.6	10.1	74.8	86.4	8.8	96.9	111.9
	3,0	300	3,06	8.5	11.6	63.5	73.3	10.7	74.9	86.4	9.4	95.4	110.2
	3,5	350	3,57	9.0	11.9	63.5	73.3	11.0	74.5	86.1	9.8	94.3	108.9
	4,0	400	4,08	9.7	12.5	62.3	71.9	11.6	72.5	83.8	10.4	90.6	104.6
3.0 Black	1,5	150	1,53	8.0	10.7	70.2	81.1	9.8	84.0	97.0	8.5	109.7	126.7
	2,0	200	2,04	9.0	11.0	74.5	86.1	10.1	88.7	102.4	8.8	114.8	132.6
	2,5	250	2,55	9.8	11.3	77.4	89.4	10.4	91.7	105.8	9.1	117.7	136.0
	3,0	300	3,06	11.5	11.9	81.2	93.8	11.0	95.3	110.0	9.8	120.6	139.3
	3,5	350	3,57	12.2	12.2	82.3	95.0	11.3	96.2	111.0	9.8	128.6	148.4
	4,0	400	4,08	13.5	12.8	82.5	95.2	11.9	95.7	110.5	10.4	125.9	145.3
4.5 Blue	1,5	150	1,53	12.8	11.6	95.1	109.8	10.4	118.8	137.2			
	2,0	200	2,04	14.0	11.9	99.1	114.5	10.7	123.1	142.1			
	2,5	250	2,55	15.1	12.2	101.9	117.7	11.0	125.8	145.2			
	3,0	300	3,06	17.2	13.1	100.3	115.8	11.9	121.9	140.8			
	3,5	350	3,57	18.2	13.4	101.0	116.7	12.2	122.3	141.2			
	4,0	400	4,08	19.7	14.0	100.2	115.7	12.8	120.1	138.7			
6.0 Green	1,5	150	1,53	14.6	11.9	103.2	119.1						
	2,0	200	2,04	16.5	12.8	100.5	116.1						
	2,5	250	2,55	18.2	13.1	105.8	122.2						
	3,0	300	3,06	21.3	13.7	113.1	130.6						
	3,5	350	3,57	22.7	14.3	110.7	127.8						
	4,0	400	4,08	25.0	14.9	112.0	129.4						
7.5 Beige	1,5	150	1,53	18.9	12.8	115.5	133.4						
	2,0	200	2,04	21.1	13.1	123.0	142.0						
	2,5	250	2,55	23.1	13.7	123.0	142.0						
	3,0	300	3,06	26.8	14.9	120.0	138.6						
	3,5	350	3,57	28.4	15.5	117.5	135.7						
	4,0	400	4,08	31.2	16.2	119.7	138.2						
9.0 Dark Gray	1,5	150	1,53	20.5	13.4	113.9	131.5						
	2,0	200	2,04	22.9	13.7	121.8	140.6						
	2,5	250	2,55	25.1	14.3	122.5	141.5						
	3,0	300	3,06	29.2	15.5	120.7	139.3						
	3,5	350	3,57	30.9	16.2	118.2	136.5						
	4,0	400	4,08	34.1	16.8	121.3	140.0						

Radius shown in meters. Data based on 360°.

** △ Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
□ Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Nozzle Performance

Lawn Pop-up
Apex @ 40 psi (2,7 Bar)

Nozzle Series	Max. Height of Spray 25°	15°	7°
1.5	7' 6" (2,3m)	4' 10" (1,5m)	2' 6" (0,8m)
2.0	8' 0" (2,4m)	5' 4" (1,6m)	2' 1" (0,6m)
3.0	8' 6" (2,6m)	5' 2" (1,6m)	2' 0" (0,6m)
4.5	9' 0" (2,7m)		
6.0	10' 0" (3,0m)		
7.5	10' 6" (3,2m)		
9.0	11' 0" (3,4m)		

Super 800 Series

Turf, ground cover, planting beds, slopes
Radius: 28'–50'
Flow rate: 0.50–10 GPM
Pressure: 30–50 psi

Application: With an impressive feature set, this proven rotor provides versatility, easy adjustment and trouble-free operation for a wide range of medium to large residential and light commercial applications.

Specifications

All Models

Radius:
28'–50' (8,5–15,2m)

Flow rate:
0.50–10 GPM
(1,8–37,8 LPM)

Recommended operating pressure range:
30–50 psi (2,0–3,5 Bar)

Maximum operating pressure:
70 psi (4,7 Bar)

Inlet:
¾" (20mm) NPT female-threaded

Lawn Pop-up

Pop-up to nozzle:
4½" (115mm)

Dimensions:
Body diameter: 2⅜" (60mm)
Cap diameter: 2.9" (74mm)
Height: 7.6" (193mm)

Check valve (Optional):
Maintains up to 6' (1,8m) elevation change

Shrub

Height:
7¾" (197mm)

High-pop

Dimensions:
Body diameter: 2¼" (70mm)
Cap diameter: 3" (75mm)
Height: 27" (686mm)

Operational Features

- Top arc indication for easy adjustments from 40°–360°
- 5" (127mm) pop-up height clears tall grasses and allows for conservation and less frequent mowing
- Part- and full-circle arcs in one sprinkler offer convenience and reduce inventory requirements
- Continuous unidirectional rotation provides uniform coverage when set at 360°
- Smart Arc™ memory returns sprinkler to previously set arc if vandalized
- Pressure activated seal and robust trip mechanism for enhanced reliability
- Standard rubber cover for safety
- Effluent and check valve options—for safety in reclaimed water situations and to prevent low-head drainage
- Five-year warranty

Installation Features

- Selection of body styles: pop, shrub and high pop—to satisfy varying installation requirements (such as slopes with shrub models)
- Nozzle tree with 9 standard and 4 low-angle nozzles to cover varying flow requirements and different trajectories
- Stainless steel radius adjustment screw allows up to 25% radius reduction
- Trajectory: 26°

Specifying Information

S800XXX XX COM E

Body	Nozzles		Optional	Optional
S—Shrub 5P—5" Lawn Pop-up 12P—12" High-pop	50—0.50 75—0.75 10—1.0 20—2.0 25—2.5	30—3.0 40—4.0 60—6.0 80—8.0	COM—Check-O-Matic	E—Effluent

Example: A Super 800 Series Sprinkler with a 5" pop-up height, would be specified as: **S8005P**

Super 800 Performance Data—U.S.

Nozzle	psi	GPM	Radius
.50	30	0.3	28
	40	0.4	29
	50	0.5	29
	60	0.6	30
.75	30	0.5	29
	40	0.6	30
	50	0.7	31
	60	0.8	32
1.0	30	1.3	32
	40	1.5	33
	50	1.7	34
	60	1.9	35
2.0	30	2.0	33
	40	2.4	34
	50	2.7	35
	60	3.0	36
2.5	30	2.5	34
	40	3.0	35
	50	3.5	36
	60	3.9	37
3.0	30	3.2	35
	40	3.7	36
	50	4.3	37
	60	4.8	38
4.0	30	4.0	36
	40	4.9	37
	50	5.6	38
	60	6.2	39
6.0	30	5.4	37
	40	6.4	39
	50	7.3	41
	60	8.1	43
8.0	30	6.8	38
	40	8.2	40
	50	9.5	42
	60	10.6	44

Radius shown in feet. Data based on 360°.

Super 800 Performance Data—Metric

Nozzle	psi	LPM	Radius
.50	2,0	1,1	8,5
	3,0	1,5	8,8
	3,5	1,9	8,8
	4,0	2,3	9,1
.75	2,0	1,9	8,8
	3,0	2,3	9,1
	3,5	2,7	9,4
	4,0	3,0	9,8
1.0	2,0	4,9	9,8
	3,0	5,7	10,1
	3,5	6,5	10,4
	4,0	7,2	10,7
2.0	2,0	7,6	10,1
	3,0	9,1	10,4
	3,5	10,3	10,7
	4,0	11,4	11,0
2.5	2,0	7,6	10,1
	3,0	9,1	10,4
	3,5	10,3	10,7
	4,0	11,4	11,0
3.0	2,0	12,2	10,7
	3,0	14,1	11,0
	3,5	16,3	11,3
	4,0	18,2	11,6
4.0	2,0	15,2	11,0
	3,0	18,6	11,3
	3,5	21,3	11,6
	4,0	23,6	11,9
6.0	2,0	20,5	11,3
	3,0	24,3	11,9
	3,5	27,7	12,5
	4,0	30,8	13,1
8.0	2,0	25,8	11,6
	3,0	31,2	12,2
	3,5	36,1	12,8
	4,0	40,3	13,4

Radius shown in feet. Data based on 360°.

Super 800 Low-angle Nozzle Performance Data—U.S.

Nozzle	psi	GPM	Radius
1.0	30	1.1	28
	40	1.3	29
	50	1.5	30
	60	1.7	31
3.0	30	2.3	30
	40	2.8	33
	50	3.1	35
	60	3.4	37
4.0	30	3.8	31
	40	4.5	34
	50	5.1	37
	60	5.6	39
6.0	30	4.9	32
	40	5.8	35
	50	6.5	39
	60	7.2	31

Radius shown in feet. Data based on 360°.

Super 800 Low-angle Nozzle Performance Data—Metric

Nozzle	psi	GPM	Radius
1.0	2,0	4,2	8,5
	3,0	4,9	8,8
	3,5	5,7	9,1
	4,0	6,5	9,4
3.0	2,0	8,7	9,1
	3,0	10,6	10,1
	3,5	11,8	10,7
	4,0	12,9	11,3
4.0	2,0	14,4	9,4
	3,0	17,1	10,4
	3,5	19,4	11,3
	4,0	21,3	11,9
6.0	2,0	18,6	9,8
	3,0	22,0	10,7
	3,5	24,7	11,9
	4,0	27,4	9,4

Radius shown in feet. Data based on 360°.

The performance data in this catalog show average values obtained while testing in an enclosed, zero-wind facility. All precipitation rates are based on a full-circle application of the nozzle to maximum radius.

Your results will vary depending on both your spacing requirements and environmental conditions.

To obtain precipitation rates for a ½ circle sprinkler, multiply the chart values by 2. For a ¼ circle sprinkler, multiply the chart values by 4.

TR50 Series

TR50P, TR50PSS, TR50XTP, TR50XTPSS

Turf, ground cover, planting beds, slopes
Radius: 30'–52'
Flow rate: 0.80–10.20 GPM
Pressure: 30–70 psi

Application: These rotors fit both residential and light commercial applications. The adjustment is not only simple, but provides setting accuracy, leaving little need for fine-tuning.

Specifications

Radius:

TR50P, TR50PSS, :
30'–52' (9,2–15,2m)
TR50XT, TR50XTPSS:
20'–47' (6,0–14,3m)

Flow rate:

TR50P, TR50XT:
0.80–10.20 GPM (3,1–46,3 LPM)
TR50PSS, TR50XTPSS:
1.0–9.80 GPM (3,6–44,5 LPM)

Nozzle data:

See page 34–35

Recommended operating pressure range:

30–70 psi (2,0–4,5 Bar)

Maximum operating pressure:

75 psi (5,2 Bar)

Inlet:

¾" (20mm) female-threaded
¾" and ½" (13 and 20mm) female-threaded (shrub only)

Below-grade installation:

½" (13mm) (except shrub models)

Dimensions (lawn pop-up model):

Pop-up to center of nozzle: 4¾" (120mm)
Base diameter: 2⅜" (60mm)
Height: 8" (200mm)

Models:

Shrub
Lawn pop-up: 5" (127mm)
High-pop: 12" (305mm)

Check valve (Standard):

Reversible check valve prevents low-head drainage, keeping laterals charged with water (maintains up to 6' (1,9m) elevation change on all models)

Operational Features (All Models)

- Simple to set watering pattern with adjusting band—the arc on the TR50 is factory pre-set to 180°, if that's not the arc you need, just turn the easy-to-adjust black band (see illustrations on pg. 33)
- Full 5" pop-up to clear tall grasses
- Smart Arc™ memory returns sprinkler to previously set arc if vandalized and slip clutch assures no damage to gears
- Below-grade installation allows for maximum safety helping to eliminate the potential for liability
- TruArc for easy arc set—eliminates the need to double check—for ease in installation and to eliminate the palming of a sprinkler to check the final arc setting
- Effluent and check valve options—for safety in reclaimed water situations and to prevent low-head drainage
- Unique, over-molded wiper seal for greater debris resistance and below-grade installation
- Cluster, water-lubricated, gear-drive design
- Standard rubber cover for safety
- Large filter screen to prevent clogging
- Five-year warranty

Installation Features (All Models)

- Color-coded nozzle tree with eight interchangeable nozzles
- Factory-installed with a #3.0 nozzle
- Arc adjustment from 30°–360°
- Continuous, unidirectional rotation provides uniform water coverage when set at 360°
- Stainless steel radius adjustment screw allows up to 25% radius reduction

Specifying Information—TR50, TR50SS

TR50 XX XX E

Description	Body	Nozzles	Optional
TR50—TR50 Series Rotor	P—Lawn Pop-up SS—Stainless Steel Lawn Pop-up S—Shrub HP—High-pop	10—1.0 45—4.5 15—1.5 60—6.0 20—2.0 75—7.5 30—3.0 90—9.0	E—Effluent

Example: A 12" high-pop TR50 Series sprinkler with a 9.0 nozzle, would be specified as: **TR50-HP-90**

Nozzle Tree for all models shown.

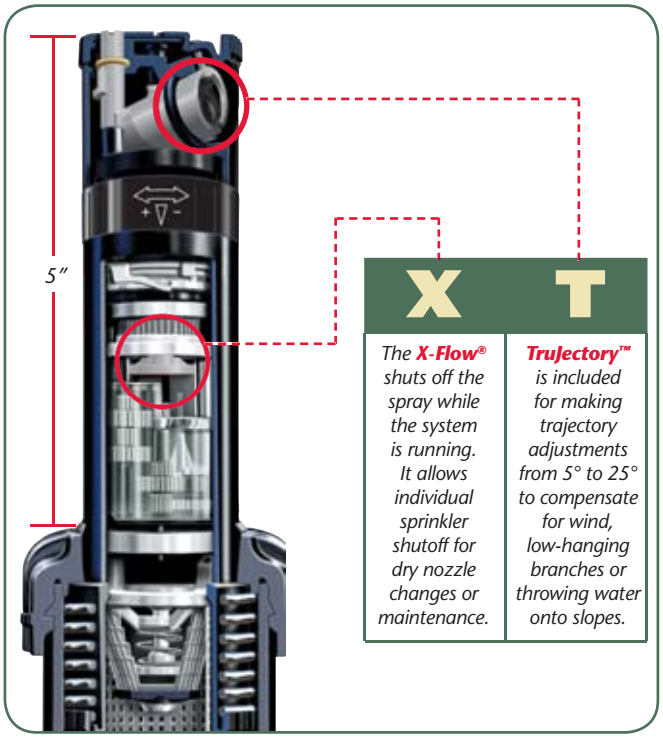
NEW Stainless Steel Models

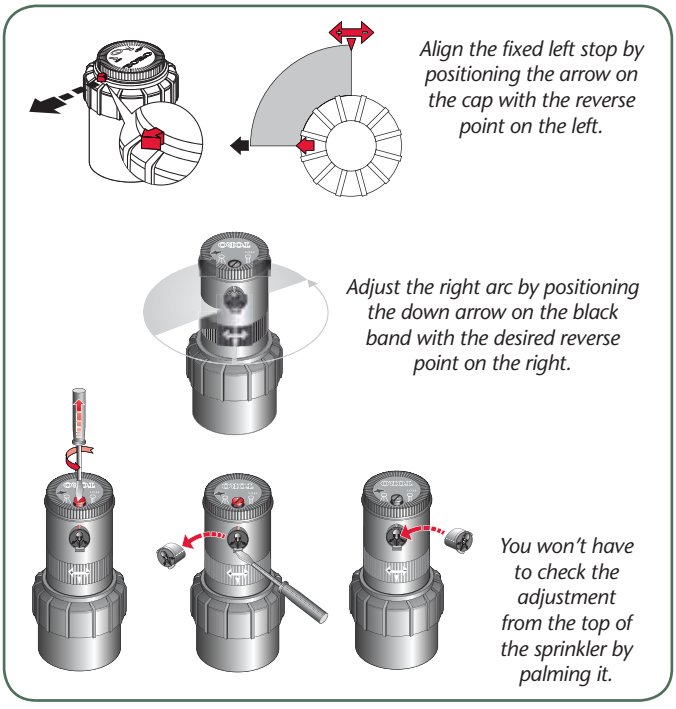
TR50XTP and TR50XTPSS

These rotors have all the features of the TR50P with the addition of the exclusive X-Flow® device and TruJectory™ nozzle adjustment feature.

Additional Features (XTP Models Only)

- Patented X-Flow® shutoff device built into the riser to turn off sprinkler flow allowing for maintenance or partial installations
- Exclusive TruJectory™ adjustment from 5° to 25° for fine-tuning nozzle spray trajectory to avoid low-hanging branches or compensate for the wind





Align the fixed left stop by positioning the arrow on the cap with the reverse point on the left.

Adjust the right arc by positioning the down arrow on the black band with the desired reverse point on the right.

You won't have to check the adjustment from the top of the sprinkler by palming it.

Specifying Information—TR50XT, TR50XTSS

TR50XT | XX | XX | E

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

Example: A TR50XT Series sprinkler with a stainless steel riser and a 6.0 nozzle, would be specified as: **TR50XT-SS-60**

TR50 Series—U.S.

TR50P, TR50PSS Performance Data—U.S.

Nozzle	psi	Radius	GPM
.50 Yellow	30	33	0.9
	40	36	1.0
	50	37	1.2
	60	38	1.3
	70	38	1.5
1.5 Orange	30	36	1.2
	40	38	1.5
	50	40	1.6
	60	41	1.8
	70	41	2.0
2 Red	30	36	1.6
	40	39	1.9
	50	40	2.1
	60	42	2.3
	70	42	2.7
3 Black	30	39	2.1
	40	41	2.5
	50	42	2.8
	60	43	3.2
	70	43	3.4
4.5 Blue	30	38	3.3
	40	40	4.0
	50	43	4.6
	60	43	5.1
	70	44	5.6
6 Green	30	39	4.2
	40	42	5.0
	50	46	5.7
	60	48	6.3
	70	48	6.8
7.5 Brown	30	40	5.2
	40	44	6.2
	50	47	7.1
	60	49	7.9
	70	49	8.5
9 Gray	30	40	6.3
	40	45	7.5
	50	48	8.6
	60	49	9.6
	70	50	10.2

Radius shown in feet. Data based on 360°.

TR50XTP, TR50XTPSS Performance Data—U.S.

Nozzle Size	psi	Flow	5°			10°			15°			20°			25°		
			Radius	Precip Rate* △	Precip Rate* □	Radius	Precip Rate* △	Precip Rate* □	Radius	Precip Rate* △	Precip Rate* □	Radius	Precip Rate* △	Precip Rate* □	Radius	Precip Rate* △	Precip Rate* □
1.0	30	1.0	20	0.28	0.24	21	0.25	0.22	26	0.16	0.14	27	0.15	0.13	30	0.12	0.11
	40	1.1	21	0.28	0.24	22	0.26	0.22	27	0.18	0.15	27	0.18	0.15	30	0.14	0.12
	50	1.3	22	0.30	0.26	24	0.25	0.21	27	0.20	0.17	27	0.20	0.17	31	0.15	0.13
	60	1.4	25	0.26	0.23	28	0.21	0.18	28	0.20	0.17	29	0.19	0.16	31	0.17	0.15
	70	1.5	25	0.29	0.25	28	0.23	0.20	28	0.22	0.19	28	0.22	0.19	31	0.18	0.16
1.5	30	1.2	28	0.18	0.15	27	0.19	0.16	30	0.15	0.13	32	0.13	0.12	34	0.12	0.10
	40	1.4	29	0.19	0.17	28	0.21	0.18	31	0.16	0.14	33	0.14	0.12	35	0.13	0.11
	50	1.6	29	0.21	0.18	30	0.20	0.17	32	0.18	0.15	34	0.16	0.13	36	0.14	0.12
	60	1.7	31	0.21	0.18	31	0.21	0.18	32	0.19	0.16	34	0.17	0.14	36	0.15	0.13
	70	1.9	31	0.22	0.19	32	0.21	0.18	32	0.21	0.18	34	0.18	0.16	35	0.18	0.15
2.0	30	1.7	31	0.19	0.17	31	0.19	0.17	32	0.18	0.16	34	0.16	0.14	36	0.14	0.12
	40	1.9	31	0.22	0.19	33	0.20	0.17	34	0.18	0.16	36	0.16	0.14	38	0.15	0.13
	50	2.2	32	0.24	0.21	34	0.21	0.18	35	0.20	0.17	37	0.18	0.16	38	0.17	0.14
	60	2.4	33	0.25	0.22	35	0.22	0.19	36	0.20	0.18	37	0.19	0.17	39	0.18	0.15
	70	2.6	33	0.27	0.23	35	0.24	0.21	36	0.22	0.19	38	0.20	0.17	39	0.20	0.17
3.0	30	2.3	31	0.27	0.23	31	0.27	0.23	34	0.23	0.20	35	0.21	0.18	38	0.18	0.16
	40	2.6	31	0.31	0.26	32	0.29	0.25	35	0.25	0.21	37	0.22	0.19	40	0.19	0.16
	50	3.0	33	0.30	0.26	35	0.28	0.24	36	0.26	0.22	38	0.23	0.20	41	0.20	0.17
	60	3.3	35	0.31	0.27	37	0.28	0.24	38	0.26	0.23	39	0.24	0.21	42	0.21	0.18
	70	3.6	35	0.32	0.28	37	0.30	0.26	39	0.27	0.23	40	0.26	0.22	44	0.21	0.18
4.5	30	3.6	31	0.42	0.36	32	0.39	0.34	34	0.35	0.30	36	0.31	0.27	39	0.26	0.23
	40	4.1	32	0.44	0.38	34	0.40	0.35	35	0.38	0.33	38	0.31	0.27	40	0.28	0.24
	50	4.6	34	0.45	0.39	36	0.40	0.34	37	0.39	0.33	40	0.33	0.29	41	0.31	0.27
	60	5.1	35	0.48	0.41	38	0.40	0.35	38	0.39	0.34	41	0.35	0.30	42	0.32	0.28
	70	5.6	36	0.48	0.42	38	0.43	0.37	39	0.41	0.35	41	0.37	0.32	42	0.35	0.31
6.0	30	4.4	31	0.51	0.44	33	0.45	0.39	35	0.40	0.35	38	0.34	0.29	41	0.29	0.25
	40	5.0	32	0.56	0.48	35	0.47	0.40	37	0.42	0.36	40	0.35	0.30	42	0.32	0.28
	50	5.7	35	0.53	0.46	37	0.46	0.40	40	0.39	0.34	43	0.35	0.30	43	0.34	0.30
	60	6.3	37	0.51	0.44	38	0.48	0.42	40	0.45	0.39	42	0.39	0.34	43	0.39	0.33
	70	6.8	38	0.54	0.47	40	0.49	0.42	41	0.45	0.39	43	0.41	0.36	45	0.38	0.33
7.5	30	4.9	34	0.47	0.41	33	0.50	0.43	35	0.45	0.39	36	0.42	0.36	41	0.32	0.28
	40	5.6	36	0.49	0.42	34	0.55	0.48	36	0.48	0.41	37	0.46	0.40	41	0.38	0.33
	50	6.3	35	0.57	0.49	37	0.52	0.45	37	0.52	0.45	39	0.46	0.40	42	0.40	0.35
	60	6.9	36	0.61	0.53	37	0.56	0.49	38	0.55	0.47	41	0.47	0.41	42	0.44	0.38
	70	7.5	37	0.63	0.54	39	0.57	0.49	38	0.58	0.50	42	0.48	0.41	43	0.45	0.39
9.0	30	6.1	34	0.59	0.51	33	0.62	0.54	34	0.59	0.51	36	0.52	0.45	42	0.38	0.33
	40	7.0	35	0.64	0.55	33	0.71	0.62	35	0.65	0.57	37	0.57	0.49	42	0.44	0.38
	50	8.0	35	0.73	0.63	35	0.75	0.65	37	0.65	0.56	40	0.56	0.48	44	0.46	0.40
	60	8.9	35	0.80	0.70	37	0.74	0.64	39	0.66	0.58	43	0.54	0.47	45	0.50	0.43
	70	9.8	37	0.82	0.71	39	0.74	0.64	40	0.68	0.59	42	0.63	0.55	47	0.50	0.44

** △ Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*

□ Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.

Shaded areas represent optimum operating pressure for that nozzle size.

Radius can be reduced 25% with breakup screw.

Performance rating is based on a zero wind condition.

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in feet. Data based on 360°.

Matched Precipitation Rate Nozzle Chart—TR50XTP

Pattern	Nozzle Number			
1/4	1.0	1.5	2.0	3.0
1/3	1.5	2.0	3.0	4.0
1/2	2.0	3.0	4.0	6.0
2/3	3.0	4.5	6.0	7.5
Full	4.5	6.0	7.5	9.0

The performance data in this catalog show average values obtained while testing in an enclosed, zero-wind facility. All precipitation rates are based on a full-circle application of the nozzle to maximum radius.

Your results will vary depending on both your spacing requirements and environmental conditions.

To obtain precipitation rates for a ½ circle sprinkler, multiply the chart values by 2. For a ¼ circle sprinkler, multiply the chart values by 4.

TR50 Series—Metric

TR50P, TR50PSS Performance Data—Metric

Nozzle	Bar	Radius	LPM
.50 Yellow	2,0	10,0	3,6
	2,5	10,6	3,7
	3,0	11,0	4,0
	3,5	11,3	4,6
	4,0	11,5	4,8
	4,5	11,6	5,3
	5,0	11,7	5,8
	5,5	11,9	6,3
1.5 Orange	2,0	10,8	4,5
	2,5	11,4	5,3
	3,0	11,8	5,8
	3,5	12,2	6,1
	4,0	12,4	6,7
	4,5	12,5	7,2
	5,0	12,5	7,7
	5,5	12,5	7,9
2 Red	2,0	10,1	6,1
	2,5	11,5	7,0
	3,0	12,0	7,6
	3,5	12,2	8,0
	4,0	12,7	9,5
	4,5	12,8	9,5
	5,0	12,8	10,4
	5,5	12,8	11,0
3 Black	2,0	11,7	7,8
	2,5	12,3	8,9
	3,0	12,6	9,9
	3,5	12,8	10,7
	4,0	13,0	11,8
	4,5	13,1	12,5
	5,0	13,1	13,2
	5,5	13,1	14,0
4.5 Blue	2,0	11,4	12,2
	2,5	12,0	14,2
	3,0	12,5	15,9
	3,5	13,1	17,4
	4,0	13,1	18,9
	4,5	13,3	20,3
	5,0	13,5	21,6
	5,5	13,7	22,7
6 Green	2,0	11,6	15,7
	2,5	12,5	17,9
	3,0	13,2	19,8
	3,5	14,1	21,6
	4,0	14,5	23,3
	4,5	14,6	24,8
	5,0	14,6	26,3
	5,5	14,6	27,9
7.5 Brown	2,0	11,9	19,2
	2,5	13,0	22,0
	3,0	13,7	24,7
	3,5	14,4	27,1
	4,0	14,8	29,3
	4,5	14,9	31,1
	5,0	14,9	32,8
	5,5	14,9	34,7
9 Gray	2,0	11,9	23,2
	2,5	13,1	26,7
	3,0	14,0	29,8
	3,5	14,7	32,8
	4,0	14,9	35,6
	4,5	15,1	37,5
	5,0	15,2	39,5
	5,5	15,2	41,9

Radius shown in meters. Data based on 360°.

TR50XTP, TR50XTPSS Performance Data—Metric

Size	Bar	Flow	5° Radius	Precip Rate* △	Precip Rate* □	15° Radius	Precip Rate* △	Precip Rate* □	25° Radius	Precip Rate* △	Precip Rate* □
1.0	2,0	3,8	6,1	7,0	6,1	7,9	4,2	3,6	9,1	3,1	2,7
	2,5	4,1	6,3	7,1	6,2	8,0	4,4	3,8	9,1	3,4	2,9
	3,0	4,5	6,5	7,3	6,3	8,1	4,7	4,0	9,2	3,6	3,2
	3,5	4,9	6,8	7,4	6,4	8,3	5,0	4,3	9,3	3,9	3,4
	4,0	5,3	7,3	6,8	5,9	8,5	5,1	4,4	9,3	4,2	3,7
	4,5	5,6	7,5	7,0	6,0	8,5	5,3	4,6	9,3	4,5	3,9
	5,0	6,0	7,5	7,3	6,3	8,6	5,6	4,9	9,3	4,7	4,1
1.5	2,0	4,7	8,5	4,5	3,9	9,1	3,9	3,4	10,4	3,0	2,6
	2,5	5,1	8,6	4,7	4,1	9,3	4,0	3,5	10,6	3,2	2,7
	3,0	5,5	8,7	5,0	4,4	9,5	4,3	3,7	10,7	3,3	2,9
	3,5	6,0	8,9	5,3	4,6	9,6	4,5	3,9	10,8	3,5	3,1
	4,0	6,5	9,2	5,3	4,6	9,7	4,7	4,1	10,8	3,8	3,3
	4,5	6,9	9,4	5,4	4,7	9,8	5,0	4,3	10,7	4,1	3,6
	5,0	7,3	9,5	5,6	4,8	9,8	5,3	4,6	10,7	4,4	3,8
2.0	2,0	6,3	9,4	4,9	4,2	9,8	4,6	4,0	11,0	3,6	3,1
	2,5	6,8	9,4	5,3	4,6	10,1	4,6	4,0	11,3	3,7	3,2
	3,0	7,5	9,5	5,7	5,0	10,5	4,7	4,1	11,5	3,9	3,4
	3,5	8,2	9,6	6,1	5,3	10,7	5,0	4,3	11,6	4,2	3,7
	4,0	8,9	9,8	6,3	5,5	10,9	5,1	4,5	11,7	4,5	3,9
	4,5	9,5	10,0	6,6	5,7	11,0	5,4	4,7	11,7	4,8	4,1
	5,0	10,0	10,1	6,8	5,9	11,0	5,7	4,9	11,8	5,0	4,3
3.0	2,0	8,9	9,4	6,9	5,9	10,4	5,7	4,9	11,6	4,6	4,0
	2,5	9,6	9,4	7,4	6,4	10,5	6,0	5,2	11,9	4,7	4,1
	3,0	10,5	9,7	7,7	6,7	10,7	6,3	5,5	12,2	4,9	4,2
	3,5	11,4	10,1	7,7	6,7	11,0	6,5	5,6	12,5	5,0	4,4
	4,0	12,3	10,4	7,8	6,8	11,3	6,6	5,7	12,6	5,3	4,6
	4,5	13,0	10,6	8,0	7,0	11,6	6,7	5,8	13,0	5,4	4,6
	5,0	13,8	10.7	8,3	7,2	11,8	6,9	5,9	13,3	5,4	4,7
4.5	2,0	13,6	9,4	10,5	9,1	10,4	8,8	7,6	11,9	6,7	5,8
	2,5	14,7	9,6	11,0	9,5	10,5	9,3	8,1	12,1	7,0	6,0
	3,0	16,1	10,0	11,2	9,7	10,7	9,7	8,4	12,3	7,4	6,4
	3,5	17,7	10,4	11,4	9,8	11,2	9,8	8,5	12,5	7,8	6,8
	4,0	19,0	10,5	12,0	10,4	11,5	10,0	8,6	12,7	8,1	7,0
	4,5	20,3	10,8	12,1	10,5	11,7	10,2	8,8	12,8	8,6	7,4
	5,0	21,4	11,0	12,2	10,6	11,9	10,4	9,0	12,8	9,0	7,8
6.0	2,0	16,7	9,4	12,9	11,2	10,7	10,1	8,8	12,5	7,4	6,4
	2,5	18,0	9,5	13,7	11,9	11,0	10,4	9,0	12,6	7,9	6,8
	3,0	19,8	9,9	13,9	12,0	11,5	10,3	9,0	12,8	8,3	7,2
	3,5	21,6	10,6	13,4	11,6	12,2	10,1	8,7	13,1	8,7	7,5
	4,0	23,3	11,1	13,0	11,3	12,2	10,8	9,4	13,1	9,4	8,1
	4,5	24,8	11,4	13,3	11,5	12,4	11,3	9,8	13,3	9,6	8,4
	5,0	26,1	11,5	13,7	11,8	12,5	11,5	10,0	13,6	9,8	8,5
7.5	2,0	18,6	10,4	12,0	10,4	10,7	11,3	9,8	12,5	8,2	7,1
	2,5	20,1	10,6	12,3	10,6	10,9	11,8	10,2	12,5	8,9	7,7
	3,0	21,9	10,8	13,0	11,2	11,0	12,5	10,8	12,5	9,6	8,3
	3,5	23,8	10,8	14,1	12,2	11,1	13,3	11,5	12,7	10,3	8,9
	4,0	25,7	10,9	14,9	12,9	11,4	13,8	11,9	12,8	10,9	9,4
	4,5	27,4	11,1	15,5	13,5	11,5	14,3	12,4	13,0	11,3	9,8
	5,0	28,9	11,2	16,0	13,9	11,6	14,8	12,8	13,1	11,6	10,0
9.0	2,0	23,1	10,4	14,8	12,9	10,4	14,8	12,9	12,8	9,7	8,4
	2,5	25,2	10,6	15,7	13,6	10,5	15,9	13,8	12,8	10,6	9,2
	3,0	27,8	10,7	16,9	14,6	10,8	16,6	14,3	13,0	11,4	9,8
	3,5	30,5	10,7	18,5	16,1	11,3	16,5	14,3	13,4	11,7	10,1
	4,0	32,9	10,7	20,0	17,3	11,6	16,8	14,5	13,5	12,4	10,8
	4,5	35,4	10,9	20,6	17,8	12,0	17,1	14,8	13,9	12,7	11,0
	5,0	17,5	11,2	20,8	18,0	12,2	17,4	15,0	14,2	12,9	11,1

** △ 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.

Radius can be reduced 25% with breakup screw.

Performance rating is based on a zero wind condition.

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in meters.

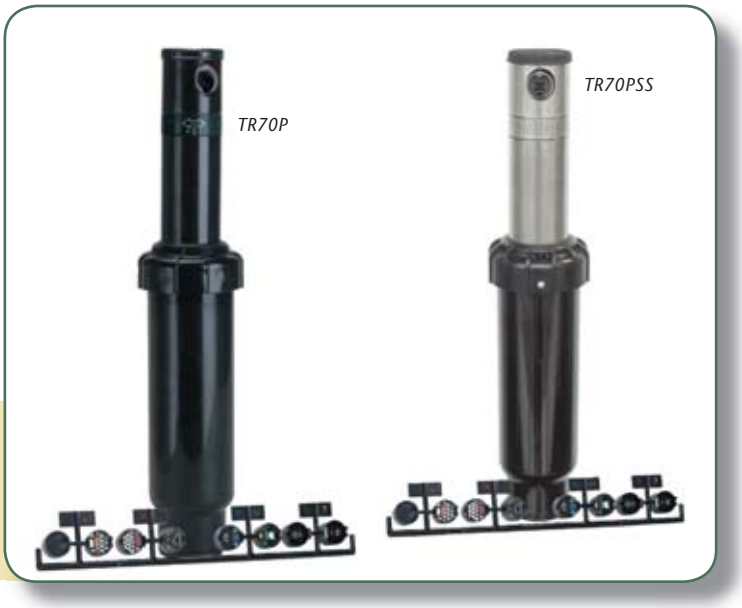
Data based on 360°.

TR70 Series

TR70P, TR70PSS, TR70XTP, TR70XTPSS

Turf
Radius: 33'–71'
Flow rate: 6.7–29.6 GPM
Pressure: 40–100 psi

Application: TR70XTP and TR70XTPSS are made to withstand the pressures of commercial applications such as sports fields.



Specifications (TR70P)

Radius:

TR70P, TR70PSS:
43'–71' (13,1–21,6m)
TR70XTP, TR70XTPSS:
33'–71' (10,0–21,6m)

Flow rate:

TR70P, TR70PSS:
7.5–29.6 GPM (28,3–112,0 LPM)
TR70XTP, TR70XTPSS:
6.7–27 GPM (25,3-102,2 LPM)

Nozzle data:

See page 38–39

Recommended operating pressure range:

40–100 psi (2,7–7,0 Bar)

Maximum operating pressure:

75 psi (5,2 Bar)

Inlet:

1" (25mm) female-threaded

Below-grade installation:

½" (13mm) (except shrub models)

Dimensions (lawn pop-up model):

Pop-up to center of nozzle: 4¾" (120mm)
Base diameter: 2⅜" (60mm)
Height: 9¼" (234mm)

Models:

Lawn pop-up: 5" (127mm)

Check valve (Standard):

Reversible check valve prevents low-head drainage, keeping laterals charged with water (maintains up to 6' (1,9m) elevation change on all models)

Operational Features (All Models)

- Simple to set watering pattern with adjusting band—the arc on the TR70P is factory pre-set to 180°, if that's not the arc you need, just turn the easy-to-adjust black band (see illustrations on pg. 37)
- Full 5" pop-up to clear tall grasses
- Smart Arc™ memory returns sprinkler to previously set arc if vandalized and slip clutch assures no damage to gears
- Below-grade installation allows for maximum safety helping to eliminate the potential for liability
- TruArc for easy arc set—eliminates the need to double check—for ease in installation and to eliminate the palming of a sprinkler to check the final arc setting
- Effluent and check valve options—for safety in reclaimed water situations and to prevent low-head drainage
- Unique, over-molded wiper seal for greater debris resistance and below-grade installation
- Cluster, water-lubricated, gear-drive design
- Standard rubber cover for safety
- Large filter screen to prevent clogging
- Five-year warranty

Installation Features (All Models)

- Color-coded nozzle tree with seven nozzles to cover varying flow requirements and for quick and easy nozzle identification
- Factory-installed with a #12.0 nozzle
- Arc adjustment from 30°–360°
- Continuous, unidirectional rotation provides uniform water coverage when set at 360°
- Stainless steel radius adjustment screw allows up to 25% radius reduction

Specifying Information—TR70P, TR70PSS

TR70 XX XX E

Description	Body	Nozzles		Optional
TR70—TR70 Series Rotor	P—Lawn Pop-up SS—Stainless Steel Lawn Pop-up	7—7.0 9—9.0 12—12.0 16—16.0	20—20.0 24—24.0 27—27.0	E—Effluent

Example: A TR70 Series lawn pop-up sprinkler with a 12.0 nozzle, would be specified as: **TR70P-12**

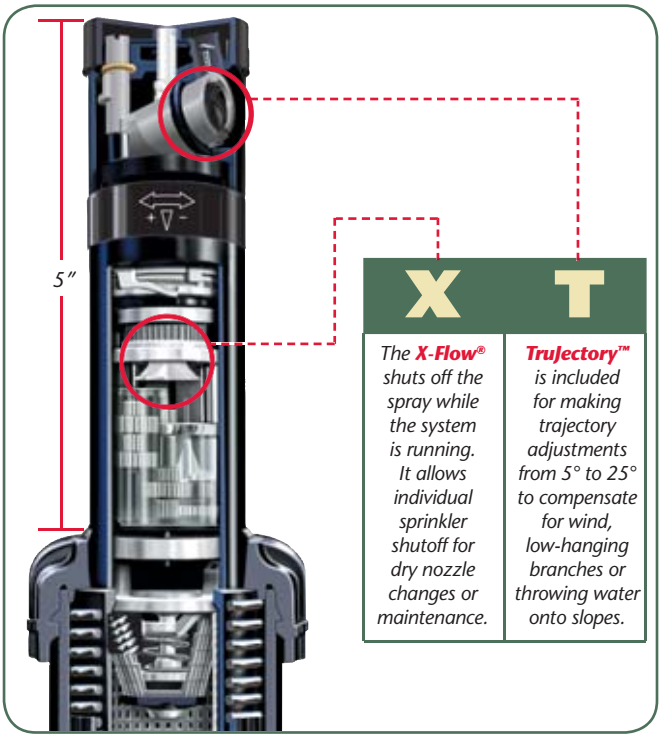
NEW Stainless Steel Models

TR70XTP and TR70XTPSS

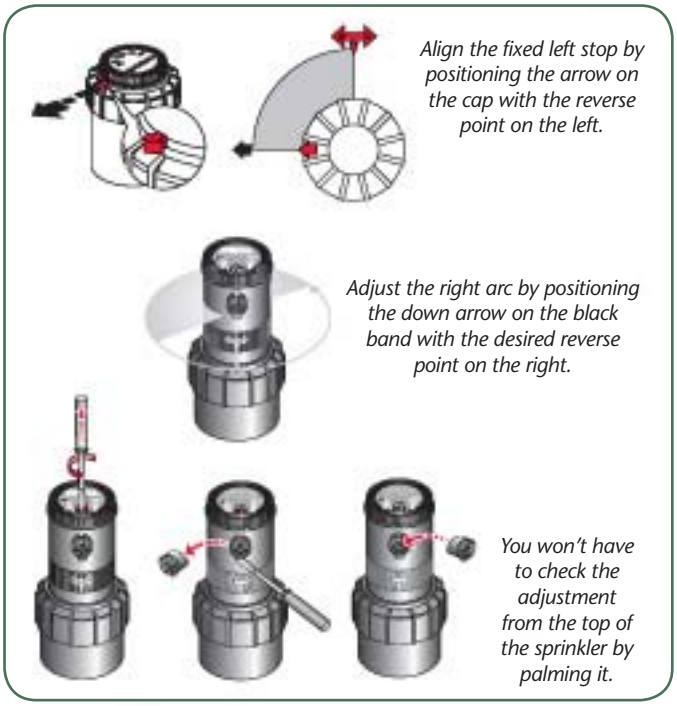
These rotors have all the features of the TR70P with the addition of the exclusive X-Flow® device and TruJectory™ nozzle adjustment feature.

Additional Features (XTP Models Only)

- Patented X-Flow® shutoff device built into the riser to turn off sprinkler flow allowing for maintenance or partial installations
- Exclusive TruJectory™ adjustment from 5° to 25° for fine-tuning nozzle spray trajectory to avoid low-hanging branches or compensate for the wind



X	T
*The **X-Flow®** shuts off the spray while the system is running. It allows individual sprinkler shutoff for dry nozzle changes or maintenance.*	***TruJectory™** is included for making trajectory adjustments from 5° to 25° to compensate for wind, low-hanging branches or throwing water onto slopes.*



Align the fixed left stop by positioning the arrow on the cap with the reverse point on the left.

Adjust the right arc by positioning the down arrow on the black band with the desired reverse point on the right.

You won't have to check the adjustment from the top of the sprinkler by palming it.

Specifying Information—TR70XT, TR70XTSS

TR70XT | XX | XX | E

Description	Body	Nozzles	Optional
TR70XT—TR70XT Series Rotor	P—Lawn Pop-up SS—Stainless Steel Lawn Pop-up	7—7.0 20—20.0 9—9.0 24—24.0 12—12.0 27—27.0 16—16.0	E—Effluent

Example: A TR70XT Series sprinkler with a stainless steel riser and a 6.0 nozzle, would be specified as: **TR70XT-SS-60**

TR70 Series—U.S.

TR70P, TR70PSS Performance Data—U.S.

Nozzle	psi	GPM	Radius	Precip. Rate △	Precip. Rate □
7 Orange	50	7.5	43	0.34	0.39
	60	8.2	45	0.34	0.39
	70	8.9	45	0.34	0.45
	80	9.6	44	0.41	0.48
	90	10.1	44	0.44	0.50
	100	11.1	46	0.44	0.51
9 Red	50	8.4	46	0.33	0.38
	60	8.8	48	0.32	0.37
	70	9.4	48	0.33	0.38
	80	10.0	51	0.32	0.37
	90	10.1	51	0.31	0.36
	100	11.6	53	0.34	0.40
12 Black	50	10.5	53	0.31	0.36
	60	11.6	55	0.32	0.37
	70	12.6	56	0.34	0.39
	80	13.5	57	0.35	0.40
	90	14.4	58	0.36	0.41
	100	15.3	60	0.35	0.41
16 Blue	50	15.3	55	0.42	0.49
	60	16.3	59	0.39	0.45
	70	17.4	61	0.39	0.45
	80	18.5	61	0.41	0.48
	90	19.7	66	0.38	0.44
	100	20.8	67	0.39	0.45
20 Green	50	18.6	55	0.51	0.59
	60	19.9	59	0.48	0.55
	70	21.0	61	0.47	0.54
	80	22.4	63	0.47	0.54
	90	22.8	66	0.45	0.56
	100	25.1	68	0.45	0.52
24 Brown	50	18.7	57	0.48	0.55
	60	19.8	61	0.44	0.51
	70	21.5	63	0.45	0.52
	80	23.1	66	0.44	0.51
	90	24.5	67	0.46	0.53
	100	25.9	70	0.44	0.51
27 Gray	50	21.1	59	0.51	0.58
	60	23.7	64	0.48	0.56
	70	25.6	67	0.48	0.55
	80	26.8	68	0.48	0.56
	90	28.2	69	0.49	0.57
	100	29.6	71	0.49	0.57

* △ *Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*

□ *Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in feet. Data based on 360°.

