RAIN BIRD®

Landscape Irrigation Products

2012 Catalog

The Intelligent Use of Water.™

New Products

www.rainbird.com/newproducts

Introducing New Rain Bird® Products for 2012

Every new product for 2012 demonstrates Rain Bird's ability to deliver irrigation solutions that enhance your productivity and profitability, while reinforcing the company's ongoing commitment to The Intelligent Use of Water™. Detailed product information and specifications can be found on the pages indicated.

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Smart Approved WaterMark

Smart Approved WaterMark™ is Australia's outdoor water-saving labeling program for products and services that help to reduce water use. Product certification by Smart Approved WaterMark is important since certification is achieved by independent assessment by a respected organization in a region that, due to water scarcity, is on the leading edge of adopting water-saving technologies. For more on Smart Approved WaterMark, please visit www.rainbird.com/SAWM

Look for the Smart Approved WaterMark label on these Rain Bird products:

- 1800 Series PRS Spray Head - page 11
- Rotary Nozzle - page 24
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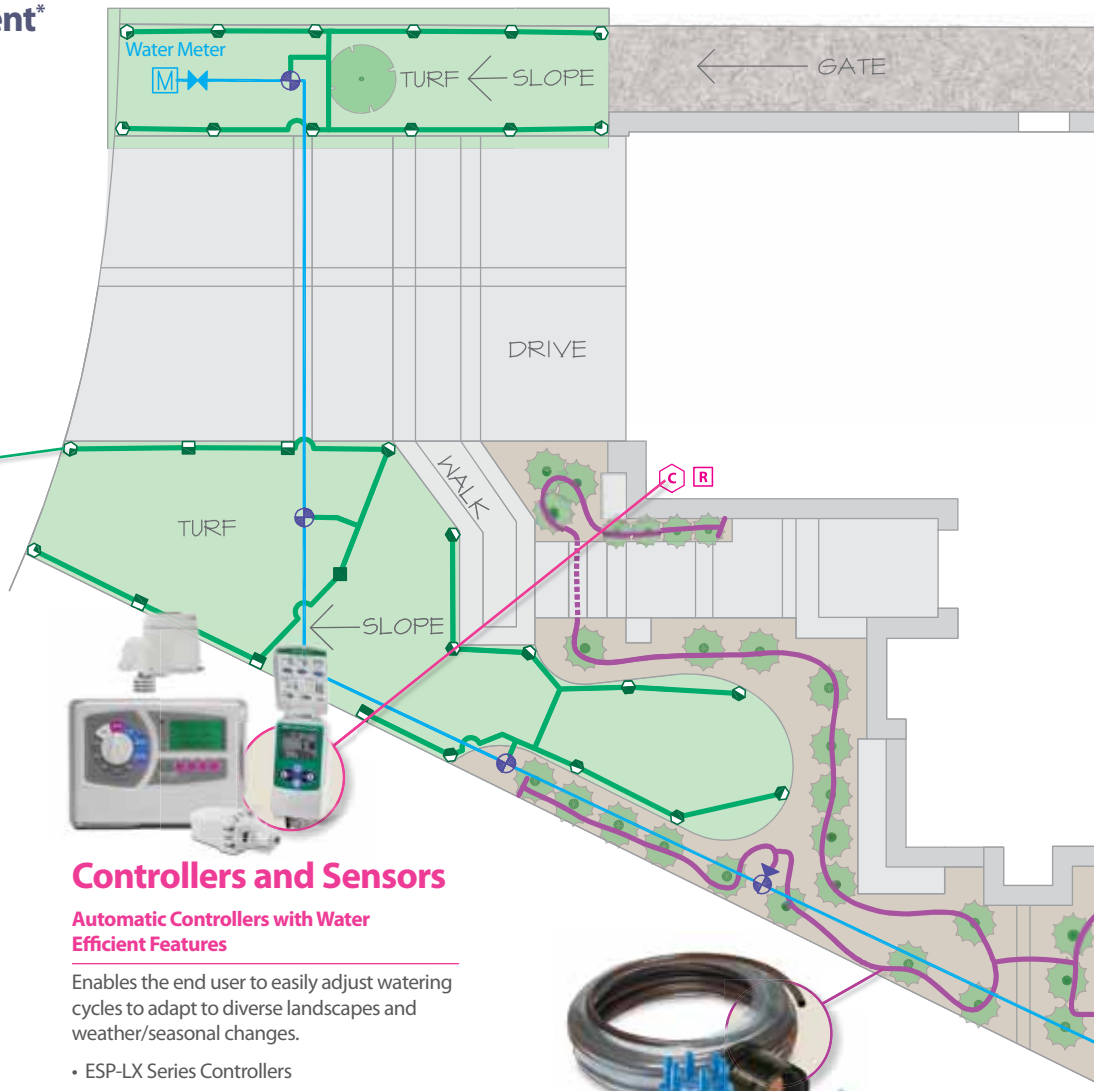
Anatomy of a Water-Efficient* Residential System

This residential design guide highlights Rain Bird product and technology solutions for a healthy landscape that uses less water.



Sprays

In-Stem Pressure Regulation

Maintain optimal water pressure. Every 5 psi reduction in pressure reduces water usage by 6-8%. When using MPR, VAN, and U-Series Nozzles, a 70 psi system reduced to a recommended 30 psi can provide more than 50% in water savings.[1]

- 1800-PRS Sprays
- 1800-SAM-PRS Sprays (regulate to 30 psi for use with MPR, VAN, and U-Series Nozzles)
- 1800-SAM-PRS-45 Sprays (regulate to 45 psi for use with Rotary Nozzles)

High Efficiency Nozzles

Provide more uniform distribution of water and eliminate over-spray which can result in 30%+ water savings.[2]

- HE-VAN Nozzles**
- Rotary Spray Nozzles
- U-Series Spray Nozzles

Seal-A-Matic™ (SAM) Check Valve Devices

Prevent water from draining out of the system at the lowest sprinkler, which eliminates erosion, runoff, and water hammer.

- 1800-SAM Sprays
- 1800-SAM-PRS Sprays
- 1800-SAM-PRS-45 Sprays

Controllers and Sensors

Automatic Controllers with Water Efficient Features

Enables the end user to easily adjust watering cycles to adapt to diverse landscapes and weather/seasonal changes.

- ESP-LX Series Controllers
- ESP-Modular Controller
- STP Plus Controller

Smart Controller Technologies

Adjust irrigation based on site specific variables. Smart controllers can reduce water use by up to 40% or more.[3]

- ET Manager Indoor
- ET Manager Cartridge
- ESP-SMT Control System
- ESP-LX Series Controller with ET Manager Cartridge

Automatic Shut-Off Devices

Automatically shut-off the controller when rain is detected, resulting in water savings of 30-35%.[4]

- RSD Rain Sensor
- WR2 Wireless Rain and Rain/Freeze Sensors

Landscape Drip

Direct-to-Plant-Root Watering Devices

Apply water slowly and directly to the roots of plants, using 30-50% less water than sprinkler irrigation and eliminating overspray and runoff.[5]

- Drip Emission Devices
- XF Dripline
- RWS Root Watering Series

High Efficiency Nozzles

Provide more uniform distribution of water and eliminate over-spray which can result in 30%+ water savings.[2]

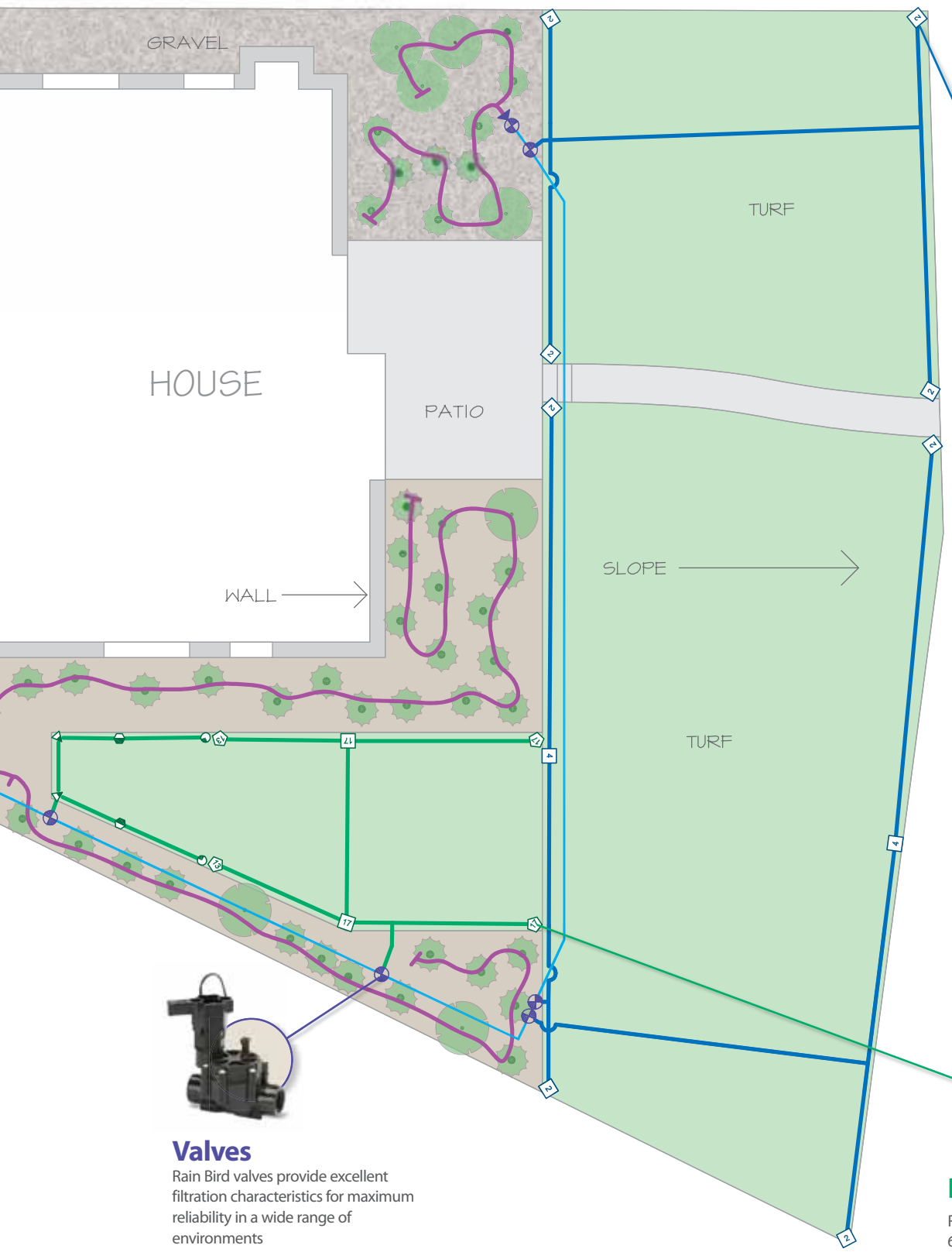
- SQ Square Nozzle (formerly XPCN)

*All claims of water savings dependent on proper design, installation, and maintenance of irrigation products. Actual water savings may vary from user to user depending on weather, irrigation system and site conditions, and previous irrigation practices.

** Currently only available in limited markets

Irrigation design is for graphical representation only.

[1-7] For references, see pg. 236



Rotors

In-Stem Pressure Regulation

Prevent water loss caused by uneven water pressure. Every 5 psi reduction in pressure reduces water usage by 6-8%.[1] The 5000PRS Series Rotor has documented 15-45% water savings.[6]

- 5000/5000 Plus Series Rotors with PRS
- TSJ-PRS Swing Joints

High Efficiency Nozzles

Rain Curtain™ nozzle technology delivers thick water droplets in a uniform, consistent pattern, eliminating over-spray which results in water savings.

- 3500 and 5000 Series Rotors

Check Valve Devices

Prevent water from draining out of the system at the lowest sprinkler, which eliminates erosion and runoff.

- 3500 and 5000 SAM Series Rotors

Valves

Rain Bird valves provide excellent filtration characteristics for maximum reliability in a wide range of environments

Rotary Nozzles

Rain Bird Rotary Nozzles require 60% less flow and offer up to 30% in water savings.[2,7]

Anatomy of a Water-Efficient* Commercial System

This commercial design guide highlights Rain Bird product and technology solutions for a healthy landscape that uses less water.

Sprays

In-Stem Pressure Regulation

Maintain optimal water pressure. Every 5 psi reduction in pressure reduces water usage by 6-8%. When using MPR, VAN, and U-Series Nozzles, a 70 psi system reduced to a recommended 30 psi can provide more than 50% in water savings.[1]

- 1800-PRS Sprays
- 1800-SAM-PRS Sprays (regulate to 30 psi for use with MPR, VAN, and U-Series Nozzles)
- 1800-SAM-PRS-45 Sprays (regulate to 45 psi for use with Rotary Nozzles)

High Efficiency Nozzles

Provide more uniform distribution of water and eliminate over-spray which can result in 30%+ water savings.[2]

- HE-VAN Nozzles**
- Rotary Spray Nozzles
- U-Series Spray Nozzles

Seal-A-Matic™ (SAM) Check Valve Devices

Prevent water from draining out of the system at the lowest sprinkler, which eliminates erosion, runoff, and water hammer.

- 1800-SAM Sprays
- 1800-SAM-PRS Sprays
- 1800-SAM-PRS-45 Sprays

Central Control Systems

Automatic ET-Based Scheduling

Adjusts run-times based on water loss from the soil through evaporation and water loss through plant transpiration ensuring that the right amount of water is applied without over watering or under watering. Automatic adjustment to watering schedules based on evapotranspiration (ET) can reduce water use by 30-50%.[8]

- Maxicom²®
- SiteControl
- IQ

Flow Management

Optimizes available water and watering windows by automatically managing total flow demand placed on the water sources.

- Maxicom²
- SiteControl
- IQ

Flow Monitoring/Leak Detection

Reduces water loss by monitoring flows in real time to locate and isolate excessive flows caused by broken pipes, vandalized sprinklers or failed valves.

- Maxicom²
- SiteControl
- IQ

Cycle + Soak™

Eliminates run-off by applying water at rate the soil can absorb such as slopes, compacted soils, and areas of poor drainage.

- Maxicom²
- SiteControl
- IQ

Valves

Pressure regulation for valves maintains constant water pressure to prevent water waste caused by misting and fogging at the head

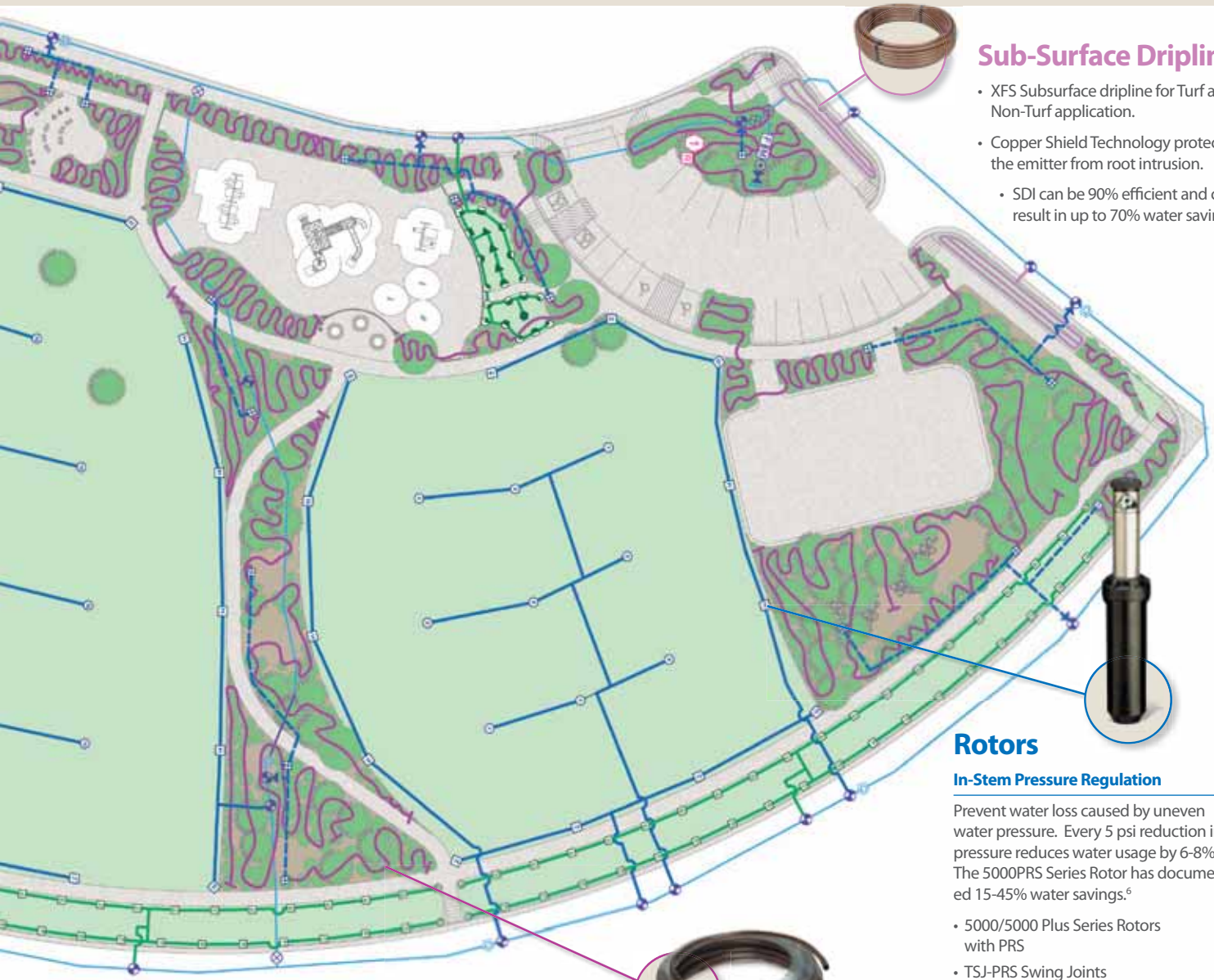
- PRS Dial Module

*All claims of water savings dependent on proper design, installation, and maintenance of irrigation products. Actual water savings may vary from user to user depending on weather, irrigation system and site conditions, and previous irrigation practices.

** Currently only available in limited markets

Irrigation design is for graphical representation only.

[1-8] For references, see pg. 236



Sub-Surface Dripline

- XFS Subsurface dripline for Turf and Non-Turf application.
- Copper Shield Technology protects the emitter from root intrusion.
  - SDI can be 90% efficient and can result in up to 70% water savings.

Rotors

In-Stem Pressure Regulation

Prevent water loss caused by uneven water pressure. Every 5 psi reduction in pressure reduces water usage by 6-8%.[1] The 5000PRS Series Rotor has documented 15-45% water savings.[6]

- 5000/5000 Plus Series Rotors with PRS
- TSJ-PRS Swing Joints

High Efficiency Nozzles

Rain Curtain™ nozzle technology delivers thick water droplets in a uniform, consistent pattern, eliminating over-spray which results in water savings.

- All Rain Bird Rotors

Check Valve Devices

Prevent water from draining out of the system at the lowest sprinkler, which eliminates erosion and runoff.

- All Rain Bird Rotors

Vandal Resistance

Vandal-resistant rotors prevent water loss due to damage and abuse.

- 5500/8005 Series Rotors

Pump Stations

Boost pressure to correct levels. Because low pressure can result in poor, uneven performance of nozzles, users frequently over-water the entire landscape to water the dry spots. Pumps boost pressure and prevent this problem from occurring.

- LP Pump Stations
- D-, DP-, and DPX-Series Pump Stations
- Intermediate Flow Pump Stations
- Main Irrigation Pump Stations

Landscape Drip

Direct-to-Plant-Root Watering Devices

Apply water slowly and directly to the roots of plants, using 30-50% less water than sprinkler irrigation.[5]

- Drip Emission Devices
- XF Dripline
- RWS Root Watering Series

High Efficiency Nozzles

Provide more uniform distribution of water and eliminate over-spray which can result in 30%+ water savings.[2]

- SQ Square Nozzle (formerly XPCN)

Anatomy of a Non-Potable Water Irrigation System

This non-potable design guide highlights Rain Bird product and technology solutions for a healthy landscape that uses non-potable water.

Landscape Drip

- Purple XF Dripline
- Purple PC Diffuser Cap
- Purple Flush Cap with Fitting

Rotors

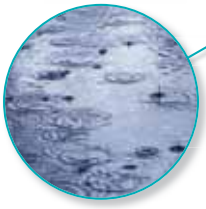
Purple Covers for Rotors:

- 3500
- 5000/5000 Plus
- 5500
- Falcon® 6504
- 8005
- 2045A Maxi-Paw™

Valves

Durable chlorine-resistant valves and accessories for reclaim applications:

- PESB-R
- EFB-CP-R
- GB-R
- Quick-coupling
- Valve Box covers



Non-Potable Water Supply

There are multiple potential water harvesting sources. Common sources on a commercial site are:

- Rainwater harvesting
- Stormwater harvesting
- HVAC condensate
- Greywater from showers, sinks, washers
- Other

Dripline

Sub-surface dripline (SDI) for turf and non-turf applications, available with purple over black to designate a non-potable system.

- Copper Shield Technology protects the emitter from root intrusion
- SDI can be 90% efficient and can result in up to 70% water savings

RWS Root Watering

Purple Grate

Sprays

Purple Cover for 1800® Series Spray Heads

Pump Stations

Pumps provide the correct amount of pressurized water to the irrigation system.

- LP Pump Station
- D-, DP-, and DPX-Series Pump Stations
- Intermediate Flow Pump Stations
- Non-Irrigation Pump Stations

Irrigation design is for graphical representation only.

How to Use this Catalog

This catalog provides useful irrigation information and tools including system layouts, product details and specifications of Rain Bird's landscape irrigation products. All the necessary information you need is provided to help you install, sell or design with the most reliable products in the industry while helping conserve water, saving valuable time and money.

In this catalog you will find specifications, features, benefits and applications that will provide the ability to deliver irrigation solutions that enhance your productivity and profitability, while reinforcing Rain Bird's ongoing commitment to The Intelligent Use of Water™.

Your 24/7 Information Resource

The Rain Bird website is your one-stop source for the latest product information and news updates from Rain Bird. Stop by anytime, day or night, and download exactly what you need to be more effective on the job. Learn about the newest Rain Bird products, look up performance charts, download CAD detail drawings and much more.

Visit www.rainbird.com today and explore this state-of-the-art resource.

2012 Landscape Irrigation Catalog Smart Phone App

The 2012 Landscape Irrigation catalog smart phone app is now available for FREE to download through iTunes App Store and the Android Marketplace.

Rain Bird Online Resources and Contacts List

Programs and Marketing Resources	Contacts/Information
Design and Specification Resources	www.rainbird.com/landscape Select from product list in left menu
ESP-LX Series Controller Configurator	www.rainbird.com\esplxseries
Facebook	www.facebook.com/RainBirdCorp
Intelligent Use of Water™	www.rainbird.com/IUOW
LEED Library	www.rainbird.com/LEED
Maxicom Dollars	www.rainbird.com/maxicomdollars E-mail: maxicom@rainbird.com
Photos and Logos	www.rainbird.com/library
Product Catalog	www.rainbird.com/catalog
Product Demos and Interactive Guides	www.rainbird.com/landscape Select from product list in left menu
Product Literature and Tech Specs	www.rainbird.com/landscape/support
Rain Bird Agency Rewards (non-profits and government agencies)	www.rainbird.com/agency E-mail: rewards@rainbird.com
Rain Bird Engineered Services	E-mail: rbsc.eng@rainbird.com
Rain Bird Rewards	www.rainbird.com/rewards E-mail: rewards@rainbird.com
Rain Bird Training and Services	www.rainbirdservicescorporation.com
Rain Bird Virtual Museum	www.rainbird.com/museum
Sales Tools Catalog	www.rainbird.com/salestoolkit
Twitter	www.twitter.com/rainbirdcorp
Water Efficiency Calculators	www.rainbird.com/calculators
Webinars	www.rainbird.com/webinars
YouTube	www.youtube.com/rainbirdcorp

" We've installed more than 100,000 Rain Bird 1800 Series Spray Heads because we trust their consistent quality.

We've been using Rain Bird 1800 Series Spray Heads and Nozzles exclusively for nearly 20 years. Rain Bird products serve our customers well and have helped us become one of the leading landscape companies in the Portland area."

***Rodney Reed,** President*
Green Earth Landscaping, Inc.

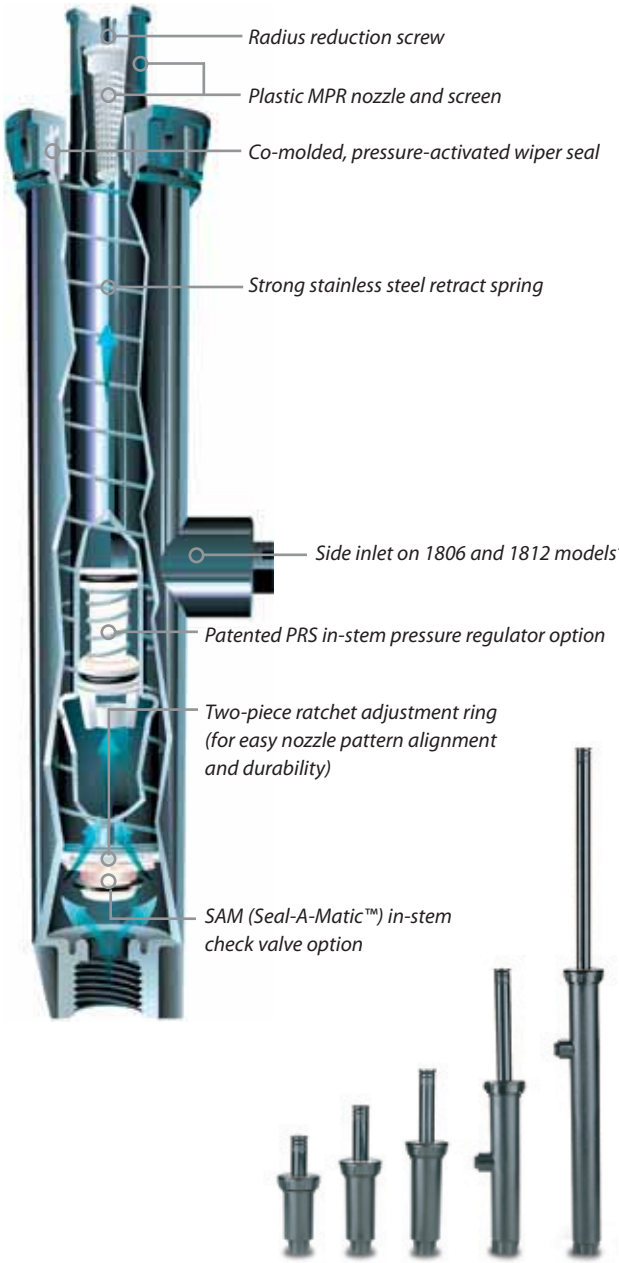
Major Products

Primary Applications	1802, 1803, 1804, 1806	1812	1800 PRS	1800 SAM	1800 SAM-PRS	1800 SAM-PRS-45	US-200, US-400	1300/ 1400 Bubblers	PA-8S	RD-04, RD-06	RD-12	RD1800 SAM	RD1800 SAM-PRS	RD1800 PRS-F	RD1800 SAM-PRS-F	RD1800 SAM-PRS-45-F
Turfgrass	●		●	●	●	●	●			●		●	●	●	●	●
Slopes				●	●	●	●*					●	●		●	●
Ground Cover/Shrubs	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
High Pressure Systems			●		●	●		●		●	●	●	●	●	●	●
Low Pressure Systems	●	●					●	●	●	●	●					
High Wind Areas	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
Non-Potable Water										●	●	●	●	●	●	●
Vandalism/Damage Prone														●	●	●
Dirty Water										●	●	●	●	●	●	●

**Optional US-SAM check valve is retrofittable on all UNI-Sprays.™*

Water Saving Tips

- The multi-function, pressure activated wiper seal assures a positive seal without excess "flow-by" which reduces water waste and allows more heads to be installed on the same valve.
- The patented, built-in PRS regulator maintains optimal operating pressure and restricts water loss by up to 70% if a nozzle is removed or damaged. It also ends water waste by eliminating misting and fogging caused by high pressure.
- Save water, stop low head drainage, and reduce water hammer by preventing water from draining out of pipes after irrigation with 1800 Series Sprays featuring Seal-A-Matic™ (SAM) check valves.



1800 Series

How To Specify

1804 - 15H

Nozzle Series/Pattern
15H: 15 Series MPR nozzle with half-circle pattern

Model
1804: 4" (10.2 cm) pop-up height

1800® Series

2", 3", 4", 6", 12" (5.1 cm; 7.6 cm; 10.2 cm; 15.2 cm; 30.5 cm)

- Co-molded wiper seal is molded into the cap and features an encased plastic "cage" to provide unmatched resistance to grit, pressure, and the environment. Additionally, the pressure-activated, multi-function seal design assures a positive seal without excess "flow-by" which enables more heads to be installed on the same valve
- Strong stainless steel spring provides reliable stem retraction
- Two-piece ratchet mechanism on all models allows easy nozzle pattern alignment and provides added durability

Features

- Precision controlled flush at pop-down clears debris from unit, assuring positive stem retraction in all soil types
  - Pre-installed orange 1800 Pop-Top™ flush plug blocks debris, larger than nozzle filter screen openings, from entering after flushing. Allows for easy nozzle installation
- Constructed of time-proven UV-resistant plastic and corrosion resistant stainless steel parts, assuring long product life
- All 1800 Spray components are removable from the top without special tools, providing for quick and easy flushing and maintenance
- Side and bottom inlets featured on 1806 and 1812 (non-SAM) models*
- Five-year trade warranty

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3m)**
- Pressure: 15 to 70 psi (1.0 to 4.8 bar)

Specifications

- Flow-by: 0 gpm at 8 psi (0.6 bar) or greater; 0.10 gpm (0.02 m^3/h; 0.36 l/m) otherwise

Dimensions/Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
  - 1802: 4" (10.2 cm) body height; 2" pop-up height (5.1 cm)
  - 1803: 4 7/8" (12.4 cm) body height; 3" pop-up height (7.6 cm)
  - 1804: 6" (15.2 cm) body height; 4" pop-up height (10.2 cm)
  - 1806: 9 3/8" (23.8 cm) body height; 6" pop-up height (15.2 cm)
  - 1812: 16" (40.6 cm) body height; 12" pop-up height (30.5 cm)
- Exposed surface diameter: 2¼" (5.7 cm)

** 1806 and 1812-SAM, SAMPRS, and SAM-PRS-45 units do not have a side inlet*

*** 2.5 to 18 feet with standard Rain Bird Spray Head Nozzles (SQ, MPR, VAN, USeries)*
13 to 24 feet with Rain Bird Rotary Nozzles

Water Saving

Precision controlled flush at pop-down clears debris from unit, assuring reliable performance and positive stem retraction in all soil types.

1800®-PRS Series

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

- PRS pressure regulator built into the stem. No parts to be installed at the site. Saves time and money
- Maintains constant outlet pressure at 30 psi (2.1 bar). Spray bodies and nozzles perform best at 30 psi. Ensures maximum spray body and nozzle performance, even with varying inlet pressures. Maintains constant pressure regardless of nozzle used
- Ends misting and fogging caused by high pressure. Stops water waste. Ensures necessary watering occurs in high pressure or wind conditions

Features

- Restricts water loss by up to 70% if nozzle is removed or damaged. Saves water and money. Reduces possibility of accidents and property damage. Recommended for vandal-prone areas
- Designed for use with all Rain Bird plastic spray head nozzles
- "PRS" stamped on cap for easy identification and maintenance
- Five-year trade warranty

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3m)*
- Pressure: 15 to 70 psi (1.0 to 4.8 bar)

Specifications

- Regulates nozzle pressure to an average 30 psi (2.1 bar) with inlet pressures of up to 70 psi (4.8 bar) (see graph)
- Flow-by: 0 gpm at 8 psi (0.6 bar) or greater; 0.10 gpm (0.02 m^3/h; 0.36 l/m) otherwise
- Installation: side or bottom inlet
- Side inlet installation not recommended in freezing climates

Dimensions

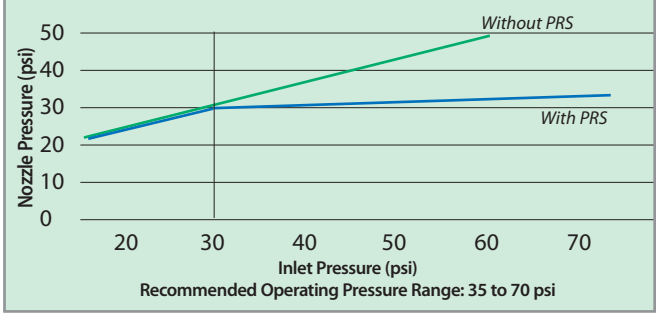
- ½" (15/21) female threaded inlets
- Body height:
  - 1804 PRS: 6" (15.2 cm)
  - 1806 PRS: 9⅜" (23.8 cm)
  - 1812 PRS: 16" (40.6 cm)
- Exposed surface diameter: 2¼" (5.7 cm)

Models

- 1804 PRS: 4" pop-up height (10.2 cm)
- 1806 PRS: 6" pop-up height (15.2 cm)
- 1812 PRS: 12" pop-up height (30.5 cm)

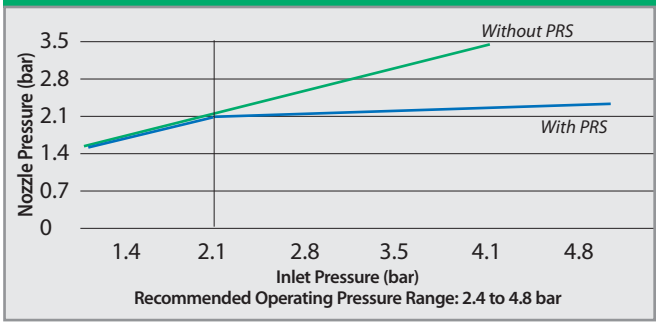
** 2.5 to 18 feet with standard Rain Bird Spray Head Nozzles (SQ, MPR, VAN, U-Series)*
13 to 24 feet with Rain Bird Rotary Nozzles

1800-PRS Performance



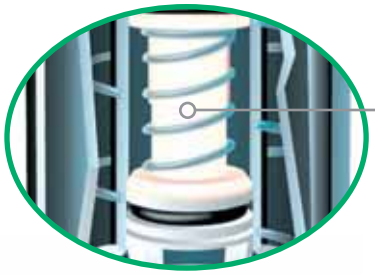
Recommended Operating Pressure Range: 35 to 70 psi

1800-PRS Performance **METRIC**



Recommended Operating Pressure Range: 2.4 to 4.8 bar

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.



Patented pressure regulator in stem compensates for high or fluctuating water pressure to ensure maximum performance

1800-PRS

How To Specify

1804- PRS- 15H

Nozzle Series/Pattern
15H: 15 Series MPR nozzle with half-circle pattern

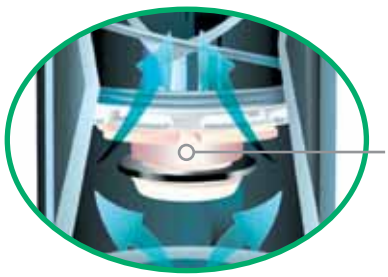
Optional Feature
PRS: In-stem pressure regulation

Model
1804: 4" (10.2 cm) pop-up height

Water Saving

The patented pressure regulator maintains optimum outlet pressure to maximize nozzle efficiency and reduces excessive nozzle flow, misting, and fogging. Every 5 psi reduction in pressure reduces water use by 6-8%. Using PRS spray heads can provide more than 50% water savings when compared to non-pressure regulating sprays in high pressure installations regardless of fluctuating inlet pressures.

1800-SAM



Built in Seal-A-Matic check valve prevents low-head drainage, ideal for use in changing elevations

How To Specify

1804- SAM- 15H

Nozzle Series/Pattern
15H: 15 Series MPR nozzle with half-circle pattern

Optional Feature
SAM: Seal-A-Matic check valve

Model
1804: 4" (10.2 cm) pop-up height

1800®-SAM Series

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

- Built-in Seal-A-Matic™ (SAM) check valve. Eliminates the need for under-the-head check valves. No parts to be installed at the site
- Traps water in lateral pipes in elevation changes of up to 14 feet (4.2 m). Reduces wear on system components by minimizing water hammer during start-up
- Even stronger retract spring to accommodate elevation changes up to 14 feet (4.2 m). One of the strongest springs in the industry

Features

- Prevents drainage from spray heads at lower elevations. Stops water waste. Ends landscape damage due to flooding and/or erosion
- Designed for use with all Rain Bird plastic spray head nozzles
- "SAM" stamped on cap for easy identification and maintenance
- Five-year trade warranty

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3m)*
- Pressure: 25 to 70 psi (1.7 to 4.8 bar)

Specifications

- SAM capability: holds up to 14 feet (4.2 m) of head; 6 psi (0.4 bar)
- Flow-by: 0 gpm at 8 psi (0.6 bar) or greater; 0.50 gpm (0.11 m^3/h; 1.80 l/m) otherwise

Dimensions

- ½" (15/21) female threaded inlet
- Body height:
  - 1804-SAM: 6" (15.2 cm)
  - 1806-SAM: 9⅜" (23.8 cm)
  - 1812-SAM: 16" (40.6 cm)
- Exposed surface diameter: 2¼" (5.7 cm)

Models

- 1804-SAM: 4" pop-up height (10.2 cm)
- 1806-SAM: 6" pop-up height (15.2 cm)
- 1812-SAM: 12" pop-up height (30.5 cm)

** 2.5 to 18 feet with standard Rain Bird Spray Head Nozzles (SQ, MPR, VAN, USeries)*
13 to 24 feet with Rain Bird Rotary Nozzles

Water Saving

The built-in Seal-A-Matic™ check valve traps water in lateral pipes and prevents drainage from sprays at lower elevations; stopping water waste and damage due to flooding and erosion. It also reduces wear on system components by minimizing water hammer during start-up.

1800®-SAM-PRS Series

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

Features

- Incorporates all 1800 Series SAM and PRS features
- Meets the needs of all spray areas, regardless of changing elevation or water pressures
- "SAM-PRS" stamped on the cap for easy identification and maintenance

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3m)*
- Pressure: 25 to 70 psi (1.7 to 4.8 bar)

Specifications

- SAM capability: holds up to 14 feet (4.2 m) of head; 6 psi (0.4 bar)
- Flow-by: 0 gpm at 8 psi (0.6 bar) or greater; 0.50 gpm (0.11 m^3/h; 1.80 l/m) otherwise

** 2.5 to 18 feet with standard Rain Bird Spray Head Nozzles (SQ, MPR, VAN, USeries) 13 to 24 feet with Rain Bird Rotary Nozzles*

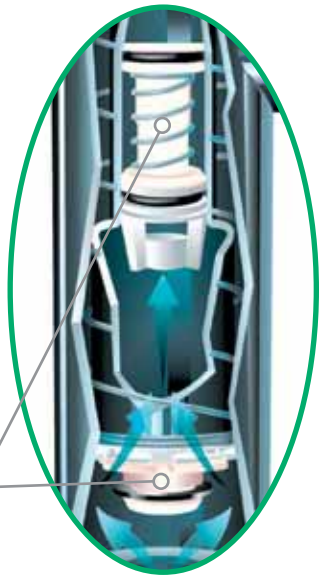
SAM-PRS

Dimensions

- ½" (15/21) female threaded inlet
- Body height:
  1804-SAM-PRS: 6" (15.2 cm)
  1806-SAM-PRS: 9 3/8" (23.8 cm)
  1812-SAM-PRS: 16" (40.6 cm)
- Exposed surface diameter: 2 ¼" (5.7 cm)

Models

- 1804-SAM-PRS: 4" pop-up height (10.2 cm)
- 1806-SAM-PRS: 6" pop-up height (15.2 cm)
- 1812-SAM-PRS: 12" pop-up height (30.5 cm)



Top-of-the-line spray head includes all the features of the SAM and PRS series, ideal regardless of pressure or elevation

1800®-SAM-P45 Series

NEW

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

Features

- Meets the needs of spray body applications using Rotary Nozzles regardless of changing elevation or water pressures. Incorporates 1800 Series SAM feature and regulates nozzle pressure at 45 psi (3.1 bar)
- Designed to maximize application efficiency when using Rotary Nozzles
- Maintains constant outlet pressure at 45 psi (3.1 bar) at varying inlet pressures. Ensures maximum spray body and nozzle performance, even with varying inlet pressures. Maintains constant pressure regardless of nozzle used
- "SAM-PRS-45" stamped on the cap for easy identification and maintenance
- Five-year trade warranty

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)*
- Pressure 25 to 70 psi (1.7 to 4.8 bar)

Specifications

- SAM capability: holds up to 14 feet (4.2 m) of head; 6 psi (0.4 bar)
- Flow-by: 0 gpm at 8 psi (0.6 bar) or greater; 0.50 gpm (0.11 m^3/h; 1.8 l/m) otherwise

SAM-P45

Dimensions

- ½" (15/21) female threaded inlet
- Body height:
  - 1804-SAM-P45: 6" (15.2 cm)
  - 1806-SAM-P45: 9 3/8" (23.8 cm)
  - 1812-SAM-P45: 16" (40.6 cm)
- Exposed surface diameter: 2 ¼" (5.7 cm)

Models

- 1804-SAM-P45: 4" pop-up height (10.2 cm)
- 1806-SAM-P45: 6" pop-up height (15.2 cm)
- 1812-SAM-P45: 12" pop-up height (30.5 cm)

** 2.5 to 18 feet with standard Rain Bird Spray Head Nozzles (SQ, MPR, VAN, U-Series); 13 to 24 feet with Rain Bird Rotary Nozzles*

How To Specify

1804- SAM- PRS-P45

- **Optional Feature** PRS: 30 psi (2.1 bar) in-stem pressure regulation; P45: 45 psi (3.1 bar) in-stem pressure regulation
- **Optional Feature** SAM: Seal-A-Matic™ check valve
- **Model** 1804: 4" (10.2 cm) pop-up height

Note: *SAM feature included with P45 models*

How To Specify

1804- SAM-P45- R13-18Q

- **Nozzle** Rotary Nozzle
- **Radius Range** 13'-18' (4.0-5.5 m) 17'-24' (5.2-7.3 m)
- **Pattern** F=Full (360°) TQ=Three-quarter (270°) TT=Two-thirds (240°) H=Half (180°) T=Third (120°) Q=Quarter (90°)
- **Optional Feature** SAM: Seal-A-Matic™ check valve; P45: 45 psi (3.1 bar) in-stem pressure regulation
- **Model** 1804: 4" (10.2 cm) pop-up height

Note: *Specify sprinkler bodies and nozzles separately.*

RD1800™ Series Spray Heads

NEW

4", 6", 12" (10.2 cm; 15.2 cm; 30.5 cm)

- Designed for use with all Rain Bird plastic spray head nozzles – Rotary Nozzles, U-Series, MPR, VAN, HE-VAN and SQ Series
- Parts resistant to corrosion in treated recycled water containing chlorine and other chemicals
- Strong stainless steel spring provides reliable stem retraction and withstands corrosion

Features

- Exclusive co-molded, pressure activated Triple-Blade Wiper Seal ensures a positive seal without excess "flow-by", which enables more heads to be installed on the same valve. The Triple-Blade Wiper Seal precisely balances flushing, flow-by and debris protection to optimize performance and durability at pop-up and retraction. Precision-controlled flushing at pop-up and retraction clears debris, assuring positive stem retraction in all soil types
- Debris pockets in the base of the spray body prevent recirculation of harmful debris during operation to reduce wear on wiper seal and stem
- Reinforced ratchet mechanism allows easy nozzle pattern alignment without tools, withstands chemicals in recycled water and prevents pattern misalignment over time
- Pre-installed 1800 Pop-Top™ flush plug blocks debris from entering after flushing and allows for easy nozzle installation
- Constructed of time-proven UV-resistant plastic and corrosion resistant stainless steel parts, assuring long product life
- All sprinkler components are removable from the top without special tools, providing for quick and easy flushing and maintenance of the sprinkler
- Side inlets featured on non Seal-A-Matic™ (SAM) models only
- Five-year trade warranty

How To Specify

RD-XX - X - Nozzle

Nozzle
See Rotary Nozzle, U-Series, MPR, VAN, HE-VAN and SQ Nozzle specifications for more information

Optional Features
S: Seal-A-Matic™ check valve
P30: 30 psi (2.1 bar) in-stem pressure regulation
P45: 45 psi (3.1 bar) in-stem pressure regulation
F: Flow-Shield™ Technology
NP: Non-potable water use indicating cover

Model
RD-04: 4" (10 cm) pop-up height
RD-06: 6" (15 cm) pop-up height
RD-12: 12" (40 cm) pop-up height

Notes:
SAM feature included with P45 models.
Flow-Shield™ Technology available in P30 and P45 models only.
Specify sprinkler bodies and nozzles separately.

Models

4" Models	
RD-04-NP	RD-04-S-P30
RD-04-S	RD-04-S-P30-F
RD-04-S-NP	RD-04-S-P30-F-N
RD-04-P30-F	RD-04-S-P45-F
RD-04-P30-F-NP	RD-04-S-P45-F-N
6" Models	
RD-06	RD-06-S-P30
RD-06-NP	RD-06-S-P30-F
RD-06-S	RD-06-S-P30-F-N
RD-06-S-NP	RD-06-S-P45-F
RD-06-P30-F	RD-06-S-P45-F-N
RD-06-P30-F-NP	
12" Models	
RD-12	RD-12-S-P30
RD-12-NP	RD-12-S-P30-F
RD-12-S	RD-12-S-P30-F-N
RD-12-S-NP	RD-12-S-P45-F
RD-12-P30-F	RD-12-S-P45-F-N
RD-12-P30-F-NP	

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 15 to 100 psi (1.0 to 6.9 bar)

Specifications

- Flow-by: SAM Models: 0 at 15 psi (1.0 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s) otherwise
  All Other Models: 0 at 10 psi (0.7 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s)otherwise

Dimensions / Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
  - RD-04: 6" (15 cm) body height; 4" pop-up height (10.2 cm)
  - RD-06: 9 3/8" (24 cm) body height; 6" pop-up height (15.2 cm)
  - RD-12: 16" (40 cm) body height; 12" pop-up height (30.5 cm)
- Exposed surface diameter: 2 ¼" (5.7 cm)

RD1800 Series

Water Saving

The RD1800's Triple-Blade Wiper Seal and debris pockets combine to prevent water waste and eliminate stick-ups.

Exclusive Flow-Shield™ Technology

Exclusive Flow-Shield™ Technology provides up to 90% reduction in water loss when a nozzle is removed, preventing potentially costly and unacceptable run-off.

Patented Pressure Regulator

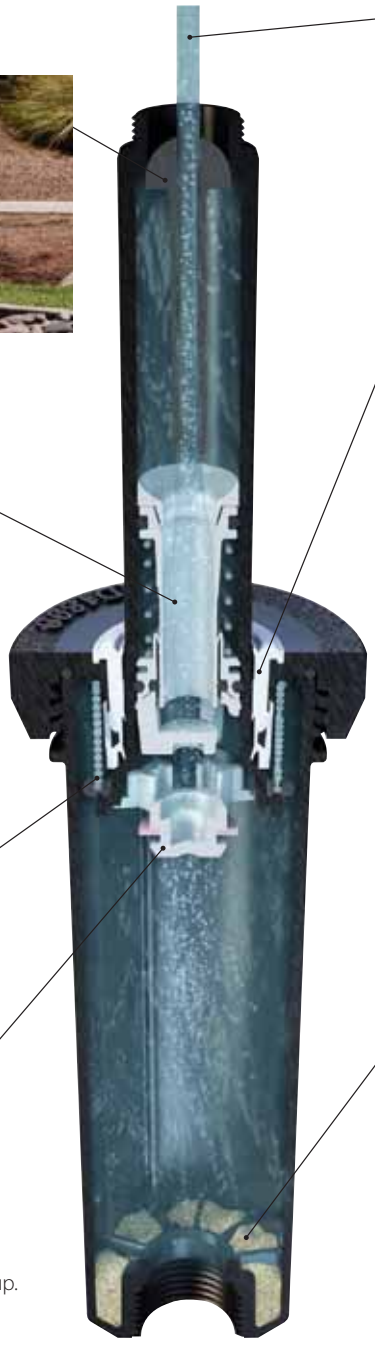
The RD1800's patented pressure regulator increases nozzle efficiency by up to 50% in high pressure applications.

Reinforced Ratchet Mechanism

The RD1800's ratchet mechanism was designed to improve ease of use and consistency, hold its setting over time, withstand years of chlorine exposure and provide greater debris resistance.

Seal-A-Matic™ (SAM) Check Valve

Exclusive to Rain Bird, the SAM Check Valve holds back up to 14 feet of head and helps eliminate low head drainage, erosion, run-off and water hammer at start-up.



Service Indication Stream

Exclusive Flow-Shield Technology delivers a low-flow service indication stream when a nozzle is removed. As a result, system performance is maintained, water is saved and you don't have to wait until you have brown grass or dead plants to notice something's wrong.

Triple-Blade Wiper Seal

The RD1800™ Series features an exclusive Triple-Blade Wiper Seal. The top seal flushes during pop-up and wipes the stem clean during retraction, preventing external debris from entering. During operation, the primary seal combines with the stem's surface to eliminate flow-by. The exclusive Third Blade provides another line of defense, in case the primary seal is damaged.

Reclaimed Water Resistant

The RD1800 Series is designed with reclaim water resistant materials such as EPDM and Polyester. These materials resist degradation caused by chlorine in reclaimed water, ensuring a longer life.

Unique Debris Pockets

With each system start-up, the RD1800's unique debris pockets hold grit in place—removing it from circulation and preventing long-term damage.

RD1800™ SAM Series

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

- Built-in Seal-A-Matic™ (SAM) check valve. Eliminates the need for under-the-head check valves. No parts to be installed at the site
- Stronger retract spring to accommodate elevation changes up to 14' (4.2 m). One of the strongest springs in the industry
- Prevents drainage from spray heads at lower elevations. Stops water waste. Ends landscape damage due to flooding and erosion

Features

- Incorporates all RD1800 Series features
- Ideal for use in areas with changing elevations
- Retains water in lateral pipes which reduces wear on system components by minimizing water hammer during start-up
- "SAM" printed on the cap for easy identification and maintenance

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 15 to 100 psi (1.0 to 6.9 bar)

Specifications

- SAM capability: Holds up to 14 feet (4.2 m)of head; 6 psi (0.3 bar)
- Flow-by: 0 at 15 psi (1.0 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s) otherwise
- No side inlet

Dimensions / Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
  - RD-04-S: 6" (15.2 cm) body height; 4" pop-up height (10.2 cm)
  - RD-06-S: 9 3/8" (23.8 cm) body height; 6" pop-up height (15.2 cm)
  - RD-12-S: 16" (40.6 cm) body height; 12" pop-up height (30.5 cm)
- Exposed surface diameter: 2 ¼" (5.7 cm)

RD1800™ SAM PRS Series

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

- Incorporates all RD1800 Series SAM and PRS features
- Meets the needs of all spray areas, regardless of changing elevation or water pressures
- "SAM-PRS" stamped on the cap for easy identification and maintenance

Operating Range

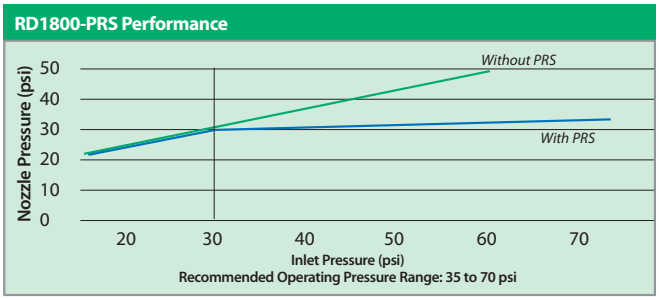
- Spacing: 2.5 to 24 feet (0.8 to 7.3m)
- Pressure: 15 to 100 psi (1.0 to 6.9 bar)

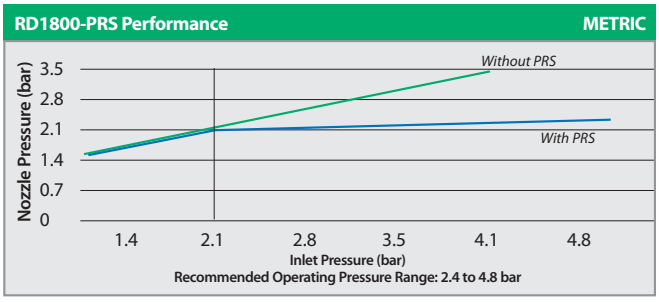
Specifications

- Flow by: 0 at 15 psi (1.0 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s) otherwise
- Regulates nozzle pressure to an average 30 psi (2.1 bar) with inlet pressures of up to 100 psi (6.9 bar)
- No side inlet

Dimensions / Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
  - RD-04-S-P30: 6" (15.2 cm) body height; 4" pop-up height (10.2 cm)
  - RD-06-S-P30: 9 3/8" (23.8 cm) body height; 6" pop-up height (15.2 cm)
  - RD-12-S-P30: 16" (40.6 cm) body height; 12" pop-up height (30.5 cm)
- Exposed surface diameter: 2 ¼" (5.7 cm)





Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.

Water Saving

Exclusive Flow-Shield™ Technology reduces water loss by up to 90% when a nozzle is removed.

RD1800™ Flow-Shield™ Series

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

- Designed to save water and preserve system hydraulics to maintain proper operation throughout the irrigation zone. Provides protection against plant material loss and reduces likelihood of incurring costly fines as a result of excessive run-off when a nozzle has been removed
- Exclusive Flow-Shield Technology built into the stem. No parts to be installed at the site. Saves water, plant material, time, and money
- Restricts water loss by up to 90% if nozzle is removed from a non-PRS spray head, and up to 50% if nozzle is removed from a PRS spray head

Features

- Incorporates all RD1800 SAM and PRS features plus:
  - Reduces possibility of accidents and property damage. Recommended for high pressure and vandal-prone areas
  - Provides low flow vertical water jet visible from +200' line of sight when a nozzle has been removed. Height and low flow of vertical water jet causes water to dissipate during descent, reducing puddles and run-off
  - Low flow vertical water jet does not exceed 2 gpm (0.45 m^3/h; 0.13 l/s), even with varying inlet pressure
  - Low flow vertical water jet decreases likelihood of nozzle removal going unnoticed, prompting nozzle replacement to decrease probability of stressed turf and plant material losses
  - "F" printed on cap for easy identification and maintenance

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 15 to 100 psi (1.0 to 6.9 bar)

Specifications

- SAM capability: Holds up to 14 feet (4.2 m)of head; 6 psi (0.3 bar)
- Flow-by: SAM Models: 0 at 15 psi (1.0 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s) otherwise
  All Other Models: 0 at 10 psi (0.7 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s)otherwise

Dimensions / Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
  - RD-04-P30-F, RD-04-S-P30-F, RD-04-S-P45-F: 6" (15.2 cm) body height; 4" pop-up height (10.2 cm)
  - RD-06-P30-F, RD-06-S-P30-F, RD-06-S-P45-F: 9 3/8" (23.8 cm) body height; 6" pop-up height (15.2 cm)
  - RD-12-P30-F, RD-12-S-P30-F, RD-12-S-P45-F: 16" (40.6 cm) body height; 12" pop-up height (30.5 cm)
- Exposed surface diameter: 2 ¼" (5.7 cm)

RD1800™ Non-Potable Water Series

4", 6", 12" (10.2 cm, 15.2 cm, 30.5 cm)

- Exclusive, non-potable water use indication on cover featuring purple Triple-Blade Wiper Seal, easy-to-read English "DO NOT DRINK", Spanish "NO BEBA" warnings, and international do not drink symbol
- Does not require the use of purple clip caps that can be removed by a vandal
- Does not require use of eye-catching purple molded covers that give away sprinkler location

Features

- The RD1800 Non-Potable Water Series offers all SAM, SAM PRS, and SAM PRS 45 Flow-Shield Series features
- Provides an alternative to clip-on caps and molded purple covers to identify non-potable water use

Operating Range

- Spacing: 2.5 to 24 feet (0.8 to 7.3 m)
- Pressure: 15 to 100 psi (1.0 to 6.9 bar)

Specifications

- SAM capability: Holds up to 14 feet (4.2 m)of head; 6 psi (0.3 bar)
- Flow-by: SAM Models: 0 at 15 psi (1.0 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s) otherwise
  All Other Models: 0 at 10 psi (0.7 bar) or greater; 0.5 gpm (0.1 m^3/h; 0.03 l/s)otherwise

Dimensions / Models

- ½" (15/21) NPT female threaded inlet
- Models and height:
  - RRD-04-S-NP, RD-04-P30-F-NP, RD-04-S-P30-F-N, RD-04-S-P45-F-N: 6" (15.2 cm) body height; 4" pop-up height (10.2 cm)
  - RD-06-NP, RD-06-S-NP, RD-06-P30-F-NP, RD-06-S-P30-F-N, RD-06-S-P45-F-N: 9 3/8" (23.8 cm) body height; 6" pop-up height (15.2 cm)
  - RD-12-NP, RD-12-S-NP, RD-12-P30-F-NP, RD-12-S-P30-F-N, RD-12-S-P45-F-N: 16" (40.6 cm) body height; 12" pop-up height (30.5 cm)
  - Exposed surface diameter: 2 ¼" (5.7 cm)

Standard Cover

Non-Potable Cover

UNI-Spray™ Series

2", 4" (5.1 cm, 10.2 cm)

- Pressure-activated, multi-functional wiper seal prevents excessive flow-by and water waste. Keeps debris from entering upon retraction
- Durable two-piece stem ratchet allows for quick and easy nozzle pattern alignment
- Rugged cover and body provide durability in high pressure and surge conditions

Features

- Small exposed cover makes the unit virtually invisible for more attractive landscapes
- UNI-Spray accepts all Rain Bird® Nozzles and accessories, which simplifies inventory management
  - VAN nozzle and screen are easily removable for flushing
- Internal parts removable from the top of the sprinkler for easy servicing
- Optional field installable Seal-A-Matic™ check valve prevents low-head drainage up to 5 feet (1.5 m) of elevation difference
- Plastic and stainless steel materials resist corrosion

Operating Range (for pre-installed nozzle choices)

- Spacing:
  - 10 VAN Series: 8 to 10 feet (2.4 to 3.0 m)
  - 12 VAN Series: 10 to 12 feet (3.0 to 3.7 m)
  - 15 VAN Series: 12 to 15 feet (3.7 to 4.6 m)
  - 18 VAN Series: 14 to 18 feet (4.3 to 5.5 m)
- Pressure: 15 to 70 psi (1.0 to 4.8 bar)
- Optimum pressure: 30 psi (2.1 bar)
- Adjustable nozzle arc range: 0° - 360°

Specifications

- Flow-by: 0 at 10 psi (0.75 bar) or greater; 0.20 gpm (0.04 m^3/h; 0.60 l/m) otherwise

Dimensions

- ½" (15/21) NPT female threaded inlet

- Body height:
  - US-200: 3¾" (9.5 cm)
  - US-400: 5 ⅞" (14.9 cm)
- Exposed surface diameter: 1¼" (3.2 cm)

Models*

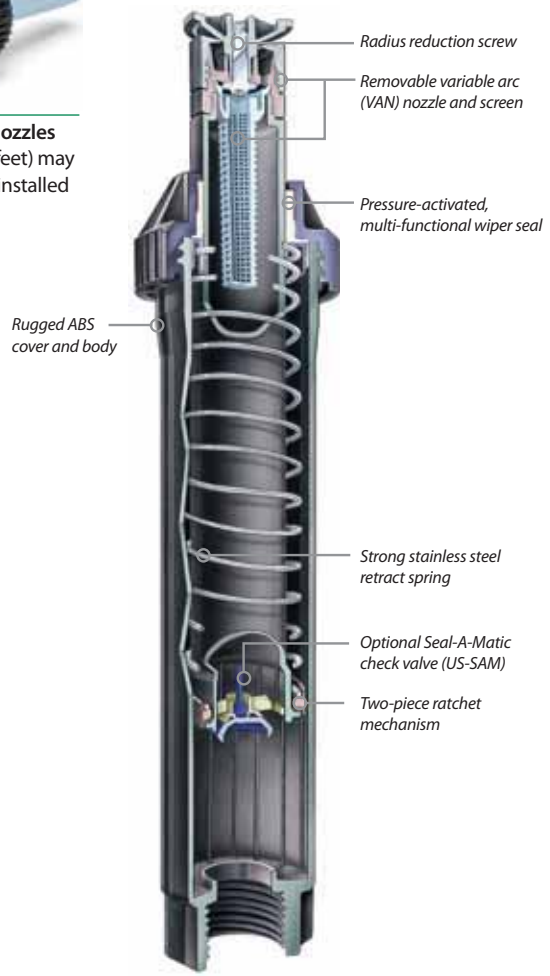
- US-400: 4" pop-up height (10.2 cm)
- US-410 VAN 4" pop-up height (10.2 cm) with 10-VAN attached
- US-212 VAN 2" pop-up height (5.1 cm) with 12-VAN attached
- US-412 VAN 4" pop-up height (10.2 cm) with 12-VAN attached
- US-215 VAN 2" pop-up height (5.1 cm) with 15-VAN attached
- US-415 VAN 4" pop-up height (10.2 cm) with 15-VAN attached
- US-418 VAN 4" pop-up height (10.2 cm) with 18-VAN attached

- US-SAM UNI-Spray field installed check valve

** The UNI-Spray accepts all Rain Bird nozzles*

Variable Arc Nozzles
(10, 12, 15 or 18 feet) may be ordered pre-installed

UNI-Spray™



How To Specify

US - 4 - 15VAN

- **Model**: UNI-Spray
- **Body**: 4"(10.2 cm)
- **Nozzle Series/Pattern**: VAN nozzle with variable arc

Water Saving

Pressure-activated wiper seal reduces flow-by during operation.

1800® NP Cover

Non-Potable 1800 Spray Head Cover

Features

- Designed for excellent retention on 1800 Series Spray Body covers
- Purple plastic cover for easy identification of non-potable water system
- Marked with "Do Not Drink!" warning in both English and Spanish.
- Snaps onto all 1800® Series Spray Body covers

Model

- 1800-NPCAP

1800-NPCAP

1800®-EXT

Plastic Extension

Features

- UV-resistant thermoplastic construction for long life
- Fits all Rain Bird Spray Bodies and Nozzles. Exception: Cannot be used with bubblers
- Easy installed without any tools
- Can be reinstalled without damaging the threads if accidentally knocked off the riser or spray head
- Maximum recommended number: two extensions per spray body

Model

- 1800-EXT

1800-EXT

PA-80

Plastic Adapter

Features

- Adapts Rain Bird Spray Bodies for use with any 1/2" (15/21) FPT bubbler or spray nozzle
- Rugged, UV-resistant thermoplastic construction
- Easy to install; no tools required

Dimensions

- Height: 1½" (3.8 cm); 0.8" (2.0 cm) above 1800 cap

Model

- PA-80

PA-80

PA-8S

Plastic Shrub Adapter

Features

- Adapts Rain Bird Nozzles for use with ½" (15/21) MPT threaded risers
- Accepts protective, non-clogging 1800 Series filter screen (shipped with nozzle) and PCS Series screens
- Durable, non-corrosive plastic construction

Specifications

- ½" (15/21) female inlet threads
- Fine top threads accept all Rain Bird nozzles

Model

- PA-8S

PA-8S

PA-8S-NP

Non-Potable Plastic Shrub Adapter

Features

- Purple plastic shrub adapter for easy identification of non-potable water system
- Adapts Rain Bird Nozzles for use with ½" (15/21) MPT threaded risers
- Accepts protective, non-clogging 1800 Series filter screen (shipped w/ nozzle) and PCS Series screens
- Durable, non-corrosive plastic construction

Specifications

- ½" (15/21) female inlet thread
- Fine top threads accept all Rain Bird Nozzles

Model

- PA-8S-NP

PA-8S-NP

PA-8S-PRS

Pressure Regulating Shrub Adapter

Features

- Adapts nozzles for use with ½" (15/21) MPT threaded risers
- Patented PRS pressure regulator built into the stem. No parts to be installed at the site. Saves time and money
  - Maintains constant outlet pressure at 30 psi (2.1 bar). Ensures maximum spray head and nozzle performance
  - Ends misting and fogging caused by high pressure. Prevents water waste and minimizes liability
  - Restricts water loss by up to 70% if nozzle is removed or damaged. Saves water and money. Reduces liability. Recommended for vandal-prone areas
- Fits all Rain Bird plastic nozzles
- Rugged thermoplastic construction resists UV rays
- Five-year trade warranty

Operating Range

- Pressure: 15 to 70 psi (1.0 to 4.8 bar)
- Flow: 0.2 to 4.0 gpm (0.05 to 0.91 m^3/h; 0.06 to 15.0 l/m)

Specifications

- ½" (15/21) female inlet threads
- Fine top threads accept all Rain Bird nozzles
- Height: 5¼" (13.3 cm)

Model

- PA-8S-PRS

PA-8S-PRS

1800 PCS

Pressure Compensating Screens

- Compensates* for pressure variations
- Eliminates fogging and water waste caused by high pressures
- Nozzles can be matched with screens to create short-throw, reduced-radius patterns and/or flush-mounted bubblers

Features

- 0.25 gpm (0.06 m^3/h; 1.2 l/m) screen allows greater flexibility in achieving 4', 6', and 7' radius patterns
- Color-coded for easy identification
- Use with all 1800 Series plastic nozzles (MPR, VAN, U-Series, Strips and Bubblers)
- Easily installed in new and retrofit applications. Simply replace standard screen with PCS screen

** With a pressure compensator, outlet pressure will be reduced, but will fluctuate as the inlet pressure changes. A pressure compensator cannot maintain outlet pressure at a constant rate. A pressure regulator establishes and maintains a constant outlet pressure of 30 psi (2.1 bar) as long as the inlet pressure at the spray head is greater than 30 psi (2.1 bar)*

Operating Range

- Flow: 0.20 to 0.90 gpm (0.05 to 0.20 m^3/h; 0.6 to 3.6 l/m)
- Pressure: 15 to 70 psi (1.0 to 4.8 bar)

Models

- PCS-020: 0.2 gpm (0.05 m^3/h; 0.6 l/m) - Brown
- PCS-025: 0.25 gpm (0.06 m^3/h; 1.2 l/m) - Pink
- PCS-030: 0.3 gpm (0.07 m^3/h; 1.2 l/m) - Silver
- PCS-040: 0.4 gpm (0.09 m^3/h; 1.8 l/m) - Orange
- PCS-060: 0.6 gpm (0.14 m^3/h; 2.4 l/m) - Black
- PCS-090: 0.9 gpm (0.20 m^3/h; 3.6 l/m) - White

Recommended Nozzle + PCS Combinations to Achieve 4', 6' and 7' Radii*

Nozzle	PCS	ft.	m
8Q-FLT	Pink	6'	(1.8)
8Q-FLT	Black	7'	(2.1)
8H-FLT	Pink	4'	(1.2)
8H-FLT	Silver	7'	(2.1)
8F-FLT	Black	4'	(1.2)
8F-FLT	White	7'	(2.1)

***Note:** Radius reduction data tested at 30 psi (1.5 bar). Individual results may vary based on site conditions*

1800 PCS Screens

1800 PCS Performance

	Flow (gpm) / m³/h (l/m) / Color / Distance	PCS-020 0.2 0.05 (60) Brown feet	PCS-020 0.2 0.05 (60) Brown meters	PCS-025 0.25 0.06 (72) Pink feet	PCS-025 0.25 0.06 (72) Pink meters	PCS-030 0.3 0.07 (84) Silver feet	PCS-030 0.3 0.07 (84) Silver meters	PCS-040 0.4 0.09 (108) Orange feet	PCS-040 0.4 0.09 (108) Orange meters	PCS-060 0.6 0.14 (144) Black feet	PCS-060 0.6 0.14 (144) Black meters	PCS-090 0.9 0.20 (216) White feet	PCS-090 0.9 0.20 (216) White meters
U-Series	U-8Q	**6**	**(1.8)**	**7**	**(2.1)**								
	U-8T	**4**	**(1.2)**	**5**	**(1.5)**								
	U-8H	**4**	**(1.2)**	**5**	**(1.5)**								
	U-8F					1	(0.3)	3	(0.9)	**7**	**(2.1)**		
	U-10Q	**5**	**(1.5)**	**6**	**(1.8)**	**10'**	**(3.1)**						
	U-10T	4	(1.2)	4	(1.2)	**8**	**(2.4)**	**10'**	**(3.1)**				
	U-10H					**5**	**(1.5)**	**6**	**(1.8)**	**8**	**(2.4)**	**9**	**(2.7)**
	U-10F									4	(1.2)	**9**	**(2.7)**
	U-12Q	2'	(0.6)	4	(1.2)	**7'**	**(2.1)**	**12'**	**(3.7)**				
	U-12T			2	(0.6)	**6'**	**(1.8)**	**8'**	**(2.4)**	**12'**	**(3.7)**		
	U-12H					3'	(0.9)	4'	(1.2)	**7'**	**(2.1)**	**11'**	**(3.4)**
	U-12TT									**6'**	**(1.8)**	**9'**	**(2.7)**
	U-12TQ									5'	(1.5)	**8'**	**(2.4)**
	U-12F							3'	(0.9)	**6'**	**(1.8)**	**8'**	**(2.4)**
	U-15Q			3'	(0.9)	6'	(1.8)	**11'**	**(3.4)**	**15'**	**(4.6)**		
	U15T									**10'**	**(3.1)**	**13'**	**(4.0)**
	U-15H					2'	(0.6)	3'	(0.9)	5'	(1.5)	**9'**	**(2.7)**
	U15TT												
	U15TQ												
	U-15F									4'	(1.2)	6'	(1.8)
VAN	4 (90°)	1'	(0.3)			**3'**	**(0.9)**	**4'**	**(1.2)**				
	4 (180°)			1'	(0.3)	**2'**	**(0.6)**	**3'**	**(0.9)**	**4'**	**(1.2)**		
	4 (270°)					1'	(0.3)	**2'**	**(0.6)**	**4'**	**(1.2)**		
	4 (330°)					1'	(0.3)	**2'**	**(0.6)**	**4'**	**(1.2)**		
	6 (90°)			2'	(0.6)	**3'**	**(0.9)**	**6'**	**(1.8)**				
	6 (180°)					2'	(0.6)	**4'**	**(1.2)**	**6'**	**(1.8)**		
	6 (270°)					0.5'	(0.2)	1'	(0.3)	**3'**	**(0.9)**	**6'**	**(1.8)**
	6 (330°)					0.5'	(0.2)	1'	(0.3)	**3'**	**(0.9)**	**6'**	**(1.8)**
	8 (90°)					1'	(0.3)	3'	(0.9)	**8'**	**(2.4)**		
	8 (180°)					0.5'	(0.2)	2'	(0.6)	**4'**	**(1.2)**	**8'**	**(2.4)**
	8 (270°)							0.5'	(0.2)	3'	(0.9)	**5'**	**(1.5)**
	8 (330°)							0.5'	(0.2)	3'	(0.9)	**5'**	**(1.5)**
	10 (90°)					3'	(0.9)	**5'**	**(1.5)**	**10'**	**(3.1)**		
	10 (180°)							1'	(0.3)	**5'**	**(1.5)**	**7'**	**(2.1)**
	10 (270°)							1'	(0.3)	**4'**	**(1.2)**	**6'**	**(1.8)**
	10 (360°)					0.5'	(0.2)	1'	(0.3)	4'	(1.2)	**6'**	**(1.8)**
	12 (90°)	3'	(0.9)			**8'**	**(2.4)**	**10'**	**(3.1)**	**12'**	**(3.7)**		
	12 (180°)					1'	(0.3)	2'	(0.6)	5'	(1.5)	**8'**	**(2.4)**
	12 (270°)					0.5'	(0.2)	1'	(0.3)	3'	(0.9)	**6'**	**(1.8)**
	12 (360°)							1'	(0.3)	3'	(0.9)	5'	(1.5)
	15 (90°)					2'	(0.6)	5'	(1.5)	**11'**	**(3.4)**	**15'**	**(4.6)**
	15 (180°)					1'	(0.3)	3'	(0.9)	6'	(1.8)	**9'**	**(2.7)**
	15 (270°)											6'	(1.8)
	15 (360°)												
	18 (90°)					0.5'	(0.2)	2'	(0.6)	6'	(1.8)	**12'**	**(3.7)**
	18 (180°)							1'	(0.3)	3'	(0.9)	5'	(1.5)
	18 (270°)							0.5'	(0.2)	1'	(0.3)	3'	(0.9)
	18 (330°)							0.5'	(0.2)	1'	(0.3)	3'	(0.9)

Bold green type indicates recommended nozzle/screen combination to achieve catalog performance at 30 psi (2.1 bar)

Bold blue type indicates satisfactory nozzle/screen combination

Black type indicates a nozzle/screen combination that provides a throw reduction of more than 50%. With these nozzle/screen combinations a uniform spray pattern is not assured and a bubbler effect may result

Note: *Screens were tested at 50 psi (3.5 bar) for 10 minutes prior to taking distance measurements. Distances may vary slightly with higher pressures and longer run-times*

Note: *Refer to catalog notation for proper nozzle selection*

1800 PCS Performance

	Flow (gpm)	PCS-020 0.2		PCS-025 0.25		PCS-030 0.3		PCS-040 0.4		PCS-060 0.6		PCS-090 0.9	
	m^3/h (l/m)	0.05 (60)		0.06 (72)		0.07 (84)		0.09 (108)		0.14 (144)		0.20 (216)	
	Color	Brown		Pink		Silver		Orange		Black		White	
	Distance	feet	meters	feet	meters	feet	meters	feet	meters	feet	meters	feet	meters
MPR	5Q												
MPR	5T												
MPR	5H	**5'**	**(1.5)**	**6'**	**(1.8)**								
MPR	5F					**5'**	**(1.5)**						
MPR	8Q	**8'**	**(2.4)**	**10'**	**(3.1)**								
MPR	8T	**6'**	**(1.8)**	**6.5'**	**(2.0)**	**7'**	**(2.1)**	**8'**	**(2.4)**				
MPR	8H	**5'**	**(1.5)**	**6'**	**(1.8)**	**7'**	**(2.1)**	**8'**	**(2.4)**				
MPR	8F					2'	(0.6)	3'	(0.9)	**8'**	**(2.4)**		
MPR	10Q	**6'**	**(1.8)**	**8'**	**(2.4)**	**8'**	**(2.4)**	**10'**	**(3.1)**				
MPR	10T	4'	(1.2)	**5'**	**(1.5)**	**9'**	**(2.7)**	**10'**	**(3.1)**				
MPR	10H	3'	(0.9)	4'	(1.2)	**6'**	**(1.8)**	**8'**	**(2.4)**	**10'**	**(3.1)**		
MPR	10F							1'	(0.3)	4'	(1.2)	**8'**	**(2.4)**
MPR	12Q	3'	(0.9)	**7'**	**(2.1)**	**8'**	**(2.4)**	**11'**	**(3.4)**	**12'**	**(3.7)**		
MPR	12T	2'	(0.6)	4'	(1.2)	**6'**	**(1.8)**	**10'**	**(3.1)**	**11'**	**(3.4)**	**12'**	**(3.7)**
MPR	12H					4'	(1.2)	**6'**	**(1.8)**	**10'**	**(3.1)**	**12'**	**(3.7)**
MPR	12TT					2'	(0.6)	4'	(1.2)	**6'**	**(1.8)**	**9'**	**(2.7)**
MPR	12TQ					2'	(0.6)	3'	(0.9)	**6'**	**(1.8)**	**8'**	**(2.4)**
MPR	12F							2'	(0.6)	5'	(1.5)	**7'**	**(2.1)**
MPR	15Q	3'	(0.9)	4'	(1.2)	5'	(1.5)	**9'**	**(2.7)**	**12'**	**(3.7)**	**15'**	**(4.6)**
MPR	15T			2'	(0.6)	5'	(1.5)	7'	(2.1)	**12'**	**(3.7)**	**14'**	**(4.3)**
MPR	15H					3'	(0.9)	4'	(1.2)	7'	(2.1)	**11'**	**(3.4)**
MPR	15TT					1'	(0.3)	2'	(0.6)	4'	(1.2)	**8'**	**(2.4)**
MPR	15TQ											6'	(1.8)
MPR	15F											4'	(1.2)
Bubbler	5Q-B	2'	(0.6)	**3**	**(0.9)**	**4'**	**(1.2)**	**5'**	**(1.5)**				
Bubbler	5H-B					1'	(0.3)	2'	(0.6)	**5'**	**(1.5)**		
Bubbler	5F-B							1'	(0.3)	2'	(0.6)	**3'**	**(0.9)**
Bubbler	5CST-B	1'	(0.3)	2	(0.6)	**3'**	**(0.9)**	**5'**	**(1.5)**				
Strip	9SST											**7' x 12'**	**(2.1 x 3.7)**
Strip	15CST							**4' x 12'**	**(1.2 x 3.7)**	**4' x 24'**	**(1.2 x 7.3)**	**4' x 30'**	**(1.2 x 9.1)**
Strip	15SST							**2' x 10'**	**(0.6x 3.1)**	**3' x 20'**	**(0.9 x 6.1)**	**4' x 26'**	**(1.2 x 7.9)**
Strip	15EST					**3' x 12'**	**(0.9 x 3.7)**	**4' x 15'**	**(1.2 x 4.6)**				
Strip	15LCS	1' x 5'	(0.3 x 1.5)	1' x 7'	(0.3 x 2.1)	**1' x 12'**	**(0.3 x 3.7)**						
Strip	15RCS	1' x 5'	(0.3 x 1.5)	1' x 7'	(0.3 x 2.1)	**1' x 12'**	**(0.3 x 3.7)**						

Bold green type indicates recommended nozzle/screen combination to achieve catalog performance at 30 psi (2.1 bar)

Bold blue type indicates satisfactory nozzle/screen combination

Black type indicates a nozzle/screen combination that provides a throw reduction of more than 50%. With these nozzle/screen combinations a uniform spray pattern is not assured and a bubbler effect may result

Note: *Screens were tested at 50 psi (3.5 bar) for 10 minutes prior to taking distance measurements. Distances may vary slightly with higher pressures and longer run-times*

Note: *Refer to catalog notation for proper nozzle selection*

"We design and install with spray bodies and nozzles that are reliable, easy to maintain and promote efficient water use. What do we like about the Rain Bird 1800 Series Spray Bodies and U-Series Nozzles? They dependably and effectively work the way they say they're going to. I can say with confidence that Rain Bird 1800 Spray Bodies and U-Series Nozzles work flawlessly and effectively. In fact, by installing that combination, we see significant gains in water efficiency."

Steve Linnenberger, *Landscape Designer*
Juan Chavez, *Landscape Foreman*

Landscape Consultants & Contractors, Inc.

Major Products		Applications
Rotary Nozzles	Individual rotating streams with lower precipitation reduce runoff and erosion	Turf, hills and slopes
U-Series Nozzles	More even distribution through dual orifice and even wetting through radius	Turf
MPR Nozzles	Matched precipitation simplifies the design process	Turf
VAN Nozzles	Easy, flexible, and convenient	Turf
SQ Nozzles	Low volume, uniform square wetting pattern with pressure-compensation	Narrow turf or flower beds

Water Saving Tips

- Rotary Nozzles have efficient water distribution through rotating streams that uniformly deliver water at a low precipitation rate, significantly reducing runoff and erosion
- U-Series Nozzles are dual-orifice nozzles that have better, more uniform water distribution. Water flowing from both orifices combines to form a continuous water stream and eliminates gaps for more uniform coverage throughout the entire watering area
- SQ Nozzles are the most precise low-volume spray with pressure compensation, square wetting pattern, and adjustable 2.5' to 4' (0.8 m to 1.2 m) throws. Excellent for narrow areas

Rotary Nozzles

0.60 in/hr Precipitation Rate from 13 to 24 Feet

Smart Approved WaterMark

- Low precipitation rate of 0.60 in/hr (15.2 mm/hr) reduces runoff and erosion
- With approximately 60% less flow than conventional spray nozzles, Rotary Nozzles allow more heads per zone, reducing overall system complexity and cost
- Multiple, rotating streams uniformly distribute water throughout the 13' to 24' radius range

Features

A Spray Nozzle with Rain Curtain Performance

- Large droplets for consistent performance
- Effective close-in watering
- Even distribution over the entire radius

Installation and Maintenance

- Designed for use on Rain Bird Spray Bodies
- Color-coded radius reduction plugs for easy identification
- Stainless steel radius reduction screw allows reduction down to 13' on the R13-18 and to 17' on the R17-24 to accommodate varying landscape needs

Design Solutions

- Matched precipitation rate across radii and pattern simplify the design process
- Precipitation rate matches Rain Bird 5000/5000 Plus MPR Rotor Nozzles allowing MPR irrigation designs from 13' to 35' (see page 57)
- Maintains highly efficient performance throughout the 20 to 55 psi pressure range, with no misting or fogging at high pressures
- Use in conjunction with 1800-SAM-P45 spray heads for maximum nozzle performance (see page 13 for more information)

How To Specify

1804-SAM-R13-18Q

- **Model** 1804
- **Optional Feature** SAM
- **Nozzle** Rotary Nozzle
- **Radius Range** 13'-18' (4.0-5.5 m) 17'-24' (5.2-7.3 m)
- **Pattern** F=Full, TQ=Three-quarter, TT=Two-thirds, H=Half, T=Third, Q=Quarter

Note: Specify sprinkler bodies and nozzles separately. Installation on Rain Bird 1800®- SAM Spray Bodies recommended in sandy environments

Durability

- Rubber collar keeps out large debris particles while enabling small ones to exit easily to keep deflector clean and clear of debris
- Screen mesh size prevents large debris from entering nozzle through spray
- Three-year trade warranty

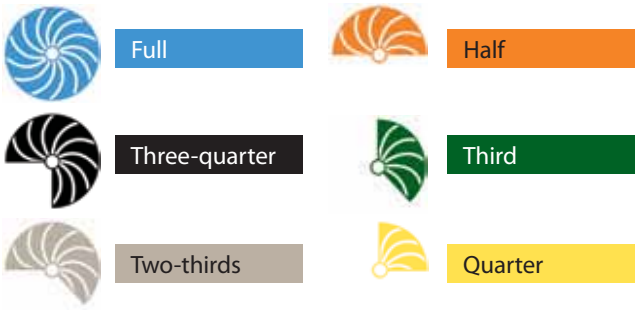
Operating Range

- Pressure range: 20-55 psi (1.4 to 3.8 bar)
- Spacing: 13 feet to 24 feet (4.0 m to 7.3 m)
  - Above spacing based on zero wind conditions

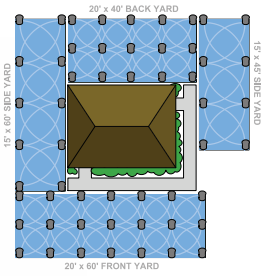
Models

- There are six different patterns available which are available in two radius* ranges:
  - 13'-18' (4.0m to 5.5m)
  - 17'-24' (5.2m to 7.3m)

** Radius refers to recommended spacing to achieve optimal precipitation rate and distribution uniformity with head to head spacing*

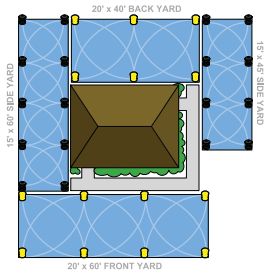


With Conventional Spray Nozzles



- **Total 58 gpm**
- **6 zones required**

With Rotary Nozzles



- **Total 26 gpm**
- **3 zones required**

Water Saving

The Rotary Nozzle has efficient water distribution through rotating streams that uniformly deliver water at a low precipitation rate, significantly reducing runoff and erosion

R13-18 Series (Black)

Arc	Pressure psi	Radius* ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
R13-18F	20	13	1.31	0.75	0.86
	25	14	1.46	0.67	0.77
	30	16	1.60	0.61	0.70
	35	16	1.73	0.61	0.70
	40	17	1.85	0.61	0.70
	45	18	1.96	0.61	0.70
	50	18	2.07	0.61	0.70
	55	18	2.17	0.61	0.70
R13-18TQ	20	13	0.98	0.75	0.86
	25	14	1.10	0.67	0.77
	30	16	1.20	0.61	0.70
	35	16	1.30	0.61	0.70
	40	17	1.39	0.61	0.70
	45	18	1.47	0.61	0.70
	50	18	1.55	0.61	0.70
	55	18	1.62	0.61	0.70
R13-18TT	20	13	0.87	0.75	0.86
	25	14	0.97	0.67	0.77
	30	16	1.07	0.61	0.70
	35	16	1.15	0.61	0.70
	40	17	1.23	0.61	0.70
	45	18	1.31	0.61	0.70
	50	18	1.38	0.61	0.70
	55	18	1.44	0.61	0.70
R13-18H	20	13	0.65	0.75	0.86
	25	14	0.73	0.67	0.77
	30	16	0.80	0.61	0.70
	35	16	0.86	0.61	0.70
	40	17	0.92	0.61	0.70
	45	18	0.98	0.61	0.70
	50	18	1.03	0.61	0.70
	55	18	1.08	0.61	0.70
R13-18T	20	13	0.44	0.75	0.86
	25	14	0.49	0.67	0.77
	30	16	0.53	0.61	0.70
	35	16	0.58	0.61	0.70
	40	17	0.62	0.61	0.70
	45	18	0.65	0.61	0.70
	50	18	0.69	0.61	0.70
	55	18	0.72	0.61	0.70
R13-18Q	20	13	0.33	0.75	0.86
	25	14	0.37	0.67	0.77
	30	16	0.40	0.61	0.70
	35	16	0.43	0.61	0.70
	40	17	0.46	0.61	0.70
	45	18	0.49	0.61	0.70
	50	18	0.52	0.61	0.70
	55	18	0.54	0.61	0.70

Note: *Rotary Nozzles tested on 4 inch pop-ups.*
Performance data taken in zero wind conditions
**Radius refers to recommended spacing to achieve optimal precipitation rate and distribution uniformity with head to head spacing*
■ *Square spacing based on 50% diameter of throw*
▲ *Triangular spacing based on 50% diameter of throw*

R13-18 Series (Black) METRIC

Arc	Pressure bar	Radius* m	Flow l/m	■ Precip mm/h	▲ Precip mm/h
R13-18F	1.4	4.0	4.95	19	22
	1.7	4.3	5.53	18	21
	2.1	4.8	6.06	15	18
	2.4	5.0	6.54	15	18
	2.8	5.2	6.99	15	18
	3.1	5.4	7.42	15	18
	3.4	5.5	7.82	15	18
	3.8	5.6	8.20	15	18
R13-18TQ	1.4	4.0	3.71	19	22
	1.7	4.3	4.15	18	21
	2.1	4.8	4.54	15	18
	2.4	5.0	4.91	15	18
	2.8	5.2	5.25	15	18
	3.1	5.4	5.56	15	18
	3.4	5.5	5.86	15	18
	3.8	5.6	6.15	15	18
R13-18TT	1.4	4.0	3.30	19	22
	1.7	4.3	3.69	18	21
	2.1	4.8	4.04	15	18
	2.4	5.0	4.36	15	18
	2.8	5.2	4.66	15	18
	3.1	5.4	4.95	15	18
	3.4	5.5	5.21	15	18
	3.8	5.6	5.47	15	18
R13-18H	1.4	4.0	2.47	19	22
	1.7	4.3	2.76	18	21
	2.1	4.8	3.03	15	18
	2.4	5.0	3.27	15	18
	2.8	5.2	3.50	15	18
	3.1	5.4	3.71	15	18
	3.4	5.5	3.91	15	18
	3.8	5.6	4.10	15	18
R13-18T	1.4	4.0	1.65	19	22
	1.7	4.3	1.84	18	21
	2.1	4.8	2.02	15	18
	2.4	5.0	2.18	15	18
	2.8	5.2	2.33	15	18
	3.1	5.4	2.47	15	18
	3.4	5.5	2.61	15	18
	3.8	5.6	2.73	15	18
R13-18Q	1.4	4.0	1.24	19	22
	1.7	4.3	1.38	18	21
	2.1	4.8	1.51	15	18
	2.4	5.0	1.64	15	18
	2.8	5.2	1.75	15	18
	3.1	5.4	1.85	15	18
	3.4	5.5	1.95	15	18
	3.8	5.6	2.05	15	18

Single row applications are not recommended
Do not reduce radius below 13' (4.0 m) on the R13-18 model and below 17' (5.2 m) on the R17-24 model
Installation on Rain Bird 1800®- SAM Spray Bodies recommended in sandy environments
Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.

R17-24 Series (Yellow)

Arc	Pressure psi	Radius* ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
R17-24F 	20	17	2.45	0.79	0.92
	25	19	2.74	0.71	0.82
	30	21	3.00	0.65	0.75
	35	22	3.24	0.65	0.75
	40	23	3.46	0.65	0.75
	45	23	3.67	0.65	0.75
	50	24	3.87	0.65	0.75
	55	24	4.06	0.65	0.75
R17-24TQ 	20	17	1.84	0.79	0.92
	25	19	2.05	0.71	0.82
	30	21	2.25	0.65	0.75
	35	22	2.43	0.65	0.75
	40	23	2.60	0.65	0.75
	45	23	2.76	0.65	0.75
	50	24	2.90	0.65	0.75
	55	24	3.05	0.65	0.75
R17-24TT 	20	17	1.63	0.79	0.92
	25	19	1.83	0.71	0.82
	30	21	2.00	0.65	0.75
	35	22	2.16	0.65	0.75
	40	23	2.31	0.65	0.75
	45	23	2.45	0.65	0.75
	50	24	2.58	0.65	0.75
	55	24	2.71	0.65	0.75
R17-24H 	20	17	1.22	0.79	0.92
	25	19	1.37	0.71	0.82
	30	21	1.50	0.65	0.75
	35	22	1.62	0.65	0.75
	40	23	1.73	0.65	0.75
	45	23	1.84	0.65	0.75
	50	24	1.94	0.65	0.75
	55	24	2.03	0.65	0.75
R17-24T 	20	17	0.82	0.79	0.92
	25	19	0.91	0.71	0.82
	30	21	1.00	0.65	0.75
	35	22	1.08	0.65	0.75
	40	23	1.15	0.65	0.75
	45	23	1.22	0.65	0.75
	50	24	1.29	0.65	0.75
	55	24	1.35	0.65	0.75
R17-24Q 	20	17	0.61	0.79	0.92
	25	19	0.68	0.71	0.82
	30	21	0.75	0.65	0.75
	35	22	0.81	0.65	0.75
	40	23	0.87	0.65	0.75
	45	23	0.92	0.65	0.75
	50	24	0.97	0.65	0.75
	55	24	1.02	0.65	0.75

Note: *Rotary Nozzles tested on 4 inch pop-ups.*
Performance data taken in zero wind conditions
**Radius refers to recommended spacing to achieve optimal precipitation rate and distribution uniformity with head to head spacing*
■ *Square spacing based on 50% diameter of throw*
▲ *Triangular spacing based on 50% diameter of throw*

R17-24 Series (Yellow) METRIC

Arc	Pressure bar	Radius* m	Flow l/m	■ Precip mm/h	▲ Precip mm/h
R17-24F 	1.4	5.2	9.27	20	23
	1.7	5.8	10.37	18	21
	2.1	6.4	11.36	16	19
	2.4	6.7	12.26	16	19
	2.8	6.9	13.10	16	19
	3.1	7.1	13.89	16	19
	3.4	7.3	14.65	16	19
	3.8	7.4	15.37	16	19
R17-24TQ 	1.4	5.2	6.95	20	23
	1.7	5.8	7.78	18	21
	2.1	6.4	7.57	16	19
	2.4	6.7	8.18	16	19
	2.8	6.9	8.74	16	19
	3.1	7.1	10.43	16	19
	3.4	7.3	11.00	16	19
	3.8	7.4	11.53	16	19
R17-24TT 	1.4	5.2	6.18	20	23
	1.7	5.8	6.91	18	21
	2.1	6.4	7.57	16	19
	2.4	6.7	8.18	16	19
	2.8	6.9	8.74	16	19
	3.1	7.1	9.27	16	19
	3.4	7.3	9.77	16	19
	3.8	7.4	10.25	16	19
R17-24H 	1.4	5.2	4.62	20	23
	1.7	5.8	5.19	18	21
	2.1	6.4	5.68	16	19
	2.4	6.7	6.17	16	19
	2.8	6.9	6.55	16	19
	3.1	7.1	6.97	16	19
	3.4	7.3	7.34	16	19
	3.8	7.4	7.68	16	19
R17-24T 	1.4	5.2	3.09	20	23
	1.7	5.8	3.46	18	21
	2.1	6.4	3.79	16	19
	2.4	6.7	4.09	16	19
	2.8	6.9	4.37	16	19
	3.1	7.1	4.64	16	19
	3.4	7.3	4.89	16	19
	3.8	7.4	5.13	16	19
R17-24Q 	1.4	5.2	2.31	20	23
	1.7	5.8	2.57	18	21
	2.1	6.4	2.84	16	19
	2.4	6.7	3.07	16	19
	2.8	6.9	3.29	16	19
	3.1	7.1	3.48	16	19
	3.4	7.3	3.67	16	19
	3.8	7.4	3.86	16	19

Single row applications are not recommended
Do not reduce radius below 13' (4.0 m) on the R13-18 model and below 17' (5.2 m) on the R17-24 model
Installation on Rain Bird 1800®- SAM Spray Bodies recommended in sandy environments
Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.

Plastic U-Series Nozzles

Dual orifice spray nozzles that use 30% less water[1]

- Additional orifice for close-in watering. Minimizes brown spots around spray heads
- Low scheduling coefficient for efficient watering. Use up to 30% less water[2]
- Matched precipitation rate between sets and matched flow (gpm, m^3/h and l/m) and precipitation rates with Rain Bird MPR Nozzles

Features

- U-Series offers a full family of nozzles, providing greater flexibility
- Fine mesh screen protects bottom orifice from debris
- Stainless steel adjustment screw to adjust flow and radius
- Five-year trade warranty
- Fits all Rain Bird Spray Bodies and Shrub Adapters

[1] *When U-Series dual-orifice nozzles are installed instead of standard nozzles on every spray body in the zone. Results may vary based on site-specific conditions such as sprinkler spacing, wind, temperature, soil and grass type*

[2] *Scheduling Coefficient (SC) measures the efficiency of spray heads. SC measures how much more you must water your ENTIRE area for the driest sections to receive sufficient water. The lower the SC, the better the spray heads distribute water*

Operating Range

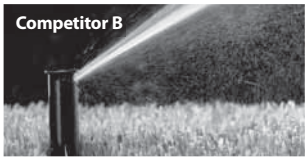
- Spacing: 5 to 15 feet (1.8 to 4.6 m)
- Pressure: 15 to 30 psi (1.0 to 2.1 bar)
- Optimum pressure: 30 psi (2.1 bar)[3]

[3] *Rain Bird recommends using 1800 PRS Spray Bodies to maintain optimum nozzle performance in higher pressure situations*

Going Head-to-Head Against the Competition

Patented U-Series

Water flowing from both orifices results in a lower scheduling coefficient. This efficient design conserves water, saves money and reduces waste

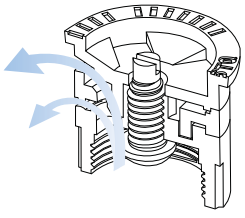


Competitor A and B nozzles fail to provide efficient close-in watering which results in a higher scheduling coefficient

Models

- U-8Q: 8-foot quarter-circle pattern nozzle
- U-8T: 8-foot one-third-circle pattern nozzle
- U-8H: 8-foot half-circle pattern nozzle
- U-8F: 8-foot full-circle pattern nozzle
- U-10Q: 10-foot quarter-circle pattern nozzles
- U-10T: 10-foot one-third-circle pattern nozzle
- U-10H: 10-foot half-circle pattern nozzle
- U-10F: 10-foot full-circle pattern nozzle
- U-12Q: 12-foot quarter-circle pattern nozzle
- U-12T: 12-foot one-third-circle pattern nozzle
- U-12H: 12-foot half-circle pattern nozzle
- U-12TT: 12-foot two-thirds-circle pattern nozzle
- U-12TQ: 12-foot three-quarter-circle pattern nozzle
- U-12F: 12-foot full-circle pattern nozzle
- U-15Q: 15-foot quarter-circle pattern nozzle
- U-15T: 15-foot one-third-circle pattern nozzle
- U-15H: 15-foot half-circle pattern nozzle
- U-15TT: 15-foot two-thirds-circle pattern nozzle
- U-15TQ: 15-foot three-quarter-circle pattern nozzle
- U-15F: 15-foot full-circle pattern nozzle

U-Series Nozzles



Rain Bird® U-Series Nozzles produce spray patterns from two orifices to form a continuous water stream. The result is that gaps in coverage are eliminated so the entire watering area is more uniformly covered*

* *Based on tests conducted at the Rain Bird Product Research Center. Tests conducted on Rain Bird and principal competitors' part-circle nozzles*

U-Series Nozzle with screen

How To Specify

1804 - U12H

Nozzle Series/Pattern
U12H: 12 Series U-Series nozzle with half circle pattern

Model
1804: 4" (10.2 cm) pop-up height

Water Saving — Water flowing from both orifices results in a lower scheduling coefficient. This efficient design conserves water, saves money and reduces waste.

U8 Series

10° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
U-8F	15	5	0.74	2.07	2.39
	20	6	0.86	2.01	2.32
	25	7	0.96	1.62	1.87
	30	8	1.05	1.58	1.83
U-8H	15	5	0.37	2.07	2.39
	20	6	0.42	2.01	2.32
	25	7	0.47	1.62	1.87
	30	8	0.52	1.58	1.83
U-8T	15	5	0.25	2.07	2.39
	20	6	0.29	2.01	2.32
	25	7	0.32	1.62	1.87
	30	8	0.35	1.58	1.83
U-8Q	15	5	0.18	2.07	2.39
	20	6	0.21	2.01	2.32
	25	7	0.24	1.62	1.87
	30	8	0.26	1.58	1.83

U8 Series METRIC

10° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
U-8F	1.0	1.7	0.16	2.8	52	60
	1.5	2.1	0.20	3.4	47	55
	2.0	2.4	0.23	3.9	41	48
	2.1	2.4	0.24	4.0	40	46
U-8H	1.0	1.7	0.08	1.4	52	60
	1.5	2.1	0.10	1.7	47	55
	2.0	2.4	0.12	1.9	41	48
	2.1	2.4	0.12	2.0	40	46
U-8T	1.0	1.7	0.05	0.9	52	60
	1.5	2.1	0.07	1.1	47	55
	2.0	2.4	0.08	1.3	41	48
	2.1	2.4	0.08	1.3	40	46
U-8Q	1.0	1.7	0.04	0.7	52	60
	1.5	2.1	0.05	0.8	47	55
	2.0	2.4	0.06	1.0	41	48
	2.1	2.4	0.06	1.0	40	46

U10 Series

12° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
U-10F	15	7	1.16	2.07	2.39
	20	8	1.34	2.01	2.32
	25	9	1.50	1.62	1.87
	30	10	1.64	1.58	1.83
U-10H	15	7	0.58	2.07	2.39
	20	8	0.67	2.01	2.32
	25	9	0.75	1.62	1.87
	30	10	0.82	1.58	1.83
U-10T	15	7	0.39	2.07	2.39
	20	8	0.45	2.01	2.32
	25	9	0.50	1.62	1.87
	30	10	0.55	1.58	1.83
U-10Q	15	7	0.29	2.07	2.39
	20	8	0.33	2.01	2.32
	25	9	0.37	1.62	1.87
	30	10	0.41	1.58	1.83

U10 Series METRIC

12° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
U-10F	1.0	2.1	0.26	4.4	52	60
	1.5	2.6	0.30	5.3	47	55
	2.0	3.0	0.34	6.1	41	48
	2.1	3.1	0.37	6.2	40	46
U-10H	1.0	2.1	0.13	2.2	52	60
	1.5	2.6	0.15	2.6	47	55
	2.0	3.0	0.17	3.1	41	48
	2.1	3.1	0.19	3.1	40	46
U-10T	1.0	2.1	0.09	1.5	52	60
	1.5	2.6	0.10	1.8	47	55
	2.0	3.0	0.11	2.0	41	48
	2.1	3.1	0.12	2.1	40	46
U-10Q	1.0	2.1	0.07	1.1	52	60
	1.5	2.6	0.08	1.3	47	55
	2.0	3.0	0.08	1.5	41	48
	2.1	3.1	0.09	1.6	40	46

Note: *All U-Series nozzles tested on 4" (10.2 cm) pop-ups*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

Radius refers to recommended product spacing. Actual radii along arc may vary

U12 Series					
23° Trajectory				■	▲
Nozzle	**Pressure psi**	**Radius ft.**	**Flow gpm**	**Precip In/h**	**Precip In/h**
U-12F	15	9	1.80	2.14	2.47
	20	10	2.10	2.02	2.34
	25	11	2.40	1.91	2.21
	30	12	2.60	1.74	2.01
U-12TQ	15	9	1.35	2.14	2.47
	20	10	1.58	2.02	2.34
	25	11	1.80	1.91	2.21
	30	12	1.95	1.74	2.01
U-12TT	15	9	1.20	2.14	2.47
	20	10	1.40	2.02	2.34
	25	11	1.60	1.91	2.21
	30	12	1.74	1.74	2.01
U-12H	15	9	0.90	2.14	2.47
	20	10	1.05	2.02	2.34
	25	11	1.20	1.91	2.21
	30	12	1.30	1.74	2.01
U-12T	15	9	0.60	2.14	2.47
	20	10	0.70	2.02	2.34
	25	11	0.80	1.91	2.21
	30	12	0.87	1.74	2.01
U-12Q	15	9	0.45	2.14	2.47
	20	10	0.53	2.02	2.34
	25	11	0.60	1.91	2.21
	30	12	0.65	1.74	2.01

U12 Series							METRIC
23° Trajectory						■	▲
Nozzle	**Pressure bar**	**Radius m**	**Flow m^3/h**	**Flow l/m**		**Precip mm/h**	**Precip mm/h**
U-12F	1.0	2.7	0.40	6.8		55	63
	1.5	3.2	0.48	8.3		47	54
	2.0	3.6	0.59	9.7		46	53
	2.1	3.7	0.60	9.8		44	51
U-12TQ	1.0	2.7	0.30	5.1		55	63
	1.5	3.2	0.36	6.3		47	54
	2.0	3.6	0.45	7.3		46	53
	2.1	3.7	0.45	7.4		44	51
U-12TT	1.0	2.7	0.26	4.5		55	63
	1.5	3.2	0.32	5.6		47	54
	2.0	3.6	0.40	6.5		46	53
	2.1	3.7	0.40	6.6		44	51
U-12H	1.0	2.7	0.20	3.4		55	63
	1.5	3.2	0.24	4.2		47	54
	2.0	3.6	0.30	4.8		46	53
	2.1	3.7	0.30	4.9		44	51
U-12T	1.0	2.7	0.13	2.3		55	63
	1.5	3.2	0.16	2.8		47	54
	2.0	3.6	0.20	3.2		46	53
	2.1	3.7	0.20	3.3		44	51
U-12Q	1.0	2.7	0.10	1.7		55	63
	1.5	3.2	0.12	2.1		47	54
	2.0	3.6	0.15	2.4		46	53
	2.1	3.7	0.15	2.5		44	51

Note: *All U-Series nozzles tested on 4" (10.2 cm) pop-ups*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

Radius refers to recommended product spacing. Actual radii along arc may vary

U-Series Nozzle

U15 Series

23° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
U-15F	15	11	2.60	2.07	2.39
	20	12	3.00	2.01	2.32
	25	14	3.30	1.62	1.87
	30	15	3.70	1.58	1.83
U-15TQ	15	11	1.95	2.07	2.39
	20	12	2.25	2.01	2.32
	25	14	2.48	1.62	1.87
	30	15	2.78	1.58	1.83
U-15TT	15	11	1.74	2.07	2.39
	20	12	2.01	2.01	2.32
	25	14	2.21	1.62	1.87
	30	15	2.48	1.58	1.83
U-15H	15	11	1.30	2.07	2.39
	20	12	1.50	2.01	2.32
	25	14	1.65	1.62	1.87
	30	15	1.85	1.58	1.83
U-15T	15	11	0.87	2.07	2.39
	20	12	1.00	2.01	2.32
	25	14	1.10	1.62	1.87
	30	15	1.23	1.58	1.83
U-15Q	15	11	0.65	2.07	2.39
	20	12	0.75	2.01	2.32
	25	14	0.82	1.62	1.87
	30	15	0.92	1.58	1.83

U15 Series METRIC

23° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
U-15F	1.0	3.4	0.60	9.8	52	60
	1.5	3.9	0.72	11.8	47	55
	2.0	4.5	0.84	13.7	41	48
	2.1	4.6	0.84	14.0	40	46
U-15TQ	1.0	3.4	0.45	7.4	52	60
	1.5	3.9	0.54	8.8	47	55
	2.0	4.5	0.63	10.3	41	48
	2.1	4.6	0.63	10.5	40	46
U-15TT	1.0	3.4	0.40	6.6	52	60
	1.5	3.9	0.48	7.9	47	55
	2.0	4.5	0.55	9.2	41	48
	2.1	4.6	0.56	9.4	40	46
U-15H	1.0	3.4	0.30	4.9	52	60
	1.5	3.9	0.36	5.9	47	55
	2.0	4.5	0.42	6.9	41	48
	2.1	4.6	0.42	7.0	40	46
U-15T	1.0	3.4	0.20	3.3	52	60
	1.5	3.9	0.24	3.9	47	55
	2.0	4.5	0.28	4.6	41	48
	2.1	4.6	0.28	4.7	40	46
U-15Q	1.0	3.4	0.15	2.5	52	60
	1.5	3.9	0.18	2.9	47	55
	2.0	4.5	0.21	3.4	41	48
	2.1	4.6	0.21	3.5	40	46

Note: *All U-Series nozzles tested on 4" (10.2 cm) pop-ups*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

Radius refers to recommended product spacing. Actual radii along arc may vary

U-Series nozzles offer better, more uniform water distribution. Water flowing from both orifices combines to form a continuous water stream. Eliminates gaps for more uniform coverage throughout the entire watering area

HE-VAN Series Nozzles*

NEW

High-Efficiency Variable Arc Spray Nozzles

- Easy arc adjustment from 0° to 360° with a simple twist of the center collar to increase or decrease arc setting
- ExactEdge™ takes the guesswork out of arc adjustment. As you turn the nozzle to the desired arc setting, you'll feel it lock into place for a clean, consistent edge every time
- Patent pending Flow Control Technology provides superior close-in watering and uniform coverage across the entire pattern

HE-VAN Series Nozzle

Features

- Thicker streams and large water droplets for greater wind resistance
- Matched precipitation rates with Rain Bird® MPR and U-Series Nozzles
- A strong top deflector to minimize nozzle damage due to normal wear and tear
- No special tools required
- Stainless steel adjustment screw to adjust flow and radius, up to a 25% reduction in radius
- Shipped with blue filter screens (0.02 x 0.02) to maintain precise radius adjustment and prevent clogging
- Fits on all Rain Bird® 1800® Series Spray Heads, UNI-Spray™ Series Spray Heads and Rain Bird Shrub Adapters

Rain Bird® HE-VAN Efficiency Ratings[1]

- Rain Bird® HE-VAN Nozzles deliver an average DU_{LQ} of 70%, more than a 40% improvement over typical variable arc spray nozzles
- Rain Bird® HE-VAN Nozzles deliver a SC ≤ 1.6, which is 35% lower than the typical variable arc spray nozzle

Operating Range

- Radius: [2]
  - HE-VAN-12: 9 to 12 feet (2,7 to 3,7 m)
  - HE-VAN-15: 11 to 15 feet (3,4 to 4,6 m)
- Pressure: 15 to 30 psi (1.0 to 2.1 bar)
- Optimum pressure: 30 psi (2.1 bar)[3]

Models

- HE-VAN-12
- HE-VAN-15

** Currently only available in limited markets*

[1] Distribution Uniformity (DU_{LQ}): DU in irrigation is a measure of how uniformly water is applied to the area being watered. DU_{LQ} is calculated by taking the volume in the lowest quarter of catch can measurements and dividing it by the average volume of all catch can measurements. Scheduling Coefficient (SC): SC is a measure of how long a zone must be run in order to provide adequate water to the driest spot.

[2] These ranges are based on proper pressure at nozzle

[3] Rain Bird recommends using 1800 PRS Spray Bodies to maintain optimum nozzle performance in higher pressure situations

How To Specify

1804 – PRS – HE-VAN-15

Size
HE-VAN-15: High Efficiency VAN with variable arc

Optional Feature
PRS: In-stem Pressure Regulation

Model
1804: 4" (10.2 cm) pop-up height

12 Series HE-VAN

23° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
360° Arc	15	9	1.67	1.99	2.30
	20	10	1.93	1.86	2.15
	25	11	2.16	1.72	1.99
	30	12	2.37	1.58	1.83
270° Arc	15	9	1.25	1.99	2.30
	20	10	1.45	1.86	2.15
	25	11	1.62	1.72	1.99
	30	12	1.77	1.58	1.83
180° Arc	15	9	0.84	1.99	2.30
	20	10	0.97	1.86	2.15
	25	11	1.08	1.72	1.99
	30	12	1.18	1.58	1.83
90° Arc	15	9	0.42	1.99	2.30
	20	10	0.48	1.86	2.15
	25	11	0.54	1.72	1.99
	30	12	0.59	1.58	1.83

12 Series HE-VAN METRIC

23° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
360° Arc	1.0	2.7	0.38	6.33	50.5	58.3
	1.4	3.0	0.44	7.31	47.3	54.6
	1.7	3.4	0.49	8.18	43.7	50.4
	2.1	3.7	0.54	8.96	40.2	46.4
270° Arc	1.0	2.7	0.28	4.75	50.5	58.3
	1.4	3.0	0.33	5.48	47.3	54.6
	1.7	3.4	0.37	6.16	43.7	50.4
	2.1	3.7	0.40	6.72	40.2	46.4
180° Arc	1.0	2.7	0.19	3.17	50.5	58.3
	1.4	3.0	0.22	3.66	47.3	54.6
	1.7	3.4	0.25	4.09	43.7	50.4
	2.1	3.7	0.27	4.48	40.2	46.4
90° Arc	1.0	2.7	0.09	1.58	50.5	58.3
	1.4	3.0	0.11	1.83	47.3	54.6
	1.7	3.4	0.12	2.04	43.7	50.4
	2.1	3.7	0.13	2.24	40.2	46.4

15 Series HE-VAN

25° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
360° Arc	15	11	2.62	2.08	2.40
	20	12	3.02	2.02	2.33
	25	14	3.38	1.66	1.92
	30	15	3.70	1.58	1.83
270° Arc	15	11	1.96	2.08	2.40
	20	12	2.27	2.02	2.33
	25	14	2.53	1.66	1.92
	30	15	2.78	1.58	1.83
180° Arc	15	11	1.31	2.08	2.40
	20	12	1.51	2.02	2.33
	25	14	1.69	1.66	1.92
	30	15	1.85	1.58	1.83
90° Arc	15	11	0.65	2.08	2.40
	20	12	0.76	2.02	2.33
	25	14	0.84	1.66	1.92
	30	15	0.93	1.58	1.83

15 Series HE-VAN METRIC

25° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
360° Arc	1.0	3.4	0.59	9.91	52.9	61.1
	1.4	3.7	0.69	11.44	51.3	59.3
	1.7	4.3	0.77	12.79	42.2	48.7
	2.1	4.6	0.84	14.01	40.2	46.5
270° Arc	1.0	3.4	0.45	7.43	52.9	61.1
	1.4	3.7	0.51	8.58	51.3	59.3
	1.7	4.3	0.58	9.59	42.2	48.7
	2.1	4.6	0.63	10.51	40.2	46.5
180° Arc	1.0	3.4	0.30	4.95	52.9	61.1
	1.4	3.7	0.34	5.72	51.3	59.3
	1.7	4.3	0.38	6.39	42.2	48.7
	2.1	4.6	0.42	7.00	40.2	46.5
90° Arc	1.0	3.4	0.15	2.48	52.9	61.1
	1.4	3.7	0.17	2.86	51.3	59.3
	1.7	4.3	0.19	3.20	42.2	48.7
	2.1	4.6	0.21	3.50	40.2	46.5

Note: *Turning the radius reduction screw may be required to achieve catalog radius and flow when the arc is set at less than maximum arc*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

VAN Series Nozzles

Variable Arc Nozzles

- Easy arc adjustment from 0° to 360° for 10, 12, 15 and 18-VAN; 0° to 330° for 4, 6 and 8-VAN
- Simple twist of the center collar increases or decreases arc setting
- 12, 15, and 18-VAN have matched precipitation rates with Rain Bird MPR Nozzles

Features

- Captured screw slot prevents screwdriver strippage
- No special tools required
- Stainless steel adjustment screw to adjust flow and radius
- Tactile left edge indicator
- Ideal for watering odd-shaped areas
- Shipped with blue filter screen (0.02" x 0.02") to maintain precise radius adjustment and prevent clogging

Operating Range

- Radius: *
  4-VAN: 3 to 4 feet (0.9 to 1.2 m)
  6-VAN: 4 to 6 feet (1.2 to 1.8 m)
  8-VAN: 6 to 8 feet (1.8 to 2.4 m)
  10-VAN: 8 to 10 feet (2.4 to 3.0 m)
  12-VAN: 10 to 12 feet (3.0 to 3.7 m)
  15-VAN: 12 to 15 feet (3.7 to 4.6 m)
  18-VAN: 14 to 18 feet (4.3 to 5.5 m)
- Pressure: 15 to 30 psi (1.0 to 2.1 bar)
- Optimum pressure: 30 psi (2.1 bar)**

** These ranges are based on proper pressure at nozzle*
*** Rain Bird recommends using 1800 PRS Spray Bodies to maintain optimum nozzle performance in higher pressure situations*

Models

- 4-VAN
- 6-VAN
- 8-VAN
- 10-VAN
- 12-VAN
- 15-VAN
- 18-VAN

VAN Series Nozzle

Easy to Adjust

4 Series VAN

0° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
330° Arc	15	3	0.62	7.23	8.35
	20	3	0.70	8.17	9.43
	25	4	0.80	5.25	6.06
	30	4	0.88	5.78	6.67
270° Arc	15	3	0.52	7.42	8.57
	20	3	0.58	8.27	9.55
	25	4	0.66	5.29	6.11
	30	4	0.73	5.86	6.77
180° Arc	15	3	0.32	6.84	7.90
	20	3	0.37	7.91	9.13
	25	4	0.41	4.93	5.69
	30	4	0.45	5.41	6.25
90° Arc	15	3	0.21	8.98	10.37
	20	3	0.24	10.27	11.86
	25	4	0.26	6.26	7.23
	30	4	0.29	6.98	8.06

4 Series VAN **METRIC**

0° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
330° Arc	1.0	0.9	0.14	2.3	189	218
	1.5	1.0	0.17	2.8	183	215
	2.0	1.2	0.20	3.3	152	176
	2.1	1.2	0.20	3.3	152	176
270° Arc	1.0	0.9	0.12	2.0	198	229
	1.5	1.0	0.14	2.3	187	216
	2.0	1.2	0.16	2.7	148	171
	2.1	1.2	0.17	2.8	157	181
180° Arc	1.0	0.9	0.07	1.2	173	200
	1.5	1.0	0.09	1.5	180	208
	2.0	1.2	0.10	1.7	139	161
	2.1	1.2	0.10	1.7	139	161
90° Arc	1.0	0.9	0.05	0.8	247	285
	1.5	1.0	0.06	0.9	240	277
	2.0	1.2	0.06	1.1	167	193
	2.1	1.2	0.07	1.1	194	224

Note: *Turning the radius reduction screw may be required to achieve catalog radius and flow when the arc is set at less than maximum arc*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

6 Series VAN

0° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
330° Arc	15	4	0.85	5.58	6.44
	20	5	0.96	4.03	4.65
	25	5	1.09	4.58	5.29
	30	6	1.20	3.50	4.04
270° Arc	15	4	0.79	6.34	7.32
	20	5	0.88	4.52	5.22
	25	5	1.00	5.13	5.92
	30	6	1.10	3.92	4.53
180° Arc	15	4	0.42	5.05	5.83
	20	5	0.49	3.77	4.35
	25	5	0.55	4.24	4.90
	30	6	0.60	3.21	3.71
90° Arc	15	4	0.26	6.26	7.23
	20	5	0.30	4.62	5.33
	25	5	0.34	5.24	6.05
	30	6	0.37	3.96	4.57

6 Series VAN METRIC

0° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
330° Arc	1.0	1.2	0.19	3.2	144	166
	1.5	1.5	0.23	3.8	112	129
	2.0	1.8	0.27	4.5	91	105
	2.1	1.8	0.27	4.5	91	105
270° Arc	1.0	1.2	0.18	3.0	167	193
	1.5	1.5	0.21	3.5	124	143
	2.0	1.8	0.24	4.1	99	114
	2.1	1.8	0.25	4.2	103	119
180° Arc	1.0	1.2	0.10	1.6	139	161
	1.5	1.5	0.11	1.9	98	113
	2.0	1.8	0.13	2.2	80	92
	2.1	1.8	0.14	2.3	86	99
90° Arc	1.0	1.2	0.06	1.0	167	193
	1.5	1.5	0.07	1.2	124	143
	2.0	1.8	0.08	1.4	99	114
	2.1	1.8	0.08	1.4	99	114

8 Series VAN

5° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
330° Arc	15	6	1.21	3.53	4.07
	20	7	1.36	2.91	3.36
	25	7	1.55	3.32	3.83
	30	8	1.70	2.79	3.22
270° Arc	15	6	1.11	3.95	4.55
	20	7	1.24	3.24	3.74
	25	7	1.41	3.69	4.25
	30	8	1.55	3.10	3.58
180° Arc	15	6	0.84	4.49	5.18
	20	7	0.97	3.81	4.40
	25	7	1.09	4.28	4.94
	30	8	1.19	3.58	4.13
90° Arc	15	6	0.51	5.46	6.29
	20	7	0.59	4.64	5.35
	25	7	0.66	5.19	5.98
	30	8	0.72	4.33	5.00

8 Series VAN METRIC

5° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
330° Arc	1.0	1.8	0.27	4.6	91	105
	1.5	2.1	0.32	5.4	79	91
	2.0	2.3	0.38	6.3	78	90
	2.1	2.4	0.39	6.4	74	86
270° Arc	1.0	1.8	0.25	4.2	103	119
	1.5	2.1	0.30	4.9	91	105
	2.0	2.3	0.34	5.8	86	99
	2.1	2.4	0.35	5.9	81	94
180° Arc	1.0	1.8	0.19	3.2	117	135
	1.5	2.1	0.23	3.8	104	120
	2.0	2.3	0.26	4.4	98	113
	2.1	2.4	0.27	4.5	94	109
90° Arc	1.0	1.8	0.12	1.9	148	171
	1.5	2.1	0.14	2.3	127	147
	2.0	2.3	0.16	2.7	121	140
	2.1	2.4	0.16	2.7	111	128

Note: *Turning the radius reduction screw may be required to achieve catalog radius and flow when the arc is set at less than maximum arc*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

10 Series VAN

10° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
360° Arc	15	7	1.93	3.80	4.39
	20	8	2.32	3.50	4.04
	25	9	2.52	3.00	3.46
	30	10	2.60	2.50	2.89
270° Arc	15	7	1.45	3.80	4.39
	20	8	1.75	3.50	4.04
	25	9	1.89	3.00	3.46
	30	10	2.10	2.70	3.12
180° Arc	15	7	0.97	3.80	4.39
	20	8	1.20	3.50	4.04
	25	9	1.26	3.00	3.46
	30	10	1.45	2.80	3.23
90° Arc	15	7	0.48	3.80	4.39
	20	8	0.58	3.50	4.04
	25	9	0.63	3.00	3.46
	30	10	0.75	2.90	3.35

10 Series VAN METRIC

10° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
360° Arc	1.0	2.1	0.44	7.3	96	111
	1.5	2.4	0.53	9.0	89	103
	2.0	2.7	0.57	9.8	76	88
	2.1	3.1	0.59	9.8	63	73
270° Arc	1.0	2.1	0.33	5.5	96	111
	1.5	2.4	0.4	6.8	89	103
	2.0	2.7	0.43	7.8	76	88
	2.1	3.1	0.48	7.9	68	79
180° Arc	1.0	2.1	0.22	3.7	96	111
	1.5	2.4	0.27	4.6	89	103
	2.0	2.7	0.29	5.3	76	88
	2.1	3.1	0.33	5.5	71	82
90° Arc	1.0	2.1	0.11	1.8	96	111
	1.5	2.4	0.13	2.3	89	103
	2.0	2.7	0.14	2.7	76	88
	2.1	3.1	0.17	2.8	73	85

12 Series VAN

15° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
360° Arc	15	9	1.56	1.86	2.14
	20	10	1.86	1.79	2.06
	25	11	2.12	1.68	1.95
	30	12	2.36	1.58	1.82
270° Arc	15	9	1.17	1.86	2.14
	20	10	1.39	1.79	2.06
	25	11	1.59	1.68	1.94
	30	12	1.77	1.58	1.82
180° Arc	15	9	0.78	1.86	2.14
	20	10	0.93	1.79	2.06
	25	11	1.06	1.68	1.95
	30	12	1.18	1.58	1.82
90° Arc	15	9	0.39	1.86	2.14
	20	10	0.46	1.79	2.06
	25	11	0.53	1.68	1.95
	30	12	0.59	1.58	1.82

12 Series VAN METRIC

15° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
360° Arc	1.0	2.7	0.35	5.80	48	55
	1.5	3.2	0.44	7.37	43	50
	2.0	3.6	0.52	8.75	41	47
	2.1	3.7	0.54	9.02	40	46
270° Arc	1.0	2.7	0.26	4.35	48	55
	1.5	3.2	0.33	5.53	43	50
	2.0	3.6	0.39	6.56	41	47
	2.1	3.7	0.41	6.76	40	46
180° Arc	1.0	2.7	0.17	2.90	48	55
	1.5	3.2	0.22	3.69	43	50
	2.0	3.6	0.26	4.37	41	47
	2.1	3.7	0.27	4.51	40	46
90° Arc	1.0	2.7	0.09	1.45	48	55
	1.5	3.2	0.11	1.84	43	50
	2.0	3.6	0.13	2.19	41	47
	2.1	3.7	0.14	2.25	40	46

Note: *Turning the radius reduction screw may be required to achieve catalog radius and flow when the arc is set at less than maximum arc*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

15 Series VAN

23° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
360° Arc	15	11	2.60	2.07	2.39
	20	12	3.00	2.01	2.32
	25	14	3.30	1.62	1.87
	30	15	3.70	1.58	1.83
270° Arc	15	11	1.95	2.07	2.39
	20	12	2.25	2.01	2.32
	25	14	2.48	1.62	1.87
	30	15	2.78	1.58	1.83
180° Arc	15	11	1.30	2.07	2.39
	20	12	1.50	2.01	2.32
	25	14	1.65	1.62	1.87
	30	15	1.85	1.58	1.83
90° Arc	15	11	0.65	2.07	2.39
	20	12	0.75	2.01	2.32
	25	14	0.82	1.62	1.87
	30	15	0.92	1.58	1.83

15 Series VAN — METRIC

23° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
360° Arc	1.0	3.4	0.60	9.8	52	60
	1.5	3.9	0.72	11.8	47	55
	2.0	4.5	0.84	13.7	41	48
	2.1	4.6	0.84	14.0	40	46
270° Arc	1.0	3.4	0.45	7.4	52	60
	1.5	3.9	0.54	8.8	47	55
	2.0	4.5	0.63	10.3	41	48
	2.1	4.6	0.63	10.5	40	46
180° Arc	1.0	3.4	0.30	4.9	52	60
	1.5	3.9	0.36	5.9	47	55
	2.0	4.5	0.42	6.9	41	48
	2.1	4.6	0.42	7.0	40	46
90° Arc	1.0	3.4	0.15	2.5	52	60
	1.5	3.9	0.18	2.9	47	55
	2.0	4.5	0.21	3.4	41	48
	2.1	4.6	0.21	3.5	40	46

18 Series VAN

26° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
360° Arc	15	14	4.21	2.07	2.39
	20	15	4.70	2.01	2.32
	25	17	4.86	1.62	1.87
	30	18	5.32	1.58	1.83
270° Arc	15	14	3.16	2.07	2.39
	20	15	3.52	2.01	2.32
	25	17	3.65	1.62	1.87
	30	18	3.99	1.58	1.83
180° Arc	15	14	2.11	2.07	2.39
	20	15	2.35	2.01	2.32
	25	17	2.43	1.62	1.87
	30	18	2.66	1.58	1.83
90° Arc	15	14	1.05	2.07	2.39
	20	15	1.17	2.01	2.32
	25	17	1.22	1.62	1.87
	30	18	1.33	1.58	1.83

18 Series VAN — METRIC

26° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
360° Arc	1.0	4.3	0.96	15.9	52	60
	1.5	4.8	1.07	18.0	47	55
	2.0	5.4	1.20	19.8	41	48
	2.1	5.5	1.21	20.1	40	46
270° Arc	1.0	4.3	0.72	12.0	52	60
	1.5	4.8	0.80	13.5	47	55
	2.0	5.4	0.90	14.8	41	48
	2.1	5.5	0.91	15.1	40	46
180° Arc	1.0	4.3	0.48	8.0	52	60
	1.5	4.8	0.54	9.0	47	55
	2.0	5.4	0.60	9.9	41	48
	2.1	5.5	0.61	10.1	40	46
90° Arc	1.0	4.3	0.24	4.0	52	60
	1.5	4.8	0.27	4.5	47	55
	2.0	5.4	0.30	5.0	41	48
	2.1	5.5	0.30	5.0	40	46

Note: *Turning the radius reduction screw may be required to achieve catalog radius and flow when the arc is set at less than maximum arc*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

Plastic MPR Nozzles

Matched Precipitation Rate Nozzles

- Matched precipitation rates across sets and across patterns in 5 Series, 8 Series, 10 Series, 12 Series, and 15 Series for even water distribution and design flexibility
- 5 Series nozzles meet small-area shrub or turf requirements
- 8 Series nozzles now have a lower water flow, which allows more spray heads per zone

MPR Nozzle and Screen

Features

- 1800® Series white filter (0.035" x 0.035") screens (shipped with nozzles) maintain precise radius adjustment and prevent clogging (5 and 8 Series nozzles are shipped with blue fine-mesh (0.02" x 0.02") filter screens)
- Stainless steel adjustment screw to adjust flow and radius

Operating Range

- Spacing: 3 to 20 feet (0.9 to 4.6 m)
- Pressure: 15 to 30 psi (1 to 2.1 bar)
- Optimum pressure: 30 psi (2.1 bar)*

** Rain Bird recommends using 1800 PRS Spray Bodies to maintain optimum nozzle performance in higher pressure situations*

Models

- 5 Series
- 5 Series: Bubbler Nozzles
- 8 Series
- 8 FLT Series: Designed for lower trajectory applications, such as windy areas
- 10 Series
- 12 Series
- 15 Series
- 15 Strip Series

Rain Bird® MPR Nozzles, The Industry Standard

Re-Sealable Nozzle Packaging

Features

- Convenient re-sealable bags
- Tamper proof seal
- Hanging holes for easy display

Re-Sealable Nozzle Packaging

5 Series MPR

5° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
5F	15	3	0.29	2.07	2.39
	20	4	0.33	2.01	2.32
	25	4	0.37	1.62	1.87
	30	5	0.41	1.58	1.83
5H	15	3	0.14	2.07	2.39
	20	4	0.16	2.01	2.32
	25	4	0.18	1.62	1.87
	30	5	0.20	1.58	1.83
5Q	15	3	0.07	2.07	2.39
	20	4	0.08	2.01	2.32
	25	4	0.09	1.62	1.87
	30	5	0.10	1.58	1.83

5 Series MPR METRIC

5° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
5F	1.0	1.1	0.06	1.1	52	60
	1.5	1.3	0.08	1.4	47	55
	2.0	1.5	0.09	1.6	41	48
	2.1	1.5	0.09	1.6	40	46
5H	1.0	1.1	0.03	0.5	52	60
	1.5	1.3	0.04	0.7	47	55
	2.0	1.5	0.04	0.7	41	48
	2.1	1.5	0.05	0.9	40	46
5Q	1.0	1.1	0.02	0.4	52	60
	1.5	1.3	0.02	0.4	47	55
	2.0	1.5	0.02	0.4	41	48
	2.1	1.5	0.02	0.4	40	46

8 Series MPR

10° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
8F	15	5	0.74	1.11	1.29
	20	6	0.86	1.29	1.49
	25	7	0.96	1.44	1.67
	30	8	1.05	1.58	1.82
8H	15	5	0.37	1.11	1.29
	20	6	0.42	1.26	1.46
	25	7	0.47	1.41	1.63
	30	8	0.52	1.56	1.81
8T	15	5	0.25	1.13	1.30
	20	6	0.29	1.31	1.51
	25	7	0.32	1.44	1.67
	30	8	0.35	1.58	1.82
8Q	15	5	0.18	1.08	1.25
	20	6	0.21	1.26	1.46
	25	7	0.24	1.44	1.67
	30	8	0.26	1.56	1.81

Note: *All MPR nozzles tested on 4" (10.2 cm) pop-ups*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