TR70XT Performance Data—U.S.

Nozzle Size	psi	Flow	5° Radius	5° Precip Rate* △	5° Precip Rate* □	15° Radius	15° Precip Rate* △	15° Precip Rate* □	25° Radius	25° Precip Rate* △	25° Precip Rate* □
7 Orange	40	6.7	33	0.68	0.59	39	0.38	0.44	44	0.29	0.33
	50	7.1	37	0.57	0.50	42	0.34	0.39	46	0.28	0.32
	60	7.8	38	0.60	0.52	43	0.36	0.41	47	0.29	0.34
	70	8.4	40	0.58	0.51	44	0.36	0.42	48	0.30	0.35
	80	9.1	41	0.60	0.52	45	0.37	0.43	49	0.32	0.37
	90	9.5	42	0.60	0.52	46	0.38	0.43	50	0.32	0.37
	100	10.6	43	0.64	0.55	47	0.40	0.46	51	0.34	0.39
9 Red	40	7.1	33	0.73	0.63	39	0.39	0.45	45	0.29	0.34
	50	8.0	37	0.65	0.56	42	0.38	0.44	47	0.30	0.35
	60	8.7	38	0.67	0.58	43	0.39	0.45	48	0.31	0.36
	70	9.3	38	0.71	0.62	44	0.41	0.47	49	0.32	0.37
	80	9.7	40	0.68	0.59	45	0.40	0.46	50	0.32	0.37
	90	10.9	42	0.68	0.59	47	0.42	0.48	51	0.35	0.40
	100	11.6	43	0.70	0.60	47	0.44	0.51	51	0.37	0.43
12 Black	40	9.7	33	0.99	0.86	39	0.53	0.61	45	0.40	0.46
	50	11.4	37	0.93	0.80	43	0.53	0.61	48	0.41	0.48
	60	12.4	38	0.95	0.82	44	0.53	0.61	50	0.41	0.48
	70	13.4	39	0.98	0.85	45	0.55	0.64	51	0.43	0.50
	80	14.2	40	0.99	0.86	46	0.56	0.65	52	0.44	0.51
	90	15.2	42	0.96	0.83	48	0.56	0.65	53	0.45	0.52
	100	16.0	43	0.96	0.83	48	0.58	0.67	53	0.48	0.55
16 Blue	40	12.7	34	1.22	1.06	40	0.66	0.76	46	0.50	0.58
	50	14.5	38	1.12	0.97	45	0.60	0.69	52	0.45	0.52
	60	16.0	42	1.01	0.87	49	0.57	0.65	55	0.44	0.51
	70	17.4	44	1.00	0.86	51	0.56	0.64	58	0.43	0.50
	80	18.3	47	0.92	0.80	53	0.55	0.64	58	0.45	0.52
	90	19.6	48	0.94	0.82	54	0.57	0.66	59	0.47	0.54
	100	20.5	50	0.91	0.79	55	0.56	0.65	60	0.47	0.55
20 Green	40	14.0	34	1.35	1.17	41	0.71	0.82	47	0.53	0.61
	50	16.2	38	1.24	1.08	46	0.65	0.75	53	0.48	0.55
	60	17.9	42	1.13	0.98	50	0.60	0.69	58	0.44	0.51
	70	19.3	48	0.93	0.81	55	0.54	0.63	61	0.43	0.50
	80	20.7	49	0.96	0.83	56	0.55	0.64	63	0.43	0.50
	90	21.9	51	0.94	0.81	56	0.58	0.67	61	0.49	0.57
	100	22.9	51	0.98	0.85	58	0.57	0.66	65	0.45	0.52
24 Brown	40	14.7	35	1.33	1.15	41	0.73	0.84	47	0.55	0.64
	50	16.4	41	1.08	0.94	48	0.59	0.68	55	0.45	0.52
	60	17.7	46	0.93	0.81	52	0.55	0.63	58	0.44	0.51
	70	18.9	49	0.87	0.76	55	0.52	0.60	61	0.42	0.49
	80	20.3	50	0.90	0.78	56	0.54	0.62	62	0.44	0.51
	90	21.6	54	0.82	0.71	60	0.51	0.59	65	0.43	0.49
	100	22.8	56	0.81	0.70	62	0.50	0.58	67	0.42	0.49
27 Gray	40	16.7	34	1.61	1.39	41	0.83	0.96	48	0.60	0.70
	50	19.0	38	1.46	1.27	47	0.72	0.83	56	0.51	0.58
	60	20.9	43	1.25	1.09	52	0.66	0.76	60	0.48	0.56
	70	22.7	49	1.05	0.91	56	0.60	0.70	63	0.48	0.55
	80	24.2	52	1.00	0.86	59	0.59	0.68	65	0.48	0.55
	90	25.6	55	0.94	0.81	62	0.55	0.64	69	0.45	0.52
	100	27.0	57	0.92	0.80	64	0.55	0.63	71	0.45	0.52

* △ *Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*

□ *Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in feet. Data based on 360°.

#12 nozzle comes pre-installed from factory.

TR70 Series—Metric

TR70P, TR70PSS Performance Data—Metric

Nozzle	Bar	LPM	Radius	Precip. Rate △	Precip. Rate □
7 Orange	3,5	28,6	13,2	11,4	9,9
	4,0	30,5	13,6	11,4	9,9
	4,5	32,4	13,7	11,9	10,3
	5,0	34,3	13,6	12,8	11,1
	5,5	36,3	13,4	13,9	12,1
	6,0	37,2	13,4	14,5	12,5
	6,5	39,8	13,7	14,7	12,8
	7,0	42,5	14,0	14,9	12,9
9 Red	3,5	31,9	14,1	11,2	9,7
	4,0	33,0	14,5	10,8	9,4
	4,5	34,5	14,8	10,9	9,4
	5,0	36,1	15,1	11,0	9,5
	5,5	37,8	15,5	10,8	9,4
	6,0	38,1	15,8	10,6	9,2
	6,5	40,6	16,0	11,0	9,5
	7,0	44,4	16,2	11,7	10,1
12 Black	3,5	40,0	16,2	10,6	9,1
	4,0	43,1	16,6	10,8	9,3
	4,5	45,9	16,9	11,1	9,6
	5,0	48,3	17,1	11,4	9,9
	5,5	51,0	17,4	11,7	10,1
	6,0	53,5	17,6	12,0	10,4
	6,5	55,9	17,9	12,0	10,4
	7,0	58,6	18,3	12,1	10,4
16 Blue	3,5	58,2	16,9	14,2	12,3
	4,0	60,9	17,7	13,4	11,6
	4,5	63,9	18,3	13,2	11,4
	5,0	66,9	18,6	13,4	11,6
	5,5	69,9	18,6	14,0	12,1
	6,0	73,2	19,7	13,1	11,4
	6,5	76,3	20,2	12,9	11,2
	7,0	79,3	20,5	13,1	11,3
20 Green	3,5	70,8	16,9	17,2	14,9
	4,0	74,3	17,7	16,3	14,2
	4,5	77,5	18,3	16,0	13,9
	5,0	80,8	18,7	15,9	13,8
	5,5	84,6	19,2	15,9	13,8
	6,0	85,8	19,8	15,1	13,1
	6,5	90,0	20,4	15,0	13,0
	7,0	95,7	20,8	15,3	13,3
24 Brown	3,5	71,1	17,5	16,1	14,0
	4,0	74,1	18,3	15,2	13,2
	4,5	78,3	18,9	15,1	13,1
	5,0	82,9	19,4	15,2	13,2
	5,5	87,3	20,1	15,0	13,0
	6,0	91,1	20,3	15,3	13,2
	6,5	95,0	20,8	15,2	13,1
	7,0	98,6	21,4	14,9	12,9
27 Gray	3,5	80,6	18,1	17,0	14,7
	4,0	87,7	19,2	16,5	14,3
	4,5	93,5	20,0	16,2	14,0
	5,0	98,0	20,5	16,1	14,0
	5,5	101,3	20,7	16,3	14,1
	6,0	105,1	20,9	16,8	14,4
	6,5	109,0	21,3	16,6	14,4
	7,0	112,8	21,7	16,5	14,3

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

□ Precipitation rates are for square spacing, shown in millimeters per hour, calculated at 50% of diameter.

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in meters. Data based on 360°.

TR70XT Performance Data—Metric

Nozzle	Bar	kPa	Kg/cm²	LPM	5° Radius	15° Radius	25° Radius
7 Orange	3,0	300	3,06	25,9	10,5	12,2	13,6
	3,5	350	3,57	27,1	11,3	12,8	14,0
	4,0	400	4,08	29,0	11,5	13,0	14,3
	4,5	450	4,59	30,7	11,9	13,3	14,5
	5,0	500	5,10	32,5	12,3	13,5	14,7
	5,5	550	5,61	34,4	12,5	13,7	14,9
	6,0	600	6,12	35,5	12,7	13,3	15,1
	6,5	650	6,63	37,7	12,9	13,6	15,4
	7,0	700	7,14	40,4	13,2	14,4	15,6
9 Red	3,0	300	3,06	28,1	10,5	12,2	13,9
	3,5	350	3,57	30,5	11,3	12,8	14,3
	4,0	400	4,08	32,4	11,5	13,0	14,6
	4,5	450	4,59	34,1	11,6	13,3	14,8
	5,0	500	5,10	35,6	11,7	13,5	15,0
	5,5	550	5,61	36,7	12,2	13,7	15,2
	6,0	600	6,12	39,9	12,6	14,1	15,5
	6,5	650	6,63	42,4	12,9	14,3	15,5
	7,0	700	7,14	44,2	13,2	14,4	15,6
12 Black	3,0	300	3,06	39,0	10,5	12,3	14,0
	3,5	350	3,57	43,4	11,3	13,1	14,7
	4,0	400	4,08	46,2	11,5	13,3	15,1
	4,5	450	4,59	48,9	11,7	13,6	15,4
	5,0	500	5,10	51,5	12,0	13,8	15,6
	5,5	550	5,61	53,7	12,2	14,0	15,8
	6,0	600	6,12	56,4	12,6	14,4	16,1
	6,5	650	6,63	58,8	12,9	14,6	16,2
	7,0	700	7,14	60,8	13,2	14,7	16,5
16 Blue	3,0	300	3,06	50,4	10,8	12,7	14,7
	3,5	350	3,57	55,3	11,7	13,8	15,9
	4,0	400	4,08	59,4	12,6	14,7	16,6
	4,5	450	4,59	63,3	13,1	15,3	17,2
	5,0	500	5,10	66,7	13,6	15,7	17,7
	5,5	550	5,61	69,2	14,3	16,1	17,7
	6,0	600	6,12	72,7	14,5	16,4	17,9
	6,5	650	6,63	75,6	14,9	16,6	18,1
	7,0	700	7,14	77,9	15,3	16,8	18,3
20 Green	3,0	300	3,06	55,9	10,8	13,0	15,0
	3,5	350	3,57	61,8	11,7	14,1	16,3
	4,0	400	4,08	66,5	12,6	15,0	17,4
	4,5	450	4,59	70,5	13,8	16,0	18,2
	5,0	500	5,10	74,4	14,7	16,8	18,7
	5,5	550	5,61	78,2	14,9	17,1	19,2
	6,0	600	6,12	81,5	15,4	17,1	19,4
	6,5	650	6,63	84,5	15,5	17,3	19,6
	7,0	700	7,14	87,1	15,6	18,2	19,9
24 Brown	3,0	300	3,06	57,9	11,3	13,2	15,2
	3,5	350	3,57	62,4	12,6	14,7	16,8
	4,0	400	4,08	66,0	13,7	15,6	17,5
	4,5	450	4,59	69,4	14,5	16,3	18,2
	5,0	500	5,10	72,8	15,0	16,8	18,7
	5,5	550	5,61	76,7	15,2	17,1	18,9
	6,0	600	6,12	80,3	16,1	17,9	19,5
	6,5	650	6,63	83,7	16,7	18,5	20,1
	7,0	700	7,14	86,7	17,1	19,0	20,5
27 Gray	3,0	300	3,06	66,2	10,8	13,1	15,5
	3,5	350	3,57	72,4	11,7	14,4	17,2
	4,0	400	4,08	77,7	12,8	15,5	18,0
	4,5	450	4,59	82,7	14,1	16,5	18,8
	5,0	500	5,10	87,3	15,2	17,3	19,4
	5,5	550	5,61	91,4	15,8	18,0	19,8
	6,0	600	6,12	95,3	16,5	18,6	20,7
	6,5	650	6,63	99,1	17,0	19,2	21,3
	7,0	700	7,14	102,9	17,4	19,6	21,7

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in meters. Data based on 360°.

#12 nozzle comes pre-installed from factory.

The performance data in this catalog show average values obtained while testing in an enclosed, zero-wind facility. All precipitation rates are based on a full-circle application of the nozzle to maximum radius.

Your results will vary depending on both your spacing requirements and environmental conditions.

To obtain precipitation rates for a ½ circle sprinkler, multiply the chart values by 2. For a ¼ circle sprinkler, multiply the chart values by 4.

V-1550 Series

Turf, ground cover, planting beds, slopes
Radius: 25′–55′
Flow rate: 0.85–11.62 GPM
Pressure: 25–50 psi

Application: With the MultiMatrx nozzle, this rotor provides the flexibility to do more with less. Great choice for residential and light commercial applications.

Specifications

Radius:
25′–55′ (7,6–16,8m)

Flow rate:
0.85–11.62 GPM (3,7–44 LPM)

Recommended operating pressure range:
25–50 psi (1,7–3,5 Bar)

Maximum operating pressure:
75 psi (5,2 Bar)

Inlet:
¾" (20mm) female-threaded (pop-up models)
¾" and ½" (13 and 20mm) female-threaded (shrub)

Dimensions:

Lawn pop-up model:
- Pop-up to center of nozzle: 2⅝" (67mm)
- Body diameter: 2½" (65mm)
- Exposed diameter: 2¾" (70mm)
- Height: 7" (180mm)

High-pop model:
- Pop-up to center of nozzle: 10¼" (260mm)
- Body diameter: 2½" (65mm)
- Exposed diameter: 2¾" (70mm)
- Height: 17" (430mm)

Shrub model:
- Height: 7⅞" (200mm)

Check valve (Optional):
Maintains up to 10′ (3m) elevation change on pop-up models and 8′ (2,4m) on shrub models

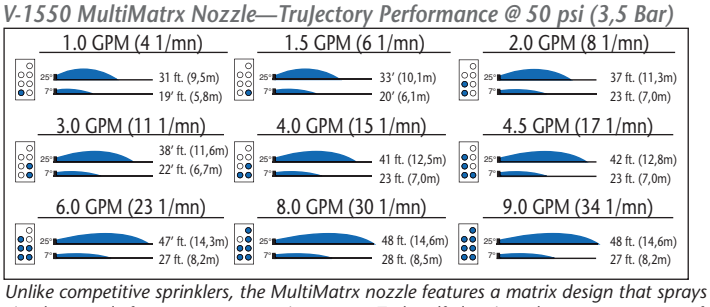
Operational Features

- Exclusive TruJectory™ for infinite trajectory adjustment from 7° to 25° to avoid low-hanging branches or compensate for the wind
- MultiMatrx™ nozzles allow you to adjust gallons per minute, arc and radius—all from the top of the sprinkler
- Full-circle and adjustable part-circle (40°–360°) models are available to cover all irrigation requirements
- All adjustments made from the top—wet or dry
- Balanced precipitation rates
- Standard rubber cover for safety
- Effluent and check valve options for safety in reclaimed water situations and to prevent low-head drainage
- Proven planetary, water-lubricated, gear-drive design
- Low-pressure models for enhanced nozzle performance
- Recycled identification cover available for all models except shrub (see page 41)
- Two-year warranty

Installation Features

- Selection of body styles: lawn, shrub and high pop to satisfy varying installation requirements (such as slopes with shrub models)
- Smart Arc™ memory returns sprinkler to previously set arc if vandalized
- Servi-Snap™ ring design for easy servicing
- No special angle nozzles to purchase, inventory, lose or install

V-1550 MultiMatrx Nozzle—TruJectory Performance @ 50 psi (3,5 Bar)



Unlike competitive sprinklers, the MultiMatrx nozzle features a matrix design that sprays water simultaneously from up to seven unique ports. Truly self-cleaning, these ports are manufactured from flexible aerospace materials, so sand and other particles pass right through without clogging or distorting the nozzle. And, the flow can be adjusted while the sprinkler is running.

V-1550 MultiMatrx MPR Combinations

The following sets of nozzles may be used in combination to deliver a balanced precipitation rate.

¼ Arc	½ Arc	¾ Arc	Full
#1	#2	#3	#4
#1.5	#3	#4.5	#6
#2	#4	#6	#8

Note: *Combinations assume that all nozzles are operating at the same pressure. In addition, sprinklers can run off the same line if adequate flow exists.*

Specifying Information

V-1550 X X LF LP E COM

Body	Arc	Optional	Optional	Optional	Optional
S—Shrub 4—Lawn Pop-up 12—High-pop	F—Full-circle P—Part-circle	LF—Low-flush	LP—Low-pressure	E—Effluent*	COM—Check-O-Matic**

Example: A full-circle V-1550 Series lawn pop-up sprinkler with a low-pressure nozzle, would be specified as: **V-1550-4FL**

**Available on shrub models only.*
***COM is standard on pop-up models and optional on shrub models.*

V-1550 Series

V-1550 Series MultiMatrx Low-pressure Nozzle Performance Data—U.S.

Nozzle Set	psi	GPM	Radius	Prec. Rate* △	Prec. Rate* □
1.0	25	0.85	29	0.11	0.10
	30	0.94	30	0.12	0.10
	35	1.02	31	0.12	0.10
	40	1.08	31	0.12	0.11
	45	1.12	31	0.13	0.11
	50	1.17	31	0.14	0.12
	55	1.21	31	0.14	0.12
	60	1.24	32	0.13	0.12
	65	1.28	32	0.14	0.12
	70	1.31	31	0.15	0.13
	75	1.34	30	0.17	0.14
1.5	25	1.05	25	0.19	0.16
	30	1.15	27	0.18	0.15
	35	1.25	29	0.17	0.11
	40	1.33	30	0.16	0.14
	45	1.42	31	0.16	0.14
	50	1.49	31	0.17	0.15
	55	1.35	31	0.18	0.16
	60	1.60	30	0.20	0.17
	65	1.66	30	0.21	0.18
	70	1.70	30	0.21	0.18
	75	1.75	30	0.22	0.19
2.0	25	1.44	27	0.22	0.19
	30	1.65	29	0.22	0.19
	35	1.82	32	0.20	0.17
	40	1.96	33	0.20	0.17
	45	2.08	31	0.20	0.17
	50	2.15	34	0.21	0.18
	55	2.29	35	0.21	0.18
	60	2.39	35	0.22	0.19
	65	2.48	36	0.21	0.18
	70	2.57	36	0.22	0.19
	75	2.64	37	0.21	0.19
3.0	25	1.85	26	0.30	0.26
	30	2.09	28	0.30	0.26
	35	2.34	32	0.25	0.22
	40	2.54	33	0.26	0.32
	45	2.73	34	0.26	0.23
	50	2.89	34	0.28	0.24
	55	3.04	35	0.28	0.24
	60	3.15	35	0.29	0.25
	65	3.30	36	0.28	0.25
	70	3.42	36	0.29	0.25
	75	3.55	37	0.29	0.25
4.0	25	2.73	26	0.45	0.39
	30	3.09	30	0.38	0.33
	35	3.47	33	0.35	0.31
	40	3.72	34	0.36	0.31
	45	4.06	35	0.37	0.32
	50	4.31	36	0.37	0.32
	55	4.52	38	0.35	0.30
	60	4.69	38	0.36	0.31
	65	4.88	39	0.36	0.31
	70	5.05	39	0.37	0.32
	75	5.21	39	0.38	0.33
4.5	25	3.23	27	0.49	0.43
	30	3.68	30	0.45	0.39
	35	4.09	34	0.39	0.34
	40	4.42	36	0.38	0.33
	45	4.71	39	0.34	0.30
	50	4.98	39	0.36	0.32
	55	5.23	40	0.36	0.31
	60	5.41	40	0.38	0.33
	65	5.62	41	0.37	0.32
	70	5.84	41	0.39	0.33
	75	6.00	42	0.38	0.33
6.0	25	4.00	28	0.57	0.49
	30	4.56	31	0.53	0.46
	35	5.05	35	0.46	0.46
	40	5.51	35	0.45	0.39
	45	5.90	39	0.43	0.35
	50	6.27	41	0.41	0.36
	55	6.61	42	0.42	0.36
	60	6.87	43	0.41	0.36
	65	7.14	44	0.41	0.36
	70	7.43	44	0.43	0.37
	75	7.68	44	0.44	0.38
8.0	25	5.02	28	0.71	0.62
	30	5.63	31	0.65	0.56
	35	6.28	35	00.57	0.49
	40	6.84	38	0.53	0.46
	45	7.36	42	0.46	0.40
	50	7.85	43	0.47	0.41
	55	8.26	45	0.45	0.39
	60	8.61	45	0.47	0.41
	65	8.99	45	0.49	0.43
	70	9.29	46	0.49	0.42
	75	9.61	47	0.48	0.42
9.0	25	5.57	29	0.74	0.64
	30	6.25	33	0.64	0.55
	35	6.96	37	0.57	0.49
	40	7.58	39	0.55	0.48
	45	8.16	42	0.51	0.45
	50	8.75	44	0.50	0.44
	55	9.23	46	0.49	0.42
	60	9.67	47	0.49	0.42
	65	10.09	49	0.47	0.40
	70	10.42	49	0.48	0.42
	75	10.89	50	0.48	0.42

= *Nozzles not recommended at this pressure.*

= *Optimum nozzle performance.*

* △ *Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*

□ *Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in feet. Data based on 360°.

V-1550 Series MultiMatrx Low-pressure Nozzle Performance Data—Metric

Nozzle Set	Base Pressure Bar	kPa	Kg/cm²	LPM	Radius	m²/hr
4.0	2,0	200	2,04	4,0	9,0	0,24
	2,5	250	2,55	4,4	9,2	0,26
	3,0	300	3,06	4,8	9,5	0,29
	3,5	350	3,57	5,1	9,5	0,30
	4,0	400	4,08	5,3	9,3	0,30
	4,5	450	4,59	5,5	9,2	0,30
	5,0	500	5,10	5,7	9,2	0,30
6.0	2,0	200	2,04	4,8	9,4	0,29
	2,5	250	2,55	5,3	0,8	0,32
	3,0	300	3,06	5,8	10,1	0,35
	3,5	350	3,57	6,3	10,1	0,38
	4,0	400	4,08	6,8	10,1	0,40
	4,5	450	4,59	7,2	10,1	0,40
	5,0	500	5,10	7,5	9,8	0,40
8.0	2,0	200	2,04	7,7	9,8	0,46
	2,5	250	2,55	8,5	10,7	0,51
	3,0	300	3,06	9,3	11,1	0,56
	3,5	350	3,57	10,0	11,3	0,60
	4,0	400	4,08	10,5	11,6	0,63
	4,5	450	4,59	10,7	11,6	0,64
	5,0	500	5,10	11,0	11,5	0,70
11.0	2,0	200	2,04	9,5	10,0	0,57
	2,5	250	2,55	10,8	11,0	0,65
	3,0	300	3,06	11,9	11,4	0,72
	3,5	350	3,57	13,0	11,6	0,78
	4,0	400	4,08	13,9	11,8	0,83
	4,5	450	4,59	14,6	11,9	0,87
	5,0	500	5,10	15,3	11,8	0,90
15.0	2,0	200	2,04	12,4	10,0	0,74
	2,5	250	2,55	14,3	11,0	0,86
	3,0	300	3,06	15,9	11,9	0,95
	3,5	350	3,57	17,2	12,5	1,03
	4,0	400	4,08	18,4	12,6	1,11
	4,5	450	4,59	19,5	12,8	1,17
	5,0	500	5,10	20,2	12,8	1,20
17.0	2,0	200	2,04	13,7	10,0	0,82
	2,5	250	2,55	15,7	11,4	0,94
	3,0	300	3,06	17,8	12,2	1,07
	3,5	350	3,57	19,4	12,8	1,16
	4,0	400	4,08	20,8	13,2	1,25
	4,5	450	4,59	21,9	13,7	1,32
	5,0	500	5,10	23,0	14,0	1,40
23.0	2,0	200	2,04	19,1	10,3	1,15
	2,5	250	2,55	21,9	12,3	1,31
	3,0	300	3,06	24,7	13,4	1,48
	3,5	350	3,57	26,1	14,3	1,56
	4,0	400	4,08	27,7	15,1	1,66
	4,5	450	4,59	29,3	15,5	1,76
	5,0	500	5,10	30,6	15,9	1,84
30.0	2,0	200	2,04	21,8	10,3	1,31
	2,5	250	2,55	26,9	12,3	1,61
	3,0	300	3,06	29,1	13,6	1,75
	3,5	350	3,57	31,8	14,6	1,91
	4,0	400	4,08	34,2	15,4	2,05
	4,5	450	4,59	36,3	15,8	2,18
	5,0	500	5,10	38,2	16,5	2,29
34.0	2,0	200	2,04	24,7	10,4	1,48
	2,5	250	2,55	28,6	12,3	1,72
	3,0	300	3,06	32,4	13,6	1,95
	3,5	350	3,57	35,5	14,6	2,13
	4,0	400	4,08	38,1	15,5	2,29
	4,5	450	4,59	40,7	16,1	2,44
	5,0	500	5,10	42,7	16,5	2,56

The performance data in this catalog show average values obtained while testing in an enclosed, zero-wind facility. All precipitation rates are based on a full-circle application of the nozzle to maximum radius.

Your results will vary depending on both your spacing requirements and environmental conditions.

To obtain precipitation rates for a ½ circle sprinkler, multiply the chart values by 2. For a ¼ circle sprinkler, multiply the chart values by 4.

= *Nozzles not recommended at this pressure.*

= *Optimum nozzle performance.*

All performance specifications are based on the stated working pressure available at the base of the sprinkler.

Radius shown in meters.

V-1550 Series Shrub w/COM—U.S.

(Model Nos. V-1550-SCOM, V-1550-SFCOM V-1550-SECOM & V-1550-SFECOM)

Nozzle	psi	GPM	7° Radius	25° Radius
1.0	40	1.02	16	29
1.5	50	1.44	16	30
2.0	50	2.15	17	31
3.0	50	2.52	18	32
3.0	60	3.13	19	34
4.0	50	3.47	18	33
4.0	60	4.13	19	35
4.5	50	4.05	18	35
4.5	60	4.56	19	37
6.0	55	5.41	19	38
6.0	65	6.13	20	40
8.0	60	7.18	20	42
8.0	70	8.16	21	43
9.0	60	7.90	20	42
9.0	70	9.76	21	45

Radius shown in feet. Data based on 360°.

V-1550 Series Shrub w/COM—Metric

(Model Nos. V-1550-SCOM, V-1550-SFCOM V-1550-SECOM & V-1550-SFECOM)

Nozzle	Bar	LPM	7° Radius	25° Radius
1.0	2,75	3,9	4,9	8,8
1.5	3,5	5,5	4,9	9,3
2.0	3,5	8,3	5,3	9,6
3.0	3,5	9,7	5,5	9,8
3.0	4,0	11,4	5,7	10,2
4.0	3,5	13,3	5,5	10,1
4.0	4,0	15,1	5,7	10,5
4.5	3,5	15,5	5,5	10,7
4.5	4,0	16,9	5,7	11,2
6.0	4,0	21,3	5,9	11,8
6.0	4,5	23,3	6,1	12,2
8.0	4,0	26,6	6,0	12,5
8.0	4,8	30,7	6,4	13,1
9.0	4,0	29,3	6,0	12,5
9.0	4,8	36,6	6,4	13,7

Radius shown in meters.

Lawn Pop-up—Apex @ 50 psi (3,5 Bar)

Nozzle Set	Max. Height of Spray	Distance from Sprinkler	Max. Height of Spray	Distance from Sprinkler
1	7' 8" (2,3m)	15' (4,6m)	1' 5" (0,4m)	9' (2,7m)
1.5	7' 8" (2,3m)	15' (3,6m)	1' 5" (0,4m)	9' (2,7m)
2	8' 4" (2,5m)	19' (5,8m)	1' 5" (0,4m)	10' (3,0m)
3	9' 4" (2,8m)	22' (6,7m)	1' 5" (0,4m)	10' (3,0m)
4	9' 6" (2,9m)	22' (6,7m)	1' 7" (0,5m)	12' (3,7m)
4.5	10' 6" (3,2m)	27' (8,2m)	1' 8" (0,5m)	13' (4,0m)
6	11' 0" (3,4m)	28' (8,5m)	1' 10" (0,6m)	14' (4,3m)
8	11' 6" (3,5m)	30' (9,1m)	2' 0" (0,6m)	15' (4,6m)
9	12' 0" (3,7m)	31' (9,4m)	2' 0" (0,6m)	15' (4,6m)

2001® Series

Turf, athletic fields
Radius: 48'–71'
Flow rate: 5.60–31.30 GPM
Pressure: 40–60 psi

Application: This commercial rotor features a radius up to 71 feet, as well as a number of features that provide a new level of convenience to design, installation and maintenance.

Specifications

Nozzle Performance:

2001 Series Sprinklers
Apex @ 60 psi (4,2 Bar)

	25°
Nozzle	Max. Height of Spray
6	11' 6" (3,5m)
9	13' 10" (4,1m)
12	13' 5" (4,0m)
15	14' (4,2m)
18	14' 2" (4,3m)
24	15' (4,6m)

- *Gray spreader nozzles used with the 6-and 9 GPM main nozzle.*
- *Red spreader nozzles used with all other main nozzles.*

Radius:
48'–71' (15,3–21,7m)

Flow rate:
5.60–31.30 GPM (22,2–118,5 LPM)

Recommended operating pressure range:
40–60 psi (2,8–4,2 Bar)

Maximum operating pressure:
100 psi (7 Bar)

Trajectory:
25°

Inlet:
1" (25mm) NPT female-threaded

Dimensions:
Pop-up to main nozzle: 3¾" (95mm)
Body diameter: 2½" (65mm)
Height: 8½" (215mm)

Precipitation rate:
0.23"–0.72" (7–21mm) per hour

Check valve:
Standard—maintains up to 10' (3m) elevation change

Operational Features

- Screw-in nozzles require no adjustment screw for retention
- Smart Arc™ memory feature returns arc to previous setting (even if nozzle is turned beyond trip point)
- Bi-directional, planetary, water-lubricated, gear-drive design provides extended life
- Rubber cover minimizes impact damage
- Unique, over-molded riser seal for greater debris resistance
- Check valve prevents low-head drainage and keeps laterals charged with water (standard on all models)
- Snap ring designed for ease of maintenance
- Stainless steel riser available, ideal for sandy applications
- Effluent indicator cap available for field change (Use Part Number 102-4043)
- Five-year warranty

Installation Features

- Arc adjustable from top (30°–360°)
- Color-coded nozzle tree for easy identification and installation
- Six main nozzles and two inner nozzles provided with each sprinkler
- 4-inch (101,6mm) pop-up height

Specifying Information

S | 2001 | X | XX | E

Optional	Arc	Nozzle	Optional
S—Stainless Steel	Blank—Adjustable Arc, 30–360° F—Full-circle, 360°	6 9 12 15 18 24	E—Effluent Indicator Cap

Example: A stainless steel 2001 Series Sprinkler with a full-circle, #12 nozzle and effluent indicator cap, would be specified as: **S2001-F-12-E**

2001® Series

2001 Series Performance Data—U.S.

Base Pres.	Nozzle Sets																							
	6 ● Yellow				9 ● Red				12 ● Brown				15 ● Black				18 ● Blue				24 ● Green			
psi	GPM	Rad	△*	□*	GPM	Rad	△	□	GPM	Rad	△	□	GPM	Rad	△	□	GPM	Rad	△	□	GPM	Rad	△	□
40	5.6	48	0.27	0.23	-8.1	49	0.38	0.32	10.2	50	0.45	0.39	12.6	52	0.52	0.45	14.7	54	0.56	0.48	18.3	57	0.63	0.54
50	6.5	50	0.29	0.25	-9.3	51	0.39	0.34	11.7	51	0.48	0.42	14.5	55	0.53	0.46	16.8	56	0.55	0.48	21.1	59	0.67	0.58
60	7.1	51	0.30	0.26	10.2	52	0.42	0.36	13.0	53	0.51	0.44	16.1	56	0.55	0.48	19.1	57	0.60	0.52	23.3	60	0.72	0.62
70	7.7	52	0.32	0.27	11.1	53	0.44	0.38	14.2	54	0.54	0.47	17.6	60	0.54	0.47	20.6	61	0.62	0.53	25.4	65	0.67	0.58
80	8.3	54	0.32	0.27	12.0	55	0.44	0.38	15.2	58	0.50	0.44	19.1	62	0.55	0.48	22.4	65	0.59	0.51	27.7	68	0.67	0.58
90	8.9	55	0.33	0.28	12.7	58	0.42	0.36	16.3	59	0.52	0.45	20.3	63	0.57	0.49	23.9	67	0.59	0.51	29.3	70	0.66	0.58
100	9.4	56	0.25	0.29	13.6	59	0.33	0.38	18.2	60	0.39	0.45	21.5	64	0.44	0.51	25.3	69	0.44	0.51	31.3	71	0.52	0.60

** △ Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
□ Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.
All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in feet. Data based on 360°.

2001 Series Performance Chart—Metric

Base Pressure			Nozzle Sets											
			6 ● Yellow		9 ● Red		12 ● Brown		15 ● Black		18 ● Blue		24 ● Green	
Bar	kPa	Kg/cm²	LPM	Radius	LPM	Radius	LPM	Radius	LPM	Radius	LPM	Radius	LPM	Radius
2,75	275	2,80	21,2	14,6	30,7	14,9	38,6	15,2	47,7	15,8	55,6	16,5	69,3	17,4
3,0	300	3,06	22,4	14,8	32,1	15,1	40,6	15,2	50,2	16,2	58,4	16,9	73,0	17,6
3,5	350	3,57	24,8	15,3	34,9	15,6	44,6	15,6	55,3	16,8	64,2	17,1	80,5	18,0
4,0	400	4,08	26,4	15,5	37,8	15,8	48,2	16,1	59,7	17,0	70,8	17,3	86,5	18,2
4,5	450	4,59	28,1	15,7	40,4	16,0	51,6	16,3	63,9	17,9	74,9	18,3	92,3	19,1
5,0	500	5,10	29,7	16,0	42,9	16,3	54,7	16,8	68,0	18,4	79.7	18,9	98,3	20,0
5,5	550	5,61	31,4	16,4	45,3	16,7	57,4	17,6	72,1	18,9	84,6	19,8	105	20,7
6,0	600	6,12	33,0	16,7	47,3	17,4	60,4	17,9	75,5	19,1	88,7	20,2	109	21,2
6,5	650	6,63	34,5	16,9	49,5	17,8	64,7	18,1	78,8	19,3	92,7	20,7	114	21,5
7,0	700	7,14	35,6	17,1	51,5	18,0	68,9	18,3	81,4	19,5	95,8	21,0	119	21,7

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

640 Series

Athletic fields
Radius: 47'–67'
Flow rate: 6.0–25.0 GPM
Pressure: 40–90 psi

Application: Considered the most durable, heavy-duty commercial sprinkler available, the 640 Series is the traditional, proven veteran for athletic fields and other large commercial applications

Specifications

Nozzle Performance:

640 Series Sprinklers
Apex @ 50 psi (3,5 Bar)

Nozzle	27° Max. Height of Spray
40	11' 6" (3,5m)
41	13' 10" (4,1m)
42	13' 5" (4,0m)

640 Series Sprinklers
Apex @ 75 psi (5,0 Bar)

Nozzle	27° Max. Height of Spray
44	19' 6" (6,0m)

640 Series Sprinklers
Apex @ 60 psi (4,2 Bar)

Nozzle	27° Max. Height of Spray
43	18' 8" (5,7m)

Radius:
47'–67' (14,3–20,4m)

Flow rate:
6.0–25.0 GPM (23–95 LPM)

Recommended operating pressure range:
40–90 psi (2,8–6,2 Bar)

Maximum operating pressure:
100 psi (7 Bar)

Inlet:
1" (25mm) female-threaded

Below-grade installation:
Up to ½" (13mm)
Exposed surface when buried: 1¾" (44mm)

Dimensions:
- Pop-up to nozzle: 2⅜" (60mm)
- Body diameter: 2½" (65mm)
- Cap diameter: 3¼" (83mm)
- Body height:
  Check-O-Matic: 9" (230mm)
  Valve-In-Head: 10½" (267mm)

Check-O-Matic:
Maintains up to 15' (4,6m) elevation change

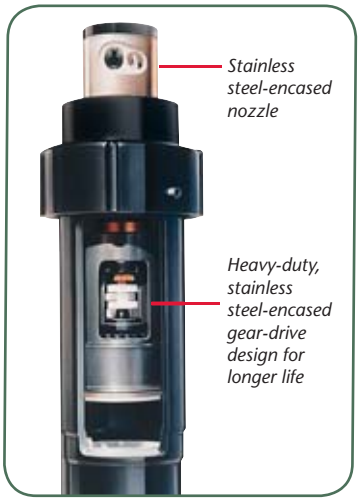
Up to ½" below-grade installation for safety

Operational Features

- Up to ½" (13mm) below-grade installation keeps rotor out of sight and prevents damage
- Durable stainless steel, engineering plastic and brass construction for reliable performance in the most demanding environments
- Optional valve-in-head—unique single-head control and hydraulic activation
- Selection of five nozzles and 12 arcs for versatility
- Several models available to meet a variety of installation requirements
- Adjustment screw allows up to 25% radius reduction
- Standard rubber cover minimizes impact damage
- Check valve prevents low-head drainage and keeps laterals charged with water (standard on all models)
- Vandal-resistant cap with locking set screw

Installation Features

- Small exposed surface diameter
- Stainless steel-encased nozzle and drive assembly
- Gear-drive design for longer life
- Basket filter screen to prevent clogging
- Stainless steel retraction spring
- Durable engineering plastic, brass and stainless steel construction
- Recycled water models available
- Five-year warranty



Specifying Information

64X 0X 4X XXX E

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

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

Most 640 sprinklers are available in component parts only. Consult Res/Com Finished Goods Price-List (Form No. 490-2843) for a complete list of sprinklers available as finished goods.