8 Series MPR METRIC

10° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
8F	1.0	1.7	0.16	2.8	28.28	32.66
	1.5	2.1	0.20	3.4	32.87	37.95
	2.0	2.4	0.23	3.9	36.69	42.37
	2.1	2.4	0.24	4.0	40.13	46.34
8H	1.0	1.7	0.08	1.4	28.28	32.66
	1.5	2.1	0.10	1.7	32.10	37.07
	2.0	2.4	0.12	1.9	35.93	41.48
	2.1	2.4	0.12	2.0	39.75	45.90
8T	1.0	1.7	0.05	1.0	28.66	33.10
	1.5	2.1	0.07	1.1	33.25	38.40
	2.0	2.4	0.08	1.3	36.69	42.37
	2.1	2.4	0.08	1.3	40.13	46.34
8Q	1.0	1.7	0.04	0.7	27.52	31.78
	1.5	2.1	0.05	0.8	32.10	37.07
	2.0	2.4	0.06	1.0	36.69	42.37
	2.1	2.4	0.06	1.0	39.75	45.90

Note: *Specify spray body and nozzles separately.*

Note: *Radius reduction over 25% of the normal throw of the nozzle is not recommended*

10 Series MPR

15° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
10F	15	7	1.16	2.28	2.63
	20	8	1.30	1.96	2.26
	25	9	1.44	1.71	1.98
	30	10	1.58	1.52	1.75
10H	15	7	0.58	2.28	2.63
	20	8	0.65	1.96	2.26
	25	9	0.72	1.71	1.98
	30	10	0.79	1.52	1.75
10T	15	7	0.39	2.28	2.63
	20	8	0.43	1.96	2.26
	25	9	0.48	1.71	1.98
	30	10	0.53	1.52	1.75
10Q	15	7	0.29	2.28	2.63
	20	8	0.33	1.96	2.26
	25	9	0.36	1.71	1.98
	30	10	0.39	1.52	1.75

10 Series MPR METRIC

15° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
10F	1.0	2.1	0.26	4.2	58	67
	1.5	2.4	0.29	4.8	50	58
	2.0	3.0	0.35	6.0	39	45
	2.1	3.1	0.36	6.0	37	43
10H	1.0	2.1	0.13	2.4	58	67
	1.5	2.4	0.14	2.4	50	58
	2.0	3.0	0.18	3.0	39	45
	2.1	3.1	0.18	3.0	37	43
10T	1.0	2.1	0.09	1.2	58	67
	1.5	2.4	0.10	1.8	50	58
	2.0	3.0	0.12	1.8	39	45
	2.1	3.1	0.12	1.8	37	43
10Q	1.0	2.1	0.06	1.2	58	67
	1.5	2.4	0.07	1.2	50	58
	2.0	3.0	0.09	1.2	39	45
	2.1	3.1	0.09	1.2	37	43

12 Series MPR

30° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
12F	15	9	1.80	2.14	2.47
	20	10	2.10	2.02	2.34
	25	11	2.40	1.91	2.21
	30	12	2.60	1.74	2.01
12TQ	15	9	1.35	2.14	2.47
	20	10	1.58	2.02	2.34
	25	11	1.80	1.91	2.21
	30	12	1.95	1.74	2.01
12H	15	9	0.90	2.14	2.47
	20	10	1.05	2.02	2.34
	25	11	1.20	1.91	2.21
	30	12	1.30	1.74	2.01
12T	15	9	0.60	2.14	2.47
	20	10	0.70	2.02	2.34
	25	11	0.80	1.91	2.21
	30	12	0.87	1.74	2.01
12Q	15	9	0.45	2.14	2.47
	20	10	0.53	2.02	2.34
	25	11	0.60	1.91	2.21
	30	12	0.65	1.74	2.01

12 Series MPR METRIC

30° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
12F	1.0	2.7	0.40	6.8	55	63
	1.5	3.2	0.48	8.3	47	54
	2.0	3.6	0.59	9.7	46	53
	2.1	3.7	0.60	9.8	44	51
12TQ	1.0	2.7	0.30	5.1	55	63
	1.5	3.2	0.36	6.3	47	54
	2.0	3.6	0.45	7.3	46	53
	2.1	3.7	0.45	7.4	44	51
12H	1.0	2.7	0.20	3.4	55	63
	1.5	3.2	0.24	4.2	47	54
	2.0	3.6	0.30	4.9	46	53
	2.1	3.7	0.30	4.9	44	51
12T	1.0	2.7	0.13	2.3	55	63
	1.5	3.2	0.16	2.8	47	54
	2.0	3.6	0.20	3.2	46	53
	2.1	3.7	0.20	3.3	44	51
12Q	1.0	2.7	0.10	1.7	55	63
	1.5	3.2	0.12	2.1	47	54
	2.0	3.6	0.15	2.4	46	53
	2.1	3.7	0.15	2.5	44	51

Note: *All MPR nozzles tested on 4" (10.2 cm) pop-ups*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

15 Series MPR

30° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
15F	15	11	2.60	2.07	2.39
	20	12	3.00	2.01	2.32
	25	14	3.30	1.62	1.87
	30	15	3.70	1.58	1.83
15TQ	15	11	1.95	2.07	2.39
	20	12	2.25	2.01	2.32
	25	14	2.48	1.62	1.87
	30	15	2.78	1.58	1.83
15H	15	11	1.30	2.07	2.39
	20	12	1.50	2.01	2.32
	25	14	1.65	1.62	1.87
	30	15	1.85	1.58	1.83
15T	15	11	0.87	2.07	2.39
	20	12	1.00	2.01	2.32
	25	14	1.10	1.62	1.87
	30	15	1.23	1.58	1.83
15Q	15	11	0.65	2.07	2.39
	20	12	0.75	2.01	2.32
	25	14	0.82	1.62	1.87
	30	15	0.92	1.58	1.83

Note: *All MPR nozzles tested on 4" (10.2 cm) pop-ups*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

15 Series MPR — METRIC

30° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
15F	1.0	3.4	0.60	9.8	52	60
	1.5	3.9	0.72	11.8	47	55
	2.0	4.5	0.84	13.7	41	48
	2.1	4.6	0.84	14.0	40	46
15TQ	1.0	3.4	0.45	7.4	52	60
	1.5	3.9	0.54	8.8	47	55
	2.0	4.5	0.63	10.3	41	48
	2.1	4.6	0.63	10.5	40	46
15H	1.0	3.4	0.30	4.9	52	60
	1.5	3.9	0.36	5.9	47	55
	2.0	4.5	0.42	6.8	41	48
	2.1	4.6	0.42	7.0	40	46
15T	1.0	3.4	0.20	3.3	52	60
	1.5	3.9	0.24	3.9	47	55
	2.0	4.5	0.28	4.6	41	48
	2.1	4.6	0.28	4.7	40	46
15Q	1.0	3.4	0.15	2.5	52	60
	1.5	3.9	0.18	2.9	47	55
	2.0	4.5	0.21	3.4	41	48
	2.1	4.6	0.21	3.5	40	46

Note: *Specify spray body and nozzles separately.*

Note: *Radius reduction over 25% of the normal throw of the nozzle is not recommended*

5 Series MPR Stream Bubbler Nozzles

0° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm
5F-B	15	5	1.50
	20	5	1.50
	25	5	1.50
	30	5	1.50
5H-B	15	5	1.00
	20	5	1.00
	25	5	1.00
	30	5	1.00
5Q-B	15	5	0.50
	20	5	0.50
	25	5	0.50
	30	5	0.50
5CST-B	15	5	0.50
	20	5	0.50
	25	5	0.50
	30	5	0.50

Note: *Indicates adjusted radius at psi shown*

Note: *Flow at adjusted radius of 5 feet (1.5 m)*

5 Series MPR Stream Bubbler Nozzles — METRIC

0° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m
5F-B	1.0	1.5	0.35	5.7
	1.5	1.5	0.35	5.7
	2.0	1.5	0.35	5.7
	2.1	1.5	0.35	5.7
5H-B	1.0	1.5	0.23	3.8
	1.5	1.5	0.23	3.8
	2.0	1.5	0.23	3.8
	2.1	1.5	0.23	3.8
5Q-B	1.0	1.5	0.12	1.9
	1.5	1.5	0.12	1.9
	2.0	1.5	0.12	1.9
	2.1	1.5	0.12	1.9
5CST-B	1.0	1.5	0.12	1.9
	1.5	1.5	0.12	1.9
	2.0	1.5	0.12	1.9
	2.1	1.5	0.12	1.9

15 Strip Series

30° Trajectory

Nozzle	Pressure psi	W x L ft.	Flow gpm
15EST	15	4 x 13	0.45
	20	4 x 14	0.50
	25	4 x 14	0.56
	30	4 x 15	0.61
15CST	15	4 x 26	0.89
	20	4 x28	1.00
	25	4x 28	1.11
	30	4 x 30	1.21
15RCS	15	3 x 11	0.35
	20	3 x 12	0.40
	25	4 x 14	0.45
	30	4 x 15	0.49
15LCS	15	3 x 11	0.35
	20	3 x 12	0.40
	25	4 x 14	0.45
	30	4 x 15	0.49
15SST	15	4 x 26	0.89
	20	4 x 28	1.00
	25	4 x 28	1.11
	30	4 x 30	1.21
9SST	15	9 x 15	1.34
	20	9 x 16	1.47
	25	9 x 18	1.60
	30	9 x 18	1.73

W *= Width of coverage pattern* ***L*** *= Length of coverage pattern*

Note: *Specify spray body and nozzles separately.*

Note: *Radius reduction over 25% of the normal throw of the nozzle is not recommended*

15 Strip Series METRIC

30° Trajectory

Nozzle	Pressure bar	W x L m	Flow m^3/h	Flow l/m
15EST	1.0	1.2 x 4.0	0.10	1.7
	1.5	1.2 x 4.3	0.11	2.0
	2.0	1.2 x 4.3	0.13	2.3
	2.1	1.2 x 4.6	0.14	2.3
15CST	1.0	1.2 x 7.9	0.20	3.4
	1.5	1.2 x 8.5	0.23	4.0
	2.0	1.2 x 8.5	0.25	4.5
	2.1	1.2 x 9.2	0.27	4.6
15RCS	1.0	0.8 x 3.2	0.08	1.3
	1.5	1.0 x 3.9	0.09	1.6
	2.0	1.2 x 4.5	0.11	1.8
	2.1	1.2 x 4.6	0.11	1.9
15LCS	1.0	0.8 x 3.2	0.08	1.3
	1.5	1.0 x 3.9	0.09	1.6
	2.0	1.2 x 4.5	0.11	1.8
	2.1	1.2 x 4.6	0.11	1.9
15SST	1.0	1.2 x 7.9	0.20	3.4
	1.5	1.2 x 8.5	0.23	4.0
	2.0	1.2 x 8.5	0.25	4.5
	2.1	1.2 x 9.2	0.27	4.6
9SST	1.0	2.7 x 4.6	0.30	5.1
	1.5	2.7 x 4.9	0.33	5.8
	2.0	2.7 x 5.5	0.36	6.5
	2.1	2.7 x 5.5	0.39	6.5

Performance data taken in zero wind conditions

8 FLT Series MPR

5° Trajectory

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
8H-FLT	15	6	0.56	3.36	3.88
	20	7	0.65	2.91	3.36
	25	7	0.72	2.60	3.01
	30	8	0.79	2.38	2.75
8Q-FLT	15	6	0.28	3.32	3.83
	20	7	0.32	2.87	3.32
	25	7	0.36	2.57	2.97
	30	8	0.39	2.35	2.71

Note: *All MPR nozzles tested on 4" (10.2 cm) pop-ups*

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data taken in zero wind conditions

8 FLT Series MPR METRIC

5° Trajectory

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
8H-FLT	1.0	1.7	0.12	2.1	87	101
	1.5	2.1	0.15	2.6	71	82
	2.0	2.4	0.18	2.9	62	71
	2.1	2.4	0.18	3.0	60	70
8Q-FLT	1.0	1.7	0.06	1.1	86	100
	1.5	2.1	0.07	1.3	71	81
	2.0	2.4	0.09	1.4	61	71
	2.1	2.4	0.09	1.5	60	69

Note: *Specify spray body and nozzles separately.*

Note: *Radius reduction over 25% of the normal throw of the nozzle is not recommended*

SQ Series, Square Pattern Nozzles (formerly known as XPCN)

The Most Precise and Efficient, Low-Volume Spray Solution for Irrigation of Small Areas with Dense Plantings

- Square spray pattern and pressure compensation offer increased efficiency and control, reducing overspray, property damage and liability
- Unique edge to edge capabilities for non-turf applications reduces the number of nozzles needed, which decreases cost and dramatically reduces installation time
- Simplify design and installation with the flexibility of applications: one nozzle throws 2.5' or 4' (0.8 m or 1.2 m) and can be used on a variety of spray heads and risers
- Meets micro irrigation system requirement for less than 26 gph flow rate at 30 psi

Features

- Square spray pattern with edge-to-edge coverage allows you to easily design and install in small spaces
- Pressure compensation design delivers uniform flow over the pressure range
- Available in 3 models—quarter, half and full patterns with matched precipitation rate
  - Virtual no-mist performance from 20 psi to 50 psi
  - Two throw distances in each nozzle. One simple click adjusts to 2.5' or 4' (0.8 m or 1.2 m)
  - Shipped with blue filter screen (0.02" x 0.02") to maintain precise distance of flow, and to prevent clogging
- Compatible with all 1800 Sprays, Xeri-Pops, New PolyFlex Riser Adapter, UNI-Spray and SCH 80 risers

Operating Range

- Pressure: 20 to 50 psi (1.4 to 3.5 bar)
- Flow rates: 6, 12 and 24 gph (22.7, 45.4 and 90.8 l/h)
- Required filtration: 40 mesh

Models

- SQ QTR: SQ Nozzle, quarter pattern
- SQ HLF: SQ Nozzle, half pattern
- SQ FUL: SQ Nozzle, full pattern
- SQ ADP12: SQ Nozzle Adapter with 12" PolyFlex Riser
- SQ ADP24: SQ Nozzle Adapter with 24" PolyFlex Riser
- SQ ADP: SQ PolyFlex Riser Adapter only

* ***Note:*** *A PA-8S Plastic Shrub Adapter (see page 19) is needed when using an SQ Series Nozzle mounted on a SCH 80 riser.*

SQ Nozzle Installed on PolyFlex Riser with Nozzle Adapter

SQ Nozzles with Screens

One Nozzle…Two Throws

With a simple turn of the nozzle to the next preset stop, the Rain Bird SQ Nozzle adjusts from a 2.5' (0.8 m) throw to a 4' (1.2 m) throw. It's like having two nozzles in one.

Can be used on…

The SQ Nozzle is an ideal solution for a wide range of difficult-to-design areas, thanks to its compatibility with popular irrigation products.

1800® Series Spray Heads | **Xeri-Pop Spray Heads** | **Polyflex Risers** | **Schedule 80 Risers**

Water Saving

SQ Series Nozzles provide a precise square wetting pattern and efficient water placement with pressure compensation – resulting in up to 65% water savings. They are great for narrow planting beds, parking lot islands, walkways, parkways, and street medians.

SQ Nozzle Performance

2.5 feet throw @ 6" height above grade

Nozzle	Pressure psi	Throw Radius ft.	Flow gph	Flow gpm	Precip. Rate w/no overlap in/h
Q	20	2.5	6.4	0.11	1.64
	30	2.5	7.4	0.12	1.90
	40	3.0	7.4	0.12	1.32
	50	3.0	7.4	0.12	1.32
H	20	2.5	10.2	0.17	1.31
	30	2.5	12.2	0.20	1.57
	40	3.0	13.7	0.23	1.22
	50	3.0	13.7	0.23	1.22
F	20	2.5	20.0	0.33	1.28
	30	2.5	24.2	0.40	1.55
	40	3.0	27.3	0.46	1.22
	50	3.0	27.3	0.46	1.22

SQ Nozzle Performance — METRIC

0.8 m throw @ 0.15 m height above grade

Nozzle	Pressure bar	Throw Radius m.	Flow lph	Flow lpm	Precip. Rate w/no overlap mm/h
Q	1.4	0.8	24	0.40	42
	2.1	0.8	28	0.47	48
	2.8	0.9	28	0.47	34
	3.4	0.9	28	0.47	34
H	1.4	0.8	39	0.65	33
	2.1	0.8	46	0.77	40
	2.8	0.9	52	0.87	31
	3.4	0.9	52	0.87	31
F	1.4	0.8	76	1.27	33
	2.1	0.8	92	1.53	39
	2.8	0.9	103	1.72	31
	3.4	0.9	103	1.72	31

SQ Nozzle Performance

4 feet throw @ 6" height above grade

Nozzle	Pressure psi	Throw Radius ft.	Flow gph	Flow gpm	Precip. Rate w/no overlap in/h
Q	20	4.0	6.4	0.11	0.64
	30	4.0	7.4	0.12	0.74
	40	4.5	7.4	0.12	0.59
	50	4.5	7.4	0.12	0.59
H	20	4.0	10.2	0.17	0.51
	30	4.0	12.2	0.20	0.61
	40	4.5	13.7	0.23	0.54
	50	4.5	13.7	0.23	0.54
F	20	4.0	20.0	0.33	0.50
	30	4.0	24.2	0.40	0.61
	40	4.5	27.3	0.46	0.54
	50	4.5	27.3	0.46	0.54

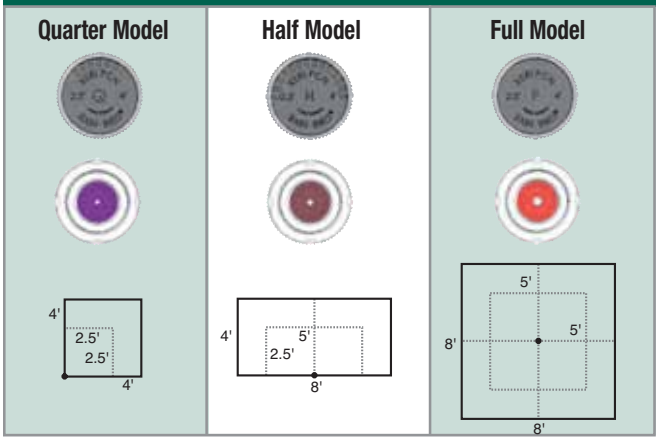
SQ Nozzle Performance — METRIC

1.2 m throw @ 0.15 m height above grade

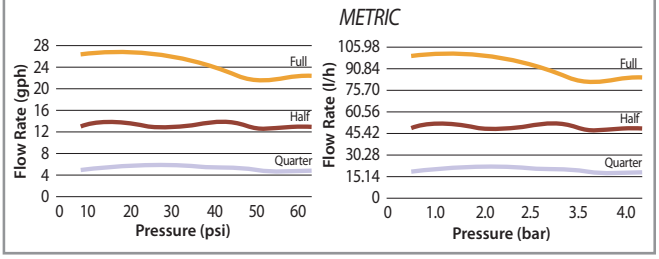
Nozzle	Pressure bar	Throw Radius m.	Flow lph	Flow lpm	Precip. Rate w/no overlap mm/h
Q	1.4	1.2	24	0.40	16
	2.1	1.2	28	0.47	19
	2.8	1.4	28	0.47	15
	3.4	1.4	28	0.47	15
H	1.4	1.2	39	0.65	13
	2.1	1.2	46	0.77	16
	2.8	1.4	52	0.87	14
	3.4	1.4	52	0.87	14
F	1.4	1.2	76	1.27	13
	2.1	1.2	92	1.53	15
	2.8	1.4	103	1.72	14
	3.4	1.4	103	1.72	14

Performance data taken in zero wind conditions

SQ Nozzles



SQ Nozzle Performance



1300A-F

Adjustable Full-Circle Bubbler

Features

- Fully adjustable flow
- Shipped with SR-050 ½" (15/21) inlet filter screen for easy installation and resistance to debris
- Operates over a wide range of pressures
- Non-corrosive plastic and stainless steel construction for long life
- Five-year trade warranty

Operating Range

- Flow: 1.0 to 2.3 gpm (3.6 to 8.4 l/m)
- Spacing: 1 to 3 feet (0.3 to 0.9 m)
- Pressure: 10 to 60 psi (0.7 to 4.1 bar)

Dimensions

- Inlet: ½" (15/21) female threaded inlet
- Height: 1" (2.5 cm)
- Top diameter: 1" (2.5 cm)

Model

- 1300A-F

1300A-F

Nozzle	Pressure psi	Flow gpm
F	10	1.0
	20	1.4
	30	1.7
	40	1.9
	50	2.1
	60	2.3

1300A-F METRIC

Nozzle	Pressure bar	Radius m³/h	Flow l/m
F	0.7	0.23	3.6
	1.0	0.26	4.2
	1.5	0.30	4.8
	2.0	0.34	5.4
	2.5	0.39	6.0
	3.0	0.43	7.2
	3.5	0.48	7.8
	4.0	0.52	8.4
	4.1	0.53	8.4

1300A-F

1400 Series

Pressure Compensating Full-Circle Bubblers

Features

- Low flow rates allow water to be absorbed as needed. Reduces runoff
- Flow will not fluctuate at pressures between 20 and 90 psi (1.4 to 6.2 bar). Maintains even flow
- Flow is not adjustable, providing increased vandal resistance
- No adjustment required
- Corrosion-proof plastic and rubber construction for long life
- Five-year trade warranty
- Shipped with special SR-050 ½" (15/21) bubbler filter screen for easy installation and resistance to debris
- Trickle pattern on models 1401 and 1402; umbrella pattern on models 1404 and 1408

Operating Range

- Flow: 0.25 to 2.00 gpm (1.2 to 7.2 l/m)
- Spacing: 1 to 3 feet (0.3 to 0.9 m)
- Pressure: 20 to 90 psi (1.4 to 6.2 bar)

Dimensions

- Inlet: ½" (15/21) female threaded inlet
- Height: 1" (2.5 cm)
- Top diameter: 1" (2.5 cm)

Models

- 1401: 0.25 gpm (0.06 m³/h; 0.9 l/m); full-circle, trickle pattern
- 1402: 0.50 gpm (0.11 m³/h; 1.8 l/m); full-circle, trickle pattern
- 1404: 1.00 gpm (0.23 m³/h; 3.6 l/m); full-circle, umbrella pattern
- 1408: 2.00 gpm (0.46 m³/h; 7.2 l/m); full-circle, umbrella pattern

1400 Series

"Once my customers actually see the difference Rain Curtain nozzles make, they won't settle for anything but Rain Bird Rotors. They've really helped me build my business."

Dennis Hoffman
Grasshopper Irrigation, Inc.

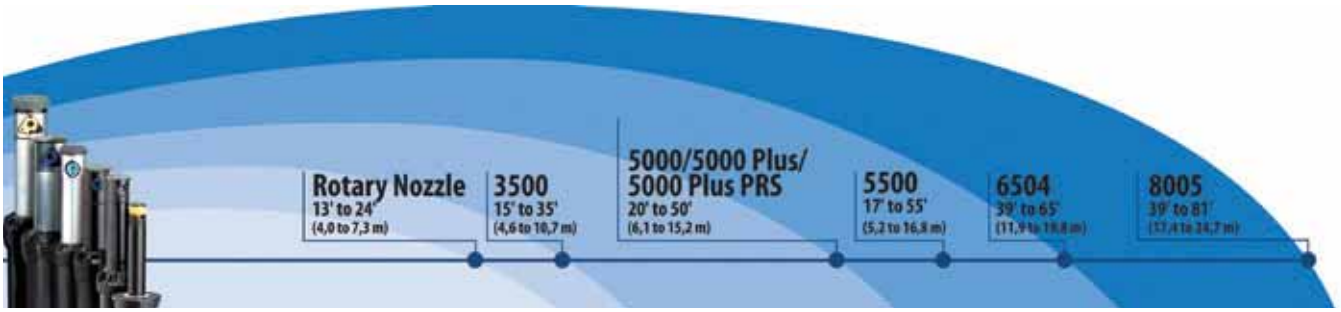
Major Products	Closed Case Rotors					Open Case Rotor
Primary Applications	**3500 Series**	**5000/5000 Plus Series**	**5500 Series**	**8005**	**Falcon™ 6504**	**2045A Maxi-Paw™**
Turfgrass 15' to 30'	●		●			
Turfgrass 25' to 50'		●	●	●	●	●
Turfgrass more than 50'			●	●	●	
Residential	●	●				●
Commercial		●	●	●	●	●
Vandalism/Damage Prone Areas			●	●		
Slopes	●	●	●	●	●	●
Ground Cover/Shrubs	●	●				
Athletic Fields			●	●	●	
Pressure Regulating		●				
High Wind Areas	●	●	●	●	●	●
Taller Turfgrass		●	●	●		
Non-Potable Water	●	●	●	●	●	●

Water Saving Tips

- Rain Curtain™ nozzle technology is the standard in water-saving nozzle performance. Rain Curtain™ performance is available in all Rain Bird Rotors
- 5000 Series Rotors with PRS will reduce water waste from 15%-45%. By eliminating pressure variation and/or over pressurization, you'll save water and deliver greener results
- All rotors with Seal-a-Matic™ (SAM) check valves prevent drainage from heads at lower elevations, stop water waste and eliminate landscape damage due to flooding and/or erosion

Whatever the Residential or Commercial Application, Rain Bird® Rotors Have It Covered

A rotor's radius of throw is a key consideration in selecting a specific model. The chart below helps you make an initial choice among rotors in the Rain Bird product line. This chart indicates the maximum radius of throw for each rotor type under zero wind conditions. The data refer to the smallest nozzle at the lowest charted pressure and the largest nozzle at the highest charted pressure.



New to the 5000/5000 Plus Series:
Ensure Water-Saving Performance, Even with High or Fluctuating Water Pressure

PRS available in 5000 Plus Rotors

Pressure Regulation

Smart Approved WaterMark

In-stem pressure regulator (PRS) maintains constant outlet pressure and distribution, leaving you with greener grass

- Reduces operating pressure for optimal nozzle performance and head-to-head consistency
- Ends misting and fogging caused by high pressure and stops water waste
- PRS option available in 5000/5000 Plus Rotors

Install Proven Rain Curtain™ Nozzle Technology

There are three elements which create the superior coverage of Rain Curtain™ nozzle technology.

1 Large Droplets for Consistent Performance

Rain Curtain™ nozzle technology produces larger water droplets that are far less susceptible to wind, and greatly minimizes misting and airborne evaporation. This competitive advantage assures that the right amount of water goes where it needs to go which saves time, money and equally important, one of nature's most valuable resources.

2 Effective Close-In Watering

Effective and gentle close-in watering eliminates dry spots around the rotor without seed washout.

3 Even Distribution Over the Entire Radius

The broad range of Rain Bird Rain Curtain™ Nozzles [0.54-36.3 gpm (0.12-8.24 m^3/h), 15-81 ft. (4.6-24.7m)] is engineered to deliver optimum distribution uniformity across the entire radius range. This uniformity compensates for varying environmental conditions, offering flexibility to the designer and assuring green grass results.

Short- to Mid-Range Rain Curtain™ Nozzle Technology
[15-50 ft. (4.6-15.3 m)]

Patent-Pending Micro-Ramps™ for superior close-in watering.

Front view of nozzle **Back view of nozzle**

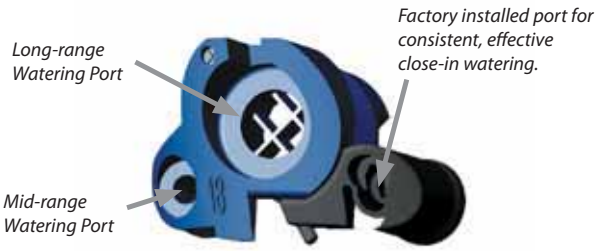
Precisely Engineered Ramps, Angles and Radii

1) Create a cohesive stream for maximum distance of throw

2) Generate larger droplets that are less susceptible to wind and airborne evaporation

3) Deliver even water distribution across the entire radius range for superior green grass results

Long Range Rain Curtain™ nozzle technology
[39-81 ft. (12.2-24.7 m)]



In Rain Bird large area rotors, Rain Curtain™ nozzle technology centers around three watering ports that deliver long-range, mid-range and close-in water for optimum distribution uniformity. This uniformity across the entire radius range greatly diminishes dependence on near-perfect head-to-head spacing, and reduces the need to overwater because there are no gaps in coverage. The close-in watering port features an expansion chamber that actually takes energy out of that part of the stream which is diverted downward around the head. By reducing the velocity of the water by as much as 90%, effective close-in watering is achieved. The close-in water flowing out of the bottom of this port is distributed gently, even though the rotor is operating at a relatively high flow and pressure.

Rain Curtain™ Nozzle Cross Reference Guide
Hunter® vs. Rain Bird

Hunter vs. Rain Bird – 3/4" Rotors

If replacing:	Use Rain Bird Nozzle	
	By Flow	By Radius
PGP	5000/5000 Plus	5000/5000 Plus
1	-	-
2	-	-
3	-	-
4	1.5	1.5
5	2.0	2.0
6	2.5	2.5
7	3.0	3.0
8	4.0	4.0
9	5.0	5.0
10	8.0	6.0
11	-	8.0
12	-	8.0

Hunter vs. Rain Bird – 3/4" Rotors

If replacing:	Use Rain Bird Nozzle			
	By Flow		By Radius	
I-20	5000/5000 Plus	5500	5000/5000 Plus	5500
0.5 SR	-	-	-	18S
1.0 SR	-	-	-	18S
2.0 SR	-	18S	-	18S
0.75 SR	-	-	-	22S
1.5 SR	-	22S	-	22S
3.0 SR	-	26S	-	22S
1.0	1.5	-	1.5	30S
1.5	1.5	2	1.5	30S
2.0	2.0	2	2.0	2
3.0	2.5	3	2.5	2
3.5	**3.0**	4	3.0	3
4.0	4.0	5	4.0	3
6.0	5.0	6	5.0	4
8.0	6.0	8	6.0	8

Hunter vs. Rain Bird – 1" Rotors

If replacing:	Use Rain Bird Nozzle			
	By Flow		By Radius	
I-25	6504	8005	6504	8005
4	4	4	4	4
5	6	6	6	6
7	8	8	6	8
8	10	10	8	8
10	12	12	10	10
13	12	12	12	12
15	14	14	14	12
18	16	16	16	14
20	18	18	18	14
23	-	22	-	16
25	-	24	-	20
28	-	26	-	22
I-40	**6504**	**8005**	**6504**	**8005**
40	8	8	6	8
41	12	12	10	10
42	12	12	10	12
43	16	16	14	14
44	18	20	18	16
45	-	22	-	20
I-35	**6504**	**8005**	**6504**	**8005**
9	8	8	8	8
12	12	12	10	10
15	14	14	12	12
18	16	16	14	14
21	18	18	14	14
24	-	22	16	16
27	-	24	16	16
30	-	26	-	20

Rain Curtain™ Nozzle Cross Reference Guide
Toro® vs. Rain Bird

Toro vs. Rain Bird – 3/4" Rotors

If replacing:	Use Rain Bird Nozzle	
	By Flow	By Radius
Super 800	5000/5000 Plus	5000/5000 Plus
0.5	-	-
0.75	-	-
1.0	1.5	1.5
2.0	2.5	2.0
2.5	3.0	2.5
3.0	4.0	2.5
4.0	5.0	3.0
6.0	6.0	4.0
8.0	8.0	5.0

Toro vs. Rain Bird – 3/4" Rotors

If replacing:	Use Rain Bird Nozzle			
	By Flow		By Radius	
TR50	5000/5000 Plus	5505	5000/5000 Plus	5505
1.0	-	-	-	-
1.5	1.5	2	1.5	2
2.0	2.0	2	2.0	3
3.0	3.0	3	3.0	3
4.5	4.0	5	4.0	3
6.0	5.0	6	4.0	4
7.5	6.0	8	4.0	4
9.0	8.0	10	5.0	4

Toro vs. Rain Bird – 1" Rotors

If replacing:	Use Rain Bird Nozzle			
	By Flow		By Radius	
Toro 2001	6504	8005	6504	8005
9	10	10	10	10
12	12	12	12	12
15	16	16	14	14
18	18	20	18	16
24	-	22	-	20
TR70	**6504**	**8005**	**6504**	**8005**
7	8	8	-	6
9	8	8	8	8
12	12	12	10	10
16	16	16	14	12
20	-	20	14	14
24	-	20	16	14
27	-	20	18	16
Toro 640	**6504**	**8005**	**6504**	**8005**
40	8	8	8	10
41	10	12	10	10
42	14	14	12	12
43	16	16	14	14
44	18	20	16	14

3500 Series

Easy to Use, Tough to Beat

- Greener grass with less water – Rain Curtain™ Nozzles deliver superior performance
- True 4" (10.2 cm) pop-up (measured from the cover to the nozzle)
- Reliability – three year trade warranty

Features

- **Rain Curtain™ Nozzle Technology**
  - Attached nozzle tree of six Rain Curtain™ Nozzles provides:
    - Large droplets for consistent performance
    - Effective close-in watering
    - Even distribution over the entire radius
- **Installation and Maintenance**
  - Top-adjust arc adjustment requiring only a flathead screwdriver
  - Radius adjustment screw allows up to 25% radius reduction without changing nozzles
  - Quick check arc/fast forward
  - Self-adjusting stator does not require replacement when changing nozzles
  - Easily removable filter screen
  - Nozzle removal feature
- **Design Solutions**
  - The 3500 Series Rotor is available in Shrub, 4" and SAM™ models
  - Rubber cover and self-flushing arc adjustment screw reduce debris intrusion and improve reliability
  - 40 - 360° part-circle arc rotation and reversing full-circle rotation in one
- **Durability**
  - Water-lubricated gear-drive design for durable, reliable operation
  - Dual action, positive stop wiper seal protects internals from debris and assures positive pop-up and retraction

Options

- Purple cover for easy identification of non-potable systems
- Seal-A-Matic™ (SAM™) check valve holds up to 7 feet (2.1 m) of elevation change, to prevent puddling and erosion caused by low-head drainage

Operating Range

- Precipitation rate: 0.37 to 0.83 inches per hour (9 to 22 mm/h)
- Radius: 15 to 35 feet (4.6 to 10.7 m)
- Radius may be reduced up to 35% with radius reduction screw
- Pressure: 25 to 55 psi (1.7 to 3.8 bar)
- Flow rate: 0.54 to 4.6 gpm (1.8 to 17.4 l/m)

Specifications

- ½" NPT female bottom threaded inlet
- Full- and part-circle adjustment 40° - 360°

Dimensions

- Pop up height: 4" (10.2 cm)
- Overall body height: Shrub: 7" (17.8 cm); 4": 6.6" (16.8 cm)
- Exposed surface diameter: 1.16" (2.9 cm)

Note: *Pop-up height measured from the cover to the nozzle. Overall body height is measured popped down*

Models

Part-circle units (PC) are adjustable from 40 -360 degrees.

- 3504-PC
- 3504-PC-SAM
- 3504-PC-SAM-NP
- 3500-S-SAM
- 3500-S-SAM-NP

3504-PC

How To Specify

3504 - S - PC - SAM - NP

- **Model** 3500 Series 4" pop-up
- **Model** Shrub
- **Rotation** Part-circle
- **Options** S = SAM; NP = Non-potable cover

Water Saving

Like all Rain Bird rotors, 3500 Series rotors use Rain Curtain™ nozzle technology to deliver the results you have come to expect while managing water wisely

3500 Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
25	0.75	15	0.54	0.46	0.53
	1.0	20	0.77	0.37	0.43
	1.5	23	1.06	0.39	0.45
	2.0	27	1.40	0.37	0.43
	3.0	29	2.17	0.50	0.57
	4.0	31	2.97	0.59	0.69
35	0.75	17	0.67	0.45	0.52
	1.0	21	0.92	0.40	0.46
	1.5	23	1.28	0.47	0.54
	2.0	27	1.69	0.45	0.52
	3.0	31	2.60	0.52	0.60
	4.0	33	3.58	0.63	0.73
45	0.75	17	0.77	0.51	0.59
	1.0	21	1.06	0.46	0.53
	1.5	24	1.48	0.49	0.57
	2.0	27	1.93	0.51	0.59
	3.0	31	3.00	0.60	0.69
	4.0	35	4.13	0.65	0.75
55	0.75	18	0.85	0.51	0.58
	1.0	22	1.18	0.47	0.54
	1.5	24	1.65	0.55	0.64
	2.0	28	2.15	0.53	0.61
	3.0	32	3.25	0.61	0.71
	4.0	35	4.60	0.72	0.83

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

3500 Nozzle Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
1.7	0.75	4.6	0.12	2.04	12	14
	1.0	6.1	0.17	2.91	9	11
	1.5	7.0	0.24	4.01	10	11
	2.0	8.2	0.32	5.30	9	11
	3.0	8.8	0.49	8.21	13	15
	4.0	9.4	0.67	11.24	15	17
2.0	0.75	4.8	0.13	2.24	12	13
	1.0	6.2	0.19	3.14	10	11
	1.5	7.0	0.26	4.35	11	12
	2.0	8.2	0.34	5.74	10	12
	3.0	9.1	0.53	8.87	13	15
	4.0	9.7	0.73	12.17	16	18
2.5	0.75	5.2	0.16	2.58	12	13
	1.0	6.4	0.21	3.55	10	12
	1.5	7.0	0.30	4.94	12	14
	2.0	8.2	0.39	6.51	12	13
	3.0	9.4	0.60	10.03	13	16
	4.0	10.1	0.83	13.82	16	19
3.0	0.75	5.2	0.17	2.86	13	15
	1.0	6.4	0.24	3.93	12	13
	1.5	7.3	0.33	5.49	12	14
	2.0	8.2	0.43	7.17	13	15
	3.0	9.4	0.67	11.13	15	17
	4.0	10.6	0.92	15.32	16	19
3.5	0.75	5.4	0.19	3.09	13	15
	1.0	6.6	0.26	4.27	12	14
	1.5	7.3	0.36	5.97	13	15
	2.0	8.4	0.47	7.79	13	15
	3.0	9.6	0.71	11.90	15	18
	4.0	10.7	1.00	16.66	18	20
3.8	0.75	5.5	0.19	3.22	13	15
	1.0	6.7	0.27	4.47	12	14
	1.5	7.3	0.37	6.25	14	16
	2.0	8.5	0.49	8.14	13	15
	3.0	9.8	0.74	12.30	16	18
	4.0	10.7	1.04	17.41	18	21

5000/5000 Plus Series

EXCLUSIVE! PRS OPTION IN 5000 PLUS

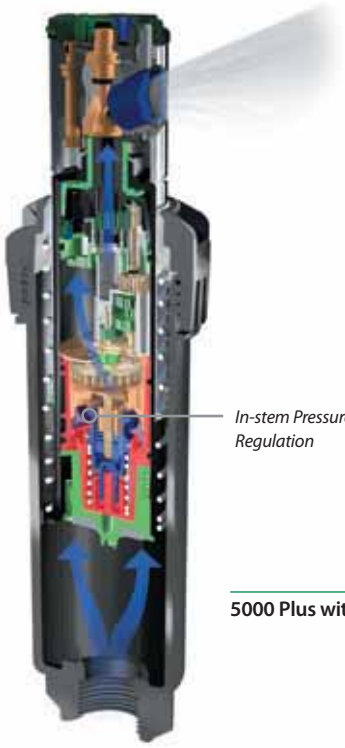
Unmatched Performance for Residential and Light Commercial Applications

Smart Approved WaterMark

- Greener grass with less water – Rain Curtain™ Nozzles deliver superior performance
- Even greater water savings with optional in-stem pressure regulation (PRS)
- Faster to install with matched precipitation rate using MPR nozzle set (see page 57)

Features

- **Rain Curtain™ Nozzle Technology**
  - Rain Curtain™ Nozzles standard on all 5000/5000 Plus Rotors
    - Large water droplets for greater wind resistance
    - Effective close-in watering
    - Even distribution over the entire radius
  - Tree of nozzles including four low angle (angle of trajectory 10°) and eight standard angle Rain Curtain™ Nozzles (angle of trajectory 25°) provides 25 to 50 (7.6 to 15.2 m) distance of throw
  - Self-aligning nozzles
- **Installation and Maintenance**
  - Slip clutch mechanism for quick adjustment on installation
  - Faster maintenance with a new self-cleaning arc adjustment screw
  - The 5000 Plus features a flow shut-off device to stop the flow of water to a particular head while the system is still in operation.
  - Top-adjust arc adjustment requiring only a flathead screwdriver
  - Radius adjustment screw allows up to 25% radius reduction without changing nozzles
- **Design Solutions**
  - 5000 in 4", 6" and 12" available in shrub or in stainless steel
  - 5000 Plus/5000 Plus PRS 4" and 6" models available in stainless steel
  - Award-winning MPR nozzle set simplifies design and installation by providing matched precipitation from 25' to 35' (7.6 to 10.7 m)
  - Standard rubber cover for extra protection. 5000 Plus/5000 Plus PRS feature a green cover while the 5000 features a black cover
  - 40 - 360° arc rotation and reversing full-circle rotation in one. (A non-reversing full-circle only unit is also available)
  - True 4" (10 cm), 6" (15.2 cm) and 12" (30.5 cm) pop-up (measured from the cover to the nozzle)
- **Durability**
  - Heavy-duty cover assembly for extra durability in residential or commercial applications
  - Heavy-duty retract spring assures positive pop-down
  - Pressure-activated multi-function wiper seal protects internals from debris and assures positive pop-up and retraction
  - Additional O-rings and seals for extra protection in "gritty" water
  - Five-year trade warranty
- **Options**
  - Stainless steel riser helps deter vandalism on public turf areas (4" and 6" 5000 Plus/5000 Plus PRS only)
  - Pre-installed Rain Curtain Nozzle on most popular 5000 and nozzle combinations
  - Seal-A-Matic (SAM)™ check valve holds up to 7 feet (2.1 m) of elevation change, to prevent puddling and erosion caused by low head drainage
  - Purple cover for easy identification of non-potable systems



5000 Plus with PRS

5012-PL-FC, 5006-PL-FC, 5004-PL-FC

How To Specify

5004-S-PL-PC-SAM-R-NP-SS

- **Options** SAM, R: PRS, NP: Non-potable cover
- **Rotation** "PC" for 40-360 degrees, "FC" for 360 degree only
- **Model** Plus
- **Model** Shrub
- **Model** 5000 Series 4" pop-up
- **Model** Stainless steel

Water Saving

Want the most water-efficient combination? Select 5000/5000 Plus with SAM, PRS and MPR nozzles. Whether you rely on Rain Curtain Nozzles to deliver water efficiently or MPR nozzles to ensure matched precipitation rates, the 5000/5000 Plus Series Rotor delivers solutions that manage water wisely.

5000/5000 Plus Series (cont.)

Operating Range

- Precipitation rate: 0.20 to 1.01 inches per hour (5 to 26 mm/h)
- Radius: 25 to 50 feet (7.6 to 15.2 m)
- Radius may be reduced up to 25% with radius reduction screw
- Pressure: 25 to 65 psi (1.7 to 4.5 bar)
- Flow Rate: 0.73 to 9.63 gpm (4.2 to 36.6 l/m)

Specifications

- ¾" (20/27) NPT female bottom threaded inlet
- Reversing full and part-circle adjustment 40° – 360°
- Full-circle only adjustment 360°

Dimensions

- Pop-up height: Shrub; 4" (10.2 cm); 6" (15.2 cm); 12" (30.5 cm)
- Overall body height: Shrub: 7 ¾" (19.7cm) 4": 7 ⅜" (18.5 cm); 6": 9 ⅝" (24.5 cm); 12": 16 ⅞" (42.9 cm)
- Exposed surface diameter: 1 ⅝" (4.1 cm)

Note: *Pop-up height measured from the cover to the nozzle. Overall body height is measured popped down*

Optional PRS Feature

EXCLUSIVE! IN 5000 PLUS

Smart Approved WaterMark

- In-stem pressure regulator (PRS) reduces operating pressure to 45 psi (3.1 bar) for optimal nozzle performance
- PRS saves water by:
  - Eliminating head-to-head pressure variations
  - Eliminating misting due to high pressure
  - Improving nozzle distribution uniformity by operating the nozzle at optimum pressure
- Maintenance-free design can be easily retrofitted into existing 5000/5000 Plus, T-Bird™ and Hunter® PGP™ (using 5004-UPG) rotor cases without digging up the entire body
- Pressure: 25 to 75 psi (1.7 to 5.2 bar)

Models

Part-circle units (PC) are adjustable from 40 –360 degrees.
Full-circle units (FC) are 360 degrees only.

- 5004-(PC or FC)-(SAM)-(R)
- 5006-(PC or FC)-(SAM)
- 5012-(PC or FC)-(SAM)
- 5000-S-PL-(PC or FC)-(SAM)-(R)-(NP) - standard with SAM
- 5004-PL-(PC or FC)-(SAM)-(R)-(NP)-(SS)
- 5006-PL-(PC or FC)-(SAM)-(R)-(NP)-(SS)
- 5012-PL-(PC or FC)-(SAM)-(R)-(NP)

Note: Many models are available with a 2.0 or 3.0 nozzle pre-installed. NP and SS versions come standard with a SAM. R = PRS

5000/5000 Plus Std. Angle Rain Curtain™ Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
25	1.5	33	1.12	0.20	0.23
	2.0	35	1.50	0.24	0.27
	2.5	35	1.81	0.28	0.33
	3.0	36	2.26	0.34	0.39
	4.0	37	2.91	0.41	0.47
	5.0	39	3.72	0.47	0.54
	6.0	39	4.25	0.54	0.62
	8.0	36	5.90	0.88	1.01
35	1.5	34	1.35	0.22	0.26
	2.0	36	1.81	0.27	0.31
	2.5	37	2.17	0.31	0.35
	3.0	38	2.71	0.36	0.42
	4.0	40	3.50	0.42	0.49
	5.0	41	4.47	0.51	0.59
	6.0	43	5.23	0.54	0.63
	8.0	43	7.06	0.74	0.85
45	1.5	35	1.54	0.24	0.28
	2.0	37	2.07	0.29	0.34
	2.5	37	2.51	0.35	0.41
	3.0	40	3.09	0.37	0.43
	4.0	42	4.01	0.44	0.51
	5.0	45	5.09	0.48	0.56
	6.0	46	6.01	0.55	0.63
	8.0	47	8.03	0.70	0.81
55	1.5	35	1.71	0.27	0.31
	2.0	37	2.30	0.32	0.37
	2.5	37	2.76	0.39	0.45
	3.0	40	3.47	0.42	0.48
	4.0	42	4.44	0.48	0.56
	5.0	45	5.66	0.54	0.62
	6.0	47	6.63	0.58	0.67
	8.0	50	8.86	0.68	0.79
65	1.5	34	1.86	0.31	0.36
	2.0	35	2.52	0.40	0.46
	2.5	37	3.01	0.42	0.49
	3.0	40	3.78	0.45	0.53
	4.0	42	4.83	0.53	0.61
	5.0	45	6.16	0.59	0.68
	6.0	48	7.22	0.60	0.70
	8.0	50	9.63	0.74	0.86

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5000/5000 Plus Std. Angle Rain Curtain™ Nozzle Performance

METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
1.7	1.5	10.10	0.25	4.2	5	6
	2.0	10.70	0.34	5.4	6	7
	2.5	10.70	0.41	6.6	7	8
	3.0	11.00	0.51	8.4	8	10
	4.0	11.3	0.66	10.8	10	12
	5.0	11.90	0.84	13.8	12	14
	6.0	11.90	0.97	16.2	14	16
	8.0	11.00	1.34	22.2	22	26
2.0	1.5	10.20	0.28	4.8	5	6
	2.0	10.80	0.36	6.0	6	7
	2.5	10.90	0.44	7.2	7	9
	3.0	11.20	0.55	9.0	9	10
	4.0	11.6	0.71	12.0	11	12
	5.0	12.10	0.91	15.0	12	14
	6.0	12.40	1.05	17.4	14	16
	8.0	11.80	1.45	24.0	21	24
2.5	1.5	10.40	0.31	5.4	6	7
	2.0	11.00	0.41	6.6	7	8
	2.5	11.30	0.50	8.4	8	9
	3.0	11.20	0.62	10.2	9	11
	4.0	12.3	0.81	13.2	11	13
	5.0	12.70	1.03	17.4	13	15
	6.0	13.20	1.21	20.4	14	16
	8.0	13.30	1.63	27.0	19	21
3.0	1.5	10.60	0.34	6.0	6	7
	2.0	11.20	0.45	7.8	7	8
	2.5	11.30	0.56	9.6	9	10
	3.0	12.10	0.69	11.4	9	11
	4.0	12.7	0.89	15.0	11	13
	5.0	13.50	1.13	18.6	12	14
	6.0	13.90	1.34	22.2	14	16
	8.0	14.10	1.79	30.0	18	21
3.5	1.5	10.70	0.37	6.0	7	8
	2.0	11.30	0.49	8.4	8	9
	2.5	11.30	0.60	10.2	9	11
	3.0	12.20	0.74	12.6	10	12
	4.0	12.8	0.97	16.2	12	14
	5.0	13.70	1.23	20.4	13	15
	6.0	14.20	1.45	24.0	14	17
	8.0	14.90	1.93	32.4	18	20
4.0	1.5	10.60	0.40	6.6	7	8
	2.0	11.10	0.52	9.0	8	10
	2.5	11.30	0.64	10.8	10	12
	3.0	12.20	0.80	13.2	11	12
	4.0	12.8	1.04	17.4	13	15
	5.0	13.70	1.32	22.2	14	16
	6.0	14.90	1.55	25.8	15	17
	8.0	15.20	2.06	34.2	18	21
4.5	1.5	10.40	0.42	7.2	8	9
	2.0	10.70	0.55	9.0	10	11
	2.5	11.30	0.68	11.4	11	12
	3.0	12.20	0.84	13.8	11	13
	4.0	12.8	1.10	18.0	13	15
	5.0	13.70	1.40	23.4	15	17
	6.0	14.60	1.64	28.2	15	18
	8.0	15.20	2.19	36.6	19	22

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5000/5000 Plus Low Angle Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
25	1.0 LA	25	0.76	0.23	0.27
	1.5 LA	27	1.15	0.30	0.35
	2.0 LA	29	1.47	0.34	0.39
	3.0 LA	29	2.23	0.51	0.59
35	1.0 LA	28	0.92	0.23	0.26
	1.5 LA	30	1.38	0.30	0.34
	2.0 LA	31	1.77	0.35	0.41
	3.0 LA	33	2.68	0.47	0.55
45	1.0 LA	29	1.05	0.24	0.28
	1.5 LA	31	1.58	0.32	0.37
	2.0 LA	32	2.02	0.38	0.44
	3.0 LA	35	3.07	0.48	0.56
55	1.0 LA	29	1.17	0.27	0.31
	1.5 LA	31	1.76	0.35	0.41
	2.0 LA	33	2.24	0.40	0.46
	3.0 LA	36	3.41	0.51	0.58
65	1.0 LA	29	1.27	0.29	0.34
	1.5 LA	31	1.92	0.38	0.44
	2.0 LA	33	2.45	0.43	0.50
	3.0 LA	36	3.72	0.55	0.64

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5000/5000 Plus Low Angle Nozzle Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
1.7	1.0 LA	7.60	0.17	3.0	6	7
	1.5 LA	8.20	0.26	4.2	8	9
	2.0 LA	8.80	0.33	5.4	9	10
	3.0 LA	8.80	0.51	8.4	13	15
2.0	1.0 LA	8.00	0.18	3.0	6	6
	1.5 LA	8.60	0.28	4.8	8	9
	2.0 LA	9.10	0.36	6.0	9	10
	3.0 LA	9.30	0.55	9.0	13	15
2.5	1.0 LA	8.60	0.20	3.6	5	6
	1.5 LA	9.20	0.32	5.4	8	9
	2.0 LA	9.50	0.41	6.6	9	10
	3.0 LA	10.10	0.62	10.2	12	14
3.0	1.0 LA	8.80	0.22	3.6	6	7
	1.5 LA	9.40	0.35	6.0	8	9
	2.0 LA	9.70	0.45	7.8	10	11
	3.0 LA	10.60	0.68	11.4	12	14
3.5	1.0 LA	8.80	0.24	4.2	6	7
	1.5 LA	9.40	0.38	6.6	9	10
	2.0 LA	9.90	0.49	8.4	10	11
	3.0 LA	10.80	0.74	12.6	13	15
4.0	1.0 LA	8.80	0.26	4.2	7	8
	1.5 LA	9.40	0.41	6.6	9	11
	2.0 LA	10.10	0.52	9.0	10	12
	3.0 LA	11.00	0.80	13.2	13	15
4.5	1.0 LA	8.80	0.27	4.8	7	8
	1.5 LA	9.40	0.44	7.2	10	11
	2.0 LA	10.10	0.56	9.0	11	13
	3.0 LA	11.00	0.84	13.8	14	16

5000 Plus PRS Std. Angle Rain Curtain™ Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
25	1.5	33	1.12	0.2	0.23
	2.0	35	1.5	0.24	0.27
	2.5	35	1.81	0.28	0.33
	3.0	36	2.26	0.34	0.39
	4.0	37	2.91	0.41	0.47
	5.0	39	3.72	0.47	0.54
	6.0	39	4.25	0.54	0.62
	8.0	36	5.9	0.88	1.01
35	1.5	34	1.35	0.22	0.26
	2.0	36	1.81	0.27	0.31
	2.5	37	2.17	0.31	0.35
	3.0	38	2.71	0.36	0.41
	4.0	40	3.5	0.42	0.49
	5.0	41	4.47	0.51	0.59
	6.0	43	5.23	0.54	0.63
	8.0	43	7.06	0.74	0.85
45	1.5	35	1.54	0.24	0.28
	2.0	37	2.07	0.29	0.34
	2.5	37	2.51	0.35	0.41
	3.0	40	3.09	0.37	0.43
	4.0	42	4.01	0.44	0.51
	5.0	45	5.09	0.48	0.56
	6.0	46	6.01	0.55	0.63
	8.0	47	8.03	0.7	0.81
55 – 75	1.5	35	1.59	0.25	0.29
	2.0	37	2.14	0.3	0.35
	2.5	37	2.6	0.37	0.42
	3.0	40	3.2	0.39	0.44
	4.0	42	4.15	0.45	0.52
	5.0	45	5.27	0.5	0.58
	6.0	46	6.22	0.57	0.65
	8.0	47	8.31	0.72	0.84

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5000 Plus PRS Std. Angle Rain Curtain™ Nozzle Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
1.7	1.5	10.1	0.25	4.20	5	6
	2.0	10.7	0.34	5.40	6	7
	2.5	10.7	0.41	6.60	7	8
	3.0	11.0	0.51	8.40	8	10
	4.0	11.3	0.66	10.80	10	12
	5.0	11.9	0.84	13.80	12	14
	6.0	11.9	0.97	16.20	14	16
	8.0	11.0	1.34	22.20	22	26
2.0	1.5	10.2	0.28	4.80	5	6
	2.0	10.8	0.36	6.00	6	7
	2.5	10.9	0.44	7.20	7	9
	3.0	11.2	0.55	9.00	9	10
	4.0	11.6	0.71	12.00	11	12
	5.0	12.1	0.91	15.00	12	14
	6.0	12.4	1.05	17.40	14	16
	8.0	11.8	1.45	24.00	21	24
2.5	1.5	10.4	0.31	5.40	6	7
	2.0	11.0	0.41	6.60	7	8
	2.5	11.3	0.50	8.40	8	9
	3.0	11.2	0.62	10.20	9	11
	4.0	12.3	0.81	13.20	11	13
	5.0	12.7	1.03	17.40	13	15
	6.0	13.2	1.21	20.40	14	16
	8.0	13.3	1.63	27.00	19	21
3.0	1.5	10.6	0.34	6.00	6	7
	2.0	11.2	0.45	7.80	7	8
	2.5	11.3	0.56	9.60	9	10
	3.0	12.1	0.69	11.40	9	11
	4.0	12.7	0.89	16.80	11	13
	5.0	13.5	1.13	18.60	12	14
	6.0	13.9	1.34	22.20	14	16
	8.0	14.1	1.79	30.00	18	21
3.5 – 5.2	1.5	10.6	0.35	6.00	6	7
	2.0	11.2	0.47	7.80	8	9
	2.5	11.3	0.58	10.20	9	11
	3.0	12.1	0.71	12.00	10	11
	4.0	12.7	0.92	15.60	12	13
	5.0	13.5	1.17	19.20	13	15
	6.0	13.9	1.39	22.80	14	17
	8.0	14.1	1.85	31.20	18	21

5000 Plus PRS Low Angle Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
25	1.0 LA	25	0.76	0.22	0.26
	1.5 LA	27	1.15	0.3	0.35
	2.0 LA	29	1.47	0.34	0.39
	3.0 LA	29	2.23	0.51	0.59
35	1.0 LA	28	0.92	0.21	0.25
	1.5 LA	30	1.38	0.3	0.34
	2.0 LA	31	1.77	0.35	0.41
	3.0 LA	33	2.68	0.47	0.55
45	1.0 LA	29	1.05	0.23	0.26
	1.5 LA	31	1.58	0.32	0.37
	2.0 LA	32	2.02	0.38	0.44
	3.0 LA	35	3.07	0.48	0.56
55 – 75	1.0 LA	29	1.09	0.25	0.29
	1.5 LA	31	1.64	0.33	0.38
	2.0 LA	32	2.09	0.39	0.45
	3.0 LA	35	3.18	0.5	0.58

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

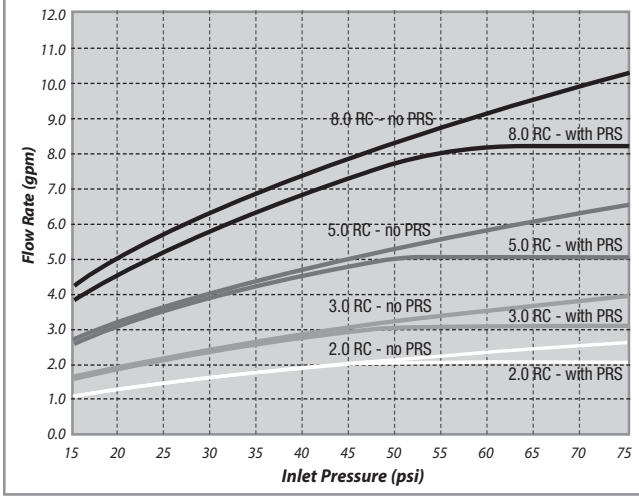
Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5000 Plus PRS Low Angle Nozzle Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
1.7	1.0 LA	7.6	0.17	3.00	6	7
	1.5 LA	8.2	0.26	4.20	8	9
	2.0 LA	8.8	0.33	5.40	9	10
	3.0 LA	8.8	0.51	8.40	13	15
2.0	1.0 LA	8.0	0.18	3.00	6	6
	1.5 LA	8.6	0.28	4.80	8	9
	2.0 LA	9.1	0.36	6.00	9	10
	3.0 LA	9.3	0.55	9.00	13	15
2.5	1.0 LA	8.6	0.20	3.60	5	6
	1.5 LA	9.2	0.32	5.40	8	9
	2.0 LA	9.5	0.41	6.60	9	10
	3.0 LA	10.1	0.62	10.20	12	14
3.0	1.0 LA	8.8	0.22	3.60	6	7
	1.5 LA	9.4	0.35	6.00	8	9
	2.0 LA	9.7	0.45	7.80	10	11
	3.0 LA	10.6	0.68	11.40	12	14
3.5 – 5.2	1.0 LA	8.8	0.23	3.60	6	7
	1.5 LA	9.4	0.36	6.00	8	10
	2.0 LA	9.7	0.47	7.80	10	12
	3.0 LA	10.6	0.70	12.00	13	15

Flow Rate v Inlet Pressure – Rain Curtain™ Nozzles



5000/5000 Plus MPR Nozzles

Faster Install and Audit with Color-Coded Matched Precipitation Rate Between 25' and 35'

- Greener grass with less water – Rain Curtain™ Nozzles deliver superior performance
- Design flexibility with a precipitation rate matching between sets and with the Rotary Nozzle
- Color-coded by radius for easy identification

Features

- Three nozzle trees of 25', 30', and 35' (7.6 m, 9.1 m, 10.7 m) radii
- Each tree contains a Q (90°), T (120°), H (180°), and F (360°) nozzle
- No fixed arc plate required
- Compatible with both the 5000 and 5000 Plus Rotor Series
- Rain Curtain™ nozzle technology provides:
  - Large droplets for consistent performance
  - Effective close-in watering
  - Even distribution over the entire radius
- Precipitation rate of 0.60 in/hr (15.2 mm/hr) reduces runoff and erosion
- Nozzles are easy to insert and remove
- Stackable nozzle trees for convenient storage
- Precipitation rate matches Rain Bird Rotary Nozzle (see page 24)

Models

- 5000-MPR-25: Tree of nozzles for 25-foot radius with Q, T, H, F nozzles attached
- 5000-MPR-30: Tree of nozzles for 30-foot radius with Q, T, H, F nozzles attached
- 5000-MPR-35: Tree of nozzles for 35-foot radius with Q, T, H, F nozzles attached

How To Specify

5000 - MPR - 25 - Q

- 5000 — Model: Rotor
- MPR — Nozzle: Matched Precipitation rate
- 25 — Radius Range: 25', 30', 35'
- Q — Pattern: Q=Quarter, T=Third, H=Half, F=Full

5000/5000 Plus MPR Nozzles

5000-MPR-25 (Red)

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
Quarter	25	23	0.74	0.54	0.62
	35	24	0.88	0.59	0.68
	45	25	1.00	0.62	0.71
	55	25	1.11	0.68	0.79
	65	25	1.21	0.75	0.86
Third	25	23	1.00	0.55	0.63
	35	24	1.21	0.61	0.70
	45	25	1.38	0.64	0.74
	55	25	1.53	0.71	0.82
	65	25	1.67	0.77	0.89
Half	25	23	1.44	0.52	0.61
	35	24	1.73	0.58	0.67
	45	25	1.98	0.61	0.70
	55	25	2.21	0.68	0.79
	65	25	2.41	0.74	0.86
Full	25	23	2.78	0.51	0.58
	35	24	3.34	0.56	0.64
	45	25	3.82	0.59	0.68
	55	25	4.25	0.65	0.76
	65	25	4.63	0.71	0.82

5000-MPR-25 (Red) METRIC

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
Quarter	1.7	7.0	0.17	3.0	13.7	15.8
	2.4	7.3	0.20	3.6	14.9	17.3
	3.1	7.6	0.23	3.6	15.6	18.1
	3.8	7.6	0.25	4.2	17.4	20.1
	4.5	7.6	0.27	4.8	18.9	21.9
Third	1.7	7.0	0.23	3.6	13.9	16.0
	2.4	7.3	0.27	4.8	15.4	17.8
	3.1	7.6	0.31	5.4	16.2	18.7
	3.8	7.6	0.35	6.0	18.0	20.7
	4.5	7.6	0.38	6.6	19.6	22.6
Half	1.7	7.0	0.33	5.4	13.3	15.4
	2.4	7.3	0.39	6.6	14.7	17.0
	3.1	7.6	0.45	7.2	15.5	17.9
	3.8	7.6	0.50	8.4	17.3	20.0
	4.5	7.6	0.55	9.0	18.9	21.8
Full	1.7	7.0	0.63	10.8	12.8	14.8
	2.4	7.3	0.76	12.6	14.2	16.4
	3.1	7.6	0.87	14.4	14.9	17.3
	3.8	7.6	0.97	16.2	16.6	19.2
	4.5	7.6	1.05	17.4	18.1	20.9

Water Saving

5000/5000 Plus MPR Nozzles deliver matched precipitation rates within and between radii from 25' to 35'. This eliminates the risks of over- or underwatering.

5000-MPR-30 (Green)

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
Quarter	25	29	1.03	0.47	0.54
	35	30	1.23	0.53	0.61
	45	30	1.40	0.60	0.69
	55	30	1.56	0.67	0.77
	65	30	1.69	0.72	0.83
Third	25	29	1.34	0.46	0.53
	35	30	1.62	0.52	0.60
	45	30	1.85	0.59	0.69
	55	30	2.06	0.66	0.76
	65	30	2.24	0.72	0.83
Half	25	29	2.15	0.49	0.57
	35	30	2.59	0.55	0.64
	45	30	2.96	0.63	0.73
	55	30	3.30	0.71	0.82
	65	30	3.60	0.77	0.89
Full	25	29	4.24	0.49	0.56
	35	30	5.08	0.54	0.63
	45	30	5.78	0.62	0.71
	55	30	6.39	0.68	0.79
	65	30	6.92	0.74	0.85

5000-MPR-30 (Green) METRIC

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
Quarter	1.7	8.8	0.23	3.6	12.0	13.8
	2.4	9.1	0.28	4.8	13.4	15.4
	3.1	9.1	0.32	5.4	15.2	17.6
	3.8	9.1	0.35	6.0	17.0	19.6
	4.5	9.1	0.38	6.6	18.4	21.2
Third	1.7	8.8	0.30	4.8	11.7	13.5
	2.4	9.1	0.37	6.0	13.2	15.2
	3.1	9.1	0.42	7.2	15.1	17.4
	3.8	9.1	0.47	7.8	16.8	19.4
	4.5	9.1	0.51	8.4	18.3	21.1
Half	1.7	8.8	0.49	8.4	12.5	14.4
	2.4	9.1	0.59	9.6	14.1	16.2
	3.1	9.1	0.67	11.4	16.1	18.6
	3.8	9.1	0.75	12.6	17.9	20.7
	4.5	9.1	0.82	13.8	19.6	22.6
Full	1.7	8.8	0.96	16.2	12.3	14.2
	2.4	9.1	1.15	19.2	13.8	15.9
	3.1	9.1	1.31	21.6	15.7	18.1
	3.8	9.1	1.45	24.0	17.4	20.0
	4.5	9.1	1.57	26.4	18.8	21.7

5000-MPR-35 (Beige)

Nozzle	Pressure psi	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
Quarter	25	32	1.40	0.53	0.61
	35	34	1.67	0.56	0.64
	45	35	1.92	0.60	0.70
	55	35	2.13	0.67	0.77
	65	35	2.31	0.73	0.84
Third	25	32	1.77	0.50	0.58
	35	34	2.15	0.54	0.62
	45	35	2.46	0.58	0.67
	55	35	2.74	0.65	0.75
	65	35	2.99	0.70	0.81
Half	25	32	2.75	0.52	0.60
	35	34	3.33	0.55	0.64
	45	35	3.81	0.60	0.69
	55	35	4.23	0.66	0.77
	65	35	4.62	0.73	0.84
Full	25	32	5.36	0.50	0.58
	35	34	6.62	0.55	0.64
	45	35	7.58	0.60	0.69
	55	35	8.43	0.66	0.76
	65	35	9.18	0.72	0.83

5000-MPR-35 (Beige) METRIC

Nozzle	Pressure bar	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
Quarter	1.7	9.8	0.32	5.4	13.4	15.4
	2.4	10.4	0.38	6.6	14.1	16.3
	3.1	10.7	0.44	7.2	15.3	17.7
	3.8	10.7	0.48	7.8	17.0	19.6
	4.5	10.7	0.52	9.0	18.4	21.3
Third	1.7	9.8	0.40	6.6	12.7	14.6
	2.4	10.4	0.49	8.4	13.6	15.8
	3.1	10.7	0.56	9.6	14.7	17.0
	3.8	10.7	0.62	10.2	16.4	18.9
	4.5	10.7	0.68	11.4	17.9	20.7
Half	1.7	9.8	0.62	10.2	13.1	15.2
	2.4	10.4	0.76	12.6	14.1	16.3
	3.1	10.7	0.87	14.4	15.2	17.6
	3.8	10.7	0.96	16.2	16.9	19.5
	4.5	10.7	1.05	17.4	18.4	21.3
Full	1.7	9.8	1.22	20.4	12.8	14.8
	2.4	10.4	1.50	25.2	14.0	16.2
	3.1	10.7	1.72	28.8	15.1	17.5
	3.8	10.7	1.91	31.8	16.8	19.4
	4.5	10.7	2.09	34.8	18.3	21.2

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5500 and 8005 Series

Protect Your Turf with High Performance, Vandal and Abuse Resistant Rotors from 17' to 81'

NEW 8005!
All of the functionality of the 7005 and 8005 in one rotor!

- Greener grass with less water – Rain Curtain™ Nozzles deliver superior performance
- Save time and replacement costs with this vandal and abuse resistant rotor family
- Lower inventory costs with a continuous 360 full-circle and part-circle operation in one head

Features

- **Rain Curtain™ Nozzle Technology**
  - Color coded Rain Curtain™ Nozzles for optimal distribution and close-in watering resulting in superior uniformity.
  - Nozzles are interchangeable from the front with no special tools
- **Vandal and Abuse Resistance**
  - Memory Arc® returns the rotor to its original arc setting
  - Non-strippable drive mechanism prevents damage from vandals and equipment
  - Brass reinforced nozzle turret to riser connection withstands side impact damage
  - Optional stainless steel riser model helps deter vandalism on public turf areas
- **Installation and Maintenance**
  - Left and right side trips are independently adjustable for ease of installation without turning the case and loosening the pipe connection
  - Easy, wet, dry arc adjustment with only a slotted screwdriver through top of rotor from 50° to 330° part-circle, 360° non- reversing full-circle
  - Reduce inventory requirements with continuous full and part-circle operation in one unit
  - Self-adjusting stator allows nozzle replacement with no other adjustments required
- **Design Solutions and Safety**
  - Standard Seal-A-Matic™ (SAM) check device/riser to help prevent low-head drainage
  - Standard black rubber cover
  - Optional purple cover for easy identification of non-potable systems
  - Small exposed diameter reduces possibility of injury on play areas
  - Optional rubber Sod Cup for player safety on sports field applications
- **Durability**
  - Redundant wiper seal reduces stick-ups and wiper seal leaks
  - Five-year trade warranty
  - Water-lubricated gear drive
  - Heavy duty retract spring ensures positive pop-down

5505 8005

How To Specify

5505 - SS - NP - 12

- **Model**: 5500 Series, 8005 Series
- **Optional Feature**: Stainless steel riser (5500 only; excludes 5512)
- **Optional Feature**: Non-potable rubber cover
- **Nozzle Size**: 12

Note: For non-U.S. applications, it is necessary to specify NPT or BSP thread type.

Water Saving

With Rain Curtain™ Nozzle performance and vandal and abuse resistant features, this family of rotors ensures that water ends up where it belongs.

5500 Series

Operating Range

- Radius: 17 to 55 feet (5.2 to 16.8 m)
- Precipitation rate: 0.21 to 1.48 in/hr (6.3 to 33.8 mm/h)
- Pressure: 40 to 90 psi (2.8 to 6.2 bar)
- Flow: 1.2 to 15.5 gpm (0.32 to 3.52 m^3/h; 4.52 to 58.88 l/m)

Specifications

- ¾" (20/27) NPT female threaded inlet
- SAM check device holds up to 10 feet (3.1 m) of head
- Rain Curtain™ Nozzles: 2.0 - orange, 3.0 - red, 4.0 - black, 5.0 - yellow, 6.0 - light blue, 8.0 - dark green, 10.0 - grey, 12.0 - beige; and short throw nozzle tree 18s, 22s, 26s, 30s - aqua
- Nozzle outlet trajectory is 22°

Dimensions

- Exposed diameter: 1¾" (4.4 cm)
- Overall diameter: 2¾" (7.0 cm)
- Overall height:* 9¼" (23.5 cm)
- Pop-up height:* 5" (12.7 cm)

Models

- 5505: ¾" NPT female threaded inlet (5" plastic riser stem)
- 5505-SS: ¾" NPT female threaded inlet (5" stainless steel covered riser stem)
- 5512: ¾" NPT female threaded inlet (12" plastic riser stem)

* ***Note:*** *5512 maximum pressure 75 psi (5,2 bar)*

8005 Series

Operating Range

- Radius: 39 to 81 feet (11.9 to 24.7 m)
- Precipitation rate: 0.48 to 1.23 inches per hour (12 to 31 mm/h)
- Pressure: 50 to 100 psi (3.5 to 6.9 bar)
- Flow: 3.8 to 36.3 gpm (0.86 to 8.24 m^3/h; 14.4 to 137.4 l/m)

Note: *Flow ranges of 7005 and 8005 are combined into 8005 rotor*

Specifications

- 1" (26/34) NPT or BSP female threaded inlet
- SAM check device holds up to 10 feet (3.1 m) of head
- Nozzle outlet trajectory is 25°
- Rain Curtain™ Nozzles: 04 - black; 06 - light blue; 08 - dark green; 10 - gray; 12 - beige; 14 - light green; 16 - dark brown; 18 - dark blue; - 20 - red; 22 - yellow; 24 - orange; 26 - white

Dimensions

- Exposed diameter: 1⅞" (4.8 cm)
- Overall diameter: 3⅛" (7.9 cm)
- Overall height:** 10⅛" (25.7 cm)
- Pop-up height:** 5" (12.7 cm)

Models

- 8005: 1" NPT female threaded inlet (plastic riser stem)
- Optional purple cover for easy identification of non-potable systems
- Optional Sod Cup

Note: *All models available with BSP threads*

** ***Note:*** *Pop-up height is measured from cover to the primary nozzle port. Overall body height is measured popped down*

Sod Cup for 7005

5500 Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
30	2	33	1.2	0.21	0.25
	3	35	2.3	0.36	0.42
	4	37	2.4	0.34	0.39
	5	37	2.6	0.37	0.42
	6	39	4.2	0.53	0.61
	8	39	5.3	0.67	0.77
40	2	37	1.6	0.23	0.26
	3	39	2.7	0.34	0.39
	4	41	2.9	0.33	0.38
	5	41	3.5	0.40	0.46
	6	45	4.8	0.46	0.53
	8	45	6.4	0.61	0.70
	10	41	7.5	0.86	0.99
	12	39	10.1	1.28	1.48
50	2	37	1.7	0.24	0.28
	3	41	3.0	0.34	0.40
	4	43	3.3	0.34	0.40
	5	45	3.8	0.36	0.42
	6	47	5.4	0.47	0.54
	8	49	7.3	0.59	0.68
	10	47	8.9	0.78	0.90
	12	45	11.1	1.06	1.22
60	2	37	1.9	0.27	0.31
	3	41	3.3	0.38	0.44
	4	45	3.6	0.34	0.40
	5	47	4.8	0.42	0.48
	6	47	6.0	0.52	0.60
	8	51	8.2	0.61	0.70
	10	51	9.7	0.72	0.83
	12	51	12.3	0.91	1.05
70	2	39	2.1	0.27	0.31
	3	43	3.5	0.36	0.42
	4	45	3.9	0.37	0.43
	5	47	5.1	0.44	0.51
	6	47	6.5	0.57	0.65
	8	53	8.8	0.60	0.70
	10	53	11.1	0.76	0.88
	12	53	13.5	0.93	1.07
80	2	39	2.3	0.29	0.34
	3	43	3.8	0.40	0.46
	4	45	4.2	0.40	0.46
	5	47	5.5	0.48	0.55
	6	49	7.0	0.56	0.65
	8	53	9.5	0.65	0.75
	10	55	12.1	0.77	0.89
	12	55	14.4	0.92	1.06
90	10	55	13.1	0.83	0.96
	12	55	15.5	0.99	1.14

5500 Short Radius Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
30	18S	17	1.4	0.93	1.08
	22S	19	1.4	0.75	0.86
	26S	25	1.4	0.43	0.50
	30S	25	1.7	0.52	0.60
40	18S	19	1.5	0.80	0.92
	22S	21	1.6	0.70	0.81
	26S	25	1.9	0.59	0.68
	30S	29	1.8	0.41	0.48
50	18S	21	1.8	0.79	0.91
	22S	23	1.8	0.66	0.76
	26S	29	2.1	0.48	0.56
	30S	31	2.0	0.40	0.46
60	18S	23	2.0	0.73	0.84
	22S	25	2.0	0.62	0.71
	26S	29	2.4	0.55	0.63
	30S	33	2.2	0.39	0.45
70	18S	23	2.2	0.80	0.92
	22S	25	2.3	0.71	0.82
	26S	29	2.8	0.64	0.74
	30S	35	2.8	0.44	0.51
80	18S	25	2.4	0.74	0.85
	22S	27	2.5	0.66	0.76
	26S	29	3.1	0.71	0.82
	30S	35	3.1	0.49	0.56

5500 Short Radius Nozzles

5500 Nozzle Performance — METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	Precip ■ mm/h	Precip ▲ mm/h
2.1	2	10.1	0.32	4.54	6.3	7.3
	3	10.7	0.52	8.71	9.2	10.6
	4	11.3	0.59	9.08	9.3	10.7
	5	11.3	0.73	9.84	11.4	13.2
	6	11.3	0.86	15.90	13.6	15.7
	8	10.1	1.23	20.06	24.2	28.0
2.5	2	10.8	0.35	5.49	5.9	6.8
	3	11.4	0.58	9.65	8.9	10.2
	4	12.0	0.66	10.27	9.1	10.5
	5	12.0	0.81	11.97	11.2	12.9
	6	12.4	0.96	17.32	12.5	14.4
	8	11.2	1.37	22.67	21.8	25.2
3.0	2	11.3	0.38	6.19	6.0	6.9
	3	12.1	0.64	10.62	8.7	10.0
	4	12.7	0.74	11.51	9.1	10.5
	5	12.9	0.90	13.65	10.8	12.5
	6	13.3	1.07	18.97	12.1	13.9
	8	12.3	1.53	25.42	20.1	23.2
	10	13.1	1.74	30.25	20.1	23.2
	12	12.5	2.30	39.56	29.3	33.8
3.5	2	11.3	0.41	6.49	6.5	7.5
	3	12.5	0.69	11.44	8.8	10.2
	4	13.2	0.80	12.58	9.2	10.7
	5	13.8	0.98	14.67	10.4	12.0
	6	13.8	1.17	20.61	12.3	14.2
	8	13.2	1.67	27.89	19.3	22.3
	10	14.4	1.83	33.92	17.6	20.3
	12	13.9	2.54	42.36	26.5	30.6
4.0	2	11.3	0.45	7.04	7.0	8.1
	3	12.5	0.75	12.27	9.7	11.2
	4	13.6	0.85	13.40	9.2	10.6
	5	14.2	1.05	17.42	10.4	12.0
	6	14.2	1.25	22.26	12.4	14.3
	8	13.6	1.80	30.36	19.5	22.5
	10	15.3	2.12	36.11	18.1	20.9
	12	15.2	2.74	45.65	23.8	27.4
4.5	2	11.6	0.48	7.59	7.1	8.2
	3	12.8	0.80	12.89	9.7	11.2
	4	13.7	0.90	14.22	9.6	11.0
	5	14.3	1.12	18.77	10.9	12.6
	6	14.3	1.33	23.71	13.0	15.0
	8	14.0	1.92	32.23	19.5	22.5
	10	15.9	2.38	39.51	18.9	21.9
	12	15.9	2.94	48.95	23.3	26.9
5.0	2	11.9	0.51	8.14	7.2	8.3
	3	13.1	0.83	13.53	9.7	11.2
	4	13.7	0.95	15.05	10.1	11.6
	5	14.3	1.18	19.69	11.5	13.3
	6	14.5	1.41	25.08	13.4	15.5
	8	14.5	2.04	33.98	19.4	22.5
	10	16.3	2.60	42.97	19.5	22.5
	12	16.3	3.12	51.96	23.4	27.1
5.5	2	11.9	0.52	8.69	7.4	8.5
	3	13.1	0.88	14.36	10.3	11.9
	4	13.7	1.00	15.87	10.6	12.2
	5	14.3	1.25	20.78	12.2	14.0
	6	14.9	1.47	26.45	13.2	15.3
	8	14.9	2.15	35.90	19.3	22.3
	10	16.8	2.74	45.71	19.6	22.6
	12	16.8	3.27	54.43	23.3	26.9
6.0	10	16.8	2.91	48.46	20.7	23.9
	12	16.8	3.45	57.43	24.5	28.3
6.2	10	16.8	2.98	49.58	21.2	24.4
	12	16.8	3.52	58.66	25.1	28.9

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5500 Short Radius Nozzle Performance — METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.1	18S	5.2	0.32	5.3	23.7	27.3
	22S	5.8	0.32	5.3	19.0	21.9
	26S	7.6	0.32	5.3	11.0	12.6
	30S	7.6	0.39	6.4	13.3	15.4
2.5	18S	5.6	0.33	5.5	21.5	24.8
	22S	6.2	0.35	5.8	18.2	21.0
	26S	7.6	0.39	6.5	13.4	15.5
	30S	8.4	0.40	6.7	11.4	13.2
3.0	18S	6.0	0.36	6.1	20.2	23.3
	22S	6.6	0.38	6.3	17.3	20.0
	26S	8.0	0.45	7.5	13.8	16.0
	30S	9.1	0.42	7.1	10.4	12.0
3.5	18S	6.4	0.41	6.9	19.8	22.9
	22S	7.1	0.41	6.9	16.6	19.1
	26S	8.8	0.48	8.0	12.3	14.3
	30S	9.5	0.46	7.6	10.2	11.7
4.0	18S	6.9	0.45	7.4	18.8	21.7
	22S	7.5	0.45	7.4	15.8	18.3
	26S	8.8	0.53	8.9	13.6	15.7
	30S	9.9	0.49	8.2	9.9	11.5
4.5	18S	7.0	0.49	8.2	19.9	23.0
	22S	7.6	0.49	8.2	16.9	19.5
	26S	8.8	0.59	9.9	15.2	17.5
	30S	10.4	0.57	9.5	10.6	12.2
5.0	18S	7.2	0.53	8.9	20.8	24.0
	22S	7.8	0.53	8.9	17.7	20.4
	26S	8.8	0.65	10.9	16.7	19.3
	30S	10.7	0.65	10.9	11.5	13.3
5.5	18S	7.6	0.57	9.4	19.6	22.6
	22S	8.2	0.57	9.4	16.8	19.4
	26S	8.8	0.70	11.7	18.0	20.8
	30S	10.7	0.70	11.7	12.3	14.3

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

5500 Cutaway

5500 Series Nozzles

8005 Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
50	● 04	39	3.8	0.48	0.56
	● 06	45	5.6	0.53	0.62
	● 08	49	6.6	0.53	0.61
	● 10	53	9.3	0.64	0.74
	● 12	57	11.1	0.66	0.76
	● 14	59	12.6	0.70	0.81
	● 16	61	14.3	0.74	0.85
	● 18	63	16.1	0.78	0.90
	● 20	65	18.6	0.85	0.98
	● 22	65	20.7	0.94	1.09
	● 24	63	22.3	1.08	1.25
	○ 26	65	24.3	1.11	1.28
60	● 04	39	3.8	0.48	0.56
	● 06	45	6.1	0.58	0.67
	● 08	49	8.4	0.67	0.78
	● 10	53	10.1	0.69	0.80
	● 12	59	12.0	0.66	0.77
	● 14	61	14.3	0.74	0.85
	● 16	65	15.9	0.72	0.84
	● 18	65	17.8	0.81	0.94
	● 20	67	20.1	0.86	1.00
	● 22	71	23.2	0.89	1.02
	● 24	69	24.7	1.00	1.15
	○ 26	73	26.7	0.96	1.11
70	● 04	39	4.7	0.60	0.69
	● 06	45	6.7	0.64	0.74
	● 08	49	9.0	0.72	0.83
	● 10	55	11.1	0.71	0.82
	● 12	59	13.2	0.73	0.84
	● 14	63	15.3	0.74	0.86
	● 16	67	17.2	0.74	0.85
	● 18	67	19.3	0.83	0.96
	● 20	71	22.0	0.84	0.97
	● 22	73	25.2	0.91	1.05
	● 24	75	27.0	0.92	1.07
	○ 26	75	29.4	1.01	1.16
80	● 04	39	5.0	0.63	0.73
	● 06	45	7.1	0.68	0.78
	● 08	49	9.8	0.79	0.91
	● 10	55	11.8	0.75	0.87
	● 12	61	14.2	0.73	0.85
	● 14	63	16.4	0.80	0.92
	● 16	67	18.6	0.80	0.92
	● 18	69	20.9	0.85	0.98
	● 20	71	23.9	0.91	1.05
	● 22	75	27.3	0.93	1.08
	● 24	77	29.2	0.95	1.10
	○ 26	79	31.5	0.97	1.12
90	● 12	61	14.7	0.76	0.88
	● 14	65	17.9	0.82	0.94
	● 16	69	20.0	0.81	0.93
	● 18	71	22.2	0.85	0.98
	● 20	73	25.3	0.91	1.06
	● 22	75	29.1	1.00	1.15
	● 24	79	31.0	0.96	1.10
	○ 26	79	33.7	1.04	1.20
100	● 20	75	26.8	0.85	0.97
	● 22	77	30.7	1.00	1.15
	● 24	79	32.8	1.01	1.17
	○ 26	81	36.3	1.07	1.23

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

8005 Cutaway

8005 Nozzle Performance — METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
3.5	4	11.9	0.86	14.38	12	14
	6	13.7	1.28	21.34	14	16
	8	14.9	1.59	25.50	14	16
	10	16.1	2.10	35.43	16	19
	12	17.5	2.52	42.27	16	19
	14	18.0	2.89	48.18	18	21
	16	18.7	3.28	54.59	19	22
	18	19.2	3.69	61.43	20	23
	20	19.9	4.25	70.83	21	25
	22	20.0	5.08	79.07	25	29
	24	19.3	5.11	85.10	27	32
	26	20.0	5.57	92.67	28	32
4.0	4	11.9	0.93	14.38	13	15
	6	13.7	1.37	22.71	15	17
	8	14.9	1.75	30.44	16	18
	10	16.3	2.30	37.63	17	20
	12	17.7	2.70	44.74	17	20
	14	18.5	3.17	52.85	19	21
	16	19.6	3.54	58.98	18	21
	18	19.7	3.97	66.10	20	24
	20	20.3	4.50	74.95	22	25
	22	21.3	5.23	85.94	23	27
	24	20.7	5.50	91.69	26	30
	26	21.8	6.01	99.26	25	29
4.5	4	11.9	1.00	16.18	14	16
	6	13.7	1.45	24.28	15	18
	8	14.9	1.92	32.99	17	20
	10	16.5	2.40	40.22	18	20
	12	18.0	2.87	47.81	18	20
	14	18.9	3.37	56.12	19	22
	16	20.1	3.77	62.77	19	22
	18	20.1	4.22	70.36	21	24
	20	21.1	4.79	79.87	22	25
	22	22.0	5.51	91.80	23	26
	24	22.0	5.88	98.08	24	28
	26	22.6	6.42	106.44	25	29
5.0	4	11.9	1.06	18.08	15	17
	6	13.7	1.54	25.74	16	19
	8	14.9	2.09	34.83	19	22
	10	16.7	2.50	42.68	18	21
	12	18.3	3.05	50.92	18	21
	14	19.2	3.54	58.96	19	22
	16	20.4	3.99	66.44	19	22
	18	20.6	4.47	74.58	21	24
	20	21.6	5.11	85.08	22	25
	22	22.4	5.84	97.39	23	27
	24	23.0	6.26	104.29	24	27
	26	23.2	6.80	113.28	25	29
5.5	4	11.9	1.13	18.90	16	18
	6	13.7	1.62	26.84	17	20
	8	14.9	2.25	37.02	20	23
	10	16.8	2.70	44.60	19	22
	12	18.5	3.23	53.66	19	22
	14	19.2	3.72	61.98	20	23
	16	20.4	4.22	70.28	20	23
	18	21.0	4.74	78.97	21	25
	20	21.6	5.42	90.30	23	27
	22	22.8	6.19	103.15	24	28
	24	23.5	6.62	110.33	24	28
	26	24.1	7.14	119.05	25	28
6.0	12	18.6	3.30	55.07	19	22
	14	19.6	3.96	66.06	21	24
	16	20.9	4.45	74.12	20	24
	18	21.5	4.95	82.56	21	25
	20	22.1	5.65	94.18	23	27
	22	22.9	6.71	108.12	26	30
	24	23.9	6.92	115.31	24	28
	26	24.1	7.50	125.08	26	30
6.2	14	19.8	4.06	67.75	21	24
	16	21.0	4.54	75.70	21	24
	18	21.7	5.04	84.02	21	25
6.5	20	22.5	5.89	98.19	23	27
	22	23.4	6.84	112.73	25	29
	24	24.1	7.22	120.25	25	29
	26	24.3	7.91	131.76	27	31
6.9	20	22.9	6.09	101.43	23	27
	22	23.5	6.97	116.19	25	29
	24	24.1	7.45	124.14	26	30
	26	24.7	8.24	137.39	27	31

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

8005 Rain Curtain™ Nozzles

Falcon 6504
Cutaway

Falcon® 6504 Series

Reliable and Economical

- Greener grass with less water – Rain Curtain™ Nozzles deliver superior performance
- Easy installation and adjustment with a ratcheting stem
- The perfect solution for quick watering or wet-down of clay tennis courts or sports turf infield areas with the optional high-speed version (full rotation in approximately one minute)

Features

- **Rain Curtain™ Nozzle Technology**
  - Color coded Rain Curtain™ Nozzles with multiple ports for optimal long-range, mid-range, and close-in watering resulting in superior uniformity
  - Nozzles are interchangeable from the front with no special tools
- **Installation and Maintenance**
  - Ratcheting stem speeds installation
  - Easy arc adjustment (part-circle model) through top of rotor from 40° to 360°
  - Self-adjusting stator does not require replacement when changing nozzles
  - Radius adjustment screw allows radius reduction up to 25% without changing nozzles
  - Falcon rotors can be ordered in case quantities from the factory with nozzles pre-installed as a special order
- **Design Solutions**
  - Stainless steel riser option helps deter vandalism on public turf areas
  - Removable Seal-A-Matic™ (SAM) check device prevents puddling and erosion caused by low-head drainage
  - Standard black rubber cover or optional purple rubber cover for non-potable water
  - Small 2" (5.1 cm) exposed diameter reduces possibility of injury in play areas
  - High speed option for syringing infield areas or dust control
  - True 4" (10.2 cm) pop-up height to center line of nozzle clears taller turfgrass
- **Durability**
  - Five-year trade warranty
  - Water-lubricated gear drive for reliable, durable rotation
  - Heavy-duty, stainless steel retract spring ensures positive pop-down
  - Patented, pressure-activated wiper seal and tapered riser stem on both plastic and stainless steel models protect internals from debris to ensure positive pop-up and retraction
  - Stainless steel trip gears ensure long-term durability

How To Specify

NP
or
F4- PC- SS- HS- 16- P

- **Model** F4: Falcon
- **Rotation** Part-circle
- **Optional Feature** Stainless steel riser
- **Optional Features** Non-potable cover or, High-speed rotor
- **Nozzle Size** 16
- **Optional Feature** Pre-installed Nozzle

Note: For non-U.S. applications, it is necessary to specify NPT or BSP thread type.

Falcon 6504

Falcon 6504
Stainless Steel

Falcon® 6504 Series (cont.)

Operating Range

- Precipitation rate: 0.37 to 1.14 inches per hour (9 to 29 mm/h)
- Radius: 39 to 65 feet (11.9 to 19.8 m)
- Pressure: 30 to 90 psi (2.1 to 6.2 bar)
- Flow: 2.9 to 21.7 gpm (0.66 to 4.93 m³/h; 10.8 to 82.2 l/m)

Specifications

- 1" (26/34) female NPT or BSP threaded inlet
- SAM check device holds up to 10 feet (3.1 m) of elevation change
- Rain Curtain™ Nozzles: 04-black; 06-light blue; 08-dark green; 10-grey; 12-beige; 14-light green; 16-dark brown; 18-dark blue
- Nozzle outlet trajectory is 25°

Dimensions

- Overall height: 8½" (21.6 cm)
- Pop-up height: 4" (10.2 cm)
- Exposed surface diameter: 2" (5.1 cm)

Note: *Pop-up height is measured from cover to center of nozzle. Overall body height is measured popped down*

Models

- F4-FC: Full-circle
- F4-PC: Part-circle
- F4-FC-NP: Full-circle, non-potable cover
- F4-PC-NP: Part-circle, non-potable cover
- F4-FC-SS: Full-circle, stainless steel
- F4-PC-SS: Part-circle, stainless steel
- F4-FC-SS-HS: Full-circle, stainless steel, high speed rotation
- F4-PC-SS-HS: Part-circle, stainless steel, high speed rotation
- F4-FC-SS-NP: Full-circle, stainless steel, non-potable cover
- F4-PC-SS-NP: Part-circle, stainless steel, non-potable cover

Note: *All models available with BSP threads*

Falcon® 6504 Rain Curtain™ Nozzles

Falcon® 6504 Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
30	4	39	2.9	0.37	0.42
	6	43	4.2	0.44	0.50
40	4	41	3.3	0.38	0.44
	6	45	4.9	0.47	0.54
	8	49	6.6	0.53	0.61
	10	51	8.1	0.60	0.69
	12	53	9.7	0.66	0.77
	14	55	11.3	0.72	0.83
	16	55	12.6	0.80	0.93
	18	59	13.7	0.76	0.87
50	4	41	3.7	0.42	0.49
	6	49	5.5	0.44	0.51
	8	51	7.4	0.55	0.63
	10	53	9.1	0.62	0.72
	12	55	11.0	0.70	0.81
	14	59	12.7	0.70	0.81
	16	61	14.3	0.74	0.85
	18	59	15.4	0.85	0.98
60	4	41	4.0	0.46	0.53
	6	47	6.0	0.52	0.60
	8	51	8.2	0.61	0.70
	10	55	10.0	0.64	0.73
	12	57	12.2	0.72	0.83
	14	61	14.0	0.72	0.84
	16	63	15.7	0.76	0.88
	18	63	17.1	0.83	0.96
70	4	41	4.4	0.50	0.58
	6	49	6.3	0.51	0.58
	8	51	8.9	0.66	0.76
	10	57	10.8	0.64	0.74
	12	59	13.2	0.73	0.84
	14	61	15.2	0.79	0.91
	16	63	16.9	0.82	0.95
	18	65	18.3	0.83	0.96
80	4	43	4.6	0.48	0.55
	6	49	6.9	0.55	0.64
	8	53	9.4	0.64	0.74
	10	55	11.6	0.74	0.85
	12	61	14.0	0.72	0.84
	14	61	16.2	0.84	0.97
	16	63	18.1	0.88	1.01
	18	65	19.6	0.89	1.03
90	18	65	21.7	0.99	1.14

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.

Falcon® 6504 Nozzle Performance — METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.1	4	11.9	0.66	10.98	9	11
	6	13.1	0.95	15.90	11	13
2.5	4	12.3	0.72	11.92	10	11
	6	13.5	1.05	17.56	12	13
	8	14.9	1.50	25.20	13	16
	10	15.5	1.84	30.60	15	18
	12	16.2	2.20	36.60	17	19
	14	16.8	2.57	42.60	18	21
	16	16.8	2.86	47.40	20	24
	18	18.0	3.11	51.60	19	22
3.0	4	12.5	0.78	13.02	10	12
	6	14.1	1.16	19.34	12	13
	8	15.1	1.56	26.04	14	16
	10	15.8	1.92	31.99	15	18
	12	16.4	2.31	38.44	17	20
	14	17.2	2.68	44.63	18	21
	16	17.4	3.00	49.95	20	23
	18	18.0	3.25	54.11	20	23
3.5	4	12.5	0.85	14.09	11	13
	6	14.9	1.26	20.96	11	13
	8	15.5	1.69	28.24	14	16
	10	16.2	2.08	34.70	16	18
	12	16.8	2.52	41.98	18	21
	14	18.0	2.91	48.45	18	21
	16	18.6	3.27	54.53	19	22
	18	18.1	3.53	58.78	22	25
4.0	4	12.5	0.89	14.91	11	13
	6	14.4	1.34	22.33	13	15
	8	15.5	1.83	30.44	15	17
	10	16.6	2.23	37.17	16	19
	12	17.3	2.72	45.28	18	21
	14	18.5	3.12	52.01	18	21
	16	19.1	3.50	58.37	19	22
	18	19.0	3.81	63.45	21	24
4.5	4	12.5	0.96	15.94	12	14
	6	14.6	1.40	16.72	13	15
	8	15.5	1.95	32.43	16	19
	10	17.1	2.37	39.44	16	19
	12	17.7	2.89	48.17	18	21
	14	18.6	3.32	55.38	19	22
	16	19.2	3.71	61.82	20	23
	18	19.5	4.03	67.12	21	24
5.0	4	12.7	1.01	16.84	13	15
	6	14.9	1.47	15.08	13	15
	8	15.7	2.05	34.16	17	19
	10	17.2	2.50	41.64	17	19
	12	18.1	3.04	50.72	19	21
	14	18.6	3.51	58.49	20	23
	16	19.2	3.91	65.11	21	24
	18	19.8	4.23	70.51	22	25
5.5	4	13.1	1.04	17.39	12	14
	6	14.9	1.56	25.79	14	16
	8	16.1	2.13	35.54	16	19
	10	16.8	2.63	43.84	19	22
	12	18.6	3.18	52.92	18	21
	14	18.6	3.67	61.23	21	25
	16	19.2	4.10	68.40	22	26
	18	19.8	4.44	74.07	23	26
6.0	18	19.8	4.79	79.77	24	28
6.2	18	19.8	4.93	82.13	25	29

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

High-Speed Falcon® 6504 Nozzle Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
30	4	37	3.0	0.42	0.49
	6	39	4.3	0.54	0.63
40	4	41	3.5	0.40	0.46
	6	43	6.0	0.62	0.72
	8	47	6.6	0.58	0.66
	10	47	8.1	0.71	0.82
	12	49	9.9	0.79	0.92
	14	53	11.4	0.78	0.90
	16	51	12.6	0.93	1.08
	18	53	13.9	0.95	1.10
50	4	41	3.7	0.42	0.49
	6	45	5.6	0.53	0.62
	8	49	7.5	0.60	0.69
	10	49	9.2	0.74	0.85
	12	53	11.2	0.77	0.89
	14	53	12.9	0.88	1.02
	16	53	14.3	0.98	1.13
	18	55	15.6	0.99	1.15
60	4	41	4.2	0.48	0.56
	6	45	6.2	0.59	0.68
	8	47	8.3	0.72	0.84
	10	49	10.2	0.82	0.94
	12	53	12.4	0.85	0.98
	14	53	14.2	0.97	1.12
	16	55	15.7	1.00	1.15
	18	59	17.2	0.95	1.10
70	4	41	4.6	0.53	0.61
	6	43	6.7	0.70	0.81
	8	49	9.0	0.72	0.83
	10	51	11.1	0.82	0.95
	12	55	13.5	0.86	0.99
	14	53	15.3	1.05	1.21
	16	57	17.1	1.01	1.17
	18	59	18.6	1.03	1.19
80	4	39	4.9	0.62	0.72
	6	43	7.1	0.74	0.85
	8	51	9.7	0.72	0.83
	10	49	11.9	0.95	1.10
	12	55	14.4	0.92	1.06
	14	53	16.5	1.13	1.31
	16	59	18.4	1.02	1.18
	18	59	20.0	1.11	1.28
90	18	61	21.3	1.10	1.27

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

High-Speed Falcon® 6504 Nozzle Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.1	4	11.3	0.68	11.35	11	12
	6	11.9	0.98	15.90	14	16
2.5	4	12.0	0.75	12.54	10	12
	6	12.7	1.22	20.16	15	18
	8	14.2	1.49	25.20	15	17
	10	14.2	1.83	30.60	18	21
	12	14.8	2.24	37.20	20	24
	14	16.0	2.58	43.20	20	23
	16	15.4	2.85	47.40	24	28
	18	16.0	3.15	52.80	24	28
3.0	4	12.5	0.81	13.51	10	12
	6	13.3	1.33	22.18	15	17
	8	14.5	1.57	26.18	15	17
	10	14.5	1.93	32.12	18	21
	12	15.4	2.35	39.20	20	23
	14	16.2	2.71	48.09	21	24
	16	15.8	3.00	49.95	24	28
	18	16.4	3.29	54.87	25	28
3.5	4	12.5	0.85	14.15	11	13
	6	13.7	1.28	21.37	14	16
	8	14.9	1.72	28.62	16	18
	10	14.9	2.11	35.11	19	22
	12	16.2	2.56	42.74	20	23
	14	16.2	2.95	49.20	23	26
	16	16.2	3.27	54.53	25	29
	18	16.9	3.57	59.51	25	29
4.0	4	12.5	0.93	15.52	12	14
	6	13.7	1.38	23.02	15	17
	8	14.4	1.85	30.81	18	21
	10	14.9	2.27	37.86	20	24
	12	16.2	2.76	46.03	21	24
	14	16.2	3.17	52.77	24	28
	16	16.6	3.50	58.37	25	29
	18	17.7	3.83	63.90	24	28
4.5	4	12.5	1.00	16.69	13	15
	6	13.4	1.48	24.46	16	19
	8	14.6	1.97	32.81	18	21
	10	15.3	2.42	40.40	21	24
	12	16.5	2.95	49.13	22	25
	14	16.2	3.36	55.94	26	30
	16	17.1	3.73	62.22	26	30
	18	18.0	4.07	67.89	25	29
5.0	4	12.3	1.06	17.70	14	16
	6	13.1	1.56	25.74	18	21
	8	15.1	2.08	34.73	18	21
	10	15.4	2.57	42.78	22	25
	12	16.8	3.12	51.96	22	26
	14	16.2	3.54	59.06	27	31
	16	17.5	3.96	65.96	26	30
	18	18.0	4.30	71.74	27	31
5.5	4	11.9	1.11	18.52	16	18
	6	13.1	1.61	26.84	19	22
	8	15.5	2.20	36.65	18	21
	10	14.9	2.70	44.97	24	28
	12	16.8	3.27	54.43	23	27
	14	16.2	3.74	62.35	29	33
	16	18.0	4.17	69.53	26	30
	18	18.0	4.53	75.58	28	32
6.0	18	18.4	4.75	79.16	28	32
6.2	18	18.6	4.84	80.62	28	32

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

2045A Maxi-Paw™ / Maxi-Paw SAM

Dirty Water Applications - Spacing Up to 45 Feet (13.7 m)

- Flexibility – Straight-through flow for dirty water applications
- Reliability – Proven impact drive
- Performance – Five interchangeable, color-coded MPR nozzles

Features

- **Installation and Maintenance**
  - No tools required to change nozzles
  - Serviceable through the top of the case
- **Design Solutions**
  - Two interchangeable low-angle (LA) nozzles (optional)
  - Double-weighted arm for slower rotation and increased distance of throw
  - Adjustable arm spring for low-pressure and low-gallonage operation
  - Energy efficient, low-pressure and low-gallonage operation
  - Full-circle or adjustable arc 20° to 340°
  - Precision Jet Tube (PJ™)
  - Distance controller diffuser pin
  - FP trip for full- or part-circle operation
  - Combination 1/2" (15/21) or 3/4" (20/27) bottom inlet
- **Durability**
  - Heavy-duty plastic case with sturdy, reinforced ribbed design
  - Self-flushing inner trip with improved inner trip lever
  - Powerful reverse action
  - Hooded bearing for longer life
  - Multi-function, pressure-activated wiper seal
  - Inlet filter screen

Options

- Internal Seal-A-Matic™ (SAM) prevents puddling and erosion caused by low-head drainage and saves water (hold back 10' (3.1 m) or head)
- Purple cover for easy identification of non-potable systems

Operating Range

- Precipitation rate: 0.23 to 1.05 inches per hour (5.8 to 26.6 mm/h)
- Spacing: 22 to 45 feet (6.7 to 13.7 m)
- Flow rate: 1.5 to 8.4 gpm (0.36 to 1.86 m^3/h; 0.6 to 31.2 l/m)
- Radius: 22 to 45 feet (6.7 to 13.7 m)
- Pressure: 25 to 60 psi (2.0 to 4.5 bar)

Specifications

- Combination ½" (15/21) or ¾" (20/27) female bottom inlet
- ½" (15/21) female side inlet
- Nozzles: 06-red; 07-black; 08-blue; 10-yellow; 12-beige
- Low angle nozzles: 07LA-black; 10LA-yellow (optional)
- Nozzle outlet trajectory is 23°
- Low angle nozzle outlet trajectory is 11°
- Side inlet installation is not recommended in freezing climates

Dimensions

- Overall height: 9 3/10" (23.6 cm)
- Top diameter: 5" (12.7 cm)

Models

- 2045A Maxi-Paw
- 2045A Maxi-Paw-SAM
- 2045A Maxi-Paw-SAM-NP

Available Nozzles

- Standard trajectory: 06, 07, 08, 10, 12
- Low angle: 07LA, 10LA

2045A Maxi-Paw

Maxi-Paw® Wrench

- For removing internal assembly from case

Model

- 42064

42064

How To Specify

2045A- SAM-10- LA

- **Model** 2045A Maxi-Paw
- **Optional Feature** SAM
- **Nozzle Size** 10
- **Optional Feature** Low Angle Nozzle

Water Saving

With its straight through water flow and few moving parts, the Maxi-Paw provides superior water distribution in the harshest water conditions.

Maxi-Paw™ / Maxi-Paw SAM Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
25	06	-	-	-	-
	07 LA	22	1.5	0.60	0.69
	07	32	2.2	0.41	0.48
	08	35	2.8	0.44	0.51
	10 LA	25	3.4	1.05	1.21
	10	38	4.2	0.56	0.65
	12	39	5.5	0.70	0.80
35	06	37	2.0	0.28	0.32
	07 LA	23	1.9	0.69	0.80
	07	37	2.7	0.38	0.44
	08	38	3.3	0.44	0.51
	10 LA	29	4.0	0.92	1.06
	10	41	4.8	0.55	0.64
	12	42	6.3	0.69	0.79
45	06	38	2.3	0.31	0.35
	07 LA	25	2.1	0.65	0.75
	07	39	3.0	0.38	0.44
	08	40	3.7	0.45	0.51
	10 LA	31	4.5	0.90	1.04
	10	42	5.4	0.59	0.68
	12	44	7.1	0.71	0.82
55	06	38	2.5	0.33	0.39
	07 LA	25	2.3	0.71	0.82
	07	41	3.3	0.38	0.44
	08	41	4.1	0.47	0.54
	10 LA	32	5.0	0.94	1.09
	10	43	6.0	0.62	0.72
	12	45	7.9	0.75	0.87
60	06	38	2.6	0.35	0.40
	07 LA	25	2.4	0.74	0.85
	07	41	3.5	0.40	0.46
	08	42	4.2	0.46	0.53
	10 LA	32	5.4	1.02	1.17
	10	44	6.4	0.64	0.74
	12	45	8.4	0.80	0.92

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

Maxi-Paw™ / Maxi-Paw SAM Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.0	6	-	-	-	-	-
	07 LA	6.8	0.38	6.0	16	19
	7	10.4	0.55	9.0	10	12
	8	11.0	0.68	11.4	11	13
	10 LA	8.1	0.83	13.8	25	29
	10	11.9	1.01	16.8	14	16
	12	12.3	1.32	22.2	18	20
2.5	6	11.3	0.46	7.8	7	8
	07 LA	7.1	0.44	7.2	17	20
	7	11.4	0.62	10.2	10	11
	8	11.7	0.76	12.6	11	13
	10 LA	8.9	0.92	15.6	23	27
	10	12.5	1.11	18.6	14	16
	12	12.9	1.45	24.0	18	20
3.0	6	11.5	0.51	8.4	8	9
	07 LA	7.5	0.47	7.8	17	19
	7	11.8	0.67	11.4	10	11
	8	12.1	0.83	13.8	11	13
	10 LA	9.4	1.01	16.8	23	27
	10	12.8	1.21	20.4	15	17
	12	13.3	1.59	26.4	18	21
3.5	6	11.6	0.55	9.0	8	9
	07 LA	7.6	0.50	8.4	17	20
	7	12.2	0.72	12.0	10	11
	8	12.4	0.89	15.0	12	13
	10 LA	9.6	1.09	18.0	23	27
	10	13.0	1.30	21.6	15	18
	12	13.6	1.72	28.8	19	21
4.0	6	11.6	0.58	9.6	9	10
	07 LA	7.6	0.54	9.0	18	21
	7	12.5	0.78	13.2	10	11
	8	12.7	0.94	15.6	12	14
	10 LA	9.8	1.19	19.8	25	29
	10	13.3	1.42	23.4	16	19
	12	13.7	1.86	31.2	20	23

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

2045A Maxi-Paw Nozzles

TSJ/TSJ-PRS Series

Swing Joints Connect ¾" (1.9 cm), 1" (2.5 cm) and 1½" (3.8 cm) Rotors or Quick Coupler Valves to Lateral Pipes

- Patented swept elbow design minimizes turbulence and pressure loss while maximizing rotor performance
- No sharp inner corners (as some competitors have)
- No internal obstructions (as some competitors have)

Features

- Preassembled units save the contractor time and reduce installation costs
- The structural integrity from the swept elbow design reduces costs associated with fatigue-related failures
- Oversized threaded inlets, extra large grips, and large visible stops make hand tightening trouble-free
- Patented double O-rings provide extra protection against leaks and keep threads clean of debris during installation
- Patented low pressure relief vent prevents pressure from building up between the primary and secondary O-rings when the swing joint is assembled in water, eliminating blown O-rings
- Built to last from rigid PVC Type I, cell classifi cation 12454-B, conforming to ASTM D1784. All NPT threads, sockets, and spigots are PVC Schedule 80 per ASTM D2464 and D2467

TSJ-PRS Only Features

- Maintains a constant, uniform pressure into the rotor regardless of nozzle used:
  - 45 psi (3.1 bar) for ¾" swing joint
  - 70 psi (4.8 bar) for 1" swing joint
- Allows each rotor on a zone to operate at the same pressure, improving consistency and overall system performance
- Reduces misting, fogging, and other performance problems caused by high pressure
- Regulator housing is made of PVC that matches the high pressure rating of the Rain Bird turf swing joint and exceeds the pressure rating of rotors
- Diaphragm is made of a durable fabric reinforced elastomer for long life
- Porous filter provides atmospheric reference without allowing contamination to enter, enabling the system to be buried in any kind of soil

Operating Range

- Pressure rating: 315 psi at 73° F (21.7 bar at 22.8° C) (per ASTM D3139)
  - Tested without leakage for 60 minutes at 790 psi (54,5 bar)
  - Tested without leakage for short term exposure at 1000 psi (68,9 bar)
- ¾" joint pressure loss: 0.3 psi at 6 gpm (0.02 bar at 0.4 l/s)
- 1 " joint pressure loss: 1.5 psi at 18 gpm; 2.5 psi at 23 gpm (0.1 bar at 1,1 l/s; 0.2 bar at 1.5 l/s)
- 1½" joint pressure loss: 0.5 psi at 40 gpm; 1.6 psi at 70 gpm (0.03 bar at 2,5 l/s; 0.1 bar at 4,4 l/s)
- TSJ-PRS maximum flow: 22 gpm (1.41 l/s)
- High operating pressure rating (315 psi; 21.6 bar) is perfect for use in constant pressure situations
- Spigot inlet available on 1" (2.5 cm) swing joints
- See charts for pressure loss comparison and pressure regulation

TSJ-PRS Application Information

- The TSJ-PRS is not recommended for use in systems where the pressure in the lateral lines is equal to or less than the nominal regulation pressure, as the increased pressure drop may adversely affect the performance of such systems.
- To reduce the effects of water hammer, Rain Bird recommends flow rates in the supply line not exceed 5 ft/sec (1.5 m/s). The TSJ-PRS is not intended to function as a water hammer prevention device.
- There are no user-serviceable parts inside. The internal spring is under compression. Do not open the PRS unit under any circumstances.

Models

- TSJ-12075: 12" (30.5 cm) long, ¾" (20/27) M x M NPT swing joint
- TSJ-12: 12" (30.5 cm) long, 1" (26/34) M x M NPT swing joint
- TSJ-12150: 12" (31 cm) long, 1 ½" (40/49) M x M NPT swing joint
- TSJ-18: 18" (45.7 cm) long, 1" (26/34) M x M NPT swing joint
- TSJ-075-PRS: ¾" swing joint with 45 psi pressure regulator, 12" (30.5 cm) long, ¾" (20/27) M x M NPT inlet and outlet
- TSJ-100-PRS: 1" swing joint with 70 psi pressure regulator, 12" (30.5 cm) long, 1" (26/34) M x M NPT inlet and outlet

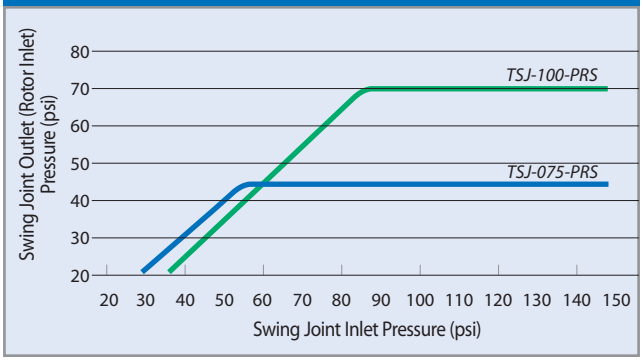
TSJ-075-PRS, TSJ-100-PRS

TSJ-12075, TSJ-12, TSJ-12150, TSJ-18

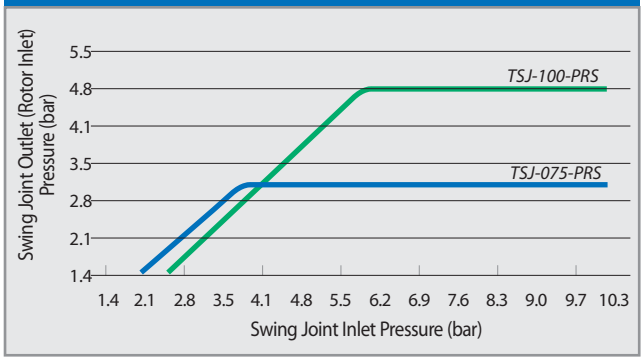
Water Saving

TSJ-PRS Series conserves water by reducing misting, fogging, and other performance problems caused by high pressure systems

TSJ-PRS Pressure Regulation



TSJ-PRS Pressure Regulation METRIC



Swing Joint Specifications

Model Number	Length		Inlet		Outlet		Thread	Pressure Regulation	
	US	METRIC	US	METRIC	US	METRIC		US	METRIC
TSJ-12075	12"	30.5 cm	¾" M	20/27 M	¾" M	20/27 M	NPT	n/a	n/a
TSJ-12	12"	30.5 cm	1" M	26/34 M	1" M	26/34 M	NPT	n/a	n/a
TSJ-12-150	12"	30.5 cm	1½" M	40/49 M	1½" M	40/49 M	NPT	n/a	n/a
TSJ-18	18"	45.7 cm	1" M	26/34 M	1" M	26/34 M	NPT	n/a	n/a
TSJ-075-PRS	12"	30.5 cm	¾" M	20/27 M	¾" M	20/27 M	NPT	45 psi	45 psi
TSJ-100-PRS	12"	30.5 cm	1" M	26/34 M	1" M	26/34 M	NPT	70 psi	70 psi

Holdup Tool with Bubble Level

Features

- Combination holdup tool/ bubble level makes proper installation easier
- Works with 5000, 5500, Falcon® 6504, and 8005

HOLDUPTOOL

ROTORTOOL

Features

- Flat blade screwdriver and pull-up tool all in one

Model

- ROTORTOOL

ROTORTOOL

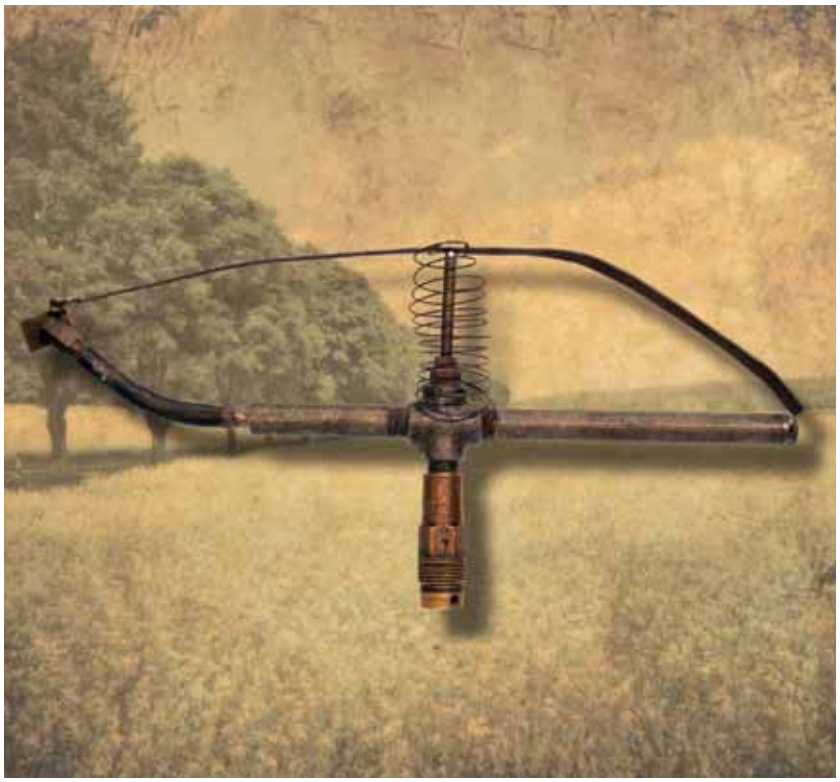
Online Water-Savings Calculators

Rain Bird has several online calculators available that will help you show your customers the potential water savings of using water-efficient Rain Bird rotors and nozzles:

- 5000/5000Plus PRS Rotors
- 5000/5000Plus MPR Rotor Nozzles
- TSJ-PRS Swing Joints

Availability

www.rainbird.com/calculators



Rain Bird introduced the first Impact Sprinkler to the market in 1933 (Patent #1.997.901) ushering in the era of modern irrigation techniques. This commitment to the design of superior, efficient, impact sprinklers is as strong today as it was 75 years ago and is evident in every product we offer.

Major Products

Primary Applications	2045-PJ Maxi-Bird	20ADJB	25BPJ-ADJ	35A-TNT	65PJADJ-TNT
Slopes	●	●	●	●	●
Ground Cover/Shrubs	●	●	●	●	●
Low Pressure Systems	●	●	●		
High Wind Areas	●	●	●		
Effluent Water	●	●	●	●	●

Water Saving Tips

- Rain Bird Impact Sprinklers have been designed for the demanding requirements of agricultural irrigation. These products have proven themselves to be grit tolerant and resistant to the attack of harsh water
- Both full-circle and part-circle models include drive mechanisms that have been refined to provide the smoothest, most reliable operation currently offered in the industry
- A generous selection of nozzles, operable across a wide pressure range, ensures that you will be able to find a sprinkler especially suited to your requirements

2045-PJ Maxi-Bird™

½" (15/21) Riser-Mounted Impact Head Used for Slope and Large-Area, Above-Grade Applications

- Flexibility – Straight-through flow for superior performance in dirty water
- Reliability – Proven impact drive
- Performance – 5 Matched Precipitation Rate (MPR) nozzles and 2 low-angle (LA) nozzles

2045-PJ-08 Maxi-Bird

Features

- Double-weighted arm for slower rotation and increased distance of throw. Powerful reverse action
- Adjustable arm spring for low-pressure and low-gallonage operation
- Precision Jet tube (PJ™) minimizes side splash
- Interchangeable, color-coded bayonet mount nozzles
  - No tools required to change nozzles
- FP trip permits full- or part-circle operation (20° to 340°)

Operating Range

- Pressure: 25 to 60 psi (1.7 to 4.1 bar)
- Flow: 1.5 to 8.4 gpm (0.34 to 1.91 m^3/h; 5.4 to 31.8 l/m)
- Radius: 22 to 45 feet (6.7 to 13.7 m)
- Precipitation rate: 0.28 to 1.21 inches per hour (7 to 31 mm/h)

Specifications

- ½" (15/21) male threaded inlet nozzles
- Nozzle outlet trajectory: 23° for 06, 07, 08, 10, and 12 nozzles
- 11° for 07 LA and 10 LA
- Standard trajectory angle nozzles: 06-red; 07-black; 08-blue; 10-yellow; 12-beige
- Low angle (LA) nozzles: 07 LA-black; 10 LA-yellow (optional)

Model

- 2045-PJ-08 Maxi-Bird

2045-PJ-08 Nozzles

2045-PJ-08 Maxi-Bird Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
25	06	-	-	-	-
	07 LA	22	1.5	0.60	0.69
	07	32	2.2	0.41	0.48
	08 *	35	2.8	0.44	0.51
	10 LA	25	3.4	1.05	1.21
	10	38	4.2	0.56	0.65
	12	39	5.5	0.70	0.80
35	06	37	2.0	0.28	0.32
	07 LA	23	1.9	0.69	0.80
	07	37	2.7	0.38	0.44
	08 *	38	3.3	0.44	0.51
	10 LA	29	4.0	0.92	1.06
	10	41	4.8	0.55	0.64
	12	42	6.3	0.69	0.79
45	06	38	2.3	0.31	0.35
	07 LA	25	2.1	0.65	0.75
	07	39	3.0	0.38	0.44
	08 *	40	3.7	0.45	0.51
	10 LA	31	4.5	0.90	1.04
	10	42	5.4	0.59	0.68
	12	44	7.1	0.71	0.82
55	06	38	2.5	0.33	0.39
	07 LA	25	2.3	0.71	0.82
	07	41	3.3	0.38	0.44
	08 *	41	4.1	0.47	0.54
	10 LA	32	5.0	0.94	1.09
	10	43	6.0	0.62	0.72
	12	45	7.9	0.75	0.87
60	06	38	2.6	0.35	0.40
	07 LA	25	2.4	0.74	0.85
	07	41	3.5	0.40	0.46
	08 *	42	4.2	0.46	0.53
	10 LA	32	5.4	1.02	1.17
	10	44	6.4	0.64	0.74
	12	45	8.4	0.80	0.92

2045-PJ-08 Maxi-Bird Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.0	6	-	-	-	-	-
	07 LA	6.8	0.38	6.0	16	19
	7	10.4	0.55	9.0	10	12
	8 *	11.0	0.68	11.4	11	13
	10 LA	8.1	0.83	13.8	25	29
	10	11.9	1.01	16.8	14	16
	12	12.3	1.32	22.2	18	20
2.5	6	11.3	0.46	7.8	7	8
	07 LA	7.1	0.44	7.2	17	20
	7	11.4	0.62	10.2	10	11
	8 *	11.7	0.76	12.6	11	13
	10 LA	8.9	0.92	15.6	23	27
	10	12.5	1.11	18.6	14	16
	12	12.9	1.45	24.0	18	20
3.0	6	11.5	0.51	8.4	8	9
	07 LA	7.5	0.47	7.8	17	19
	7	11.8	0.67	11.4	10	11
	8 *	12.1	0.83	13.8	11	13
	10 LA	9.4	1.01	16.8	23	27
	10	12.8	1.21	20.4	15	17
	12	13.3	1.59	26.4	18	21
3.5	6	11.6	0.55	9.0	8	9
	07 LA	7.6	0.50	8.4	17	20
	7	12.2	0.72	12.0	10	11
	8 *	12.4	0.89	15.0	12	13
	10 LA	9.6	1.09	18.0	23	27
	10	13.0	1.30	21.6	15	18
	12	13.6	1.72	28.8	19	21
4.0	6	11.6	0.58	9.6	9	10
	07 LA	7.6	0.54	9.0	18	21
	7	12.5	0.78	13.2	10	11
	8 *	12.7	0.94	15.6	12	14
	10 LA	9.8	1.19	19.8	25	29
	10	13.3	1.42	23.4	16	19
	12	13.7	1.86	31.2	20	23

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

* *Standard Nozzle Size*

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

20ADJB

½" (15/21) Riser-Mounted Impact Head Used for Slope or Non-Turf-Area Applications

- Flexibility – Straight-through flow for superior performance in dirty water
- Reliability – Proven impact drive
- Durability – Rugged brass construction

Features

- Distance-control diffuser pin allows up to 25% radius reduction without changing nozzles

Operating Range

- Precipitation rate: 0.16 to 0.39 inches per hour (4 to 10 mm/h)
- Radius: 38 to 41 feet (11.6 to 12.5 m)
- Pressure: 30 to 70 psi (2.1 to 4.8 bar)
- Flow: 2.4 to 5.9 gpm (0.54 to 1.34 m^3/h; 9.0 to 22.2 l/m)

Specifications

- ½" (15/21) male threaded inlet
- For 10 nozzle at normal operating pressure, the highest point of stream is 7 feet (2.1 m) above nozzle
- Nozzles: 08, 09, 10

Model

- 20ADJB

20ADJB

20ADJB Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
30	08	38	2.4	0.16	0.18
	09	39	3.1	0.20	0.23
	10 *	39	3.8	0.24	0.28
40	08	39	2.9	0.18	0.21
	09	40	3.6	0.22	0.25
	10 *	40	4.4	0.26	0.31
50	08	40	3.2	0.19	0.22
	09	41	4.0	0.23	0.26
	10 *	41	5.0	0.29	0.33
60	08	40	3.6	0.22	0.25
	09	41	4.4	0.25	0.29
	10 *	41	5.5	0.32	0.36
70	08	40	3.9	0.23	0.27
	09	41	4.8	0.27	0.32
	10 *	41	5.9	0.34	0.39

20ADJB Performance **METRIC**

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.1	8	11.6	0.54	9.0	4	5
	9	11.9	0.70	12.0	5	6
	10 *	11.9	0.86	14.4	6	7
2.5	8	11.8	0.61	10.2	4	5
	9	12.1	0.77	12.6	5	6
	10 *	12.1	0.95	15.6	6	7
3.0	8	11.9	0.67	11.4	5	5
	9	12.2	0.84	13.8	6	7
	10 *	12.2	1.04	17.4	7	8
3.5	8	12.0	0.73	12.0	5	6
	9	12.3	0.91	15.0	6	7
	10 *	12.3	1.13	18.6	7	9
4.0	8	12.1	0.79	13.2	5	6
	9	12.4	0.98	16.2	6	7
	10 *	12.4	1.21	20.4	8	9
4.5	8	12.2	0.85	14.4	6	7
	9	12.5	1.05	17.4	7	8
	10 *	12.5	1.30	21.6	8	10
4.8	8	12.2	0.89	15.0	6	7
	9	12.5	1.09	18.0	7	8
	10 *	12.5	1.34	22.2	9	10

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

* *Standard Nozzle Size*

Optimum water distribution achieved at 40 to 50 psi (2.8 to 3.5 bar)

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.

25BPJ-ADJ Series

½" (15/21) Riser-Mounted Impact Head Used for Slope or Large, Non-Turf-Area Applications

- Flexibility – Straight-through flow for superior performance in dirty water
- Reliability – Proven impact drive
- Durability – Rugged brass, bronze, and stainless steel construction. Bronze body and arm, stainless steel trip assembly, brass bearing sleeve and nipple. Stainless steel fulcrum pin, arm spring, trip spring and friction collars

Features

- FP trip allows full- or part-circle operation. Adjustable from 20° to 340°
- Die-cast Precision Jet tube (PJ™) minimizes side splash

Operating Range

- Precipitation rate: 0.41 to 0.66 inches per hour (10 to 17 mm/h)
- Radius: 38 to 41 feet (11.6 to 12.5 m)
- Pressure: 30 to 50 psi (2.1 to 3.5 bar)
- Flow: 3.1 to 5.0 gpm (0.70 to 1.14 m^3/h; 12.0 to 19.2 l/m)

Specifications

- ½" (15/21) male threaded inlet
- Nozzle outlet trajectory: 25°
- Nozzles: 09, 10

Models

- 25BPJ-FP-ADJ
- 25BPJ-FP-ADJ-DA
- 25BPJ-FP-ADJ-DA-TNT
- 25BPJ Special

25BPJ-ADJ Series Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
30	09	38	3.1	0.41	0.48
	10 *	39	3.8	0.48	0.56
40	09	39	3.6	0.46	0.53
	10 *	40	4.4	0.53	0.61
50	09	40	4.0	0.48	0.56
	10 *	41	5.0	0.57	0.66

25BPJ-ADJ Series Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.1	9	11.6	0.70	12.0	10	12
	10 *	11.9	0.86	14.4	12	14
2.5	9	11.8	0.77	12.6	11	13
	10 *	12.1	0.95	15.6	13	15
3.0	9	12.0	0.85	13.8	12	14
	10 *	12.3	1.05	17.4	14	16
3.5	9	12.2	0.91	15.0	12	14
	10 *	12.5	1.14	19.2	15	17

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

** Standard Nozzle Size*

Optimum water distribution achieved at 40 to 50 psi (2.8 to 3.5 bar)

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1. See page 224 for complete ASAE Test Certification Statement.