640 Series

640 Series Performance Data—U.S.

Nozzle	psi	GPM	Radius	360°		270°		238°		192°		180°		173°	
				△*	□ *	△	□	△	□	△	□	△	□	△	□
40	40	6.0	47	0.30	0.26	0.40	0.35	0.46	0.39	0.57	0.49	0.60	0.52	0.63	0.54
	50	6.7	50	0.30	0.26	0.40	0.34	0.45	0.39	0.56	0.49	0.60	0.52	0.62	0.54
	60	7.3	52	0.30	0.26	0.40	0.35	0.45	0.39	0.56	0.49	0.60	0.52	0.62	0.54
	70	8.0	53	0.32	0.27	0.42	0.36	0.48	0.41	0.60	0.52	0.63	0.55	0.66	0.57
	80	8.6	54	0.33	0.28	0.44	0.38	0.50	0.43	0.62	0.53	0.66	0.57	0.68	0.59
	90	9.2	55	0.34	0.29	0.45	0.39	0.51	0.44	0.64	0.55	0.68	0.59	0.70	0.61
41	40	9.5	48	0.46	0.40	0.61	0.53	0.69	0.60	0.86	0.75	0.92	0.79	0.95	0.83
	50	10.2	53	0.40	0.35	0.54	0.47	0.61	0.58	0.76	0.60	0.81	0.70	0.84	0.73
	60	11.0	54	0.42	0.36	0.56	0.48	0.63	0.55	0.79	0.68	0.84	0.73	0.87	0.76
	70	11.9	55	0.44	0.38	0.58	0.50	0.66	0.57	0.82	0.71	0.87	0.76	0.91	0.79
	80	12.7	56	0.45	0.39	0.60	0.52	0.68	0.59	0.85	0.73	0.90	0.78	0.94	0.81
	90	13.4	57	0.46	0.40	0.61	0.53	0.69	0.60	0.86	0.74	0.92	0.79	0.95	0.83
42	40	12.0	52	0.49	0.43	0.66	0.57	0.75	0.65	0.93	0.80	0.99	0.85	1.03	0.89
	50	12.9	55	0.47	0.41	0.63	0.55	0.72	0.62	0.89	0.77	0.95	0.82	0.99	0.85
	60	14.0	56	0.50	0.43	0.66	0.57	0.75	0.65	0.93	0.81	0.99	0.86	1.03	0.89
	70	14.7	57	0.50	0.44	0.67	0.58	0.76	0.66	0.95	0.82	1.01	0.87	1.05	0.91
	80	15.8	58	0.52	0.45	0.69	0.60	0.79	0.68	0.98	0.85	1.04	0.90	1.09	0.94
	90	16.8	58	0.56	0.48	0.74	0.64	0.84	0.73	1.04	0.90	1.11	0.96	1.16	1.00
43	40	13.2	56	0.47	0.41	0.62	0.54	0.71	0.61	0.88	0.76	0.94	0.81	0.97	0.84
	50	14.5	59	0.46	0.40	0.62	0.53	0.70	0.61	0.87	0.75	0.93	0.80	0.96	0.83
	60	15.7	59	0.50	0.43	0.67	0.58	0.76	0.66	0.94	0.82	1.00	0.87	1.04	0.83
	70	17.0	61	0.51	0.44	0.68	0.59	0.77	0.67	0.96	0.83	1.02	0.88	1.06	0.92
	80	18.3	63	0.51	0.44	0.68	0.59	0.77	0.67	0.96	0.83	1.03	0.89	1.07	0.92
	90	19.4	64	0.53	0.46	0.70	0.61	0.80	0.69	0.99	0.86	1.05	0.91	1.10	0.95
44	40	16.7	55	0.61	0.53	0.82	0.71	0.93	0.80	1.15	1.00	1.23	1.06	1.28	1.11
	50	18.6	60	0.57	0.50	0.76	0.66	0.87	0.75	1.08	0.94	1.15	1.00	1.20	1.03
	60	19.9	61	0.59	0.52	0.79	0.68	0.90	0.78	1.12	0.97	1.19	1.03	1.24	1.07
	70	21.9	63	0.61	0.53	0.82	0.71	0.93	0.80	1.15	1.00	1.23	1.06	1.28	1.11
	80	23.4	65	0.62	0.53	0.82	0.71	0.93	0.81	1.16	1.00	1.23	1.07	1.28	1.11
	90	25.0	67	0.62	0.54	0.82	0.71	0.94	0.81	1.16	1.01	1.24	1.07	1.29	1.12

Nozzle	psi	GPM	Radius	148°		127°		108°		90°		60°		45°	
				△	□	△	□	△	□	△	□	△	□	△	□
40	40	6.0	47	0.73	0.64	0.85	0.74	1.01	0.87	1.21	1.05	1.81	1.57	2.42	2.09
	50	6.7	50	0.72	0.63	0.84	0.73	0.99	0.86	1.19	1.03	1.79	1.55	2.38	2.06
	60	7.3	52	0.73	0.63	0.85	0.74	1.00	0.75	1.20	1.04	1.80	1.56	2.40	2.08
	70	8.0	53	0.77	0.67	0.90	0.78	1.05	0.91	1.27	1.10	1.90	1.65	2.53	2.19
	80	8.6	54	0.80	0.69	0.93	0.80	1.09	0.95	1.31	1.14	1.97	1.70	2.62	2.27
	90	9.2	55	0.82	0.71	0.96	0.83	1.13	0.98	1.35	1.17	2.03	1.76	2.71	2.34
41	40	9.5	48	1.11	0.96	1.30	1.12	1.53	1.32	1.83	1.59	2.75	2.38	3.67	3.18
	50	10.2	53	0.98	0.85	1.14	0.99	1.34	1.16	1.62	1.40	2.42	2.10	3.23	2.80
	60	11.0	54	1.02	0.88	1.19	1.03	1.40	1.21	1.68	1.45	2.52	2.18	3.36	2.91
	70	11.9	55	1.06	0.92	1.24	1.07	1.46	1.26	1.75	1.52	2.62	2.27	3.50	3.03
	80	12.7	56	1.09	0.95	1.27	1.10	1.50	1.30	1.80	1.56	2.70	2.34	3.60	3.12
	90	13.4	57	1.11	0.97	1.30	1.12	1.53	1.32	1.83	1.59	2.75	2.38	3.67	3.18
42	40	12.0	52	1.20	1.04	1.40	1.21	1.64	1.42	1.97	1.71	2.96	2.56	3.95	3.42
	50	12.9	55	1.15	1.00	1.34	1.16	1.58	1.37	1.90	1.64	2.85	2.46	3.79	3.29
	60	14.0	56	1.21	1.05	1.40	1.22	1.65	1.43	1.99	1.72	2.98	2.58	3.97	3.44
	70	14.7	57	1.22	1.06	1.42	1.23	1.68	1.445	2.01	1.74	3.02	2.61	4.03	3.49
	80	15.8	58	1.27	1.10	1.48	1.28	1.74	1.51	2.09	1.81	3.13	2.71	4.18	3.62
	90	16.8	58	1.35	1.17	1.57	1.36	1.85	1.60	2.22	1.92	3.33	2.89	4.44	3.85
43	40	13.2	56	1.14	0.98	1.32	1.15	1.56	1.35	1.87	1.62	2.81	2.43	3.74	3.24
	50	14.5	59	1.13	0.97	1.31	1.14	1.54	1.34	1.85	1.60	2.78	2.41	3.71	3.21
	60	15.7	59	1.22	1.06	1.42	1.23	1.67	1.45	2.01	1.74	3.01	2.61	4.01	3.47
	70	17.0	61	1.23	1.07	1.44	1.25	1.69	1.47	2.03	1.76	3.05	2.64	4.06	3.52
	80	18.3	63	1.25	1.08	1.45	1.25	1.71	1.48	2.05	1.78	3.08	2.66	4.10	3.55
	90	19.4	64	1.28	1.11	1.49	1.29	1.75	1.52	2.11	1.82	3.16	2.74	4.21	3.65
44	40	16.7	55	1.49	1.29	1.74	1.50	2.04	1.77	2.46	2.13	3.68	3.19	4.91	4.25
	50	18.6	60	1.40	1.21	1.63	1.41	1.91	1.66	2.30	1.99	3.45	2.99	4.60	3.98
	60	19.9	61	1.45	1.25	1.68	1.46	1.98	1.71	2.38	2.06	3.57	3.09	4.76	4.12
	70	21.9	63	1.49	1.29	1.74	1.53	2.04	1.84	2.45	2.76	3.68	3.68	4.91	4.25
	80	23.4	65	1.50	1.30	1.74	1.51	2.05	1.78	2.46	2.13	3.70	3.20	4.93	4.27
	90	25.0	67	1.50	1.30	1.75	1.52	2.06	1.79	2.48	2.15	3.72	3.22	4.95	4.29

**△ Precipitation rates are for triangular spacing, shown in inches per hour, calculated at 50% of diameter.*
** □ Precipitation rates are for square spacing, shown in inches per hour, calculated at 50% of diameter.*
All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in feet. Data based on 360°.
***Note:** For the 640, differing arcs cannot be valved together.*

640 Series

640 Series Performance Data—Metric

Nozzle	Bar	kPa	Kg/cm²	LPM	Radius	Precip. Rate* △	Precip. Rate* □
40	3,0	300	3,06	23,6	14,6	7,7	6,6
	3,5	350	3,57	25,5	15,3	7,5	6,5
	4,0	400	4,08	27,2	15,7	7,6	6,6
	4,5	450	4,59	29,0	16,0	7,8	6,8
	5,0	500	5,10	30,9	16,2	8,1	7,1
	5,5	550	5,61	32,5	16,5	8,3	7,2
	6,0	600	6,12	34,1	16,7	8,5	7,3
41	3,0	300	3,06	36,9	15,2	11,0	9,6
	3,5	350	3,57	38,8	16,2	10,2	9,6
	4,0	400	4,08	41,0	16,4	10,5	9,1
	4,5	450	4,59	43,4	16,6	10,9	9,4
	5,0	500	5,10	45,8	16,8	11,2	9,7
	5,5	550	5,61	48,0	17,1	11,4	9,8
	6,0	600	6,12	49,9	17,3	11,5	10,0
42	3,0	300	3,06	46,6	16,2	12,3	10,6
	3,5	350	3,57	49,1	16,8	12,0	10,4
	4,0	400	4,08	52,2	17,0	12,5	10,8
	4,5	450	4,59	54,4	17,2	12,7	11,0
	5,0	500	5,10	56,7	17,5	12,8	11,1
	5,5	550	5,61	59,7	17,7	13,2	11,4
	6,0	600	6,12	62,5	17,7	13,8	11,9
43	3,0	300	3,06	51,7	17,4	11,8	10,2
	3,5	350	3,57	55,2	18,0	11,8	10,2
	4,0	400	4,08	58,5	18,0	12,5	10,8
	4,5	450	4,59	62,0	18,3	12,8	11,1
	5,0	500	5,10	65,6	18,7	13,0	11,2
	5,5	550	5,61	69,1	19,2	13,0	11,2
	6,0	600	6,12	72,2	19,4	13,3	11,5
44	3,0	300	3,06	65,7	17,3	15,2	13,1
	3,5	350	3,57	70,8	18,3	14,6	12,7
	4,0	400	4,08	74,3	18,5	15,0	13,0
	4,5	450	4,59	79,3	18,9	15,4	13,3
	5,0	500	5,10	84,3	19,4	15,5	13,4
	5,5	550	5,61	88,4	19,8	15,6	13,5
	6,0	600	6,12	92,8	20,2	15,7	13,6

*△ *Precipitation rates are for triangular spacing, shown in millimeters per hour, calculated at 50% of diameter.*
* □ *Precipitation rates are for square spacing, shown in millimeters per hour, calculated at 50% of diameter.*
All performance specifications are based on the stated working pressure available at the base of the sprinkler.
Radius shown in meters. Data based on 360°.
***Note:** For the 640, differing arcs cannot be valved together.*

Official Turf Care Provider
to the
Rose Bowl
Stadium

Accessories

Recycled Water Indicators

300 & 340 Series
89-7853
- Lavender cover for 300 and 340 Series Omni nozzle
- Use with part no. 300-15 (Omni Nozzle)

89-7854
- Lavender cover for 300 and 340 Series Omni nozzle high-pop models
- Use with part no. 300-25 (Omni Nozzle)

89-7889
- Lavender plug for 300 and 340 Series with fixed-radius nozzles

XP-300, S600 & S700 Series
89-3816
- Lavender plug for use with XP-300, Super 600 and Super 700 Series nozzles

V-1550 Series
89-7857
- Lavender cover for V-1550 Series models

Rubber Covers

S700 Series
700-10
- Rubber cover for Super 700 Series models

Installation/Adjustment Tools

XP-300, S600 & S700 Series
995-33
- 1/16" (2mm) hex driver tool for XP-300, Super 600 and Super 700 Series models
- Designed for radius adjustments

Mini 8 & S800 Series
102-2024
- Adjustment tool for Mini 8 and Super 800 Series models

S700 Series
89-1375
- Adjustment tool for Super 700 Series models

V-1550 Series
89-7350
- Adjustment tool for V-1550 Series models

2001 Series
89-4717
- Adjustment tool for 2001 Series models

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

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

995-42
- Canister removal tool for 640 Series models

996-51
- Cap removal tool for 640 Series models

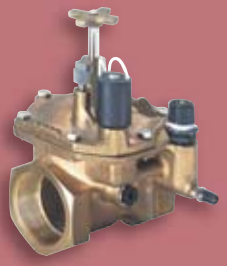
995-37
- Seal installation tool for 640 Series models

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

Valves Overview

		EZ-Flo Plus	254/264 Series	250/260 Series	
Flow Range		0.25-30 GPM	0.25-30 GPM	0.5-30 GPM	
Operating Pressure		10-150 PSI Max	10-150 PSI Max	20-150 PSI Max	
Conditions	Electrically Activated Systems	X	X	X	
	Hydraulically Activated Systems			X	
	Pin Type Systems			X	
	Effluent Water	X	X	X	
Sizes	3/4" (20 mm)	X	X		
	1" (25 mm)	X	X	X	
	1 1/4" (32 mm)	X			
	1 1/2" (40 mm)				
	2" (50 mm)				
	2 1/2" (65 mm)				
	3" (75 mm)				
Configurations	Angle	X			
	Anti-Siphon	X			
	Inline/Globe	X	X	X	
Inlet/Outlet	Threaded (Female)	X		X	
	Slip	X			
	Male X Male	X	X		
	Male X Barb	X	X		
Features	Manual Flow Control	X	X	X	
	Pressure Regulation				
	Internal Bleed	X			
	External Bleed (Flush)	X	X	X	
Body Construction	ABS		X	X	
	PVC	X			
	Glass-filled Nylon		X	X	
	Glass-filled Polypropylene	X			
	Brass				
Warranty		3 Years	2 Years	2 Years	





	252 Series	P-220 Series	220 Series
	5.0-90 GPM	5.0-300 GPM	5.0-350 GPM
	20-150 PSI Max	10-220 PSI Max	10-220 Psi Max
	X	X	X
	X		X
	X		
	X	X	X
	X	X	X
	X	X	X
	X	X	X
		X	X
			X
	X	X	X
	X	X	X
	X	X	X
	X	X	X
		X	X
		X	
	X	X	X
	X		
	X	X	
			X
	2 Years	5 Years	5 Years

EZ-Flo® Plus Jar-Top Valves

¾", 1", 1¼"
Electric
Globe, Angle, Anti-siphon
Residential

Application: Multiple inlet and outlet configurations as well as a jar-top design give this valve the flexibility and serviceability that can meet residential applications anywhere in the world.

Specifications

Recommended flow range (by size):

¾" (20mm): 0.25–20 GPM (1–76 LPM)
1" (25mm): 0.25–30 GPM (1–114 LPM)
1¼" (32mm): 0.25–30 GPM (1–114 LPM)

Operating pressure:

10–150 psi (0,7–10 Bar)

Solenoid (24 V ac):

Inrush: 0.4 amps, 9.60 VA
Holding: 0.2 amps, 4.80 VA

Dimensions (by model):

Female: 5⅛" H x 3" W x 4" L (130 x 75 x 101mm)
Male: 5⅛" H x 3" W x 5½" L (130 x 75 x 140mm)
Angle: 5⅛" H x 3" W x 5¾" L (135 x 75 x 95mm)
Anit-siphon: 6" H x 3" W x 6⅞" L (152 x 75 x 175mm)

Body configurations:

Type	Size		
	¾"	1"	1¼"
Anti-siphon	✓	✓	
Inline		✓	
Angle		✓	
FxF NPT		✓	
MxM NPT		✓	
Slip x Slip		✓	
M NPT x Barb		✓	✓
Flow Control			
with	✓	✓	✓
without	✓	✓	✓

Features

- Jar-top design with heavy-duty cap ring requires no screws and provides fast and easy servicing
- Broad selection of inlet and outlet configurations and choice of sizes including anti-siphon meet the installation requirements of different geographic regions and piping systems
- Manual internal and external bleed provides versatility when a user doesn't want to walk back to the controller to turn on a station
- Heavy-duty corrosion- and UV-resistant PVC, glass-filled nylon and stainless steel construction
- Tough, double-beaded Santoprene® diaphragm
- Full stainless steel metering system
- Encapsulated solenoid with captured hex plunger, spring and O-ring
- Recycled water solenoid and warning tag (Part No. RW60-Kit) available
- Available with or without flow control
- Three-year warranty

Friction Loss Data—U.S.

Size	Model	GPM Flow					
		0.25	5	10	15	20	30
1¼" (32mm)	Inline	1.8	2.3	2.8	3.0	4.1	4.9
1" (25mm)	Inline	2.0	3.5	4.0	3.0	3.3	6.2
1" (25mm)	Angle	2.0	3.3	2.2	1.8	1.9	3.9
1" (25mm)	Anti-siphon	2.0	2.1	3.1	2.3	3.8	8.1
¾" (20mm)	Anti-siphon	2.0	4.2	4.2	4.8	7.6	—

Friction Loss Data—Metric

Size	Model	LPM Flow					
		1	19	38	57	76	114
32mm (1¼")	Inline	0,13	0,16	0,19	0,21	0,28	0,34
25mm (1")	Inline	0,14	0,24	0,28	0,31	0,32	0,43
25mm (1")	Angle	0,14	0,22	0,15	0,12	0,13	0,27
25mm (1")	Anti-siphon	0,14	0,14	0,31	0,16	0,26	0,56
20mm (¾")	Anti-siphon	0,14	0,29	0,29	0,33	0,52	—

Note: *For optimum sprinkler performance when designing a system, calculate total friction loss to ensure sufficient downstream pressure. Flow rates are recommended not to exceed 5 psi (0,3 bar) loss. U.S. values are listed in psi. Metric values are listed in bar*

Specifying Information

EZF [X] [X] [0X]

Flow Control	Body Style	Size
0—Without 2—With	0—1" Slip x Slip 1—1" Male x Male NPT 5—Male NPT x Barb 6—1" Female NPT 8—1" Angle 9—Anti-siphon	03—¾" (20mm) 04—1" (25mm) 05—1¼" (32mm)

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

A jar-top design for easy servicing.

254/264 Valves

¾", 1"
Electric
Globe
Residential, Light Commercial

Application: These durable valves are designed for contractors who prefer male inlets and male or barbed outlets and need a valve that can withstand the pressures of large residential and light commercial applications.

Features

- Male inlets along with male or barbed outlets meet the installation requirements of contractors
- Single-piece rubber diaphragm for reliable, leak-free closing
- Tough, glass-filled Zytel cap and body allow this valve to be rated up to 150 psi
- Manual flow control adjustable to zero flow
- Self-cleaning, stainless steel metering pin
- External manual bleed
- 18" (45cm) lead wires
- Single-piece rubber diaphragm
- Recycled water flow-control knob available
- Available with or without flow control
- Low-inrush solenoid
- Two-year warranty

254/264 Series Friction Loss Data—U.S.

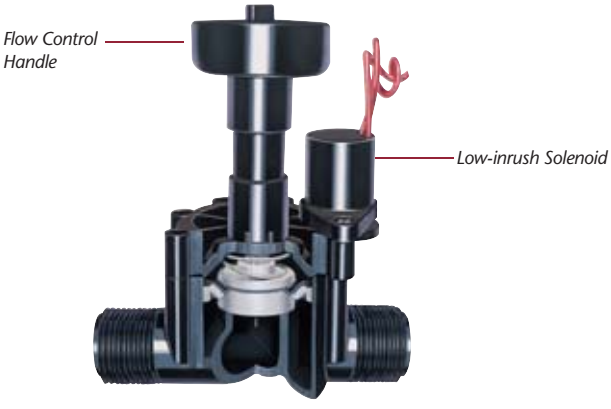
Size	Model	GPM Flow											
		.5	1	3	5	10	15	20	25	30	35	40	45
¾" (20mm)	Electric	<1.0	<1.0	<1.0	1.5	3.0	6.5						
1" (25mm)	Electric				2.0	2.0	2.3	3.1	4.0	5.4	7.0	8.7	10.5

Note: For optimum sprinkler performance when designing a system, calculate total friction loss to ensure sufficient downstream pressure. Flow rates are recommended not to exceed 5 psi loss. Values are listed in psi.

254/264 Series Friction Loss Data—Metric

Size	Model	LPM Flow							
		2	25	50	75	100	125	150	175
20mm (¾")	Electric	<0,1	0,1	0,4	0,7				
25mm (1")	Electric		0,1	0,2	0,2	0,3	0,4	0,6	0,8

Note: For optimum sprinkler performance when designing a system, calculate total friction loss to ensure sufficient downstream pressure. Flow rates are recommended not to exceed 0,3 bar loss. Values are listed in bar.
For kPa values, multiply tabular values by 100. For Kg/cm², multiply tabular values by 1,02.



Specifications

Recommended flow range (by size):
¾" (20mm): 0.25–15.0 GPM (1–57 LPM)
1" (25mm): 5.0–30.0 GPM (19–114 LPM)

Operating pressure (by size):
¾" (20mm): 10–150 psi (0,7–10 Bar)
1" (25mm): 20–150 psi (1,4–10 Bar)

Solenoid:
24 V ac
¾" (20mm): Inrush: 0.25 amps, 6.00 VA
Holding: 0.19 amps, 4.56 VA
1" (25mm): Inrush: 0.30 amps, 7.20 VA
Holding: 0.20 amps, 4.80 VA

Dimensions (by size):
¾" (20mm):
– 3" H x 4" W (76 x 102mm)
1" (25mm):
– 254 (with flow control): 6" H x 4½" W (152 x 115mm)
– 264 (w/o flow control): 4½" H x 4½" W (115 x 115mm)

Burst pressure safety rating:
750 psi (50 Bar)

Body configurations	*Size*	
Type	¾"	1"
M x M	✓	✓
M x B		✓
Flow Control		
with	✓	✓
without	✓	✓

Specifying Information

2X4 0X 0X

Flow Control	Body Style	Size
5—w/Flow Control 6—w/o Flow Control	0—Male Thread x Male Thread 1—Male Thread x Barb	3— ¾" (20mm) 4—1" (25mm)

Example: A 1" (25mm) electric 264 Series Valve without flow control with a male thread barb, would be specified as: **264-16-04**

250/260 Valves

1"
Electric, Hydraulic, Pin-type
Globe
Residential, Light Commercial

Application: These durable valves are designed for contractors who prefer female inlets and outlets and need a valve that can withstand the pressures of large residential and light commercial applications.

260-06-04 250-00-04 250-06-04

Specifications

Recommended flow range (by size):

1" (25mm): 5.0–30.0 GPM (19–114 LPM)

Operating pressure (by size):

1" (25mm): 20–150 psi (1,4–10 Bar)

Solenoid:

24 V ac (50/60 Hz)
Inrush: 0.30 amps, 7.20 VA
Holding: 0.20 amps, 4.80 VA

Dimensions:

1" (25mm):
- 250 (with flow control): 6" H x 4½" W (152 x 114mm)
- 260 (w/o flow control): 4½" H x 4½" W (114 x 114mm)

Burst pressure safety rating:

750 psi (50 Bar)

Body configurations	*Size*
Type	1"
F x F	✓
Flow Control	
with	✓
without	✓

Features

- Single-piece rubber diaphragm for reliable, leak-free closing
- Tough, glass-filled Zytel cap and body allow this valve to be rated up to 150 psi
- Manual flow control adjustable to zero
- Self-cleaning, stainless steel metering pin
- External manual bleed
- Low-inrush solenoid
- 18" (45cm) lead wires (electric models)
- Single-piece rubber diaphragm
- Recycled water flow-control knob available
- Available with or without flow control
- Two-year warranty

250/260 Series Friction Loss Data—U.S.

Size	Model	GPM Flow						
		0.5	10	15	20	25	30	40
1" (25mm)	Hydraulic	<1.0	1.0	2.0	3.0	4.0	6.0	9.5
1" (25mm)	Electric		4.4	4.5	5.0	5.0	7.0	9.5

Note: *For optimum sprinkler performance when designing a system, calculate total friction loss to ensure sufficient downstream pressure. Flow rates are recommended not to exceed 5 psi loss. Values listed in psi.*

250/260 Series Friction Loss Data—Metric

Size	Model	LPM Flow						
		20	40	60	80	100	125	150
1" (25mm)	Hydraulic	<0,1	0,1	0,1	0,2	0,3	0,5	0,6
1" (25mm)	Electric		0,3	0,3	0,3	0,4	0,5	0,6

Note: *For optimum sprinkler performance when designing a system, calculate total friction loss to ensure sufficient downstream pressure. Flow rates are recommended not to exceed 0,3 bar loss. Values listed in bar. For kPa values, multiply tabular values by 100. For Kg/cm² values, multiply tabular values by 1,02.*

Specifying Information

2X0 0X 04

Flow Control	Activation Type	Size
5—w/Flow Control 6—w/o Flow Control	0—Pin-type Hydraulic 1—Normally Open Hydraulic 6—Electric	04—1" (25mm)

Example: A 1" (25mm) 250 Series Valve without flow control and electric activation, would be specified as: **250-06-04**

252 Valves

1", 1½", 2"
Electric, Hydraulic
Globe, Angle
Commercial

Application: This durable valve is designed to handle the needs of every commercial application, whether electric or hydraulic. The debris-resistant design is tested and proven to perform under the harshest conditions.

Features

- Fabric-reinforced rubber diaphragm provides long-term tear and stretch tolerance
- Debris-resistant models that can operate in the harshest of climates with dirty water
- Globe and globe/angle built into one valve
- 1", 1½" and 2" (25mm, 40mm and 50mm) female inlet/outlet NPT
- Manual flow control
- External manual bleed
- 24" (60cm) lead wires (1½" and 2" electric [40mm and 50mm] electric models) or 18" lead wires (1" [25mm] electric model)
- Self-cleaning, stainless steel metering pin (electric)
- Removable, self-flushing, 120-mesh stainless steel screen
- Tough, glass-filled Zytel® cap
- Single-piece diaphragm
- Recycled water flow-control knob available for a greater range of uses
- Two-year warranty

Specifications

Recommended flow range (by size):
1" (25mm): 5.0–20 GPM (19–91 LPM)
1½" (40mm): 25–70 GPM (95–318 LPM)
2" (50mm): 60–90 GPM (227–409 LPM)

Operating pressure:
20–150 psi (1,4–10 Bar)

Solenoid (24 V ac, 50/60 Hz):
Inrush: 0.30 amps, 7.20 VA
Holding: 0.20 amps, 4.80 VA

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

Burst pressure safety rating:
750 psi (50 Bar)

(Debris-resistant model)

Recommended flow range (by size):
1½" (40mm): 25–90 GPM (95–409 LPM)
2" (50mm): 60–90 GPM (230–409 LPM)

Operating pressure:
20–150 psi (1,4–10 Bar)

Solenoid (24 V ac, 50/60 Hz):
Inrush: 0.30 amps, 7.20 VA
Holding: 0.20 amps, 4.80 VA

Dimensions (by size):
1½" (25mm) 7¾" H x 6" W (197 x 152mm)
2" (50mm): 9½" H x 7" W (241 x 178mm)

Burst pressure safety rating:
750 psi (50 Bar)

Body configurations:

Type	Size		
	1"	1½"	2"
FxF NPT	✓	✓	✓
Flow Control with	✓	✓	✓

252 Series Friction Loss Data—U.S.

Size	Type	Configuration	GPM Flow															
			5	10	20	25	30	40	50	60	70	80	100	120	150	170	180
1½" (40mm)	Hydraulic	Globe				1.0	1.0	2.0	3.0	4.0	5.5	6.5	10.5	13.5			
		Angle				1.0	1.0	1.5	1.5	3.0	4.0	5.0	7.0	11.0			
2" (50mm)	Hydraulic	Globe								1.5	2.0	2.0	3.5	5.0	8.0	10.0	11.0
		Angle								1.0	1.0	1.5	2.0	3.0	5.0	6.0	6.0
1" (25mm)	Electric	Globe	3.0	4.0	5.0	6.0	7.0	9.5									
		Angle	2.0	3.5	4.5	4.5	5.0	7.5									
1½" (40mm)	Electric	Globe				1.5	1.0	2.0	3.0	4.0	5.0	7.0	11.0	15.0			
		Angle				1.5	1.0	1.5	2.0	3.0	3.0	5.0	7.0	9.0			
2" (50mm)	Electric	Globe								2.0	2.0	2.5	3.5	5.5	8.0	10.0	11.0
		Angle								1.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0

252 Series Friction Loss Data—Metric

Size	Type	Configuration	LPM Flow													
			25	50	75	100	125	150	175	200	250	300	400	500	600	700
40mm (1½")	Hydraulic	Globe				0,07	0,09	0,14	0,18	0,23	0,34	0,44	0,78	1,06		
		Angle				0,07	0,08	0,10	0,10	0,13	0,25	0,34	0,56	0,93		
50mm (2")	Hydraulic	Globe									0,14	0,17	0,27	0,43	0,61	0,79
		Angle									0,07	0,13	0,23	0,30	0,37	0,52
25mm (1")	Electric	Globe	0,2	0,30	0,34	0,42	0,53	0,65								
		Angle	0,2	0,26	0,31	0,32	0,40	0,51								
40mm (1½")	Electric	Globe				0,10	0,11	0,14	0,18	0,23	0,32	0,47	0,84	1,20		
		Angle				0,09	0,08	0,10	0,12	0,16	0,21	0,33	0,52	0,70		
50mm (2")	Electric	Globe									0,14	0,17	0,28	0,45	0,61	0,79
		Angle									0,07	0,13	0,23	0,30	0,37	0,52

= Debris-resistant models

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.

U.S. values shown in psi. Metric values shown in bar. For kPa values, multiply tabular values by 100. For Kg/cm² values, multiply tabular values by 1,02.

Specifying Information

252 XX 0X

Activation Type	Size
06—1" (25mm) Electric	4—1" (25mm)
20—1½" (40mm) Pin-type Hydraulic	6—1½"(40mm)
21—Normally Open Hydraulic	8—2" (50mm)
25—1½" or 2" (40 or 50mm) Electric, Debris-resistant	
26—1½" or 2" (40 or 50mm) Electric	

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

P-220 Valves

Featuring Spike-Guard™ Solenoid Technology

1", 1½", 2", 3"
Electric, Pressure-regulating
Globe, Angle
Commercial

Application: These heavy-duty glass-filled nylon valves are specially designed for commercial applications with pressures up to 220 psi, but also have the ability to pressure regulate the flow through the valve anywhere from 5–100 psi.

Specifications

Recommended flow range (by size):

1" (25mm): 5–35 GPM (20–159 LPM)
1½" (40mm): 30–110 GPM (114–400 LPM)
2" (50mm): 80–180 GPM (300–600 LPM)
3" (75mm): 150–300 GPM (568–1100 LPM)

Operating pressure (by model):

Electric: 10–220 psi (0,7–15 Bar)
Pressure-regulating:
– Outlet (EZR-30): 5–30 psi, ± 3 psi (0,3–2,0 Bar ± 0,2 Bar)
– Outlet (EZR-100): 5–100 psi, ± 3 psi (0,3–7,0 Bar ± 0,2 Bar)
– Inlet: 15–220 psi (1,0–15 Bar)
– Minimum pressure differential (between inlet and outlet required for regulation: 10 psi (0,7 Bar)

Solenoid (24 V ac, 50/60 Hz Standard):

– Inrush: (50 Hz) 0.17 amps
(60 Hz) 0.12 amps
– Holding: (50 Hz) 0.15 amps
(60 Hz) 0.1 amps

Dimensions (by size):

1" (25mm): 6¾" H x 3⅝" W (171 x 92mm)
1½" (40mm): 7¼" H x 3⅝" W (184 x 92mm)
2" (50mm): 9½" H x 6⅛" W (241 x 156mm)
3" (75mm): 10¾" H x 6⅛" W (273 x 156mm)

Burst pressure safety rating:

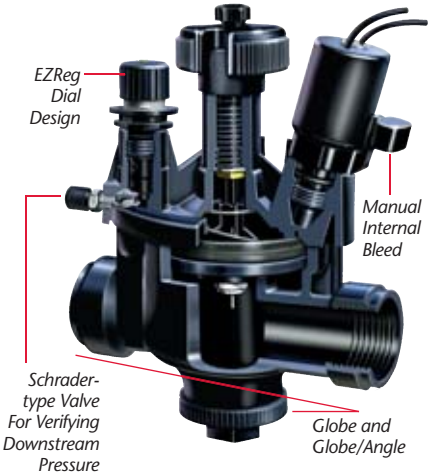
750 psi (50 Bar)

Body configurations:

Type	Size			
	1"	1½"	2"	3"
FxF NPT	✓	✓	✓	✓
Globe/Angle	✓	✓	✓	✓
Flow Control with	✓	✓	✓	✓

Features

- The Spike-Guard™ solenoid features very low power consumption, which reduces wire size requirements, allows twice as many valves to run simultaneously on a transformer and lowers power costs
- With a lightning rating exceeding 20,000 volts, the new 220 Series brass valves offer nearly three times the lightning protection of competitive products
- Precise, pressure control option with compact EZReg™ (can be factory installed) dial design. Technology does not effect friction loss unlike competitive valves.
- Tough, glass-filled nylon and stainless steel construction
- 1", 1½", 2" and 3" (25mm, 40mm, 50mm and 75mm) female inlet/outlet
- External manual bleed
- Pressure regulates in electric or manual modes and is serviceable under pressure
- No external tubing for either electric or pressure-regulating models
- Internal downstream manual bleed allows for manually setting pressure regulation
- 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 (20 LPM) with EZReg
- Low-power requirement for longer wire runs
- Recycled water solenoid and warning tag
- Five-year warranty



220-psi maximum pressure rating for dependable performance in high-pressure applications.

P-220 Valves

Electric & Pressure-regulating

Spike-Guard Solenoid Technology

P-220 Series Friction Loss Data—U.S.*

Size	Configuration	GPM Flow																					
		5	10	20	30	40	50	60	70	80	90	100	110	120	130	140	150	180	200	225	250	275	300
1" (25mm)	Globe	4.00	4.20	3.20	4.10	7.20	10.90																
	Angle	4.00	4.20	3.10	2.70	4.80	7.90																
1½" (40mm)	Globe				1.60	2.30	3.60	5.20	7.00	9.20	11.70	14.40	17.50										
	Angle				1.30	1.60	2.80	4.00	5.50	7.10	9.00	11.00	13.30										
2" (50mm)	Globe									2.10	2.70	3.30	4.00	4.80	5.60	6.50	7.50	8.05					
	Angle									1.20	1.60	2.00	2.40	2.80	3.30	3.90	4.40	5.10					
3" (75mm)	Globe																2.50	3.00	4.10	5.30	6.70	8.30	10.10
	Angle																1.90	2.40	3.30	4.30	5.50	6.90	8.50

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 loss. Values shown in psi.*

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	0,29	0,25	0,25	0,26	0,32	0,43	0,55	0,69	0,82													
	Angle	0,29	0,35	0,21	0,20	0,21	0,29	0,38	0,49	0,61													
40mm (1½")	Globe					0,12	0,14	0,18	0,23	0,28	0,43	0,62	0,85	1,11									
	Angle					0,09	0,10	0,13	0,17	0,22	0,34	0,48	0,65	0,85									
50mm (2")	Globe											0,14	0,20	0,25	0,32	0,40	0,48	0,54					
	Angle											0,08	0,12	0,15	0,19	0,24	0,29	0,32					
75mm (3")	Globe																	0,18	0,24	0,32	0,41	0,52	0,65
	Angle																	0,14	0,19	0,26	0,34	0,43	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.*

Precise Pressure Regulation

An accurate and visibly adjustable dial, coupled with a forward-flow valve design allows the 220 Series with the EZReg module to regulate with flows of only 5 GPM (1" valve) and requires only 10 psi differential to operate. The pressure regulator is perfect for retrofit projects and can be easily and quickly installed (even under pressure) with no danger of water geysers from the removed solenoid area or valve opening. The EZReg regulates in the manual mode should power be unavailable. A standard, Schrader-type valve permits quick verification of downstream operating pressure.

Valve Wire Sizing Chart

Maximum One-way Distance (in ft.) Between Controller and Valve Using Spike-Guard™ Solenoid*

Ground Wire	Control Wire						
	18	16	14	12	10	8	6
18	2040	2520	2940	3280	3540	3720	3860
16	2520	3260	4000	4660	5220	5620	5920
14	2940	4000	5180	6360	7420	8300	8960
12	3280	4660	6360	8240	10100	11800	13180
10	3540	5220	7420	10100	13180	16060	18770
8	3720	5260	8300	11800	16060	20800	25540
6	3860	5960	8960	13180	18700	25540	33080

** Solenoid Model: 24 V ac Pressure: 150 psi*
Voltage Drop: 4 V Minimum Operating Voltage: 20 V Amperage (peak) 0.12 A

Specifying Information

P220 | 2X | X | X

Type	Configuration	Solenoid	Size
P220—P-220 Series Plastic Valve	26—NPT, Electric 27—NPT, Pressure-regulated (5–100)	0—Solenoid 6—Less Solenoid 9—DC Latching Solenoid	4—1" (25m) 6—1½" (40mm) 8—2" (50mm) 0—3" (75mm)

Options for P-220 Series

EZR-30	EZReg, 5–30 psi Regulator Module
EZR-100	EZReg, 5–100 psi Regulator Module
RW60-Kit	Recycled Water (Lavender) Solenoid Assembly (24 V ac, 60 Hz) and Warning Tag)
DCLS-P	Potted DC Latching Solenoid Assembly

Example: A 1" (25mm) P-220 Series plastic electric, pressure-regulating valve with a 60 Hz solenoid, would be specified as: **P220-27-04**

Note: *Less solenoid available in 1" (25mm), 1½" (40mm), 2" (50mm) and 3" (75mm) electric NPT and BSP versions only.*

220 Brass Valves

Electric & Pressure-regulating Featuring Spike-Guard™ Solenoid Technology

1", 1¼", 1½", 2", 2½", 3"
Electric, Pressure-regulating
Globe, Angle
Commercial

Application: Built for commercial applications such as sports fields, these heavy-duty brass and stainless steel valves feature pressure regulation and are designed to withstand high-pressure applications.

Specifications

Recommended flow range (by size):

1" (25mm): 5–40 GPM (19–151 LPM)
1¼" (32mm): 20–100 GPM (75–378 LPM)
1½" (40mm): 20–130 GPM (75–492 LPM)
2" (50mm): 30–180 GPM (114–681 LPM)
2½" (65mm): 60–250 GPM (227–946 LPM)
3" (75mm): 80–350 GPM (303–1325 LPM)

Operating pressure (by model):

Electric: 10–220 psi (0,7–15 Bar)
Pressure-regulating:
– Outlet (EZR-100): 5–100 psi, ± 3 psi (0,3–7,0 Bar ± 0,2 Bar)
– Inlet: 15–220 psi (1,0–15 Bar)
– Minimum pressure differential (between inlet & outlet required for regulation: 10 psi (0,7 Bar)

Solenoid (24 V ac, 50/60 Hz, Standard):

– Inrush: (50 Hz) 0.17 amps
(60 Hz) 0.12 amps
– Holding: (50 Hz) 0.15 amps
(60 Hz) 0.1 amps

Dimensions (by size):

1" (25mm) model: 5½" H x 5" W (145 x 125mm)
1¼" (32mm) model: 6½" H x 6" W (165 x 150mm)
1½" (40mm) model: 6⅛" H x 6" W (165 x 150mm)
2" (50mm) model: 7½" H x 7" W (191 x 178mm)
2½" (65mm) model: 8¾" H x 8½" W (223 x 216mm)
3" (75mm) model: 8¾" H x 8½" W (223 x 216mm)

Burst pressure safety rating:

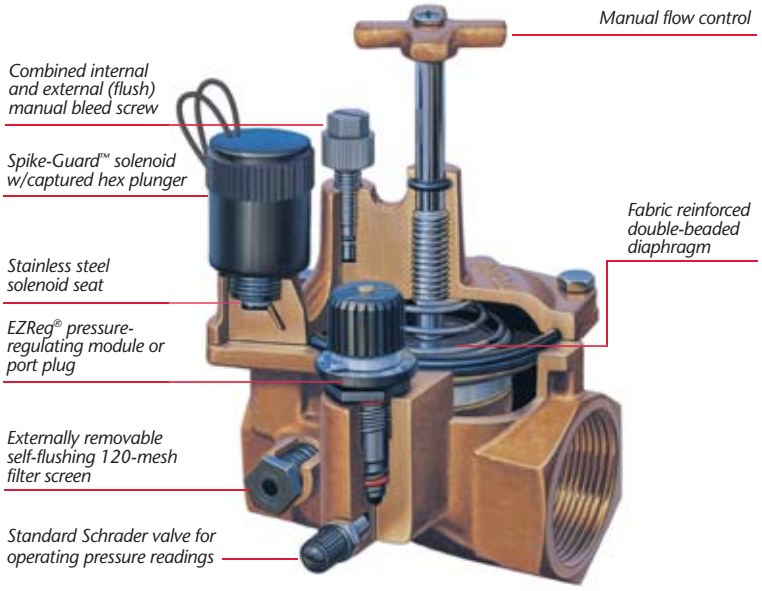
750 psi (50 Bar)

Body configurations:

Type	Size					
	1"	1¼"	1½"	2"	2½"	3"
Globe	✓	✓	✓	✓		
Angle					✓	✓
Flow Control with	✓	✓	✓	✓	✓	✓

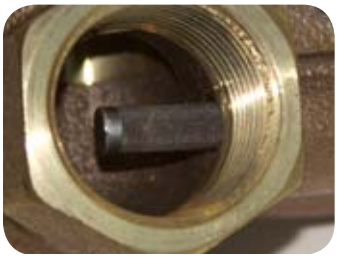
Features

- The Spike-Guard™ solenoid features very low power consumption, which reduces wire size requirements, allows twice as many valves to run simultaneously on a transformer and lowers power costs
- With a lightning rating exceeding 20,000 volts, the new 220 Series brass valves offer nearly three times the lightning protection of competitive products
- Easily removable, self-flushing 120 mesh, stainless steel filter screen to trap debris before it can cause problems
- Internal downstream manual bleed keeps valve box dry and allows for manually setting pressure regulation
- Precise pressure control option with compact EZReg dial-design technology (factory or field installed—no need to remove solenoid)
- 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
- Easily removable, self-flushing, 120-mesh, stainless steel filter screen
- No external tubing for either electric or pressure regulating models
- External manual bleed for system flushing
- Manual flow control: adjustable to zero flow
- Tough, double-beaded, fabric-reinforced rubber diaphragm
- Stainless steel diaphragm support ring for minimum wear
- Stainless steel solenoid seat for longer life and positive shutdown
- Five-year warranty



220 Series Brass Valves
Electric & Pressure-regulating

Spike-Guard Solenoid Technology



Dirty Water Resistance

The 220 Series 120-mesh stainless steel filter screen is positioned n the supply side of the water stream. It is constantly flushed by the flow, enabling the use of very dirty water without clogging and valve closure failure. Stainless steel construction of both the filter screen and the valve solenoid seat ensure long component life in all types of water and pressures. In addition, the filter screen is easily removed for cleaning and ther eare not bulky tubes that can break or deterioriate.

220 Series Friction Loss Data—U.S.

Model	Type	GPM Flow																		
		5	10	15	20	30	40	50	60	70	80	100	120	150	170	180	200	250	300	350
1" (25mm)	Electric	2.0	2.5	1.5	2.5	5.5	8.9													
1¼" (32mm)	Electric				4.4	4.7	5.1	5.5	5.8	7.2										
1½" (40mm)	Electric				3.9	4.2	4.6	4.9	5.2	5.5	7.2									
2" (50mm)	Electric					1.0	2.0	2.0	2.5	3.0	3.5	6.0	7.5	10.0	12.0	14.0				
2½" (65mm)	Electric								2.0	2.2	2.3	2.4	2.5	3.0	4.0	4.5	5.5	7.0		
3" (75mm)	Electric										2.2	2.4	2.5	3.0	4.0	4.5	5.5	6.5	7.0	7.5
1" (25mm)	Hydraulic	<1	<1	1.5	2.5	5.5	7.0													
1¼" (32mm)	Hydraulic				2.0	2.7	3.7	4.8	6.0	8.0										
1½" (40mm)	Hydraulic				<1	1.5	2.5	3.0	4.5	6.0	8.0									
2" (50mm)	Hydraulic					<1	1.0	1.1	1.5	2.5	3.0	5.5	7.0	10.0	11.5	14.5				

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.
Values shown in psi.

220 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														
32mm (1¼")	Electric			0,38	0,42	0,47	0,51	0,56	0,61	0,88	1,03										
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					
65mm (2½")	Electric								0,15	0,16	0,16	0,17	0,17	0,19	0,24	0,33	0,40	0,46			
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 0,3 bar loss.
Values shown in bar.

Valve Wire Sizing Chart

*Maximum One-way Distance (in ft.) Between Controller and Valve Using Spike-Guard™ Solenoid**

Ground Wire	Control Wire						
	18	16	14	12	10	8	6
18	2040	2520	2940	3280	3540	3720	3860
16	2520	3260	4000	4660	5220	5620	5920
14	2940	4000	5180	6360	7420	8300	8960
12	3280	4660	6360	8240	10100	11800	13180
10	3540	5220	7420	10100	13180	16060	18770
8	3720	5260	8300	11800	16060	20800	25540
6	3860	5960	8960	13180	18700	25540	33080

** Solenoid Model: 24 V ac Pressure: 150 psi*
Voltage Drop: 4 V Minimum Operating Voltage: 20 V Amperage (peak) 0.12 A

Specifying Information

220 | 2X | X | X

Body Style	Solenoid	Size
26—NPT, Electric 27—NPT, Pressure-regulated (5–100)	0—Solenoid 6—Less Solenoid	4—1" (25mm) 5—1¼" (32mm) 6—1½" (40mm) 8—2" (50mm) 9—2½" (65mm) 0—3" (75mm)

Example: A 1" (25mm) NPT pressure-regulated, 220 Series Brass Valve with 60 Hz solenoid, would be specified as: **220-27-04**

Note: Less solenoid available in 1", 1½", 2"and 3" (25, 40, 50 and 75mm) electric NPT and BSP versions only.
1", 1½" and 2" (25, 40 and 50mm)—globe configuration.
2½" and 3"(65 and 75mm)—angle configuration.

Specifying Information

Model Number	Description
	Recycled Water Indicator
RW60-Kit	Recycled Water (Lavender) Solenoid Assembly (24 V ac, 60 Hz) and Warning Tag

Quick Coupler Valves

¾", 1"

Standard, Vinyl, Effluent

One- and Two-piece Models

Frequent-use Watering Areas

Application: These valves are designed to provide frequent-use watering areas with localized access to the mainline water supply.

Features

- ¾" and 1" (20mm and 25mm) one- and two-piece single-lug models including ACME thread key connections to meet a variety of installation requirements
- Hose swivel provides 360° movement without hose tangling for ease of use
- A variety of sizes to meet various applications
- Metal and vinyl locking and non-locking covers
- Lavender-colored locking cover for recycled-water applications
- Two-year warranty

Quick Coupler Series Friction Loss Data—U.S.

Model Number	GPM Flow											
	10	15	20	25	30	35	40	50	60	70	85	100
075-SLSC	1.5	3.1	5.3	8.5								
100-2SLLC			1.1	2.2	3.6	5.7	8.0					

Note: *For optimum sprinkler performance when designing a system, be sure to calculate total friction loss to ensure sufficient downstream pressure. Values listed in psi. Flow rates are recommended not to exceed 5 psi loss.*

Quick Coupler Series Friction Loss Data—Metric

Model Number	LPM Flow										
	35	50	75	100	125	150	175	225	275	325	375
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. For kPa values, multiply tabular values by 100. For Kg/cm² values, multiply tabular values by 1,02.*

Ordering Information—Quick Couplers

Valves

Order No.	Description
075-SLSC	¾", One-piece, Single lug, Quick Coupler w/Standard Cover
100-SLSC	1", One-piece, Single lug, Quick Coupler w/Standard Cover
100-SLVC	1", One-piece, Single lug, Quick Coupler w/Vinyl Cover
100-SLVLC	1", One-piece, Single lug, Quick Coupler w/Vinyl Locking Cover
100-SLLVC	1", One-piece, Single lug, Quick Coupler w/Lavender Vinyl Cover (Effluent)
100-2SLVC	1", Two-piece, Single lug, Quick Coupler w/Vinyl Cover
100-2SLLVC	1", Two-piece, Single lug, Quick Coupler w/Lavender Vinyl Cover (Effluent)
100-ATLVC	1", One-piece, ACME Thread Quick Coupler w/Lavender Vinyl Cover (Effluent)

Accessories

Order No.	Description
075-SLK	½" Female, ¾" Male, Single Lug Coupler Key
100-SLK	¾" Female, 1" Male, Single Lug Coupler Key
100-AK	1" ACME Thread Coupler Key
075-75-MHS	¾" NPT x ¾" MHT Hose-Swivel
075-MHS	1" NPT x ¾" MHT Hose-Swivel
100-MHS	1" NPT x 1" MHT Hose-Swivel
LK	Key for Locking Cover

Specifying Information

XXX XX XX

Size	Pieces/Connection	Cover
075—¾" 100—1"	SL—One-piece, Single Lug 2SL—Two-piece, Single Lug AT—ACME Thread	SC—Standard Cover VC—Vinyl Cover LVC—Lavender 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**

Valve Accessories

Recycled Water Indicators

89-7855

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

Solenoids

DCLS-P

- Potted DC latching solenoid for Toro valves used with EZ-Flo Plus, P-220 or 220 Series valves
- Also compatible with all Irritrol valves with bleed plug

R811-24VACG

- Solenoid assembly for EZ-Flo Plus, P-220, and 220 Series valves
- Captive hex plunger features
- 24 V ac
- 60 Hz, 18" leads

RW60-Kit

- Lavender solenoid with warning tag for EZ-Flo Plus, P-220 and 220 Series valves
- Captive hex plunger features
- 24 V ac, 0.40 amp inrush, 0.20-amp-holding

EZReg™ Pressure-regulation Options

EZR-30 and EZR-100

- Pressure-regulator module for use with 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)

Controllers Overview

Features | Operation

	DDC-WP	DDC	TMC-212	TMC-424	TIS-612	
Number of Stations	2, 4, 6, 8	4, 6, 8	2-12	4-24	6, 9, 12	
Modular			X	X		
Battery Powered	X					
Armchair Programming	X	X		X		
Number of Programs	3	3	3	4	2	
Number of Start Times	3	3	4	16	1 (2 if high ET)	
ET Adjust					X	
Flow Sensing				X		
RainSensor Compatible	X	X	X	X	X	
Simultaneous Operation	1 Station plus Master Valve	1 Station plus Master Valve	1 Station plus Master Valve	3 Station plus Master Valve	2 Station plus Master Valve	
Programmable Master Valve	X	X	X	X		
Well Recovery			X	X		
Short Detection	X	X	X	X	X	
Non-Volatile Memory	X	X	X	X	X	
Indoor/Outdoor Cabinet	High-Impact Plastic, Waterproof	High-Impact Plastic, Indoor/Outdoor	High-Impact Plastic, Indoor/Outdoor	High-Impact Plastic, Indoor/Outdoor	High-Impact Plastic, Indoor/Outdoor	
Waterproof (IP 68 for valve boxes)	X					

CONTROLLERS

	TIS-240	Custom Command	TDC-100/200	Sentinel
	24	9, 12, 15, 18, 24, 36, 48	100, 200	12, 24, 36, 48
			X	X
		X		
	3	4	10	16
	1 (2 if high ET)	16	60	8 (per program)
	X			X
			X	X
	X	X	X	X
	3 Station plus Master Valve	4 Station plus Master Valve	10 Stations	6 Station plus Master Valve
		X	X	X
			X	X
	X	X	X	X
	X	X	X	
	High-Impact Plastic, Indoor/ Outdoor	High-Impact Plastic or Metal, Indoor/Outdoor	Metal, Indoor/ Outdoor	Metal & Stainless Steel Wall Mount; Stainless Steel or High-Impact Plastic Pedestal

TMC-212 Series

2–12 Stations
Modular
Indoor or Outdoor
Residential, Light Commercial

Application: A modular controller designed to provide versatility in station counts from 2 to 12 stations and programming flexibility to meet customer requirements that makes it ideal for a broad range of residential applications.