25BPJ-FP-ADJ

Brass nozzle with bridge-mounted stainless steel diffuser pin and non-clog, barrel-type vane. Diffuser pin allows up to 25% radius reduction without changing nozzles

25BPJ Special

Same as model 25 BPJ-FP-ADJ-DA-TNT, with tamper-resistant friction collars and fixed trip for part-circle operation only

25BPJ-ADJ-DA-TNT

Same as model 25BPJ-FP-ADJ-DA, with TNT bearing

25BPJ-FP-ADJ-DA

Same as model 25BPJ-FP-ADJ, with bridge-mounted DA distance control flap

How To Specify

25BPJ-ADJ- 09

Nozzle
09

Model
25BPJ-FP-ADJ

35A-TNT

3/4" (20/27) male bearing. TNT bearing only. Cast brass body and arm. Brass bearing sleeve and nipple. Stainless steel arm spring, trip spring, and trip collars. Stainless steel trip can be set for full- or part-circle operation

35A-PJDA-TNT

Same as model 35A-TNT, with Precision Jet tube (PJ™) and distance control flap (DA)

35A-ADJ-TNT

Same as model 35A-TNT with distance control diffuser pin (ADJ)

35A-PJADJ-TNT

Same as model 35A-TNT with distance control diffuser pin (ADJ) and Precision Jet tube (PJ™)

How To Specify

35A-PJADJ-TNT- 10

Nozzle
10

Model
35A-PJADJ-TNT

35A-TNT Series

3/4" (20/27) Riser-mounted Impact Head Used for Slope or Large, Non-Turf-Area Applications

- Flexibility – Straight-through flow for superior performance in dirty water
- Reliability – Proven impact drive
- Durability – Rugged brass and stainless steel construction

Features

- Long-wearing TNT bearing
- FP trip allows full- or part-circle operation. Adjustable from 20° to 340°
- Precision Jet tube (PJ™) minimizes side splash
- Stainless steel distance control diffuser pin and DA distance control flap allow up to 25% radius reduction without changing nozzles

Operating Range

- Precipitation rate: 0.43 to 0.67 inches per hour (11 to 17 mm/h)
- Radius: 42 to 51 feet (12.8 to 15.6 m)
- Pressure: 30 to 60 psi (2.1 to 4.1 bar)
- Flow: 3.9 to 7.8 gpm (0.89 to 1.77 m^3/h; 15.0 to 29.4 l/m)

Specifications

- 3/4" (20/27) male threaded inlet
- Nozzle outlet trajectory: 27°

Models

- 35A-TNT
- 35A-ADJ-TNT
- 35A-PJDA-TNT
- 35A-PJADJ-TNT

35A-TNT Series Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
30	10	42	3.9	0.43	0.49
	11	43	4.6	0.48	0.55
	12 *	44	5.5	0.55	0.63
40	10	44	4.5	0.45	0.52
	11	45	5.4	0.51	0.59
	12 *	47	6.4	0.56	0.64
50	10	45	5.0	0.48	0.55
	11	47	6.0	0.52	0.60
	12 *	49	7.2	0.58	0.67
60	10	46	5.4	0.49	0.57
	11	48	6.6	0.55	0.64
	12 *	51	7.8	0.58	0.67

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

* *Standard Nozzle Size*

Optimum water distribution achieved at 40 to 50 psi (2.8 to 3.5 bar)

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

35A-TNT Series Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
2.1	10	12.8	0.89	15.0	11	12
	11	13.1	1.04	17.4	12	14
	12 *	13.4	1.25	21.0	14	16
2.5	10	13.1	0.97	16.2	11	13
	11	13.5	1.15	19.2	13	15
	12 *	13.9	1.37	22.8	14	16
3.0	10	13.4	1.05	17.4	12	13
	11	13.9	1.26	21.0	13	15
	12 *	14.5	1.50	25.2	14	17
3.5	10	13.7	1.13	18.6	12	14
	11	14.3	1.37	22.8	13	16
	12 *	15.0	1.63	27.0	15	17
4.0	10	14.0	1.21	20.4	12	14
	11	14.6	1.48	24.6	14	16
	12 *	15.5	1.75	29.4	15	17
4.1	10	14.0	1.23	20.4	12	14
	11	14.6	1.50	25.2	14	16
	12 *	15.6	1.77	29.4	15	17

65PJADJ-TNT

1" (26/34) Riser-Mounted Impact Head Used for Slope or Large, Non-Turf-Area Applications

- Flexibility – Straight-through flow for superior performance in dirty water
- Reliability – Proven impact drive
- Durability – Rugged brass and stainless steel construction

Features

- Long-wearing TNT bearing
- FP trip allows full- or part-circle operation. Adjustable from 20° to 340°
- Precision Jet tube (PJ™) minimizes side splash
- Stainless steel distance control diffuser pin allows up to 25% radius reduction without changing nozzles

Operating Range

- Precipitation rate: 0.75 to 0.94 inches per hour (19 to 23 mm/h)
- Radius: 57 to 65 feet (17.4 to 19.8 m)
- Pressure: 50 to 80 psi (3.5 to 5.5 bar)
- Flow: 12.9 to 16.5 gpm (2.93 to 3.75 m^3/h; 48.6 to 62.4 l/m)

Specifications

- 1" (26/34) female NPT or BSP threaded inlet.
- Nozzle outlet trajectory: 27°

Model

- 65PJADJ-TNT
- 65PJADJ-TNT-BSP: BSP model

65PJADJ-TNT Performance

Pressure psi	Nozzle	Radius ft.	Flow gpm	■ Precip In/h	▲ Precip In/h
50	16	57	12.9	0.76	0.88
60	16	58	14.2	0.81	0.94
70	16	63	15.4	0.75	0.86
80	16	65	16.5	0.75	0.87

65PJADJ-TNT Performance METRIC

Pressure bar	Nozzle	Radius m	Flow m^3/h	Flow l/m	■ Precip mm/h	▲ Precip mm/h
3.5	16	17.4	2.93	48.6	19	22
4.0	16	17.9	3.16	52.8	20	23
4.5	16	18.5	3.35	55.8	19	23
5.0	16	19.2	3.55	59.4	19	22
5.5	16	19.8	3.75	62.4	19	22

Precipitation rates based on half-circle operation

■ *Square spacing based on 50% diameter of throw*

▲ *Triangular spacing based on 50% diameter of throw*

** Standard Nozzle Size*

Optimum water distribution achieved at 40 to 50 psi (2.8 to 3.5 bar)

Performance data collected in zero wind conditions

Performance data derived from tests that conform with ASAE Standards; ASAE S398.1.
See page 224 for complete ASAE Test Certification Statement.

65PJADJ-TBT

How To Specify

65PJADJ- TNT

Nozzle
16

Model
65PJADJ-TNT

"I've installed other valves, but the reliability didn't come close to Rain Bird® DV Valves. That's why over the last 15 years we've installed DV Valves exclusively, because I won't risk my reputation on anything else."

Joe DiBlasi, Sr.
JKJ Lawn Sprinkler Inc.

Major Products

Primary Applications	DV	DVF	ASVF	JTV	JTVF	PGA	PEB	PESB/PESB-R	GB-R	EFB-CP-R	BPE	BPES	QC
Manual Bleed	I/E	I/E	I/E	I/E	I/E	I	I/E	I/E	I/E	I/E	E	E	
Flow Control		●	●		●	●	●	●	●	●	●	●	
Bottom Inlet	DV-A	DVF-A	●			●					●	●	●
Low Flow	●	●	●	●	●		●	●	●	●			
PRS-Dial Compatible						●	●	●	●	●	●	●	
Dirty Water								●		●		●	
Non-Potable Water						●	●	●	●	●	●	●	●
Sites Requiring Brass									●	●	●	●	●
Sites Requiring Plastic	●	●	●	●	●	●	●	●					
Decoder System Compatible						●	●	●	●	●	●	●	

- *DV/DVF available in globe, angle, slip x slip, and male x barb configurations.*
- *Flows below 3 gpm (0.68 m^3/h; 0.19 l/s) install RBY filter upstream.*
- *I/E = Internal/External*
- *JTV/JTVF available in globe, slip x slip and male x barb configurations.*
- *The PESB-R, GB-R and EFB-CP-R are specifically designed with chlorine-resistant components for reclaimed water applications.*

Water Saving Tips

- The PRS-Dial is an excellent means of regulating outlet pressure at the valve regardless of incoming pressure fluctuations. It helps ensure optimal pressure performance at the head
- Rain Bird valves provide excellent filtration characteristics for maximum reliability in a wide range of environments
- PESB-R, GB-R, and EFB-CP-R reclaimed valves provide reliable operation in all water conditions. Valve diaphragms are composed of EPDM, a rubber material which is chlorine and chemical resistant

DV Series

¾", 1" (20/27, 26/34) Plastic Residential Valves

- Double-filtered pilot-flow design for maximum reliability
- Balanced-pressure diaphragm for long life
- Energy-efficient, low-power encapsulated solenoid with captured plunger and 90 mesh (200 micron) solenoid filter

Features

- External bleed to manually flush system of dirt and debris during installation and system start-up
- Internal bleed for spray-free manual operation
- Buna-N diaphragm with self-cleaning 90 mesh (200 micron) pilot water filter and captive spring
- Operates in low-flow and landscape drip applications when the RBY filter is installed upstream. An option for low flow (3 gpm or less; 0.68 m^3/h; 11.4 l/m) applications is to use a LFV-100/075 Low Flow Valve (see page 204), or Drip Control Zone Kit (see page 197)
- 1¼" (3.2 cm) stainless steel phillips head screws
- Five-year trade warranty

Options

- Slip-by-slip configuration for low-cost, solvent-weld installations
- Male by barb configuration for installation with poly pipe
- Angle configuration for flexible installations especially when submains are deep
- Accepts latching solenoid for use with Rain Bird battery-operated controllers

Operating Range

- Pressure: 15 to 150 psi (1.03 to 10.34 bar)
- 075-DV flow: 0.2 to 22 gpm (0.05 to 5.0 m^3/h; 0.76 to 83.3 l/m).
- 100-DV flow: 0.2 to 40 gpm (0.05 to 9.08 m^3/h; 0.76 to 151.4 l/m).
- Water temperature: Up to 110° F (43° C)
- Ambient temperature: Up to 125° F (52° C)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.30 A (7.2 VA) at 60 Hz
- Holding current: 0.19 A (4.6 VA) at 60 Hz
- Coil resistance: 42-55 ohms

Dimensions

- Height: 4½" (11.4 cm)
- Height (Angle): 5½" (14 cm)
- Length: 4⅜" (11.1 cm)
- Length (Angle): 3¾" (9.5 cm)
- Length (MB): 5¾" (14.6 cm)
- Width: 3⅓" (8.4 cm)

Models

- 075-DV: ¾" (20/27)
- 100-DV: 1" (26/34)*
- 100-DV-SS: 1" (26/34)
- 100-DV-A: 1" (26/34)
- 100-DV-MB: 1" (26/34)

** Available with BSP threads*

Recommendations

1.Rain Bird recommends flow rates that result in discharge velocities in the supply line not to exceed 7.5 ft/sec (2.3 m/s) in order to reduce the effects of water hammer.
2. DV Series valves and any other Rain Bird residential valves cannot be used with PRS pressure regulating modules.
3. Not recommended for use with two-wire systems.

075-DV

100-DV

100-DV-MB

100-DV-A

100-DV-SS

How To Specify

100 - DV - MB

- **Optional Configuration:** MB: Male x barb; A: Angle; SS: Slip x Slip
- **Model** DV: Remote Control Valve; ASV: Anti-siphon valve
- **Size** 075: ¾" (20/27); 100: 1" (26/34)

This specifies a 100-DV valve; 1" (26/34) male x barb with flow control. ***Note:*** *For non-U.S. applications it is necessary to specify NPT or BSP thread type (1" only).*

DVF Series

1" (26/34) Plastic Residential Valves with Flow Control

- Economical irrigation valve for residential and light commercial applications where flow control is required
- Incorporates all features of DV Series Valves
- 60% easier system tuning with power steering flow control, a unique, easy-to-turn, patented pressure assisted mechanism

Operating Range

- Pressure: 15 to 150 psi (1.03 to 10.34 bar)
- 100-DVF flow: 0.2 to 40 gpm (0.05 to 9.08 m^3/h; 0.76 to 151.40 l/m)
- Water temperature: Up to 110° F (43° C)
- Ambient temperature: Up to 125° F (52° C)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.30 A (7.2 VA) at 60 Hz
- Holding current: 0.19 A (4.6 VA) at 60 Hz
- Coil resistance: 42-55 ohms

Dimensions

- Height: 5 3/5" (14.2 cm)
- Height (Angle): 6 1/8" (15.5 cm)
- Length: 4 3/8" (11.1 cm)
- Length (Angle): 3 3/4" (9.5 cm)
- Length (MB): 5 3/4" (14.6 cm)
- Width: 3 1/3" (8.4 cm)

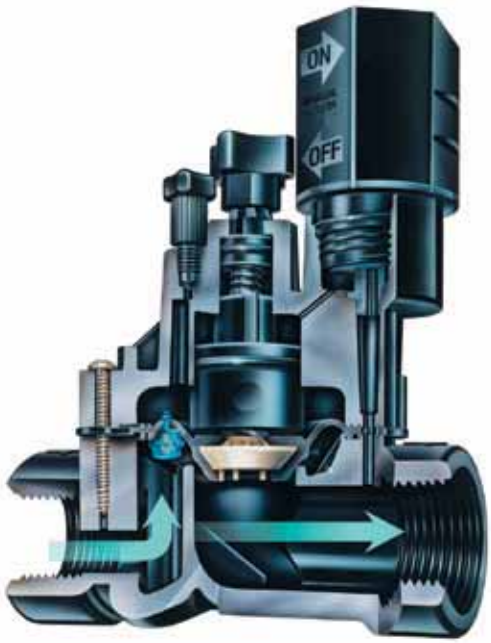
Models

- 100-DVF: 1" (26/34)*
- 100-DVF-SS: 1" (26/34)
- 100-DVF-A: 1" (26/34)
- 100-DVF-MB: 1" (26/34)

** Available with BSP threads*

Recommendations

1.Rain Bird recommends flow rates that result in discharge velocities in the supply line not to exceed 7.5 ft/sec (2.3 m/s) in order to reduce the effects of water hammer.
2. DV Series valves and any other Rain Bird residential valves cannot be used with PRS pressure regulating modules.
3. Not recommended for use with two-wire systems.



DVF Cutaway


100-DVF


100-DVF-SS


100-DVF-MB


100-DVF-A

DV and DVF Valve Pressure Loss (psi)		
Flow gpm	075-DV ¾" psi	100-DV/100-DVF 1" psi
1	3.2	3.3
3	3.9	3.6
5	4.2	3.8
10	5.0	3.8
20	7.7	5.1
30	-	6.4
40	-	8.6

DV and DVF Valve Pressure Loss (bar) METRIC			
Flow m^3/h	l/m	075-DV ¾" bar	100-DV/100-DVF 1" bar
0.23	4	0.22	0.23
0.60	10	0.26	0.24
1.20	20	0.29	0.26
3.60	60	0.45	0.32
4.50	75	0.53	0.35
6.00	100	-	0.41
9.00	150	-	0.59

100-DV/DVF Angle, MxB Valve Pressure Loss (psi)		
Flow gpm	Angle 1" psi	Male x barb 1" psi
1	2.8	2.5
3	3.0	2.9
5	3.2	3.0
10	3.9	3.1
20	4.3	4.3
30	5.4	7.4
40	8.2	12.7

100-DV/DVF Angle, MxB Valve Pressure Loss (bar) METRIC			
Flow m^3/h	l/m	Angle 1" bar	Male x barb 1" bar
0.23	4	0.19	0.17
0.60	10	0.20	0.19
1.20	20	0.22	0.21
3.60	60	0.28	0.26
4.50	75	0.30	0.30
6.00	100	0.35	0.44
9.00	150	0.56	0.86

Note: *See Xerigation section (page 206) for RBY Filter flow loss data*

Note: *DV/DVF Male x barb not recommended for flows exceeding 30 gpm (6.81 m^3/h, 113.56 l/m)*

ASVF Series

¾", 1" (20/27, 26/34) Plastic Residential Valves with Atmospheric Backflow Preventer

- Combination reliable DVF Valve and atmospheric vacuum breaker in one unit
- I.A.P. M.O. and A.S.S.E. listing approved
- City of Los Angeles listing approved and Canadian Standards Association (CSA) listing approved

Features

- Incorporates all features of DV and DVF Series valves

Operating Range

- Pressure: 15 to 150 psi (1.03 to 10.34 bar)
- 075-ASVF flow: 0.2 to 22 gpm (0.05 to 5.0 m^3/h; 0.76 to 83.3 l/m). An option for low flow (3 gpm or less; 0.68 m^3/h; 11.36 l/m) applications is to use a ASVF-LF-075 Low Flow Anti-siphon Valve (see page 199), or Drip Control Zone Kit (see page 197)
- 100-ASVF flow: 0.2 to 40 gpm (0.05 to 9.09 m^3/h; 0.76 to 151.42 l/m)
- Water temperature: Up to 110° F (43° C)
- Ambient temperature: Up to 125° F (52° C)

Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.30 A (7.2 VA) at 60 Hz
- Holding current: 0.19 A (4.6 VA) at 60 Hz
- Coil resistance: 42-55 ohms

Codes

- Anti-siphon must be installed at least 6" (15.2 cm) above the highest point of water in the pipe and sprinklers it serves
- No valve can be located downstream of the anti-siphon valve
- Anti-siphon valves must not be operated continuously for more than twelve (12) hours
- Consult local codes

Dimensions

- Height: 6¼" (15.8 cm)
- Length: 6 1/10" (15.5 cm)
- Width: 3⅕" (8.1 cm)

Models

- 075-ASVF: ¾" (20/27)
- 100-ASVF: 1" (26/34)

Models available in NPT threads only

Not recommended for use with two-wire systems.

100-ASVF

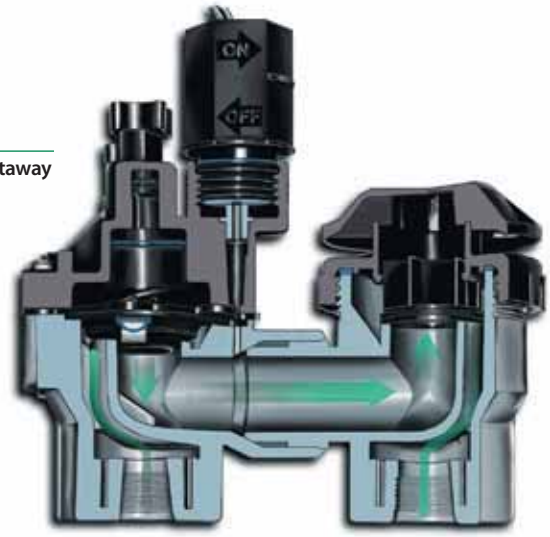
ASVF Valve Pressure Loss (psi)

Flow gpm	075-ASVF ¾" psi	100-ASVF 1" psi
1	2.8	2.9
3	3.4	3.1
5	3.8	3.3
10	4.6	3.9
20	6.5	5.0
30	-	7.8
40	-	13.4

ASVF Valve Pressure Loss (bar) METRIC

Flow m^3/h	l/m	075-ASVF ¾" bar	100-ASVF 1" bar
0.23	3.8	0.19	0.20
0.6	10	0.23	0.21
1.2	20	0.26	0.23
3.6	60	0.39	0.31
4.5	75	0.45	0.34
6.0	100	-	0.47
9.0	150	-	0.91

* *See Xerigation section (page 206) for RBY Filter flow loss data. Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.3 m/s) in order to reduce the effects of water hammer*



ASVF Cutaway

JTV/JTVF Jar Top Valve Series

1" (26/34) – Versatility, Value, Convenience

- Double-filtered pilot flow for maximum reliability
- Threaded bonnet provides easy removal with no screws
- Accepts latching solenoid for use with Rain Bird battery-operated controllers

Features

Reliability

- Balanced-pressure diaphragm for long life
- Buna-N diaphragm with self-cleaning 90-mesh (200 micron) pilot water filter and stainless steel spring
- Energy efficient, low-power encapsulated solenoid with captured plunger

Versatility

- Available in multiple fitting types
- External bleed to manually flush system of dirt and debris during installation and system start up
- Internal bleed for spray-free manual operation
- Available with optional flow control feature

Ease of Service

- Trouble-free service with few parts
- Drop-in diaphragm for effortless maintenance

Operating Range

- Pressure: 15 to 150 psi (1.0 to 10.3 bar)
- Flow: 0.25 to 30 gpm (0.23 to 6.82 m^3/h; 0.95 to 113.6 l/m)
- Operating temperatures: Water temperature up to 110° F (43° C); ambient temperature up to 125° F (52° C)
- Operates in low-flow and Xerigation® applications when the RBY filter is installed upstream

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.30 A (7.2 VA) at 60 Hz
- Holding current: 0.19 A (4.6 VA) at 60 Hz
- Coil resistance: 42-55 ohms

Dimensions

- Height: 5" (12.7 cm)
- Length: 4" (10.2 cm)
- Length (MxB): 5.8" (14.7 cm)
- Width: 3⅛" (7.9 cm)

Models

- 100-JTV: 1" (26/34) female x female threaded*
- 100-JTV-SS: 1" (26/34) slip x slip
- 100-JTV-MB: 1" male x barb
- 100-JTVF-BSP: 1" female x female with flow control*

* *Important Note: BSP is the only thread option available with flow control*

Not recommended for use with two-wire systems.

Jar Top Valve Pressure Loss (psi)

Flow gpm	JTV/JTVF psi	Male x barb psi
1	3.0	3.8
3	3.4	4.2
5	3.8	4.4
10	4.5	4.6
15	5.6	4.7
20	6.9	5.5
30	9.7	9.8

Jar Top Valve Pressure Loss (bar) METRIC

Flow m^3/h	l/m	JTV/JTVF bar	Male x barb bar
0.23	3.8	0.20	0.27
0.6	10	0.23	0.29
1.2	20	0.27	0.30
3.6	60	0.40	0.34
4.5	75	0.49	0.41
6.0	100	0.60	0.57
6.8	114	0.67	0.67

100-JTV

100-JTV-MB

100-JTV-SS

100-JTVF-BSP

How To Specify

100 - JTVF - SS

Optional Configuration:
SS: Slip x Slip
MM: Male x Male
MB: Male x barb

Model
JTV: Jar Top Valve
JTVF: Jar Top Valve w/Flow Control

Size
100: 1" (26/34)

Note: For non-U.S. applications it is necessary to specify NPT or BSP thread type (1" only)

HV Series

NEW

1" (20/27, 26/34) Plastic Residential Valves
Outstanding performance. Unmatched durability.

- Eccentric diaphragm for smooth closing, less water hammer
- Compact design, 2.54" spin radius for tight installations
- Your choice of tools to open valve (nut driver, Phillips head screwdriver, slotted head screwdriver)

Features

- **Reliability**
  - Glass-filled polypropylene body for strength
  - Reverse flow normally closed design
  - Double-filtered pilot flow for maximum reliability
  - Trouble-free service with few parts
  - Buna-N diaphragm with self-cleaning 90-mesh (200 micron) pilot water filter and stainless steel spring
- **Versatility**
  - Operates in low-flow and Xerigation® applications when the RBY filter is installed upstream
  - Available in multiple fitting types
  - External bleed to manually flush system of dirt and debris during installation and system start-up
  - Internal bleed for spray-free manual operation
- **Ease of Service**
  - Captive multi-drive screws for easier maintenance
  - Quick access to diaphragm with only four screws
  - Diaphragm locating post for reliable service

Operating Range

- Pressure: 15 to 150 psi (1.0 to 10.34 bar)
- 0.2 to 30 gpm (0.05 to 6.82 m^3/h; 0.01 to 1.89 l/s); for flows below 3 gph (0,68 m^3/h; 0.19 l/s) or any Xerigation® application, use RBY-100-200MX filter installed upstream
- Water temperature: Up to 110° F (43° C)
- Ambient temperature: Up to 125° F (52° C)

Electrical Specifications

- 24 VAC 50/60 Hz solenoid
- Maximum Inrush Current: 0.250 Amps @ 60HZ
- Holding Current: 0.143 Amps @ 60HZ
- Coil Resistance: 52 to 55 Ohms

Dimensions

- Height: 4.62" (11.7 cm)
- Length: 4.4" (11.2 cm)
- Width: 3.1" (7.9 cm)

HV Valve Pressure Loss (psi)

Flow (gpm)	1" HV (psi)
1	1.57
3	2.07
5	2.38
10	3.33
20	4.59
30	6.14
40	8.23

HV Valve Pressure Loss (psi) METRIC

Flow (m^3/h)	Flow (l/s)	1" HV (bar)
0.25	0.06	0.11
0.75	0.21	0.14
1.00	0.28	0.16
2.00	0.56	0.23
5.00	1.39	0.32
7.50	2.08	0.42
9.10	2.52	0.57

* *See Xerigation section (page 206) for RBY Filter flow loss data. Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.3 m/s) in order to reduce the effects of water hammer*

Models

- 100-HV NPT
- 100-HV-SS
- 100-HV BSP

100HV

Residential Valve Wire Sizing

4.6 VA Valves (DV) - Equivalent Feet of Circuit Length

80 psi (5.5 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18	16	14	12
18	3000			
16	3680	4700		
14	4290	5850	7570	
12	4800	6840	9300	12050

100 psi (6.9 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18	16	14	12
18	2300			
16	2820	3660		
14	3290	4490	5800	
12	3680	5240	7130	9420

125 psi (8.6 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18	16	14	12
18	1400			
16	1720	2200		
14	2000	2730	3530	
12	2240	3190	4340	5620

150 psi (10.4 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18	16	14	12
18	600			
16	730	950		
14	860	1170	1510	
12	960	1370	1860	2410

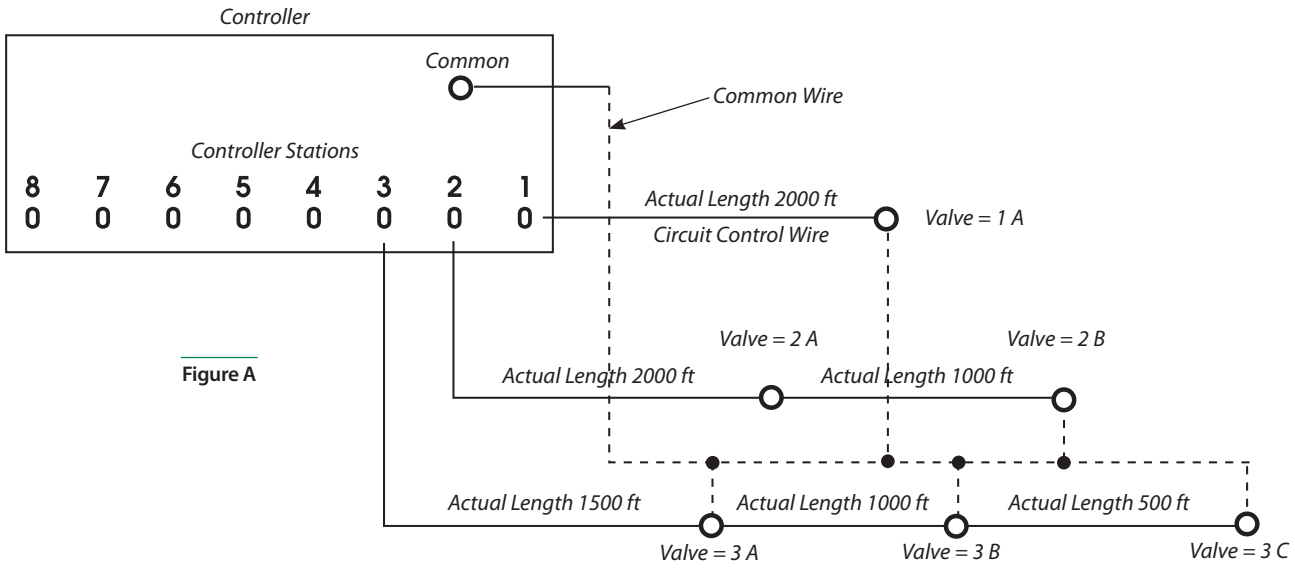


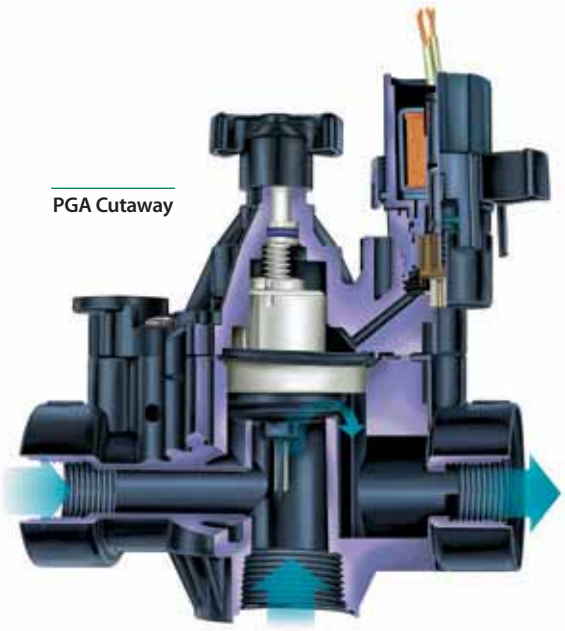
Figure A

For Rain Bird commercial valves wire sizing please see page 107

PGA Series

1", 1½", 2" (26/34, 40/49, 50/60) Plastic Globe/Angle Valves

- Plastic globe/angle valve for residential/light commercial applications. The PGA Series offers versatility at an affordable price
- Fabric-reinforced diaphragm for longer life
- Rugged PVC construction for reliable operation



PGA Cutaway

150-PGA-NP-HAN

150-PGA

Features

- Globe and angle configuration for flexibility in design and installation
- Slow closing to prevent water hammer and subsequent system damage
- One-piece solenoid with captured plunger and spring for easy servicing. Prevents loss of parts during field service
- Non-rising flow control handle adjusts water flow as needed
- Manual internal bleed operates the valve without allowing water into the valve box. Allows pressure regulator adjustment without turning on the valve at the controller
- Normally closed, forward flow design

Options

- Accommodates field installed PRS-Dial pressure regulating module to ensure optimum sprinkler performance. Regulates up to 100 psi (6.9 bar)
- Purple flow control handles for easy identification of non-potable water systems
  - PGA-NP-HAN1 (1" and 1½")
  - PGA-NP-HAN2 (2")
- Accepts latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10.4 bar)

Operating Range

- Pressure: 15 to 150 psi (1.04 to 10.4 bar)
- PRS-Dial regulates up to 100 psi (6.9 bar)
- Flow: 2 to150 gpm (0.45 to 34.05 m^3/h; 7.8 to 568 l/m)
- Flow with PRS-Dial: 5 to 150 gpm (1.14 to 34.05 m^3/h; 19.2 to 568 l/m)
- Water temperature: Up to 110° F (43° C) - refer to chart
- Ambient temperature: Up to 125° F (52° C)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.41 A (9.84 VA) at 60Hz
- Holding current: 0.28 A (6.72 VA) at 60Hz
- Coil resistance: 30-39 ohms

How To Specify

100 - PGA - PRS-D

Size
100: 1" (26/34)
150: 1½" (40/49)
200: 2" (50/60)

Model
PGA

Optional Feature
PRS-Dial: pressure regulating module *(must be ordered separately)*

Note: Valve and PRS-Dial module must be ordered separately. For non-U.S. applications, it is necessary to specify NPT or BSP thread type.

PGA Series (cont.)

Dimensions

Model	Height	Length	Width
• 100-PGA	7¼" (18.4 cm)	5½" (14.0 cm)	3¼" (8.3 cm)
• 150-PGA	8" (20.3 cm)	6¾" (17.2 cm)	3½" (8.9 cm)
• 200-PGA:	10" (25.4 cm)	7¾" (19.7 cm)	5" (12.7 cm)

Note: *PRS-Dial adds 2" (5.1 cm) to valve height*

Models

- 100-PGA: 1" (26/34)
- 150-PGA: 1½" (40/49)
- 200-PGA: 2" (50/60)

BSP threads available; specify when ordering

Recommendations

1. *Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.29 m/s) in order to reduce the effects of water hammer*
2. *For flows below 5 gpm (1.14 m^3/h; 19.2 l/m), Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm*
3. *For flows below 10 gpm (2.27 m^3/h; 37.8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position*

PGA Series Temperature Rating

Water Temperature	Continuous Pressure
73˚ F	150 psi
80˚ F	132 psi
90˚ F	112 psi
100˚ F	93 psi
110˚ F	75 psi

PGA Series Temperature Rating — METRIC

Water Temperature	Continuous Pressure
23˚ C	10.4 bar
27˚ C	9.1 bar
32˚ C	7.7 bar
38˚ C	6.4 bar
43˚ C	5.2 bar

PGA Series Valve Pressure Loss (psi)

Flow gpm	100-PGA Globe 1"	100-PGA Angle 1"	150-PGA Globe 1½"	150-PGA Angle 1½"	200-PGA Globe 2"	200-PGA Angle 2"
1	5.1	4.3	-	-	-	-
5	5.5	5.0	-	-	-	-
10	5.9	5.5	-	-	-	-
20	6.0	5.6	-	-	-	-
30	6.4	5.5	1.9	1.3	-	-
40	7.0	7.5	3.2	2.0	1.2	1.0
50	-	-	4.8	3.0	1.5	0.9
75	-	-	11.1	6.5	3.0	1.7
100	-	-	19.2	11.7	5.5	3.0
125	-	-	-	-	8.6	4.8
150	-	-	-	-	12.0	6.5

PGA Series Valve Pressure Loss (bar) — METRIC

Flow m^3/h	Flow l/m	100-PGA Globe 2.5 cm	100-PGA Angle 2.5 cm	150-PGA Globe 3.8 cm	150-PGA Angle 3.8 cm	200-PGA Globe 5.1 cm	200-PGA Angle 5.1 cm
0.23	3.8	0.35	0.30	-	-	-	-
0.6	10	0.36	0.32	-	-	-	-
1.2	20	0.38	0.35	-	-	-	-
3	50	0.41	0.38	-	-	-	-
6	100	0.43	0.38	0.10	0.07	-	-
9	150	0.48	0.51	0.22	0.14	0.08	0.07
12	200	-	-	0.38	0.23	0.12	0.07
15	250	-	-	0.61	0.36	0.17	0.10
18	300	-	-	0.86	0.51	0.24	0.13
21	350	-	-	1.16	0.70	0.33	0.18
24	400	-	-	-	-	0.43	0.23
27	450	-	-	-	-	0.54	0.30
30	500	-	-	-	-	0.66	0.36
34	568	-	-	-	-	0.83	0.45

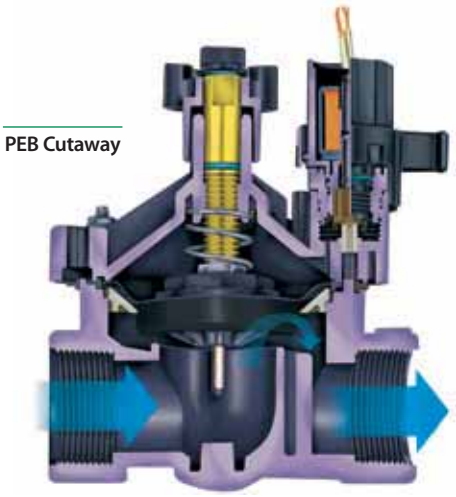
Notes

1. *Loss values are with flow control fully open*
2. *PRS-Dial recommended for use in shaded area only*

PEB/PESB Series

1", 1½", 2" (26/34, 40/49, 50/60) Plastic Industrial Valves

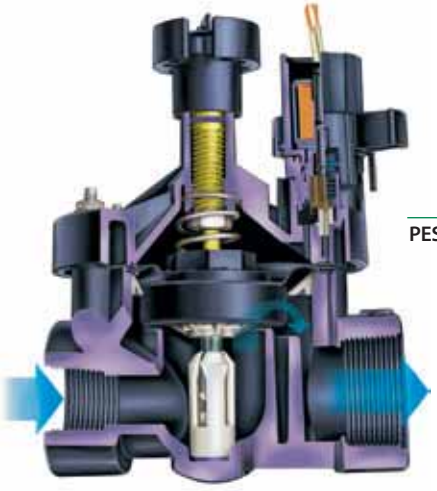
- Body constructed of durable glass-filled nylon for long life and reliable performance. Stainless steel studs molded into the body resist thread damage
- Slow closing to prevent water hammer and subsequent system damage
- Fabric-reinforced diaphragm for longer life



PEB Cutaway

Features

- Low flow operating capability for a wide range of applications
- Plastic scrubber on the PESB valve scrapes the stainless steel screen to clean and break down grit and plant material. Prevents debris build-up and clogging
- One-piece solenoid with captured plunger and spring for easy servicing. Prevents loss of parts during field service
- Flow control handle adjusts water flow as needed
- Manual internal bleed operates the valve without allowing water into the valve box. Allows pressure regulator adjustment without turning on the valve at the controller
- Manual external bleed permits flushing debris from the system. Recommended for system start up and after repairs.
- Normally closed, forward flow design
- Globe configuration



PESB Cutaway

Options

- Accommodates field installed PRS-Dial pressure regulating module to ensure optimum sprinkler performance. Regulates up to 100 psi (6.9 bar)
- Purple flow control handles for easy identification of non-potable water systems (sold separately)
  - PEB-NP-HAN1(1")
  - PEB-NP-HAN2 (1½" and 2")
- Accepts latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10.4 bar)

200-PEB

200-PESB

How To Specify

100 - PEB - PRS-D

Size
100: 1" (26/34)
150: 1½" (40/49)
200: 2" (50/60)

Model
PEB

Optional Feature
PRS-Dial: pressure regulating module *(must be ordered separately)*

Note: Valve and PRS-Dial module must be ordered separately. For non-U.S. applications, it is necessary to specify NPT or BSP thread type.

PEB/PESB Series (cont.)

Operating Range

- Pressure: 20 to 200 psi (1.38 to 13.8 bar)
- PRS-Dial regulates up to 100 psi (6.9 bar)
- Flow: 0.25 to 200 gpm (0.06 to 45.40 m^3/h; 1.2 to 757 l/m)
- Flow with PRS-Dial: 5 to 200 gpm (1.14 to 45.40 m^3/h; 19.2 to 757 l/m)
- Water temperature: Up to 150° F (66° C)
- Ambient temperature: Up to 150° F (66° C)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.41 A (9.84 VA) at 60Hz
- Holding current: 0.28 A (6.72 VA) at 60Hz
- Coil resistance: 30-39 ohms

Dimensions

Model	Height	Length	Width
• 100-PEB and 100-PESB:	6½" (16.5 cm)	4" (10.2 cm)	4" (10.2 cm)
• 150-PEB and 150-PESB:	8" (20.3 cm)	6" (15.2 cm)	6" (15.2 cm)
• 200-PEB and 200-PESB:	8" (20.3 cm)	6" (15.2 cm)	6" (15.2 cm)

Note: *The PRS-Dial option adds 2" (5.1 cm) to valve height*

Models

- 100-PEB and 100-PESB: 1" (26/34)
- 150-PEB and 150-PESB: 1½" (40/49)
- 200-PEB and 200-PESB: 2" (50/60)

BSP threads available; specify when ordering

Recommendations

1. *Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.29 m/s) in order to reduce the effects of water hammer*
2. *For flows below 5 gpm (1.14 m^3/h; 19.2 l/m), Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm*
3. *For flows below 10 gpm (2.27 m^3/h; 37.8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position*
4. *For PRS-Dial applications, Rain Bird recommends the installation of a pressure-regulating master valve or inline pressure regulator when the inlet pressure exceeds 100 psi (6.9 bar)*

PEB and PESB Series Valve Pressure Loss (psi)

Flow gpm	100-PEB 1"	150-PEB 1½"	200-PEB 2"
0.25	0.8	-	-
0.5	1.0	-	-
1	1.3	-	-
5	1.7	-	-
10	1.8	-	-
20	2.9	3.9	-
30	5.6	3.6	-
40	10.0	3.5	-
50	15.6	3.6	4.8
75	-	5.4	4.5
100	-	9.6	5.2
125	-	14.6	8.2
150	-	21.2	11.8
175	-	-	15.5
200	-	-	19.5

PEB and PESB Series Valve Pressure Loss (bar) METRIC

Flow m^3/h	Flow l/m	100-PEB 2.5 cm	150-PEB 3.8 cm	200-PEB 5.1 cm
0.06	1	0.06	-	-
0.3	5	0.09	-	-
0.6	10	0.10	-	-
1.2	20	0.12	-	-
3	50	0.15	-	-
6	100	0.32	0.26	-
9	150	0.68	0.24	-
12	200	-	0.26	0.33
15	250	-	0.33	0.32
18	300	-	0.42	0.32
21	350	-	0.57	0.34
24	400	-	0.74	0.41
27	450	-	0.92	0.51
30	500	-	1.14	0.64
33	550	-	1.38	0.77
36	600	-	-	0.90
39	650	-	-	1.04
42	700	-	-	1.18
45	757	-	-	1.34

Notes

1. *Loss values are with flow control fully open*
2. *PRS-Dial recommended for use in shaded area only*

PESB-R Series Valves

1", 1½", 2" (26/34, 40/49, 50/60) Durable Chlorine-Resistant Valves for Reclaimed Water Applications

- Reliable operation even in heavily chlorinated water. Valve diaphragm composed of EPDM, a rubber material which is chlorine and chemical resistant
- Plastic valve parts molded of plastic which is chlorine and chemical resistant
- Body constructed of durable glass-filled nylon for long life and heavy-duty performance at 200 psi (13.8 bar) pressure

Features

- One-piece solenoid design with captured plunger and spring for easy servicing. Prevents loss of parts during field service
- PESB-R conversion kits also available to convert existing PEB and PESB valves to reclaimed water valve. Kit includes NP handle, sticker, diaphragm assembly, scraper and snap washer
- Stainless steel studs molded into the body. Bonnet can be attached and removed easily without damaging threads
- External bleed protects the solenoid ports from debris when system is flushed.
- Internal bleed operates the valve without allowing water into the valve box; allows pressure regulator to be adjusted without turning on the valve at the controller first
- Low-flow operating capability (0.25 gpm; 0.06 m^3/h; 1.2 l/m) for a wide range of applications
- Slow closing to prevent water hammer and subsequent system damage
- Scrubber mechanism scrapes stainless steel screen clean to break down grit and plant material
- Purple flow control handle standard on PESB-R Series valves

PESB-R Cutaway

150-PESB-R

How To Specify

100 - PESBR - PRS-D

Size
100: 1" (26/34)
150: 1½" (40/49)
200: 2" (50/60)

Model
PESB-R: scrubber model

Optional Feature
PRS-Dial: pressure regulating module *(must be ordered separately)*

Note: Valve and PRS-Dial module must be ordered separately.

PESB-R Series (cont.)

Options

- Accommodates optional, field installed PRS-Dial pressure regulating module to ensure optimum sprinkler performance
- Accepts latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10.4 bar)

Operating Range

- Pressure: 20 to 200 psi (1.38 to 13.8 bar)
- Flow: 0.25 to 200 gpm (0.06 to 45.40 m^3/h; 1.2 to 757 l/m)
- Flow with PRS-Dial: 5 to 200 gpm (1.14 to 45.40 m^3/h; 19.2 to 757 l/m)
- Temperature: Up to 150° F (66° C)

Electrical Specifications

- Power: 24 VAC 50/60 cycle solenoid
- Inrush current: 0.41 A (9.84 VA) at 60 Hz
- Holding current: 0.28 A (6.72 VA) at 60 Hz
- Coil resistance: 30 - 39 ohms

Dimensions

Model	Height	Length	Width
• 100-PESB-R	6½" (16.5 cm)	4" (10.2 cm)	4" (10.2 cm)
• 150-PESB-R	8" (20.3 cm)	6" (15.2 cm)	6" (15.2 cm)
• 200-PESB-R	8" (20.3 cm)	6" (15.2 cm)	6" (15.2 cm)

Note: The PRS-Dial option adds 2" (5.1 cm) to valve height

Models

- 100-PESB-R: 1" (26/34)
- 150-PESB-R: 1½" (40/49)
- 200-PESB-R: 2" (50/60)
- 100-PESB-R-WK: 1" (26/34) Conversion Kit
- 150-PESB-R-WK: 1½" (40/49) Conversion Kit
- 200-PESB-R-WK: 2" (50/60) Conversion Kit

BSP threads available, specify when ordering

Recommendations

1. Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.29 m/s) in order to reduce the effects of water hammer

2. For flows below 5 gpm (1.14 m^3/h; 19.21 l/m), Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm

3. For flows below 10 gpm (2.27 m^3/h; 37.8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position

PESB-R Series Valve Pressure Loss (psi)

Flow gpm	100-PESB-R 1"	150-PESB-R 1½"	200-PESB-R 2"
0.25	1.6	-	-
0.5	3.0	-	-
1	1.8	-	-
5	2.9	-	-
10	2.9	-	-
20	2.6	3.5	-
30	5.8	3.1	-
40	10.2	2.3	-
50	16.0	2.1	3.7
75	-	4.3	3.3
100	-	7.5	4.7
125	-	11.9	8.6
150	-	17.0	12.6
175	-	-	14.8
200	-	-	18.9

PESB-R Series Valve Pressure Loss (bar) **METRIC**

Flow m^3/h	Flow l/m	100-PESB-R 2.5 cm	150-PESB-R 3.8 cm	200-PESB-R 5.1 cm
0.06	1	0.11	-	-
0.3	5	0.13	-	-
0.6	10	0.15	-	-
1.2	20	0.20	-	-
3	50	0.19	-	-
6	100	0.32	0.22	-
9	150	0.69	0.16	-
12	200	-	0.16	0.25
15	250	-	0.24	0.24
18	300	-	0.33	0.25
21	350	-	0.45	0.30
24	400	-	0.59	0.38
27	450	-	0.75	0.53
30	500	-	0.91	0.67
33	550	-	1.10	0.82
36	600	-	-	0.92
39	650	-	-	1.00
42	700	-	-	1.13
45	757	-	-	1.30

Notes

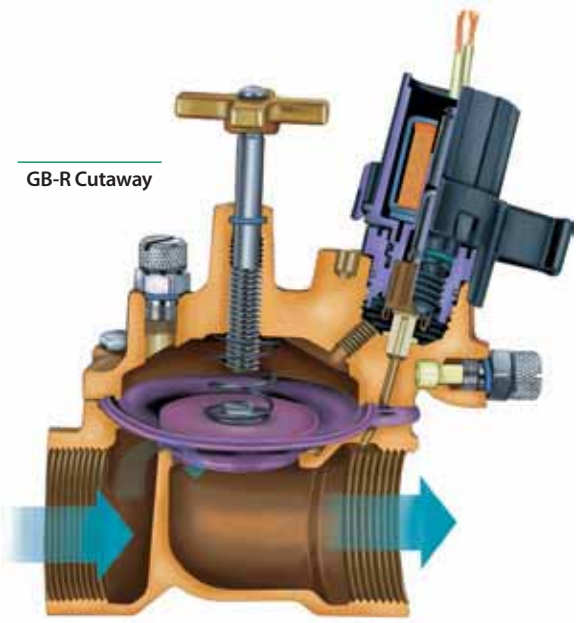
1. Loss values are with flow control fully open

2. PRS-Dial recommended for use in shaded area only

GB-R Series Brass Valves

1", 1¼", 1½", 2" (26/34, 33/42, 40/49, 50/60)

- Rugged red brass construction for longer life
- Durable, fabric-reinforced diaphragm for longer life, even in extreme conditions
- Normally closed, reverse flow design ensures valve will fail in the closed position if a tear or rip in the diaphragm occurs. Prevents flooding, water waste and landscape damage



GB-R Cutaway

Features

- Slow closing to prevent water hammer and subsequent system damage
- One-piece solenoid with captured plunger and spring for easy servicing. Prevents loss of parts during field service
- Flow control handle adjusts water flow as needed
- Manual internal bleed operates the valve without allowing water into the valve box. Allows pressure regulator adjustment without turning on the controller
- Manual external bleed permits flushing debris from the system. Recommended for system start up and other repairs
- Globe configuration
- **Reclaimed Water Compatible:** All models now feature EPDM diaphragms and chlorine-resistant parts as standard equipment
- Purple handle cover included to designate non-potable water

Options

- Accommodates field installed PRS-Dial pressure regulating module to ensure optimum sprinkler performance. Regulates up to 100 psi (6.9 bar)
- Accepts latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10.4 bar)

Purple handle cover included to designate non-potable water

150-GB-R

How To Specify

100 - GB-R - PRS-D

Size
100: 1" (26/34)
125: 1¼ (33/42)
150: 1½" (40/49)
200: 2" (50/60)

Model
GB-R

Optional Feature
PRS-Dial: pressure regulating module *(must be ordered separately)*

Note: Valve and PRS-Dial module must be ordered separately.

GB-R Series (cont.)

Operating Range

- Pressure: 15 to 200 psi (1.04 to 13.8 bar)
- PRS-Dial regulates up to 100 psi (6.9 bar)
- Flow with/without PRS-Dial: 5 to 200 gpm (1.14 to 45.40 m^3/h; 19.2 to 757 l/m)
- Water temperature: Up to 150° F (66° C)
- Ambient temperature: Up to 150° F (66° C)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.41 A (9.84 VA) at 60Hz
- Holding current: 0.28 A (6.72 VA) at 60Hz
- Coil resistance: 30-39 ohms

Dimensions

Model	Height	Length	Width
• 100-GB-R:	6" (15.2 cm)	4½" (11.4 cm)	2¼" (5.7 cm)
• 125-GB-R:	5¾" (14.6 cm)	5" (12.7 cm)	3" (7.6 cm)
• 150-GB-R:	6½" (16.5 cm)	5½" (14 cm)	4" (10, 2 cm)
• 200-GB-R:	7" (17.8 cm)	6¾" (17.1 cm)	5¼" (13.3 cm)

Note: The PRS-Dial option adds 2" (5.1 cm) to the valve height

Models

- 100-GB-R: 1" (26/34)
- 125-GB-R: 1¼" (33/42)
- 150-GB-R: 1½" (40/49)
- 200-GB-R: 2" (50/60)

BSP threads unavailable

Recommendations

1. Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.29 m/s) in order to reduce the effects of water hammer

2. For flows below 5 gpm (1.14 m^3/h; 19.21 l/m), Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm

3. For flows below 10 gpm (2.27 m^3/h; 37.8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position

GB-R Series Valve Pressure Loss (psi)

Flow gpm	100-GB-R 1"	125-GB-R 1¼"	150-GB-R 1½"	200-GB-R 2"
5	0.4	-	-	-
10	0.8	-	-	-
15	1.2	-	-	-
20	2.1	1.4	2.3	0.6
30	5.0	2.3	2.9	0.7
40	8.2	4.1	2.0	0.9
50	13.0	6.8	3.3	1.1
60	-	9.8	4.6	1.7
80	-	16.5	7.5	2.6
100	-	-	11.8	3.9
120	-	-	16.6	5.9
140	-	-	-	7.8
160	-	-	-	10.0
180	-	-	-	12.4
200	-	-	-	15.1

GB-R Series Valve Pressure Loss (bar) METRIC

Flow m^3/h	Flow l/m	100-GB-R 2.5 cm	125-GB-R 3.8 cm	150-GB-R 3.8 cm	200-GB-R 5.1 cm
1	19	0.03	-	-	-
3	50	0.07	-	-	-
6	100	0.27	0.14	0.19	0.05
9	150	0.56	0.28	0.14	0.06
12	200	-	0.53	0.25	0.09
15	250	-	0.82	0.38	0.14
18	300	-	1.12	0.51	0.18
21	350	-	-	0.70	0.24
24	400	-	-	0.91	0.31
27	450	-	-	1.13	0.40
30	500	-	-	-	0.49
33	550	-	-	-	0.58
36	600	-	-	-	0.68
39	650	-	-	-	0.79
42	700	-	-	-	0.90
45	757	-	-	-	1.04

Notes

1. Loss values are with flow control fully open

2. PRS-Dial recommended for use in shaded area only

EFB-CP-R Series Brass Valves

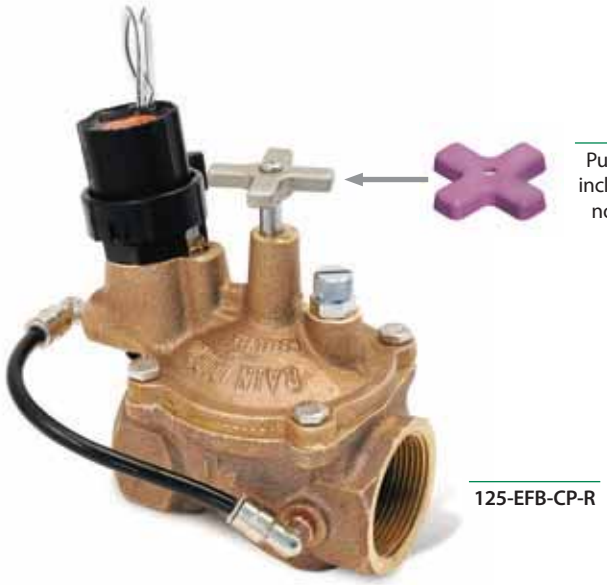
1", 1¼", 1½", 2" (26/34, 33/42, 40/49, 50/60)

- Reliable performance even in dirty water applications. Self-flushing filter resists debris build-up
- Rugged red brass construction for longer life
- Durable, fabric-reinforced diaphragm for longer life, even in extreme conditions

EFB-CP-R Cutaway

Features

- Normally closed, reverse flow design ensures valve will fail in the closed position if a tear or rip in the diaphragm occurs. Prevents flooding, water waste and landscape damage
- Slow closing to prevent water hammer and subsequent system damage
- One-piece solenoid with captured plunger and spring for easy servicing. Prevents loss of parts during field service
- Flow control handle adjusts water flow as needed
- Manual internal bleed operates the valve without allowing water into the valve box. Allows pressure regulator adjustment without turning on the controller
- Manual external bleed permits flushing debris from the system. Recommended for system start up and other repairs
- Contamination-proof, self-flushing filter screen resists debris build-up. Water flow continuously flushes the screen, dislodging particles and debris before they can accumulate and clog the filter
- Globe configuration
- **Reclaimed Water Compatible:** All models now feature EPDM diaphragms and chlorine-resistant parts as standard equipment
- Purple handle cover included to designate non-potable water



Purple handle cover included to designate non-potable water

125-EFB-CP-R

How To Specify

100 - EFB-CP-R - PRS-D

Size
100: 1"
125: 1¼"
150: 1½"
200: 2"

Model
EFB-CP-R

Optional Feature
PRS-Dial: pressure regulating module *(must be ordered separately)*

Note: Valve and PRS-Dial module must be ordered separately.

EFB-CP-R Series (cont.)

Options

- Accommodates field installed PRS-Dial pressure regulating module to ensure optimum sprinkler performance. Regulates up to 100 psi (6.9 bar)
- Latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10.4 bar)

Operating Range

- Pressure: 15 to 200 psi (1.04 to 13.8 bar)
- PRS-Dial regulates up to 100 psi (6.9 bar)
- Flow with/without PRS-Dial: 5 to 200 gpm (1.14 to 45.40 m^3/h; 19.2 to 757 l/m)
- Water temperature: Up to 150° F (66° C)
- Ambient temperature: Up to 150° F (66° C)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.41 A (9.84 VA) at 60Hz
- Holding current: 0.28 A (6.72 VA) at 60Hz
- Coil resistance: 30-39 ohms

Dimensions

Model	Height	Length	Width
• 100-EFB-CP-R:	6" (15.2 cm)	4½" (11.4 cm)	3¼" (8.3 cm)
• 125-EFB-CP-R:	5¾" (14.6 cm)	5" (12.7 cm)	3¼" (8.3 cm)
• 150-EFB-CP-R:	6½" (16.5 cm)	5½" (14 cm)	4½" (11.4 cm)
• 200-EFB-CP-R:	7" (17.8 cm)	6¾" (17.1 cm)	5¾" (14.6 cm)

Note: *The PRS-Dial option adds 2" (5.1 cm) to the valve height*

Models

- 100-EFB-CP-R: 1" (26/34)*
- 125-EFB-CP-R: 1¼" (33/42)
- 150-EFB-CP-R: 1½" (40/49)*
- 200-EFB-CP-R: 2" (50/60)*

* *BSP threads available; specify when ordering*

Recommendations

1. *Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.29 m/s) in order to reduce the effects of water hammer*
2. *For flows below 5 gpm (1.14 m^3/h; 19.21 l/m), Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm*
3. *For flows below 10 gpm (2.27 m^3/h; 37.8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position*

EFB-CP-R Series Valve Pressure Loss (psi)

Flow gpm	100 EFB-CP-R 1"	125 EFB-CP-R 1¼"	150 EFB-CP-R 1½"	200 EFB-CP-R 2"
5	0.2	-	-	-
10	0.7	-	-	-
15	1.2	-	-	-
20	2.1	1.4	2.3	0.5
30	5	2.3	2.9	0.6
40	8.2	4.1	2	0.8
50	13	6.8	3.3	1.1
60	-	9.8	4.6	1.8
80	-	16.5	7.5	2.4
100	-	-	11.8	3.8
120	-	-	16.6	5.9
140	-	-	-	7.8
160	-	-	-	10
180	-	-	-	12.5
200	-	-	-	15.8

EFB-CP-R Series Valve Pressure Loss (bar) **METRIC**

Flow m^3/h	Flow l/m	100 EFB-CP-R 2.5 cm	125 EFB-CP-R 3.2 cm	150 EFB-CP-R 3.8 cm	200 EFB-CP-R 5.1 cm
1	19	0.01	-	-	-
3	50	0.07	-	-	-
6	100	0.27	0.14	0.19	0.04
9	150	0.56	0.28	0.14	0.05
12	200	-	0.53	0.25	0.09
15	250	-	0.82	0.38	0.14
18	300	-	1.12	0.51	0.16
21	350	-	-	0.70	0.23
24	400	-	-	0.91	0.30
27	450	-	-	1.13	0.40
30	500	-	-	-	0.49
33	550	-	-	-	0.58
36	600	-	-	-	0.68
39	650	-	-	-	0.79
42	700	-	-	-	0.92
45	757	-	-	-	1.09

Notes

1. *Loss values are with flow control fully open*
2. *PRS-Dial module recommended for all flow rates*

300-BPE/300-BPES Brass Valves

3" (80/90)

- The reliable brass body and glass-filled nylon bonnet equips these valves to withstand extreme pressure surges, effluent water and clogging debris. For additional protection, the BPES model features a patented scrubber mechanism to actively fight dirt and particles
- Unique hybrid construction featuring durable red brass body and glass-filled nylon bonnet for long life at a value price
- Durable, fabric-reinforced diaphragm for longer life

Features

- Slow closing to prevent water hammer and subsequent system damage
- **BPES only:** Patented nylon scrubber scrapes a stainless steel screen to clean and break down grit and plant material. Prevents debris build-up and clogging
- Globe and angle configuration for flexibility in design and installation
- Normally closed, forward flow design
- Robust solenoid provides dependable performance even during constant operation
- Flow control handle adjusts water flows as needed and incorporates a brass thread insert for longer life
- Manual external bleed permits flushing debris from the system. Recommended for system start up and repairs
- Highly efficient operation with extremely low pressure loss.

Options

- Accommodates field-installed PRS-Dial pressure regulating module to ensure optimum sprinkler performance. Regulates up to 100 psi (6.9 bar)
- Purple flow control handle for non-potable water applications. (BPE-NP-HAN)
- Accepts latching solenoid for use with Rain Bird battery-operated controllers up to 150 psi (10.4 bar)

Operating Range

- Pressure: 20 to 200 psi (1.38 to 13.8 bar)
- PRS-Dial regulates up to 100 psi (6.9 bar)
- Flow with/without PRS-Dial: 60 to 300 gpm (13.62 to 68.10 m^3/h; 227 to 1136 l/m)
- Temperature: Up to 150° F (66° C)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.41 A (9.84 VA) at 60Hz
- Holding current: 0.28 A (6.72 VA) at 60Hz
- Coil resistance: 28 ohms, nominal

300-BPES

BPE and BPES 3" Valve Pressure Loss (psi)

Flow gpm	Globe	Angle
60	6.6	6.8
80	5.1	5.9
100	3.2	3.5
120	1.8	1.8
140	1.8	2.1
160	2.0	2.1
180	2.2	2.0
200	2.7	2.5
250	4.0	3.4
300	4.9	4.5

BPE and BPES 3" Valve Pressure Loss (bar) METRIC

Flow m^3/h	Flow l/m	Globe	Angle
13.6	227	0.46	0.47
24	400	0.19	0.21
36	600	0.14	0.14
48	800	0.21	0.19
60	1000	0.29	0.26
68	1136	0.34	0.31

Notes

1. Loss values are with flow control fully open

2. PRS-Dial module recommended for all flow rates

Dimensions

Model	Height	Length	Width
• 300	13⅝" (34.61 cm)	8" (20.32 cm)	7" (17.78 cm)

Models

- 300-BPE: 3" (80/90)
- 300-BPES: 3" (80/90)

BSP threads available; specify when ordering

BPES Cutaway

Recommendations

1. Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.29 m/s) in order to reduce the effects of water hammer

2. For flows below 5 gpm (1.14 m^3/h; 19.2 l/m), Rain Bird recommends use of upstream filtration to prevent debris from collecting below the diaphragm.

3. For flows below 10 gpm (2.27 m^3/h; 37.8 l/m) Rain Bird recommends the flow control stem be turned down two full turns from the fully open position.

How To Specify

300 - BPE - PRS-D

- **Size** 3" (80/90)
- **Model** BPE
- **Optional Feature** PRS-Dial: pressure regulating module *(must be ordered separately)*

Note: Valve and PRS-Dial module must be ordered separately. For non-U.S. applications, it is necessary to specify NPT or BSP thread type.