TMC-212 Indoor

TMC-212 Outdoor

Specifications

Electrical input power:

- 120 V ac ±10%, (60 Hz) plug-in transformer
- 0.50 amps (24 W) maximum

Station output power:

- 24 V ac (60 Hz)
- 0.50 amps (12 VA) per station maximum
- 0.50 amps (12 VA) pump/master valve
- 0.70 amps (17 VA) total load

Surge protection:

Standard:

- 6.0 KV common mode
- 600 V normal mode

High Surge:

- 6.0 KV common mode
- 3.5 KV normal mode

Dimensions (by model):

Indoor: 8" W x 8½" H x 2" D (206 x 216 x 50mm)

Outdoor: 13" W x 9½" H x 3½" D (330 x 241 x 89mm)

Shipping weight (includes carton):

Indoor: 3 lbs. 4 oz. (1,5 kg)

Outdoor: 5 lbs. 6 oz. (2,5kg)

UL, CUL Listed

Features

Programmability

- Three fully independent programs with four start times per program
- Three scheduling choices by program:
  - Seven-day calendar
  - Seven-day interval with day exclusion
  - Odd/even days with day exclusion
- Station run times from one minute to four hours
- Programmable well recovery/station delay from 1 to 60 seconds or 1 to 60 minutes
- Pump start delay from 1 to 60 seconds
- Master valve on/off by program
- Seasonal adjust by program from 0–200% in 10% increments
- Automatic split cycle when season adjust is greater than 100%
- Program stacking
- Rain delay from one to seven days
- Clear Memory feature erases programming by program

Versatility

- Station count modularity from 2 to 12 stations in two-station modules
- Hot-swappable station modules
- Modules backward-compatible with GreenKeeper® 212
- Compatible with normally open or normally closed rain sensors
- Operation of two solenoids per station (up to 0.50 amps per station max)

Durability

- Non-volatile memory requires no batteries and holds programming information for up to five years
- Indoor and key lock outdoor models
- Automatic short detection for circuit protection and faster troubleshooting
- Module options available for standard- or high-surge protection

Warranty

- Three-year warranty on standard model, five-year warranty on high-surge model

Specifying Information

TMC-212 XXX

Model	Cabinet Type
TMC-212	ID—Indoor OD—Outdoor ODH—Outdoor, High-surge

TSM XXX

Model	Description
TSM	02—2-station Expansion Module 02-H—High-surge, 2-station Expansion Module

Example: A 6-station indoor TMC-212 Controller, would be specified as: **TMC-212–ID and TSM-02**

Note: Base model includes four stations (two modules)

2-station Expansion Modules (for TMC-212)

Two-station modules allow for easy expansion up to 12 stations, provide great flexibility and are more cost effective.

- All TMC controllers come standard with two modules installed (4 stations).
- High surge protection provided only if TSM-02-H is installed in TMC-212-ODH model.

TSM-02
Standard module

TSM-02-H
High-surge module

TMC-424 Series

TMC-424

- 4 to 24 Stations
- Modular
- Indoor or Outdoor
- Residential, Commercial

Application: A full-featured, modular controller expandable from 4 to 24 stations using 4- or 8-station modules. Its flexible, modular design and advanced features makes it an ideal choice for residential, commercial and sports field applications.

Features

Programmability

- Four independent programs and 16 total start times, allotted to programs in any combination
- Station run times in minutes or seconds
- Three scheduling choices by program:
  - Seven-day calendar
  - One- to 31-day interval with day exclusion
  - Odd/even days with day exclusion
- Flow monitoring from learned flows
- Program stacking with the ability to operate up to three programs simultaneously
- Rain delay from one to 14 days
- Water budgeting from 0–200% in 10% increments
- Programmable well recovery from 5 to 55 seconds in 5-second increments or one to 30 minutes
- Pump start/master valve settable by program and station
- Clear memory feature erases programming by program
- 12-/24-hour real-time clock for programming accuracy
- Semi-automatic, manual and timed manual irrigation for operation flexibility

Versatility

- Modular station counts from 4 to 24 stations in either 4- or 8-station modules
- Hot-swappable station modules indicate module location and station count in real time
- Dual-use cabinet (indoor or outdoor) and modular internal power supply
- Pump start/master valve output in both stand-alone mode or with flow monitoring modules allows up to 4 POCs (one POC operating at a time)
- Optional flow monitoring will monitor up to three flow sensors simultaneously
- Operates with standard and pulse-type flow sensors
- Standard- or high-surge options

Convenience

- Non-volatile memory requires no batteries and holds programming information for up to five years
- Time and calendar retention for 24 hours
- Program Review feature quickly recaps all program information on the face of the controller
- Armchair Programming™ allows for programming prior to installation
- Short detection for fast troubleshooting
- Valve Test mode for quick system checks
- Compatible with Toro's EZ Remote® and all normally closed rain sensors
- Large LCD display with real-time icons to confirm operation and easy-to-read overlay
- Multi-language capability (English, Spanish, French, Italian, German)

Warranty

- Five-year warranty

Specifications

Electrical input power:

- 120 V ac ±10%, (60 Hz)
- 0.50 amps maximum

Station output power:

- 24 V ac (60 Hz)
- 0.50 amps (12 VA) per station max.
- 0.50 amps (12 VA) pump/master valve
- 1.20 amps (29 VA) 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

Dimensions (Indoor or Outdoor):

15¼" W x 10⅛" H x 5⅛" D
(387 x 264 x 137mm)

Shipping weight (includes carton):

6 lbs. 9 oz. (3,13 kg)

UL, CUL listed

4- and 8-station Expansion Modules (for TMC-424)

- Removable modules provide faster and easier servicing
- Expands as your needs expand
- Fewer dollars in inventory investment

TSM-4 *TSM-4F* *TSM-4H*
TSM-8 *TSM-8F* *TSM-8H*

Standard and high-surge modules meet the needs of different geographical regions.

Specifying Information

TMC-424 XX XX XX XX

Model	Type	Module Description
TMC-424*	ID—Indoor OD—Outdoor	4—4-station, Standard Surge 4H—4-station, High Surge 4F—4-station, High Surge and Flow Metering 8—8-station, Standard Surge 8H—8-station, High Surge 8F—8-station, High Surge and Flow Metering

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

A 24-station TMC-424 controller in an outdoor cabinet with two flow monitors, would be specified as: **TMC-424-OD-8F-8F-8**

**** Note: Base models do not include station modules.***

Intelli-Sense™ (TIS-612/ TIS-240) Series

- 6, 9, 12 or 24 Stations
- ET-based Run Times
- Indoor or Outdoor
- Residential, Light Commercial

Application: This controller automatically adjusts irrigation according to plants' actual requirements with 6, 9, 12 or 24 stations, making it the ideal water conservation tool for residential and commercial applications.

Specifications

Electrical input power:

- 120 V ac ±10%, (60 Hz)
- 0.50 amps (24 W) maximum

Station output power:

6-, 9-, or 12-stations:

- 24 V ac (60 Hz)
- 0.50 amps (12 VA) per station max.
- 0.375 amps (9 VA) pump/ master valve
- 1.0 amps (24 VA) total load

24-stations:

- 24 V ac (60 Hz)
- 0.50 amps (12 VA) per station max.
- 0.375 amps (9 VA) pump/ master valve
- 1.25 amps (30 VA) total load

Dimensions (by model):

Indoor, 6-, 9-, or 12-stations:

- 6½" W x 7½" H x 3¾" D (165 x 190,5 x 95mm)

Outdoor, 6-, 9-, or 12-stations:

- 9¾" W x 7½" H x 5¾" D (248 x 190,5 x 146mm)

Outdoor, 24-stations:

- 11⅝" W x 8½" H x 5¾" D (295 x 216 x 146mm)

Shipping weight (includes carton):

6-, 9-, or 12-stations:

- Indoor: 4 lbs. 8 oz. (2,0 kg)
- Outdoor: 6 lbs. 6 oz. (3,0kg)

24-stations:

- 7 lbs. 12 oz. (3,5kg)

UL, CUL listed

100% CIT Certified

Features

- Weather (ET) data gathered from NOAA Weather Satellites is accurate down to 1 sq. km. providing the accuracy of an on-site weather station without the cost and maintenance issues
- Patented WeatherTRAK® scheduling engine eliminates guesswork in setting up baseline schedules which reduces time and error in setup
- Receives daily ET updates from the ET-Everywhere service ensuring the most up-to-date weather information is used to adjust run times resulting in efficient water management

Programmability

- Four programming modes:
  - Automatic (controller determined) with daily ET-Everywhere downloads
  - User-defined with daily ET-Everywhere downloads
  - User-defined without ET-Everywhere downloads
  - Controller Off
- Two independent programs with one start time per program (three independent programs on TIS-240)
- Selectable water window
- Three scheduling choices:
  - Seven-day calendar
  - Odd/even days
  - 30-day interval
- Independent station adjust from –50% to +25% in 5% increments
- Program stacking for simultaneous operation of two programs
- Cycle and soak programming allows up to 16 cycles per start time
- Start days programming based on seven-day week, 1–30 day interval or odd/even days
- 365-day calendar includes optional automatic adjustment for daylight savings
- Review mode shows schedule and programming for each valve
- Copy button to decrease programming time

ET (Evapotranspiration)

- Selectable maximum ET value
- Last downloaded ET values including time and date stamp
- Second program start time for days with abnormally high ET values
- Display of weekly ET values from previous seven-day accumulation
- Selectable crop coefficients (Kc values) for custom plant types

Hardware, etc.

- TIS-612: 6, 9, or 12 stations
- TIS-240: 24 stations
- Built-in one-way pager to receive ET-Everywhere weather data
- Automatic short detection for faster troubleshooting
- Available in indoor or outdoor models available (TIS-240/outdoor model only)
- Non-volatile memory maintains programming during a power outage for up to 10 years
- Compatible with normally closed rain-sensors
- Sensor bypass switch
- Master valve/pump start

Warranty

- Five-year warranty

Specifying Information Controller

TIS [XX] [XX]

Model	Description	Cabinet
TIS—Toro Intelli-Sense	06-station Controller 09-station Controller 12-station Controller 24-station* Controller	ID–Indoor OD–Outdoor

Example: A 24-station, Intelli-Sense (TIS-240) Controller in an outdoor cabinet, would be specified as: **TIS-24-OD**

**24-station outdoor only*

Specifying Information ET-Everywhere Data Service

ETE [XXX] [XY]

Model	Stations	Service
ETE—ET Everywhere	612—6, 9 or 12 stations 240—24 stations	1Y—One Year 2Y—Two Years 3Y—Three Years 5Y—Five Years

Contact WeatherTRAK Customer Service at 1-800-362-8774 for purchase and activation of ET Everywhere Data Service

DDCWP Series

DDCWP Series

- 2, 4, 6 and 8 Stations
- Battery Powered
- Waterproof
- Residential, Light Commercial

Application: An economical battery powered controller in a waterproof case designed for a variety of landscaping applications and installation environments requiring 2 to 8 stations.

Features

Programmability
- 2-, 4-, 6-, or 8-station models
- Three independent programs
- 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 program from 0–200% in 10% increments
- Manual operation by station or program
- Programmable Master Valve

Convenience
- Armchair Programming™ with 9-volt battery power source
- Program review feature
- Compatible with normally closed rain sensors
- Convenient mounting bracket for easy installation in valve boxes
- Low battery indicator on LCD screen
- Unique power feature that verifies sufficient power to turn off valves before turning on

Durability
- Fully waterproof and submersible up to 6.5′ (2m) per IP-68 standards allows contractors to mount up to an 8-station controller in a valve box for vandal resistance, etc.
- Exclusive "Digital Dial" technology removes potential for mechanical failure found in traditional dials
- Self-diagnostic circuit breaker skips shorted stations
- Five-year program retention with on-board coin battery saves time of day and all programming features

Warranty
- Two-year warranty

Specifications

Electrical:
- Operates using 2 x 9V alkaline batteries (not supplied).
- Operates one Toro latching solenoid per station and one latching solenoid equipped master valve
- Maximum distance between controller and a latching solenoid using AWG #18 (1.0 mm²) sized wire: 197′ (60 m)
- Controller is compatible with all Toro valves accepting latching solenoids (model DCLS-P or equivalent) and select competitive valve models/ latching solenoids
- Accepts Toro TRS RainSensor™ and other wired rain sensors

Mechanical Specifications:

Weight without 9-volt batteries:
23.3 oz. (672 gm)

Dimensions:

5¾″ W x 5″ H x 1 15/16″ D
(14.5 x 12.6 x 4.9cm)

Operating temperature:

32° - 140° F (0° - 60°C)


DCLS-P Latching Solenoid Assembly

Wire Run Lengths for DDCWP

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

Multi-strand Wire	Distance	
	Feet	Meters
18 AWG (1.0mm²)	197	60
16 AWG (1.5mm²)	305	93
14 AWG (2.5mm²)	493	150
12 AWG (4.0mm²)	820	250

Specifying Information

DDCWP | X | 9V

Description	Stations		Voltage
DDCWP—Digital Dial Waterproof Controller	2—2 Stations 4—4 Stations	6—6 Stations 8—8 Stations	9 Volt

Example: An 8-station DDC controller with a 9-volt transformer in a waterproof cabinet, would be specified as: **DDCWP-8-9V**

DDC™ Series

4, 6 and 8 Stations
Digital Dial Technology
Indoor, Outdoor
Residential, Light Commercial

DDC Series Indoor

DDC Series Outdoor

Application: An economical controller designed for a variety of landscaping applications and installation environments requiring up to 8 stations.

Specifications

Electrical input power:

- 120 V ac (60 Hz)
- 0.50 amps

Station output power:

- 24 V ac (60 Hz)
- 0.25 amps (6 VA) per station maximum
- 0.25 amps (6 VA) pump start/master valve
- 0.50 amps (12 VA) total load

Dimensions (by model):

Indoor: 5¾" W x 5" H x 1½" D (89 x 178 x 220mm)
Outdoor: 3½" W x 8⅝" H x 7" D (89 x 178 x 220mm)

Shipping weight (without 9-volt battery, includes carton):

Indoor: 9 oz. (280kg)
Outdoor: 2.5 lbs. (1,14kg)

Features

Programmability

- 4-, 6-, or 8-station models
- Three independent programs
- Three start times per program
- Three scheduling choices by program:
  - Seven-day calendar
  - 1- to 7-day interval
  - Odd/even with 365-day calendar
- Station run times from one minute to four hours in one-minute increments
- Seasonal adjust by program from 0–200% in 10% increments
- Manual operation by station or program
- Programmable Master Valve
- Semi-auto manual start by program

Convenience

- Armchair Programming™ with 9-volt battery power source
- Program review feature

- Available in indoor, outdoor or waterproof models
- Compatible with normally closed rain sensors
- Large terminal screws for easy installation and wiring

Durability

- Exclusive "Digital Dial" technology removes potential for mechanical failure found in traditional dials
- Self-diagnostic circuit breaker identifies and reacts to irrigation faults protecting the controller and minimizing related issues
- Five-year program retention with on-board coin battery saves time of day and all programming features

Warranty

- Two-year warranty

Specifying Information

DDC | X | 120 | XX

Description	Stations	Voltage	Optional
DDC—Digital Dial Controller	4—4 Stations 6—6 Stations 8—8 Stations*	120—120 V ac	ID—Indoor OD—Outdoor

Example: A 6-station DDC controller with a 120 V ac plug-in transformer in an outdoor cabinet, would be specified as: **DDC-6-120-OD**

**8-station outdoor only*

CC Series in Metal Wall-mount Cabinet (36- or 48-station)

CC Series Metal with Pedestal-mount Cabinet (12-, 15-, 18- or 24-station)

CC Series in Plastic Wall-mount Cabinet (12-, 15, 18- or 24-station)

Custom Command™ Series

9, 12, 15, 24, 36, 48 Stations
Four Independent Programs
Wall or Pedestal Mount
Residential, Commercial

Application: A flexible controller with a choice of metal or plastic enclosures and a variety of station counts ranging from 9 to 48 make this an ideal controller for commercial, municipal, and sports field applications.

Features

Programmability

- Four independent programs and 16 start times (can be allocated to any program)
- 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
- Station run times from one minute to ten hours in one-minute increments
- Program stacking for simultaneous operation of one to four programs (four program stacking only in 36- and 48-station models)
- Seasonal adjust by program from 0–200% in 10% increments
- Individual station manual start and manual start by program
- Independent program erase for each program
- Master valve/pump start operation selectable by program

Versatility

- Available in 9-, 12-, 15-, 18-, 24-, 36- and 48-station models
- Available in wall-mount metal cabinet, metal pedestal, or wall-mount plastic cabinet

Durability

- Highest surge protection in industry in competitive price range
- Non-volatile memory retains programmed information in even of power failure
- Time and date retention for up to 90 days using 9-volt battery
- Self-diagnostic circuit breaker that identifies and overrides faulty stations

Warranty

- Five-year warranty

Specifications

Electrical input power:

- 120 V ac ±10%, (60 Hz)
- 0.50 amps (24 W) maximum

Station output power:

- 24 V ac (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

Dimensions (by model):

Plastic:
11½" W x 5⅞" H x 8⅝" D
(292 x 149 x 219mm)

Metal (12-, 15-, 18- and 24-stations):
10¾" W x 9¾" H x 5¾" D
(273 x 248 x 146mm)

Metal (36-, and 48-stations):
10¾" W x 15¾" H x 5¾" D
(273 x 399 x 146mm)

Pedestal:
10¾" W x 27⅞" H x 3⅜" D
(273 x 702 x 86mm)

Shipping weight (includes carton):

Indoor: 3 lbs. 4 oz. (1,5 kg)
Outdoor: 5 lbs. 6 oz. (2,5kg)

UL, CUL listed

Specifying Information

CC | X | XX

CC	X	XX
CC—Custom Command	M—Metal P—Plastic	9—9-stations 12—12-stations 15—15-stations 18—18-stations 24—24-stations 36—36-stations 48—48-stations PED—Pedestal Mount (up to CC-M24 only)

Example: A 12-station Custom Command Controller with an internal transformer, metal cabinet and pedestal mount would be specified as:
CC–M12 and CC–PED

TDC Series
Turf Decoder Controller

Modular
100 to 200 Stations
1-, 2- or 4-station Decoders
Commercial

Application: The TDC (Turf Decoder Controller) system provides a durable, cost-effective alternative to traditionally wired irrigation control systems. Using a 2-wire path to communicate to buried decoders, the TDC is vandal resistant, easy to install and easy to expand.

TDC 100/200 Series Modular Controller

Specifications

Electrical input power:
- 120 V ac or 220/240 V ac, (50/60 Hz) Transformer

Station output power:
- Up to 38 V ac maximum
- 3 amps maximum output

Dimensions (by model):
14" W x 13" H x 6" D (35½ x 33½ x 15cm)

Operating temperature:
0°–140° F (0°–60° C)

UL, CUL approved

Features

Stand-alone Controllers
- Modular controller up to 200 stations
- Large LCD display and simple, intuitive programming interface
- Activate up to 20 solenoids at up to 2.8 miles (4,5 km) away from the controller
- Water window calculator
- Powerful diagnostics for locating and troubleshooting issues
- Remote Ready and RainSensor™ compatible
- 10 independent irrigation programs and 1 non-irrigation program
- 6 start times per program
- Manual start of each station or entire program
- Water Budget (Season Adjust) 0 to 200% in 10% increments
- 14-day calendar and 14-day interval watering schedule
- Odd/Even day watering with 31st day exclusion
- Day Exclusion (remove a day from standard program)
- 10-digit alpha-numeric zone identification
- Non-volatile memory retains programming
- Programmable master valve, by program
- Programmable pump start, by program
- Lockable, weather-resistant wall-mount cabinet
- 12-/24-hour real time clock

Decoders
- 1-, 2- or 4-station decoders with built in surge protection
- 1 or 2 solenoids per station
- Utilizes D.C. latching solenoids for valve control
- Sensor decoder for connection to pulse (flow) or switch (rain) type sensors

DCLS-P Latching Solenoid Assembly

CDEC-1 Series Decoder

Specifying Information Controller

CDEC | SA | XXX

Model	Control Type	Station Count
CDEC	SA	100 200

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

Specifying Information Decoder

Model	Description
CDEC-1	Single Station Decoder
CDEC-2	Two Station Decoder
CDEC-4	Four Station Decoder

Wireless RainSensors

- Wireless or Wired
- Rain or Rain/Freeze Sensor
- Quick-Clip™ Gutter Bracket
- 500' Range

Application: Wireless Rain and Rain/Freeze sensors that include numerous unique, patented and patent-pending features that make them the ideal water management tool for all applications.

Features

RainSensor™ Transmitter

- Selectable rain sensing shutoff indexes at ⅛", ¼", ½" and ¾"
- Maintenance-free hygroscopic disks
- No special tools required for installation (includes Quick-Clip™ gutter bracket)
- One transmitter can communicate to multiple receivers (in range)
- Low-profile design with UV-resistant housing
- Easy-access battery compartment
- 500 foot range (transmitter to receiver)
- 5-year coin cell battery life
- Power source: 2 lithium coin cells (CR2032-3V)
- Operating temperature: –20°F to 120°F
- FCC, IC and ACA approved

RainSensor Receiver

- Multi-function receiver
- Digital LCD display provides real-time sensor status
- Normally open or normally closed operation (3 A @ 24 V ac)
- Smart Bypass™ allows for system override at any time
- Low battery indicator
- Selectable water conservation mode to delay automated resumption of scheduled programs (extend reset time of sensor)—save up to 30% more water
- Programmable rain delay from 1 to 7 days for controllers without this feature
- Designed for indoor or outdoor installations
- Fail-safe modes in the event of loss of communication
- Power: 22–28 V ac/VDC, 100 mA (from existing controller or optional transformer)

Digital Freeze Sensor

- Digital programmable accuracy for freeze shutoff
- Fully integrated into the wireless-unit
- Real-time outdoor temperature displayed on LCD
  - Display range: –20° to 140° F in 1° increments
- User-selectable freeze shutoff points from 35°–45° F in 2° increments

Specifications

Dimensions:

Transmitter:
1¾" W x 3½" H x 1¾" D
(4,4 x 8,9 x 4,4cm)
Receiver:
2" W x 4" H x 1¼" D
(5,1 x 10,2 x 3,2cm)

Weight (includes carton):

0.78 lbs. (.353kg)

Transmitting Range:

500' (152m)

Specifying Information

Model	Description
TWRS	Toro Wireless RainSensor
TWRFS	Toro Wireless Rain/Freeze Sensor

Wired RainSensor

Application: Wired Rain Sensors provide a cost-effective solution compatible with Toro and all other manufacturers' controllers that are designed to accept a sensor device

Features

- Selectable rain shutoff indexes at ⅛", ¼", ½" and ¾" of precipitation
- Compatible with all Toro and other manufacturers' controllers that are designed to accept a sensor-device
- Maintenance-free hygroscopic disks; adjustable rain sensitivity
- No special tools required for installation (includes Quick-Clip™ gutter bracket)
- 25' (7,6m), outdoor-rated, UV-resistant cable and housing
- Normally closed or normally open operation

Specifications

Dimensions:

1¾" W x 3½" H x 1¾" D
(4,4 x 8,9 x 4,4cm)

Weight (includes carton):

0.80 lbs. (0,36kg)

Ration:

3 A, 24 V ac

Operating temperature range:

-20° to 140° F (-29° to 60° C)

Specifying Information

Model	Description
TWS	Toro Wired RainSensor

Toro Maintenance Remote (TMR-1)

- Single-operator Operation
- Large LCD
- 1.5 Mile Range
- Commercial

Application: The Toro Maintenance Remote is designed for convenience and usability. This powerful tool enables a single operator to perform irrigation checks and operate the system up to 1.5 miles away.

Specifications

Frequency:

- MURS designated channels (U.S. USE only) (151.82, 151.88, 151.94, 154.57, 154.6 MHz)
- Automatic detection and avoidance of busy channels

TMR-1-RX Receiver:

- Receiver input voltage: 22–26 V ac input
- Operating temperature range: -10° to +60° C
- Size: 12" x 3" (with antenna)

TMR-1-TX Transmitter:

- DC operating voltage: 4–6 V DC (4 AA NiMH batteries)
- Battery charger: dual rate, 12-hour charger
- Size: 12" x 3" (with antenna)

Features

Convenience

- Intuitive, easy-to-use keypad
- Large easy-to-read LCD display
- Remotely controls up to 500 stations
- Up to 1.5 mile line-of-sight range and operation unlicensed MURS frequencies provides the range required for commercial installations without the hassle of frequency licensing
- Rechargeable NiMH batteries for long life
- Battery life indicator
- All Station Cycle (ASC mode) *(A "Toro exclusive feature" to test all stations—2 minute run time per station)*
- Kit comes standard with durable, plastic carrying case

Versatility

- 999 programmable receiver addresses enable true multi-controller/multi-site compatibility
- User may replace rechargeable batteries with standard AA alkaline cells if needed
- Quick Connect System allows receiver to easily be moved from one controller to another
- Receiver operates off of the 24 V ac power from the controller—no need for additional power source
- Circular Connector provides plug-in-play compatibility with the Toro TMC-212 and TMC-424 Series controllers (comes standard with 5' cable)
- Controller compatibility:
  - Toro TMC-212, TMC-424 and GreenKeeper® 212
  - Irritrol KwikDial® and RainDial® Plus

Ease-of-Use

- Simple, intuitive function set includes:
  - Select a controller (receiver)
  - Select a station (maximum stations settable)
  - Station ON/PAUSE/OFF
  - Step-up: Advance (turn off current station and turn on next higher)
  - Step-down (turn off current station and turn on next lower)
  - Default run time is 10 minutes
  - Display shows countdown of time left to run
- Ergonomic design and removable belt clip for easy handling

Specifying Information

TMR-1 XXX

Model	Description
TMR-1	KIT—Complete Kit: Transmitter, Receiver, Circular Connector/Cable Assembly, Wall Charger, Batteries, Carrying Case
	TX—Hand-held Transmitter, Batteries, Charger
	RX—Receiver, Circular Connector Assembly
	CC—Circular Connector

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

EZ-Remote™

- Single-operator Operation
- 300′ Range
- Uses One 9-volt Battery
- Residential

Application: This hand-held remote enables a single operator or homeowner to perform irrigation checks and operate the system without opening the controller cabinet.

Specifying Information

Model Number	Description
EZR–T	EZ-Remote Transmitter only
EZR–R	EZ-Remote Receiver only
EZR–CA03	EZ-Remote 40" (1,1m) Cable Harness Kit*
EZR–CA25	EZ-Remote 25' (7,62m) Cable Harness Kit*
EZR–KIT	EZ-Remote Complete Kit** (TMC-12)

Example: A complete EZ-Remote kit, would be specified as: **EZR-KIT**

** Includes modular cable, receiver plug assembly and mounting brackets.*
*** Includes receiver, transmitter and 40" (1,1m) harness kit.*

Features

- Simple command set for ease of use
- Compatible with: TMC-212 and TMC-424
- Remote field control provides convenient maintenance and troubleshooting
- 300′ (91m) range*
- Powered by one 9-volt battery
- Low-battery indicator
- One-year warranty

** Range varies depending on site and atmospheric conditions*

Electric-Hydraulic Converters

- Direct Manual Control
- Unlimited Expansion
- Wall- or Pedestal-mount
- Commercial

Application: The EHC converts the electrical output from sophisticated and flexible electric controllers to the pressure-based signals in hydraulic irrigation systems.

Specifications

Pressure:
40–150 psi (3,0–10,3 Bar)

Electrical input power:
- 24 V ac (60 Hz)
- 0.37 amps (8.800 VA) inrush
- 0.30 amps (7.20 VA) holding
- 1.20 amps (29 VA) total load

Wiring:
- 18 AWG x 4′ (1,2m) wire leads
- Maximum distance from converter to valve:
  - 3⁄16" (5mm): 500′ (15m)
  - ¼" (6mm): 1000′ (30m)

Normally open:
Valve elevation should not exceed 25′ (7,6m) above or 70′ (21,3m) below controller elevation

Normally closed:
Valve elevation should not exceed 0′ above or 70′ (21,3m) below controller elevation

Features

- Ideal for areas with high lightning risk and poor water conditions
- Direct manual control activates any sprinkler from the converter
- Unlimited expansion—add as many converters as needed
- For normally open or normally closed hydraulic systems
- Can be wall or pedestal mounted in a plastic cabinet (Part No. 89-8342)

Specifying Information

EXX XX 06

Configuration	Cabinet Type	Output
16—16 Stations 24—24 Stations 32—32 Stations 40—40 Stations 48—48 Stations	3—Plastic 9—Stainless Steel	1—Normally Open 2—Normally Closed

Example: An Electric-hydraulic Converter with 16 stations in a stainless steel cabinet with normally closed actuation, would be specified as: **E16-92-06**

Sentinel™ Central Control

Central Control Software
PC-based
ET-based Watering
Commercial

Application: This powerful, yet simple-to-use software is ideal for large sites such as cities, business parks and school districts as it allows a user to control up to 999 field satellites from a remote location with a desktop or laptop computer.

Features

- **Simplicity**—with Sentinel Central Control Software, 90% of all operations are executed in one screen. All data in the system is stored at both the computer and the satellites so in the event of a power outage, satellites will continue to irrigate according to their previous watering schedule
- **Reliability**—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. True two-way programming allows for changes in the field to be uploaded to the computer

Programming

- Access all the programming features of Sentinel Controllers through the PC-based Central Software
- 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 programming can be uploaded to computer
- Support for System Administration
  - Set system, program and satellite descriptions
  - Map valve positions on site maps
  - Mark special dates on on-screen calendar

Troubleshooting and Management

- Alarm reporting of any communication issues from the central to the satellites such as over- or under-flow conditions or power failures
- Extensive reporting features:
  - Run time reports
  - Water usage
  - Alarms
  - Logging of system changes
- Water use, rain and ET accumulation
- Flow Optimizing in order to maintain maximum flow of the system
- Ability to divide system into groups representing similar field attributes
- 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 minimize training requirements
- Map-based feedback on system status
- No middle manager required—provides vast, inexpensive and reliable communication

Support

- All centrals come with a minimum of one year of NSN® support
- Standard telephone modem or internet connection allows for remote access to central software via pcAnywhere
- Three choices of central packages:
  - Software only
  - Software and radio communications interface
  - Central controller, software and radio communications interface

For technical information and updates on the Sentinel Central Control System, visit us on the Web at: http://www.toro.com

Specifying Information—Sentinel Central

SGIS XX

Description	Service
SGIS—Sentinel Central Control Irrigation System	1-T—Software Only w/1 Year of NSN Telephone Support for Software 0-1—Software, Peripheral Hardware w/1 Year of NSN Telephone Support 1-0—Software, Computer Equipment, Peripheral Hardware w/1 Year of NSN Support 5-0—Software, Computer Equipment, Peripheral Hardware w/5 Years of NSN Support

The Challenge: Effective Water Management

Putting together an efficient irrigation system is no small task. Concerns such as watering precision, broken pipes and mainlines, or dealing with electrical shorts and power outages have been problematic for landscape managers for decades. These along with increased competition for water supplies, scarcity of resources, and recent irrigation mandates have left those in irrigation management roles searching for the most efficient, yet simple, way of combating all of these issues.

The Solution: Sentinel Central Control

The Toro Sentinel System was introduced in 2002 and has rapidly established itself in the marketplace as one of the leaders in central control. Sentinel allows the user to manage the irrigation for up to 999 satellite controllers from one central location. Capabilities like true two-way programming and controllers that are remote and sensor ready out-of-the-box, combined with Toro's leadership in communications technology and an intuitive, easy-to-use software interface, make Sentinel the answer to your water management needs.

Multiple Site Applications

Sentinel provides the ability to program, control, and monitor multiple remote controllers from one location. Whether controlling one large, contiguous site like a sports complex or housing association, or multiple remote sites like a school district or parks & recreation department, Sentinel provides easy, rapid access to the irrigation system from a computer.

System Control

Sentinel allows all irrigation control actions to be carried out easily and efficiently from a central location. Control actions such as adjusting runtimes to changing weather conditions or stopping irrigation in the event of rain or high wind can be automatically accomplished without requiring a technician to visit individual controllers.

Sensor Integration

Sentinel can incorporate many different sensors, including flow sensors, tipping rain cans, wind sensors, freeze sensors, and full weather-stations. These sensors and instruments monitor site and climatic conditions and report to the central computer. Runtime adjustments are automatically made based on these inputs and combined with information on plant material and soil types.

Multiple Communications Options

A Sentinel system consists of a central computer, irrigation controllers, sensors, weather stations, and a communication system that ties it all together. No matter whether the central computer is located on site or at a remote location, communication options like radio, telephone, cellular, and Ethernet can be mixed and matched to meet system needs.

Sentinel Is Easy to Use

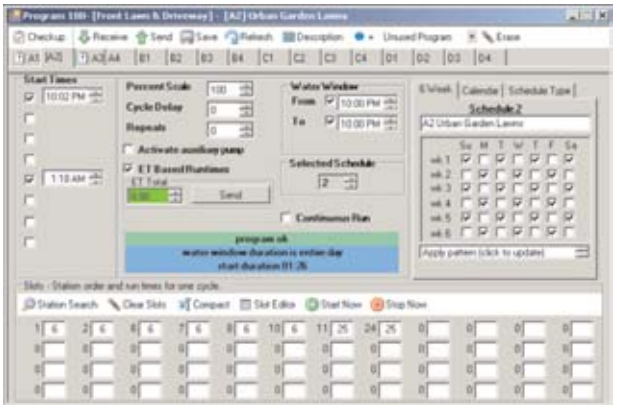
Sentinel is simple and intuitive, and it's one of the most powerful irrigation control systems ever offered. Information is graphically displayed—so it's easy to see and use. And, all similar functions are grouped together making it simple to find information quickly.

Sentinel Master Control Panel

Provides easy access to all programming functions—no keystrokes or sequences required, and no need to go searching for functions.

Automatic Operations

Daily operations and scheduling are made quick and easy. All essential programming information is contained in one window so it's easy to understand and manage.

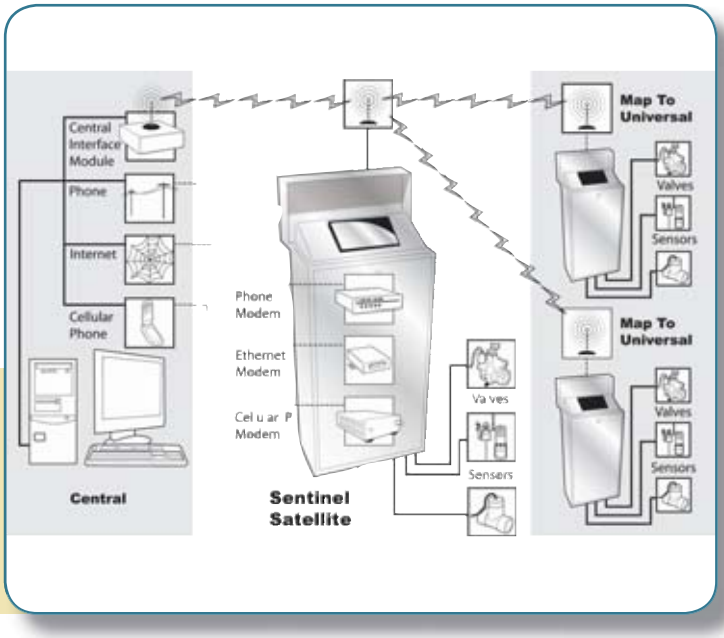


And, many more customer-driven features that optimize water management…

- ET-based watering
- Set control parameters for each station
- View water usage and compare to historical
- Extensive alarm and reporting capabilities
- Map-based feedback of system operation
- Intuitive visual cues and operator aids

Sentinel™ Satellites and MapTo Universal

- Modular
- Independent Operation
- ET-based Run Times
- Commercial



Application: These commercial-grade modular controllers from 12 to 48 stations in 12-station increments operate in both stand-alone and central mode and are ideal for large sites, and come standard with hand-held capability and the ability to read and react to flow sensors.

Specifications

Electrical input power:
- 110–120 V ac (50/60Hz)
- 14 mA (no load)
- 400 mA (maximum load)

Station output power:
- 24 V ac (50/60 Hz)
- 0.25 amps (12 VA) per station; 2.0 amps maximum

Station draw:
6 stations and pump maximum (also limited by software)

Surge protection:
Level 4, 24 V output boards, 20 KV @ 10 KVA

Operating temperatures:
14° to 140° F (-10°–60° C)

Dimensions (by model):
Wall-mount: 17⅛" W x 30¾" H x 8⅝" D (43,5 x 78,1 x 29,1cm)
Pedestal-mount: 17⅛" W x 34½" H x 8⅝" D (43,5 x 87,6 x 29,1cm)

Shipping weight (includes carton):
Wall-mount (48 stations):
47 lbs. (21,1 Kg)
Pedestal-mount (48 stations):
63 lbs. (28,3 Kg)

Manually activate individual stations by flipping the toggle switch to ON

Features

- ***Flexibility***—Sentinel field satellites are built with modular counts ranging from 12 to 48 stations which allow the end user to expand in 12-station increments without having to purchase a new satellite. These satellites are available in a variety of wall- or pedestal-mounted enclosures in order to best meet the various site application needs
- ***Convenience***—the Sentinel system is shipped from the factory with the ability to read and react to flow sensors. It is hand-held remote ready—no need to purchase additional add-ons for the Sentinel remote (SHHR) to function with the system. The system is also compatible with a variety of weather-sensing devices such as weather stations, and rain sensors which allow the user to control watering more precisely
- Operate independently of the central computer so if there is an issue (with the computer) the system still runs
- Every controller is built with flow sensing and hand-held ability whereas you have to purchase additional hardware for those features on other systems
- Modular from 12 to 48 stations in 12-station increments which allows the user to expand their system without having to buy a brand new controller

Programmability
- MapTo capability provides the ability to program and communicate to another field controller within radio reception—this is the same as having 96 stations
- Two sensor inputs included for rain sensors or other switch sensors
- 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
- True two-way communication allows for changes in the field to be uploaded to the central computer and allows two-way communication with a hand-held radio in stand-alone mode
- Program single or multiple stations to operate sequentially or start a program or multiple programs with just a few keystrokes
- 6-week scheduling calendar
- Up to eight start times per program
- 16 programs in stand-alone mode
- Station run times from one minute to fours and 15 minutes
- Global adjustment from 0–255%
- Percent adjust by program from 0–255%
- Ability to operate from one to six programs simultaneously
- Ability to read open- or closed-contact switches in any station count configuration
- ET-based run times with use of low-cost weather station

Service
- Current monitoring will disable a station if excessive draw occurs
- Non-volatile memory will retain all programming and real-time data for 10 years in the event of a power failure

Warranty
- Five-year warranty

Front-entry Metal, Wall-mount Cabinet

Description:
10¾" W x 15¾" H x 5¾" D powder-coated, wall-mount enclosure

Specifying Information

SSAXX XX XXX 6 N S X

Configuration	Station Count	Cabinet Type	Output	Comm.	Sensor Capable	Surge Options
SSAK—Sentinel Satellite Assy. with Keypad SSAMN—Sentinel MapTo	12—12 24—24 36—36 48—48	WS3—Powder-coated Wall Mount (Small)	6—Electric 24 V ac	N—Narrow-band	S—Sensor	1—Standard Surge 3—Surge on Small Wall Mount

Example: A 24-station Sentinel Satellite in a metal wall-mount cabinet with electric output, narrow-band communication and surge, would be specified as: **SSAK24WS36NS3**

Example: A 24-station Sentinel MapTo in a wall-mount cabinet with electric output, narrow-band communication and surge, would be specified as: **SSAMN24WS36NS3**

Front-entry, Stainless Steel Cabinet

Description:
16-gauge stainless steel, front-entry, wall-mount enclosure with backplate and junction box

Specifying Information

SSAXX XX XXX 6 N S X

Configuration	Station Count	Cabinet Type	Output	Comm.	Sensor Capable	Surge Options
SSAK—Sentinel Satellite Assy. with Keypad SSAMN—Sentinel MapTo	12—12 24—24 36—36 48—48	WS2—Stainless Steel Wall Mount (Large)	6—Electric 24 V ac	N—Narrow-band	S—Sensor	1—Standard Surge Large-capacity Terminal Block w/LEDs 4—Large-capacity Terminal Block w/LEDs Switches Chokes & Add'l Surge

Example: A 24-station Sentinel Satellite in a pedestal-mount cabinet with electric output, narrow-band communication and additional surge, would be specified as: **SSAK24WS26NS4**

Example: A 24-station Sentinel MapTo in a wall-mount cabinet with electric output, narrow-band communication and surge, would be specified as: **SSAMN24WS26NS4**

Top-entry, Plastic Cabinet

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

Specifying Information

SSAXX XX XXX 6 N S X

Configuration	Station Count	Cabinet Type	Output	Comm.	Sensor Capable	Surge Options
SSAK—Sentinel Satellite Assy. with Keypad SSAMN—Sentinel MapTo	12—12 24—24 36—36 48—48	PP1—Plastic Pedestal Mount (Large)	6—Electric 24 V ac	N—Narrow-band	S—Sensor	1—Standard Surge Large-capacity Terminal Block w/LEDs 4—Large-capacity Terminal Block w/LEDs Switches Chokes & Add'l Surge

Example: A 24-station Sentinel Satellite in a pedestal-mount cabinet with electric output, narrow-band communication and additional surge, would be specified as: **SSAK24PP16NS4**

Example: A 24-station Sentinel MapTo in a pedestal-mount cabinet, electric output, narrow-band communication & additional surge, would be specified as: **SSAMN24PP16NS4**

Top-entry, Stainless Steel Cabinet

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

Specifying Information

SSAXX XX XXX 6 N S X

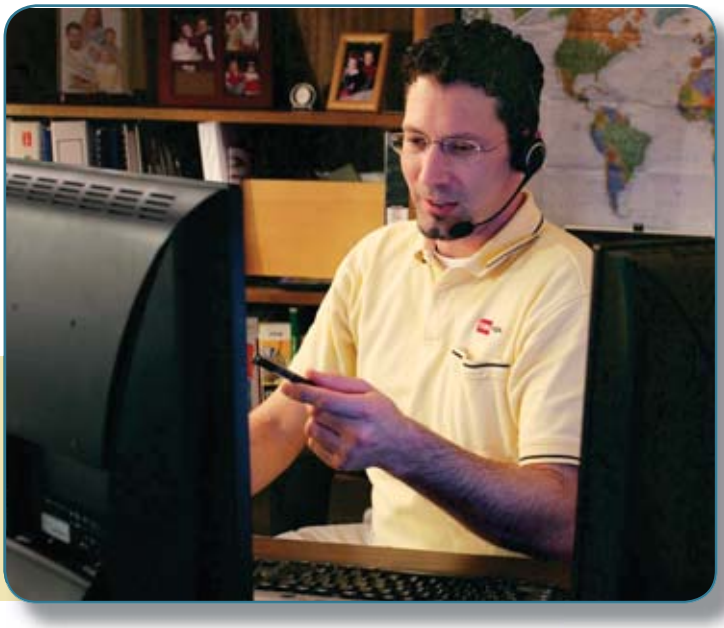
Configuration	Station Count	Cabinet Type	Output	Comm.	Sensor Capable	Surge Options
SSAK—Sentinel Satellite Assy. with Keypad SSAMN—Sentinel MapTo	12—12 24—24 36—36 48—48	PS1—Stainless Steel Pedestal Mount (Large)	6—Electric 24 V ac	N—Narrow-band	S—Sensor	1—Standard Surge Large-capacity Terminal Block w/LEDs 4—Large-capacity Terminal Block w/LEDs Switches Chokes & Add'l Surge

Example: A 24-station Sentinel Satellite in a pedestal-mount cabinet with electric output, narrow-band communication and additional surge, would be specified as: **SSAK24PS16NS4**

Example: A 24-station Sentinel MapTo in a wall-mount cabinet, electric output, narrow-band communication & additional surge, would be specified as: **SSAMN24PS16NS4**

NSN® National Support Network

24/7, Worldwide Support
Microsoft® Certified Partner
On-site Diagnostic Lab
Hands-on Training



Whether you need training, programming support, or just have a question, you can count on Toro NSN® for worldwide 24-hour, 365-day support.