PRS-Dial cutaway

PRS-Dial

Pressure Regulating Module

Smart Approved WaterMark

- The PRS-Dial is an excellent means of regulating outlet pressure at the valve regardless of incoming pressure fluctuations. The visible scale makes adjustment quick and easy. The regulator fits all Rain Bird PGA, PEB, PESB, PESB-R, GB-R, EFB-CP-R, BPE and BPES series valves
- Regulates and maintains constant outlet pressure between 15 and 100 psi (1.04 to 6.9 bar) within ±3 psi (±0.21 bar)
- Adjustment knob with detents permits fine-tune setting in 1⁄3 psi (0.02 bar) increments. Dial cartridge makes installation and adjustment quick, easy and accurate

Features

- Improved spike reduction capabilities reduce water hammer
- Ergonomic design with snap-tight cover to prevent vandalism
- Waterproof dial cartridge eliminates fogging and binding
- Dial cartridge retrofits into all existing PRS-B units
- Schrader valve connects pressure hose gauge, ordered separately
- Easy field installation. PRS-Dial threads underneath the solenoid and adapter
- Corrosion-resistant glass-filled nylon for rugged performance

Operating Range

- Pressure: Up to 100 psi (6.9 bar)*
- Regulation: 15 to 100 psi (1.04 to 6.9 bar)
- Accuracy: ±3 psi (±0.21 bar)
- Flow: Refer to chart

* *While the PRS-Dial unit can withstand pressures up to 200 psi (13.8 bar), accurate pressure regulation can be maintained only up to 100 psi (6.9 bar)*

150-PGA with PRS-Dial Installation†

150-PESB with PRS-Dial Installation†

150-PESB-R with PRS-Dial Installation†

GB-R with PRS-Dial Installation†

150-EFB-CP-R with PRS-D Installation†

300-BPE with PRS-Dial Installation†

† *Note: Valve and PRS-Dial module must be ordered separately.*

PRS-Dial

Models

- PRS-D

Application Information

- Proper operation requires inlet pressure to be a minimum of 15 psi (1.04 bar) higher than desired outlet pressure
- For areas with very high pressure or uneven terrain, install sprinklers with PRS pressure regulating stems and/or SAM check valves
- When inlet pressure exceeds 100 psi (6.9 bar), a pressure regulating master valve or inline pressure regulator is required
- Rain Bird does not recommend using the pressure regulating module for applications outside the recommended flow ranges
- To reduce the effects of water hammer, Rain Bird recommends flow rates in the supply line not to exceed 7.5 ft/sec (2.29 m/s)
- For flows below 10 gpm (2.27 m^3/h; 37.8 l/m), Rain Bird recommends the flow control stem be turned down two full turns from the fully open position

Valve Flow Ranges*

Model	gpm
100-PGA	5-40
150-PGA	30-100
200-PGA	40-150
100-PEB	5-50
150-PEB	20-150
200-PEB	75-200
100-PESB/PESB-R	5-50
150-PESB/PESB-R	20-150
200-PESB/PESB-R	75-200
100-GB-R	5-50
125-GB-R	20-80
150-GB-R	20-120
200-GB-R	20-200
100-EFB-CP-R	5-50
125-EFB-CP-R	20-80
150-EFB-CP-R	20-120
200-EFB-CP-R	20-200
300-BPE	60-300
300-BPES	60-300

Valve Flow Ranges* **METRIC**

Model	m^3/h	l/m
100-PGA	1.14-9.08	19.2-151
150-PGA	6.81-22.70	113-378
200-PGA	9.08-34.05	151-568
100-PEB	1.14-11.35	19.2-189
150-PEB	4.54-34.05	76-568
200-PEB	17.03-45.40	284-757
100-PESB/PESB-R	1.14-11.35	19.2-189
150-PESB/PESB-R	4.54-34.05	76-568
200-PESB/PESB-R	17.03-45.40	284-757
100-GB-R	1.14-11.35	19.2-189
125-GB-R	4.54-18.16	76-302
150-GB-R	4.54-31.78	76-529
200-GB-R	4.54-45.40	76-757
100-EFB-CP-R	1.14-11.35	19.2-189
125-EFB-CP-R	4.54-18.16	76-302
150-EFB-CP-R	4.54-31.78	76-529
200-EFB-CP-R	4.54-45.40	76-757
300-BPE	13.62-68.10	227-1136
300-BPES	13.62-68.10	227-1136

** These are the valve flow ranges. The PRS-Dial regulates only up to 100 psi (6.9 bar)*

Quick-Coupling Valves

- Industrial-strength brass quick-coupling valves for convenient water access in potable and non-potable systems
- Rugged, red brass construction for long life and reliable performance
- Reliable operation with strong corrosion-resistant stainless steel spring

Features

- Optional locking cover on models 33-DLRC, 44-LRC, 5-LRC, 33-DNP, 44-NP and 5-NP (use 2049 key to unlock). Metal cover on model 7 only
- One-piece body design (models 3-RC, 5-RC, and 7).
- Two-piece body design for easy servicing (models 33-DRC, 44-LRC, 44-RC, 33-DNP, and 44-NP).
- Strong corrosion-resistant stainless steel spring prevents leakage
- Thermoplastic cover for durability
- 33-DNP, 44-NP and 5-NP covers marked with "Do Not Drink!" warnings in English and Spanish

Operating Range

- Pressure: 5 to 125 psi (0.35 to 8.63 bar)
- Flow: 10 to 125 gpm (2.27 to 28.38 m³/h; 37.8 to 473 l/m)
- 33-DNP, 44-NP and 5-NP flow: 10 to 70 gpm (2.27 to 15.89 m³/h; 37.8 to 265 l/m)

Dimensions (height)

- 3-RC: 4¼" (10.8 cm)
- 33-DRC: 4⅜" (11.1 cm)
- 33-DLRC: 4⅝" (11.7 cm)
- 44-RC: 6" (15.2 cm)
- 44-LRC: 6" (15.2 cm)
- 5-RC: 5½" (14.0 cm)
- 5-LRC: 5½" (14.0 cm)
- 7: 5¾" (14.6 cm)
- 33-DNP: 4⅜" (11.1 cm)
- 44-NP: 6" (15.2 cm)
- 5-NP: 5½" (14.0 cm)

Models

- 3-RC: 3⁄4" (20/27) Rubber Cover, 1-Piece Body
- 33-DRC: 3⁄4" (20/ 27) Double Track Key Lug, Rubber Cover, 2-Piece Body
- 33-DLRC: 3⁄4" (20/27) Double Track Key Lug, Locking Rubber Cover, 2-Piece Body
- 44-RC: 1" (26/34) Rubber Cover, 2-Piece Body
- 44-LRC: 1" (26/34) Locking Rubber Cover, 2-Piece Body
- 5-RC: 1" (26/34) Rubber Cover, 1-Piece Body
- 5-LRC: 1" (26/34) Locking Rubber Cover, 1-Piece Body
- 7: 11⁄2" (40/49) Metal Cover, 1-Piece Body
- 5-RC-BSP: 1" (26/34) Rubber Cover, 1-Piece Body, BSP threaded
- 5-LRC-BSP: 1" (26/34) Locking Rubber Cover, 1-Piece Body, BSP threaded
- 33-DNP: 3⁄4" (20/27) Non-potable, Purple Locking Rubber Cover, 2-Piece Body
- 44-NP: 1" (26/34) Non-potable, Purple Locking Rubber Cover, 2-Piece Body
- 5-NP: 1" (26/34) Non-potable, Purple Locking Rubber Cover, 1-Piece Body

Note: *For non-US applications, it is necessary to specify NPT or BSP thread type*

Quick-Coupling Valves Pressure Loss (psi)

Flow	3-RC	33-DRC 33-DLRC 33-DNP	44-RC 44-LRC 44-NP	5-RC 5-LRC 5-NP	7
gpm	¾"	¾"	1"	1"	1½"
10	1.8	2	-	-	-
15	4.7	4.3	2.2	-	-
20	7.2	7.6	4.4	-	-
30	-	-	11.5	4.1	-
40	-	-	-	7.3	-
50	-	-	-	11	1.7
60	-	-	-	15.7	2.5
70	-	-	-	21.5	3.6
80	-	-	-	-	4.9
100	-	-	-	-	8.4
125	-	-	-	-	14

Quick-Coupling Valves Pressure Loss (bar) **METRIC**

Flow		3-RC	33-DRC 33-DLRC 33-DNP	44-RC 44-LRC 44-NP	5-RC 5-LRC 5-NP	7
m³/h	l/m	1.9 cm	1.9 cm	2.5 cm	2.5 cm	3.8 cm
2.3	38	0.12	0.12	-	-	-
4	67	0.41	0.42	0.23	-	-
5	83	0.57	0.62	0.40	-	-
6	100	-	-	0.62	-	-
7	117	-	-	0.83	0.30	-
8	133	-	-	-	0.40	-
9	150	-	-	-	0.50	-
10	167	-	-	-	0.61	-
12	200	-	-	-	0.85	0.13
14	233	-	-	-	1.15	0.18
16	267	-	-	-	1.50	0.25
22	367	-	-	-	-	0.54
28	473	-	-	-	-	0.97

Quick-Coupling Valve Cutaway

Quick Coupling Valves

Valve Keys

Quick-Coupling Keys

Features

- Key threads into top of quick-coupling valve to provide water access

Models

- 33-DK: ¾" (20/27)
- 44-K: 1" (26/34)
- 55-K-1: 1" (26/34)*
- 7-K: 1½" (40/49)*

* *Available with BSP threads; specify when ordering*

55-K-1

Corresponding Valve Keys

Valve	Key	Top Pipe Threads Male	Female
3-RC	33-DK	¾"	½"
33-DRC/33-NP	33-DK	¾"	½"
44-RC/44-NP	44-K	1"	¾"
5-RC/5-NP	55-K-1	1"	-
7	7-K	1½"	1¼"

Corresponding Valve Keys METRIC

Valve	Key	Top Pipe Threads Male	Female
3-RC	33-DK	20/27	15/21
33-DRC/33-NP	33-DK	20/27	15/21
44-RC/44-NP	44-K	26/34	20/27
5-RC/5-NP	55-K-1	26/34	-
7	7-K	40/49	33/42

SH Series

Hose Swivel

Features

- Attaches water hose to quick-coupling valve key
- Swivels up to 360°
- Allows hose to be pulled in any direction
- Prevents hose damage

Specifications

- SH-0: ¾" (20/27) female pipe thread x ¾" (20/27) male hose thread
- SH-1: 1" (26/34) female pipe thread x ¾" (20/27) male hose thread
- SH-2: 1" (26/34) female pipe thread x 1" (26/34) male hose thread
- SH-3: 1½" (40/49) female pipe thread x 1" (26/34) male hose thread

Models

- SH-0
- SH-1
- SH-2*
- SH-3

**Available with BSP threads*

SH-0

Locking Cover Key

Features

- Locks and unlocks the optional locking cover on quick-coupling valves
- Operates the valve marker compression lock
- Compatible with models 33-DLRC, 33-DNP, 44-LRC, 44-NP, 5-LRC, and 5-NP

Model

- 2049 Cover Key

2049

SPLICE-1

Wire Splice

Features

- Fast, reliable splicing
- UV resistant black housing is pre-filled with non-toxic lithium grease

Specifications

- Splices low voltage electrical control wires: 30 V max
- Fits wires up to
  - 5 #18, #20, or #22 AWG
  - 4 #16 AWG
  - 2 #14 AWG

Model

- SPLICE-1

SPLICE-1

Purple Valve Handle Assembly

Features

- Purple flow control handle identifies valve as part of a non-potable system
- Easily field installed
- Sizes for all Rain Bird Commercial Valves

Models

- PGA-NP-HAN1 (1" and 1½" PGA Valves)
- PGA-NP-HAN2 (2" PGA Valves)
- PEB-NP-HAN1 (1" PEB/PESB Valves)
- PEB-NP-HAN2 (1½" and 2" PEB/PESB Valves)
- BPE-NP-HAN (3" BPE/BPES Valves)

PEB-NP-HAN PGA-NP-HAN

BPE-NP-HAN

B to A Solenoid Adapter Kit

Features

- Rugged construction
- Includes model A solenoid
- Easily field installed
- Fits all plastic and brass commercial valves (PGA, PEB, PESB, PESB-R, GB-R, and EFB-CP-R)
- Standard on BPE and BPES series valves

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.41 A (9.84 VA) at 60Hz
- Holding current: 0.28 A (6.72 VA) at 60Hz
- Coil resistance: 28 ohms, nominal

Model

- SOL-ADA

Solenoid Adapter

Right Choice in Jar Top Valves Sales Brochure

Features

- Used by contractors when recommending Jar Top Valves to homeowners
- Size is 8½" wide x 11" high
- 3-hole punched; Packs of 25
- Contractors order through Rain Bird Rewards: rainbird.com/rewards or 1-888-370-1814

Model

- D39785: Right Choice in Jar Top Valves Sales Brochure

24 VAC Solenoid Valves Wire Sizing – 50Hz

9.8 VA Valves (EZ) with 26.5 Volt Transformers - Equivalent Feet of Circuit

80 psi (5.5 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 ●	12 ●	10 ●	8 ●	6 ●	4 ●
18	2800							
16	3400	4400						
14	4000	5500	7100					
12	4500	6400	8700	11300				
10	4800	7100	10200	13900	18000			
8	5100	7700	11400	16200	22100	28600		
6	5300	8100	12300	18100	25700	35000	45000	
4	5400	8400	13000	19500	28800	40900	55400	72100

100 psi (6.9 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 ●	12 ●	10 ●	8 ●	6 ●	4 ●
18	2600							
16	3200	4200						
14	3800	5100	6700					
12	4200	6000	8200	10600				
10	4500	6700	9600	13100	16900			
8	4800	7200	10700	15200	20800	26900		
6	4900	7600	11600	17000	24200	32900	42400	
4	5100	7900	12200	18400	27100	38500	52200	67800

125 psi (8.6 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 ●	12 ●	10 ●	8 ●	6 ●	4 ●
18	2500							
16	3100	4000						
14	3600	5000	6400					
12	4100	5800	7900	10200				
10	4400	6500	9200	12600	16300			
8	4600	7000	10300	14700	20000	25900		
6	4800	7400	11200	16400	23300	31700	40900	
4	4900	7600	11800	17700	26100	37100	50300	65400

150 psi (10.4 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 ●	12 ●	10 ●	8 ●	6 ●	4 ●
18	2400							
16	3000	3900						
14	3500	4800	6200					
12	3900	5600	7600	9900				
10	4200	6200	8900	12100	15700			
8	4400	6700	10000	14100	19300	25000		
6	4600	7100	10700	15800	22500	30500	39300	
4	4700	7300	11300	17100	25200	35800	48400	63000

200 psi (13.8 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 ●	12 ●	10 ●	8 ●	6 ●	4 ●
18	1800							
16	2200	2900						
14	2600	3600	4700					
12	2900	4200	5800	7400				
10	3200	4700	6700	9200	11900			
8	3300	5100	7500	10700	14600	18900		
6	3500	5300	8100	11900	17000	23100	29800	
4	3500	5500	8600	12900	19000	27000	36600	47600

Commercial Valve Wire Sizing Procedure

Step 1

Determine actual distance, along wire run, from controller out to the first valve on a circuit and between each succeeding valve on a multiple valve circuit (as shown in Figure A, page 90). Example: (Two watt solenoid, 26.5 volt transformer, 50Hz, at 150 psi water pressure at valves.)

Step 2

Calculate the equivalent circuit length for each valve circuit on the controller. (See chart to left)

Step 3

Selecting Common Wire Size: Using the longest equivalent length calculated above, go to the appropriate valve chart and select a common wire and a control wire that are as close to the same size as possible (the common wire size should always be equal to or one size larger than the control wire size.) In the example above, the circuit for station #3 has the longest equivalent length, 7000 feet. In the chart (for this example use the chart for 150 psi water pressure at the valve and a 26.5 volt transformer) select a wire size combination of size 14 and 12 wire. Select common wire as size 12 wire. Since one common wire shall be used for all valves on the controller, you have now established the common wire size for that controller as size 12 wire.

Step 4

Sizing Circuit Control Wires: Reading only from the row for the common wire size selected in Step 3 (size 12), proceed to select each control wire size from the chart using the calculated equivalent length for each circuit.

Station #1: Equiv. Length = 1 valve x 2000 ft. = 2000 ft. select size 18 control wire

Station #2: Equiv. Length = (1 valve x 1000 ft.) + (2 valves x 2000 ft.) = 5000 ft. select size 16 control wire

Station #3: Equiv. Length = (1 valve x 500 ft.) + (2 valves x 1000 ft.) + (3 valves x 1500 ft.) = 7000 ft. select size 14 control wire

24 VAC Solenoid Valves Wire Sizing – 60Hz

9.8 VA Valves (EZ) with 26.5 Volt Transformers - Equivalent Feet of Circuit

80 psi (5.5 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 •	12 •	10 •	8 •	6 •	4 •
18	2300							
16	2800	3700						
14	3300	4500	5900					
12	3700	5300	7200	9400				
10	4000	5900	8500	11500	15000			
8	4200	6400	9500	13500	18400	23800		
6	4400	6700	10200	15000	21400	29100	37500	
4	4500	7000	10800	16300	24000	34000	46100	60000

100 psi (6.9 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 •	12 •	10 •	8 •	6 •	4 •
18	2100							
16	2500	3300						
14	3000	4100	5300					
12	3300	4700	6500	8400				
10	3600	5300	7600	10300	13400			
8	3800	5700	8500	12000	16400	21300		
6	3900	6000	9100	13400	19100	26000	33500	
4	4000	6200	9600	14500	21400	30500	41300	53700

125 psi (8.6 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 •	12 •	10 •	8 •	6 •	4 •
18	1800							
16	2200	2900						
14	2600	3600	4600					
12	2900	4200	5700	7400				
10	3200	4700	6700	9100	11800			
8	3300	5000	7500	10600	14500	18700		
6	3400	5300	8100	11900	16900	22900	29600	
4	3500	5500	8500	12800	18900	26900	36400	47300

150 psi (10.4 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 •	12 •	10 •	8 •	6 •	4 •
18	1600							
16	2000	2600						
14	2300	3200	4200					
12	2600	3700	5100	6600				
10	2800	4200	6000	8200	10600			
8	3000	4500	6700	9500	13000	16800		
6	3100	4800	7200	10600	15200	20600	26600	
4	3200	4900	7600	11500	17000	24100	32700	42500

200 psi (13.8 bar) Water Pressure at Valve

Common Wire Size	Control Wire Size 18 •	16 •	14 •	12 •	10 •	8 •	6 •	4 •
18	1300							
16	1600	2100						
14	1900	2600	3300					
12	2100	3000	4100	5300				
10	2300	3400	4800	6500	8500			
8	2400	3600	5400	7600	10400	13500		
6	2500	3800	5800	8500	12100	16500	21300	
4	2500	3900	6100	9200	13600	19400	26200	34100

Commercial Valve Wire Sizing Procedure

Step 1

Determine actual distance, along wire run, from controller out to the first valve on a circuit and between each succeeding valve on a multiple valve circuit (as shown in Figure A, page 90). Example: (Two watt solenoid, 26.5 volt transformer, 60Hz, at 150 psi water pressure at valves.)

Step 2

Calculate the equivalent circuit length for each valve circuit on the controller. (See chart to left)

Step 3

Selecting Common Wire Size: Using the longest equivalent length calculated above, go to the appropriate valve chart and select a common wire and a control wire that are as close to the same size as possible (the common wire size should always be equal to or one size larger than the control wire size.) In the example above, the circuit for station #3 has the longest equivalent length, 7000 feet. In the chart (for this example use the chart for 150 psi water pressure at the valve and a 26.5 volt transformer) select a wire size combination of size 12 and 10 wire. Select common wire as size 10 wire. Since one common wire shall be used for all valves on the controller, you have now established the common wire size for that controller as size 10 wire.

Step 4

Sizing Circuit Control Wires: Reading only from the row for the common wire size selected in Step 3 (size 10), proceed to select each control wire size from the chart using the calculated equivalent length for each circuit.

Station #1: Equiv. Length = 1 valve x 2000 ft. = 2000 ft. select size 18 control wire

Station #2: Equiv. Length = (1 valve x 1000 ft.) + (2 valves x 2000 ft.) = 5000 ft. select size 14 control wire

Station #3: Equiv. Length = (1 valve x 500 ft.) + (2 valves x 1000 ft.) + (3 valves x 1500 ft.) = 7000 ft. select size 12 control wire

"The Rain Bird ESP-SMT Smart Control System is the product our company has been waiting for. We are all about saving our customers money through real water savings. The ESP-SMT does that better than any previous innovation in the industry. We use this controller on every system we install. It allows us to offer something most other companies do not - and that sets us apart from the competition."

Jim Lewis, *President*
Lewis Landscape Services, Inc.

Water Saving Tips

- A Water Budget feature is available on all Rain Bird AC-powered controllers, allowing users to easily adjust irrigation schedules to changing seasonal landscape water requirements. The ESP-LX Series Controllers also feature an automated Monthly Seasonal Adjust feature to help save water through automatic adjustments every month of the year
- Water savings can also be optimized through daily irrigation schedule adjustments which fine-tune watering based on current weather. All schedule-based controllers can easily be upgraded to include smart weather-based/ET or soil moisture irrigation control capability by adding the Rain Bird ET Manager, or ET Manager Cartridge
- All Rain Bird controllers simplify conservation through a variety of flexible programming features. With the touch of a button, the ESP Modular can recall a previously saved "Contractor Default" irrigation schedule; the ESP-LX Series "Delayed Recall" feature automatically reverts to typical watering schedules after a user-set time period

Major Products

Primary Applications	STP Plus	ESP Modular	ESP-SMT	ESP-LXME	ESP-LXMEF	ESP-LXD	ESP-MC	TBOS™
Residential	●	●	●					●
Light Commercial		●	●	●	●	●	●	●
Commercial/Industrial				●	●	●	●	●
Type of Controller								
Hybrid	●	●	●	●	●	●	●	
Solid State								●
Battery Operated								●
Indoor Location	●	●	●	●	●	●	●	
Outdoor Location		●	●	●	●	●	●	
Features								
Stations (up to)	9	13	13	48	48	200	24	4
Programs (up to)	9	3	13	4	4	4	4	3
Station Timing (up to)	240 min[1]	6 hr[1]	weather-based	12 hr[1]	12 hr[1]	12 hr[1]	12 hr[1]	12 hr
Number of Starts per Program (up to)	4	4	N/A	8	8	8	8	8
Surge protection	●	●	●	●	●	●	●	
230VAC Option	●	●		●	●	●	●	
Master Valve/Pump Start	●	●	●	●[2]	●[2]	●[2]	●[2]	
Water Budgeting	●	●	●	●[6]	●[6]	●[6]	●	
Individual Program Shut-Off	●		●	●	●	●	●	
Rain Delay	●		●	●	●	●	●	
Battery Programmable		●	●	●	●	●	●	●
Sensor Terminals, Status Indicator and Override		●	●	●	●	●	●	
Delay Between Stations (up to)		9 hrs	9 hrs	0 - 10 min.	0 - 10 min.	0 - 10 min.	9 hrs	
Flow Sensing					●	●		
Simultaneous Multi-Station Operation				●	●	●	●	●
Cycle + Soak™			●	●	●	●	●	
Overlapping Programs				●	●	●	●	
Manual On/Off	●	●	●	●	●	●	●	●
Remote Control Compatible	●	●	●	●	●	●	●[5]	
Diagnostic Test			●	●	●	●	●	
Diagnostic Circuit Breaker	●	●	●	●	●	●		
Out-of-Valve Box Programming								●
Submersible (up to)								3.3 ft (1 m)
Vandal/Tamper Resistant								●
Self-Cleaning Solenoid								●
Low Battery Indicator								●
Programming Schedule								
7 Day-of-Week	●	●	●	●	●	●	●	●
2, 3, 5 Fixed Cycle								
1-7 Variable Cycle		●	●					●
1-31 Variable Cycle		●	●	●	●	●		
1-99 Variable Cycle			●				●	
Odd/Even Cycle	●	●	●	●	●	●	●	
Odd 31st	●	●	●	●	●	●	●	●
365-Day Calendar	●	●	●	●	●	●	●	
Event Day Off		●	●	●	●	●	●	
Central Control Compatibility								
Maxicom²® and SiteControl Upgradeable							●	
IQ™ Upgradeable				●	●	●		
Cabinet								
Plastic-Indoor	●	●	●					
Plastic-Outdoor		●	●	●	●	●		●
Powder-Coated Metal Outdoor				●	●	●	●	
Stainless Steel Pedestal							●	
Powder-Coated Metal Pedestal				●	●	●	●	
Hardware/Accessories								
Two-Wire Decoders and Accessories						●		
Rain Sensor	●	●		●	●	●	●	●
Flow Sensor					●	●		
ET Manager™ Cartridge				●	●	●		

[1] With water budgeting, timing can be extended [2] Programmable by station [3] Not compatible with Rain Bird remotes [4] Selectable for each program and by month

STP Plus Series Controller

NEW

4, 6, 9 Station Indoor Controller for Residential Use

- Easiest controller in the irrigation industry to program and operate. So easy to operate you won't even need to read the instructions
- Simple to use "At-a-Glance" programming allows you to see all of the irrigation schedule information for each specific zone at the same time on the controller face plate
- Independent zone control gives you the flexibility to easily accommodate the diverse watering needs of each zone

Features

- The STP Plus Controller allows you to select multiple start times per day on an individual zone basis, helping you maintain a healthier lawn and garden
- The Adjust Water feature enables you to easily increase or decrease the irrigation amount as needed
- In the event of a prolonged rain, you can easily suspend the irrigation schedule up to 72 hours using the controller's Rain Delay feature
- The Water Now features allow you to simply apply additional water to irrigate a single zone or all zones without impacting the previously set schedule
- To help manage water restrictions, the controller can be set to water on specific days of the week
- The irrigation schedule is stored in the event of a power outage using non-volatile memory
- Extra 24 volt terminals are available on the terminal strip to allow attachment of a Wireless Rain Sensor (not included) or other powered accessories

Operating Specifications

- Zone Timing:
  - 0 – 240 minutes in one minute increments
  - 0 – 480 minutes with Adjust Water feature activated
- Start Times:
  - Up to 4 start times (15 minute increments) can be assigned to each zone
  - Overlapping start times will stack to prevent two zones from operating concurrently
- Day Schedule
  - Each zone can water on any day combination (7 day week) or in ODD or EVEN day mode.
- Rain Delay
  - The entire irrigation schedule can be suspended up to 72 hours (12 hour increments).
- Water Adjust
  - The irrigation schedule for the entire controller can be increased by 100% or decreased up to 90% (10% increments).

Electrical Specifications

- Input Required:
  - 120 VAC ± 10%, 60Hz
  - 230 VAC ± 10%, 50Hz
- Output: 25.5 VAC, 0.65A
- Surge Protection:
  - Primary input has a built-in MOV (metal oxide varistor) to protect circuitry
  - Output has a built-in MOV for each station
- Power Outage Protection:
  - A lithium battery saves date and time for up to 7 days
  - Non-volatile memory saves all program information
- Valve capacity: one 24 VAC, 7VA solenoid per station plus a master valve

Dimensions

- Width: 7" (17.8 cm)
- Height: 6" (15.2 cm)
- Depth: 1¼" (3.2 cm)

Models

- STP4PL: STP Plus 4 station - 120V
- STP6PL: STP Plus 6 station - 120V
- STP9PL: STP Plus 9 station - 120V
- ISTP4PLROW: STP Plus 4 station - 230V
- ISTP6PLROW: STP Plus 6 station - 230V
- ISTP9PLROW: STP Plus 9 station - 230V

STP Plus

Water Saving

The STP Plus' independent zone control feature facilitates management of diverse watering needs to different zones, conserving water by allowing appropriate irrigation to different landscape areas

ESP Modular Series

4, 7, 10, 13 Station Indoor or Outdoor Controller for Residential and Light Commercial Use

- Modularity – Start with the 4-station base controller and easily expand to 13 stations. Minimize inventory and always have the right station count on hand
- Quality – Built-in reliability; designed with durable parts, superior surge protection and high temperature tolerance
- Easy-to-use ESP-style programming – Simple to set up, time tested and homeowner approved; you'll be on to the next job faster than ever

Features

- Contractor Default™ Program allows the contractor to save their default program and retrieve it with the push of a button. Easily reload a schedule that has been altered by a homeowner or replace a temporary schedule for new seed or sod
- Auxiliary Station™ (Station 13) can be set to bypass an active sensor to allow watering even if the other stations are disabled or can be set as a normal station. Ideal for covered patio watering or non-irrigation systems such as landscape lighting or fountains
- Programmable day off allows the user to set any day of the week as a non-watering day in any program or schedule, making it easy to comply with requirements such as weekly lawn care, maintenance or watering restrictions
- Global seasonal adjust (0-200%) allows the user to alter the run-time of all the valves in every program to meet changing seasonal needs
- Dedicated sensor terminals allow the user to easily connect a sensor to the controller for maximum water efficiency. A light (LED) and a message on the LCD indicates when a sensor is active
- Sensor bypass switch allows the user to override an active sensor
- Master valve/pump start circuit programmable by station allows operation of connected pump as needed
- Programmable delay between station allows additional time between zones for water well recovery or slow closing valves
- Enhanced Diagnostic Feedback™ alerts the user to conditions when watering is suspended due to an activated sensor, shorted stations or programming errors with a warning light and message on the LCD
- Fuseless, diagnostic circuit breaker identifies a station with valve or wiring problems and continues to water operable stations
- Valve Test Terminal allows the installer to test the valve wires during installation to determine the valve that each wire is connected to
- 365-day calendar with leap year intelligence ensures accurate Odd/Even day watering
- Non-volatile memory maintains the irrigation schedule indefinitely during a power outage
- Five-year lithium battery maintains the time and date for a cumulative life of 5 years during power outages

Operating Specifications

- Number of programs: 3 independent
- Automatic starts: 4 per program, 12 total
- Station timing: 0 to 6 hours for all stations
- Independent programming schedules:
  - Custom (water by day of the week)
  - Odd (water on odd days of the month except on the 31st and February 29th if a leap year)
  - Even (water on even days of the month)
  - Cyclical (1-31 days: water from every other day to once every 31 days)

Electrical Specifications

- Input required: 120 VAC ± 10%, 60Hz / 230VAC ± 10%, 50Hz / 240VAC ± 10%, 50Hz
- Output: 25.5 VAC 1A
- Surge protection: Primary input has 2 built-in MOVs (metal oxide varistor) to protect circuitry. Output has 2 built in MOVs for each valve station
- Power back-up: Lithium coin-cell battery maintains time and date while non-volatile memory maintains the schedule
- Multi-valve station capacity: Up to two 24 VAC, 7VA solenoid valves per station plus a master valve

Dimensions

- Width: 10.7" (27.2 cm); Height: 7.7" (19.5 cm); Depth: 4.4" (11.2 cm)

Models

- Controller Base Models
  - ESP-4Mi: 4 station - indoor 120V
  - ESP-4M: 4 station - outdoor 120V
  - IESP-4MEU: 4 station - outdoor 230V - Europe
  - IESP-4MCH: 4 station - outdoor 230V - China
  - IESP-4MAUS: 4 station - outdoor 240V - Australia
  - IESP-4MROW: 4 station - outdoor 230V - International (except Europe and China)
- Modules
  - ESP-SM3: Three station expansion module

ESP Modular

Water Saving

Three independent programs help conserve water by allowing easy programming of uique irrigation schedules for diverse landscape applications

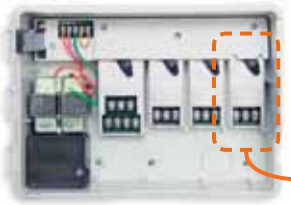
ESP-SMT Smart Modular Control System

4 to 13 Station Indoor or Outdoor Smart Modular Control System for Residential and Light Commercial Use

- The proven accuracy of weather–based scheduling – Builds on over 25 years of proven success that Rain Bird has had in employing weather-based scheduling on some of the world's most demanding commercial landscapes and golf course sites
- Quick and easy programming – Programming "wizard" technology walks you through each programming step to assure that the control system is set-up to optimize the irrigation schedule to provide healthy, vibrant plant material while saving water.
- Instant Rainfall and Usable Measurement – Not only does the ESP-SMT suspend irrigation when it rains, it measures useable rainfall. The result is virtually no under- or over-watering
- Zone-specific irrigation schedule calculations – Each zone's irrigation schedule is customized to meet that specific zone's unique watering requirements

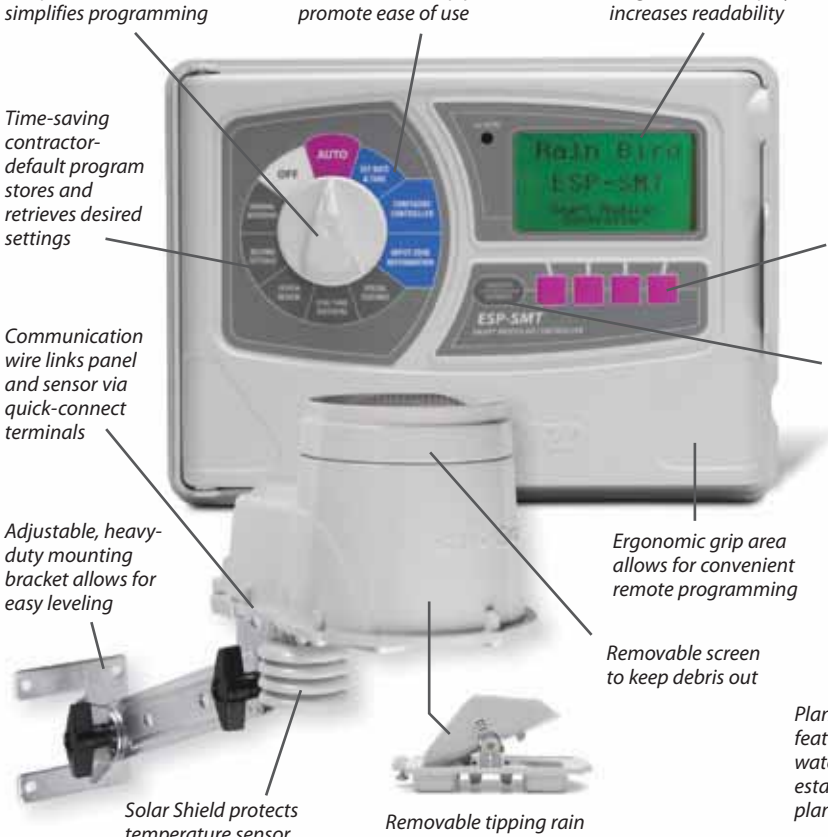
Features

- Typically provides water savings of 20% to 50% over traditional time-based controllers
- Each zone's soil moisture balance is maintained at the optimum level using the proven Maximum Allowed Depletion (MAD) irrigation scheduling method
- The ESP-SMT saves water by making real time irrigation schedule adjustments based on a daily reference Evapotranspiration (ET) value that is determined by the weather parameters collected by the on-site weather sensor
- Separate grow-in period allows the user to set up an initial time-based program to establish the plant material for a pre-set number of days. Once this time period expires, the zone will automatically revert to weather –based scheduling
- Rain Suspend is activated when the tipping rain bucket has measured the user-set rain threshold, preventing irrigation from occurring during a rain event
- Tipping bucket rain sensor measures the amount of rainfall and the timing of the rain to account for usable rainfall, thereby preventing over-watering



ESP-SMT with three ESP-SM3 station expansion modules for a total of 13 stations

Hot-swappable three-station expansion modules



English text

Spanish text

Plant maturity selection feature ensures effective watering of both established and newly planted vegetation

ESP-SMT Smart Modular Control System (cont.)

- Automatic Cycle and Soak™ timing determined by the soil type and severity of the slope prevents surface run-off
- Contractor Default™ Program allows the contractor to save prescribed default program in the controller's memory and easily retrieve it with the simple push of a button if a homeowner has altered the contractor's original program
- Reduced irrigation system component damage and liability as the ESP-SMT controller will interrupt irrigation during freezing conditions at the site
- Non-volatile memory maintains the controller settings indefinitely even in the event of a prolonged power-outage
- Integral lithium battery maintains the current date and time for a cumulative life of 5 years during power outages
- Programmable delay between stations allows additional time between zones for water well recovery or slow closing valves
- Master valve/pump-start circuit programmable by station allows operation of connected pump as needed
- Each zone can be set to acknowledge or bypass the tipping rain bucket settings. This is ideal for irrigating plant material that is located under a covered patio or for non-irrigation functions such as landscape lighting
- Fuseless, diagnostic circuit breaker identifies a zone with wiring short problems and continues to water all operable zone while identifying the faulty zone
- Valve Test Terminal allows the user to test the valve wires during installation to determine the valve wire that corresponds to each zone
- Easily upgrades from a 4-station base model to 13 stations with the addition of 3 station expansion hot-swappable modules allowing for station expansion without disconnecting power to the controller
- Backlit graphic dot-matrix display is easy to read in dimly lit areas. The large display text is easy to read and can be changed from English to Spanish by the simple touch of the English/Spanish button located on the face of the controller
- Spacious, heavy-duty cabinet with internal junction box (outdoor model) provides lots of room for wiring. Outdoor model comes with a key locking cabinet

Electrical Specification

- Input Required: 120VAC +/- 10%, 60 Hz
- Output: 25.5VAC 1A
- Surge Protection: Primary input side has (2) built-in MOV's (metal oxide varistor) to protect circuitry. Output side has (2) built-in MOV's for each valve station
- Power back-up: Lithium coin-cell battery maintains time and date while non-volatile memory maintains the schedule
- Multi-valve station capacity: Up to two 24VAC, 7VA solenoid valves per station plus a master valve

Dimensions

- Controller
  - Width: 10.7" (27.2 cm)
  - Height: 7.7" (19.5 cm)
  - Depth: 4.4" (11.2 cm)
- Sensor *(Largest Area Across)*
  - Width: 6.0" (15.2 cm)
  - Length: 8.8" (22.4 cm)
  - Height : 5.9" (15.0 cm)
- Mounting Bracket
  - Maximum reach: 7.0" (17.8 cm)

Models

- Control System Base Models *(includes ESP-SMT controller & weather sensor)*
  - ESP-SMT4i – 4 station indoor* - 120V
  - ESP-SMT4 – 4 station outdoor* -120V
- Upgrade Model *(includes ESP-SMT controller panel & weather sensor)*
  - ESP-SMT-UPG – Kit to Upgrade existing ESP-Modular Controllers**
- Modules
  - ESP-SM3 – Three-station expansion module

** To expand up to 13 stations, use ESP-SM3 – Three Station Expansion Modules*
*** Applies to ESP-M controllers manufactured after April, 2005*

***Note:** All ESP-SMT models come with a heavy-duty adjustable bracket and 25 feet of communication wire for mounting and wiring the weather sensor*

Controller Panel Fits ESP-Modular Chassis For Easy Upgrades

In seconds, upgrade an existing ESP-Modular to the ESP-SMT Smart Control System just by switching panels.

ESP-LXME Controller

8 to 48 Station Capable Commercial Controller

NEW

Smart Approved WaterMark

- Simple - ESP Extra Simple Programming
- Modular - Easily expandable from 8 or 12 stations to 48 stations with 4-, 8-, and 12-station modules
- Upgradeable to Smart Controller or Central Control

ESP-LXME Controller

Features

- Large LCD display with easy to navigate softkey user interface
- Hot-swappable modules, no need to power down the controller to add/remove modules
- Dynamic station numbering eliminates station numbering gaps
- Weather Sensor input with override switch
- Master valve/pump start circuit
- 6 user-selectable languages
- Non-Volatile (100- year) program memory
- Standard 10kV surge protection
- Front panel is removable and programmable under battery power

Water Management Features

- Optional Flow Smart Module™ with Learn Flow utility and flow usage totalizer
- FloWatch™ protection for high and low flow conditions with user defined reactions
- FloManager™ manages hydraulic demand, making full use of available water to shorten total watering time
- SimulStations™ are programmable to allow up to 5 stations to operate at the same time
- Water Windows by program plus Manual MV Water Window
- Cycle+Soak™ by station
- Rain Delay
- 365-Day Calendar Day Off
- Programmable Station Delay by program
- Normally Open or Closed Master Valve programmable by station
- Weather Sensor programmable by station to prevent or pause watering
- Program Seasonal Adjust
- Global Monthly Seasonal Adjust
- Operates in order of station priorities to optimize watering efficiencies and decrease overall runtime.

12-Station, 8-Station, and 4-Station Modules

Water Saving $

The Contractor Default Delayed Recall feature automates the change back to a normal irrigation schedule after heavier watering of new seed or sod – with no user input necessary

ESP-LXME Controller (cont.)

Diagnostic Features

- Alarm light with external case lens
- Electronic diagnostic circuit breaker
- Program summary and review
- Variable test program
- RASTER™ station wiring test

Operating Specifications

- Station timing: 0 min to 12 hrs
- Seasonal Adjust; 0% to 300% (16 hrs maximum station run time)
- 4 independent programs (ABCD)
- ABCD programs can overlap
- 8 start times per program
- Program Day Cycles include Custom days of the week, Odd, Odd31, Even, & Cyclical dates
- Manual station, program, test program

Electrical Specifications

- Input required: 120 VAC ± 10%, 60Hz (International models: 230 VAC ± 10%, 50Hz; Australian models: 240 VAC ± 10%,50Hz)
- Output: 26.5 VAC 1.9A
- Power back-up: Lithium coin-cell battery maintains time and date while nonvolatile memory maintains the programming
- Multi-valve capacity: Maximum five 24 VAC, 7VA solenoid valves simultaneous operation including the master valve, maximum two solenoid valves per station
- Certifications
  - UL, CUL, CE, CSA, C-Tick, FCC Part 15

Dimensions

- Width: 14.32 in. (36,4 cm)
- Height:12.69 in. (32,2 cm)
- Depth: 5.50 in. (14,0 cm)

Optional Accessories

- LIMR-Kit: LIMR remote control Kit for Rain Bird Controllers (see page 125)
- LXMM: Powder-Coated Metal Cabinet for ESP-LX Modular (see page 131)
- LXMMPED: Powder-Coated Metal Pedestal for ESP-LX Modular (see page 131)
- ETC-LX: ET Manager Cartridge (see page 119)
- IQ Communication Cartridge (see page 120)
- See page 152 for information on Rain Bird FS-Series Flow Sensors

Models

- Controller Base Models
  - ESP8LXME: 8-station, 120 VAC
  - ESP12LXME: 12-station, 120 VAC
  - I8LXME: 8-station for international markets, 230 VAC
  - I12LXME: 12-station for international markets, 230 VAC
  - I8LXMEEU: 8-station for Europe, 230 VAC
  - I12LXMEEU: 12-station for Europe, 230 VAC
  - I8LXMEAU: 8-station for Australia, 240 VAC
  - I12LXMEAU: 12-station for Australia, 240 VAC
- Models with Flow Sensing
  - ESP8LXMEF: 8-station, 120 VAC
  - ESP12LXMEF: 12-station, 120 VAC
  - I8LXMEF: 8-station for international markets, 230 VAC
  - I12LXMEF: 12-station for international markets, 230 VAC
  - I8LXMEEUF: 8-station for Europe, 230 VAC
  - I12LXMEEUF: 12-station for Europe, 230 VAC
  - I8LXMEAUF: 8-station for Australia, 240 VAC
  - I12LXMEAUF: 12-station for Australia, 240 VAC

Modules

- ESPLXMSM4: 4-station module
- ESPLXMSM8: 8-station module
- ESPLXMSM12: 12-station module
- FSMLXME: Flow Smart Module

ESP-LXME Controller in Optional LXMM Metal Cabinet

Optional LXMMPED Metal Pedestal

ESP-LXD Decoder Controller

NEW

Smart Approved WaterMark

50 – 200 station capable Two-Wire Decoder Commercial Controller

- Simple – uses the same proven Extra Simple Programming as other ESP-LX controllers
- Flexible – easily expandable from 50 – 200 stations with support for 5 Master Valves, 5 flow sensors, 4 weather sensors and a variety of upgrades
- Proven Technology – uses the same FD-TURF two-wire decoders used by the MDC and MDC2 controllers with more than half a million decoders installed worldwide over the past 20 years

Features

- **Rain Bird's Intuitive ESP (Extra Simple Programming)**
  - Uses the same programming interface as other ESP controllers
  - Six user-selectable languages, including English, Spanish, French, Italian, German and Portuguese
  - Two-wire diagnostics to simplify and expedite troubleshooting
  - Four independent programs with capability to overlap
- **Flexible Control**
  - Spacious case with eight lugs to support up to four two-wire paths (all managed as a single two-wire path)
  - UV-resistant, outdoor-rated plastic locking wall-mountable case
  - Uses the same decoder hardware as MDC/MDC2 and SiteControl. Supported decoders include FD-101TURF, FD-102TURF, FD-202TURF, FD-401TURF & FD-601TURF; also supports SD-210TURF sensor decoders and LSP-1 line surge protectors
  - Pre-coded decoder addresses eliminate confusion associated with user-defined decoder addressing; new barcode scanner-based decoder address input with the optional PBC-LXD cartridge
  - User-adjustable SimulStations™ at the program and controller level allows control of simultaneous station operation
  - ESP-LXD is compatible with the new LIMR remote control
  - Controller includes 50 stations; expandable to 200 stations by adding 1 – 2 ESPLXD-SM75 station expansion modules (each station expansion module adds an additional 75 stations)
- **Water Conservation and Management**
  - Cycle+Soak™ by station
  - Rain Delay and Calendar Day Off
  - Programmable Station Delay by Program
  - Program-level and monthly Seasonal Adjust
  - Up to 5 Master Valves/Pump Starts programmable by station plus up to 5 flow sensors
  - Up to 4 Weather Sensors programmable by station

ESP-LXD Decoder Controller

ESPLXD-SM75 Module

ESPLXD-M50 Module

How To Specify

ESP-LXD - SM75

Controller
ESP-LXD: 120V Outdoor
IESP-LXD: 230V International
IESPLXDEU: 230V European
IESP-LXDA: 240V Australian

Modules & Cartridges
SM75: 75-station expansion module
PBC-LXD: Program Backup Cartridge (see next page)

ESP-LXD Decoder Controller (cont.)

- **Flow Management**
  - FloManager™ for management of your system's hydraulic capacity (flow sensors not required)
  - FloWatch™ for SEEF (Seek and Eliminate Excessive Flow) and SELF (Seek and Eliminate Low Flow) for automatic diagnosis and management of mainline breaks or underflow
  - Learn Flow and User-Entered flow supports automatic learning or user-estimated flow rates
  - Flow logging for monitoring and conservation of water consumption
  - Supports English (GPM) and Metric (LPM, LPS, M3/s) flow rate measurement

Dimensions, Electrical Specifications & Certifications

- Dimensions (W x H x D): 14.32" x 12.69" x 5.5" (36.4 x 32.2 x 14.0 cm)
- Electrical input required: 120VAC +/- 10%, 60 Hz; International models 230VAC +/- 10%, 50 Hz; Australian models 240VAC +/- 10%, 50 Hz
- Certifications: UL, CE, CUL, C-Tick
- Lithium coin-cell battery and nonvolatile memory maintain date, time and programming
- Multi-valve capable: up to 2 solenoid valves per station (FD-102 or FD-202 decoders required) with user-adjustable simultaneous operation of up to eight valves and/or Master Valves

Model

- ESP-LXD: 50-station, 120 VAC
- IESPLXD: 50-station for international markets, 230 VAC
- IESPLXDEU: 50-station for Europe, 230 VAC
- IESPLXDAU; 50-station for Australia, 240 VAC

Optional Accessories

- ESPLXD-SM75: 75-station module for ESP-LXD
- PBC-LXD: Program Backup Cartridge for ESP-LXD
- LIMR-KIT: LIMR remote control kit for Rain Bird controllers
- FD-TURF: two-wire decoders
- SD-210TURF: two-wire sensor decoder
- LSP1TURF: two-wire line surge protection
- DPU-210: two-wire decoder programming unit
- LXMM: powder-coated metal cabinet for ESP-LX series controllers
- LXMMPED: powder-coated metal pedestal for ESP-LX series controllers
- ETC-LX: ET Manager™ Cartridge for ESP-LX series controllers (see page 119)
- IQ-NCC: Network Communication Cartridge for ESP-LX Series Controllers (see page 120)
- See page 152 for information on Rain Bird FS-Series Flow Sensors

[1]FD-TURF decoders include peel-off barcode address labels

[2]Barcode scanning pen not included – sold separately; Unitech MS100-2 recommended (www.ute.com)

PBC-LXD Programming Backup Cartridge for ESP-LXD

NEW

Provides program backup and restore and barcode scanning capability for the ESP-LXD controller

Upgrade Kit Features

- Provides 8 full backups, including all programs, flow information and decoder addresses – allows you to easily archive 8 different controllers – restoring all information typically takes two minutes or less
- Snaps into the back of the ESP-LXD front panel; installs without tools; no additional enclosures or external wiring required
- Kit includes cable for interface to barcode scanning pen (pen not included) – allows you to quickly scan decoder addresses into the ESP-LXD controller during installation to save you time

Model

- PBC-LXD (works with all versions of the ESP-LXD controller)

PBC-LXD Cartridge

ET Manager™ Cartridge

Upgrades Any ESP-LX Series Controller to an ET/Weather-Based Irrigation Controller

Features

Water Saving Benefits

- The ET Manager™ Cartridge saves water by making real-time adjustments to the irrigation schedule based on hourly weather information
- Water savings of 20% – 50% over traditional time-based irrigation control
- Measures the four key components of ET: solar radiation, relative humidity, wind, and temperature, as well as effective rainfall
- Adjusts program run-times and the frequency of irrigation
- Four separate moisture balances are maintained, one for each program or hydrozone to efficiently water varied plant types (example: turf, shrubs, trees, annuals, etc)

Easy Installation

- Installs in seconds with no tools into all ESP-LX Series controllers; snaps into a dedicated bay on the back of the controller faceplate
- Antenna mounts on NPS nipple
- Setup Wizard walks user through all key setup parameters

Reduced Liability

- Minimum temperature interrupt to prevent irrigation during freezing conditions reducing liabilities associated with walkway icing

Additional ETC-LX Features

- The ET Manager™ Cartridge uses the same Weather Reach™ signal as the Rain Bird ET Manager™ (ETMi)
- Eliminates the need to travel to controller sites to make adjustments or programming changes, contributing to significant labor savings
- Ribbon cable connects ETC-LX cartridge to the controller
- Antenna cable connects with snap in connector
- Status LEDs show current status of communication
- ETC-LX kit includes ET Manager™ Cartridge, receiver antenna, manual, and ET Manager™ Resource CD which will help schedule irrigation run times based on landscape parameters

Operating Specifications

- Electrical power is provided by the LX Controller
- Operating Temperature Range 5° F-149° F (Radio reception operating temperature: 32° F - 122° F)
- Tipping Rain Gauge wire: 18 – 26 AWG

Optional Accessories

- ETM-RMK: Remote antenna mount for ETC-LX*
- ETM-RG: Tipping Rain Gauge
- ETM-WRSS: Weather Reach Server Software
- ETM-PS: ET Manager Programming Software

** Allows the antenna to be remotely mounted for better signal reception. ET Manager™ has a built in antenna but locations with a weak paging signal may require an external antenna*

For more information call the ET Manager™ Hotline: 1-877-351-6588

ETC-LX
ET Manager™ Cartridge

IQ NCC Network Communication Cartridge

NEW

Upgrades any ESP-LX Series Controller to an IQ Central Control Satellite Controller

- IQ is the perfect irrigation control solution for parks departments, school districts, property managers, landscape maintenance contractors, and water managers
- IQ can manage small single-controller sites as well as large multi-controller sites
- IQ NCC cartridges are compatible with the ESP-LXME traditionally-wired controllers with 1 to 48 station capacity and ESP-LXD 2-wire controllers with 1 to 200 station capacity

Direct Satellites

- Single controller sites would use an IQ NCC cartridge configured as a Direct satellite. A Direct satellite has an IQ central computer communication connection but no network connections to other satellites in the system

Server & Client Satellites

- Multi-controller sites would use one IQ NCC cartridge configured as a Server satellite and the other NCC cartridges configured as Client satellites. The Server satellite has an IQ central computer communication connection and shares this communication connection with the Client satellites though high-speed data cable or radios. The communication connection between Server and Client satellites is called the IQNet™
- Satellites on a common IQNet can share weather sensors and master valves
- Server and Client satellites using high-speed data cable for IQNet communication require installation of an IQ CM Communication Module. Server and Client satellites using radio communication for IQNet communication require installation of an IQSSRADIO radio. Each cartridge kit includes cables to connect the NCC cartridge to connection module and/or radio

IQ NCC-PH Phone Cartridge

- Includes embedded 56K Telco Analog Phone Modem with RJ-11 port
- Includes RJ-11 modular phone cable (analog phone line required)

IQ NCC-GP GPRS/Cellular Cartridge

- Includes embedded GPRS/Cellular Data Modem with antenna connector
- Includes internal antenna for plastic controller enclosures (optional external antenna available for metal case controller enclosures)
- Requires GPRS/Cellular data service plan with static IP address from Cellular Service Provider

IQ NCC-EN Ethernet Cartridge

- Includes embedded Ethernet Network Modem with RJ-45 port
- Includes RJ-45e patch cable (requires LAN network static IP address)

IQ NCC-WF WiFi Cartridge

- Includes embedded WiFi Wireless Network Modem with antenna connector, and internal antenna for plastic controller enclosures (requires LAN wireless network static IP address; optional external antenna available for metal case controller enclosures)
- WPA/WPA2 encryption supported

IQ NCC-RS RS232 Cartridge

- Includes RS-232 Port for IQ Direct Cable or External Modem communication connection to the IQ central computer, and external modem cable (IQ Direct Cable provided with IQ Software Package)
- Used for Direct or Server Satellite applications requiring direct cable connection or external modem (radio or other 3rd-party device) communication with the IQ central computer, and for Client Satellite applications requiring IQNet high-speed data cable or radio communication with the Server Satellite

IQ FSCM-LXME Flow Smart Connection Module

- Provides IQNet high-speed data cable connections for ESP-LXME Controller
- Includes Flow Smart Module and Base Module functions
- Replaces standard ESP-LXME Base Module

IQ CM-LXD Connection Module

- Provides IQNet high-speed data cable connections for ESP-LXD Controller
- Installs in ESP-LXD 0 (zero) module slot

IQ SS-Radio Radio Modem

- Provides IQNet wireless radio communication between Server and Client satellite controllers
- Can also be used with the IQ NCC-RS RS232 Cartridge for IQ central computer to Direct or Server satellite radio communication
- Includes power supply and external antenna (programming software and cable provided separately)

IQ NCC Network Communication Cartridge

ET Manager™

Upgrades Standard Irrigation Controllers to ET / Weather-Based "Smart" Controllers

- ET Made Easy - Compatible with virtually any irrigation controller, regardless of the number of stations - the ET Manager converts conventional irrigation controllers to weather-smart irrigation systems
- The Smart Choice - Uses an hourly (not just daily) wireless signal from local weather stations to measure evaporation and rainfall to automatically control watering
- Intelligent Water Management - ET Manager only allows watering when necessary according to local weather conditions promoting healthier landscapes and conservation of our most precious resource

Universal Compatibility

- Compatible with virtually any irrigation controller through the common wire, regardless of the number of stations
- Provides pulse output of ET to compatible controllers

Easy to Use

- Large graphical LCD display makes the ET Manager easy to read, program and understand
- Weather information and graphs are maintained from the last two weeks allowing quick viewing of rain, air temperature, wind speed, relative humidity and ET
- At-a-glance display shows the current landscape moisture level for valve groups "A" and "B"
- Easy to use intuitive menu allows the user to quickly access programming and system information
- "A" and "B" indicator lights let the user know whether watering will occur or not
- Override button allows the user to quickly override the ET Manager to permit manual watering

Maximum Flexibility

- Programmable delays for rain, temperature and wind allows irrigation to be interrupted until adverse conditions change
- Can receive signal to interrupt all irrigation for emergency management or drought restrictions
- Two independent ET-based irrigation schedules to accommodate differing plant types (ex. turf and shrubs)
- Daily watering window allows non-ET-based controller programs to operate normally
- Adjusts to any cycle mode (CUSTOM, ODD, ODD 31st OFF, or EVEN)
- Programmable landscape adjustment values based on plant type used to meet site specific watering needs
- Compatible with Rain Bird WS Pro Weather Station as well as other weather station networks through custom integration

ET Manager

Water Saving

The Rain Bird ET Manager measures evaporation and rainfall to automatically control watering cycles. The unit receives a wireless signal from local weather stations to calculate evaporation and adapts to any sprinkler controller to allow watering only when needed.

ET Manager (cont.)

Reliable Operation

- Power failure backup: A 9-volt alkaline battery is included to keep current time and date during a power outage
- UL listed; CUL, FCC approved
- User programmable 12-month historical ET database for backup in the unlikely event that the weather signal is interrupted
- A yellow LED indicates "Attention" conditions the user should be aware of
- Settings can be saved and later recalled for system restoration – "Contractor Default"
- Secure password protected system prevents unauthorized program changes

Healthy Landscape Through Precision Irrigation

- Hourly weather data adjusts the soil moisture balance used to control the watering frequency to meet the actual water needs of the landscape – never over-water or under-water again due to unpredictable weather
- The programmable irrigation amounts correspond to the irrigation controller settings and are linked to the soil moisture balance to allow watering once soil moisture settings are reached
- Optional tipping rain gauge can be used on site to replace rain information from the weather station
- Programmable effective rain settings, based on soil conditions, automatically limit the amount of rain used in the soil moisture balance

Save Time and Money

- Quick and easy installation allows users to realize savings and benefits faster
- Information log reports the date and time of the last watering, number of times watering occurred, and other events to track operation
- Reduce water costs dramatically through sustained conservation. Average water savings of 20%-50% are possible using the ET Manager™
- Reduce labor costs – scheduling changes are made automatically based on current weather conditions instead of manual seasonal adjustment

Dimensions

Width: 5.6 inches (14.2 cm)

Height: 6.5 inches (16.5 cm)

Depth: 2.0 inches (5 cm)

Weight: 15 ounces (435 g)

Programmable Schedule Options

Available watering days can be limited to accommodate site needs. The look-ahead feature may allow watering the day before a non-available watering day. ET Manager Scheduler Software provided FREE of charge on ET Manager Resource CD.

1. ODD day watering (per program)
2. EVEN day watering (per program)
3. CUSTOM (weekly schedule)
4. ODD 31st off (per program)

Electrical Specifications

- Power supply: 12 to 30 volts AC or 12 to 35 volts DC
- Operating temperature range: 5° F - 149° F (Radio reception operating temperature: 32° F - 122° F)
- Terminal wire gauge: 14 to 26 awg
- Ground lug wire gauge: 10 to 18 awg
- Serial communication: TTL 1x6 header
- Optional external antenna connection: BNC female, 930 MHz, 50 ohm
- Rain gauge sensor voltage: 3.3 volts DC
- Battery backup: 9-volt alkaline battery included for programming under batter power and maintaining program current time and date during power outages
- Three-year warranty

Optional Accessories

ETMi-ANT: ETMi Remote Antenna Kit*

ETM-RG: Tipping Rain Gauge

ETM-WRSS: Weather Reach Server Software

ETM-PS: ET Manager Programming Software

ETMi-OE: ETMi Outdoor Enclosure

** ET Manager has a built in antenna. Locations with a weak paging signal may require an external antenna*

Models

ETMi: ET Manager Control Device, indoor model only

For more information call the ET Manager Hotline: 1-877-351-6588

ESP-MC Series

12, 24 Station Outdoor Controller for Commercial Use

- ESP – Extra-Simple Programming with self-prompting large alphanumeric LCD display makes this controller easy to program, read, and understand
- Surge protection and contamination-resistant design make the controller reliable and robust under extreme field conditions
- Upgradeable to Maxicom²® and SiteControl satellite

ESP-MC

Features

- **Rain Bird's Intuitive ESP (Extra Simple Programming)**
  - Water budget by program, adjustable in 1% increments from 0 – 300% (up to a maximum run-time of 16 hours)
  - Exclusive Rain Bird Cycle + Soak™ by station allows total station run-time to be split into usable cycles, minimizing puddling and runoff
  - Adjustable Delay Between Stations provides time for water well recovery or time for slow closing valves to turn off completely
  - 12-hour watering duration (Water Budget adjustable to 16-hours) for any or all stations to aid with drip compatibility
- **Rain Bird Reliability**
  - A removable battery-powered front panel makes programming prior to installation quick and easy
  - An additional lithium backup battery to maintain date and time for 10 years and user programs for 100 years
  - Dedicated sensor terminals with Sensor Bypass for manual override of an active sensor, plus programmable Sensor Override by station
  - Universal remote ready, with pre-installed remote control connectors
- **Time-Saving Troubleshooting**
  - RASTER™ wiring test quickly diagnoses field wiring and solenoid problems
  - Built in diagnostic functions let you confirm program information, calculate total program and valve run-times, and run a test program to operate all system valves sequentially
  - Diagnostic self-setting circuit breaker identifies valve or wire faults and continues to water operable stations ("FAULT" message appears on the LCD screen)

ESP-MC-SS

Water Saving

The Rain Bird Cycle + Soak feature maximizes efficient use of water by irrigating when irrigation zones are ready for additional water instead of adhering to a fixed irrigation schedule that may result in runoff

ESP-MC Series (cont.)

- **Robust Design**
  - Available in 12 or 24 station versions
  - Best in class surge protection – 5 times better than major competitors – provides peace of mind during brownouts and lightning storms
  - Available in a powder coated, wall-mount, metal cabinet with mounting plate and mounting bracket or a stainless steel pedestal
  - Two dedicated master valve/pump start circuits, one programmable by station, for optimal irrigation control
  - Quick connect terminal strip for fast installation

Operating Specifications

- Automatic starts: Four independent programs (A, B, C & D-drip) with 8 start times per program per day (32 total starts); program stack or overlap programmable by program
- Station timing: 0 – 12 hours for all stations (0 – 120 minutes selectable in 1 minute increments; above 120 minutes selectable in 10 minute increments)
- Built in support for a variety of programming schedules:
  - 365-day calendar with leap year intelligence
  - Even, Odd or Odd 31 day watering (per program)
  - Cyclical watering (1 – 99 days, variable per program)
  - Custom watering (day of the week by program)
  - Manual watering: single or multiple valve or entire program
- Variable 1 – 99 minute test program
- Programmable 1 – 99 day rain delay

Electrical Specifications

- Input required: 117VAC ± 10%, 60Hz (International models: 230VAC ± 10%, 50Hz)
- Output: 26.5VAC, 2.5A
- Station load capacity: Up to two 24VAC, 7VA solenoid valves per station plus a master valve or pump start relay
- Diagnostic circuit breaker skips and indicates stations with overloaded circuits
- Power supply overload, backup fuse: 3.0A SLO-BLO
- Battery backup: 9VDC, Ni-Cad rechargeable for programming under battery power and for maintaining active program-in-progress during a power outage
- Heavy-duty electrical surge protection for both input power and field outputs
- UL Listed; CSA, CE, C-Tick approved

Dimensions

- Powder-Coated Metal Wall-Mount
  - Width: 11 5/16" (28.7 cm)
  - Height: 11 1/2" (29.2 cm)
  - Depth: 6 1/2" (16.5 cm)
- Stainless Steel Pedestal
  - Width: 11 1/2" (29.2 cm)
  - Height: 30" (75 cm)
  - Depth: 11 1/2" (29.2 cm)

Models

- Powder-Coated Metal Wall-Mount
  - ESP-12MC: 12-station, 120 VAC
  - ESP-24MC: 24-station, 120 VAC
- Stainless Steel Pedestal
  - ESP-12MCSS: 12-station, 120 VAC
  - ESP-24MCSS: 24-station, 120 VAC

Optional Features

- Pedestal Mount (PED-DD16): Grey pedestal, mount wall mount version on top

Replacement Face Plates

- ESP-12MC-FPW: 12-station waterproof front panel face plate
- ESP-24MC-FPW: 24-station waterproof front panel face plate
- ESP-40MC-FPW: 40-station waterproof front panel face plate

ESP-MC Quick Connect Terminal Strip

Landscape Irrigation and Maintenance Remote (LIMR)

NEW

The Remote. Reborn.

The all-new Rain Bird® Landscape Irrigation & Maintenance Remote (LIMR) was designed for usability, performance and reliability. Every feature will save you time and money in maintaining efficient Rain Bird irrigation system operation and head alignment. Using less water while getting more done.

Irrigation remote compatible with the ESP-Modular, ESP-SMT, ESP-LX, ESP-LX+, ESP-LXME, ESP-LXMEF, ESP-LXD, ESP-LXDF, STPi, and STP Plus Controllers

- Permanently install the quick connect cable to quickly attach a receiver whenever you visit a jobsite
- For commercial applications, permanently mount a receiver and easily connect to it with your handheld transmitter
- Capable of operating multiple receivers simultaneously with the same handheld transmitter

Features

- Simple interface and easy-to-follow, on-screen instructions, such as:
  - Run a system test
  - Activate a zone
  - Run a program
  - Custom receiver naming
  - Skip to any zone by entering its number
- Save time and money as you maintain efficient Rain Bird system operation and head alignment
- Maintaining Rain Bird system operation and head alignment is easier and faster than ever because you no longer have to walk to the controller to turn zones on or off
- A single crew member can activate zones, blow out systems and perform other winterization or maintenance tasks reducing your cost of doing business
- Install the receiver in seconds with just one hand and operate up to 255 zones
- Skip to any zone by entering its number. No need to scroll through zones in consecutive order
- Run a system test, specifying how many minutes, which zone to start with and which zone to end with
- Two-way communication between the remote and the controller allows remote activity information to be displayed on the handheld device
- Custom names can be assigned to 20 different receivers for easy identification. Each handheld remote can control up to 128 different receivers simultaneously
- Operating range of up to 1.5 miles (2.4 km) line of sight
- Actual range will vary depending on site terrain and obstacles that block the line of sight. Obstructions such as buildings and walls as well as the strength of interfering signals can affect range

Specifications

- Operating range: Up to 1.5 miles (2.4 Km) line of sight
- Two-way communication using FCC certified 900MHz radios
- UL Recognized
- Zone capability: 1 to 255
- Battery type: 3 – AA Alkaline
- Custom names can be assigned to 20 different receivers for easy identification
- Each handheld remote can control up to 128 different receivers simultaneously

Dimensions

- KIT: 12" (30.5cm) H x 16.75" (42.5cm) W x 2.75" (7.0cm) D
- TX: 11.2" (28.5 cm) H x 3.6" (9.3cm) W x 1.6" (4.1cm) D
- RX: 6.2" (15.8 cm) H x 4.1" (10.5cm) W x 1.22" (3.1cm) D

Models (US and Canada only)

- LIMRKIT: includes TX, RX, QC603, QC503, batteries and a durable plastic carrying case
- LIMRTX: Transmitter
- LIMRRX: Receiver
- LIMRQC503: 5 pin Quick Connect, 3 feet long
- LIMRQC530: 5 pin Quick Connect, 30 feet long
- LIMRQC603: 6 pin Quick Connect, 3 feet long
- LIMRQC630: 6 pin Quick Connect, 30 feet long

Landscape Irrigation and Maintenance Remote (LIMR)

TBOS Control Module and Field Transmitter

TBOS™

Battery-Operated Controller for Commercial Use

- The TBOS battery-operated line of buriable controllers allows the use of automatic irrigation in the absence of AC power
- Rugged case, inside valve box installation, and separation of the transmitter from the control module avoid vandalism and tampering with your programs
- IP-68 rated waterproof case assures reliable operation under water and safeguards your investment

Features

- Ideal for commercial applications, including municipal parks, street and highway landscape projects and construction projects
- Convenient temporary option for providing uninterrupted irrigation while repairs are made to an AC-powered system
- 365-day calendar (adjusts for leap year)
- AM/PM or 24-hour display
- Run-time from 1 minute to 12 hours in 1-minute increments
- Basic programming (standard mode) includes 3 independent programs on a 7-day program cycle
- Additional cycles (turbo mode) include even, odd, odd-31 and 1-6 day program cycles for maximum flexibility
- 8 start times per program per day
- Battery indicator reports battery status in the TBOS Field Transmitter
- Independent station operation allows simultaneous start times or sequential start times based on system hydraulic capacity
- The TBOS field transmitter has a large Liquid Crystal Display (LCD) with self-explanatory function icons. Each function is indicated by an easy-to-understand symbol
- The 7-key keypad is equipped with a "beep" sound to confirm that a key has been pressed for fast and sure programming
- One TBOS field transmitter programs an unlimited number of TBOS Control Modules
- Field transmitter and control module have external optical connectors for easy plug-in
- It is possible to transmit information even if the module is under water
- TBOS potted latching solenoid is compatible with all Rain Bird valves in the DV, DVF, ASVF, PGA, PEB, PESB, GB-R, EFB-CP-R, BPE and BPES series
- The TBOS solenoid adapters will adapt the potted latching solenoid for use in retrofit applications with selected Irritrol® (Hardie/Richdel) and Buckner® valves or Champion® and Superior® valve actuators

Water Saving

TBOS offers both fixed and interval day watering schedules to facilitate both water conservation and adherence to municipal watering restriction schedules

TBOS Control Module

- Available in 3 models: 1, 2, and 4 stations
- Operates one valve per station
- Station timing: 1 minute to 12 hours in 1-minute increments with a 365-day calendar. Stations are assigned to a single program
- Active sensor connection accommodates Rain Bird® RSD-BEx Rain Sensor
- Operates with only one 9V alkaline battery (Energizer™ and Duracell™ are recommended) type 6AM6 (international standard) or 6LR61 (European standard): battery not included
- Battery life is one year with a high-quality 9V alkaline battery
- IP-68 rated waterproof case for reliable operation under water
- Dimensions: 3¾ x 5⅛ x 2 inches (9.5 x 13.0 x 5.3 cm)
- Weight: 17.64 ounces (500 g)
- Maximum wire run between the module and solenoid:

Wire Size	Maximum Distance
18 AWG (0.75 mm²)	32 ft (10 m)
16 AWG (1.5 mm²)	50 ft (15 m)
14 AWG (2.5 mm²)	80 ft (24 m)

- C-Tick approved

TBOS Field Transmitter

- Field transmitter required for programming control module
- Dimensions: 3½ x 7½ x 1⅞ inches (9.0 x 19.0 x 4.5 cm)
- Weight: 7.05 ounces (200 g)
- Operating temperature: 32° to 140° F (0° to 60° C)
- C-Tick approved

TBOS Potted Latching Solenoid

- Two 18 gauge (0.75 mm²) wires are supplied: 23.6 inches (60 cm) long
- Fits Rain Bird valves: DV, DVF, ASVF, PGA, PEB, PESB, GB-R, EFB-CP-R, BPE and BPES Series
- 150 psi (10 bar) maximum operating pressure
- Dimensions: 1⅜" x 2⅜" x 1½" (4.0 cm x 6.0 cm x 4.2 cm)

TBOS Solenoid Adapters

- Easy to install
- Black adapter for plastic valves allows the TBOS potted latching solenoid to be used with selected Irritrol (Hardie/Richel) and Buckner valves
- Brown adapter for brass valves allows the TBOS potted latching solenoid to be used with selected Champion and Superior valve actuators

Models

- TBOS-FTUS: Field Transmitter
- TBOS-1CMUS: 1-Station Control Module
- TBOS-2CMUS: 2-Station Control Module
- TBOS-4CMUS: 4-Station Control Module
- TBOS-PSOL: Potted Latching Solenoid
- TBOS-ADAPP: Solenoid Adapter for plastic valves
- TBOS-ADAPB: Solenoid Adapter for brass valves

TBOS Potted Latching Solenoid and Solenoid Adapters

WR2 Series Wireless Rain/Freeze Sensors

WR2 Series Wireless Rain/Freeze Sensors

Smart Approved WaterMark

Saving water and so much more.