Support for the Sentinel™ Central Control

- Unlimited 24-hour toll-free support with 24/7/365 emergency paging
- Technical assistance by e-mail with next business day response
- Remote PC assistance where connectivity is available
- Support of Microsoft 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
- User training both hardware and software

For more information on products, services, or training, contact:

Toro NSN
P.O. Box 3339
Abilene, TX 79604,
(888) 676-8676,
Or, visit us on the web:
http://www.toronsn.com

When you need help the most, we're here

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 24-hour central component replacement service ensures minimal disruption to the operation of your irrigation system (U.S.).

Industry-best training—classroom and computer-based:

NSN offers curriculum tailored to meet the range of user experience and proficiency. Classroom instruction is available at regional locations and at the NSN Training Center—where classes feature hands-on computer training and the operation of Toro hardware.

The confidence of working with the best in the business:

Toro NSN is a Microsoft® Certified Partner. Our support technicians are licensed irrigators, and our hardware technicians are A+ certified. 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.

Total operational confidence:

If your central hardware goes down, our TORO central control component replacements arrive at your facility Toro-tested, ready to keep you up and running.

New system support, flexible options to renew:

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

TORO NSN.

Sentinel™ Hand-held Remote

Two-way Voice Communication
5-watt Radio
1 to 2 Mile Range
Commercial

Application: A powerful tool that offers total convenience. This universal remote gives you the ability to conduct irrigation checks, make program changes and operate your system without opening field satellite enclosures. Only one person is necessary to use these functions.

Features

Not only a command piece, this universal remote also serves as a two-way voice radio, allowing you to communicate with other crew members. It's all the power and handiness you need in a small remote-controlled unit.

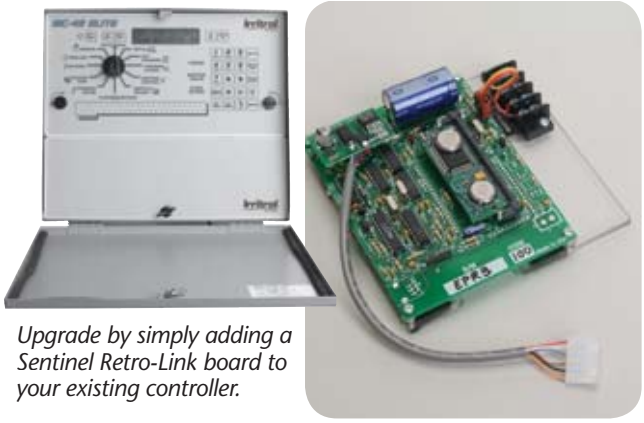
- Simple command set
- Accesses controller and satellite features from the field
- Direct access to controllers *(central control software not required)*
- Two-way voice communication capability
- System On and Off command activation
- Five-watt radio
- 16 selectable and programmable channels
- For use with a Sentinel central control system
- Range: 1–2 miles

Specifying Information

Model No.	Description
SHHR	Sentinel Hand-held Radio

Retro-Link

Application: The Sentinel Retro-Link Assembly allows you to easily upgrade your existing Irritrol MC/E Controller, turning it into a Sentinel Satellite.



Upgrade by simply adding a Sentinel Retro-Link board to your existing controller.

Specifications

Dimensions—Retro-Link PCB:

5½" W x 5½" L x 1½" H
(13,97 W x 13,21 L x 3,02cm H)

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
- A minimum of one year of Toro's NSN 24/7 support
- 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
- Retro-Link works with:
  - Irritrol MC/E
- 5-year warranty (Retro-Link kit)

Specifying Information

Model	Description
SRL-IR	Sentinel Retro-Link Assy. (Irritrol)

Micro-irrigation Overview




Applications

	DL2000 & Microline w/ROOTGUARD	Blue Stripe Dripline	On-line Emitters	Fogger	
Diameter	5/8″ 1/4″ (Microline)	5/8″ 1/4″ (Soakerline)			
Diameter (of coverage)	2′-7′*	2′-7′*	2′-7′*	2′-5′	
Spacing	12″, 18″, 24″ 6″, 12″ (Microline)	12″,18″, 24″ 6″, 12″ (Soakerline)	Point Source	2′-5′	
Flow Range	0.53-1.0 GPH	0.53-1.0 GPH	0.5-2.0 GPH	2.0-4.0 GPH	
Operating Pressure	15-60 PSI	15-60 PSI	8-60 PSI	10-20 PSI	
Pressure Compensating	DL2000	Drip IN PC	NGC; Turbo-SC Plus		
Non-Pressure Compensating	Microline	Soakerline	Turbo-Key ii; E-2 Classic Take-apart	X	
Turf	X	X	X	X	
Shrubs/Ground Cover	X		X	X	
Sloped Areas			X		
High Pressure Systems					
Low Pressure Systems	X	X	X	X	
High Traffic Areas	X				
Nursery		X	X	X	
Median Strips/ Parking Islands	X		X		
High Wind Conditions		X	X		
Subsurface Irrigation	X				

Note: *Wetted area, dependent on soil type

MICRO-IRRIGATION

	Snap-Jet II	Micro-Sprinkler VI PC	Blue Stripe Hose
		3/8″ inlet	1/4″ to 1″
	1.5′-30′	14′-28′	
	1′-30′	4′-28′	
	6.0-24 GPH	9.0-65 GPH	
	20 PSI	20-60 PSI	
		X	
	X		
	X	X	X
	X	X	X
		X	
	X	X	X
			X
	X	X	
	X		X

DL2000® Series

- Emitter spacing: 12", 18"
- Flow rates: 0.5 or 1.0 GPH
- ROOTGUARD® protection
- Residential, Commercial

Application: The DL2000 subsurface irrigation system delivers optimal water application directly to the root zone. It is perfect for odd-shaped designs, median strips, public recreation areas, residential property and golf course applications (i.e., bunker edges, bunker tongues, tees and greens).

Specifications

Flow rates:

0.5 GPH (2,0 LPH)
1.0 GPH (4,0 LPH)

Operating pressure:

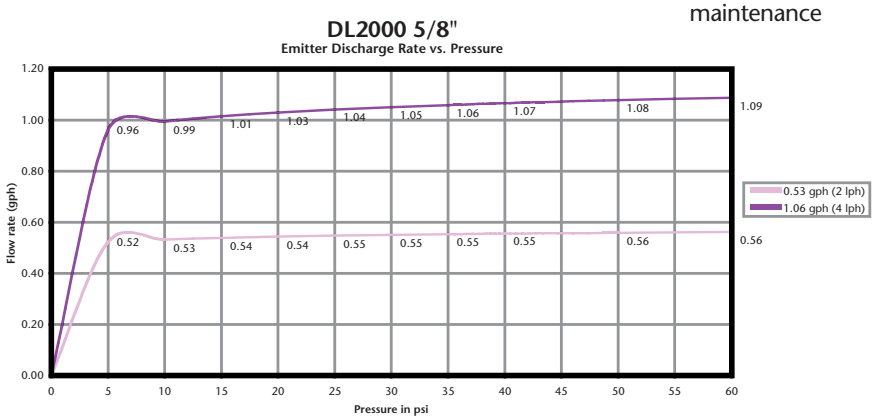
60 psi (3,5 Bar)

Pressure-compensating dripline emitter spacing:

12" and 18" (30,5cm and 45,7cm)

Microline ¼" (6mm) tubing spacing:

6" or 12" (150 or 300mm) for small, tight areas



Features

- US Government-approved ROOTGUARD® protection uses the non-toxic TREFLAN® that creates a force-field effect, guarding against root intrusion by diverting root growth away from the emitter outlet
- Drip In® PC self-cleaning emitters provide precise, trouble-free water application
- Flexible, sturdy design to fit into unusual spaces
- TREFLAN is impregnated during the manufacturing process and requires no maintenance
- Flexible, sturdy design to fit into unusual spaces
- Easy to install and requires minimal maintenance
- Can be installed at grade or buried 4"–8" (100–200mm) underground, delivering irrigation directly to the plant's root zone
- Optional purple hose available for non-potable applications
- Emitters are inseparably banded to the inside wall of durable polyethylene dripline tubing during manufacturing
- Withstands acids down to pH2 as well as fertilizers, chemicals and chlorine
- Approved fertilizers and chemicals can be added at a central inlet to flow directly to the root zone
- Distinctive red stripes to signify Toro dripline with ROOTGUARD
- Seven-year warranty on DL2000 tubing and seven-year warranty on ROOTGUARD root-intrusion protection

Specifying Information

RGP - X | XX - XX - X

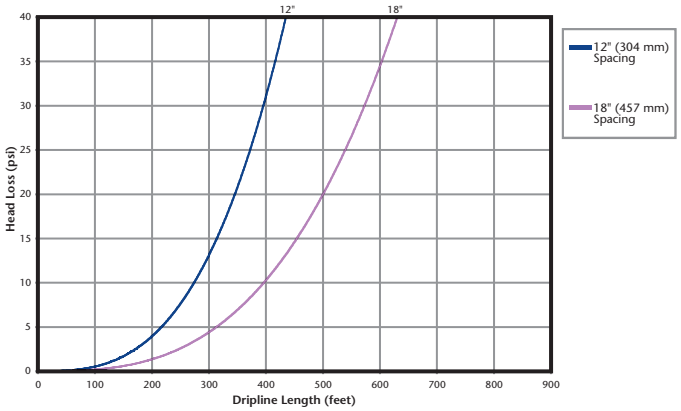
Emitter Flow GPH @ 30 psi (LPH @ 2,07 Bar)	Emitter Spacing	Coil Length	Optional
2—.50 GPH (1.9 LPH) 4—1.0 GPH (4.0 LPH)	12—12" (30cm) 18—18" (45cm)	01—100' (30m) 05—500' (150m)	E—Purple Tubing for Non-potable Water

Example: A 500' (150m) coil of Pressure-compensating Dripline with ROOTGUARD, 12" (30cm) emitter spacing and 0.53 GPH (2.0 LPH), would be specified as: **RGP-212-05**

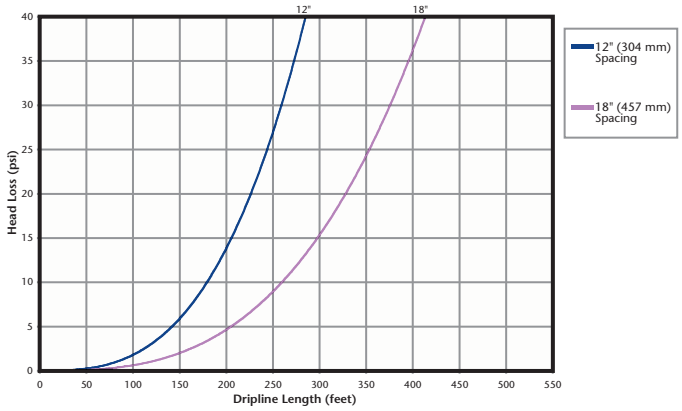
Uses 0.710" (18mm) compression fitting on Toro barb fittings.

DL2000® Series

Head Loss vs. Dripline Length and Emitter Spacing
DL2000 5⁄8", 0.53 GPH (2 LPH) Emitter @ 0% Slope



Head Loss vs. Dripline Length and Emitter Spacing
DL2000 5⁄8", 1.06 GPH (4 LPH) Emitter @ 0% Slope



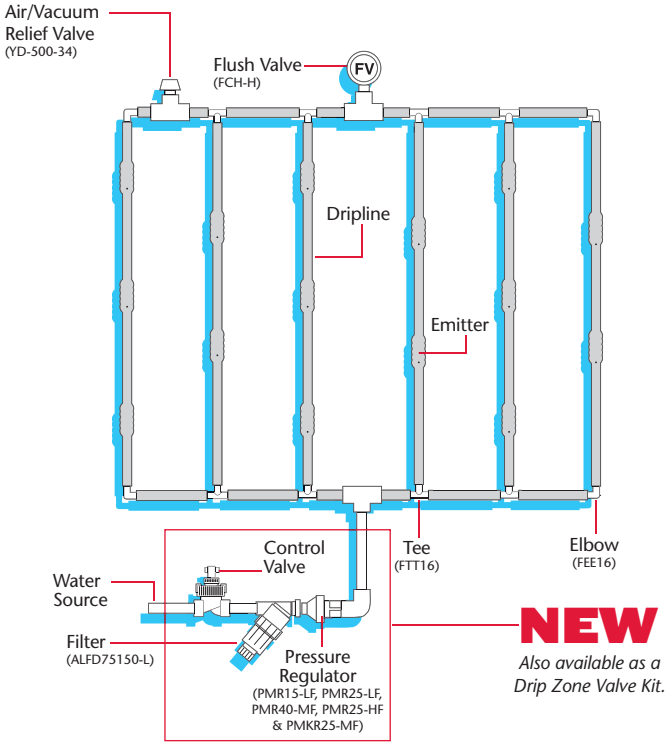
Length of Run Chart—U.S.

5⁄8" (0.620" ID / 0.710" OD)			Inlet Pressure vs. Maximum Length of Run in Feet			
Part Number	Flow Rate	Emitter Spacing	15 psi	25 psi	30 psi	40 psi
RGP-212	.53 GPH	12"	250'	360'	400'	460'
RGP-218	.53 GPH	18"	350'	515'	565'	650'
RGP-412	1.0 GPH	12"	160'	240'	260'	300'
RGP-418	1.0 GPH	18"	240'	340'	375'	430'

Length of Run Chart—Metric

(15.75mm ID/18mm OD)			Inlet Pressure vs. Maximum Length of Run in Meters			
Part Number	Flow Rate	Emitter Spacing	1,03 Bar	1,72 Bar	2,07 Bar	2,76 Bar
RGP-212	2,0 LPH	30,5 cm	76 m	110 m	122 m	140 m
RGP-218	2,0 LPH	45,7 cm	107 m	157 m	172 m	198 m
RGP-412	4,0 LPH	30,5 cm	49 m	73 m	79 m	91 m
RGP-418	4,0 LPH	45,7 cm	73 m	104 m	114 m	131 m

Performance Table	US	Metric
Flow Rate	.53/1.06 gph	2.0/4.0 lph
Coefficient of Variation (Cv)	″ 5%	
Flow Exponent (x)	0.05	
Inside Diameter	0.620"	15,75 mm
Outside Diameter	0.710"	18,03 mm
Wall	0.045"	1,143 mm
Operating pressure (P)	15–60 psi	1,03–4,13 Bar
Minimum filtration requirement	120 Mesh	125 Micron
Hazen-Williams C factor	140	
Barb loss factor (Kd)	.98	



Microline with ROOTGUARD®

- ¼" tubing
- Flow rate: .53 GPH
- Emitter spacing: 6" or 12"
- Residential, Commercial

Application: Microline with ROOTGUARD is ideal for small tight areas such as planter boxes, small flower beds or under narrow strips of turf.

Features

- ROOTGUARD protection uses the non-toxic Treflan® creating a force-field effect guarding against root intrusion into the emitters
- Flexible, sturdy design to fit into unusual spaces
- Easy to install and requires minimal maintenance
- 1/4" tubing with built-in emitters allows for ease of installation even to the smallest of areas

Length of Run Chart—U.S.

Part Number	Tubing Size	Flow Rate	Emitter Spacing	Inlet Pressure	Max Length of Run
MCRG-206	¼"	.53 GPH	6"	15 psi	19'
MCRG-212	¼"	.53 GPH	12"	15 psi	33'

Length of Run Chart—metric

Part Number	Tubing Size	Flow Rate	Emitter Spacing	Inlet Pressure	Max Length of Run
MCRG-206	4mm	2 LPH	15,2cm	1 Bar	6m
MCRG-212	4mm	2 LPH	30,2cm	1 Bar	10m

Performance Table	US	Metric
Inside Diameter	0.170"	4,32 mm
Outside Diameter	0.250"	6,35 mm
Wall	0.040"	1,02 mm
Operating pressure	15–60 psi	1,03–4,13 Bar
Minimum filtration requirement	140 Mesh	105 Micron
Nominal Flow Rate (Q)	0.53 gph	2 lph

Specifying Information Microline

Part Number	Description
MCRG-206	DL2000 100' (30m) Roll, ¼" (4mm) Non-pressure-compensating Microline Dripline w/ROOTGUARD, 6" (150mm) Emitter Spacing, 0.50 GPH (2,0 LPH)
MCRG-212	DL2000 100' (30m) Roll, ¼" (4mm) Non-pressure-compensating Microline Dripline w/ROOTGUARD, 12" (300mm) Emitter Spacing, 0.50 GPH (2,0 LPH)

Microline ¼" Fittings

Part Number	Description
FTT0400	Tee (Barb x Barb)
FEE0400	Elbow (Barb x Barb)
FCC0400	Coupling (Barb x Barb)
FCV-BB	Microflow Valve (Barb x Barb)
FMP08	Hose Punch for ¼" barbed fittings and emitter
IPS0104	1/4" (4mm) plastic locator stake to hold tubing in place

⅝" Loc-Eze® Fittings

Part Number	Description
FTT16	Loc-Eze Tee
FEE16	Loc-Eze Elbow
FCC16	Loc-Eze Coupling
FAM16	Loc-Eze x 1/2" MPT Male Adapter
FTV16	Loc-Eze x 1/2" Slip Adapter Tee
FTF16	Loc-Eze x 1/2" FPT Tee
FJA16	Loc-Eze x 3/4" MHT Male Adapter
FJJ16	Loc-Eze x 3/4" MHT with Cap
FAS16	Loc Eze x 3/4" FHT Hose Swivel with Screen
FAS16-1	Loc Eze x 3/4" FHT Hose Swivel with Washer
FTS16	Loc-Eze x 3/4" FHT Swivel Tee with Screen
FTS16-1	Loc-Eze x 3/4" FHT Swivel Tee with Washer

Note: ⅝" EHW1645 is an equivalent hose size to DL2000 Dripline.

0.710" OD Compression Fittings

Part Number	Description
CA-710	OD Compression Adapter ½" Spigot
CEFCH-H	OD Compression Adapter with Flush Valve, 0.8 GPM, 2 psi Sealing

Accessories

Part Number	Description
YD-500-34	Air Vent—½" MIPT Air Release & Vacuum Relief Valve
FCH-H-FIPT	Flush Valve—¾" FPT (Pipe Thread), 0.8 GPM, 2 psi Sealing Press
FCH-H-FHT	Flush Valve—¾" FHT (Hose Thread), 0.8 GPM, 2 psi Sealing Pres
PMR15-LF	Pressure Regulator—¾", 15 psi 1/10-8 GPM Low-flow
PMR25-LF	Pressure Regulator—¾", 25 psi 1/10-8 GPM Low-flow
PMR25-MF	Pressure Regulator—¾", 25 psi 2–20 GPM Medium-flow
PMR40-MF	Pressure Regulator—¾", 40 psi 2–20 GPM Medium-flow
PR25-HF	Pressure Regulator—1¼" x 1", 25 psi, 10–32 GPM High-flow
DL-MP9	DL2000 Pop-up Operation Indicator
FJQ16	5/8" (16mm) Figure-eight End Clamp
SS6-50	3/4" (20mm) Steel Soil Staple to Hold Tubing in Place
IPS1500	5/8" (16mm) Plastic Locator Stake to Hold Tubing in Place

DripIn® PC
Pressure-compensating Dripline

- 100', 500' and 1000' coils
- Emitter flow: 0.53, 1.00 GPH
- Emitter spacing: 12", 18", 24"
- Residential, Commercial

Application: DripIn pressure-compensating dripline comes standard with the blue stripe of quality. DripIn PC is also available in solid brown or solid purple for reclaimed water applications.

Features

- DripIn PC has built-in emitters that deliver precise water application directly to the root zone
- Fully pressure-compensating from 15–60 psi (0,4–3,5, Bar)
- The pressure-compensating design makes it ideal for slopes, high wind areas and areas with limited water supply or low pressure
- Highly clog resistant due to the dual-opposed outlet emitters
- Built-in emitters
- Works well with ID and OD compression fittings
- Ease of installation
- Keeps water off hardscapes preventing unsightly stains
- Works well in odd-shaped areas

Specifications

Flow rates:
0.53 GPH (2,0 LPH)
1.06 GPH (4,0 LPH)

Operating pressure:
15–60 psi (0,4–3,5 Bar)

Spacing:
12", 18" and 24"
(30,5cm, 45cm and 60cm)

Coil lengths:
100', 250'*, 500' and 1000'
(30m, 75mm*, 150m and 300m)
**250' lengths available in brown dripline only*

Length of Run Chart—U.S.

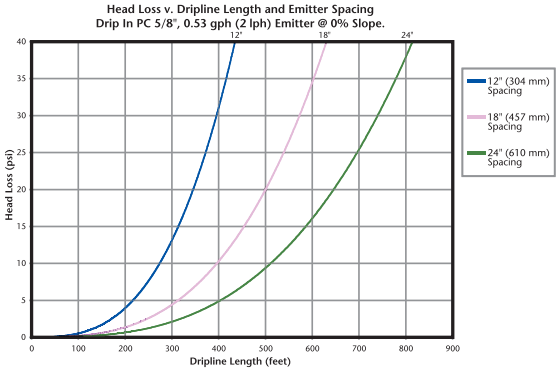
5/8" (0.620" ID / 0.710" OD)				Inlet pressure vs. Max length of run in Feet			
Part Number	Tubing Size	Flow Rate	Emitter Spacing	15 psi	25 psi	30 psi	40 psi
PCS1853-12	.620" ID	.53 gph	12"	250'	360'	400'	460'
PCS1853-18	.620" ID	.53 gph	18"	350'	515'	565'	650'
PCS1853-24	.620" ID	.53 gph	24"	450'	650'	720'	825'
PCS1810-12	.620" ID	1.0 gph	12"	160'	240'	260'	300'
PCS1810-18	.620" ID	1.0 gph	18"	240'	340'	375'	430'
PCS1810-24	.620" ID	1.0 gph	24"	300'	425'	475'	540'

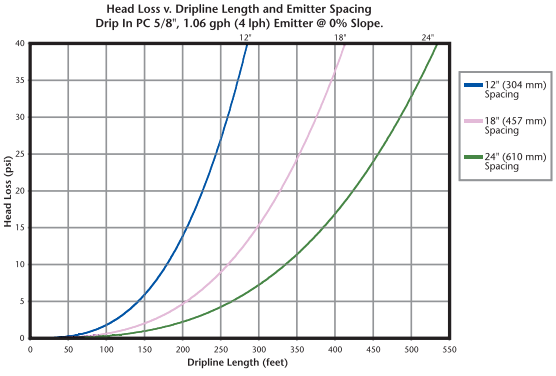
Cutaway illustration of the DripIn built-in emitter.

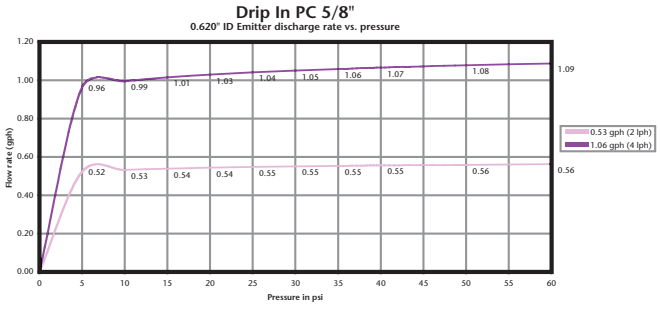
Length of Run Chart—Metric

15.75mm ID / 18mm OD)				Inlet pressure vs. Max length of run in Meters			
Part Number	Tubing Size	Flow Rate	Emitter Spacing	1.03 bar	1.72 bar	2.07 bar	2.76 bar
PCS1853-12	15.75 mm ID	2.0 lph	30.5 cm	76 m	110 m	122 m	140 m
PCS1853-18	15.75 mm ID	2.0 lph	45.7 cm	107 m	157 m	172 m	198 m
PCS1853-24	15.75 mm ID	2.0 lph	61.0 cm	137 m	198 m	219 m	251 m
PCS1810-12	15.75 mm ID	4.0 lph	30.5 cm	49 m	73 m	79 m	91 m
PCS1810-18	15.75 mm ID	4.0 lph	45.7 cm	73 m	104 m	114 m	131 m
PCS1810-24	15.75 mm ID	4.0 lph	61.0 cm	91 m	130 m	145 m	165 m

Performance Table	US	Metric
Flow Rate	.53/1.06 gph	2.0/4.0 lph
Coefficient of Variation (Cv)	″ 5%	
Flow Exponent (x)	0.05	
Inside Diameter	0.620"	15,75 mm
Outside Diameter	0.710"	18,03 mm
Wall	0.045"	1,143 mm
Operating pressure (P)	15–60 psi	1,03–4,13 Bar
Minimum filtration requirement	120 Mesh	125 Micron
Hazen-Williams C factor	140	
Barb loss factor (Kd)	.98	







Specifying Information

PCX | 18 | XX | XX | XXX

Pressure Compensation	Tubing size	Emitter flow, gph (lph) @ 30 psi (2.07 bar)	Emitter spacing	Coil length
PCS–Blue Stripe PCB–Brown	18–5/8" (0.620" ID)	53–0.53 gph (2.00 lph) 10–1.00 gph (4.00 lph)	12–12" (30.5 cm) 18–18" (45cm) 24–24" (60cm)	100–100' (30m) 250–250' (75m)* 500–500' (150m) –1000' (300m)

Example: A coil of 5/8" (0.620" ID) pressure compenstating .53 gph (2.00 lph) emitters spaced at 12" (30cm) on a 500' (150m) coil would have the following part number: **PCS1853-12-500**

**250' coil length is only available in brown dripline 12" and 18" emitter spacing.*
Other DripIn dripline sizes (0.550" ID and 0.710" ID) available upon request.

Blue Stripe® Hose

- Inside diameter: ⅝", ¾", 1"
- Various coil lengths
- ID or OD controlled
- Residential, Commercial

Application: Blue Stripe hose is available in a variety of sizes, color configurations and lengths to meet any landscape application.

Blue Stripe Polyethylene Hose

Blue Stripe Micro-distribution Hose

Features

Polyethylene and Micro-distribution Hose

- Manufactured from premium grade linear low density polyethylene for the most dependable operation
- Minimum 2% carbon black added for ultraviolet (UV) deterioration
- Available in OD Controlled configurations
- Available with a blue, white or purple stripe for easy on-site identification of drip zones or applications during installation and operation
- Available in a wide range of diameters, wall thicknesses, coil lengths and working pressures
- Available in purple for reclaimed water applications or in brown as another alternative
- Conforms to A.S.A.E. standards for minimum inside diameters and wall thickness
- Superior quality and durability
- 7-year non-prorated warranty (longest in business)

Specifications

Polyethylene Hose

ID Controlled Hose

	Part Number	Hose Size		Nominal Hose Size			Coil Length	Internal Diameter		Wall Thickness		Coil Weight		Pressure Rating
		ID Inch	ID mm	ID Inch	OD Inch	Wall Inch	Ft.	Min. Inch	Max. Inch	Min. Inch	Max. Inch	Min. Lbs.	Max. Lbs.	psi
Blue Stripe® Round Hose - Coil Stretch Wrapped														
	EHW1554-050	-	15	0.570	0.685	0.058	500	0.569	0.574	0.054	0.059	21.5	23.9	77
	EHW1645-010	5/8"	16	0.620	0.710	0.045	100	0.613	0.618	0.047	0.052	4.0	4.5	64
	EHW1645-050	5/8"	16	0.620	0.710	0.045	500	0.613	0.618	0.045	0.050	18.9	21.3	61
Blue Stripe® Round Hose - Coil Banded														
	EHD1554-050	-	15	0.570	0.685	0.058	500	0.569	0.574	0.054	0.059	21.5	23.9	77
x	EHD1554-100	-	15	0.570	0.685	0.058	1,000	0.569	0.574	0.054	0.059	43.0	47.7	77
pwx	EHD1645-050	5/8"	16	0.620	0.710	0.045	500	0.613	0.618	0.045	0.050	18.9	21.3	61
pwx	EHD1645-100	5/8"	16	0.620	0.710	0.045	1,000	0.613	0.618	0.045	0.050	37.8	42.7	61
pwx	EHD2057-050	3/4"	20	0.805	0.925	0.060	500	0.804	0.809	0.057	0.063	31.4	35.1	59
px	EHD2057-100	3/4"	20	0.805	0.925	0.060	1,000	0.804	0.809	0.057	0.063	62.7	70.2	59
pw	EHD2667-066	1"	26	1.060	1.200	0.070	660	1.056	1.061	0.067	0.073	63.4	69.8	53

P = also available as Purple Stripe Hose for reclaimed water

w = also available as Blue Stripe White Hose

x = also available as White Blue Stripe Hose

Also available without stripe on special request.

OD Controlled Hose

	Part Number	Hose Size		Nominal Hose Size			Coil Length	Outside Diameter		Wall Thickness		Coil Weight		Pressure Rating
		ID Inch	ID mm	ID Inch	OD Inch	Wall Inch	Ft.	Min. Inch	Max. Inch	Min. Inch	Max. Inch	Min. Lbs.	Max. Lbs.	psi
Blue Stripe® OD Controlled Hose - Coil Stretch Wrapped														
	EHW1650-010	5/8"	16	0.600	0.700	0.050	100	0.697	0.702	0.047	0.052	3.9	4.4	65
	EHW1650-050	5/8"	16	0.600	0.700	0.050	500	0.697	0.702	0.047	0.052	19.4	21.8	65
Blue Stripe® OD Controlled Hose - Coil Banded														
	EHO1650-050	5/8"	16	0.600	0.700	0.050	500	0.697	0.702	0.047	0.052	19.4	21.8	65
	EHO1650-100	5/8"	16	0.600	0.700	0.050	1,000	0.697	0.702	0.047	0.052	38.7	43.5	65
	EHO2055-050	3/4"	20	0.830	0.940	0.055	500	0.935	0.940	0.052	0.057	29.2	32.3	53
	EHO2055-100	3/4"	20	0.830	0.940	0.055	1,000	0.935	0.940	0.052	0.057	58.3	64.7	53

Micro-distribution Hose

ID Controlled Hose

	Part Number	Hose Size		Nominal Hose Size			Coil Length	Internal Diameter		Wall Thickness		Coil Weight		Pressure Rating
		ID Inch	ID mm	ID Inch	OD Inch	Wall Inch	Ft.	Min. Inch	Max. Inch	Min. Inch	Max. Inch	Min. Lbs.	Max. Lbs.	psi
Blue Stripe Round Hose - Coil Stretch Wrapped														
	EHW0437-100	1/4"	4	0.170	0.250	0.040	1,000	0.167	0.172	0.037	0.042	9.64	11.48	161
	EHW0645-050	-	6	0.250	0.346	0.048	500	0.245	0.255	0.045	0.050	8.34	9.74	137
Blue Stripe Round Hose - Coil Banded														
	EHD0437-010	1/4"	4	0.170	0.250	0.040	100	0.167	0.172	0.037	0.042	-	1.5	161
Blue Stripe Round Hose - Reel Boxed														
	EVR0332-250	1/4"	4	0.126	0.196	0.035	2,500	0.126	0.129	0.032	0.037	-	-	-
	EVR0332-100	1/4"	4	0.126	0.196	0.035	1,000	0.126	0.129	0.032	0.037	-	-	-

DripIn PC® and Blue Stripe® Fittings and Accessories

Specifying Information
⅝" Loc-Eze Fittings

Part Number	Description
FTT16	Loc-Eze Tee
FEE16	Loc-Eze Elbow
FCC16	Loc-Eze Coupling
FAM16	Loc-Eze x 1/2" MHT Male Adapter
FTV16	Loc-Eze x 1/2" Slip Adapter Tee
FTF16	Loc-Eze x 1/2" FPT Tee
FJA16	Loc-Eze x 3/4" MHT Male Adapter
FJJ16	Loc-Eze x 3/4" MHT with Cap
FAS16	Loc-Eze x 3/4" FHT Swivel with Screen
FAS16-1	Loc-Eze x 3/4" FHT Swivel with Cap
FTS16	Loc-Eze x 3/4" FHT Swivel Tee with Screen
FTS16-1	Loc-Eze x 3/4" FHT Swivel Tee with Washer

Specifying Information
15mm Barbed Fittings

Part Number	Description
FCC15	Loc-Eze Coupling
FCC1500	Barbed Coupling
FAM1500	Barbed x 1/2" MPT Male Adapter
FAS1500	Barbed x 3/4" FHT Swivel with Screen
FAS1500-1	Barbed x 3/4" FHT Swivel with Washer
FEE1500	Barbed Elbow
FJA1500	Barbed x 3/4" MHT Male Adapter
FJJ1500	Barbed x 3/4" MHT with Cap
FTS1500	Barbed x 3/4" FHT Swivel Tee with Screen
FTS1500-1	Barbed x 3/4" FHT Swivel Tee with Washer
FTT1500	Barbed Tee

Specifying Information
Compression Fittings

Part Number	Description
CA-710	OD Compression Adapter for 0.71 OD Tubing (Blue)
CEFCH-H	OD Compression Adapter with Flush Valve, 0.8 GPM, 2 psi Sealing

Specifying Information
Accessories

Part Number	Description
FCH-H-FIPT	Flush Valve—¾" FNPT (Pipe Thread), 0.8 GPM, 2 psi Sealing Pressure
FCH-H-FHT	Flush Valve—¾" FHT (Hose Thread), 0.8 GPM, 2 psi Sealing Pressure
FJQ16	5/8" (16mm) Figure-eight End Clamp
SS6-50	3/4" (20mm) Steel Soil Staple to Hold Tubing in Place
IPS1500	5/8" (16mm) Plastic Locator Stake to Hold Tubing in Place

See page 86 for Micro-distribution Hose Fittings.

Soakerline™ Classic Dripline

¼" dripline
Flow rate: .53 gph
Emitter spacing: 6", 12"
Residential, Commercial

Blue Stripe Soakerline™ Dripline

Brown Soakerline™ Dripline

Application: Soakerline is ideal to use around plants, trees and shrubs. The built-in emitters make installation easy.

Specifications

Flow rate (nominal):
.53 GPH (2 LPH)

Operating pressure:
15–60 psi (1,03–4,13 Bar)

Emitter spacing:
6" and 12" (15,2 and 30,5 cm)

Fittings:
Full line of fittings available

Coil length:
100' coil or 3,000' reel

Features

- Soakerline ¼" dripline has a flexible and sturdy design making it ideal for small landscape applications
- Built-in emitters allow for ease of installation
- Available in brown to blend into landscape areas

Length of Run Chart—U.S.

Soakerline - 1/4" classic dripline					
Part Number	Tubing Size	Flow Rate	Emitter Spacing	Inlet Pressure	Max Length of Run
SDx252-6-xxx	1/4"	.53 gph	6"	15 psi	19'
SDx252-12-xxx	1/4"	.53 gph	12"	15 psi	33'

Length of Run Chart—Metric

Soakerline - 1/4" classic dripline					
Part Number	Tubing Size	Flow Rate	Emitter Spacing	Inlet Pressure	Max Length of Run
SDx252-6-xxx	4 mm	2 lph	15.2 cm	1 bar	6 M
SDx252-12-xxx	4 mm	2 lph	30.5 cm	1 bar	10 M

Performance Table	US	Metric
Inside Diameter	0.170"	4,32 mm
Outside Diameter	0.250"	6,35 mm
Wall	0.040"	1,02 mm
Operating pressure	15–60 psi	1,03–4,13 Bar
Minimum filtration requirement	140 Mesh	105 Micron
Nominal Flow Rate (Q)	0.53 gph	2 lph

FCC0400

FTT0400

FEE0400

FCV-BB

FMP08

IPS0104

Specifying Information
Soakerline & Micro-Distribution Hose Fittings

Part Number	Description
FTT0400	Tee (Barb x Barb)
FEE0400	Elbow (Barb x Barb)
FCC0400	Coupling (Barb x Barb)
FCV-BB	Microflow Valve (Barb x Barb)
FMP08	Hose Punch for ¼" barbed fittings and emitter
IPS0104	1/4" (4mm) plastic locator stake to hold tubing in place

Specifying Information

SD [X] 252 [XX] [XXX]

Dripline Type	Emitter Spacing	Length
S—Blue Stripe B—Brown Tubing	6—6" (15cm) 12—12" (30cm)	100—100' Coil 3000—3000' Reel

Example: A coil of brown ¼" 0.53 GPH Soakerline classic dripline with 12" emitter spacing in a 3000' coil, would be specified as: **SDB252-12-3000**

NGE with Black (1.0 GPH) color-coded dust cap

NGE with Red (2.0 GPH) color-coded dust cap

NGE with Blue (0.5 GPH) color-coded dust cap

Male adapter option for use with ¼" exit tubing

NGE® New Generation Emitters

Pressure-compensating

Pressure: 8–60 psi

Flow: 0.5, 1.0, 2.0 GPH

Residential, Commercial

Application: This unique design allows flushing and anti-siphoning during the emitter's operation and shutdown, giving it added protection from clogging.

Operational Features

- Uniform flow rates make the NGE ideal for use in difficult topographical conditions
- With a Coefficient of Variation (Cv) of 3% or less as tested by Toro® and independent labs, the NGE is one of the best performing pressure-compensating emitters available
- The unique emitter design and pressure-compensating diaphragm will:
  - allow the emitter to 'self-flush' during operation and shut down to facilitate cleaning. This ensures the emitter is free of debris at start-up and during the emitter operation.
  - stop the emitter from draining below 2–3 psi (0,1–0,2 Bar) preventing complete drainage and reducing the time required to refill the system at start-up improving the overall operation.
  - allow the emitter to 'close' inhibiting back siphoning and preventing the emitter from being contaminated with debris

Installation Features

- Barbed inlet allows emitters to be installed directly onto hose or used with ¼" (4mm) leader tubing (Part No. EHD0437)
- Available with Male Adapter (-MA) or Snap-on Dust Cap (-DC):
  - Male Adapter option with bug shield deters the entry of insects but also can be used with ¼" (4mm) exit tubing for precise water placement
  - Dust Cap option deters dust and insects from entering the emitter

Specifications

Flow rates:

DPC02: 0.5 GPH (2,0 LPH)
DPC04: 1.0 GPH (4,0 LPH)
DCP08: 2.0 GPH (8,0 LPH)

Operating pressure:

8–60 psi (0,5–4,1 Bar)

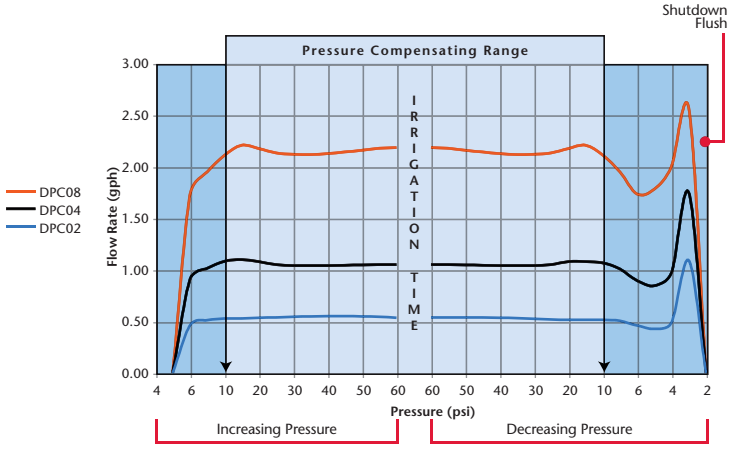
Color-coded snap-on dust cap:

0.5—Blue
1.0—Black
2.0—Red

Flow Rates—U.S. and Metric

Pressure		DPC02		DPC04		DPC08	
psi	Bar	GPH	LPH	GPH	LPH	GPH	LPH
6	0,41	0.46	1,76	0.91	3,44	1.73	6,56
8	0,55	0.51	1,93	1.01	3,84	1.95	7,37
10	0,69	0.53	2,00	1.08	4,10	2.11	7,98
15	1,03	0.53	2,00	1.10	4,16	2.21	8,35
20	1,38	0.53	2,02	1.08	4,08	2.17	8,23
25	1,72	0.54	2,04	1.05	3,97	2.13	8,07
30*	**2,07**	**0.54**	**2,06**	**1.04**	**3,94**	**2.12**	**8,02**
35	2,41	0.55	2,08	1.04	3,94	2.12	8,01
40	2,76	0.55	2,09	1.04	3,94	2.12	8,04
45	3,10	0.55	2,08	1.04	3,95	2.14	8,11
50	3,45	0.55	2,07	1.05	3,96	2.16	8,17
55	3,79	0.54	2,06	1.05	3,97	2.18	8,24
60	4,14	0.54	2,03	1.05	3,97	2.18	8,27

** Recommended operating pressure*



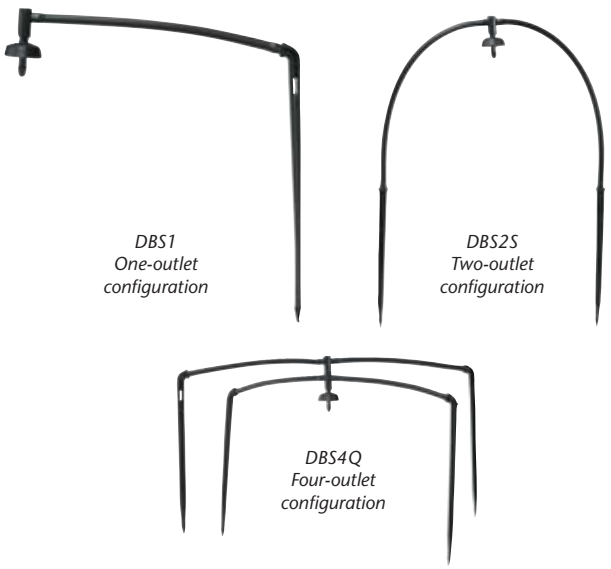
Performance Table		DPC02	DPC04	DPC08
Nominal Flow Rate (Q)	GPH	0.53 GPH	1.06 GPH	2.11 GPH
	LPH	2,0 LPH	4,0 LPH	8,0 LPH
Recom. Pressure Range (P)	psi	8–60 psi		
	Bar	0,6–4,1 Bar		
Emitter Exponent (x)		0.000	0.000	0.002
Coefficient of Variation (Cv)		3%		
Min. Filtration Requirement		140 Mesh (105 Micron)		
Optional Outlet		-MA (Male Adapter) -DC (Snap-on Dust Cap)		
Color (Cap)		Blue	Black	Red

Specifying Information

Part Number	Description
	NGE SF (Self-flushing) Pressure-compensating Turbulent Flow Emitter with Male Adapter
DPC02-MA	0.5 GPH (2 LPH) NGE Self-flushing Pressure-compensating Emitter w/Male Adapter (black)
DPC04-MA	1.0 GPH (4 LPH) NGE Self-flushing Pressure-compensating Emitter w/Male Adapter (black)
DPC08-MA	2.0 GPH (8 LPH) NGE Self-flushing Pressure-compensating Emitter w/Male Adapter (black)
	NGE SF (Self-flushing) Pressure-compensating Turbulent Flow Emitter with Dust Cap
DPC02-DC-BLUE	0.5 GPH (2 LPH) NGE Self-flushing Pressure-compensating Emitter w/Dust Cap (blue)
DPC04-DC	1.0 GPH (4 LPH) NGE Self-flushing Pressure-compensating Emitter w/Dust Cap (black)
DPC08-DC-RED	2.0 GPH (8 LPH) NGE Self-flushing Pressure-compensating Emitter w/Dust Cap (red)

Black Spider® Multi-outlet Device

Three configurations
Use w/¼" male spigot outlet
Length: 18", 24", 32", 36"
Residential, Commercial



Application: Use in conjunction with our NGE-MA (male adapter) emitter for precise water placement—suited for use where pot watering and hanging basket irrigation systems are used.