Rain and rain/freeze sensors are becoming "must have" components for irrigation systems these days. Rain Bird designed the new WR2 wireless sensor to exceed the standard. With revolutionary features, this sensor saves time, improves system performance and enhances your reputation as a water management expert. Reliable signal transmission and other innovations deliver superior responsiveness to rainfall and cold temperatures, while user-friendly features cut installation and programming time in half. Choose your own rainfall set points and save up to 35% on water usage while promoting lush, beautiful landscapes.

- Designed for 24 VAC residential and commercial irrigation systems, this high-quality product saves water and extends irrigation system life by automatically sensing precipitation and interrupting irrigation during rain and low temperature events
- Highly intuitive icon-driven controller interface simplifies programming
- Enhanced antenna array provides superior signal reliability that overcomes most line-of-sight obstructions

Features and Benefits

- Sensor signal strength indicator enables one person set up, reducing installation time
- Convenient adjustment and monitoring of rain or freeze settings at the controller interface
- Programming logic can suspend irrigation using the "Quick Shut Off" feature or when the amount of rainfall exceeds the rainfall set point
- Wireless Rain / Freeze Sensor will suspend irrigation when the system reaches a programmed low temperature set point
- Simple battery replacement requiring no tools or need to disassemble sensor
- Easy to install, self-leveling sensor bracket mounts to flat surfaces or rain gutters
- Antennas concealed within the units for greater visual appeal and product robustness

Electrical Specifications

- Application: suitable for use with 24 VAC controllers (with or without pump start / master valve)
- Electrical rating suitable for use with up to six 24VAC 7VA solenoids plus an additional master valve or pump start that does not exceed 53VA
- Controller Interface Wire: 30" (76 cm) length of #22 gauge (0.64 mm) UV resistant extension wire
- UL, cUL, CE, C-Tick, and WEEE certifications

How To Specify

WR2 - RC

Model
WR2

North America (916 MHz)
RC: Rain Combo
RFC: Rain/Freeze Combo
RS: Rain Sensor Only
RFS: Rain/Freeze Sensor Only
RFI: Rain/Freeze Controller Interface Only

- FCC approved spread spectrum 2 way radio transceivers with FCC Class B approvals
- Signal transmission distance of 700' line of sight
- Battery life: four or more years under normal operating conditions
- 6 KV surge / lighting protection

Mechanical Properties

- Adjustable rainfall settings from 1/8" – 1/2" (3 – 13 mm)
- Adjustable low temperature settings from 33°F – 41°F (0.5° – 5°C)
- Three irrigation modes to select: Programmed, Suspend Irrigation for 72 hours, Override sensor for 72 hours
- High-grade, UV resistant polymer units resist harmful environmental affects
- "Quick Shut Off" suspends active irrigation cycle within approximately two minutes

Dimensions

- **WR2 Controller Interface**
  - Width: 3.1" (7.9 cm)
  - Length: 6.8" (17.2 cm)
  - Depth: 1.7" (4.3 cm)
  - Distance between Mounting Holes: 6.25" (15.9 cm)
- **WR2 Sensor Assembly**
  - Sensor Length: 5.8" (14.7 cm)
  - Attachment Bracket Length: 4.6" (11.7 cm)
  - Distance between Mounting Holes: 4.25" (10.8 cm)
  - Horizontal displacement (bracket + fixed ball arm): 5.5" (14.0 cm)

Models

- WR2-RC: Rain Combo
- WR2-RFC: Rain/Freeze Combo
- WR2-RS: Rain Sensor Only
- WR2-RFS: Rain/Freeze Sensor Only
- WR2-RFI: Rain/Freeze Controller Interface Only

Replacement or Spare Parts

- WR2 Battery - #651009S
- WR2 Disk Assembly - #637810S

Step 1

Program in seconds

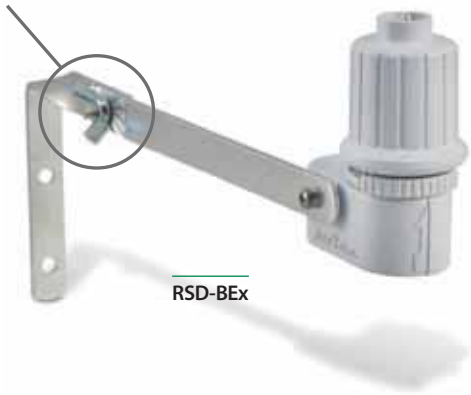
Step 2

Determine best sensor location

Step 3

Install sensor easily using mounting bracket

Latching Hinge Maintains Alignment



RSD-BEx

RSD-CEx

RSD-BEx / RSD-CEx

Rain Sensor

Smart Approved WaterMark

Features and Benefits

- Automatic rain shutoff prevents overwatering due to natural precipitation
- Robust, reliable design reduces service call backs
- Moisture sensing disks work in a variety of climates
- Different sensor mounts permit speed and flexibility on the job site
- Latching hinge maintains alignment

Mechanical Properties

- Multiple rainfall settings from ⅛"– ¾" (5 - 20 mm) are quick and easy with just the twist of a dial
- Adjustable vent ring helps control drying time
- High-grade, UV resistant polymer body resists the elements
- Available in rugged bracket version (RSD-BEx model comes with 5" latching aluminum bracket) or conduit version (RSD-CEx) for a clean and professional look

Electrical Specifications

- Application: Suitable for low voltage 24 VAC control circuits and 24 VAC pump start relay circuits*
- Switch electrical rating: 3A @ 125/250 VAC
- Capacity: Electrical rating suitable for use with up to ten 24 VAC, 7 VA solenoid valves per station, plus one master valve
- Wire: 25' (7.6 m) length of #20, 2 conductor UV resistant extension wire
- UL, cUL listed; CE, C-Tick approved

* *Not recommended for use with high voltage pump start, pump start relay circuits or devices.*

Dimensions

- RSD-BEx
  - Overall length: 6.5" (16.5 cm)
  - Overall height: 5.4" (13.7 cm)
  - Bracket hole pattern: 1.25" (3.2 cm)
- RSD-CEx
  - Overall length: 3" (7.6 cm)
  - Overall height: 2.75" (7 cm)

Models

- RSD-BEx: Rain sensor w/ latching bracket, extension wire
- RSD-CEx: Rain sensor w/ threaded adapter, extension wire

How To Specify

RSD - BEx

Extension Wire
25' (7.6 m) length

Mounting
BE: Metal Bracket
CE: Conduit Version

Model
RSD: Rain Sensing Device

Rain Check™

Automatic Rain Shutoff

Features

- Adjustable stainless steel sensing probes offer the flexibility of triggering the rain shutoff with as little as ⅛" (3.2 mm) of precipitation
- Water in the rain collector pan evaporates faster than soil moisture to permit watering if required
- Electronic design eliminates micro switches and water absorbing disks which may rust and/or wear out
- UV resistant plastic construction increases operating life in harsh environments
- Works with almost all 24 VAC controllers for maximum versatility

Specifications

- Input required: connects to valve common wire
- Fuse: 3 A
- Collector pan can be removed for cleaning
- Multi-valve capacity: Up to three 24 VAC solenoid valves per station
- Not recommended for use with direct acting (non-flow switch) pump start relays

Dimensions

- Length: 8" maximum (20.3 cm)
- Height 4" maximum (10.2 cm)
- Width: 2½" maximum (6.4 cm)

Model

- Rain Check

Rain Check

Controller Pedestals

Pedestals for ESP-MC, ESP-LX Series, ESP-SAT, and CCU

Features

- Includes all necessary mounting bolts, nuts, and washers

Specifications

- Material: Powder-coated steel
- Field wiring connection: In controller

Dimensions

Model	Height	Width	Depth
• PED-DD16	23½" (59.7 cm)	10½" (26.7 cm)	5" (12.7 cm)
• LXMMPED	28" (71.1 cm)	14¼" (36.2 cm)	7¼" (18.4 cm)
• LXMM	12⅞" (32.7 cm)	14½" (36.8 cm)	7¾" (19.7 cm)

Model

- PED-DD16: Pedestal for ESP-MC, ESP-SAT, and CCU
- LXMM: Metal Cabinet for ESP-LX Series Controllers*
- LXMMPED: Metal Pedestal for ESP-LX Series Controllers*

* ***Note:*** *Metal cabinets and pedestals are not standard on ESP-LX Series controllers and must be purchased separately*

PED-DD16 Shown with ESP-12MC

LXMMPED Shown with ESP-LXME in LXMM Metal Cabinet

DB Series Wire Connector

Direct Bury Twist-On Wire Connector with Strain Relief

Features and Benefits

- Easy to use single piece connector
- Strain relief to ensure wires are secure and won't pull apart
- UL 486D Certified for direct burial
- Waterproof silicon sealant protects against corrosion
- Recommended for two-wire decoder systems

Specifications

- Fits wires ranging from 22ga to 6ga
- Use on connections from 24 VAC to 600 VAC

Model

- DBTWC25

DB Series Wire Connector

Pigtail

Features

- 6-feet (1.8 m) long
- Three 16 gauge stranded conductor wires
- 90 degree molded plug type NEMA 5-15P
- Gray color

Model

- PIGTAIL

PIGTAIL

Rain Bird Controller Power Usage Summary (With a Master Valve)

	STP Plus	ESP-Modular	ESP-SMT	ESP-LX Series
Controller Standby Power	0.86W	2.62W	3.36W*	7.26W
Power Used by Master Valve	4.5W	4.5W	4.5W	5.0W
Power Used for Each Active Valve	3.40W	3.75W	3.75W	3.75W

** Controller with sensor attached*

	ZONE 1	2	3	4	5	6	7	8	9	10	
a) Master valve power from table (if applicable)											Watts
b) # of valves on this zone											
c) Valve power from table above											Watts
d) Total daily run-time for this zone											minutes
Daily valve power usage by zone = $\frac{(a+b*c)*d}{60,000}$											Kwh

Total Daily Valve Power Usage = Add the daily usage of all zones above _____ Kwh

Controller Daily Power Usage = Controller Standby Power * 24 / 1000 _____ Kwh

Yearly / Monthly Power Usage = (Controller Daily Power Usage * # days the system plugged in) + (Total Daily Valve Power Usage * Number of days the system irrigates) _____ Kwh

"We recommend Maxicom²® to our clients because the system is the most efficient and effective method for controlling individual zones within complex irrigation systems. Maxicom² analyzes weather conditions from the previous 24 hours and adjusts the amount of water needed for the conditions and for each specific zone. Our clients reap the benefits – lower costs for labor and water, plus healthier plants and turf."

Ellen Beighley, *President*

Irrigation Management Systems

Water Saving Tips

- Maxicom², SiteControl, and IQ™ Systems provide fully-automated ET (evapotranspiration) adjustment of irrigation programs for maximum water savings
- Maxicom² and IQ™ Systems provide the tools to efficiently water dozens or even hundreds of irrigation systems across multiple remote sites from a single computer
- Maxicom² and IQ™ FloWatch™ utility monitors and records real-time flow and automatically diagnoses and eliminates flow problems caused by broken pipes, vandalism or stuck valves

Major Products

Primary Applications	IQ™	SiteControl	Maxicom²®
Multi-Site Central Control	●		●
Single Site Central Control	●	●	
Satellite Controller System	●	●	●
Two-Wire Decoder System	●	●	
Hybrid Satellite/Decoder System	●	●	
Features			
Computer Programming	●	●	●
Computer Monitoring	●	●	●
Computer Manual Operation	●	●	●
Interactive Map Interface		●	
ET Programming	●	●	●
Automatic ET Adjustment	●	●	●
Smart Weather Reaction		●	
Programming Dry-Run	●	●	●
Flow Management	●	●	●
Flow Monitoring	●	●	●
Search/Eliminate Problem Flow	●	●	●
High Flow Shut-off	●	●	●
Low Flow Shut-off	●		●
Rain Watch		●	●
Rain Shutoff	●	●	●
Cycle + Soak	●	●	●
Hardware			
Computer Included with Software		●	●
CCU - ESP-SAT Interface			●
TWI - ESP-SAT Interface		●	
SDI/LDI - Decoder Interface		●	
FD-TURF Two-Wire Decoders	●	●	
ESP-SAT Satellite		●	●
ESP-SITE-SAT Site Satellite			●
ESP-MIB Upgrade Kit		●	●
ESP-SITE-U Upgrade Kit			●
ESP-LX Series Satellite	●		
IQ-NCC Upgrade Kit	●		
LINK Radio/Modem Kit		●	●
FREEDOM Remote Control		●	●
DEC Sensor-Pulse Decoders		●	●
RSD Rain Shut-off Device	●	●	●
FS Flow Sensors	●	●	●
WSPRO2 Weather Station	●	●	●
WSPRO LT Weather Station	●	●	●
RAINGAUGE Rain Sensor		●	
ANEMOMETER Wind Sensor	●	●	●

About Central Control Systems

Irrigation central control is computer-based and enables the programming, monitoring and operation of an irrigation system from a central location. Central control systems are designed to allow a single site (college campus, corporate headquarters) or a set of sites (school district, parks and recreation department) to control all their irrigation from one central computer. Central control can monitor and automatically adapt system operation and irrigation run-times in response to conditions in the system and surrounding area (weather change, pipe breaks, etc) as well as parameters defined by the operator.

Rain Bird Central Control

Rain Bird developed the original computer based central control system in the 1970s and today has thousands of systems installed worldwide.

Satellite Controllers and Field Decoders

Rain Bird offers a variety of systems to match the needs of the customer, budget, site or application. Select from systems designed specifically for single sites, multiple sites, small or large. Rain Bird central control systems can utilize satellite controllers, two-wire decoders, or a combination of both.

Key Features

Centralized Programming

A central control system allows programming from a single computer location, saving the time and money usually spent traveling to the controllers. Program changes to multiple controllers across multiple sites can be made in just minutes. Irrigation run-times can automatically be adjusted with the addition of a weather station or sensors.

System Communication

Communication options between the central computer, irrigation controllers, decoders, sensors and weather stations can include hardwire, direct-connect, phone, cellular, radio, fiber-optics, Ethernet, and Wi-Fi.

System Operation and Monitoring

The central control system monitors itself and can make use of flow, rain, wind, moisture and other sensors to adjust operation or take action in real time. System operational logs and any alarms for problems that occur are communicated back to the central computer, where reports can be generated.

Rain Bird Multi-Site Central Control Systems

Maxicom²®

Maxicom² is a feature-packed irrigation management tool for control of multiple, small to large, remote irrigation systems. Maxicom² offers superior water management features utilizing satellite controller technology. Maxicom² is the tool of choice for water managers, park and recreation departments, school districts and theme parks worldwide.

IQ™

IQ offers a simple, easy to learn modular software program and modular hardware for control of satellite controllers across multiple sites. IQ includes many water and time saving features that eliminate the need to travel to the site to reprogram or monitor the irrigation system. IQ is the ideal tool for a wide variety of commercial applications.

Rain Bird Single Site Central Control Systems

SiteControl

SiteControl offers powerful central control features for single, large, contiguous sites. SiteControl provides interactive map-based control and real-time communication between the field and the central computer. It can control two-wire decoders, satellite controllers or both for unmatched expandability and flexibility. SiteControl is ideal for property developments, sports field complexes, shopping malls, cemeteries, resorts and hotels.

IQ™ v2.0 Central Control Software

NEW

Modular Multi-Site Central Control

- State-of-the-art command and control features in an easy to learn and use interface
- Provides advanced water management features saving money and time
- IQ Software has modular satellite controller capacity and features. Purchase only what is needed and upgrade as needs change in the future

IQ provides remote programming, management, and monitoring of ESP-LX Series Controllers from the computer in your office. IQ is the perfect irrigation control solution for parks departments, school districts, property managers, landscape maintenance contractors, and water managers. IQ can manage small single-controller sites as well as large multi-controller sites and supports both ESP-LX Series traditionally wired and 2-wire decoder controllers.

IQ v2.0 Software

IQ v2.0 Software Package

- The IQSTARTCD Base Software Package provides 5-satellite controller capacity and a basic set of features. IQ software satellite controller capacity can be upgraded in 5-satellite increments with the IQ5SATSWU Upgrade to any total satellite capacity required. Advanced features are available in IQ Software Feature Packs. Feature Packs include a bundle of related features that expand the capabilities of the IQ Base Software Package.
- IQ Base Software and Feature Packs include a context-sensitive help system. Click on the help icon available in most screens and be taken directly to the help topic feature you are using. The software offers multiple language, date/time, and units support allowing the user to interface with the software in their primary language. User selectable languages include English, Spanish, French, German, Italian, and Portuguese.

Base Software Package Features

- Software 5-satellite controller capacity upgradable in 5-satellite increments
- IQNet 5-satellite capacity upgradable in 5-satellite increments
- Compatible with ESP-LXME & ESP-LXMEF traditionally-wired and ESP-LXD 2-wire decoder controllers
- Site, satellite, and station names
- Programming in seconds, minutes, and hours
- Daily or Monthly Seasonal Adjust % or ET station run time adjustments by site
- Dry-Run™ Graphical Program Review
- User initiated Synchronize and Retrieve Logs communication
- Manual Program, Test Program, Station starts

Detailed logs and reports

How To Specify

IQ V2.0 SOFTWARE & FEATURE PACKS

IQSTARTCD:	Base Software Package, 5-Satellite Capacity
IQ5SATSWU:	Software 5-Satellite Capacity Upgrade
IQ5SATNCCU:	IQNet 5-Satellite Capacity Upgrade
IQACOMFP:	Advanced Communications Feature Pack
IQAPGMFP:	Advanced Programming Feature Pack
IQAETFP:	Advanced ET Feature Pack
IQAFSENFP:	Advanced Flow Sensing Feature Pack

Water Saving

Evapotranspiration (ET) is the combination of water lost from the soil and the plant's use due to evaporation and plant transpiration. Total water use can be reduced by using ET feature on IQ to determine when and how much to irrigate.

IQ™ v2.0 Central Control Software (cont.)

Recommended Computer Requirements

- Operating System: Windows® XP or 7 32-bit or 64-bit
- Processor: Intel I5-540M or equivalent
- RAM Memory: 3 GB minimum
- Available Hard Disk Space: 10 GB
- CD-ROM Drive: 8X speed minimum
- Display Resolution: 1024 x 768 minimum
- 56K Flex Phone Modem (Phone communication)
- Network Connection (for Ethernet, WiFi, GPRS communication)
- Serial Port or USB to Serial Adapter (for Direct Connect and External Modem communication)

Additional 5-Satellite Capacity Upgrade

- IQ Software and IQNet satellite controller capacity can be upgraded in 5-satellite increments
- Additional capacity is added through a purchased software activation keycode

IQ Feature Packs

- Feature Packs are enabled through a purchased software activation keycode
- Feature Pack features are enabled for all sites and satellites in the IQ Software

Advanced Communications Feature Pack

- Automated satellite Synchronize & Retrieve Logs and Weather Source Retrieve Weather Data communication
- Satellite IQ Call-in™ (satellite initiates communication, NCC-PH Phone Cartridge only)
- Automated Email Alarm/Warning and Satellite Station Run Time Reports

Advanced Programming Feature Pack

- Satellite PIN-Code Protection (4-digit PIN-Code required to make programming changes at the satellite)
- Satellite 2-Way Programming (changes made at the satellite can be viewed and accepted in the IQ software)
- Copy/Move Satellite Utility (copy or move a satellite to another site)

Advanced ET Feature Pack

- Automated MAD (Management Allowed Depletion) Irrigation Scheduling adjustments
- Software uses Irrigation Association terminology and formulas
- ET/Rainfall Weather Sources include:
  - CIMIS Internet Service (California only)
  - ETMI ET Manager Weather Reach Service (North America only)
  - Rain Bird WSPROLT Weather Station
  - Rain Bird WSPRO2 Weather Station
- 4 ET Checkbooks per satellite controller
- Export to Microsoft Excel® for customized reports

Advanced Flow Sensing Feature Pack

- Retrieves minute-by-minute flow logs from flow sensor equipped ESP-LXMEF and ESP-LXD Satellite Controllers
- Flow Logs vs. Projected Flow Graphical Report (identifies which programs & stations where running at any point in time)
- Actual Flow Totals added to Satellite Station Run Time Report (included in Automated Email Reports)

IQ NCC Network Communication Cartridge

NEW

Upgrades any ESP-LX Series Controller to an IQ Central Control Satellite Controller

- IQ is the perfect irrigation control solution for parks departments, school districts, property managers, landscape maintenance contractors, and water managers
- IQ can manage small single-controller sites as well as large multi-controller sites
- IQ NCC cartridges are compatible with the ESP-LXME traditionally-wired controllers with 1 to 48 station capacity and ESP-LXD 2-wire controllers with 1 to 200 station capacity

Direct Satellites

- Single controller sites would use an IQ NCC cartridge configured as a Direct satellite. A Direct satellite has an IQ central computer communication connection but no network connections to other satellites in the system

Server & Client Satellites

- Multi-controller sites would use one IQ NCC cartridge configured as a Server satellite and the other NCC cartridges configured as Client satellites. The Server satellite has an IQ central computer communication connection and shares this communication connection with the Client satellites though high-speed data cable or radios. The communication connection between Server and Client satellites is called the IQNet™
- Satellites on a common IQNet can share weather sensors and master valves
- Server and Client satellites using high-speed data cable for IQNet communication require installation of an IQ CM Communication Module. Server and Client satellites using radio communication for IQNet communication require installation of an IQSSRADIO radio. Each cartridge kit includes cables to connect the NCC cartridge to connection module and/or radio

IQ NCC-PH Phone Cartridge

- Includes embedded 56K Telco Analog Phone Modem with RJ-11 port
- Includes RJ-11 modular phone cable (analog phone line required)

IQ NCC-GP GPRS/Cellular Cartridge

- Includes embedded GPRS/Cellular Data Modem with antenna connector
- Includes internal antenna for plastic controller enclosures (optional external antenna available for metal case controller enclosures)
- Requires GPRS/Cellular data service plan with static IP address from Cellular Service Provider

IQ NCC-EN Ethernet Cartridge

- Includes embedded Ethernet Network Modem with RJ-45 port
- Includes RJ-45e patch cable (requires LAN network static IP address)

IQ NCC-WF WiFi Cartridge

- Includes embedded WiFi Wireless Network Modem with antenna connector, and internal antenna for plastic controller enclosures (requires LAN wireless network static IP address; optional external antenna available for metal case controller enclosures)
- WPA/WPA2 encryption supported

IQ NCC-RS RS232 Cartridge

- Includes RS-232 Port for IQ Direct Cable or External Modem communication connection to the IQ central computer, and external modem cable (IQ Direct Cable provided with IQ Software Package)
- Used for Direct or Server Satellite applications requiring direct cable connection or external modem (radio or other 3rd-party device) communication with the IQ central computer, and for Client Satellite applications requiring IQNet high-speed data cable or radio communication with the Server Satellite

IQ FSCM-LXME Flow Smart Connection Module

- Provides IQNet high-speed data cable connections for ESP-LXME Controller
- Includes Flow Smart Module and Base Module functions
- Replaces standard ESP-LXME Base Module

IQ CM-LXD Connection Module

- Provides IQNet high-speed data cable connections for ESP-LXD Controller
- Installs in ESP-LXD 0 (zero) module slot

IQ SS-Radio Radio Modem

- Provides IQNet wireless radio communication between Server and Client satellite controllers
- Can also be used with the IQ NCC-RS RS232 Cartridge for IQ central computer to Direct or Server satellite radio communication
- Includes power supply and external antenna (programming software and cable provided separately)

IQ NCC Network Communication Cartridge

ESP-LXME Controller

8 to 48 Station Capable Commercial Controller

NEW

- Simple - ESP Extra Simple Programming
- Modular - Easily expandable from 8 or 12 stations to 48 stations with 4-, 8-, and 12-station modules
- Upgradeable to Smart Controller or Central Control

ESP-LXME Controller

12-Station, 8-Station, and 4-Station Modules

Features

- Large LCD display with easy to navigate softkey user interface
- Hot-swappable modules, no need to power down the controller to add/remove modules
- Dynamic station numbering eliminates station numbering gaps
- Weather Sensor input with override switch
- Master valve/pump start circuit
- 6 user-selectable languages
- Non-Volatile (100- year) program memory
- Standard 10kV surge protection
- Front panel is removable and programmable under battery power

Water Management Features

- Optional Flow Smart Module™ with Learn Flow utility and flow usage totalizer
- FloWatch™ protection for high and low flow conditions with user defined reactions
- FloManager™ manages hydraulic demand, making full use of available water to shorten total watering time
- SimulStations™ are programmable to allow up to 5 stations to operate at the same time
- Water Windows by program plus Manual MV Water Window
- Cycle+Soak™ by station
- Rain Delay
- 365-Day Calendar Day Off
- Programmable Station Delay by program
- Normally Open or Closed Master Valve programmable by station
- Weather Sensor programmable by station to prevent or pause watering
- Program Seasonal Adjust
- Global Monthly Seasonal Adjust
- Operates in order of station priorities to optimize watering efficiencies and decrease overall runtime.

Water Saving

The Contractor Default Delayed Recall feature automates the change back to a normal irrigation schedule after heavier watering of new seed or sod – with no user input necessary

Diagnostic Features

- Alarm light with external case lens
- Electronic diagnostic circuit breaker
- Program summary and review
- Variable test program
- RASTER™ station wiring test

Operating Specifications

- Station timing: 0 min to 12 hrs
- Seasonal Adjust; 0% to 300% (16 hrs maximum station run time)
- 4 independent programs (ABCD)
- ABCD programs can overlap
- 8 start times per program
- Program Day Cycles include Custom days of the week, Odd, Odd31, Even, & Cyclical dates
- Manual station, program, test program

Electrical Specifications

- Input required: 120 VAC ± 10%, 60Hz (International models: 230 VAC ± 10%, 50Hz; Australian models: 240 VAC ± 10%,50Hz)
- Output: 26.5 VAC 1.9A
- Power back-up: Lithium coin-cell battery maintains time and date while nonvolatile memory maintains the programming
- Multi-valve capacity: Maximum five 24 VAC, 7VA solenoid valves simultaneous operation including the master valve, maximum two solenoid valves per station
- Certifications

- UL, CUL, CE, CSA, C-Tick, FCC Part 15

Dimensions

- Width: 14.32 in. (36,4 cm)
- Height:12.69 in. (32,2 cm)
- Depth: 5.50 in. (14,0 cm)

Optional Accessories

- LIMR-Kit: LIMR remote control Kit for Rain Bird Controllers (see page 125)
- LXMM: Powder-Coated Metal Cabinet for ESP-LX Modular (see page 131)
- LXMMPED: Powder-Coated Metal Pedestal for ESP-LX Modular (see page 115)
- ETC-LX: ET Manager Cartridge (see page 119)
- IQ Communication Cartridge (see page 120)

Models

- Controller Base Models
  - ESP8LXME: 8-station, 120 VAC
  - ESP12LXME: 12-station, 120 VAC
  - I8LXME: 8-station for international markets, 230 VAC
  - I12LXME: 12-station for international markets, 230 VAC
  - I8LXMEEU: 8-station for Europe, 230 VAC
  - I12LXMEEU: 12-station for Europe, 230 VAC
  - I8LXMEAU: 8-station for Australia, 240 VAC
  - I12LXMEAU: 12-station for Australia, 240 VAC
- Models with Flow Sensing
  - ESP8LXMEF: 8-station, 120 VAC
  - ESP12LXMEF: 12-station, 120 VAC
  - I8LXMEF: 8-station for international markets, 230 VAC
  - I12LXMEF: 12-station for international markets, 230 VAC
  - I8LXMEEUF: 8-station for Europe, 230 VAC
  - I12LXMEEUF: 12-station for Europe, 230 VAC
  - I8LXMEAUF: 8-station for Australia, 240 VAC
  - I12LXMEAUF: 12-station for Australia, 240 VAC

Modules

- ESPLXMSM4: 4-station module
- ESPLXMSM8: 8-station module
- ESPLXMSM12: 12-station module
- FSMLXME: Flow Smart Module

ESP-LXME Controller in Optional LXMM Metal Cabinet

Optional LXMMPED Metal Pedestal

ESP-LXD Decoder Controller

NEW

50 – 200 station capable Two-Wire Decoder Commercial Controller

- Flexible – easily expandable from 50 – 200 stations with support for 5 Master Valves, 5 flow sensors, 4 weather sensors and a variety of upgrades
- Proven Technology – uses the same FD-TURF two-wire decoders used by the MDC and MDC2 controllers with more than half a million decoders installed worldwide over the past 20 years
- Upgradeable to IQ™ Central Control Satellite Controller with IQ-NCC Cartridge

ESP-LXD Decoder Controller

ESPLXD-SM75 Module

ESPLXD-M50 Module

Features

- **Rain Bird's Intuitive ESP (Extra Simple Programming)**
  - Uses the same programming interface as other ESP controllers
  - Six user-selectable languages, including English, Spanish, French, Italian, German and Portuguese
  - Two-wire diagnostics to simplify and expedite troubleshooting
  - Four independent programs with capability to overlap
- **Flexible Control**
  - Spacious case with eight lugs to support up to four two-wire paths (all managed as a single two-wire path)
  - UV-resistant, outdoor-rated plastic locking wall-mountable case
  - Uses the same decoder hardware as MDC/MDC2 and SiteControl. Supported decoders include FD-101TURF, FD-102TURF, FD-202TURF, FD-401TURF & FD-601TURF; also supports SD-210TURF sensor decoders and LSP-1 line surge protectors
  - Pre-coded decoder addresses eliminate confusion associated with user-defined decoder addressing; new barcode scanner-based decoder address input with the optional PBC-LXD cartridge
  - User-adjustable SimulStations™ at the program and controller level allows control of simultaneous station operation
  - ESP-LXD is compatible with the new LIMR remote control
  - Controller includes 50 stations; expandable to 200 stations by adding 1 – 2 ESPLXD-SM75 station expansion modules (each station expansion module adds an additional 75 stations)
- **Water Conservation and Management**
  - Cycle+Soak™ by station
  - Rain Delay and Calendar Day Off
  - Programmable Station Delay by Program
  - Program-level and monthly Seasonal Adjust
  - Up to 5 Master Valves/Pump Starts programmable by station plus up to 5 flow sensors
  - Up to 4 Weather Sensors programmable by station

How To Specify

ESP-LXD - SM75

Controller
ESP-LXD: 120V Outdoor
IESP-LXD: 230V International
IESPLXDEU: 230V European
IESP-LXDA: 240V Australian

Modules & Cartridges
SM75: 75-station expansion module
PBC-LXD: Program Backup Cartridge (see next page)

- **Flow Management**
  - FloManager™ for management of your system's hydraulic capacity (flow sensors not required)
  - FloWatch™ for SEEF (Seek and Eliminate Excessive Flow) and SELF (Seek and Eliminate Low Flow) for automatic diagnosis and management of mainline breaks or underflow
  - Learn Flow and User-Entered flow supports automatic learning or user-estimated flow rates
  - Flow logging for monitoring and conservation of water consumption
  - Supports English (GPM) and Metric (LPM, LPS, M3/s) flow rate measurement

Dimensions, Electrical Specifications & Certifications

- Dimensions (W x H x D): 14.32" x 12.69" x 5.5" (36.4 x 32.2 x 14.0 cm)
- Electrical input required: 120VAC +/- 10%, 60 Hz; International models 230VAC +/- 10%, 50 Hz; Australian models 240VAC +/- 10%, 50 Hz
- Certifications: UL, CE, CUL, C-Tick
- Lithium coin-cell battery and nonvolatile memory maintain date, time and programming
- Multi-valve capable: up to 2 solenoid valves per station (FD-102 or FD-202 decoders required) with user-adjustable simultaneous operation of up to eight valves and/or Master Valves

Model

- ESP-LXD: 50-station, 120 VAC
- IESPLXD: 50-station for international markets, 230 VAC
- IESPLXDEU: 50-station for Europe, 230 VAC
- IESPLXDAU; 50-station for Australia, 240 VAC

Optional Accessories

- ESPLXD-SM75: 75-station module for ESP-LXD
- PBC-LXD: Program Backup Cartridge for ESP-LXD
- LIMR-KIT: LIMR remote control kit for Rain Bird controllers
- FD-TURF: two-wire decoders
- SD-210TURF: two-wire sensor decoder
- LSP1TURF: two-wire line surge protection
- DPU-210: two-wire decoder programming unit
- LXMM: powder-coated metal cabinet for ESP-LX series controllers
- LXMMPED: powder-coated metal pedestal for ESP-LX series controllers
- IQ-NCC: Network Communication Cartridge for ESP-LX Series Controllers

[1]*FD-TURF decoders include peel-off barcode address labels*

[2]*Barcode scanning pen not included – sold separately; Unitech MS100-2 recommended (www.ute.com)*

PBC-LXD Programming Backup Cartridge for ESP-LXD

NEW

Provides program backup and restore and barcode scanning capability for the ESP-LXD controller

Upgrade Kit Features

- Provides 8 full backups, including all programs, flow information and decoder addresses – allows you to easily archive 8 different controllers – restoring all information typically takes two minutes or less
- Snaps into the back of the ESP-LXD front panel; installs without tools; no additional enclosures or external wiring required
- Kit includes cable for interface to barcode scanning pen (pen not included) – allows you to quickly scan decoder addresses into the ESP-LXD controller during installation to save you time

Model

- PBC-LXD (works with all versions of the ESP-LXD controller)

PBC-LXD Cartridge

FD-TURF Two-Wire Decoders

SiteControl and ESP-LXD with Support for 1, 2, 4 or 6 Decoder Addresses

- Easy, cost-effective installation, expansion and upgrade between ESP-LXD and/or SiteControl systems
- Installed out of sight and protected from the elements and vandalism
- Enables advanced diagnostic and sensor features

Operating Specifications

Select different two-wire decoders to operate one, two, four, or six valves. Five different decoder options let you choose the precise amount of landscape irrigation control you need.

Decoders

- FD-101TURF Field Decoder interfacing signal line and valve
- FD-102TURF Field Decoder interfacing signal line and valve or one pair of valves
- FD-202TURF Field Decoder interfacing signal line and 2 valves or 2 pair of valves
- FD-401TURF Field Decoder interfacing signal line and up to 4 individual valves
- FD-601TURF Field Decoder interfacing signal line and up to 6 individual valves
- LSP-1TURF Line Surge Protection
- SD-210TURF Sensor Decoder interfacing signal line and analog or digital decoders
- Pump Start Relay. Use Field Decoder to interface between pump relay and two-wire line

• **Output Power:** Adjustable from controller – Inrush and holding current values adjustable at controller.
• **Encapsulation:** Fully waterproof
• **Address:** Pre-coded from factory (i.e., no switches)
• **Electrical Input:**
  - Nominal voltage: 34Vpp (24V AC) from two-wire line
  - Minimum voltage: 21 Vpp (15V AC)
• **Standby Current:** FD-101TURF, FD-102TURF: 0.5 mA FD-202TURF, FD-401TURF and FD-601TURF: 1 mA
• **Mounting:** In valve box (recommended) or direct burial
• **Power Draw:**
  - FD-101TURF: 0.5 mA (idle) 18 mA (per active solenoid)
  - FD-102TURF: 0.5 mA (idle) 18 mA (per active solenoid)
  - FD-202TURF: 1 mA (idle) 18 mA (per active solenoid)
  - FD-401TURF: 1 mA (idle) 18 mA (per active solenoid)
  - FD-601TURF: 1 mA (idle) 18 mA (per active solenoid)

Decoders

How To Specify

FD - 101 - TURF

Application
TURF - for ESP-LXD or SiteControl

Decoder Type
101: Single Address (1 solenoid)
102: Single Address (up to 2 solenoids)
202: Dual Address (up to 4 solenoids)
401: Four Addresses (up to 4 solenoids)
601: Six Addresses (up to 6 solenoids)

Model
FD - Field Decoder

- **Dimensions:**
  - FD-101TURF: Length: 2.77 in. (70 mm), Diameter: 1.5 in. (40 mm)
  - FD-102TURF: Length: 3.35 in. (85 mm), Diameter: 1.77 in. (45 mm)
  - FD-202TURF: Length: 3.35 in. (85 mm), Diameter: 1.97 in. (50 mm)
  - FD-401TURF: Length: 3.94 in. (100 mm), Diameter: 2.56 in. (65 mm)
  - FD-601TURF: Length: 3.94 in. (100 mm), Diameter: 2.56 in. (65 mm)
- **Solenoids:**
  - FD-101TURF: 1 with individual control
  - FD-102TURF: 1 or 2 simultaneously
  - FD-202TURF: 1 to 4 simultaneously
  - FD-401TURF: 1 to 4 with individual control
  - FD-601TURF: 1 to 6 with individual control
- **Wires:**
  - FD-101TURF: Blue to cable, white to solenoid
  - FD-102TURF: Blue to cable, white to solenoid
  - FD-202TURF: Blue to cable, white and brown to solenoids
  - FD-401TURF: Blue to cable, color-coded to solenoids
  - FD-601TURF: Blue to cable, color-coded to solenoids
- **Surge Protection: One of the following is required every 500 ft. along two-wire path (40 V, 1.5 kW transil)**
  - LSP-1 Line Surge Protector
  - FD-401TURF with built in surge protection
  - FD-601TURF with built in surge protection
- **Input Fuse (FD-401TURF and FD-601TURF only):** 300-500 mA, thermal
- **Electrical Input:**
  - Maximum voltage: 36 Vpp
  - Maximum load:
    - FD-101TURF: 1 Rain Bird solenoid (one per address)
    - FD-102TURF: 2 Rain Bird solenoids (two per address)
    - FD-202TURF: 4 Rain Bird Solenoids (two per address)
    - FD-401TURF: 4 Rain Bird Solenoids (one per address)
    - FD-601TURF: 6 Rain Bird solenoids (one per address)
- **Maximum Cable Runs:**
  - 14 gauge
    - Star: 1.65 miles
    - Loop: 6.61 miles
- **Decoder/Solenoid Wires:**
  - Electrical resistance: Max. 3 ohms
- **Maximum Distance Decoder/Solenoids:**
  - Cable length: 14 gauge, 456 feet
- **Wiring:** MAXI-Cable 14-2UF double jacketed
- **Environment:**
  - Working range: 32° to 122° F (0° to 50° C)
  - Storage range: -4° to 158° F (-20 to 70° C)
  - Humidity: 100%

Note: *Rain Bird recommends using 3M DBR/DBY waterproof connectors for all connections.*

Note: *FD-Series Decoders are not compatible with residential valves like the Rain Bird DV, DVF, ASVF, JTV, & JTVF.*

DPU-210 Decoder Programming Unit

For ESP-LXD, MDC/MDC2 and SiteControl FD-Turf Two-Wire Decoders

- Decoder Programming Unit tests and verifies operation of the ESP-LXD, MDC/MDC2, or SiteControl field decoders. Also allows for re-programming decoder addresses for maximum site set-up flexibility

DPU-210

SiteControl

SiteControl

A Full-Featured Central Control System for Single Site Applications

- Interactive, map-based software is easy to use and provides real-time decision making
- Unparalleled communications flexibility with decoders and/or satellites
- Advanced water management features maximize landscape conditions and water savings

Basic Control Features

- From the SiteControl Central Controller, the irrigation system can be scheduled for days to water, run-times, linking schedules, sensor starts, cycle and soak schedules, ET sensitized scheduling, etc
- Interactive map allows for maximum control yet easy programming, monitoring and troubleshooting for operator
- Verify programming down to station level with the intuitive dry run feature
- Manual operation of system from central computer via direct manual access (DMA)
- Operation of non-irrigation applications such as lighting, security gates, fountains, pumps, sensors, etc

Additional Features

Advanced Graphical Mapping

- Maps generated by GPS technology, AutoCAD or overhead photography recreate your site
- Interactive mapping and on-screen graphics show your complete site with location of individual valves and sprinklers. Extensive status reporting is a click away
- Map utilities software module allows you to measure distances and areas from your map

Hybrid System

- Expand your system with the purchase of the hybrid software module
- Same system can operate satellites and/or decoders

Smart Weather™

- Designed to take complete advantage of Rain Bird's most advanced line of weather stations
- Track ET rates with a weather station and react to current weather conditions through logical sequential steps
- Advanced warning system accepts user-defined sensor thresholds. System operator can be immediately alerted if thresholds are exceeded

Water Saving

SiteControl Smart Weather and RainWatch features allow the operator to configure pre-defined weather conditions and corresponding system reactions to save water with automatic program start, pause, resume, or cancel in reaction to wind, temperature, rain, solar radiation and humidity

Automatic ET Features

- Automatically adjusts run-times in relation to changes in evapotranspiration values
- Minimum ET (patent pending) allows setting threshold for irrigation to occur, promoting deep watering

RainWatch™ (Patent Pending)

- Provides rain shutdown and then adjusts run-times based on measured rainfall

Expanded System Capability

- Utilizing the most advanced software development tools in the industry SiteControl offers excellent performance and software/hardware compatibility
- System is modular. Buy only what you need; expand at a later date
- Increase wire-path capacity by simply purchasing modules

Remote System Control

- Take control of your system and operate SiteControl from anywhere on your site using the Rain Bird FREEDOM System. Available via phone, cellular phone or UHF radio

Superior Monitoring and Programming

- Flo-Graph™ provides real-time graphics with individual station information presented in colorful charts
- Flo-Manager™ balances system demands and maximum capacities with efficiency, helping to lower water demand, reduce system wear and tear, and save energy
- Cycle + Soak™ better controls the application of water on slopes and in areas with poor drainage
- QuickIRR™ and SimpleIRR™ provide quick and easy methods to build irrigation schedules and programs based on your parameters
- Print Office feature prints all monitor log and site information in a clean and concise format for easy site monitoring and troubleshooting
- SmartSensors™ allows monitoring flow and other conditions, as well as setting specific reactions selected by the user

Other Features

- Up to 200 points of connection
- Up to 200 pulse sensors
- Water usage logs
- Station run-time logs
- Posted and dry run logs
- ET spreadsheet
- 1 year Global Service Plan included

Models

- SCON: Desktop PC with SiteControl software, includes 1 year Global Support Plan (GSP)

Software Module Options

- Smart Weather
- Rain Bird Messenger (for Smart Weather)
- Automatic ET
- Hybrid Module
- Smart Sensor
- Map Utilities
- Freedom
- 8 Additional Locations
- Additional Wire-Path (2nd)
- Additional Wire-Path (3rd)
- Additional Wire-Path (4th)
- SiteControl Plus

GSP Features

- Toll-free phone support (see page 156)
- Remote system diagnostics
- Extended warranty
- Next business day hardware replacement
- Future upgrades to SiteControl software at no charge
- Training or on-site support rebates
- Incident and other support
- Board Exchange Program discounts

TWI Satellite Interface

Satellite Interface for SiteControl Only

- Allows real-time, two-way communication between SiteControl Central Controller and field satellites
- Allows use of advanced in-field capabilities of ESP-SAT two-wire or LINK versions
- Modular capacity can grow with the site

Features

- TWI operates up to 28 satellites (maximum of up to 672 satellite stations), pulse decoders or sensor decoders per wire-path
- Can be expanded to up to 112 ESP-SATs (maximum of up to 2.688 satellite stations), pulse or sensor decoders in a SiteControl system
- TWI comes standard with one wire-path, upgradeable to 4 wire-paths with the purchase of the Additional Wire-Path module
- SiteControl can be configured to operate 8 total Interfaces (Hybrid Software Module required)
- UL-Listed. Indoor use
- Wall mount: drawn steel, seamless, cabinet with hinged front panel
- Computer data path: RS-232 serial cable

Electrical Specifications

TWI Hardwire

- Input required: 120VAC ± 10% @ 1.25A 60/50Hz or 220/230/240VAC ± 10% @ 0.5A 50/60Hz
- Output: 2 x 26.5VAC @ 0.9A 60/50Hz or 4 x 26.5VAC @ 0.9A 50/60Hz
- Circuit breaker: NA (Autoresettable)

TWI Link

- Input required: 120VAC ± 10% @ 1.25A 60/50Hz or 220/230/240VAC ± 10% @ 0.5A 50/60Hz
- Output: NA
- Circuit breaker: NA

Grounding

- All TWI's shall be grounded to a 5 ohm or less earth ground

Dimensions

- Width: 15½" (39.4 cm)
- Height: 12½" (31.7 cm)
- Depth: 6" (15.2 cm)

Models

- TWISAT2: Two-wire (hard wire)
- TWISATL: Link (radio)

TWI Interface

LDI/SDI Two-Wire Decoder Interface

Decoder Interface for SiteControl Only

- Allows real-time, two-way communication between SiteControl Central Controller and decoders
- Connects the powerful capabilities of SiteControl with the ease of installation and security of a two-wire decoder system
- System can be set up and expanded according to project needs

Features

- Works with Rain Bird Turf field and sensor decoders (FD-101TURF, FD-102TURF, FD-202TURF, FD-401TURF, FD-601TURF, SD-210TURF)
- Two-wire communications path also allows advanced diagnostic and sensor features for the Central Controller
- SDI (Small Decoder Interface) can interface with up to 200 decoder addresses and can activate up to 400 solenoids
- LDI (Large Decoder Interface) can interface with up to 500 decoder addresses and can activate up to 1000 solenoids. Requires SiteControl Plus software module
- SDI and LDI come standard with up to 4 wire-paths possible
- SiteControl system can be configured to operate up to 8 total Interfaces (SiteControl Plus and/or Hybrid Software Modules Required)
- Computer data path: RS-232 serial cable
- Decoder data path: Two-wire Maxi cable
- Wall mount: Heavy-duty, plastic, cabinet with a key-lock door

Electrical Specifications

North America

- External transformer
- Input: 120 VAC ± 10% @ 0.59A 60Hz
- Output: 24VAC @ 2A 60Hz
- Circuit breaker: NA (Autoresettable)
- UL listed, indoor use

International Recommended Specifications

- Transformer not supplied
- Model: ISDITURF and ILDITURF
- Input: 220, 230, 240VAC ± 10% @ 0.36A 50Hz
- Output: 24VAC @ 2A 50Hz
- CE listed, indoor use

Grounding

- MSP-1 surge protector for each wire path
- All SDIs and LDIs shall be grounded to a 5 ohm or less earth ground

SDI Interface
(LDI not shown)

Dimensions (LDI and SDI)

- Width: 9½" (24.1 cm); Height: 10¼" (26 cm); Depth: 4⅜" (11.1 cm)

Models

- SDITURF (w/ transformer): Controls 200 addresses
- LDITURF (w/ transformer): Controls 500 addresses

Maxicom²®

Multi-Site Central Control Ideal for Large Commercial Systems

- Multi-site Central Control system for commercial or industrial irrigation applications
- Conserves water via advanced ET-based irrigation features
- Flexible programming allows system to react to sensors and work within watering restrictions

System Features

- Maxicom²® Central Controller Package comes with Maxicom² software, pre-configured computer, Global Service Plan (GSP), and training
- Control hundreds of ESP-SITE-SAT Satellites (single controller sites) and Cluster Control Units (CCUs) which can each control up to 28 individual ESP-SAT Satellite Controllers on multi-controller sites
- Monitor dozens of Weather Sources including WSPRO2 Weather Stations, ET Managers, or rain counting sensors (Raingauge)
- Freedom Remote Control allows manual operation of system through a cellular phone or radio
- Multiple log and water usage reports are generated automatically to track system operation and water savings

Water Management Features

- Cross satellite schedule operation; 999 separate schedules per CCU provides precision watering of areas and microclimates
- ET Checkbook™ manages Evapotranspiration (ET) and automatically adjusts Satellite Controller station run-time or day cycle intervals to match the landscapes water requirements
- FloManager™ manages the total flow demand placed on the water source(s), optimizing both the available water and watering window
- FloWatch™ monitors flow sensors at each water source, records flow, and automatically reacts to problem flows by shutting down the effected portion of the system (individual valve or mainline)
- RainWatch™ monitors rain counting sensors, records rainfall, and automatically reacts to rainfall by interrupting irrigation, waiting to see how much rain has fallen, and determines if the irrigation should be resumed or cancelled

Operational Features

- Communication Control Engine automatically sends updated programming to sites before watering begins and retrieves logs after irrigation is completed; manual operation can be performed at any time
- Start day cycles: Custom (day of the week), Odd/Even, Odd31, or Cyclical and include Event Day Off Calendar scheduling
- Station run-times programmable from 1 minute to 16 hours
- Cycle + Soak™ optimizes water application to soil infiltration rate, reducing runoff and puddling
- Control non-irrigation functions such as lighting, fountains, door locks and gates

Maxicom² Communications Options

- Central Controller to CCU: Phone, direct connect, radio, cellular, network (Ethernet, wi-fi, fiber-optics)
- CCU to ESP-SAT2: Two-wire path
- CCU to ESP-SATL: Radio, MasterLink, network (Ethernet, wi-fi, fiber-optics)

Global Service Plan (GSP) Features (see page 156)

- Toll-free phone support
- Remote systems diagnostics
- Customer satisfaction policy on covered central control components and next business day hardware replacement
- Free software service packs
- Training and on-site support rebates
- Board Exchange Program discounts

Models

- MC2GOLD1: New System - Desktop PC with Maxicom software, includes 1 year Global Support Plan (GSP)
- GSPMCPL3: Current GSP Or Expired GSP Subscribers, Desktop PC with Maxicom software, includes 3 Years Platinum Plus Global Support Plan
- GSPMXPPCIA: Current GSP Subscribers, Desktop PC with Maxicom software, based on 3 Year Platinum Plus Global Support Plan, includes year 1 GSP, requires year 2 and 3 GSP to be purchased separately (M95543A2)
- GSPMXPPCIM: Current GSP Subscribers, Desktop PC with Maxicom software, based on 3 Years Platinum Plus Global Support Plan, includes month 1 GSP, requires month 2 - 36 GSP to be purchased separately (M95544M2)
- GSPMXPPNIA: New GSP or Expired GSP Subscribers, Desktop PC with Maxicom software, based on 3 Years Platinum Plus Global Support Plan, includes year 1 GSP, requires year 2 and 3 GSP to be purchased separately (M95541A2)
- GSPMXPPNIM: New GSP or Expired GSP Subscribers, Desktop PC with Maxicom software, based on 3 Years Platinum Plus Global Support Plan, includes month 1 GSP, requires month 2 - 36 GSP to be purchased separately (M95542M2)
- MC2UPG: Maxicom Upgrade Software - CD Only, upgrade existing Maxicom 1.X, 2.X and 3.X system to latest Maxicom Version

Maxicom²

Water Saving

Maxicom² ET Checkbook manages soil moisture in the same way you manage money in your checking account. Daily water loss from ET is a withdrawal while irrigation and rainfall are deposits of moisture into the soil.

Cluster Control Unit CCU Interface

CCU Interface for Maxicom²® Only

- Runs real-time operations of a site consisting of up to 28 satellites
- Adapts station sequence to changing conditions for maximum efficiency
- Instantly responds to unexpected conditions and sensor inputs

Features

- Manages communication connections with the Maxicom² Central Controller
- Controls up to 28 Satellite Controllers (672 stations) and 56 sensor inputs as one dynamic control system
- Stores and executes schedule instructions from Maxicom² Central Controller
- Capable of real-time decision making to react to unexpected conditions such as broken pipes, stuck valves, rainfall, etc.
- Logs actual Satellite Controller station run-time and sensor activity

Water Management Features

- Cross Satellite schedule operation; 999 separate schedules per CCU provides precision watering of areas and microclimates
- FloManager™ manages the total flow demand placed on the water source(s), optimizing both the available water and watering window
- FloWatch™ monitors flow sensors at each water source, records flow, and automatically reacts to problem flows by shutting down the effected portion of the system (individual valve or mainline)
- RainWatch™ monitors rain counting sensors, records rainfall, and automatically reacts to rainfall by interrupting irrigation, waiting to see how much rain has fallen, and determines if the irrigation should be resumed or cancelled

Maxicom² Communications Options

- Central Controller to CCU: Phone, direct connect, radio, cellular, network (Ethernet, wi-fi, fiber-optics)
- CCU to ESP-SAT2: Two-wire path
- CCU to ESP-SATL: Radio, MasterLink, network (Ethernet, wi-fi, fiber-optics)

How To Specify

CCU - 28 - W

Mounting
W: Wall mount
S: stainless steel pedestal

Channels
6: 6 channels
28: 28 channels

Model
CCU

Example specifies a CCU with 28 channels, in a wall mount cabinet.

Electrical Specifications

- Input required: 117 VAC±10% @ 0.5A 60 Hz or 220/240/260±10% @ 0.5A 50 Hz
- Output: 26.5 VAC, 60Hz or 50 Hz, 0.5A
- Circuit breaker: NA
- Autoresettable poly switch 0.65A open (steady state) 1.3A open (surge)
- Single-point grounding bus bar

Dimensions

- Powder-Coated Metal Wall-Mount
  - Width: 11 5/16" (28.7 cm)
  - Height: 11 1/2" (29.2 cm)
  - Depth: 6 1/2" (16.5 cm)
- Stainless steel pedestal
  - Width: 11 1/2" (29.2 cm)
  - Height: 30" (76.2 cm)
  - Depth: 11 1/2" (29.2 cm)

Models

Channels (24 Station Satellites)	Metal Wall-Mount	Stainless Steel Pedestal	Maximum Satellite Stations	Maximum Sensor Inputs
6	CCU6W	CCU6S	144	12
28	CCU28W	CCU28S	672	56

Notes:

- *Satellites with 24 stations or less require 1 channel*
- *Satellites with 28 stations or higher require 2 channels*
- *The sensor input capacity of a CCU varies CCU to Satellite communication option*
- *Metal wall-mount models available in 230VAC and 240VAC, 50HZ*

CCU-6-W CCU-28-W

ESP-SAT Satellite Controller

12, 24, 32, 40 Stations Satellite Controller for Maxicom²® and SiteControl

- Field Satellite Controller for Maxicom² or SiteControl Central Control systems
- The power of an advanced water-management tool, in an easy-to-use package
- All the features and stand-alone capabilities of the Rain Bird ESP-MC Controller line

Features

- ESP-SAT is controlled through the Maxicom² CCU or SiteControl TWI
- Executes instructions issued from the central control system
- ESP-SATL models incorporates two sensor inputs
- See Maxicom² Central Control System (page 147) or SiteControl (page 144) for ESP-SAT features under central control
- ESP-SAT can also operate as a standalone controller, with identical features of the ESP-MC (see page 123 for features)

Options

- 12, 24, 32 and 40 station models
- Two-Wire (SAT2) or Link (SATL) secondary communication
- Metal, wall-mount enclosure
- Stainless steel pedestal

Maxicom² Communications Options

- CCU to ESP-SAT2: Two-wire path
- CCU to ESP-SATL: Radio, MasterLink, network (Ethernet, wi-fi, fiber-optics)

Electrical Specifications

- Input required: 117 VAC ± 10%, 60Hz (International models: 230 VAC± 10%, 50Hz)
- Output 26.5 VAC, 2.5A
- Station load capacity: Up to two 24 VAC, 7VA solenoid valves per station plus a master valve or pump start relay
- Diagnostic circuit breaker skips and indicates stations with overloaded circuits
- Non-volatile, 100-year memory holds program, date, and time during power outages
- Battery backup: 9VDC, NiCad rechargeable for programming under battery power and for maintaining active program-in-progress during a power outage
- Heavy-duty electrical surge protection
- Single-point ground bus bar

Dimensions

- Powder-Coated Metal Wall-Mount
  - Width: 11 5/16" (28.7 cm)
  - Height: 11½" (29.2 cm)
  - Depth: 6½" (16.5 cm)
- Stainless steel pedestal
  - Width: 11½" (29.2 cm)
  - Height: 30" (76.2 cm)
  - Depth: 11½" (29.2 cm)

Models

Station	Two-Wire Metal Wall-Mount	Two-Wire Stainless Steel Pedestal	Link Metal Wall-Mount	Link Stainless Steel Pedestal
12	ESP-12SAT-2W	ESP-12SAT-2S	ESP-12SAT-LW	ESP-12SAT-LS
24	ESP-24SAT-2W	ESP-24SAT-2S	ESP-24SAT-LW	ESP-24SAT-LS
32	ESP-32SAT-2W	—	—	—
40	ESP-40SAT-2W	ESP-40SAT-2S	ESP-40SAT-LW	ESP-40SAT-LS

Notes:

- *If Link Radio communication is to be used between the CCU or TWI and the Satellites a Radio/Modem Kit must also be specified*
- *ESP-SAT field satellite controllers require a CCU to connect to the Maxicom² system*
- *ESP-SAT field satellite controllers require a TWI to connect to the SiteControl system*
- *The two-wire path is a hardwire communication path connecting the CCU or TWI and the Satellites*
- *Link Radio is wireless radio communication connecting the CCU or TWI and the Satellites*
- *12 and 24 station Satellites occupy 1 channel on the CCU or TWI. 32 and 40 station Satellites occupy 2 channels on the CCU or TWI*
- *Link Radio communication satellites have 2 sensor inputs*

ESP-40SAT-2W Satellite

How To Specify

ESP - 24SAT - 2W

- **Model**: ESP (120VAC)
- **Number of Stations**: 12SAT: 12 stations; 24SAT: 24 stations; 32SAT: 32 stations; 40SAT: 40 stations
- **Mounting**: W: Metal Wall mount; S: Stainless Steel
- **Satellite Data Path**: 2: Two-wire; L: MAXILink™ Radios

ESP-SITE-SAT Satellite Controller

12, 24, 32, 40 Stations Satellite Controller for Maxicom²® Only

- Combines power of a Cluster Control Unit (CCU) with capabilities of a single ESP-Satellite controller for small Maxicom² sites
- Advanced water-management tool, in an easy-to-use package
- All the features and stand-alone capabilities of the Rain Bird ESP-MC Controller line

Features

- Combines function of a Cluster Control Unit (CCU) and ESP-SAT Satellite Controller in a single enclosure design
- Stores and executes schedule instructions from Maxicom² Central Controller
- Incorporates two Maxicom² sensor inputs
- See Maxicom² Central Control System (page 147) for ESP-SITE-SAT features under central control
- ESP-SITE-SAT can also operate as a standalone controller, with identical features of the ESP-MC (see page 123 for features)

Options

- 12, 24, 32 and 40 station models
- Metal, wall-mount enclosure
- Stainless steel pedestal

Maxicom² Communications Options

- Central Controller to ESP-SITE-SAT: Phone, direct connect, radio, cellular, network (Ethernet, wi-fi, fiber-optics)

Electrical Specifications

- Input required: 117 VAC ± 10%, 60Hz (International models: 230 VAC and 240 VAC ± 10%, 50Hz)
- Output: 26.5 VAC, 2.5A
- Station load capacity: Up to two 24 VAC, 7VA solenoid valves per station plus a master valve or pump start relay
- Diagnostic circuit breaker skips and indicates stations with overloaded circuits

How To Specify

ESP - 24SITE - W

Mounting
W: Metal wall mount
S: Stainless Steel

Number of Stations
12SITE: 12 stations
24SITE: 24 stations
32SITE: 32 stations
40SITE: 40 stations

Model
ESP (120VAC)

- Battery backup: 9VDC, NiCad rechargeable for programming under battery power and for maintaining active program-in-progress during a power outage
- Heavy-duty electrical surge protection
- Single-point ground bus bar

Dimensions

- Powder-Coated Metal Wall-Mount
  - Width: 11 5/16" (28.7 cm)
  - Height: 11½" (29.2 cm)
  - Depth: 6½" (16.5 cm)
- Stainless Steel Pedestal
  - Width: 11½" (29.2 cm)
  - Height: 30" (76.2 cm)
  - Depth: 11½" (29.2 cm)

Models

Stations	Metal Wall-Mount	Stainless Steel Pedestal
12	ESP-12SITE-W	ESP-12SITE-S
24	ESP-24SITE-W	ESP-24SITE-S
32	—	ESP-32SITE-S
40	ESP-40SITE-W	ESP-40SITE-S

Note: *Does not require a CCU to connect to Maxicom²*

ESP-28SITE-W Site Satellite

Packaged Systems

Pedestal and Wall-Mounted Solutions for Central Control Projects

- Weather-resistant stainless steel or powder coated enclosures
- Factory-assembled and tested
- Customizable to meet individual project needs

Features

- Robust, customized enclosures for controllers and components are specified to match project requirements and to arrive as "plug and play" assemblies – pre-assembled, factory-tested, and ready to install
- The enclosures are NEMA rated, ensuring a professional appearance while keeping the housed central control components safe from weather elements, vandalism, and pests
- Packaged system enclosures are available in wall-mount or pedestal versions for Maxicom²®, SiteControl™, IQ™ and other controllers

Standard Model Designations

- Choose from standard stainless steel or powder-coated enclosures to house from one to six controllers. Enclosures are available in a variety of front-opening or flip-top designs
- Packaged system enclosures are customizable to include central control components and ancillary items required for the application such as lightning protection, communications options, flow monitoring, relays, etc. Standard specifications, model configurators, and reference drawings are available upon request

Wall Mount with CCU and 3 ESP-SAT Controllers

Pedestal with ESP-SAT Controller

Pedestal with IQ™ Controller

Link Radio Modem Kits

Maxicom²® or SiteControl

Features

- Allows wireless communication between CCU or TWI and satellite controllers
- Easy installation in CCU, TWI or ESP-SAT-Link controllers
- Available pre-programmed in private business or special frequencies

Models

- RMK406NARR (406-430 MHz - Government only)
- RMK450NARR (450-470 MHz - Commercial band)

License Requirements

- FCC frequency license required

Installation Requirements

- One Radio Modem Kit required at each CCU or TWI-Link interface and ESP-SAT-LINK Satellite Controller
- CCU (Cluster Control Unit) required for Maxicom²
- TWI-Link required for SiteControl
- Includes hardware for installation in wall-mount or stainless steel pedestal controllers
- Antenna required (sold separately)
- Radio Modem Kit can be shared by multiple ESP-SAT-LINK Satellites installed at a single location with use of cluster adapter modules

Freedom for Central Control

Maxicom,[2]® or SiteControl

Features

- Uses standard telephone interface or radio repeater at computer
- Single cellular phone or radio can control entire central control system
- 2-way talk communication is available with radio system
- Standard land-line telephones can also control the system
- Password protected for security
- Start/stop stations, schedules, or site (rain shutdown)

Hardware

- Radio system – repeater, hand-held unit, antenna, cables
- Telephone system – DTMF module, power supply, cable

Electrical Specifications

- Input required: 117VAC 60Hz
- Telephone system: dedicated dial-up telephone line

License Requirements

- Telephone system: none
- Radio system: FCC frequency license required

Dimensions

- Telephone system: DTMF module: 6" x 7" x 2" (152 mm x 178 mm x 51 mm)
- Radio system:
  - Repeater: 16.38" x 9.63" x 4.50" (416 mm x 245 mm x 114 mm)
  - Hand-held: 3.0" x 8.0" x 1.5" (76 mm x 203 mm x 38 mm)

Models

- FREEDOMFOR (phone)
- FREERADNSP (radio, special frequency)

Freedom for Central Control - Radio

Flow Sensors and Transmitters

Maxicom,[2]® SiteControl, ESP-LXD or IQ™

Features (Sensors)

- Simple six-bladed impeller design
- Designed for outdoor or underground applications
- Available in PVC, brass or stainless steel construction
- Pre-installed in tee or saddle mounted insert versions

Features (Transmitters)

- Reliable solid-state design, available with or without LCD display
- Easy-to-program, menu-driven design
- Programmable from a computer (PT322 only)
- Operates with MAXILink,™ MAXI two-wire, and two-wire decoder systems
- Mounted in NEMA enclosure (optional in PT3002 only)

Operating Specifications (Sensors)

- Accuracy: ± 1% (full scale)
- Flow rate: 0.5-30 feet per second
- Pressure: 400 psi (max) on metal models; 100 psi (max) on plastic models
- Temperature: 221°F (105°C) (max) on metal models; 140°F (60°C) (max) on plastic models

Electrical Specifications (Transmitters)

- Input required: 9-35 VAC/VDC (322 Series); 12-24 VAC/VDC (PT3002 Series)
- Output: Pulse output
- Operating Temp: 32°F-158°F (0°C to 70°C)
- Units: Domestic and International units available on PT3002

Dimensions

- PT322: 3.65" x 1.75" x 1.00" (93mm x 44mm x 25mm)
- PT3002: 3.78" x 3.78" x 2.21" (96mm x 96mm x 56mm)
- FS100B: 5.45" x 4.94" x 2.21" (138mm x 126mm x 56mm)
- FS150P: 5.0" x 5.16" x 2.38" (127mm x 131mm x 60mm)
- FS200P: 5.63" x 5.64" x 2.88" (143mm x 143mm x 73mm)
- FS300P: 6.50" x 6.83" x 4.23" (165mm x 173mm x 107mm)
- FS400P: 7.38" x 7.83" x 5.38" (187mm x 199mm x 137mm)
- FS350B/SS: 7.13" x 3"(diameter) (181mm x 76mm (diameter))
- FS350SS: 7.13" x 3"(diameter) (181mm x 76mm (diameter))

Configuration

- **For (Hard Wire) Two-Wire Satellite Systems (Maxicom²® and SiteControl),** the Flow Sensor is installed with a Pulse Transmitter and a Rain Bird Pulse Decoder (DECPULLR)
- **For Link Radio Satellite Systems (Maxicom² and SiteControl),** the Flow Sensor is installed with a Pulse Transmitter (no decoder required)
- **For ESP-SITE Satellite Systems (Maxicom²),** the Flow Sensor is installed with a Pulse Transmitter (no decoder required)
- **For SiteControl Decoder Systems,** the Flow Sensor is installed with a Two-Wire Decoder Sensor Decoder (SD210TURF)
- **For ESP-LXD Decoder Systems,** the Flow Sensor is installed with a Two-Wire Decoder Sensor Decoder (SD210TURF)
- **For ESP-LXMEF Systems,** the Flow Sensor is attached to the FSM-LXME Flow Smart Module
- Surge protection (FSSURGEKIT) is recommended for Maxicom & SiteControl systems – One at the Pulse Transmitter, and if more than 50' of wire run, one at the Flow Sensor. FSSURGEKIT is not compatible with ESP-LXMEF and ESP-LXD Controllers

Models

Brass TEE's

- FS200B: 2" (50mm) Brass Tee Flow Sensor
- FS150B: 1 1/2" (40mm) Brass Tee Flow Sensor
- FS100B: 1" (25mm) Brass Tee Flow Sensor

Plastic TEE's

- FS400P: 4" (110mm) PVC Tee Flow Sensor
- FS300P: 3" (75mm) PVC Tee Flow Sensor
- FS200P: 2" (50mm) PVC Tee Flow Sensor
- FS150P: 1 1/2" (40mm) PVC Tee Flow Sensor
- FS100P: 1" (25mm) PVC Tee Flow Sensor
- FS075P: 3/4" (20mm) PVC Tee Flow Sensor
- FS050P: 1/2" (12mm) PVC Tee Flow Sensor

Inserts

- FS350SS: 3" and higher, Stainless Steel Insert
- FS350B: 3" and higher, Brass Insert
- FSTINSERT: Replacement insert for Tee type sensors

Pulse Transmitters

- PT322: Pulse Transmitter, no display
- PT3002: Pulse Transmitter, LCD display
- PT322SW: PT322 Pulse Transmitter programming software

Accessories

PTPWRSUPP: Pulse Transmitter power supply
NEMACAB: NEMA Enclosure for PT3002
FSSURGEKIT: Flow Sensor surge protection kit
DECPULLR: Pulse Decoder for two-wire satellites
SD210TURF: Sensor Decoder for decoder systems
FSM-LXME: Flow Smart Module for ESP-LXME Series Controllers

Rain Bird Flow Sensor Suggested Operating Range

The following table indicates the suggested flow range for Rain Bird Flow Sensors. Rain Bird Sensors will operate both above and below the indicated flow rate. However, good design practice dictates the use of this range for best performance. Sensors should be sized for flow rather than pipe size.