Features

- Add-on assembly allows additional distribution for directing water to plants
- Easy to install on the NGE-MA as well as other emitters with a ¼" (4mm) male spigot outlet
- Available in one-, two- or four-outlet configuration
- Lengths are:
  – 18" (45,7 cm)
  – 24" (61,0 cm)
  – 32" (81,3 cm)
  – 36" (91,4 cm)

Specifying Information

Model No.	Description
DBS1-XX	Black Spider-1—Single outlet elbow configuration w/barbed elbow stake
DBS1S-XX	Black Spider-1S—Single outlet straight configuration w/barbed elbow stake
DBS2Q-XX	Black Spider-2Q—Two outlet configuration w/turbulent elbow stakes
DBS2S-XX	Black Spider-2S—Two outlet configuration w/turbulent straight stakes
DBS4Q-XX	Black Spider-4Q—Four outlet configuration w/turbulent elbow stakes
DBS4S-XX	Black Spider-4S—Four outlet configuration w/turbulent straight stakes

Example: A single outlet elbow configuration with barbed elbow stake and 18" micro-tube would be: DBS1-18

Note: The emitter must be inserted into the female adapter at least half the length of the emitters male adapter to ensure a positive fit.

Black Spider® Accessories

Specifying Accessories

Part Number	Description
FBS1E	1 outlet barbed elbow x female adaptor
FBS1S	1 outlet barbed straight x female adaptor
FBS2	2 outlet barbed tee x female adaptor
FBS2-MA	2 outlet barbed manifold x female/male adaptor
IPS0301	Turbulent flow straight stake
IPS0301BQ	Barbed elbowed stake
IPS0301Q	Turbulent flow elbowed stake
SFH0332-24	1/8" PEVA Leader Tube -24" (61cm)
SFH0332-36	1/8" PEVA Leader Tube -36" (91.4cm)

Turbo-SC® Plus
Pressure-compensating Emitter

Pressure-compensating
Self-flushing
Flow: 0.5, 1.0, 2.0 GPH
Residential, Commercial

Application: The Turbo-SC Plus pressure-compensating emitter is ideal for use in landscaping applications where there is difficult topographical conditions.

Features

- Take-apart feature permits fast, easy on-site inspection and cleaning
- Color-coded base for easy on-site identification:
  Blue—0.5 gph (2,0 lph)
  Black—1.0 gph (4,0 lph)
  Red—2.0 gph (8,0 lph)
- Large self-flushing, turbulent flow path for higher resistance to plugging where water conditions may be a problem
- Proven pressure-compensating emitter design
- Available in three flow rates
- Barbed inlet allows emitters to be installed directly onto hose or used with ¼" (4mm) leader tubing (Part No. EHD0437)
- Male Adapter with bug shield deters the entry of insects, but also can be used with ¼" (4mm) exit tubing for precision water placement
- High quality diaphragm for improved pressure compensation and uniformity over a wide range of pressure
- Outlet baffle to deter entry of insects

Specifications

Flow rate:

Turbo-SC Plus
– DPJ02-A: 0.5 GPH (2,0 LPH)
– DPJ04-A: 1.0 GPH (4,0 LPH)
Turbo-SC
– DPJ08-A: 2.0 GPH (8,0 LPH)

Operating pressure:

10–50 psi (0,7–3,5 Bar)

Performance Table		DPJ02-A	DPJ04-A	DPJ08-A
Nominal Flow Rate (Q)	GPH	0.53 GPH	1.06 GPH	2.11 GPH
	LPH	2,0 LPH	4,0 LPH	8,0 LPH
Recom. Pressure Range (P)	psi	10–50 psi		
	Bar	0,7–3,5 Bar		
Emitter Exponent (x)		0.02	-0.04	0.01
Min. Filtration Requirement		140 Mesh (105 Micron)		
Color (Base)		Blue	Black	Red

Flow Rate—U.S.

psi	DPJ02-A	DPJ04-A	DPJ08-A
5	0.42	0.73	1.41
10	0.44	0.97	1.80
15	0.47	0.96	2.00
20	0.49	0.97	2.12
25	0.50	1.00	2.15
* **30**	**0.51**	**1.01**	**2.15**
35	0.51	1.01	2.11
40	0.50	1.00	2.04
45	0.49	0.98	1.95
50	0.47	0.95	1.84
55	0.45	0.91	

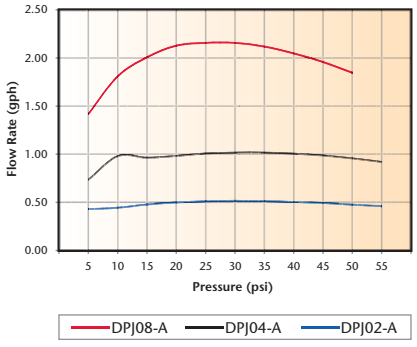
** Recommended operating pressure*
Values listed in gallons per hour.

Flow Rate—Metric

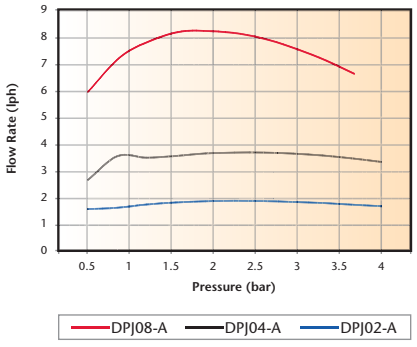
Bar	DPJ02-A	DPJ04-A	DPJ08-A
0,5	1,60	2,94	6,01
1,0	1,74	3,49	7,42
1,5	1,95	3,69	8,40
* **2,0**	**1,90**	**3,77**	**8,02**
2,5	1,94	3,32	8,11
3,0	1,82	3,69	7,29
3,5	1,78	3,61	6,97
4,0	1,74	3,49	

** Recommended operating pressure*
Values listed in liters per hour.

Pressure vs. Flow—U.S.



Pressure vs. Flow—Metric



Specifying Information

Part Number	Description
DPJ02-A-BLUE	0.5 GPH (2 LPH) Pressure-compensating Emitter w/Male Adapter (Blue)
DPJ04-A	1.0 GPH (4 LPH) Pressure-compensating Emitter w/Male Adapter (Black)
DPJ08-A-RED	2.0 GPH (8 LPH) Pressure-compensating Emitter w/Male Adapter (Red)

Turbo-Key® II Classic Emitter

Non-pressure-compensating
Barbed inlet
Flow: 0.5, 1.0, 2.0 GPH
Residential, Commercial

Application: The Turbo-Key II Classic (non-pressure-compensating) emitter is ideal for use in flat landscaping applications.

Specifications

Flow rate:

Turbo-Key II
- DNK-02-3: 0.5 GPH (2,0 LPH)
- DNK-04-3: 1.0 GPH (4,0 LPH)
- DNK-08-3: 2.0 GPH (8,0 LPH)

Operating pressure:

0–50 psi (0–3,5 Bar)

Features

- Take-apart feature permits fast, easy on-site inspection and cleaning
- Barbed inlet allows emitters to be installed directly onto hose or used with ¼" (4mm) leader tubing (Part No. EHD0437)
- Large, turbulent flow path for higher resistance to plugging where water conditions may be a problem
- New self-piercing barb inlet
- Proven Classic® (non-pressure-compensating) emitter design

Flow Rate—U.S.

psi	DPJ02-A	DPJ04-A	DPJ08-A
5	0.42	0.73	1.41
10	0.44	0.97	1.80
15	0.47	0.96	2.00
20	0.49	0.97	2.12
25	0.50	1.00	2.15
* **30**	**0.51**	**1.01**	**2.15**
35	0.51	1.01	2.11
40	0.50	1.00	2.04
45	0.49	0.98	1.95
50	0.47	0.95	1.84
55	0.45	0.91	

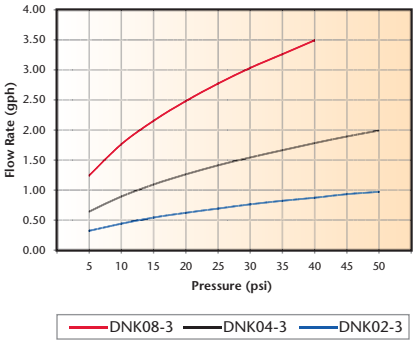
* *Recommended operating pressure*
Values listed in gallons per hour.

Flow Rate—Metric

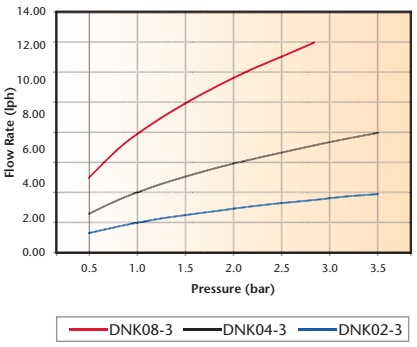
Bar	DPJ02-A	DPJ04-A	DPJ08-A
0,5	1,60	2,94	6,01
1,0	1,74	3,49	7,42
1,5	1,95	3,69	8,40
* **2,0**	**1,90**	**3,77**	**8,02**
2,5	1,94	3,32	8,11
3,0	1,82	3,69	7,29
3,5	1,78	3,61	6,97
4,0	1,74	3,49	

* *Recommended operating pressure*
Values listed in liters per hour.

Pressure vs. Flow—U.S.



Pressure vs. Flow—Metric



Performance Table		DPJ02-A	DPJ04-A	DPJ08-A
Nominal Flow Rate (Q)	GPH	0.53 GPH	1.06 GPH	2.11 GPH
	LPH	2,0 LPH	4,0 LPH	8,0 LPH
Recom. Pressure Range (P)	psi	10–50 psi		
	Bar	0,7–3,5 Bar		
Emitter Exponent (x)		0.02	-0.04	0.01
Min. Filtration Requirement		140 Mesh (105 Micron)		
Color (Base)		Blue	Black	Red

Specifying Information

Model No.	Description
DNK02-3	0.5 GPH (2 LPH) Turbulent Flow Emitter (Black Base/White Pill)
DNK-04-3	1.0 GPH (4 LPH) Turbulent Flow Emitter (Black Base/Blue Pill)
DNK-08-3	2.0 GPH (8 LPH) Turbulent Flow Emitter (Black Base/Green Pill)

E-2® Classic Take-apart Emitter

- Non-pressure-compensating
- Barbed inlet
- Flow: 1.0, 2.0, 4.0 GPH
- Residential, Commercial

Application: The E-2 Classic Take-apart emitter allows installation directly onto hose or can be used with 1/4" leader tubing.

Features

- Proven Classic® (non-pressure-compensating) hydraulic design
- Economic emitter for trouble-free applications
- Barbed inlet allows emitters to be installed directly onto hose or used with ¼" (4mm) leader tubing (Part No. EHD0437
- Exit barb may be used with ¼" (4mm) exit tubing for precision water placement

Specifications

Flow rate:

DBK04: 1.0 GPH (4,0 LPH)
DBK08: 2.0 GPH (8,0 LPH)
DBK16: 4.0 GPH (16,0 LPH)

Operating pressure:

10–50 psi (0,7–3,5 Bar)

Flow Rate—U.S.

psi	DBK04	DBK08	DBK16
5	0.58	1.03	2.09
10	0.88	1.53	3.08
* 15	1.12	1.93	3.87
20	1.33	2.27	4.55
25	1.52	2.58	5.15
30	1.70	2.87	5.71
35	1.87	3.13	6.23
40	2.03	3.38	6.71
45	2.17	3.62	7.17
50	2.32	3.84	7.61

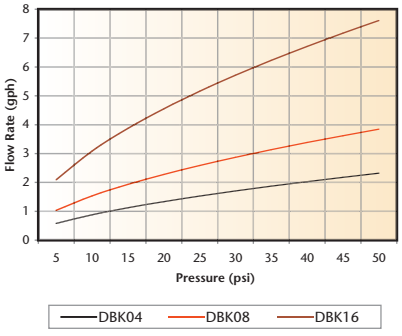
** Recommended operating pressure*
Values listed in gallons per hour.

Flow Rate—Metric

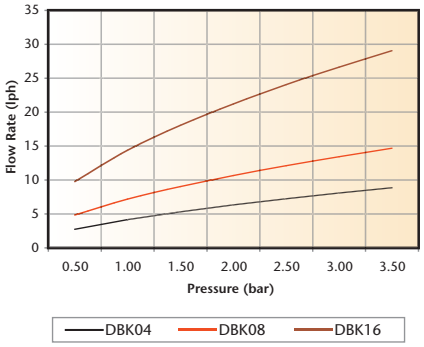
Bar	DBK04	DBK08	DBK16
0,50	2,73	4,82	9,74
* 1,00	4,15	7,17	14,38
1,50	5,31	9,04	18,05
2,00	6,31	10,65	21,21
2,50	7,22	12,10	24,04
3,00	8,07	13,43	26,63
3,50	8,85	14,66	29,04

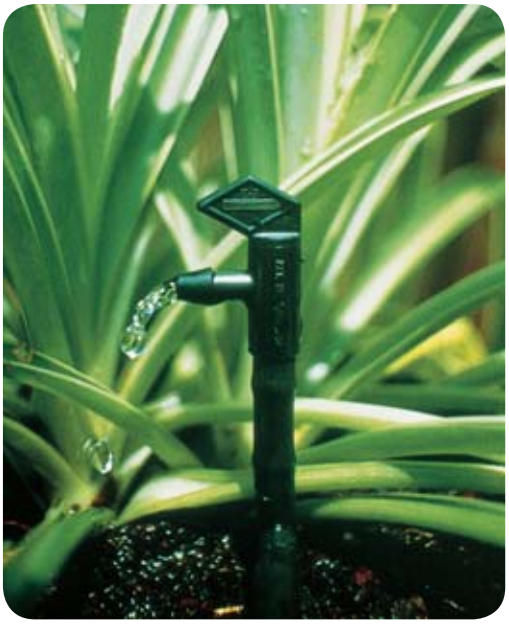
** Recommended operating pressure*
Values listed in liters per hour.

Pressure vs. Flow—U.S.



Pressure vs. Flow—Metric





Performance Table		DBK04	DBK08	DBK16
Nominal Flow Rate (Q)	GPH @ 15 psi	1.06 GPH	2.11 GPH	4.23 GPH
	LPH @ 1 Bar	4 LPH	8 LPH	16 LPH
Flow Coefficient (K)	U.S. Units	0.22	0.41	0.85
	Metric Units	4,15	7,17	14,38
Operating Pressure Range (P)	psi	0–50 psi		
	Bar	0–3,5 Bar		
Flow Exponent (X)		0.60	0.57	0.56
Coefficient of Variation (Cv)		″ 5%	″ 6%	″ 6.5%
Minimum Filtration Requirement		140 Mesh (105 Micron)		

Specifying Information

Model No.	Description
DBK04	1.0 GPH (4,0 LPH)
DBK08	2.0 GPH (8,0 LPH)
DBK16	4.0 GPH (16,0 LPH)

Varis® and Varistake® Adjustable Emitters

Adjustable
8 outlets
Flow: 0–14 GPH
Residential, Commercial

Application: The Varis emitter has eight outlets with an adjustable flow rate of 0–14 GPH and can be installed at a height of 1″ to 2½″ above grade to maximize diameter of throw.

Specifications

Maximum working pressure:

45 psi (3 Bar)

Flow:

Adjustable: 0–14 GPH (0–40 LPH)

Varis adjustable emitter:

¼″ (4mm) barbed inlet (Part No. DAK05)

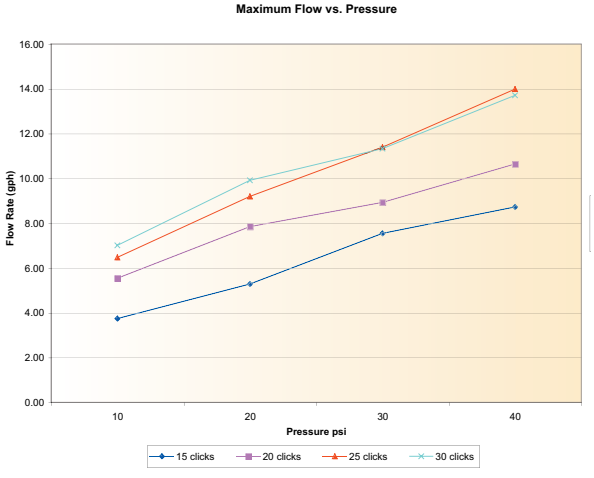
Varistake adjustable emitter with 4½″ stake:

¼″ (4mm) barbed inlet suitable for ¼″ (4mm) leader tubing (Part No. EHD0437)

Diameter of throw (maximum opening @ 30 clicks):

At height of 1″ above grade
- 20 psi: 6″ diameter
- 30 psi: 13½″ diameter
- 40 psi: 21″ diameter

At height of 2½″ above grade
- 20 psi: 8″ diameter
- 30 psi: 15½″ diameter
- 40 psi: 27″ diameter



Specifying Information

Model No.	Description
DAK05	Varis adjustable emitter with ¼″(4mm) barbed inlet
DAK15	Varistake adjustable emitter with 4¾″ (12cm) stake and ¼″ (4mm) barbed inlet

Fogger

SFJ4xx SFL4xx

- Creates a fine mist spray
- Hydraulic
- Flow: 2.0, 3.0, 4.0 GPH
- Residential, Commercial

Application: The fogger sprays a fine mist at low volumes and low pressures. It is an ideal product for increasing humidity in hot, dry climates.

Features

- Rugged nylon construction with no moving parts
- Proven hydraulic vortex design
- Barbed fogger (SFJxx) attaches direction only LLDPE Hose or ¼" (4mm) micro-distribution hose (Part No. EHD0437) and can be used with locator stake (Part No. (PS0104)
- ⅛" NPT threaded fogger (SF4xx) attaches directly to ⅛" threaded connection or threaded fogger stake (Part No. IPS0409)

Specifications

Flow rate:

SFL/SFJ 408: 2.0 GPH (8,0 LPH)
SFL/SFJ 412: 3.0 GPH (12,0 LPH)
SFL/SFJ 416: 4.0 GPH (16,0 LPH)

Operating pressure*:

10–35 psi (0,7–2,25 Bar)
*20 psi (2,25 Bar) recommended

Diameter of throw (approximate):

2'–5' (0,6–1,5m)

Replacement nozzles:

Fogger Model Number:	Nozzle Part Number:
SFL408, SFJ408	DEP3263-08
SFL412, SFJ412	DEP3263-12
SFL416, SFJ416	DEP3263-16

Performance Table		SFL/SFJ 408	SFL/SFJ 412	SFL/SFJ 416
Nominal Flow Rate (Q)				
	gph @ 20 psi	2 gph	3 gph	4 gph
	lph @ 1.5 bar	8 lph	12 lph	16 lph
Operating Pressure Range (P)				
	psi	10 to 35 psi		
	bar	0.75 to 2.25 bar		
Flow Exponent (x)		0.43	0.38	0.42
Minimum filtration requirment		200 Mesh (74 Micron)		

Specifying Information

Model No.	Description
SFJ4XX	Barbed Fogger
SFL4XX	Threaded Fogger
SFL4XX1	Threaded Fogger with Stake
IPS0409	Barbed Fogger with Stake

Example: A Threaded Fogger with Stake and 3.0 GPH (12 LPH) would be: SFL4121

Note: For flow rates (XX in model number above), use:
08—2.0 GPH (8 LPH)
12—3.0 GPH (12 LPH)
16—4.0 GPH (15 LPH)

Snap-Jet® II

- Pressure-regulating
- Low maintenance
- Flow: 6,0 –24,0 GPH
- Residential, Commercial

Application: The Snap-Jet II is a versatile, low maintenance jet. With a choice of eight snap-fit spray patterns and seven flow rates, it easily accommodates various plant growth stages and soils types.

Specifications

Flow (by model):

SSJ30X—6.0 GPH (22,7 LPH)
SSJ35X—8.4 GPH (31,8 LPH)
SSJ40X—10.7 GPH (40,5 LPH)
SSJ45X—14.1 GPH (53,4 LPH)
SSJ50X—16.7 GPH (63,2 LPH)
SSJ55X—20.6 GPH (77,6 LPH)
SSJ60X—24.0 GPH (90,9 LPH)

Operating pressure:

20 psi (1,3 Bar)

Features

- Unique pressure-compensating device ensures uniform flows and diameter of throw over a wide range of pressures and run lengths
- The spinner retracts to protect the nozzle when not in operation. This allows for resistance to insects and dust as well as ease on inspection and maintenance
- Color-coded nozzles for ease of flow rate identification
- Large wetting patterns with uniform water application
- Splash plate patterns interchange to accommodate the various growth stages and crop sizes

Performance Table		SSJ30x Black	SSJ35x Orange	SSJ40x Blue	SSJ45x Purple	SSJ50x Green	SSJ55x Yellow	SSJ60x Red
Nominal Flow Rate (Q)	GPH	6.0	8.4	10.7	14.1	16.7	20.6	24.0
	LPH	22,71	31,80	40,50	53,37	63,22	77,60	90,85
Recom. Pressure Range (P)	psi	0.5–30 psi						
	Bar	0,3–2 Bar						
Flow Exponent (x)		00.5						
Coefficient of Variation (Cv)		″5%						
Recom. Filtration Requirement	Mesh	140	120	120	100	100	80	70
	Micron	105	125	125	150	150	177	210

Specifying Information

SJA | 40 | A | 03 | XX | X

Snap-Jet Assembly	Orifice Size	Splash Plate Pattern	Stake Part Number	Lead Length	Optional
SJA—Prefix to Represent Snap-Jet Assembly	40—.040″ Dia. (Orifice Size of Jet Body)	A—Splash Plate Pattern Letter	03—IPS0403 (Last Two Digits of Stake Part Number)	24″ (61cm) 30″ (76cm) 36″ (91cm)	D—Barb Stake Assembly C—Clip Stake Hose

Example: A Snap-Jet II assembly with a clip stake hose on a 36″ lead, would be specified as: **SJA40A03-36C**

Snap-Jet® II

Spray Patterns: / Jet Trajectory:		A	B	C	D	E	F	H	J	K
- High	24°									
- Standard	18°									
- Low	13°									
- Flat	0°									

Nozzle		Pressure	Flow Rate	Small Full Circle 360° x 16 streams	Large Full Circle 360° x 16 streams	Hi-Lo Full Circle 360° x 16 streams		Hi-Lo Part Circle 330° x 11 streams		Half Circle 180° x 9 streams	Deflector 360° solid	Hi-Lo Butterfly 2 x 120° 10 streams		Solid Butterfly 2 x 120° solid		Solid Part Circle 1 x 90° solid
Model	Size / Color	psi	gph	Std Ft.	Std Ft.	Flat Ft.	Std Ft.	Lo Ft.	Hi Ft.	Std Ft.	Down Inch	Lo Ft.	Hi Ft.	Flat W x L Ft.		Std Ft.
SSJ30x	30 Black	10	4.2	7.8	8.8	5.7	7.8	7.8	9.9	3.5	16.0	11.3	12.0	6.7	9.1	6.4
		15	5.2	9.5	10.8	6.9	9.5	9.5	12.1	4.3	16.0	13.7	14.3	6.5	8.9	7.8
		20	6.0	11.0	12.5	8.0	11.0	11.0	14.0	5.0	16.0	13.0	14.0	5.2	9.2	9.0
		25	6.7	12.3	14.0	8.9	12.3	12.3	15.7	5.6	16.0	11.5	14.0	4.7	9.6	10.1
		30	7.3	13.5	15.3	9.8	13.5	13.5	17.1	6.1	16.0	10.8	14.8	4.7	10.2	11.0
SSJ35x	35 Orange	10	5.9	8.1	9.9	6.4	8.5	9.5	12.7	4.2	16.0	11.3	13.0	6.5	8.9	6.8
		15	7.3	10.0	12.1	7.8	10.4	11.7	15.6	5.2	16.0	13.0	13.3	5.2	10.3	8.4
		20	8.4	11.5	14.0	9.0	12.0	13.5	18.0	6.0	16.0	14.0	14.7	5.0	10.8	9.6
		25	9.4	12.9	15.7	10.1	13.4	15.1	20.1	6.7	16.0	13.3	16.0	4.7	11.1	10.8
		30	10.3	14.1	17.1	11.0	14.7	16.5	22.0	7.3	16.0	11.3	17.0	4.7	12.5	11.8
SSJ40x	40 Blue	10	7.6	8.5	11.0	7.1	9.2	13.3	15.2	4.9	16.0	14.8	15.3	7.0	9.4	7.3
		15	9.3	10.4	13.4	8.7	11.3	13.9	18.6	6.1	16.0	18.7	18.7	4.7	10.5	8.9
		20	10.7	12.0	15.5	10.0	13.0	16.0	21.5	7.0	16.0	19.7	21.0	4.5	11.6	10.3
		25	12.0	13.4	17.3	11.2	14.5	17.9	24.0	7.8	16.0	22.0	22.3	4.7	11.7	11.5
		30	13.1	14.7	19.0	12.2	15.9	19.6	26.3	8.6	16.0	22.0	22.7	4.8	12.1	12.6
SSJ45x	45 Purple	10	10.0	8.8	12.0	7.4	9.9	13.1	16.6	5.3	16.0	12.7	14.0	6.0	9.1	7.7
		15	12.2	10.8	14.7	9.1	12.1	16.0	20.4	6.5	16.0	16.0	16.7	4.0	11.1	9.4
		20	14.1	12.5	17.0	10.5	14.0	18.5	23.5	7.5	16.0	18.0	19.0	4.0	11.9	10.9
		25	15.8	14.0	19.0	11.7	15.7	20.7	26.3	8.4	16.0	20.0	21.0	4.2	11.9	12.2
		30	17.3	15.3	20.8	12.9	17.1	22.7	28.8	9.2	16.0	22.3	23.0	4.3	11.6	13.4
SSJ50x	50 Green	10	11.8	9.2	13.1	7.8	10.6	13.8	17.7	5.7	16.0	17.0	18.0	5.0	9.7	8.2
		15	14.5	11.3	16.0	9.5	13.0	16.9	21.7	6.9	16.0	21.0	22.7	4.7	11.0	10.1
		20	16.7	13.0	18.5	11.0	15.0	19.5	25.0	8.0	16.0	23.3	24.7	4.8	11.3	11.6
		25	18.7	14.5	20.7	12.3	16.8	21.8	28.0	8.9	16.0	25.3	27.7	5.0	12.2	12.9
		30	20.5	15.9	22.7	13.5	18.4	23.9	30.6	9.8	16.0	27.0	29.0	5.0	12.4	14.2
SSJ55x	55 Yellow	10	14.5	9.5	14.1	8.1	11.0	14.5	18.4	6.0	16.0	19.7	21.0	5.0	9.2	8.6
		15	17.8	11.7	17.3	10.0	13.4	17.8	22.5	7.4	16.0	22.7	25.0	5.7	10.0	10.6
		20	20.5	13.5	20.0	11.5	15.5	20.5	26.0	8.5	16.0	25.3	27.7	6.2	10.8	12.3
		25	22.9	15.1	22.4	12.9	17.3	22.9	29.1	9.5	16.0	29.3	31.3	6.5	11.1	13.7
		30	25.1	16.5	24.5	14.1	19.0	25.1	31.8	10.4	16.0	32.0	32.7	6.5	11.4	15.0
SSJ60x	60 Red	10	17.0	9.9	15.2	8.1	11.3	15.2	18.7	6.4	16.0	19.0	21.3	4.7	10.0	9.2
		15	20.8	12.1	18.6	10.0	13.9	18.6	23.0	7.8	16.0	22.7	28.0	4.8	10.8	11.2
		20	24.0	14.0	21.5	11.5	16.0	21.5	26.5	9.0	16.0	26.7	30.3	5.3	11.3	13.0
		25	26.8	15.7	24.0	12.9	17.9	24.0	29.6	10.1	16.0	31.3	33.3	5.3	11.6	14.6
		30	29.4	17.1	26.3	14.1	19.6	26.3	32.5	11.0	16.0	32.7	34.0	5.8	12.2	15.9

= *Recommended operating pressure.*

Specifying Information—Stakes

Model No.	Description
IPS0400	Clip Stake—Black
IPS0403	Barbed Stake, 4mm x 10-32 UNF (Self-tapping Threads) for Snap-Jets—Black
IPS0403XX	Barbed Stake Assembly, 4mm x 10-32 UNF (Self-tapping Threads) with Leader Tube and 4mm Take-off (24", 30" or 36" Length)

Micro-Sprinkler VI Pressure-compensating

- Pressure-compensating
- Color-coded nozzles
- Flow: 9.3–23.6 GPH
- Residential, Commercial

Application: The Micro-Sprinkler VI PC is fully pressure-compensating and available in five flow rates. Nozzles are color coded for easy flow rate identification.

Specifications

Flow rate:

SSA630—9.3 GPH (35 LPH)
SSA632—12.4 GPH (47 LPH)
SSA634—14.6 GPH (55 LPH)
SSA636—18.4 GPH (70 LPH)
SSA638—23.6 GPH (90 LPH)

Recommended operating pressure range:

25–60 psi (1,7–4,1 Bar)

Lengths:

18" (45,7cm) 36" (91,4cm)
24" (61,0cm) 48" (121,9cm)
30" (76,2cm)

Inlet:

⅜" MPT

Features

- Uniform flows and diameter of throw over a wide range of pressures and run lengths are ensured by the unique pressure-compensating device
- The spinner retracts to protect the nozzle when not in operation allowing for resistance to insects and dust as well as ease of inspection and maintenance
- Color-coded nozzles for ease of flow rate identification
- Optional break-off deflector tab allows the sprinkler to be placed near a newly planted tree in order to concentrate water where the roots are developing
- Components are designed for quick disassembly for ease in maintenance

Performance Chart

Model No.	Model No. with Deflector Tab	Nozzle Color	Pressure		Flow Rates		Diameter		Approx. Diameter with Deflector Tab	
			psi	bar	gph	lph	Feet	Meters	Feet	Meters
SSA630	SSA630-D	Brown	20	1.38	9.3	35.2	13.9	4.23	4.2	1.27
			30	2.07	9.3	35.1	13.4	4.08	4.0	1.22
			40	2.76	9.2	34.9	13.2	4.02	4.0	1.21
			50	3.45	9.2	34.8	13.1	4.00	3.9	1.20
			60	4.14	9.2	34.8	13.1	4.00	3.9	1.20
SSA632	SSA632-D	Light Blue	20	1.38	12.4	46.9	15.5	4.73	4.7	1.42
			30	2.07	12.4	46.9	15.0	4.58	4.5	1.37
			40	2.76	12.4	47.1	14.8	4.52	4.4	1.35
			50	3.45	12.5	47.5	14.8	4.50	4.4	1.35
			60	4.14	12.5	47.2	14.8	4.50	4.4	1.35
SSA634	SSA634-D	Light Green	20	1.38	14.6	55.2	15.5	4.73	4.7	1.42
			30	2.07	14.6	55.2	15.0	4.58	4.5	1.37
			40	2.76	14.6	55.2	14.8	4.52	4.4	1.35
			50	3.45	14.5	54.8	14.8	4.50	4.4	1.35
			60	4.14	14.6	55.2	14.8	4.50	4.4	1.35
SSA636	SSA636-D	Orange	20	1.38	18.0	68.2	20.8	6.32	6.2	1.90
			30	2.07	18.4	69.6	20.0	6.11	6.0	1.83
			40	2.76	18.2	69.0	19.8	6.02	5.9	1.81
			50	3.45	18.2	69.0	19.7	6.00	5.9	1.80
			60	4.14	18.4	69.8	19.7	6.00	5.9	1.80
SSA638	-	Gray	20	1.38	21.6	81.8	29.7	9.07	8.9	2.72
			30	2.07	23.6	89.2	28.7	8.76	8.6	2.63
			40	2.76	23.3	88.0	28.3	8.63	8.5	2.59
			50	3.45	23.0	87.1	28.2	8.60	8.5	2.58
			60	4.14	23.9	90.5	28.2	8.60	8.5	2.58

· Diameters are quoted according to ASAE S398.1. Actual diameter may exceed diameter quoted

Note: Filtration requirement is 140 mesh (105 micron).

Micro-Sprinkler VI PC Assemblies

Features

- Designed for quick and easy installation
- Color-coded nozzles for ease in identification
- Leader tube lengths:
  - 18" (45,7cm)
  - 24" (61,0cm)
  - 30" (76,2cm)
  - 36" (91,4cm)
  - 48" (121,9cm)
- Micro-Sprinkler assemblies include:
  - Micro-Sprinkler
  - IPS1004 Stake
  - 4mm Coupling
  - 4mm Leader Tube (24", 30", 36" or 48" lengths)

Specifying Information
Micro-Sprinkler VI PC Assemblies

SSA XXX XX

Micro-Sprinkler VI PC	Nozzle Type	Lead Length
SSA - Prefix to represent Micro-Sprinkler VI PC	630—9.20 gph Brown Nozzle 632—12.4 gph Blue Nozzle 634—14.6 gph Green Nozzle 636—18.2 gph Orange Nozzle 638—23.8 gph Grey Nozzle	24—24" (61cm) 30—30" (76cm) 36—36" (91cm) 48—48" (122cm)

Example: A Micro-Sprinkler VI PC assembly with a brown nozzle and 24" lead would be part number: **SSA63024**

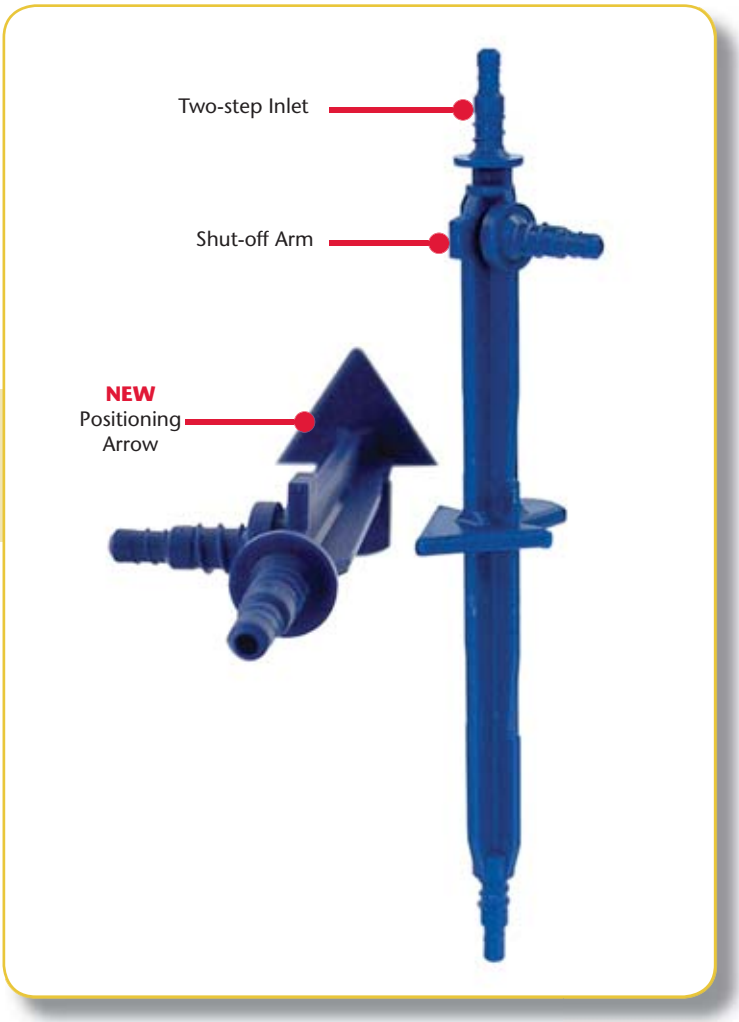
Micro-Sprinkler VI PC Accessories

Specifying Accessories

Part Number	Description
IPS1004	3/8" FPT x 4mm or 6mm Barbed Stake - Black for Micro-Sprinklers
IPS1025	3/8" FPT Clamp & Sta-Base - Black for Micro-Sprinklers (Unassembled)
SRP3299	Replacement 3/8" FPT Clamp for Sta-Base
SRP3300	Replacement Base for Sta-Base
IPS1004**xx**	Micro-Sprinkler 4mm Barbed Assembly with Leader Tube & 4mm Take-off 24", 30" or 36" length
IPU1510-1	3/8" FPT x 1/2" MPT Reducing Adapter
IPG10091	3/8" FPT x 4mm Barb Adaptor with 5mm Stake Insert for Micro-Sprinkler
WBD180R	Micro-Sprinkler® 180 Deg. Red Deflector

Pot Spray Stake

Two-step threaded inlet
160° low-angle spray
Flow: 5.6, 10.5, 16.0 GPH
Residential, Commercial



Application: The Pot Spray Stake provides every container with a consistent spray pattern and flow.

Specifications

Flow rate:

IPS03BK—5.6 GPH (21,2 LPH)
IPS03BL—10.5 GPH (39,7 LPH)
IPS03GR—16.0 GPH (60,6 LPH)

Recommended operating pressure:

20 psi (1,4 Bar)

Height:

5¼" (133,3mm)

Features

- Unique positioning arrow (refer to photo) ensures that water sprays toward the plant
- Stake sets the proper height in the pot
- Spray pattern works well from low to high water pressures
- 160° low-angle spray pattern designed for round pots to reduce overspray
- Side arm shut-off with ring gives a water-tight seal to prevent debris from getting into the tube
- Steep angle threads easily lock tubing onto the stake
- Two-step threaded inlet easily accommodates most popular polyethylene and vinyl tubing sizes
- Designed with wide ribs and steps so the stake stays where you put it
- Traditional shut-off stake end
- Made with UV-resistant resin
- 24" (61,0cm) and 36" (91,4cm) lengths

Specifying Information

Part Number	Description
IPS03BK	5.6 gph (21.2 lph) @ 20 psi (1.4 bar) 0.03" Orifice - Black
IPS03BL	10.5 gph (39.7 lph) @ 20 psi (1.4 bar) 0.04" Orifice - Blue
IPS03GR	16.0 gph (60.6 lph) @ 20 psi (1.4 bar) 0.05" Orifice - Green
SFH0332-24	1/8" PEVA leader tubing – 24" (61.0cm)
SFH0332-36	1/8" PEVA leader tubing – 36" (91.4cm)

Accessories

Pressure-compensating Modules

Features

- Provides low-flow rates to reduce runoff in compacted soils and deep percolation in sandy soils
- Color coded by flow rate for easy identification
- Ideal for customizing water use for varying plant material
- A fit for long runs or elevation changes
- Quantity per package: 5

Specifying Information—PC Modules

Model No.	Description
PCM-6	6.5 GPH (25 LPH), Gray
PCM-9	9.5 GPH (36 LPH), Orange
PCM-11	11 GPH (42 LPH), Blue
PCM-17	17 GPH (64 LPH), Green
PCM-21	21 GPH (80 LPH), Yellow
PCM-25	25 GPH (95 LPH), Red

Pressure Regulators

Specifying Information—PC Regulators

Model No.	Description
PMR15-LF	3/4", 15 psi, 1/10-8 GPM Low-flow Pressure Regulator
PMR25-LF	3/4", 25 psi, 1/10-8 GPM Low-flow Pressure Regulator
PMR40-MF	3/4", 40 psi, 2–20 GPM Medium-flow Pressure Regulator
PMR25-HF	1-1/4" x 1", 25 psi, 10–32 GPM High-flow Pressure Regulator
PMR25-MF	3/4", 25 psi, 2–20 GPM Medium-flow Pressure Regulator

Drip Stake and Accessories

Specifying Information—Drip Stake & Accessories

Model No.	Description
IPS0104	1/4" (4mm) Plastic Locator Stake (holds tubing in place)
FPG02	Double-sided Goof Plug
BC-025	Bug Cap for 1/4" (4mm) Tubing
FMP08	Plastic Insertion Tool for 1/4" (4mm) Barbed Fittings and Emitters
FMP16	Stainless Steel Insertion Tool for 1/4" (4mm) Barbed Fittings and Emitters

Leader Tube with Take-off

Specifying Information—Leader Tube w/Take-off

Model No.	Description
HWF3XX	4mm Leader Tube / 4mm Barb for 4mm Barb Stake
HWF4XX	4mm Leader Tube / 4mm Barb for 4mm Clip Stake
HWF6XX	6mm Leader Tube / 6mm Barb for 6mm Barb Stake

Example: 4mm Leader Tube / 4mm Barb for 4mm Clip Stake with a 24" Lead Length, would be specified as: **HWF424**

Note: Leader tubing available in 24" (61,0cm), 30" (76,2cm) or 36" (91,4cm) length.

Drip Zone Valve Kits

Low-volume
Size: ¾", 1"
Flow: low or medium
Residential, Commercial

Application: Specially designed for low-volume residential and commercial drip applications, these kits are a simple, one stop package available in ¾" and 1" sizes.

Features

- Kits minimize installation time
- No need to purchase separate parts—all you need is the kit
- Drip Zone Kits fit into standard valve box
- Available for:
  - Toro Valves: EZ-Flo® Plus, 1" In-line
    EZ-Flo® Plus, ¾" AVB
- Kit comes complete with:
  - Toro Y-Filter—protects against contamination
  - Control Valve—controls the flow of water
  - Pressure Regulator—reduces system pressure to levels suitable for drip irrigation
  - Ball Valve—allows for maintenance without the need to turn off the water source

Specifications

	Toro EZ-Flo Plus AVB*		Toro EZ-Flo Plus In-line	
Part Number	DZK-EZF-075-LF	DZK-EZF-075-MF	DZK-EZF-1-LF	DZK-EZF-1-MF
Description	Drip Zone Valve Kit, ¾" EZ-Flo Plus, AVB, Low-flow	Drip Zone Valve Kit, ¾" EZ-Flo Plus, AVB, Medium-flow	Drip Zone Valve Kit, 1" EZ-Flo Plus, In-line, Low-flow	Drip Zone Valve Kit, 1" EZ-Flo Plus, In-line, Medium-flow
Connection Size	¾"	¾"	1"	1"
Control Valve Solenoid	VA, Holding 0.20 amps, 5.75 VA			
Minimum Flow Rate	0.25 GPM	2 GPM	0.25 GPM	2 GPM
Maximum Flow Rate	8 GPM	20 GPM	8 GPM	20 GPM
Maximum Pressure	150 psi	150 psi	150 psi	150 psi
Y-Filter—Degree of Filtration	150 Mesh/100 Microns	150 Mesh/100 Microns	150 Mesh/100 Microns	150 Mesh/100 Microns
Regulator—Preset Pressure	25 psi	25 psi	25 psi	25 psi
Thread Connection—Upstream	Female NPT	Female NPT	Female NPT	Female NPT
Thread Connection—Downstream	Female NPT	Female NPT	Male NPT	Female NPT
Minimum Number of Emitters				
0.5 gph	30	240	30	240
1 gph	15	120	15	120
2 gph	8	60	8	60
Maximum Number of Emitters				
0.5 gph	960	2400	960	2400
1 gph	490	1200	480	1200
2 gph	240	600	240	600

Note: *Consult your local plumbing code for backflow prevention requirements.*
** AVB = Atmospheric Vacuum Breaker (Anti-siphon Valve)*

Flow vs. Friction Loss—U.S. Friction Loss (psi)

Part Number	GPM	0.25	5	8	15	20
DZK-EZF-075-LF	Min. Inlet Pressure Required	3	5	5	n/a	n/a
	Minimum Inlet Pressure Required (psi)	30	32	32	34	39
DZK-EZF-075-MF	Min. Inlet Pressure Required	3	5	5	7	13
	Minimum Inlet Pressure Required (psi)	30	32	32	34	39
DZK-EZF-1-LF	Min. Inlet Pressure Required	3	5	5	n/a	n/a
	Minimum Inlet Pressure Required (psi)	30	32	32	34	39
DZK-EZF-1-MF	Min. Inlet Pressure Required	3	5	5	5	8
	Minimum Inlet Pressure Required (psi)	30	32	32	32	35

Flow vs. Friction Loss—Metric Friction Loss (bars)

Part Number	LPM	1	19	30	57	76
DZK-EZF-075-LF	Min. Inlet Pressure Required	0,21	0,34	0,34	n/a	n/a
	Minimum Inlet Pressure Required (Bar)	2,01	2,21	2,21	2,34	2,69
DZK-EZF-075-MF	Min. Inlet Pressure Required	0,21	0,34	0,34	0,48	0,90
	Minimum Inlet Pressure Required (Bar)	2,01	2,21	2,21	2,34	2,69
DZK-EZF-1-LF	Min. Inlet Pressure Required	0,21	0,34	0,34	n/a	n/a
	Minimum Inlet Pressure Required (Bar)	2,01	2,21	2,21	2,21	2,41
DZK-EZF-1-MF	Min. Inlet Pressure Required	0,21	0,34	0,34	0,34	0,55
	Minimum Inlet Pressure Required (Bar)	2,01	2,21	2,21	2,21	2,41

Specifying Information

DZK XXXXXX XX

Kit	Valve Type	Flow Rate
DZK—Drip Zone Kit	EZF-075—¾" EZ-Flo Plus AVB EZF-1—1" EZ-Flo Plus In-line 2711—¾" AVB 700 (UltraFlow)—1" In-line	LF—Low Flow MF—Medium Flow

Example: A Drip Zone Kit with a 1" EZ-Flo Plus, low-flow in-line valve, would be specified as: **DZK-EZF-1-LF**

Air Release Valves


YD-500-34


ARV-1-A


ARV-1-K


ARV-2-KA


ARV-2-K

Performance Table

Part Number	YD-500-34	ARV-1-K	ARV-2-K	ARV-1-A	ARV-2-KA
Valve Type	Air/Vacuum Relief	Air/Vacuum Relief Non-Continuous		Single Acting Continuous	Dual Acting Continuous
Working Pressure	150	225	225	170	225
Totally sealed from (psi)	3	3	3	3	3
Volume of air release in CFM without valve closing and without the presence of water	N/A	295	590	41.2	590
Release air volume @ 5 psi	N/A	26 CFM	260 CFM	8.8 CFM	140 CFM
Units per bag	10	1	1	1	1

Features

- Essential element in a pressurized irrigation system
  - Allows air to escape the pipelines at system start up
  - Prevents air pockets from forming in the irrigation system which can restrict flow
  - Provides vacuum relief at shutdown preventing irrigation equipment from being damaged
  - Provides pipeline protection due to water hammer
- Continuous acting air vents remove excess air while the system is charged

Specifying Information

Part number	Description
ARV-2-KA	2" MNPT large acting and continuous acting air vent
ARV-1-A	1" MNPT continuous acting air vent
ARV-2-K	2" MNPT large acting air vent
ARV-1-K	1" MNPT large acting air vent
YD-500-34	1/2" MNPT large acting air vent

Mazzei® AirJection®

Features

- Aerates the root zone in subsurface irrigation applications each time you irrigate
- Designed to introduce the proper amount of air into the subsurface system through a Mazzei injector
- Increases root mass for healthier and increased vitality in turf and plants
- Less stress on plants allowing for greater absorption of water, air and soil nutrients simultaneously during the irrigation cycle

Specifications

Flow rates:

0.9–13.77 GPH
(3,4–52,1 LPH)

Sizes:

2" and 3" PVC Slip
½" and ¾" MNPT Models

Injectors:

9 color-coded injectors

*Motive Flow - Gallons Per Minute **(gpm)***

Inlet Pressure psi	MAI-A3	MAI-A5	MAI-A7	MAI-A10	MAI-A12	MAI-A14	MAI-A16	MAI-A20	MAI-A24
20	0.90	1.47	1.87	2.63	3.00	3.67	4.33	5.63	7.30
25	1.00	1.67	2.17	2.93	3.30	4.03	4.83	6.30	7.83
30	1.10	1.80	2.37	3.20	3.57	4.47	5.23	6.87	8.43
35	1.20	1.97	2.53	3.50	3.93	4.80	5.67	7.33	9.27
40	1.30	2.10	2.73	3.73	4.20	5.03	6.10	7.80	9.80
45	1.40	2.27	2.90	4.00	4.47	5.47	6.43	8.23	10.57
50	1.47	2.37	3.07	4.13	4.73	5.77	6.70	8.83	10.93
60	1.60	2.57	3.30	4.57	5.17	6.40	7.37	9.53	12.00
70	1.70	2.77	3.63	4.90	5.53	6.83	7.87	10.37	12.90
80	1.83	2.97	3.87	5.17	5.90	7.30	8.50	11.03	13.77
	Red	Orange	Yellow	Green	Blue	Purple	Gray	Tan	Brown

*Motive Flow - Liters Per Minute **(l/m)***

Inlet Pressure Kg/cm²	MAI-A3	MAI-A5	MAI-A7	MAI-A10	MAI-A12	MAI-A14	MAI-A16	MAI-A20	MAI-A24
1.41	3.41	5.55	7.07	9.97	11.36	13.88	16.40	21.32	27.63
1.76	3.79	6.31	8.20	11.10	12.49	15.27	18.29	23.85	29.65
2.11	4.16	6.81	8.96	12.11	13.50	16.91	19.81	26.00	31.92
2.46	4.54	7.44	9.59	13.25	14.89	18.17	21.45	27.76	35.07
2.81	4.92	7.95	10.35	14.13	15.90	19.05	23.09	29.52	37.09
3.16	5.30	8.58	10.98	15.14	16.91	20.69	24.35	31.16	40.00
3.52	5.55	8.96	11.61	15.64	17.92	21.83	25.36	33.43	41.38
4.22	6.06	9.71	12.49	17.28	19.56	24.22	27.88	36.08	45.42
4.92	6.43	10.47	13.75	18.55	20.94	25.86	29.78	39.24	48.83
5.62	6.94	11.23	14.64	19.56	22.33	27.63	32.17	41.76	52.11
	Red	Orange	Yellow	Green	Blue	Purple	Gray	Tan	Brown

Plastic Y-Filters

¾", 1" and 1½" MPT
Pressure: 5–142 psi
Flow: 5–80 GPM
Residential, Commercial

Application: Ideal for landscape applications, the "F" Series family of Y-model filters offers superior performance and durability under demanding conditions. Screen filters are available in small- and large-size bodies.

Specifications

Recommended pressure range:
5–142 psi (0,3–9,8 Bar)

Flow:
5–80 GPM (22,7–363,6 LPM)

Features

- Plastic Y-Model filters are available in ¾", 1" and 1½" MPT
- Constructed of the highest quality plastics for durability and corrosion resistance
- Available in plastic disc and stainless steel screen
- ¾" and 1" screen filters are available in small- and large-size bodies
- Easy element access for trouble-free maintenance
- ½" male thread outlet with cap for quick flushing cleaning
- Body and cap constructed of nylon
- Locking ring constructed of glass-reinforced nylon
- O-Ring constructed of Buna-N

Specifying Information

Model	Size	Max Flow	Element	Mesh	Body	Head Loss Curve
ALFD7150-1	3/4"	25 GPM	Disc	150	Large	B
ALFD10150-1	1"	35 GPM	Disc	150	Large	C
ALFD15150-1	1-1/2"	80 GPM	Disc	150	Large	D

Specifying Information

Model	Size	Max Flow	Element	Mesh	Body	Head Loss Curve
ALFS75150-S	3/4"	18 GPM	Screen	150	Small	A
ALFS75150-L	3/4"	25 GPM	Screen	150	Large	B
ALFS10150-S	1"	25 GPM	Screen	150	Small	B
ALFS10150-L	1"	35 GPM	Screen	150	Large	C
ALFS15150-L	1-1/2"	80 GPM	Screen	150	Large	D

Specifying Information

Model	Size	Element	Mesh	Body
AMP-0004-4F	3/4", 1" and 1-1/2"	Disc	150	Large Body S ize Filters
AMP0004-15	1/4" and 1"	Screen	150	Small Body Size Filters
AMP000-2F	3/4", 1" and 1-1/2"	Screen	150	Large Body Size Filters

When installing the disc filter, the flow direction is opposite to the screen filter

XD Filter

- Two downstream exit ports
- 2" or 3" XD filter
- Glass-reinforced nylon body
- Residential, Commercial

Application: The XD Filter is designed for use as a primary or secondary filter. Ideal for applications such as well water containing light amounts of sand, water sources with low solids concentration or surface water containing small amounts of organic fluid.

Features

- Glass-reinforced nylon body construction provides durability and reliability that will extend product life
- Specially designed disc rings provide greater surface area resulting in a longer time between cleaning and less filter maintenance
- Includes a ball plastic valve that has the ability to flush out the filter without stopping the irrigation cycle
- Two downstream exit ports mean the filter can be installed in an angle or globe configuration, reducing the need to re-do piping
- O-Ring between cover and body prevents leakage
- Ring nut is easy to tighten and provides a tight seal
- Location of pre-molded threaded holes for the pressure gauges allows for reading of upstream and downstream pressures

Specifications

Maximum pressure:

145 psi (10 Bar)

Flow:

2" XD Filter
- 110 GPM (25 m³/h)

3" XD Filter
- 220 GPM (50 m³/h)

Connection:

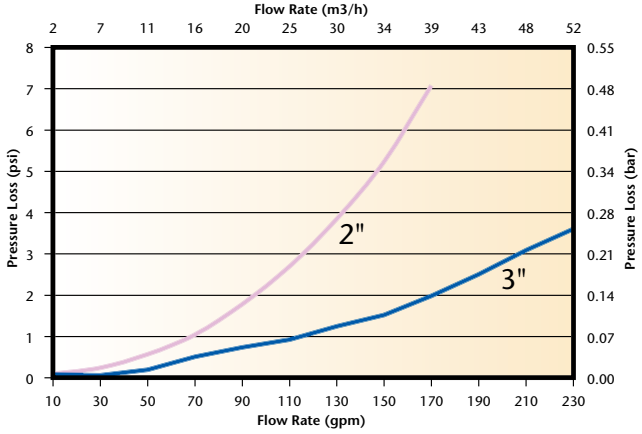
2" XD Filter
- 2" (50mm)

3" XD Filter
- 3" (76mm)

Specifications

Color Coded Disc Rings		
Mesh	Micron	Color
120	125	blue
150	100	red
200	75	brown

Head Loss Chart - XD Filter



Performance Table

Part Number	IT-ABF50XX-3X-N	IT-ABF50XX-3X	IT-ABF75XX-3X-N	IT-ABF75XX-3X
Description	2" XD Filter		3" XD Filter	
Element Type	Disc			
Degree of Filtration	120, 150, 200 Mesh (125, 100, 75 micron)			
Filtration area	1,674 in²	10,800 cm²	2,790 in²	18,000 cm²
Maximum Flow Rate	110 gpm	25 m³/h	220 gpm	50 m³/h
Maximum Pressure	145 psi	10 bars	145 psi	10 bars
Connection Size	2 in. / 50 mm		3 in. / 76 mm	
Connection Type	Male Threaded NPT	Male Threaded BSP	Male Threaded NPT	Male Threaded BSP
Distance Between Threads	10 4/5 in. / 274 mm		12 3/5 in. / 320 mm	
Weight	14 lbs / 6.5 kgs		18 lbs / 8 kgs	

Note: Insert required mesh size of 120 = 12, 150 = 15 or 200 = 20 in place of XX.

Specifying Information

Part Number	Description
IT-ABF5012-3X-n	2", 110 mesh disc filter
IT-ABF5015-3X-n	2", 115 mesh disc filter
IT-ABF5020-3X-n	2", 120 mesh disc filter
IT-ABF7512-3X-n	3", 110 mesh disc filter
IT-ABF7515-3X-n	3", 115 mesh disc filter
IT-ABF7520-3X-n	3", 120 mesh disc filter

Communication Directory

Toro Irrigation Headquarters

Phone: (951) 688-9221
Fax: (951) 359-1870
Website: www.toro.com

Order Services

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Fax: (951) 451-1390
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Customer Resource Center

At your service to provide literature, promotional and product information as well as branch support

Phone: (800) 523-3187
Fax: (800) 862-8676
Email: customer.resource.center@toro.com

Technical Support

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Email: support@toro.com

Controller Repair

Phone: (800) 899-2058

RESOURCES

Formulas and Conversion Factors

Precipitation Rates

Equilateral Triangular Spacing

U.S.

$$P.R.\ (in/hr) = \frac{(GPM\ of\ 360) \times 96.25}{(Head\ Spacing)^2 \times .866}$$

Metric

$$P.R.\ (mm/hr) = \frac{m^3/hr\ of\ 360 \times 1000}{m^2 \times .866}$$

Square/Rectangular Spacing

U.S.

$$P.R.\ (in/hr) = \frac{(GPM\ of\ 360) \times 96.25}{Head\ Spacing \times Row\ Spacing}$$

Metric

$$P.R.\ (mm/hr) = \frac{m^3/hr\ of\ 360 \times 1000}{Head\ Spacing \times Row\ Spacing}$$

Square/Rectangular Spacing for Specific Arc

U.S.

$$P.R.\ (in/hr) = \frac{34650 \times GPM\ (for\ any\ arc)}{Degrees\ of\ Arc \times Head\ Spacing \times Row\ Spacing}$$

Metric

$$P.R.\ (mm/hr) = \frac{m^3/hr\ (for\ any\ arc) \times 1000}{Degrees\ of\ Arc \times Head\ Spacing \times Row\ Spacing}$$

Horsepower

$$H.P. = \frac{GPM \times Ft\ of\ Head}{3{,}960 \times Pump\ Efficiency\ (expressed\ as\ a\ decimal)}$$

Station Run Time

U.S.

$$S.R.T.\ (min/wk) = \frac{Total\ Weekly\ Req'd\ (inch/wk) \times 60\ (min/hr)}{Precipitation\ Rate\ (in/hr)}$$

Metric

$$S.R.T.\ (min/wk) = \frac{Total\ Weekly\ Req'd\ (mm/wk) \times 60\ (min/hr)}{Precipitation\ Rate\ (mm/hr)}$$

Pipe Velocity

U.S.

$$V\ (ft/sec) = \frac{0.4085 \times Flow\ (GPM)}{(Inside\ Pipe\ Diameter\ in\ Inches)^2}$$

Metric

$$V\ (m/sec) = \frac{1273.24 \times Flow\ (l/sec)}{(Inside\ Pipe\ Diameter\ in\ Millimeters)^2}$$

Slope

$$S = \frac{Rise\ (Measure\ of\ Length)}{Run\ (Measure\ of\ Length)}$$

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	.02832
	$yards^3$/minute	$meters^3$/second	.01274
	gallons/minute	$meters^3$/hour	.22716
	gallons/minute	liters/minute	3.7854
	gallons/minutes	liters/second	.06309
	$meters^3$/hour	liters/minute	16.645
	$meters^3$/hour	liters/second	.2774
	liters/minute	liters/second	60
Length	feet	inches	12
	inches	centimeters	2.540
	feet	meters	.30481
	kilometers	miles	.6214
	miles	feet	5280
	miles	meters	1609.34
	millimeters	inch	.03937

To Convert	From	To	Multiply By
Pressure	psi	kilopascals	6.89476
	psi	bars	.068948
	bars	kilopascals	100
	psi	feet of head	2.31
Velocity	feet/second	meters/second	.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	$meters^3$	.003785
	gallons	liters	3.785
	imperial gallons	gallons	1.833

Sprinkler Spacing and Winterization Specifications

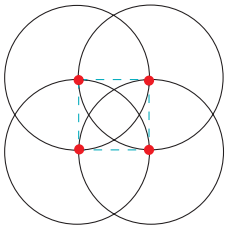
Sprinkler Spacing

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

Precipitation Rate Formulas

- Square-spaced sprinklers in pattern:

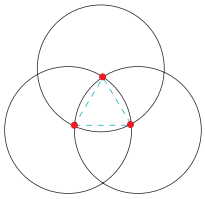
$$\frac{\text{GPM of full circle x 96.3}}{(\text{Spacing})^2}$$



- **Square Spacing**
  No wind—55% of diameter
  4 mph wind—50% of diameter
  8 mph wind—45% of diameter

- Triangular-spaced sprinklers in pattern:

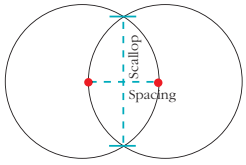
$$\frac{\text{GPM of full circle x 96.3}}{(\text{Spacing})^2\ (0.866)}$$



- **Triangular Spacing**
  No wind—50% of diameter
  4 mph wind—55% of diameter
  8 mph wind—50% of diameter

- Single row:

$$\frac{\text{GPM of full circle x 96.3}}{(\text{Spacing})\ (\text{Scallop})}$$

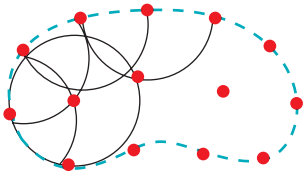


- **Single-Row Spacing**
  No wind—50% of diameter
  4 mph wind—50% of diameter
  8 mph wind—45% of diameter

For additional information, refer to Toro Form No. 490-1737.

- Area and flow:

$$\frac{\text{Total GPM of zone x 96.3}}{\text{Total irrigated square feet of zone}}$$



Winterization Specifications

In freezing climates, sprinklers and valves should be properly winterized to prevent freeze-related damage. For detailed information, refer to Toro Form No. 364-0072.

Friction Loss Characteristics

Losses in psi per 100 feet of hose (psi/100 ft.) for hose sizes: .509" (13mm) ID through .627" (16mm) ID

Part No.		EHD1335		EHD1348		EHD1350		EHD1443		EHD1554		EHD1635		EHD1642		EHD1645	
Nom. ID		0.509"		0.510"		0.520"		0.550"		0.572"		0.616"		0.627"		0.616"	
Min. ID		0.506"		0.510"		0.516"		0.547"		0.569"		0.613"		0.624"		0.613"	
Min. Wall		0.035"		0.048"		0.050"		0.043"		0.054"		0.035"		0.042"		0.045"	
Flow		Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss
GPM	GPH	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI
0.5	30	0.80	0.37	0.79	0.35	0.77	0.34	0.68	0.25	0.63	0.21	0.54	0.14	0.52	0.13	0.54	0.14
1.0	60	1.60	1.33	1.57	1.28	1.53	1.21	1.37	0.91	1.26	0.75	1.09	0.52	1.05	0.48	1.09	0.52
1.5	90	2.39	2.82	2.36	2.71	2.30	2.56	2.05	1.93	1.89	1.59	1.63	1.11	1.57	1.02	1.63	1.11
2.0	120	3.19	4.80	3.14	4.62	3.07	4.37	2.73	3.29	2.52	2.71	2.17	1.89	2.10	1.73	2.17	1.89
2.5	150	3.99	7.26	3.93	6.99	3.84	6.60	3.41	4.97	3.15	4.10	2.72	2.85	2.62	2.62	2.72	2.85
3.0	180	4.79	10.18	4.71	9.80	4.60	9.26	4.10	6.97	3.79	5.75	3.26	4.00	3.15	3.67	3.26	4.00
3.5	210	5.58	13.55	5.50	13.04	5.37	12.31	4.78	9.27	4.42	7.65	3.80	5.32	3.67	4.88	3.80	5.32
4.0	240	6.38	17.35	6.28	16.69	6.14	15.77	5.46	11.87	5.05	9.79	4.35	6.81	4.20	6.25	4.35	6.81
4.5	270	7.18	21.57	7.07	20.76	6.90	19.61	6.14	14.76	5.68	12.18	4.89	8.48	4.72	7.77	4.89	8.48
5.0	300	7.98	26.22	7.85	25.24	7.67	23.84	6.83	17.94	6.31	14.81	5.44	10.30	5.25	9.45	5.44	10.30
6.0	360	9.57	36.75	9.42	35.37	9.21	33.41	8.19	25.15	7.57	20.75	6.52	14.44	6.29	13.24	6.52	14.44
7.0	420	11.17	48.90	10.99	47.06	10.74	44.45	9.56	33.46	8.83	27.61	7.61	19.21	7.34	17.62	7.61	19.21
8.0	480			12.56	60.26	12.27	56.92	10.92	42.85	10.09	35.36	8.70	24.60	8.39	22.56	8.70	24.60
9.0	540			14.13	74.95	13.81	70.80	12.29	53.29	11.36	43.98	9.78	30.60	9.44	28.06	9.78	30.60
10.0	600							13.65	64.77	12.62	53.45	10.87	37.19	10.49	34.11	10.87	37.19
11.0	660									13.88	63.77	11.96	44.37	11.54	40.69	11.96	44.37
ID120	720									15.14	74.93			12.59	47.81	13.05	52.13

Losses in psi per 100 feet of hose (psi/100 ft.) for hose sizes: .726" (18mm) ID through 1.360" (35mm) ID

Part No.		EHD1845		EHD1847		EHD1850		EHD2052		EHD2057		EHD2662		EHD2667		EHD3580	
Nom. ID		0.710"		0.729"		0.729"		0.807"		0.807"		1.060"		1.060"		1.365"	
Min. ID		0.707"		0.726"		0.726"		0.804"		0.804"		1.056"		1.056"		1.360"	
Min. Wall		0.045"		0.047"		0.050"		0.052"		0.057"		0.062"		0.067"		0.084"	
Flow		Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss
GPM	GPH	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI
1	60	0.82	0.26	0.78	0.23	0.78	0.23	0.63	0.14	0.63	0.14	0.37	0.04	0.37	0.04	0.22	0.01
2	120	1.63	0.94	1.55	0.83	1.55	0.83	1.26	0.50	1.26	0.50	0.73	0.13	0.73	0.13	0.44	0.04
3	180	2.45	2.00	2.33	1.75	2.33	1.75	1.90	1.07	1.90	1.07	1.10	0.28	1.10	0.28	0.66	0.08
4	240	3.27	3.40	3.10	2.99	3.10	2.99	2.53	1.82	2.53	1.82	1.47	0.48	1.47	0.48	0.88	0.14
5	300	4.09	5.14	3.88	4.52	3.88	4.52	3.16	2.75	3.16	2.75	1.83	0.73	1.83	0.73	1.10	0.21
6	360	4.90	7.21	4.65	6.34	4.65	6.34	3.79	3.85	3.79	3.85	2.20	1.02	2.20	1.02	1.33	0.30
7	420	5.72	9.59	5.43	8.43	5.43	8.43	4.42	5.13	4.42	5.13	2.56	1.36	2.56	1.36	1.55	0.40
8	480	6.54	12.28	6.20	10.79	6.20	10.79	5.06	6.57	5.06	6.57	2.93	1.74	2.93	1.74	1.77	0.51
9	540	7.36	15.27	6.98	13.42	6.98	13.42	5.69	8.17	5.69	8.17	3.30	2.16	3.30	2.16	1.99	0.63
10	600	8.17	18.57	7.75	16.32	7.75	16.32	6.32	9.93	6.32	9.93	3.66	2.63	3.66	2.63	2.21	0.77
11	660	8.99	22.15	8.53	19.47	8.53	19.47	6.95	11.84	6.95	11.84	4.03	3.14	4.03	3.14	2.43	0.92
12	720	9.81	26.02	9.30	22.87	9.30	22.87	7.58	13.91	7.58	13.91	4.40	3.69	4.40	3.69	2.65	1.08
13	780	10.62	30.18	10.08	26.52	10.08	26.52	8.22	16.14	8.22	16.14	4.76	4.28	4.76	4.28	2.87	1.25
14	858	11.69	36.04	11.09	31.68	11.09	31.68	9.04	19.27	9.04	19.27	5.24	5.11	5.24	5.11	3.16	1.49
15	920	12.54	41.01	11.89	36.04	11.98	36.04	9.69	21.93	9.69	21.93	5.62	5.81	5.62	5.81	3.39	1.70
16	982	13.38	46.27	12.69	40.66	12.69	40.66	10.35	24.74	10.35	24.74	6.00	6.56	6.00	6.56	3.62	1.91
17	1,044	14.23	51.82	13.49	45.54	13.49	45.54	11.00	27.71	11.00	27.71	6.38	7.34	6.38	7.34	3.84	2.14
18	1,080			13.95	48.46	13.95	48.46	11.38	29.48	11.38	29.48	6.59	7.81	6.59	7.81	3.98	2.28
19	1,140			14.73	53.56	14.73	53.56	12.01	32.59	12.01	32.59	6.96	8.64	6.96	8.64	4.20	2.52
20	1,200							12.64	35.83	12.64	35.83	7.33	9.50	7.33	9.50	4.42	2.77
22	1,320							13.90	42.75	13.90	42.75	8.06	11.33	8.06	11.33	4.86	3.31
24	1,440							15.17	50.23	15.17	50.23	8.79	13.31	8.79	13.31	5.30	3.88
26	1,560							16.43	58.25	16.43	58.25	9.52	15.44	9.52	15.44	5.74	4.50
28	1,680							17.69	66.82	17.69	66.82	10.26	17.71	10.26	17.71	6.18	5.17
30	1,800							18.96	75.93	18.96	75.93	10.99	20.13	10.99	20.13	6.63	5.87
32	1,920									20.22	85.57	11.72	22.68	11.72	22.68	7.07	6.62
34	2,040											12.45	25.38	12.45	25.38	7.51	7.40
36	2,160											13.19	28.21	13.19	28.21	7.95	8.23
38	2,280											13.92	31.18	13.92	31.18	8.39	9.10
40	2,400											14.65	34.29	14.65	34.29	8.83	10.00
45	2,700											16.48	42.65	16.48	42.65	9.94	12.44
50	3,000											18.32	51.84	18.32	51.84	11.04	15.12
55	3,300											20.15	61.84	20.15	61.84	12.15	18.04
60	3,600											21.98	72.66	21.98	72.66	13.25	21.19
65	3,900													23.81	84.27	14.36	24.58
70	4,200															15.46	28.19
75	4,500															16.56	32.04
80	4,800															17.67	36.11
85	5,100															18.77	40.40
90	5,400															19.88	44.91
95	5,700															20.98	49.64

Friction losses are calculated using Hazen-Williams equation (C = 140) and minimum inside diameter.

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

Friction Loss Characteristics

Losses in psi per 100 feet of hose (psi/100 ft.) for hose sizes: .596" (16mm) ID through .870" (22mm) ID

Part No.		EHO1650		EHO2055		EHO2060		HDO2255	
Nom. ID		0.600"		0.830"		0.820"		0.870"	
Min. ID		0.596"		0.821"		0.811"		0.870"	
Nom. Wall		0.050"		0.055"		0.060"		0.055"	
Flow		Velocity	Loss	Velocity	Loss	Velocity	Loss	Velocity	Loss
GPM	GPH	FPS	PSI	FPS	PSI	FPS	PSI	FPS	PSI
0.5	30	0.58	0.17	0.30	0.03	0.31	0.04	0.27	0.03
1.0	60	1.15	0.60	0.61	0.13	0.62	0.13	0.54	0.10
1.5	90	1.73	1.27	0.91	0.27	0.93	0.28	0.81	0.20
2.0	120	2.30	2.16	1.21	0.46	1.24	0.48	1.08	0.34
2.5	150	2.88	3.27	1.52	0.69	1.55	0.73	1.35	0.52
3.0	180	3.45	4.59	1.82	0.96	1.86	1.02	1.62	0.73
3.5	210	4.03	6.10	2.12	1.28	2.17	1.36	1.89	0.97
4.0	240	4.60	7.82	2.42	1.64	2.48	1.74	2.16	1.24
4.5	270	5.18	9.72	2.73	2.04	2.79	2.17	2.43	1.54
5.0	300	5.75	11.81	3.03	2.48	3.11	2.64	2.70	1.87
6.0	360	6.90	16.56	3.64	3.48	3.73	3.69	3.24	2.62
7.0	420	8.05	22.03	4.24	4.63	4.35	4.92	3.78	3.49
8.0	480	9.20	28.21	4.85	5.93	4.97	6.29	4.32	4.47
9.0	540	10.35	35.09	5.45	7.38	5.59	7.83	4.86	5.56
10.0	600	11.50	42.65	6.06	8.96	6.21	9.52	5.40	6.76
11.0	660	12.65	50.89	6.67	10.70	6.83	11.35	5.94	8.06
12.0	720	13.80	59.78	7.27	12.57	7.45	13.34	6.48	9.47
13.0	780			7.88	14.57	8.07	15.47	7.02	10.99
14.0	840			8.48	16.72	8.70	17.75	7.56	12.61
15.0	900			9.09	19.00	9.32	20.16	8.10	14.32
16.0	960			9.70	21.41	9.94	22.72	8.64	16.14
17.0	1,020			10.30	23.95	10.56	25.42	9.17	18.06
18.0	1,080			10.91	26.63	11.18	28.26	9.71	20.08
19.0	1,140			11.51	29.43	11.80	31.24	10.25	22.19
20.0	1,200			12.12	32.36	12.42	34.35	10.79	24.40
22.0	1,320			13.33	38.61	13.66	40.98	11.87	29.11
24.0	1,440			14.55	45.36	14.91	48.15	12.95	34.20
26.0	1,560			15.76	52.61	16.15	55.84	14.03	39.67
28.0	1,680			16.97	60.35			15.11	45.51
30.0	1,800							16.19	51.71
32.0	1,920							17.27	58.27

Friction losses are calculated using Hazen-Williams equation (C = 140) and minimum inside diameter.

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

Friction Loss Characteristics

PVC Class 200 IPS Plastic Pipe

PVC Class 200 IPS Plastic Pipe

Sizes: ¾" thru 6"

Flow: 1 thru 600 GPM

(1120, 1220) SDR 21 C=150 PSI LOSS PER 100 FEET OF PIPE (PSI/100 FT)

SIZE	¾"		1"		1¼"		1½"		2"		2½"		3"		4"		6"	
OD	1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
ID	.930		1.189		1.502		1.720		2.149		2.601		3.166		4.072		5.993	
WALL THK.	.060		0.063		0.079		0.090		0.113		0.117		0.167		0.214		0.316	
Flow GPM	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss
1	0.47	0.06	0.28	0.02	0.18	0.01	0.13	0.00										
2	0.94	0.22	0.57	0.07	0.36	0.02	0.27	0.01	0.17	0.00								
3	1.42	0.46	0.86	0.14	0.54	0.04	0.41	0.02	0.26	0.01	0.18	0.00						
4	1.89	0.79	1.15	0.24	0.72	0.08	0.55	0.04	0.35	0.01	0.24	0.01						
5	2.36	1.20	1.44	0.36	0.90	0.12	0.68	0.06	0.44	0.02	0.30	0.01						
6	2.83	1.68	1.73	0.51	1.08	0.16	0.82	0.08	0.53	0.03	0.36	0.01	0.24	0.00				
7	3.30	2.23	2.02	0.67	1.26	0.22	0.96	0.11	0.61	0.04	0.42	0.01	0.28	0.01				
8	3.77	2.85	2.30	0.86	1.44	0.28	1.10	0.14	0.70	0.05	0.48	0.02	0.32	0.01				
9	4.25	3.55	2.59	1.07	1.62	0.34	1.24	0.18	0.79	0.06	0.54	0.02	0.36	0.01				
10	4.72	4.31	2.88	1.30	1.80	0.42	1.37	0.22	0.88	0.07	0.60	0.03	0.40	0.01				
11	5.19	5.15	3.17	1.56	1.98	0.50	1.51	0.26	0.97	0.09	0.66	0.03	0.44	0.01				
12	5.66	6.05	3.46	1.83	2.17	0.59	1.65	0.30	1.06	0.10	0.72	0.04	0.48	0.02	0.29	0.00		
14	6.60	8.05	4.04	2.43	2.53	0.78	1.93	0.40	1.23	0.14	0.84	0.05	0.56	0.02	0.34	0.01		
16	7.55	10.30	4.61	3.11	2.89	1.00	2.20	0.52	1.41	0.17	0.96	0.07	0.65	0.03	0.39	0.01		
18	8.49	12.81	5.19	3.87	3.25	1.24	2.48	0.64	1.59	0.22	1.08	0.09	0.73	0.03	0.44	0.01		
20	9.43	15.58	5.77	4.71	3.61	1.51	2.75	0.78	1.76	0.26	1.20	0.10	0.81	0.04	0.49	0.01		
22	10.38	18.58	6.34	5.62	3.97	1.80	3.03	0.93	1.94	0.32	1.32	0.12	0.89	0.05	0.54	0.01		
24	11.32	21.83	6.92	6.60	4.34	2.12	3.30	1.09	2.12	0.37	1.44	0.15	0.97	0.06	0.59	0.02		
26	12.27	25.32	7.50	7.65	4.70	2.46	3.58	1.27	2.29	0.43	1.56	0.17	1.05	0.07	0.63	0.02		
28	13.21	29.04	8.08	8.78	5.06	2.82	3.86	1.46	2.47	0.49	1.68	0.19	1.13	0.07	0.68	0.02		
30	14.15	33.00	8.65	9.98	5.42	3.20	4.13	1.66	2.65	0.56	1.80	0.22	1.22	0.09	0.73	0.02	0.34	0.00
35	16.51	43.91	10.10	13.27	6.32	4.26	4.82	2.20	3.09	0.75	2.11	0.29	1.42	0.11	0.86	0.03	0.39	0.01
40	18.87	56.23	11.54	17.00	7.23	5.45	5.51	2.82	3.53	0.95	2.41	0.38	1.62	0.14	0.98	0.04	0.45	0.01
45			12.98	21.14	8.13	6.78	6.20	3.51	3.97	1.19	2.71	0.47	1.83	0.18	1.10	0.05	0.51	0.01
50			14.42	25.70	9.04	8.24	6.89	4.26	4.41	1.44	3.01	0.57	2.03	0.22	1.23	0.06	0.56	0.01
55			15.87	30.66	9.94	9.83	7.58	5.09	4.85	1.72	3.31	0.68	2.23	0.26	1.35	0.08	0.62	0.01
60			17.31	36.02	10.85	11.55	8.27	5.97	5.30	2.02	3.61	0.80	2.44	0.31	1.47	0.09	0.68	0.01
65			18.75	41.77	11.75	13.40	8.96	6.93	5.74	2.35	3.92	0.93	2.64	0.36	1.59	0.10	0.73	0.02
70					12.65	15.37	9.65	7.95	6.18	2.69	4.22	1.06	2.84	0.41	1.72	0.12	0.79	0.02
75					13.56	17.47	10.34	9.03	6.62	3.06	4.52	1.21	3.05	0.46	1.84	0.14	0.85	0.02
80					14.46	19.68	11.03	10.18	7.06	3.44	4.82	1.36	3.25	0.52	1.96	0.15	0.90	0.02
85					15.37	22.02	11.72	11.39	7.50	3.85	5.12	1.52	3.45	0.59	2.09	0.17	0.96	0.03
90					16.27	24.48	12.41	12.66	7.95	4.28	5.42	1.69	3.66	0.65	2.21	0.19	1.02	0.03
95					17.18	27.06	13.10	13.99	8.39	4.74	5.72	1.87	3.86	0.72	2.33	0.21	1.07	0.03
100					18.08	29.76	13.79	15.39	8.83	5.21	6.03	2.06	4.07	0.79	2.46	0.23	1.13	0.04
110					19.89	35.50	15.17	18.36	9.71	6.21	6.63	2.45	4.47	0.94	2.70	0.28	1.24	0.04
120							16.54	21.57	10.60	7.30	7.23	2.88	4.88	1.11	2.95	0.33	1.36	0.05
130							17.92	25.02	11.48	8.47	7.84	3.34	5.29	1.29	3.19	0.38	1.47	0.06
140							19.30	28.70	12.36	9.71	8.44	3.84	5.69	1.47	3.44	0.43	1.59	0.07
150									13.25	11.04	9.04	4.36	6.10	1.68	3.69	0.49	1.70	0.08
160									14.13	12.44	9.64	4.91	6.51	1.89	3.93	0.55	1.81	0.08
170									15.01	13.91	10.25	5.50	6.91	2.11	4.18	0.62	1.93	0.09
180									15.90	15.47	10.85	6.11	7.32	2.35	4.42	0.69	2.04	0.11
190									16.78	17.10	11.45	6.75	7.73	2.60	4.67	0.76	2.15	0.12
200									17.66	18.80	12.06	7.43	8.14	2.85	4.92	0.84	2.27	0.13
225									19.87	23.38	13.56	9.24	9.15	3.55	5.53	1.04	2.55	0.16
250											15.07	11.23	10.17	4.31	6.15	1.27	2.83	0.19
275											16.58	13.39	11.19	5.15	6.76	1.51	3.12	0.23
300											18.09	15.74	12.21	6.05	7.38	1.78	3.40	0.27
325											19.60	18.25	13.22	7.01	7.99	2.06	3.69	0.31
350													14.24	8.05	8.61	2.36	3.97	0.36
375													15.26	9.14	9.22	2.69	4.25	0.41
400													16.28	10.30	9.84	3.03	4.54	0.46
425													17.29	11.53	10.45	3.39	4.82	0.52
450													18.31	12.81	11.07	3.77	5.11	0.57
475													19.33	14.16	11.68	4.16	5.39	0.63
500															12.30	4.58	5.67	0.70
550															13.53	5.46	6.24	0.83
600															14.76	6.42	6.81	0.98

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

PVC Class 315 IPS Plastic Pipe

PVC Class 315 IPS Plastic Pipe

Sizes: ½" thru 6"

Flow: 1 thru 600 GPM

(1120, 1220) SDR 13.5 C=150 PSI LOSS PER 100 FEET OF PIPE (PSI/100 FT)

SIZE	½"		¾"		1"		1¼"		1½"		2"		2½"		3"		4"		6"	
OD	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
ID	0.716		0.894		1.121		1.414		1.618		2.023		2.449		2.982		3.834		5.643	
WALL THK.	0.062		0.078		0.097		0.123		0.141		0.176		0.213		0.259		0.333		0.491	
Flow GPM	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss
1	0.79	0.22	0.51	0.07	0.32	0.02	0.20	0.01	0.15	0.00										
2	1.59	0.78	1.02	0.27	0.64	0.09	0.40	0.03	0.31	0.01	0.19	0.00								
3	2.38	1.65	1.53	0.56	0.97	0.19	0.61	0.06	0.46	0.03	0.29	0.01	0.20	0.00						
4	3.18	2.82	2.04	0.96	1.29	0.32	0.81	0.10	0.62	0.05	0.39	0.02	0.27	0.01						
5	3.97	4.26	2.55	1.45	1.62	0.48	1.02	0.16	0.77	0.08	0.49	0.03	0.34	0.01	0.22	0.00				
6	4.77	5.97	3.06	2.03	1.94	0.67	1.22	0.22	0.93	0.11	0.59	0.04	0.40	0.02	0.27	0.01				
7	5.57	7.95	3.57	2.70	2.27	0.90	1.42	0.29	1.09	0.15	0.69	0.05	0.47	0.02	0.32	0.01				
8	6.36	10.18	4.08	3.45	2.59	1.15	1.63	0.37	1.24	0.19	0.79	0.06	0.54	0.03	0.36	0.01				
9	7.16	12.66	4.59	4.30	2.92	1.43	1.83	0.46	1.40	0.24	0.89	0.08	0.61	0.03	0.41	0.01				
10	7.95	15.38	5.10	5.22	3.24	1.74	2.04	0.56	1.55	0.29	0.99	0.10	0.68	0.04	0.45	0.01	0.27	0.00		
11	8.75	18.35	5.61	6.23	3.57	2.07	2.24	0.67	1.71	0.35	1.09	0.12	0.74	0.05	0.50	0.02	0.30	0.01		
12	9.55	21.56	6.12	7.32	3.89	2.43	2.44	0.79	1.87	0.41	1.19	0.14	0.81	0.05	0.55	0.02	0.33	0.01		
14	11.14	28.69	7.14	9.74	4.54	3.24	2.85	1.05	2.18	0.54	1.39	0.18	0.95	0.07	0.64	0.03	0.38	0.01		
16	12.73	36.74	8.16	12.47	5.19	4.15	3.26	1.34	2.49	0.70	1.59	0.23	1.08	0.09	0.73	0.04	0.44	0.01		
18	14.32	45.69	9.18	15.51	5.84	5.16	3.67	1.67	2.80	0.87	1.79	0.29	1.22	0.12	0.82	0.04	0.49	0.01		
20	15.91	55.54	10.20	18.86	6.49	6.27	4.08	2.03	3.11	1.05	1.99	0.35	1.36	0.14	0.91	0.05	0.55	0.02		
22	17.50	66.26	11.23	22.50	7.14	7.48	4.48	2.42	3.42	1.25	2.19	0.42	1.49	0.17	1.00	0.06	0.61	0.02		
24	19.10	77.84	12.25	26.43	7.79	8.79	4.89	2.84	3.74	1.47	2.39	0.50	1.63	0.20	1.10	0.08	0.66	0.02		
26			13.27	30.65	8.44	10.19	5.30	3.29	4.05	1.71	2.59	0.58	1.76	0.23	1.19	0.09	0.72	0.03		
28			14.29	35.16	9.09	11.69	5.71	3.78	4.36	1.96	2.79	0.66	1.90	0.26	1.28	0.10	0.77	0.03	0.35	0.00
30			15.31	39.95	9.74	13.29	6.12	4.29	4.67	2.23	2.99	0.75	2.04	0.30	1.37	0.11	0.83	0.03	0.38	0.01
35			17.86	53.15	11.36	17.68	7.14	5.71	5.45	2.96	3.48	1.00	2.38	0.39	1.60	0.15	0.97	0.04	0.44	0.01
40					12.98	22.64	8.16	7.31	6.23	3.80	3.98	1.28	2.72	0.51	1.83	0.19	1.11	0.06	0.51	0.01
45					14.61	28.15	9.18	9.10	7.01	4.72	4.48	1.59	3.06	0.63	2.06	0.24	1.24	0.07	0.57	0.01
50					16.23	34.22	10.20	11.06	7.79	5.74	4.98	1.94	3.40	0.76	2.29	0.29	1.38	0.09	0.64	0.01
55					17.85	40.83	11.22	13.19	8.57	6.85	5.48	2.31	3.74	0.91	2.52	0.35	1.52	0.10	0.70	0.02
60					19.48	47.97	12.24	15.50	9.35	8.04	5.98	2.71	4.08	1.07	2.75	0.41	1.66	0.12	0.76	0.02
65							13.26	17.97	10.13	9.33	6.48	3.15	4.42	1.24	2.98	0.48	1.80	0.14	0.83	0.02
70							14.28	20.62	10.90	10.70	6.97	3.61	4.76	14.2	3.21	0.55	1.94	0.16	0.89	0.02
75							15.30	23.43	11.68	12.16	7.47	4.10	5.10	1.62	3.44	0.62	2.08	0.18	0.96	0.03
80							16.32	26.40	12.46	13.71	7.97	4.62	5.44	1.82	3.67	0.70	2.22	0.21	1.02	0.03
85							17.34	29.54	13.24	15.33	8.47	5.17	5.78	2.04	3.89	0.78	2.35	0.23	1.08	0.04
90							18.36	32.84	14.02	17.05	8.97	5.75	6.12	2.27	4.12	0.87	2.49	0.26	1.15	0.04
95							19.38	36.30	14.80	18.84	9.47	6.35	6.46	2.51	4.35	0.96	2.63	0.28	1.21	0.04
100									15.58	20.72	9.96	6.99	6.80	2.76	4.58	1.06	2.77	0.31	1.28	0.05
110									17.14	24.72	10.96	8.34	7.48	3.29	5.04	1.26	3.05	0.37	1.40	0.06
120									18.70	29.04	11.96	9.79	8.16	3.87	5.50	1.48	3.33	0.44	1.53	0.07
130											12.96	11.36	8.84	4.48	5.96	1.72	3.60	0.51	1.66	0.08
140											13.95	13.03	9.52	5.14	6.42	1.97	3.88	0.58	1.79	0.09
150											14.95	14.81	10.20	5.84	6.88	2.24	4.16	0.66	1.92	0.10
160											15.95	16.69	10.88	6.59	7.34	2.53	4.44	0.74	2.04	0.11
170											16.94	18.67	11.56	7.37	7.79	2.83	4.71	0.83	2.17	0.13
180											17.94	20.75	12.24	8.19	8.25	3.14	4.99	0.93	2.30	0.14
190											18.94	22.94	12.92	9.05	8.71	3.47	5.27	1.02	2.43	0.16
200											19.93	25.23	13.60	9.95	9.17	3.82	5.55	1.12	2.56	0.17
225													15.30	12.38	10.32	4.75	6.24	1.40	2.88	0.21
250													17.00	15.05	11.47	5.77	6.93	1.70	3.20	0.26
275													18.70	17.95	12.61	6.89	7.63	2.03	3.52	0.31
300															13.76	8.09	8.32	2.38	3.84	0.36
325															14.91	9.39	9.02	2.76	4.16	0.42
350															16.05	10.77	9.71	3.17	4.48	0.48
375															17.20	12.23	10.40	3.60	4.80	0.55
400															18.35	13.79	11.10	4.06	5.12	0.62
425															19.49	15.42	11.79	4.54	5.44	0.69
450																	12.49	5.05	5.76	0.77
475																	13.18	5.58	6.08	0.85
500																	13.87	6.14	6.40	0.94
550																	15.26	7.32	7.04	1.12
600																	16.65	8.60	7.68	1.31

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

Friction Loss Characteristics

PVC Schedule 40 IPS Plastic Pipe

PVC Class 40 IPS Plastic Pipe

Sizes: ½" thru 6"

Flow: 1 thru 600 GPM

(1120, 1220) C=150 PSI LOSS PER 100 FEET OF PIPE (PSI/100 FT)

SIZE	½"		¾"		1"		1¼"		1½"		2"		2½"		3"		4"		6"	
OD	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
ID	0.622		0.824		1.049		1.380		1.610		2.067		2.469		3.068		4.026		6.065	
WALL THK.	0.109		0.113		0.133		0.140		0.145		0.154		0.203		0.216		0.237		0.280	
Flow GPM	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss
1	1.05	0.43	0.60	0.11	0.37	0.03	0.21	0.01	0.15	0.00										
2	2.11	1.55	1.20	0.39	0.74	0.12	0.42	0.03	0.31	0.02	0.19	0.00								
3	3.16	3.28	1.80	0.84	1.11	0.26	0.64	0.07	0.47	0.03	0.28	0.01	0.20	0.00						
4	4.22	5.60	2.40	1.42	1.48	0.44	0.85	0.12	0.62	0.05	0.38	0.02	0.26	0.01						
5	5.27	8.46	3.00	2.15	1.85	0.66	1.07	0.18	0.78	0.08	0.47	0.02	0.33	0.01	0.21	0.00				
6	6.33	11.86	3.60	3.02	2.22	0.93	1.28	0.25	0.94	0.12	0.57	0.03	0.40	0.01	0.26	0.01				
7	7.38	15.77	4.20	4.01	2.59	1.24	1.49	0.33	1.10	0.15	0.66	0.05	0.46	0.02	0.30	0.01				
8	8.44	20.20	4.80	5.14	2.96	1.59	1.71	0.42	1.25	0.20	0.76	0.06	0.53	0.02	0.34	0.01				
9	9.49	25.12	5.40	6.39	3.33	1.97	1.92	0.52	1.41	0.25	0.85	0.07	0.60	0.03	0.39	0.01				
10	10.55	30.54	6.00	7.77	3.70	2.40	2.14	0.63	1.57	0.30	0.95	0.09	0.66	0.04	0.43	0.01				
11	11.60	36.43	6.60	9.27	4.07	2.86	2.35	0.75	1.73	0.36	1.05	0.11	0.73	0.04	0.47	0.02				
12	12.65	42.80	7.21	10.89	4.44	3.36	2.57	0.89	1.88	0.42	1.14	0.12	0.80	0.05	0.52	0.02	0.30	0.00		
14	14.76	56.94	8.41	14.48	5.19	4.47	2.99	1.18	2.20	0.56	1.33	0.17	0.93	0.07	0.60	0.02	0.35	0.01		
16	16.87	72.92	9.61	18.55	5.93	5.73	3.42	1.51	2.51	0.71	1.52	0.21	1.07	0.09	0.69	0.03	0.40	0.01		
18	18.98	90.69	10.81	23.07	6.67	7.13	3.85	1.88	2.83	0.89	1.71	0.26	1.20	0.11	0.78	0.04	0.45	0.01		
20	21.09	110.23	12.01	28.04	7.41	8.66	4.28	2.28	3.14	1.08	1.90	0.32	1.33	0.13	0.86	0.05	0.50	0.01		
22			13.21	33.45	8.15	10.33	4.71	2.72	3.46	1.29	2.10	0.38	1.47	0.16	0.95	0.06	0.55	0.01		
24			14.42	39.30	8.89	12.14	5.14	3.20	3.77	1.51	2.29	0.45	1.60	0.19	1.04	0.07	0.60	0.02		
26			15.62	45.58	9.64	14.08	5.57	3.17	4.09	1.75	2.48	0.52	1.74	0.22	1.12	0.08	0.65	0.02		
28			16.82	52.28	10.38	16.15	5.99	4.25	4.40	2.01	2.67	0.60	1.87	0.25	1.21	0.09	0.70	0.02		
30			18.02	59.41	11.12	18.35	6.42	4.83	4.72	2.28	2.86	0.68	2.00	0.29	1.30	0.10	0.75	0.03		
35					12.97	24.42	7.49	6.43	5.50	3.04	3.34	0.90	2.34	0.38	1.51	0.13	0.88	0.04	0.38	0.00
40					14.83	31.27	8.56	8.23	6.29	3.89	3.81	1.15	2.67	0.49	1.73	0.17	1.00	0.04	0.44	0.01
45					16.68	38.89	9.64	10.24	7.08	4.84	4.29	1.43	3.01	0.60	1.95	0.21	1.13	0.06	0.49	0.01
50					18.53	47.27	10.71	12.45	7.87	5.88	4.77	1.74	3.34	0.73	2.16	0.26	1.25	0.07	0.55	0.01
55							11.78	14.85	8.65	7.01	5.25	2.08	3.68	0.88	2.38	0.30	1.38	0.08	0.61	0.01
60							12.85	17.45	9.44	8.24	5.72	2.44	4.01	1.03	2.60	0.36	1.51	0.10	0.66	0.01
65							13.92	20.23	10.23	9.56	6.20	2.83	4.35	1.19	2.81	0.41	1.63	0.11	0.72	0.02
70							14.99	23.21	11.01	10.96	6.68	3.25	4.68	1.37	3.03	0.48	1.76	0.13	0.77	0.02
75							16.06	26.37	11.80	12.46	7.16	3.69	5.01	1.56	3.25	0.54	1.88	0.14	0.83	0.02
80							17.13	29.72	12.59	14.04	7.63	4.16	5.35	1.75	3.46	0.61	2.01	0.16	0.88	0.02
85							18.21	33.26	13.37	15.71	8.11	4.66	5.68	1.96	3.68	0.68	2.13	0.18	0.94	0.02
90							19.28	36.97	14.16	17.46	8.59	5.18	6.02	2.18	3.90	0.76	2.26	0.20	0.99	0.03
95									14.95	19.30	9.07	5.72	6.35	2.41	4.11	0.84	2.39	0.22	1.05	0.03
100									15.74	21.22	9.54	6.29	6.69	2.65	4.33	0.92	2.51	0.25	1.10	0.03
110									17.31	25.32	10.50	7.51	7.36	3.16	4.76	1.10	2.76	0.29	1.22	0.04
120									18.88	29.75	11.45	8.82	8.03	3.72	5.20	1.29	3.02	0.34	1.33	0.05
130											12.41	10.23	8.70	4.31	5.63	1.50	3.27	0.40	1.44	0.05
140											13.36	11.74	9.37	4.94	6.06	1.72	3.52	0.46	1.55	0.06
150											14.32	13.33	10.03	5.62	6.50	1.95	3.77	0.52	1.66	0.07
160											15.27	15.03	10.70	6.33	6.93	2.20	4.02	0.59	1.77	0.08
170											16.23	16.81	11.37	7.08	7.36	2.46	4.27	0.66	1.88	0.09
180											17.18	18.69	12.04	7.87	7.80	2.74	4.53	0.73	1.99	0.10
190											18.14	20.66	12.71	8.70	8.23	3.02	4.78	0.81	2.10	0.11
200											19.09	22.72	13.38	9.57	8.66	3.33	5.03	0.89	2.21	0.12
225													15.05	11.90	9.75	4.14	5.66	1.10	2.49	0.15
250													16.73	14.47	10.83	5.03	6.29	1.34	2.77	0.18
275													18.40	17.26	11.92	6.00	6.92	1.60	3.05	0.22
300															13.00	7.05	7.55	1.88	3.32	0.26
325															14.08	8.17	8.18	2.18	3.60	0.30
350															15.17	9.38	8.81	2.50	3.88	0.34
375															16.25	10.65	9.43	2.84	4.15	0.39
400															17.33	12.01	10.06	3.20	4.43	0.44
425															18.42	13.43	10.69	3.58	4.71	0.49
450															19.50	14.93	11.32	3.98	4.99	0.54
475																	11.95	4.40	5.26	0.60
500																	12.58	4.84	5.54	0.66
550																	13.84	5.77	6.10	0.79
600																	15.10	6.78	6.65	0.92

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

Friction Loss Characteristics

PVC Schedule 80 IPS Plastic Pipe

PVC Class 80 IPS Plastic Pipe

Sizes: ½" thru 6"

Flow: 1 thru 600 GPM

(1120, 1220) C=150 PSI LOSS PER 100 FEET OF PIPE (PSI/100 FT)

SIZE	½"		¾"		1"		1¼"		1½"		2"		2½"		3"		4"		6"	
OD	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
ID	0.546		0.742		0.957		1.278		1.500		1.939		2.323		2.900		3.826		5.761	
WALL THK.	0.147		0.154		0.179		0.191		0.200		0.218		0.276		0.300		0.337		0.432	
Flow GPM	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss
1	1.36	0.81	0.74	0.18	0.44	0.05	0.24	0.01	0.18	0.01	0.10	0.00								
2	2.73	2.92	1.48	0.66	0.89	0.19	0.49	0.05	0.36	0.02	0.21	0.01	0.15	0.00						
3	4.10	6.19	2.22	1.39	1.33	0.40	0.74	0.10	0.54	0.05	0.32	0.01	0.22	0.01						
4	5.47	10.54	2.96	2.37	1.78	0.69	0.99	0.17	0.72	0.08	0.43	0.02	0.30	0.01						
5	6.84	15.93	3.70	3.58	2.22	1.04	1.24	0.25	0.90	0.12	0.54	0.03	0.37	0.01	0.24	0.00				
6	8.21	22.33	4.44	5.02	2.67	1.46	1.49	0.36	1.08	0.16	0.65	0.05	0.45	0.02	0.29	0.01				
7	9.58	29.71	5.18	6.68	3.11	1.94	1.74	0.47	1.26	0.22	0.75	0.06	0.52	0.03	0.33	0.01				
8	10.94	38.05	5.92	8.56	3.56	2.48	1.99	0.61	1.45	0.28	0.86	0.08	0.60	0.03	0.38	0.01				
9	12.31	47.33	6.66	10.64	4.00	3.09	2.24	0.76	1.63	0.35	0.97	0.10	0.68	0.04	0.43	0.01				
10	13.68	57.52	7.41	12.93	4.45	3.75	2.49	0.92	1.81	0.42	1.08	0.12	0.75	0.05	0.48	0.02	0.27	0.00		
11	15.05	68.63	8.15	15.43	4.90	4.47	2.74	1.10	1.99	0.50	1.19	0.14	0.83	0.06	0.53	0.02	0.30	0.01		
12	16.42	80.63	8.89	18.13	5.34	5.26	2.99	1.29	2.17	0.59	1.30	0.17	0.90	0.07	0.58	0.02	0.33	0.01		
14			10.37	24.12	6.23	6.99	3.49	1.71	2.53	0.79	1.51	0.23	1.05	0.09	0.67	0.03	0.39	0.01		
16			11.85	30.88	7.12	8.95	3.99	2.19	2.90	0.01	1.73	0.29	1.20	1.12	0.77	0.04	0.44	0.01		
18			13.33	38.41	8.01	11.14	4.49	2.73	3.26	1.26	1.95	0.36	1.36	0.15	0.87	0.05	0.50	0.01		
20			14.82	46.69	8.90	13.54	4.99	3.31	3.62	1.52	2.17	0.44	1.51	0.18	0.97	0.06	0.55	0.02		
22			16.30	55.70	9.80	16.15	5.49	3.95	3.98	1.81	2.38	0.52	1.66	0.22	1.06	0.07	0.61	0.02		
24			17.78	65.44	10.69	18.97	5.99	4.64	4.35	2.13	2.60	0.61	1.81	0.25	1.16	0.09	0.66	0.02		
26			19.26	75.90	11.58	22.01	6.49	5.39	4.71	2.47	2.82	0.71	1.96	0.29	1.26	0.10	0.72	0.03		
28					12.47	25.24	6.99	6.18	5.07	2.83	3.03	0.81	2.11	0.34	1.35	0.11	0.78	0.03		
30					13.36	28.69	7.49	7.02	5.43	3.22	3.25	0.92	2.26	0.38	1.45	0.13	0.83	0.03	0.36	0.00
35					15.59	38.16	8.74	9.34	6.34	4.29	3.79	1.23	2.64	0.51	1.69	0.17	0.97	0.05	0.43	0.01
40					17.81	48.87	9.99	11.96	7.25	5.49	4.34	1.57	3.02	0.65	1.94	0.22	1.11	0.06	0.49	0.01
45							11.24	14.88	8.16	6.83	4.88	1.96	3.40	0.81	2.18	0.28	1.25	0.07	0.55	0.01
50							12.49	18.09	9.06	8.30	5.42	2.38	3.78	0.99	2.42	0.34	1.39	0.09	0.61	0.01
55							13.73	21.58	9.97	9.90	5.96	2.84	4.15	1.18	2.66	0.40	1.53	0.10	0.67	0.01
60							14.98	25.35	10.87	11.63	6.51	3.33	4.53	1.38	2.91	0.47	1.67	0.12	0.73	0.02
65							16.23	29.40	11.78	13.49	7.05	3.87	4.91	1.61	3.15	0.55	1.81	0.14	0.79	0.02
70							17.48	33.72	12.69	15.47	7.59	4.44	5.29	1.84	3.39	0.63	1.95	0.16	0.86	0.02
75							18.73	38.32	13.59	17.58	8.13	5.04	5.67	2.09	3.63	0.71	2.09	0.18	0.92	0.03
80							19.98	43.19	14.50	19.81	8.68	5.68	6.04	2.36	3.88	0.80	2.22	0.21	0.98	0.03
85									15.41	22.16	9.22	6.36	6.42	2.63	4.12	0.90	2.36	0.23	1.04	0.03
90									16.32	24.64	9.76	7.07	6.80	2.93	4.36	1.00	2.50	0.26	1.10	0.04
95									17.22	27.23	10.30	7.81	7.18	3.24	4.60	1.10	2.64	0.29	1.16	0.04
100									18.13	29.95	10.85	8.59	7.56	3.57	4.85	1.21	2.78	0.31	1.22	0.04
110									19.94	35.73	11.93	10.25	8.31	4.25	5.33	1.45	3.06	0.38	1.35	0.05
120											13.02	12.04	9.07	5.00	5.82	1.70	3.34	0.44	1.47	0.06
130											14.10	13.96	9.82	5.60	6.30	1.97	3.62	0.51	1.59	0.07
140											15.19	16.02	10.58	6.65	6.79	2.27	3.90	0.59	1.72	0.08
150											16.27	18.20	11.34	7.56	7.27	2.57	4.18	0.67	1.84	0.09
160											17.36	20.51	12.09	8.51	7.76	2.89	4.45	0.75	1.96	0.10
170											18.44	22.95	12.85	9.53	8.24	3.24	4.73	0.84	2.08	0.11
180											19.53	25.51	13.60	10.59	8.73	3.60	5.01	0.93	2.21	0.13
190													14.36	11.71	9.21	3.98	5.29	1.03	2.33	0.14
200													15.12	12.87	9.70	4.37	5.57	1.14	2.45	0.16
225													17.01	16.01	10.91	5.44	6.27	1.41	2.76	0.19
250													18.90	19.46	12.12	6.61	6.96	1.72	3.07	0.23
275															13.34	7.89	7.66	2.05	3.38	0.28
300															14.55	9.27	8.36	2.41	3.68	0.33
325															15.76	10.75	9.05	2.79	3.99	0.38
350															16.97	12.33	9.75	3.20	4.30	0.44
375															18.19	14.01	10.45	3.64	4.60	0.50
400															19.40	15.79	11.14	4.10	4.91	0.56
425																	11.84	4.59	5.22	0.63
450																	12.54	5.10	5.53	0.70
475																	13.23	5.64	5.83	0.77
500																	13.93	6.20	6.14	0.85
550																	15.32	7.40	6.76	1.01
600																	16.72	8.69	7.37	1.19

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

Friction Loss Characteristics

Polyethylene (PE)

SDR—Pressure-rated Tube

Sizes: ½" thru 6"

Flow: 1 thru 600 GPM

(2306, 3206, 3306) SDR7, 9, 11.5, 15) C=150 PSI LOSS PER 100 FEET OF PIPE (PSI/100 FT)

SIZE	½"		¾"		1"		1¼"		1½"		2"		2½"		3"		4"		6"	
OD	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
ID	0.622		0.824		1.049		1.380		1.610		2.067		2.469		3.068		4.026		6.065	
WALL THK.	0.109		0.113		0.133		0.140		0.145		0.154		0.203		0.216		0.237		0.280	
Flow GPM	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss
1	1.05	0.49	0.60	0.12	0.37	0.04	0.21	0.01	0.15	0.00	0.09	0.00								
2	2.10	1.76	1.20	0.45	0.74	0.14	0.42	0.04	0.31	0.02	0.19	0.01								
3	3.16	3.73	1.80	0.95	1.11	0.29	0.64	0.08	0.47	0.04	0.28	0.01	0.20	0.00						
4	4.21	6.35	2.40	1.62	1.48	0.50	0.85	0.13	0.62	0.06	0.38	0.02	0.26	0.01						
5	5.27	9.60	3.00	2.44	1.85	0.76	1.07	0.20	0.78	0.09	0.47	0.03	0.33	0.01	0.21	0.00				
6	6.32	13.46	3.60	3.43	2.22	1.06	1.28	0.28	0.94	0.13	0.57	0.04	0.40	0.02	0.26	0.01				
7	7.38	17.91	4.20	4.56	2.59	1.41	1.49	0.37	1.10	0.18	0.66	0.05	0.46	0.02	0.30	0.01				
8	8.43	22.93	4.80	5.84	2.96	1.80	1.71	0.47	1.25	0.22	0.76	0.07	0.53	0.03	0.34	0.01				
9	9.49	28.52	5.40	7.26	3.33	2.24	1.92	0.59	1.41	0.28	0.85	0.08	0.60	0.03	0.39	0.01				
10	10.54	34.67	6.00	8.82	3.70	2.73	2.14	0.72	1.57	0.34	0.95	0.10	0.66	0.04	0.43	0.01				
11	11.60	41.36	6.00	10.53	4.07	3.25	2.35	0.86	1.73	0.40	1.05	0.12	0.73	0.05	0.47	0.02	0.27	0.00		
12	12.66	48.60	7.21	12.37	4.44	3.82	2.57	1.01	1.88	0.48	1.14	0.14	0.80	0.06	0.52	0.02	0.30	0.01		
14	14.76	64.65	8.41	16.46	5.19	5.08	2.99	1.34	2.20	0.63	1.33	0.19	0.93	0.08	0.60	0.03	0.35	0.01		
16	16.87	82.79	9.61	21.07	5.93	6.51	3.42	1.71	2.51	0.81	1.52	0.24	1.07	0.10	0.69	0.04	0.40	0.01		
18	18.98	02.97	10.81	26.21	6.67	8.10	3.85	2.13	2.83	1.01	1.71	0.30	1.20	0.13	0.78	0.04	0.45	0.01		
20			12.01	31.86	7.41	9.84	4.28	2.59	3.14	1.22	1.90	0.36	1.33	0.15	0.86	0.05	0.50	0.01		
22			13.21	38.01	8.15	11.74	4.71	3.09	3.46	1.46	2.10	0.43	1.47	0.18	0.95	0.06	0.55	0.02		
24			14.42	44.65	8.89	13.79	5.14	3.63	3.77	1.72	2.29	0.51	1.60	0.21	1.04	0.07	0.60	0.02		
26			15.62	41.79	9.64	16.00	5.57	4.21	4.09	1.99	2.48	0.59	1.74	0.25	1.12	0.09	0.65	0.02		
28			16.82	59.41	10.38	18.35	5.99	4.83	4.40	2.28	2.67	0.68	1.87	0.29	1.21	0.10	0.70	0.03		
30			18.02	67.50	11.12	20.85	6.42	5.49	4.72	2.59	2.86	0.77	2.00	0.32	1.30	0.11	0.75	0.03	0.33	0.01
35					12.97	27.74	7.49	7.31	5.50	3.45	3.34	1.02	2.34	0.43	1.51	0.15	0.88	0.04	0.38	0.01
40					14.83	35.53	8.56	9.36	6.29	4.42	3.81	1.31	2.67	0.55	1.73	0.19	1.00	0.05	0.44	0.01
45					16.68	44.19	9.64	11.64	7.08	5.50	4.29	1.63	3.01	0.69	1.95	0.24	1.13	0.06	0.49	0.01
50					18.53	53.71	10.71	14.14	7.87	6.68	4.77	1.98	3.34	0.83	2.16	0.29	1.25	0.08	0.55	0.01
55							11.78	16.87	8.65	7.97	5.25	2.36	3.68	1.00	2.38	0.35	1.38	0.09	0.61	0.01
60							12.85	19.82	9.44	9.36	5.72	2.78	4.01	1.17	2.60	0.41	1.51	0.11	0.66	0.01
65							13.92	22.99	10.23	10.86	6.20	3.22	4.35	1.36	2.81	0.47	1.63	0.13	0.72	0.02
70							14.99	26.37	11.01	12.46	6.68	3.69	4.68	1.56	3.03	0.54	1.76	0.14	0.77	0.02
75							16.06	29.97	11.80	14.16	7.16	4.20	5.01	1.77	3.25	0.61	1.88	0.16	0.83	0.02
80							17.13	33.77	12.59	15.95	7.63	4.73	5.35	1.99	3.46	0.69	2.01	0.18	0.88	0.03
85							18.21	37.79	13.37	17.85	8.11	5.29	5.68	2.23	3.68	0.77	2.13	0.21	0.94	0.03
90							19.28	42.01	14.16	19.84	8.59	5.88	6.02	2.48	3.90	0.86	2.26	0.23	0.99	0.03
95									14.95	21.93	9.07	6.50	6.35	2.74	4.11	0.95	2.39	0.25	1.05	0.03
100									15.74	24.12	9.54	7.15	6.69	3.01	4.33	1.05	2.51	0.28	1.10	0.04
110									17.31	28.77	10.50	8.53	7.36	3.59	4.76	1.25	2.76	0.33	1.22	0.05
120									18.88	33.80	11.45	10.02	8.03	4.22	5.20	1.47	3.02	0.39	1.33	0.05
130											12.41	11.62	8.70	4.90	5.63	1.70	3.27	0.45	1.44	0.06
140											13.36	13.33	9.37	5.62	6.06	1.95	3.52	0.52	1.55	0.07
150											14.32	15.15	10.03	6.38	6.50	2.22	3.77	0.59	1.66	0.08
160											15.27	17.08	10.70	7.19	6.93	2.50	4.02	0.67	1.77	0.09
170											16.23	19.11	11.37	8.05	7.36	2.80	4.27	0.75	1.88	0.10
180											17.18	21.24	12.04	8.95	7.08	3.11	4.53	0.83	1.99	0.11
190											18.14	23.48	12.71	9.89	8.23	3.44	4.78	0.92	2.10	0.12
200											19.09	25.81	13.38	10.87	8.66	3.78	5.03	1.01	2.21	0.14
225													15.05	13.52	9.75	4.70	5.66	1.25	2.49	0.17
250													16.73	16.44	10.83	5.71	6.29	1.52	2.77	0.21
275													18.40	19.61	11.92	6.82	6.92	1.82	3.05	0.25
300															13.00	8.01	7.55	2.13	3.32	0.29
325															14.08	9.29	8.18	2.48	3.60	0.34
350															15.17	10.65	8.81	2.84	3.88	0.39
375															16.25	12.10	9.43	3.23	4.15	0.44
400															17.33	13.64	10.06	3.64	4.43	0.50
425															18.42	15.26	10.69	4.07	4.71	0.55
450															19.50	16.97	11.32	4.52	4.99	0.62
475																	11.95	5.00	5.26	0.68
500																	12.58	5.50	5.54	0.75
550																	13.84	6.56	6.10	0.89
600																	15.10	7.70	6.65	1.05

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

Friction Loss Characteristics

Type K Copper Water Tube C-140

Type K Copper Water Tube C=140

Sizes: ½" thru 3"

Flow: 1 thru 600 GPM

PSI LOSS PER 100 FEET OF TUBE (PSI/100 FT)

SIZE	½"		⅝"		¾"		1"		1¼"		1½"		2"		2½"		3"	
OD	0.625		0.750		0.875		1.125		1.375		1.625		2.125		2.625		3.125	
ID	0.527		0.652		0.745		0.995		1.245		1.481		1.959		2.435		2.907	
WALL THK.	0.049		0.049		0.065		0.065		0.065		0.072		0.083		0.095		0.109	
Flow GPM	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss	Velocity FPS	psi Loss
1	1.46	1.09	0.95	0.39	0.73	0.20	0.41	0.05	0.26	0.02	0.18	0.01	0.10	0.00				
2	2.93	3.94	1.91	1.40	1.47	0.73	0.82	0.18	0.52	0.06	0.37	0.03	0.21	0.01				
3	4.40	8.35	2.87	2.97	2.20	1.55	1.23	0.38	0.78	0.13	0.55	0.05	0.31	0.01	0.20	0.00		
4	5.87	14.23	3.83	5.05	2.94	2.64	1.64	0.65	1.05	0.22	0.74	0.09	0.42	0.02	0.27	0.01	0.19	0.00
5	7.34	21.51	4.79	7.64	3.67	3.99	2.06	0.98	1.31	0.33	0.93	0.14	0.53	0.04	0.34	0.01	0.24	0.01
6	8.81	30.15	5.75	10.70	4.41	5.60	2.47	1.37	1.57	0.46	1.11	0.20	0.63	0.05	0.41	0.02	0.28	0.01
7	10.28	40.11	6.71	14.24	5.14	7.44	2.88	1.82	1.84	0.61	1.30	0.26	0.74	0.07	0.48	0.02	0.33	0.01
8	11.75	51.37	7.67	18.24	5.88	9.53	3.29	2.33	2.10	0.78	1.48	0.34	0.85	0.09	0.55	0.03	0.38	0.01
9	13.22	63.89	8.63	22.68	6.61	11.86	3.70	2.90	2.36	0.97	1.67	0.42	0.95	0.11	0.61	0.04	0.43	0.02
10	14.69	77.66	9.59	27.57	7.35	14.41	4.12	3.53	2.63	1.18	1.86	0.51	1.06	0.13	0.68	0.05	0.48	0.02
11	16.15	92.65	10.55	32.89	8.08	17.19	4.53	4.21	2.89	1.41	2.04	0.61	1.16	0.16	0.75	0.05	0.53	0.02
12	17.62	108.85	11.51	38.64	8.82	20.20	4.94	4.94	3.15	1.66	2.23	0.71	1.27	0.18	0.82	0.06	0.57	0.03
14			13.43	51.41	10.29	26.87	5.76	6.57	3.68	2.21	2.60	0.95	1.48	0.24	0.95	0.08	0.67	0.04
16			15.35	65.83	11.76	34.41	6.59	8.42	4.21	2.83	2.97	1.22	1.70	0.31	1.10	0.11	0.77	0.05
18			17.27	81.88	13.23	42.80	7.41	10.47	4.73	3.52	3.34	1.51	1.91	0.39	1.23	0.13	0.86	0.06
20			19.19	99.53	14.70	52.02	8.24	12.73	5.26	4.28	3.72	1.84	1.12	0.47	1.37	0.16	0.96	0.07
22					16.17	62.06	9.06	15.18	5.79	5.10	4.09	2.19	2.33	0.56	1.51	0.20	1.06	0.08
24					17.64	72.92	9.89	17.84	6.31	5.99	4.46	2.58	2.55	0.66	1.65	0.23	1.15	0.10
26					19.11	84.57	10.71	10.69	6.84	6.95	4.83	2.99	2.76	0.77	1.78	0.27	1.25	0.11
28							11.53	23.73	7.37	7.98	5.20	3.43	2.97	0.88	1.92	0.30	1.35	0.13
30							12.36	26.97	7.89	9.06	5.58	3.89	3.18	1.00	2.06	0.35	1.44	0.15
35							14.42	35.88	9.21	12.06	6.51	5.18	3.72	1.33	2.40	0.46	1.68	0.19
40							16.48	45.95	10.52	15.44	7.44	6.63	4.25	1.70	2.75	0.59	1.93	0.25
45							18.54	57.15	11.84	19.20	8.37	8.25	4.78	2.12	3.00	0.73	2.17	0.31
50									13.16	23.34	9.30	10.03	5.31	2.57	3.44	0.89	2.41	0.38
55									14.47	27.85	10.23	11.97	5.84	3.07	3.78	1.06	2.65	0.45
60									15.79	32.71	11.16	14.06	6.37	3.60	4.12	1.25	2.89	0.53
65									17.10	37.94	12.09	16.31	6.91	4.18	4.47	1.45	3.13	0.61
70									18.42	43.52	13.02	18.70	7.44	4.80	4.81	1.66	3.37	0.70
75									19.74	49.46	13.95	21.25	7.97	5.45	5.16	1.89	3.62	0.80
80											14.88	23.95	8.50	6.14	5.50	2.13	3.86	0.90
85											15.81	26.80	9.03	6.87	5.84	2.38	4.10	1.01
90											16.74	29.79	9.56	7.64	6.19	2.65	4.34	1.12
95											17.67	32.93	10.09	8.44	6.53	2.93	4.58	1.24
100											18.60	36.21	10.63	9.28	6.88	3.22	4.82	1.36
110													11.69	11.08	7.56	3.84	5.31	1.62
120													12.75	13.01	8.25	4.52	5.79	1.91
130													13.82	15.09	8.94	5.24	6.27	2.21
140													14.88	17.31	9.63	6.01	6.75	2.54
150													15.94	19.67	10.32	6.83	7.24	2.88
160													17.01	22.17	11.00	7.69	7.72	3.25
170													18.07	24.81	11.69	8.61	8.20	3.64
180													19.13	27.58	12.38	9.57	8.69	4.04
190															13.07	10.58	9.17	4.47
200															13.76	11.63	9.65	4.91
225															15.48	14.47	10.86	6.11
250															17.20	17.58	12.07	7.43
275															18.92	20.98	13.27	8.86
300																	14.48	10.41
325																	15.69	12.07
350																	16.89	13.85
375																	18.10	15.73
400																	19.31	17.73
425																		
450																		
475																		
500																		
550																		
600																		

Note: Shaded areas of chart indicate velocities over 5 feet per second (FPS). **Use with caution.**

Velocity of flow values are computed from the general equation $V = .408 \frac{Q}{d^2}$

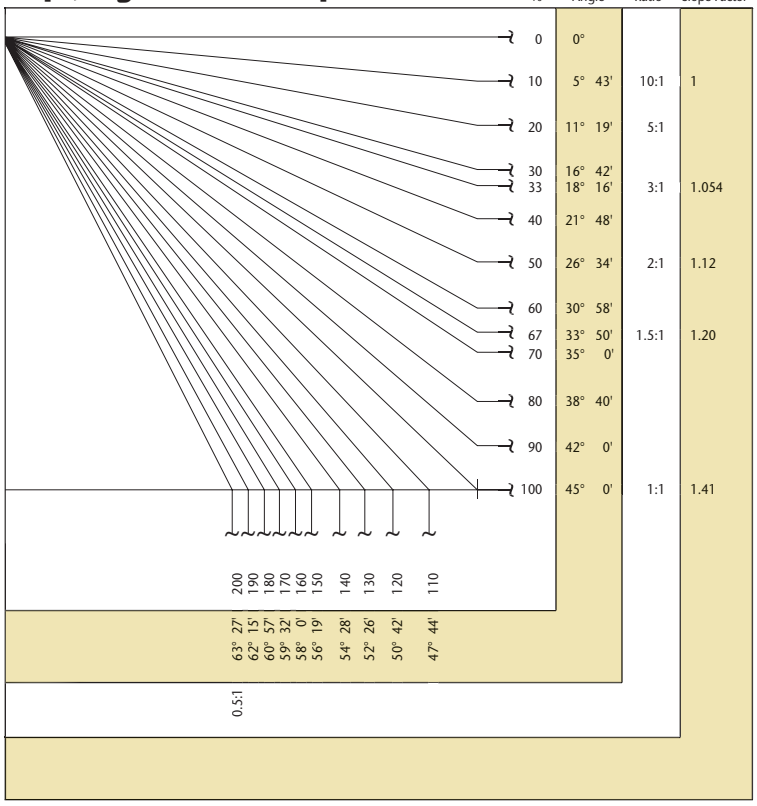
Friction pressure loss values are computed from the equation $hf = 0.2083 \left(\frac{100}{C}\right)^{1.852} \frac{Q^{1.852}}{d^{4.866}}$ x .433 for psi loss per 100' of pipe

Pressure Loss Through Water Meters and Precipitation Rate Reference Charts

Pressure Loss—psi

FLOW GPM	NOMINAL SIZE						
	⅝"	¾"	1"	1½"	2"	3"	4"
1	0.2	0.1					
2	0.3	0.2					
3	0.4	0.3					
4	0.6	0.5	0.1				
5	0.9	0.6	0.2				
6	1.3	0.7	0.3				
7	1.8	0.8	0.4				
8	2.3	1.0	0.5				
9	3.0	1.3	0.6				
10	3.7	1.6	0.7				
11	4.4	1.9	0.8				
12	5.1	2.2	0.9				
13	6.1	2.6	1.0				
14	7.2	3.1	1.1				
15	8.3	3.6	1.2				
16	9.4	4.1	1.4	0.4			
17	10.7	4.6	1.6	0.5			
18	12.0	5.2	1.8	0.6			
19	13.4	5.8	2.0	0.7			
20	15.0	6.5	2.2	0.8			
22		7.9	2.8	1.0			
24		9.5	3.4	1.2			
26		11.2	4.0	1.4			
28		13.0	4.6	1.6			
30		15.0	5.3	1.8	0.7		
32			6.0	2.1	0.8		
34			6.9	2.4	0.9		
36			7.8	2.7	1.0		
38			8.7	3.0	1.2		
40			9.6	3.3	1.3		
42			10.6	3.6	1.4		
44			11.7	3.9	1.5		
46			12.8	4.2	1.6		
48			13.9	4.5	1.7		
50			15.0	4.9	1.9	0.7	
52				5.3	2.1		
54				5.7	2.2		
56				6.2	2.3		
58				6.7	2.5		
60				7.2	2.7	1.0	
65				8.3	3.2	1.1	
70				9.8	3.7	1.3	
75				11.3	4.3	1.5	
80				12.8	4.9	1.6	0.7
90				16.1	6.2	2.0	0.8
100				20.0	7.8	2.5	0.9
110					9.5	2.9	1.0
120					11.3	3.4	1.2
130					13.0	3.9	1.4
140					15.1	4.5	1.6
150					17.3	5.1	1.8
160					20.0	5.8	2.1
170						6.5	2.4
180						7.2	2.7
190						8.0	3.0
200						9.0	3.2
220						11.0	3.9
240						13.0	4.7
260						15.0	5.5
280						17.3	6.3
300						20.0	7.2
350							10.0
400							13.0
450							16.2
500							20.0

Slope, Angle & Ratio Precipitation Rates



Maximum Precipitation Rates

Soil Texture	Maximum Precipitation Rates: Inches Per Hour							
	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	2.00	2.00	2.00	1.50	1.50	1.0	1.0	0.50
Coarse sandy soils over compact subsoils	1.75	1.50	1.25	1.00	1.00	0.75	0.75	0.40
Uniform light sandy loams	1.75	1.00	1.25	0.80	1.00	0.60	0.75	0.40
Light sandy loams over compact subsoils	1.25	0.75	1.00	0.50	0.75	0.40	0.50	0.30
Uniform silt loams	1.00	0.50	0.80	0.40	0.60	0.30	0.40	0.20
Silt loams over compact subsoil	0.60	0.30	0.50	0.25	0.40	0.15	0.30	0.10
Heavy clay or clay loam	0.20	0.15	0.15	0.10	0.12	0.08	0.10	0.06

The maximum PR values listed 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 feet (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 1000 feet with the following formula:

$$R = \frac{*500 \times Vd}{F \times 1}$$

where R = allowable wire resistance per 1000 feet.

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 .30 amps is to be located 2680 ft. 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) = 2680 ft.
The current draw (I) = .3 amps

$$R = \frac{500 \times 4}{2680 \times .3} = 2.49 \text{ ohm/1000 ft.}$$

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 2590 ft. 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 2590 feet = 11,215 feet.

** 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	Resistance at 20°C Ohms per 1000 ft.
4	.25
6	.40
8	.64
10	1.02
12	1.62
14	2.57
16	4.10
18	6.51

Chart 3
Maximum One-way Distance (ft.) Between Controller and Valve (standard 24 VAC solenoid) †

Valve Wire Sizing							
Ground Wire	Control Wire						
	18	16	14	12	10	8	6
18	1020	1260	1470	1640	1770	1860	1930
16	1260	1630	2000	2330	2610	2810	2960
14	1470	2000	2590	3180	3710	4150	4480
12	1640	2330	3180	4120	5050	5900	6590
10	1770	2610	3710	5050	6540	8030	9380
8	1860	2810	4150	5900	8030	10400	12770
6	1930	2960	4480	6590	9380	12770	16540

† Solenoid Model: 24 V ac Pressure: 150 psi 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 V ac	24 V ac-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 V.a.c.	12 V ac-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

570Z Pressure-compensating Devices (PCDs)

		0.1		.25		.5		.7		1		1.4		2		3	
Pattern	Desc.	GPM	Radius	GPM	Radius	GPM	Radius	GPM	Radius	GPM	Radius	GPM	Radius	GPM	Radius	GPM	Radius
	5Q	0.11	5	0.19	5	0.19	5	0.19	5	0.19	5	0.19	5	0.19	5	0.19	6
	5T	0.12	5	0.20	5	0.21	5	0.22	5	0.22	5	0.22	5	0.22	5	0.22	5
	5H	0.11	2	0.20	5	0.30	5	0.31	5	0.32	5	0.33	5	0.33	5	0.33	5
	5TT			0.27	5	0.44	5	0.47	5	0.48	5	0.48	5	0.48	5	0.48	5
	5TQ			0.29	5	0.50	5	0.53	5	0.57	5	0.57	5	0.57	5	0.57	5
	5F			0.25	5	0.39	5	0.62	5	0.67	5	0.68	5	0.68	5	0.66	5
	8Q			0.25	8	0.42	8	0.42	8	0.43	9	0.43	9	0.43	9	0.43	8
	8T			0.29	6	0.35	8	0.41	8	0.43	8	0.46	8	0.46	8	0.46	8
	8H			0.28	4	0.50	8	0.65	9	0.85	9	0.87	9	0.88	9	0.87	9
	8TT			0.28	2	0.50	7	0.70	8	1.12	9	1.17	10	1.19	10	1.20	10
	8TQ			0.26	1	0.50	6	0.70	8	1.21	10	1.41	11	1.44	11	1.46	11
	8F			0.25	1	0.50	6	0.58	6	1.00	9	1.42	10	1.46	10	1.46	10
	10Q			0.31	7	0.37	10	0.60	11	0.63	12	0.64	11	0.64	11	0.64	11
	10T			0.24	4	0.50	10	0.66	11	0.88	11	0.90	11	0.91	11	0.90	11
	10H			0.30	4	0.57	8	0.75	10	1.16	10	1.20	10	1.21	11	1.21	11
	10TT			0.26	2	0.47	6	0.57	7	1.00	10	1.55	11	1.64	11	1.63	11
	10TQ					0.53	6	0.61	7	1.09	10	1.61	10	1.69	10	1.71	11
	10F							0.55	1	1.19	6	1.51	10	2.06	11	2.21	10
	12Q			0.30	5	0.53	12	0.71	12	0.78	13	0.77	12	0.78	13	0.79	13
	12T			0.27	3	0.50	9	0.70	11	1.00	12	1.01	12	1.04	12	1.04	12
	12H			0.29	1	0.54	6	0.63	7	1.05	12	1.69	13	1.79	14	1.80	14
	12TT					0.46	4	0.61	5	1.29	10	1.40	12	2.35	12	2.41	12
	12TQ					0.49	5	0.57	6	1.26	11	1.60	12	2.20	14	2.29	13
	12F							0.57	4	1.17	7	1.82	10	2.10	11	3.22	11
	15Q			0.28	3	0.52	10	0.81	14	1.30	15	1.46	16	1.49	16	1.51	16
	15T					0.50	7	0.60	8	1.10	14	1.79	15	1.94	15	1.99	15
	15H					0.53	3	0.62	5	1.25	11	1.65	15	2.59	17	2.71	17
	15TT					0.54	2	0.62	3	1.21	9	1.79	13	2.20	16	2.75	18
	15TQ									1.18	6	1.77	10	2.50	15	2.81	16
	15F									1.16	3	1.74	8	2.45	9	3.30	13
	9-SST			0.29	5x2	0.47	7x10	0.56	7x12	1.20	9x18	1.76	11x22	1.76	11x22	1.99	11x22
	4-SST			0.26	1x6	0.47	2x20	0.57	3x24	1.00	4x30	1.50	4x34	1.54	4x34	1.57	4x34
	4-CST			0.26	1x6	0.47	2x20	0.57	3x24	1.00	4x30	1.50	4x34	1.54	4x34	1.57	4x34
	4-EST			0.29	1x8	0.50	4x15	0.66	4x18	0.78	4x18	0.75	4x18	0.74	4x18	0.76	4x18
	4S-SST			0.25	2x6	0.59	4x18	0.66	4x18	0.84	4x18	0.84	4x20	0.84	4x20	0.87	4x20
	2-SST	0.12	2x6	0.16	2x6	0.19	2x6	0.17	2x6	0.17	3x6	0.17	3x6	0.17	3x6	0.17	3x6
	SB-90			0.25	2	0.47	7	0.56	9	1.22	17	1.41	18	1.45	18	1.46	19
	SB-180			0.25	1	0.50	2	0.61	3	1.22	9	1.87	15	2.30	14	2.43	15
	SB-360			0.23	1	0.45	1	0.54	2	1.12	4	1.79	9	2.50	11	3.59	14
	SB-2-180			0.25	2	0.47	8	0.56	9	1.15	16	1.35	17	1.38	18	1.40	20
	SB-4-180			0.24	1	0.50	2	0.61	3	1.21	10	1.83	14	2.27	17	2.41	17
	35-SSQ			0.25	5	0.48	13	0.70	18	1.12	18	1.23	18	1.27	18	1.27	18
	35-SSH			0.23	1	0.45	7	0.56	8	1.16	18	1.40	18	2.01	14	2.19	14
	35-SSF					0.46	3	0.53	3	1.15	9	1.80	15	2.00	18	3.34	18
	10-SSQ			0.24	5	0.47	15	0.70	15	1.13	17	1.19	17	1.20	17	1.21	17
	10-SSH			0.23	1	0.45	4	0.54	4	1.14	13	1.40	15	2.44	18	2.89	16
	10-SSF					0.47	2	0.56	2	1.18	9	1.76	14	2.00	15	3.53	14
	FB-25			0.25		0.50		0.70		1.00		1.40		2.00		3.00	
	FB-50			0.25		0.50		0.70		1.00		1.40		2.00		3.00	
	FB-100			0.25		0.50		0.70		1.00		1.40		2.00		3.00	
	FB-200-ADJ			0.25		0.50		0.70		1.00		1.40		2.00		3.00	

Performance shown at 55 psi (3,8 Bar).
Radius shown in feet.
Data based on 360°.
= Standard PCD. Using PCDs below this range may produce undesirable nozzle performance.
= PCD benefits (decreased fogging and pressure reduction) may not be realized when using PCDs above this range.

Toro Limited Warranty for Irrigation Division 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 equipment (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 who may be listed in your telephone directory Yellow Pages under "Irrigation Supplies" or "Sprinkler Systems," or contact The Toro Warranty Company, P.O. Box 489, Riverside, California 92502, phone (800) 664-4740 for the location of your nearest Toro distributor, or outside the U.S., call (951)-688-9221.

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.

Some states do not allow the exclusion of incidental or consequential damages, so this exclusion may not apply to you. All implied warranties, including those of merchantability and fitness for use, are limited to the duration of this express warranty.

Some states do not allow limitations on how long an implied warranty lasts, so this limitation may not apply to you.

This warranty gives you specific legal rights and you may have other rights, which vary from state to state.

Standard Warranty

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

Extended 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; Super 700 Series (commercial version), Super 800 Series, TR50 and TR50XT Series, 2001® Series, TR70 and TR70XT Series and 640 Series rotors; P-220 Series and 220 Series Brass valves; TMC-212 Series (high surge), TMC-424 Series, Intelli-Sense™ (TIS-612/TIS-240), TDC and Custom Command Series controllers; and TWRS Wireless RainSensor™ Series (receiver and transmitter).

Extended Three-year Warranty

The following products are covered by this warranty for three years from date of installation: Remote 3000 valve-mounted controller, TMC-212 Series (standard) controllers and EZ-Flo® Plus Series valves.

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 one year 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-424 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.

Micro-Irrigation Warranty

Claims for damages that are not freight related should be filed with The Toro Company no later than five days from date of receipt at: The Toro Warranty Company, 1588 N. Marshall Avenue, El Cajon, CA 92020

Warranty period from date of delivery:

DL2000® Series Dripline
- Emitters — 2 years
- Hose — 5 years
- Rootguard — 7 years**

Drip In® Series Dripline
- Emitters — 2 years
- Hose — 5 years

Blue Stripe® Hose
- All — 1 year

Fittings
- All — 1 year

Emission Devices
- All (except NGE) — 1 year
- NGE Emitter — 2 years

Mazzei Injectors
- Airjection® — 1 year*

Valves
- Air Release — 1 year

Filters and Components
- All — 1 year

Other Accessories
- All — 1 year

** Warranty by Mazzei Injector Corporation*

*** Pro-rated warranty for root intrusion by Geoflow Inc.*

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.

TORO® **Count on it.**

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