Model	Suggested Operating Range (Gallons / Minute)	Suggested Operating Range (Liters / Minute)	Suggested Operating Range (Cubic Meters / Hour)
FS050P	1.9 - 18.9	7.2 - 71.7	0.43 - 4.3
FS075P	3.3 - 33.2	12.6 - 125.8	0.75 - 7.5
FS100P	5.4 - 53.9	20.4 - 204	1.2 - 12.2
FS150P	5 - 100	18 - 378	1.1 - 22.7
FS200P	10 - 200	36 - 756	2.3 - 45.4
FS300P	20 - 300	78 - 1134	4.5 - 68.1
FS400P	40 - 500	150 - 1890	9.1 - 113.6
FS100B	2 - 40	6 - 150	0.5 - 9
FS150B	2 - 82.6	6.3 - 313	0.4 - 18.7
FS200B	4.9 - 294	18.5 - 1112	1.1 - 66.7
FS350B	12 - 45000*	48 - 168000*	2.7 - 10200*
FS350SS	12 - 45000*	48 - 168000*	2.7 - 10200*

** Depends on pipe size and material*

Flow Sensors

Flow Sensor Transmitters and Accessories

How To Specify

FS - 100 - B (Flow Sensors)

FS = Flow Sensor

B = Brass
P = Plastic (PVC)
SS = Stainless Steel

050 = ½" (12mm)
075 = ¾" (21mm)
100 = 1" (25mm)
150 = 1½" (40mm)
200 = 2" (50mm)
300 = 3" (75mm)
400 = 4" (110mm)
350 = 3" (75mm) and higher

PT - 322 (Pulse Transmitters)

322 = No read out
3002 = Digital readout

PT = Pulse Transmitter

WS-PRO Weather Stations

Maxicom²® (WS-PRO2 only), SiteControl, IQ™, or Weather Reach Server

Features

- Scientific accuracy sensors located three meters above the ground for added vandal-resistance
- Powerful, internal micro-logger for climatic data collection, logging and analysis, constant communication with weather sensors, and storage of 30 days of data
- Rugged yet lightweight metal construction;
- Self-diagnostic test mechanisms: internal moisture, battery voltage level, test port for local sensor check, and simple-to-service sensors and internal components
- State-of-the-art weather software calculates ET values, stores daily and historic ET values, monitors and displays current weather conditions, and graphically displays weather parameters

SiteControl Features

- WS-PRO2 and WS-PRO-LT Weather Station compatibility is standard for SiteControl v3.0 or later software
- SiteControl can interface with up to 6 weather stations
- Automatic communication between Central Controller and Weather Station requires SiteControl Automatic ET Software Module
- SiteControl Smart Weather Software Module enables automatic, user defined reactions to weather events (rain, freeze, high wind, etc.)

IQ v2.0 Features

- WS- PRO2 or WS-PRO-LT Weather stations are compatible with IQ v2.0 or later software
- Automatic communication between the IQ v2.0 central and weather station requires the Advanced ET feature pack (IQAETFP)
- Weather data retrieval hourly up to 24 times a day or custom retrieval times up to 5 per day

Maxicom2® Features (WS-PRO2 only)

- WS-PRO2 Weather Station compatibility is standard for Maxicom2® v3.6 or later software
- Each site can have its own Weather Station or can share between sites
- Automatic communication standard
- Up to 24 automatic weather data retrievals can be configured per day

Weather Station Sensors

- Air Temperature
- Solar Radiation
- Relative Humidity
- Wind Speed
- Wind Direction
- Rainfall

System Compatibility

- Maxicom² (WS-PRO2 only)
- SiteControl (requires Automatic ET Software Module)
- IQ v2.0 with Advanced ET Feature Pack
- ET Manager Weather Reach Server Software

Models

- WS-PRO2-DC Direct Connect model – 2-pair wire connection with Central Controller via short-haul modem
- WS-PRO2-PH Phone Connect model – dial-up phone modem for phone communication with Central Controller
- WS-PRO2-PHS Phone Connect, Solar Power model – dial-up phone modem for phone communication with Central Controller, solar powered
- WS-PRO-LT-SH Short Haul model – 2-pair wire connection with Central Controller via short-haul modem
- WS-PRO-LT-WL Wireless model – wireless connection with Central Controller via 916 MHz radio (only available in the U.S. and Canada)
- WS-PRO-LT-WLS Wireless model – wireless connection with Central Controller via 916 MHz radio, solar powered (only available in the U.S. and Canada)

WS-PRO2

RAINGAUGE Rain Sensor

Maxicom²® or SiteControl

Features

- Accurate rain counter switch counts rainfall in 1/100th inch increments
- Heavy-duty metal construction
- Mounting bracket
- Debris screen
- 4" diameter

Model

- RAINGAUGE

RAINGAUGE

ANEMOMETER Wind Sensor

Maxicom,²® SiteControl, IQ™, ESP-LXME, ESP-LXD

Features

- Accurate wind speed measurement for high-wind shutdown or interrupt of irrigation programs
- Heavy-duty metal mounting bracket
- Requires PT322, PT1502 or PT3002 Pulse Transmitter for use with Maxicom² System
- Requires PT3002 Pulse Transmitter for use with SiteControl, IQ Systems, ESP-LXME, ESP-LXD

Model

- ANEMOMETER

ANEMOMETER

Sensor-Pulse Decoders

For Maxicom²® or SiteControl Two-Wire Satellite Systems

Features

- Complete feedback system
- Extends central control system versatility
- Color-coded wire leads for ease of installation
- Programmable address codes for individual operation
- Encapsulated in moisture-and UV-resistant case for use in outdoor conditions

Functions

- Sensor Decoder: Monitors dry contact switches (moisture sensor, pressure switch, security systems, etc.) for open or closed conditions and informs the system of switch status
- Pulse Decoder: Reads pulses from monitoring devices, such as flow sensors and rain gauge, and sends the information to the system for analysis and action

Electrical Specifications

- Input required: 26 VAC (provided by the two-wire communication path. No separate power supply required)

Dimensions

- Top: 3¼" diameter (8.3 cm); Height: 8" (20.3 cm); Bottom: 2½" diameter (6.4 cm)

DEC-SEN-LR DEC-PUL-LR

Models

- DEC-SEN-LR Sensor Decoder (for switch sensor)
- DEC-PUL-LR Pulse Decoder (for pulse sensor)

Note: *All decoders function with the satellite two-wire communication path only. They are not required for the MAXILink™ communication path or ESP-SITE Satellites*

Central Controls

Maxi Interface Boards

Upgrades any ESP-MC Controller to a Maxicom²® or SiteControl Central Control Satellite Controller

Upgrade Kit Features

- Upgrades an ESP-MC Controller (wall mount or pedestal) to an ESP-SAT or ESP-SITE Satellite Controller
- No additional enclosures or external wiring required
- Installs on stand-offs on controller output board
- Link and Site Kits include replacement transformer
- Upgrade Kit includes connection cables and manuals

Models

- ESP-MIB2 Two-Wire secondary communication
- ESP-MIBL Link secondary communication
- ESP-SITEU Site Satellite (Maxicom² only)

ESP-MIB-TW

MSP-1 Surge Protection

Maxicom,²® SiteControl, or ESP-LXD Surge Protection for Two-Wire Satellite and Two-Wire Decoder Systems

Features

- Protects central control components from electrical surges on a two-wire communication path
- Can be installed in satellite or CCU pedestal or underground in conjunction with MGP-1 (Maxicom²® Grounding Plate)

Model

- MSP-1

MSP-1

MGP-1 Surge Grounding Plate

Maxicom,²® SiteControl or ESP-LXD Surge Protection for Two-Wire Satellite and Two-Wire Decoder Systems

Features

- Provides a mounting location for MSP-1 or other grounding wires directly to a grounding rod or pipe
- Installed on grounding rod or pipe

Model

- MGP-1

MGP-1

Central Control Global Service Plans

Scalable Service Packages For Your Central Control System

- GSP members enjoy a host of benefits such as special discounts on GSP services like the Board Exchange Program, lower cost of maintaining their Rain Bird Central Control System with our Platinum level hardware support feature, and expert remote technical support from our GSP engineers for troubleshooting assistance or when learning how to maximize the performance of their system

- Scalable service plans give you more choices when deciding which plan is best for your needs and budget. Choose from:
  - Platinum Plus (3 years)
  - Platinum (2 or 3 years)
  - Gold (1, 2 or 3 years)
  - IQ and ESP-LXD (2 years)

Features

• Maxicom²® and SiteControl Service Plans

- Gold Level Service Plan

- Software and hardware troubleshooting
  - Toll-free support, 8am - 5pm, local business hours, normal business days
- Remote software assistance support
  - Symantec pcAnywhere® or GoToAssist™ software allows support engineers to remotely access your central control system when issues can not be resolved over the phone
- Board Exchange Program Discounts
  - Provides you with the opportunity to obtain selected replacement hardware at a discounted price.
- Software point releases
  - Provides you with the newest central control service packs for your level of service at no extra charge!
- Central Control training or on-site support rebates
  - Rebates are available for the purchase of Central Control training courses or on-site support by a Rain Bird Authorized Service Provider

- Platinum Level Service Plan

All of the features of the Gold Service Plan plus:

- Software enhancements and major new releases
  - Reduces the expense of adding new features and functions and upgrading your system to the newest versions of your central control software
- Hardware loaner program*
  - Ensures that if any Rain Bird Central Control hardware component covered under the Global Service Plan becomes inoperable, a loaner will be shipped to your site via a next business day delivery service at no extra charge!

- Platinum Plus Level Service Plan

All of the features of the Platinum Service Plan plus:

- PC Upgrade
  - Reduces the expense of upgrading your system to the latest Rain Bird Central Control computer system

• IQ and ESP-LXD Service Plans

- Hardware loaner program*
- Software enhancements and major new releases
- Software point releases
- Central Control training or on-site support rebates
- GSP software and hardware troubleshooting

• Incident and Other Support

- For non-GSP customers, Rain Bird offers telephone support services which are charged per incident. Call us at 1-866-GSP-XPRT for more information

* ***Note:*** *Hardware Loaner Program requires you to obtain a Rain Bird Central Control installation verification audit. Platinum and Platinum Plus loaner programs are limited to 5 registered sites (based on CCU, Site-SAT, TWI, LDI, or SDI serial numbers). Loaner privileges for additional sites may be purchased for an additional fee*

If you would like to know more about our Central Control Global Service Plans contact your local Rain Bird Central Control Distributor or call GSP at (866) GSP – XPRT.

Renewal Options (Lump Sum Plans)

Model	Subscription	Part #
Maxicom²® Platinum/ Platinum Plus		
Standard	**2 Year**	M95520
Standard	**3 Year**	M95530
Plus: Standard + Computer	**3 Year**	M95540
Maxicom²® Gold		
Trial	**1 Year**	M95560
Standard	**2 Year**	M95570
Standard	**3 Year**	M95580
SiteControl Platinum/ Platinum Plus		
Standard	**2 Year**	M97520
Standard	**3 Year**	M97530
Plus: Standard + Computer	**3 Year**	M97540
SiteControl Gold		
Trial	**1 Year**	M97560
Standard	**2 Year**	M97570
Standard	**3 Year**	M97580
ESP-LXD		
Standard	**2 Year**	M001351
IQ™		
Standard	**2 Year**	I95200

Renewal Options (Payment Plans)

Model	Payment Frequency	Subscription	Part #
Maxicom Platinum Plus			
New or Expired Subscribers	Annual	**3 Year**	M95541A1
	Monthly	**3 Year**	M95542M1
Current Subscribers	Annual	**3 Year**	M95543A1
	Monthly	**3 Year**	M95544M1
Maxicom Platinum			
Current Subscribers	Annual	**2 Year**	M95520A1
	Monthly	**2 Year**	M95520M1
	Annual	**3 Year**	M95530A1
	Monthly	**3 Year**	M95530M1
SiteControl Platinum Plus			
New or Expired Subscribers	Annual	**3 Year**	M97541A1
	Monthly	**3 Year**	M97542M1
Current Subscribers	Annual	**3 Year**	M97543A1
	Monthly	**3 Year**	M97544M1
SiteControl Platinum			
Current Subscribers	Annual	**2 Year**	M97520A1
	Monthly	**2 Year**	M97520M1
	Annual	**3 Year**	M97530A1
	Monthly	**3 Year**	M97530M1

"No site is the same so no pump station is the same. Rain Bird designs and builds my pump stations based on my specifications and measurements so I can count on a quick and easy installation."

Nick Shebert
TurfPro

Water Saving Tips

- Newer high-efficiency motors are able to convert a higher percentage of their electric input to useful mechanical work resulting in energy and cost savings
- Rain Bird Variable Frequency Drive (VFD) pump stations save energy while delivering the water pressure necessary to ensure maximum water use efficiency
- Rain Bird designs pump stations specifically for the application, ensuring that the pump runs at maximum efficiency. Delivering the right pressure as demanded by the system ensures your irrigation system is efficient and effective. For assistance call 520-806-5620 or email pumps@rainbird.com

Low Profile Pump Station (LP)

0.5 to 10 hp; Up to 120 psi (8.1 bar); Up to 235 gpm (1.8-27.2m³/h)

- Cost effective – Standardized VFD driven pump system delivers high performance with minimum investment
- Low Profile – Compact aluminum marine enclosure with powder coated skid and piping
- Energy efficient – Variable Frequency Drive (VFD) maintains constant pressure at varying flow demand
- Reliability – Simple standard design, easy installation and maintenance

Low Profile Pump Station (LP) with NEMA 3R enclosure

Features

- Horizontal end-suction pumps (5, 7.5, and 10 hp)
- Compact marine grade aluminum enclosure
- Separate NEMA 3R electrical controls enclosure
- Steel piping throughout, with flange or Victaulic couplings
- Corrosion resistant powder coating on skid, piping, and flanges
- Pump Start Relay, or optional pressure start
- Variable Frequency Drive for maximum efficiency
- GT1020 Operator touch screen with text
- Circuit breaker motor protection
- Surge protection
- Pump thermal switch for safety shutdown
- Fan and louver cooling
- Inlet/outlet glycerin filled pressure guages
- Pump bypass manifold
- Flow switch

Options

- Environmental package: Insulation and heater
- Intake Screen and Foot Valve Assembly: For suction lift application

Electrical Power Specification

- 60Hz, 3-phase power: 208V, 230V, 460V
- 60Hz, 1-phase power: 208V, 230V

Application

- Choose the Low Profile Pump Station for small to midsize boost, flooded suction and suction lift applications such as, city parks and buildings, sports fields, commercial buildings, small home owner's associations, and large residential sites

Interior of Low Profile Pump Station (LP)

"D" Series Pump Stations
D/DP/DPX-Series Pump Stations

Flows Up to 300 gpm (68 m^3/h) and Greater, Discharge Pressures Up to 150 psi (10.3 bar)

- Reliability – Integrated Plug-n-Pump Stations (up to 300gpm) provide single source responsibility for the entire pumping system insuring trouble-free installation and operation
- No hassle buying – Purchase all irrigation system components from Rain Bird facility in Tucson, Arizona
- Easy start-up – All stations are wet tested prior to shipment

Features

- Vertical multistage pump for flooded suction or pressure boosting applications
- Horizontal end-suction pump for flooded suction, pressure boosting, or suction-lift applications
- Variable Frequency Drive for maximum energy efficiency
- Monochrome-backlit touch screen operator interface makes for easy operator training
- Power-loss auto-restart ensures seamless operation on loss and regain of electrical power
- Operator touch screen
- Vandal resistant enclosure in PGS8-C0651 fence green or FS 20450 night tan

Options

- Environmental Package: Insulation and heater
- Audible/visual alarm
- Pressure Relief Valve (PRV)
- Z - Pipe(s)
- Expansion tank and flow switch: If pump start signal is not available
- Swing Check Valve: for suction lift application
- Pump bypass manifold
- Flow meter: Inlet/discharge thru enclosure wall only if flowmeter is chosen

Electrical Power Specifications

- 60 Hz, 3-phase power: 230V, 460V, 575V
- 50 Hz, 3-phase power: 190V, 380V, 415V
- 60 Hz, 1-phase power: 230V (up to 10 hp per pump)

Note: *See the "Pump Station Specification Guide for Low Profile and D-Series Pumps" on page 233*

D-Series Features

- Drive-only pump system that cost effectively delivers no-frills high performance

D-Series Applications

- Residential and commercial flooded-suction, pressure boosting, and suction lift irrigation applications requiring a reliable pump station delivering the pressure and flow rate required by the irrigation system

DP-Series Features

- Programmable logic controller (PLC) allows controls beyond pressure and flow such as lake level controls, actuated automation filtration, and the ability to alter pressure set points based on time (variable pressure settings)

DP-Series Application

- Residential and commercial flooded-suction, pressure boosting, and suction lift irrigation applications up to 300 gpm, with pressures up to 150 psi requiring programmable logic controls

D-Series

DP-Series

D-Series, DP-Series and DPX-Series Pump Stations (cont.)

DPX-Series Features

- Seamless system integration with Rain Bird SiteControl software (requires optional full color touch screen)
- Liquid-cooled NEMA 3R electrical panel ensures reliability and longevity in hot climates
- Programmable logic controller (PLC) allows controls beyond pressure and flow such as lake level controls, actuate automation filtration, and alter pressure set points based on time (variable pressure settings)
- Selection of the full color touch screen and modem options provides communication between the pump station and central control computer
- Power-loss auto-restart ensures seamless operation on loss and regain of electrical power

DPX-Series Application

- Warm climate residential and commercial flooded-suction, pressure boosting, and suction lift irrigation applications up to 300 gpm, with pressures up to 150 psi requiring liquid cooled electronics
- When communication between the pump station and Rain Bird SiteControl is desired

DPX-Series Options

- Full color touch screen with Spanish and English operator screens. This option is required for communication between the pump station and central control computer
- Hard wire or radio communication modems
- Filtration or wye strainer with auto flush
- Self cleaning inlet screen
- Pump start relay
- "Z" pipe
- Lake level controls
- Pump bypass
- Environmental Package: Insulation and heater
- Suction lift assembly

"D" Series Pump Features

Item	PLC REQUIRED DPX	PLC REQUIRED DP	NO PLC D
Reliable Delivery of Required Pressure and Flow	✔	✔	✔
Remote Pump Monitoring (using Pump Manager)	✔		
Multiple Pump Applications	✔	✔	
Lake Level Controls	✔	✔	
Pressure or Flow (max or min settings)	✔	✔	✔
Full Color Touchscreen Option	✔		
Filtration Controls	✔	✔	
Self Cleaning Inlet Screen	✔	✔	
Communication Between Pump Station and Central Control	✔	✔	
Heat Exchanger in Warmer Climates	✔		
PLC - Programmable Logic Control	✔	✔	
Pump Thermal Safety Switch	✔	✔	✔

Color Touchscreen
(Standard on D, DP, DPX Series)

DPX-Series

Intermediate Flow Pump Stations

Flows Up to 750 gpm (170 m^3/h) at 120 psi (8.3 bar). Higher Flows Available at Pressures Less than 120 psi (8.3 bar)

- Enhanced Serviceability – Modern electrical design utilizing industrial breaker motor protection instead of time-wasting fuses. Industrial circuit breakers are quickly reset and designed for an extended service life
- Easy Operator Training – Easy to navigate monochrome touch-screen
- Reduced Cost – Our powder coat paint earned a perfect rating on ASTM corrosion tests. Less corrosion equals longer pipe, skid, and manifold life, reducing cost

Intermediate Flow Pump Stations Color Touchscreen (Optional on D, DP, DPX Series)

Features

- Everything you need for your irrigation system construction or renovation from the only manufacturer dedicated to irrigation for over seven decades
- Easy installation and start-up
- Dry no-flow protection and thermal safety

Application

Mid to large projects such as golf courses, parks, lake transfer sports fields, nurseries, turf farms, and other agricultural pojects

Options

- Air conditioner electrical panel cooling
- Enclosures: aluminum, painted steel (government specified colors), or stainless steel
- Full color touch-screen with English and Spanish
- Magnetic flow meter
- Modem, radio or hard-wired
- Totally enclosed, fan cooled (TEFC) motor
- Wye strainer with auto back-flush
- Z discharge pipe

Intermediate Flow Pump Station

Electrical Power Specifications

- 60 Hz, 3-Phase Power: 230V (up to 60hp per pump), 460V, 575V
- 50 Hz, 3-Phase Power: 190V (up to 60hp per pump), 380V, 415V
- 60 Hz, 1-Phase Power: 230V (up to 30hp per pump)

Main Irrigation Pump Stations

Flows Up to 10,000 gpm (2,300 m^3/h)

- Enhanced Serviceability – Modern electrical design utilizing industrial breaker motor protection instead of time-wasting fuses. Industrial circuit breakers are quickly reset and designed for an extended service life
- Reduced Downtime – Modern electrical design that uses industrial circuit breaker motor protection instead of time wasting fuses. Industrial circuit breakers are good for thousands of trips
- Easy Operator Training – English and Spanish color touch-screen that is easy to learn

Features

- Reduced cost: Powder coat paint earned the highest rating on ASTM corrosion tests. Less corrosion equals longer pipe, skid, and manifold life, reducing cost
- No-hassles buying: Everything you need for your irrigation system construction or renovation from the only manufacturer dedicated to irrigation
- Real-time communication between the pump station and Rain Bird Central Control

Application

Reliable Variable Frequency Drive Pump Stations designed to serve as the main irrigation pump station for large commercial sites and projects. Rain Bird Pump Systems are designed for both new construction projects and can be custom built for tough-to-fit renovation projects

- **Available in the following configurations:**
  - Vertical and submersible turbine pump stations for wet-well applications
  - Horizontal end suction for flooded suction, suction lift, and pressure boosting applications
  - Multistage pumps for flooded suction and pressure boosting applications where differential pressures greater than 130 psi (9 bar) are required

Options

- Air conditioned electrical panel cooling system
- Custom controls
- Custom piping and manifolds
- Enclosures: aluminum, painted steel (government specified colors) or stainless steel
- Fabricated discharge heads
- Fertigation systems
- Filtration: backwashing screen filters and suction scan filters (hydraulic or electric)
- Heater, skid mounted 5KW
- Intake box screen with 3 stainless steel screens
- Lake level control: float switch and ultrasonic
- Magnetic flow meter
- Modem, radio or hard-wired
- Power zones: 5, 7.5, or 10KVA
- Totally enclosed, fan cooled (tefc) motors
- Wye strainer with auto back-flush
- Z discharge pipe
- HDPE piping and manifolding

Electrical Power Specifications

- 60 Hz, 3-Phase Power: 230V (up to 60hp per pump), 460V, 575V
- 50 Hz, 3-Phase Power: 190V (up to 60hp per pump), 380V, 415V
- 60 Hz, 1-Phase Power: 230V (up to 30hp per pump)

Main Irrigation Pump Station

Water Feature Pump Stations

Flows Up to 10,000 gpm (2,300 m^3/h) and Greater

- Adjustable Look – The VFD allows for altering the look of a water feature by adjusting the pump run speed
- Save Energy – "Night-Run" Mode runs VFD driven pump at minimum speed, minimizing energy cost while preventing stagnant water
- Enhanced Serviceability – Modern electrical design utilizing industrial breaker motor protection instead of time-wasting fuses. Industrial circuit breakers are quickly reset and designed for an extended service life

Features

- Monochrome touch-screen operator interface
- Powder coat paint earned a perfect rating on ASTM corrosion tests. Less corrosion equals longer pipe, skid, and manifold life, reducing cost

Application

Reliable Variable Frequency Drive (VFD), water feature pump stations allow adjustable water feature appearance and provide a "Night-Run" mode that prevents stagnant water when the full look of the water feature is not desired. Constant speed systems require that the system be on or off, allowing water to stagnate during non-running periods.

- Available in flows up to 10,000 gpm and greater in the following configurations:
  - Vertical turbine pump stations for wet-well applications
  - Split-case and horizontal end suction for flooded suction applications

Options

- Air conditioner electrical panel cooling
- Custom controls
- Custom piping and manifolds
- Enclosures: aluminum, painted steel (government specified colors) or stainless steel
- Fabricated discharge heads
- Filtration: backwashing screen filters and suction scan filters (hydraulic or electric)
- Heater, skid mounted 5KW
- Intake box screen with 3 stainless steel screens
- Lake level control: float switch and ultrasonic
- Totally enclosed, fan cooled (TEFC) motors
- Wye strainer with auto back-flush
- Z discharge pipe
- HDPE piping and manifolding

Electrical Power Specifications

- 60 Hz, 3-Phase Power: 230V (up to 60hp per pump), 460V, 575V
- 50 Hz, 3-Phase Power: 190V (up to 60hp per pump), 380V, 415V

Water Feature Pump Station

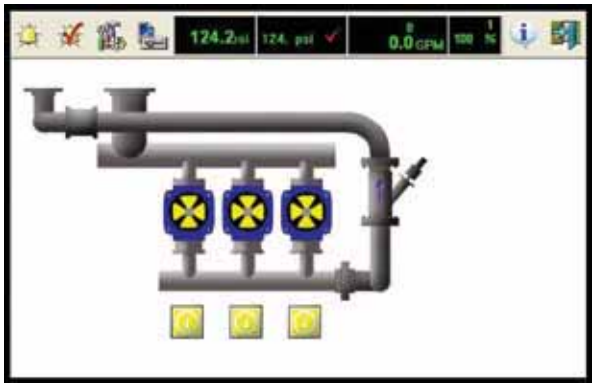
Pump Manager with SmartPump™

Combine a Rain Bird Pump Station and site control software to fully integrate pump station operation with your site control software with real-time communication.

Pump Manager with SmartPump™

- Matches irrigation system operation with the real capacity of the pump station, shortening the water window and decreasing energy consumption
- Alerts the superintendent in real time of irrigation and pump station problems via cell phone text message
- Responds to irrigation system and pump system problems in real-time. Other systems can lose an hour of irrigation time trying to recover from a fault

Pump Manager with SmartPump™ provides for pump station control and full monitoring capabilities from the site control



Pump Station Service

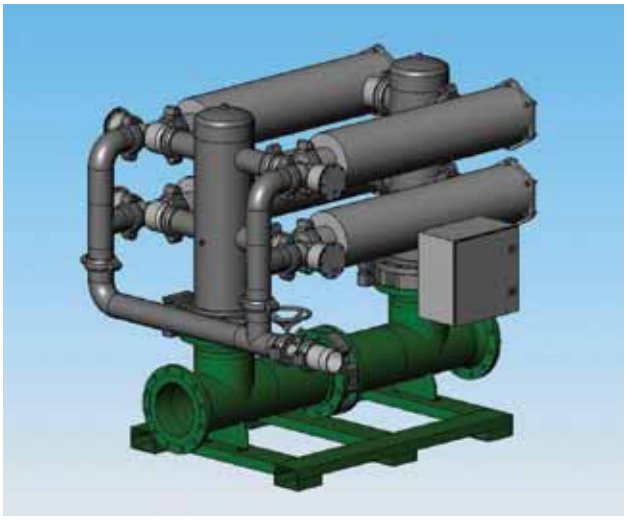
Rain Bird fields a nationwide network of Authorized Service Providers to ensure your pump station remains in operation. Additionally, Rain Bird also offers Phone Support, Preventative Maintenance Plans and Full Service coverage during and after the Customer Satisfaction Policy is completed. Add these services to your purchase to get the full package. Contact your authorized Rain Bird Distributor for details.

Rain Bird Filtration Systems

Need filtration due to lowering water quality or getting ready to switch to reclaim? Rain Bird can fabricate custom filter manifolds and integrate leading back-washing screen filters or suction-scan filters to yield a filter system that is ready to install.

Filter Systems are available for flows up to 10,000 gpm and available with:

- Backwashing screen filters with epoxy coated steel
- Hydraulic or electrically operated suction-scan filters in painted steel or stainless steel construction



Filter Screen Mesh Number and Micron Cross Reference

Filter Screen Conversion

MESH #	MICRONS
35	500
40	400
45	354
50	297
60	250
70	210
80	177
100	149
120	125
140	105
170	88
200	74

LM Series

Single Pattern Lake Management Aerators

- Keep lakes and ponds beautiful by stimulating vertical circulation and adding dissolved oxygen to the water
- Maintain sufficient water quality that prevents undesirable algae build-up, over-growth of weeds, unpleasant odors and depleted fish population
- Effectively work to maintain an ecological balance in lakes or ponds less than 15 feet (5 m) deep

Features

- Available in 1 - 5 hp pumps, 115V, 230V, single and three-phase
- All LM units are factory assembled, delivered ready to install
- Heavy-duty 304 stainless steel arms support a float filled with US Coast Guard-approved closed cell foam, for maximum buoyancy
- Stainless steel housing contains a custom-built electric motor, designed to move high volumes of water and provide years of dependable service
- Unique pumping chamber attachment on the motor housing allows high pumping rates for maximum circulation
- Deflector plate provides an appealing display
- Fine mesh screen prevents the intake of debris to allow the continuous flow of incoming water, and ensures full and symmetrical spray patterns when in operation
- LM11 only - virtually unbreakable stainless steel chopper-style prop
- Specially designed float rings allow the unit to ride level in the water

Specifications

- Unit: Manufactured of corrosion-resistant, 18-8 stainless steel and high-density thermal plastics. Corrosion resistance allows unit to be installed in almost all water source types
- Float: Green exterior shell is made of high-density thermal plastic polyethylene. The interior of the float is closed-cell polyethylene
- Motor: Custom-built electric motor with dynamically balanced rotors. Encased in a stainless steel housing that is completely hidden from view
- Cable: All units are shipped with underwater cable, ordered separately with 50 feet minimum, in 25 foot increments*
- Screen: ¼" nylon fine mesh water intake screen for LM10, LM20 and LM30 models only
- Power Control Center: NEMA 3R rated control center includes ground fault interrupt; magnetic starter; surge arrestor; power disconnect; 24-hour on/off timer
- Safety Testing: Components UL and CSA listed; assembly tested and approved by ETL, ETL-C and CE

** 10 gauge underwater cable ordered separately in 25 foot increments*

Models

LM10: Principal feature is a one-plume geyser-like spray pattern that rises high into the air

LM11: Well proportioned fan-shaped spray is a perfect balance of form and function

LM20: Popular dual spray pattern offers adds aesthetic benefits while effectively maintaining water quality

LM30: Differentiating feature is its multi-dimensional three plume design

Optional Features

- 3-light set systems run on 12-volt power and are available with 65-watt halogen bulbs
- Colored lenses in red, blue, green and yellow
- Intake screen is optional for LM11

LM11

Overview of LM20

LMM Series

Multi-Pattern Lake Management Aerators

- Effectively work to maintain an ecological balance in lakes or ponds less than 15 feet (5 m) deep
- Keep lakes and ponds beautiful by stimulating vertical circulation and adding dissolved oxygen to the water
- Maintain sufficient water quality that prevents undesirable algae build-up, over-growth of weeds, unpleasant odors and depleted fish population

Features

- Available in ½ and ¾ hp, 115V, 230V, single phase pumps
- All LMM units are factory assembled, delivered ready to install
- Manufactured entirely of stainless steel and thermal plastics to provide years of dependable service
- Stainless steel debris screen prevents the intake of foreign objects to allow the continuous flow of incoming water, which ensures aesthetically pleasing spray patterns
- Mini power center is encased in industrial-grade, non-corroding case to assure reliability
- Spray pattern can be changed to LM10, LM20 or LM11
- Diffuser ring allows the spray pattern to be varied in height and diameter (LMM with LM10 and LM11 patterns only)

LMM Shown with LM20 Pattern Selected

Specifications

- Unit: Manufactured of corrosion-resistant, 18-8 stainless steel and high-density thermal plastics. Corrosion resistance allows unit to be installed in almost all water source types
- Float: Black exterior shell is made of high-density thermal plastic polyethylene. The interior of the float is closed-cell polyethylene. Each float consists of specially designed float rings, which call the unit to ride level in the water
- Motor: Custom-built submersible, water-cooled, corrosion-resistant, stainless steel motor. Constructed to run continuously and is available in 60 Hz @ 3450 RPM
- Impellers/Props: Manufactured of polyphenylene oxide, modified. Material is corrosion-resistant to most all types of water, salt solutions and acids
- Cable: All units are shipped with underwater cable, ordered separately with 50 feet minimum, in 25 foot increments*
- Mini Power Center: 115V unit controls are enclosed in a 5" x 5" x 4" industrial-grade, all plastic, non-corroding case. 115V controls consist of 24-hour on/off timer and GFI. 230V units are enclosed in a 11" x 11" x 6" high-impact, corrosion-resistant thermal plastic, NEMA rated type 3S. 230V unit controls consist of 24-hour on/off timer, fuse or circuit breaker protection and GFI
- Screen: Corrosion-resistant 18-8 stainless steel intact screen to efficiently prevent clogging
- Safety Testing: Safety tested and approved as a package by ETL, ETL-C and CE

** 12 gauge underwater cable ordered separately in 25 foot increments*

Models

- Includes 3 interchangeable nozzles to change from LM10, LM11, LM20

LM10: Principal feature is a one-plume geyser-like spray pattern that rises high into the air

LM11: Well proportioned fan-shaped spray, it is a perfect balance of form and function

LM20: Popular dual spray pattern offers adds aesthetic benefits while effectively maintaining water quality

Optional Features

- 2-light set systems run on 12-volt power and are available with 20-watt halogen bulbs. Stainless steel mounting brackets facilitate installation to achieve a variety of illumination effects
- Colored lenses in red, blue, green and yellow

""Having grown up in Tucson, saving water is my passion! I became intrigued with 'Drip-in-Turf' after seeing its success at a corporate building in Del Mar, and a College in San Diego. I wanted to experience it myself, so I retro-fitted my own backyard. My turf has an irregular shape, so overspray was a big issue. Applying water directly to the root zone worked efficiently, my turf looks great, and I'm saving water. I am now a true believer and specify 'Drip-in-Turf' whenever I can!"

***Marian Marum,** ASLA, LEED AP*
Marum Partnership Landscape Architecture
San Diego, California

Water Saving Tips

- Drip products deliver water directly to the root zone. Use dripline for dense plantings where it's cost effective to distribute low-volume water evenly. Use a system of precise emitter devices for sparse plantings where it's cost effective to separately irrigate each plant
- Use drip to eliminate overspray, and you'll eliminate waste. Eliminate unsightly spray stains on buildings and fences. Eliminate soil erosion, water runoff, and potential litigation. Walkways, roads, and vehicles stay dry
- Ask your tax advisor about capital depreciation when calculating your return-on-investment for a drip retrofit. Save water, and save money at the same time

Xerigation®/ Landscape Drip System Overview

Targeted Watering with Xerigation®/Landscape Drip

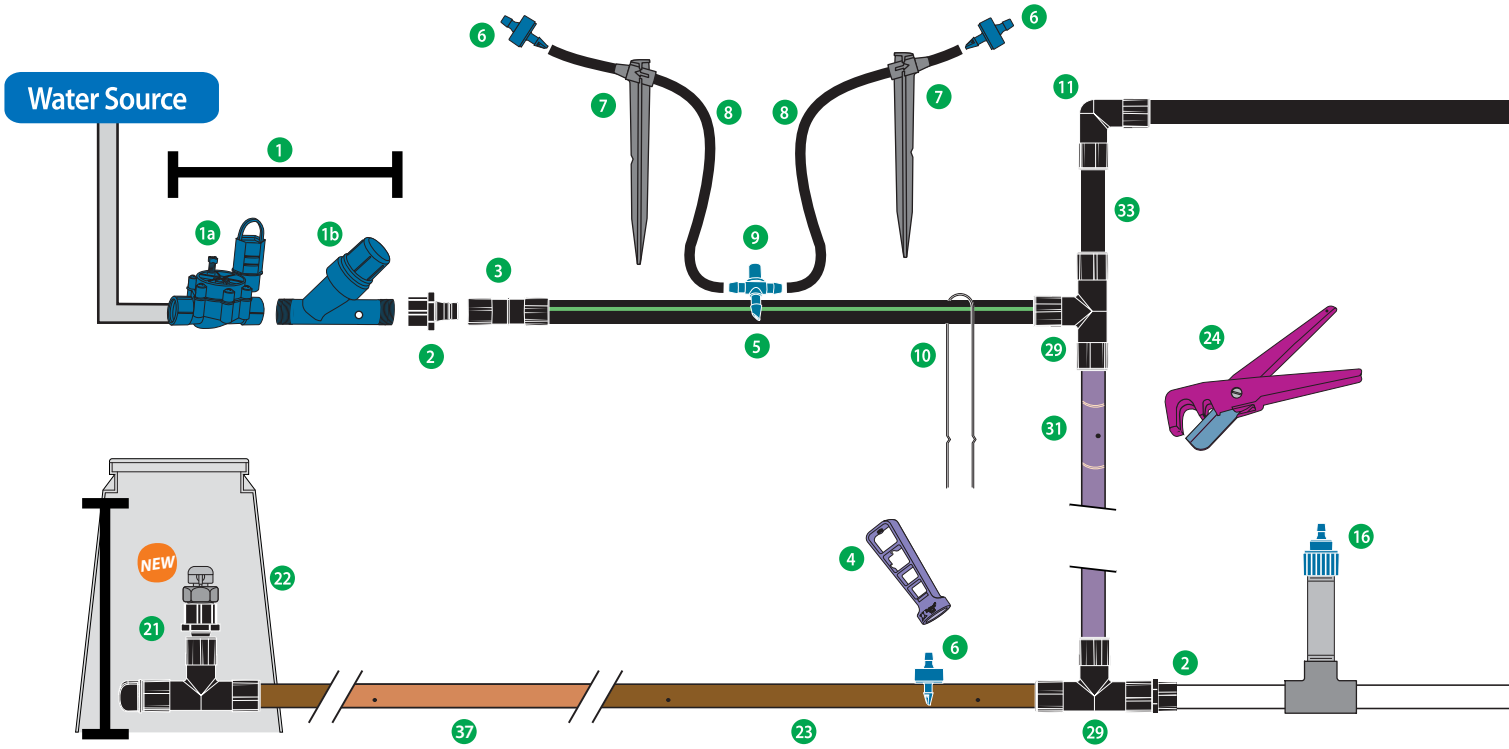
Rain Bird Xerigation/Landscape Drip products are made especially for low-volume irrigation systems. By delivering water at or near the plants' root zones, Rain Bird Xerigation products offer targeted watering with the following advantages:

- Water conservation
- Greater efficiency (target each plant)
- Design flexibility; simple construction and easily expandable
- Healthier plants
- Reduced liability (e.g. no overspray, no runoff)
- Minimization of weed growth
- Cost savings

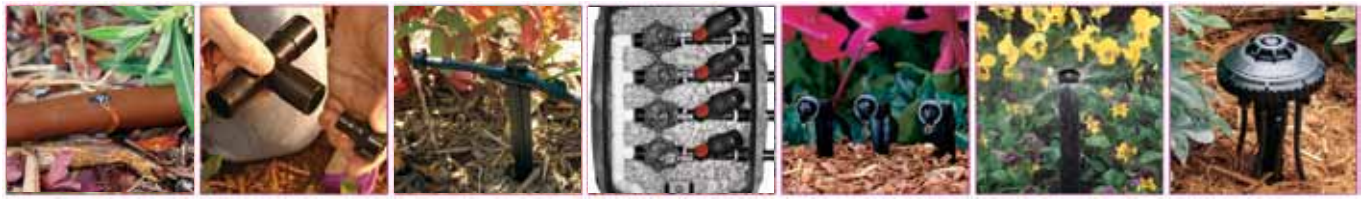
Broadest Product Line in the Industry

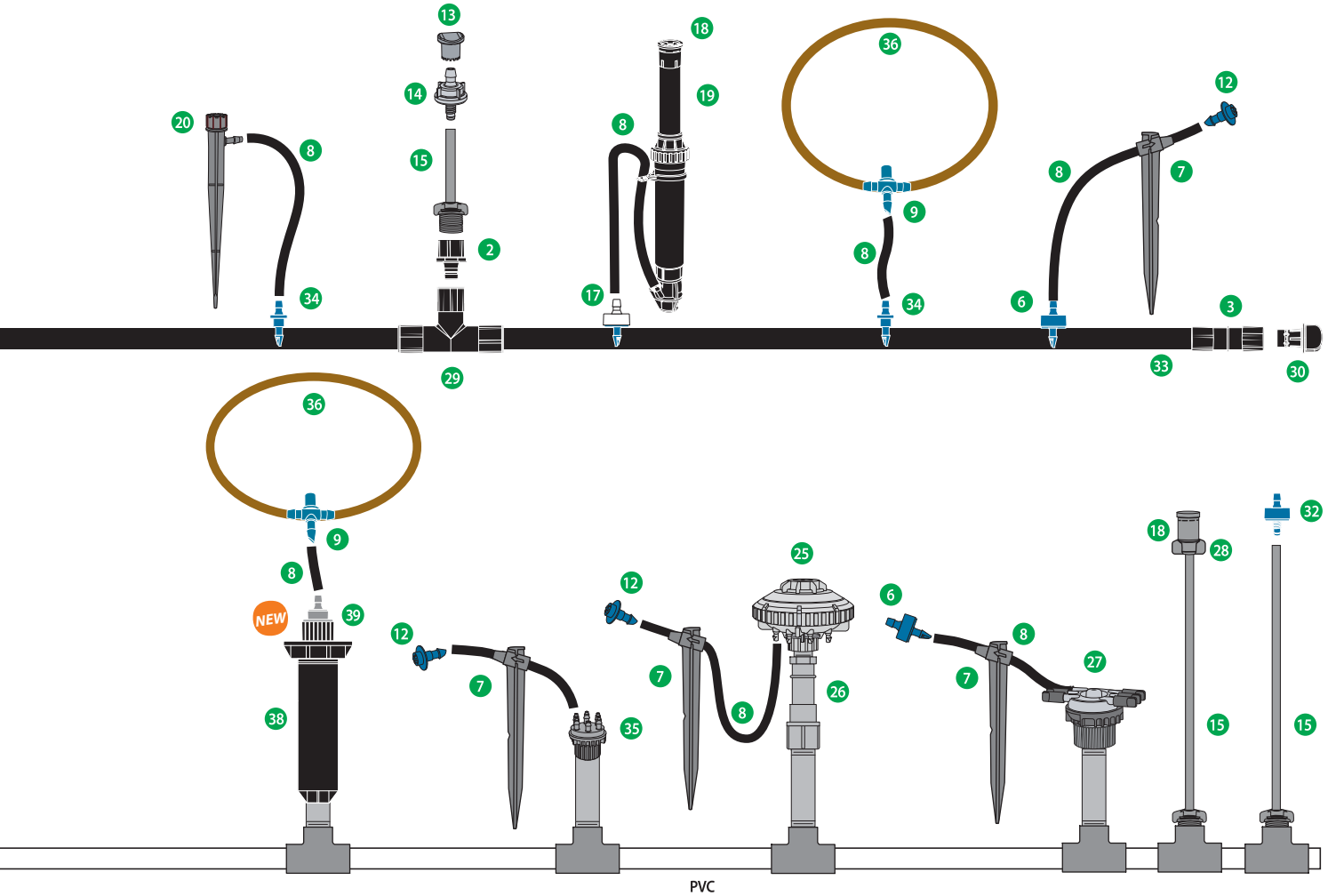
With over 150 products, Rain Bird has the products needed for your application. Systems can be designed to meet any site requirements and offer many exclusive Rain Bird advances including:

- Flexible XF Series dripline with advanced polymers that provide kink resistance and reduced coil memory for easier installation.
- Compact Control Zones with combined pressure regulator and filter to reduce parts, potential leak problems, and allow for fitting more Control Zones in a valve box.
- Precision low volume SQ spray nozzles that offer a square wetting pattern and adjusts to either 2.5' or 4' throw distances.
- Point source emitters that provide pressure compensation with a wide selection of flow rates and three inlet options (Barb, 1032 threaded, and ½" FPT).
- XFS dripline with Copper Shield Technology™ for use in sub-surface applications under turf or shrub and groundcover areas. Copper Shield Technology™ effectively protects the emitter from root intrusion.



1. Control Zone Kit (pg. 197)
1a. Low Flow Valve (pg. 204)
1b. Pressure Regulating Filter (pg. 205)
2. Easy Fit Female Adapter (pg. 192)
3. Easy Fit Coupling (pg. 192)
4. Xeriman Tool (pg. 195)
5. Xeri-Black Stripe Tubing (pg. 189)
6. Xeri-Bug Emitter (pg. 170)
7. ¼" Tubing Stake (pg. 182)
8. XQ ¼" Distribution Tubing (pg. 190)
9. ¼" Barb Tee (pg. 194)
10. Tie-Down Stake (pg. 194)
11. Easy Fit Elbow (pg. 192)
12. Diffuser Bug Cap (pg. 182)
13. PC Emitter Diffuser Cap (pg. 182)
14. PC Module-1032 (pg. 174)
15. PolyFlex Riser Assembly (pg. 183)
16. Xeri-Bug Emitter - ½" FPT (pg. 170)
17. ¼" Self-Piercing Barb Connector (pg. 172)
18. SQ Series Square Nozzle (formerly XPCN) (pg. 176)
19. Xeri-Pop (pg. 178)

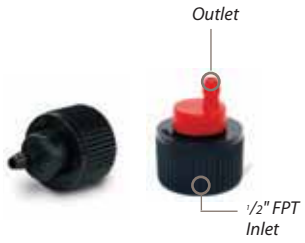




20. Xeri-Bubbler SPYK (pg. 179)
NEW 21. ARV050 Air Relief Valve Kit (pg. 189)
22. SEB-7X Emitter Valve Box (pg. 194)
23. XFD Dripline (pg. 184)
24. Tubing Cutter (pg. 194)
25. Xeri-Bird 8 (pg. 173)
26. Inline Pressure Regulator (pg. 210)
27. 6 Outlet Manifold (pg. 172)
28. SQ Series Nozzle Adapter (pg. 176)
29. Easy Fit Tee (pg. 192)
30. Easy Fit Flush Cap (pg. 192)
31. Purple XF Dripline (pg. 184)
32. Xeri- Bug Emitter - 1032 (pg. 170)
33. XT-700 Distribution Tubing (pg. 189)
34. ¼" Barb Connector (pg. 194)
35. Multi-Outlet Xeri-Bug (pg. 172)
36. ¼" Landscape Dripline (pg. 193)
37. XFS Sub-Surface Dripline with Copper Shield Technology
38. RETRO-1800 Spray-to-Drip Retrofit Kit
NEW 39. XT-025 ½" FPT x Barb Grey Transfer Fitting

XB-05PC, XB-10PC, XB-20PC

XB-05PC-1032, XB-10PC-1032, XB-20PC-1032
1032-threaded models are specifically designed to be used with PolyFlex Risers, 1032 thread adapters (1032-A), or 1800 Xeri-Bubbler Adapter (XBA-1800)



XBT-10, XBT-20

How To Specify

XB - T - 05 - PC - 1032

- **Model** Xeri-Bug
- **Optional** ½" FPT inlet
- **Flow** 05 = 0.5 gph (1.89 l/h), 10 = 1.0 gph (3.79 l/h), 20 = 2.0 gph (7.57 l/h)
- **Pressure Compensating**
- **Optional** 1032 threaded inlet

Xeri-Bug™ Emitters

Point-Source Low-Flow Emitters for Watering the Root Zones of Plants, Trees, and Container Plants

- The only emitters with self-piercing barbs, making them the easiest to install using the Xeriman™ tool
- Widest selection of pressure-compensating emitters, with 3 flow rates and 3 inlet options
- Most compact and unobtrusive emitters

Features

- Flow-rates of 0.5, 1.0 and 2.0 gph (1.89, 3.79 and 7.57 l/h)
  - Pressure-compensating design delivers uniform flow throughout a wide pressure range (15 to 50 psi; 1.0 to 3.5 bar)
- Available with 3 different inlets (1.0 and 2.0 models):
  - Self-piercing barb for quick, one-step insertion into ½" or ¾" drip tubing
  - 10-32 threaded inlet that easily threads into a PolyFlex Riser (see page 183), 1032 Thread adapter (page 183) or 1800 Xeri-Bubbler Adapter (page 183)
  - ½" FPT inlet that easily threads onto a ½" PVC riser (1.0 and 2.0 gph models)
- Outlet barb securely retains ¼" Distribution Tubing (XQ)
- Design makes installation and maintenance easy
  - Self-flushing action minimizes clogging
  - Robust design made from highly inert materials that are resistant to chemicals
  - Durable plastic construction is UV-resistant
- Color-coded to identify flow rate

Operating Range

- Flow: 0.5 to 2.0 gph (1.89 to 7.57 l/h)
- Pressure: 15 to 50 psi (1.0 to 3.5 bar)
- Required filtration: 150 to 200 mesh (75 to 100 micron)

Models: barb inlet x barb outlet

- XB-05PC: Blue, 0.5 gph (1.89 l/h)
- XB-10PC: Black, 1.0 gph (3.79 l/h)
- XB-20PC: Red, 2.0 gph (7.57 l/h)

Models: 10-32 thread inlet x barb outlet

- XB-05PC-1032: Blue, 0.5 gph (1.89 l/h)
- XB-10PC-1032: Black, 1.0 gph (3.79 l/h)
- XB-20PC-1032: Red, 2.0 gph (7.57 l/h)

Models: ½" FPT inlet x barb outlet

- XBT-10: Black, 1.0 gph (3.79 l/h)
- XBT-20: Black, 2.0 gph (7.57 l/h)

Water Saving

Use a 1032-threaded emitter on a polyflex riser cut just above grade for high traffic areas. This configuration will ensure proper emitter alignment and healthy plants, despite the foot traffic!

Xeri-Bug Emitter Specifications and Models

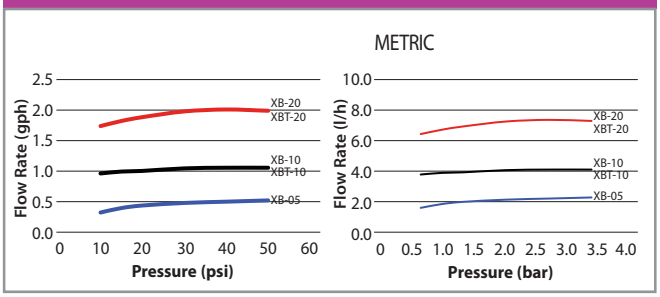
Model	Inlet Type/ Color	Nominal Flow gph	Filtration Required mesh
XB-05PC	Barb/Blue	0.5	200
XB-10PC	Barb/Black	1.0	150
XB-20PC	Barb/Red	2.0	150
XB-05PC1032	10-32T/Blue	0.5	200
XB-10PC1032	10-32T/Black	1.0	150
XB-20PC1032	10-32T/Red	2.0	150
XBT-10PC	½" FPT/Black	1.0	150
XBT-20PC	½" FPT/Black	2.0	150

Xeri-Bug Emitter Specifications and Models METRIC

Model	Inlet Type/ Color	Nominal Flow l/h	Filtration Required micron
XB-05PC	Barb/Blue	1.89	75
XB-10PC	Barb/Black	3.79	100
XB-20PC	Barb/Red	7.57	100
XB-05PC1032	10-32T/Blue	1.89	75
XB-10PC1032	10-32T/Black	3.79	100
XB-20PC1032	10-32T/Red	7.57	100
XBT-10PC	½" FPT/Black	3.79	100
XBT-20PC	½" FPT/Black	7.57	100

Xeri-Bug™ Emitter, TS025-1/4" stake, and DBC025 Diffuser Bug Cap

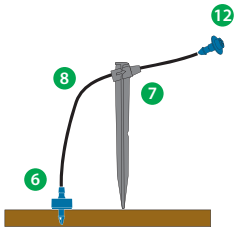
Xeri-Bug Emitter Performance



(For reference numbers below, please see the Xerigation System Overview page 168)

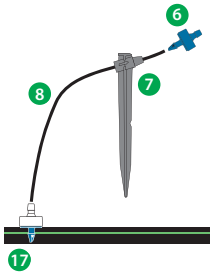
Installation Option 1

Using a Xeriman Tool, insert an emitter directly into ½" drip tubing or between dripline emitters as needed.



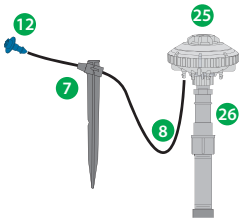
Installation Option 2

For more precise water placement, use ¼" distribution tubing, a ¼" tubing stake, and a bug cap.



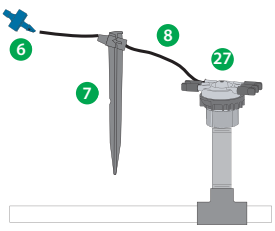
Installation Option 3

For precise water placement, a barbed connector can be punched into distribution tubing. The emitter is then placed at the end of the ¼" distribution tubing. NOTE: should the emitter become dislodged, unregulated flow will occur.



Installation Option 4

The Xeri-Bird 8 provides a centralized location for up to eight emitters. A mix of Xeri-Bug and/ or PC emitters can be used to provide the flow rates needed for different plant materials. Tentacles of ¼" distribution tubing, ¼" tubing stakes, and bug caps allow for precise water placement.



Installation Option 5

The 6 Outlet Manifold provides a centralized water distribution connection for up to six emission devices. Connect the ¼" distribution tubing to one of the outlets. Use a ¼" tubing stake to ensure precise water placement. The emitter is placed on the end of the 1/4" distribution tubing to regulate the water flow. NOTE: should the emitter become dislodged, unregulated flow will occur.

Multi-Outlet Xeri-Bug™

Features

- Pressure compensating design delivers uniform flow throughout a wide pressure range (15 to 50 psi; 1.0 to 3.5 bar)
- Six-outlet emitter supplied with one outlet opened. Simply clip the outlet tips open with snips or clippers for additional operational ports
- Barbed outlets retain ¼" Distribution Tubing (XQ)
- Self-flushing action minimizes clogging
- Durable, UV-resistant color-coded plastic housing

Operating Range

- Flow: 0.5, 1.0 or 2.0 gph (1.89, 3.79 or 7.57 l/h)
- Pressure: 15 to 50 psi (1.0 to 3.5 bar)
- Filtration: 150-mesh (100-microns)

Models: barb inlet x barb outlet

- XB-05-6: Blue, 0.5 gph (1.89 l/h)
- XB-10-6: Black, 1.0 gph (3.79 l/h)
- XB-20-6: Red, 2.0 gph (7.57 l/h)

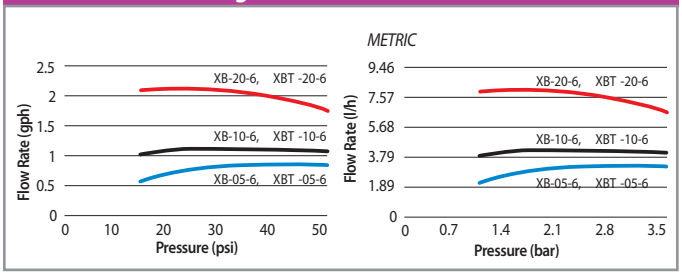
Models: ½" FPT inlet x barb outlet

- XBT-05-6: Blue, 0.5 gph (1.89 l/h)
- XBT-10-6: Black, 1.0 gph (3.79 l/h)
- XBT-20-6: Red, 2.0 gph (7.57 l/h)

XB-05-6, XB-10-6, XB-20-6

XBT-05-6, XBT-10-6, XBT-20-6

Multi-Outlet Xeri-Bug Emitter Performance



6 Outlet Manifold - EMT-6XERI

Features

- ½" FPT inlet threads onto ½" riser and provides a manifold with six free-flowing ¼" barb outlets
- Each barb outlet is sealed with a durable plastic cap
- Plastic caps remove easily, allowing for a drip area that can be customized with up to six different emission devices
- Attach ¼" Distribution Tubing (XQ) onto each outlet for use with: Xeri-Bugs, PC Modules, Xeri-Pops, Xeri-Sprays, and Xeri-Bubblers

Operating Range

- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Model

- EMT-6XERI

EMT-6XERI

¼" Self-Piercing Barb Connector

Features

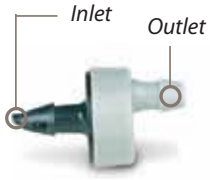
- Used to connect ¼" Distribution Tubing into ½" or ¾" distribution tubing
- Self-piercing barb inlet is easily inserted into ½" or ¾" distribution tubing using a Xeriman™ Tool (XM-Tool)
- Outlet barb accepts ¼" Distribution Tubing (XQ). Gray outlet barb indicates unit has unrestricted flow

Operating Range

- Pressure: 0 to 50 psi (0 to 3.5 bar)

Model

- SPB-025



SPB-025

½" FPT x Barb Grey Transfer Fitting

NEW

Features

- Grey outlet to designate open flow
- ½" FPT inlet can be easily attached to a schedule 80 riser or the top of an 1800 Retro
- Barbed outlet so ¼" distribution tubing or ¼" drip tubing can be easily and securely attached

Operating Range

- Pressure: 0 to 50 psi (0 to 3.5 bar)

Model

- XT025

XT025

Xeri-Bird™ 8 Multi-Outlet Emission Device

The Most Flexible and Feature-Rich Multi-Outlet Device on the Market, Ideal for New Projects and Retrofit Applications

- The only multi-outlet device on the market with 8 configurable ports and 10 flow options for each port for maximum flexibility
- XBD-80 and XBD-81 models each contain a built-in filter. Makes retro-fitting easy when installed with the optional in-stem pressure regulator (PRS-050 page 210)
- Easy to maintain, because body can be easily removed from riser

Features

- Threads onto any ½" riser and delivers water to multiple locations for increased system flexibility
- Each port accepts a Xeri-Bug™ Emitter or PC Module for independent flows from 0.5 to 24 gph (1.89 to 90.84 l/h) or use a self-piercing barb connector (SPB-025) for unrestricted flow
- XBD-80 and XBD-81 models each feature an integral 200 mesh (75 micron) filter which is easily serviceable from the top of the unit
- Eight bottom-mounted, sure-grip barbed outlets securely retain ¼" Distribution Tubing (XQ)
- Unique union base nut allows removal of Xeri-Bird 8 body from riser for easy installation and maintenance
- Emitters must be installed inside the Xeri-Bird to prevent excess back pressure

Operating Range

- Flow: 0 to 24 gph (0 to 90.84 l/h) per outlet
- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Models

- XBD-80: Xeri-Bird 8 unit (includes 7 removable port plugs and filter)
- XBD-81: Xeri-Bird 8 unit (includes eight 1 gph (3.79 l/h) Xeri-Bug emitters factory installed, and filter)

Replacement Parts:

- XBD8SCRN: replacement screen and two o-rings

XBD-80

XBD-80 With 8 Xeri-Bugs and In-Stem Regulator Shown Installed (Order Xeri-Bugs and In-Stem Pressure Regulator Separately)

Helpful Hint: Always install emitters with the pointed end (inlet barb) or threaded end up, as shown

Water Saving

Use a mix of Xeri-Bug and Pressure Compensating Module emitters in a Xeri-Bird 8 to accommodate the watering needs of different plant materials. When mixing emitters, be sure to note the system run-time to prevent over- or under-watering.

PC-05, PC-07, PC-10

PC-12, PC-18, PC-24

PC-05-1032, PC-07-1032, PC-10-1032
1032-threaded models are specifically designed to be used with PolyFlex Risers, 1032 thread adapters (1032-A), or 1800 Xeri-Bubbler Adapter (XBA-1800)

PC Diffuser
PC Diffuser Caps are designed to fit onto outlet of pressure compensating drip modules

Pressure-Compensating Modules

Point-Source Medium-Flow Emitters for Watering Larger Shrubs and Trees

- The only emitters with self-piercing barbs, making them the easiest to install using the Xeriman™ tool
- Widest selection of pressure-compensating emitters, with 6 flow rates and 2 inlet options
- Most compact and unobtrusive emitters

Features

- Flow rates from 5 to 24 gph (18.93 to 90.84 l/h)
- Pressure-compensating design delivers uniform flow throughout a wide pressure range (10 to 50 psi; 0.7 to 3.5 bar)
- Available with 2 different inlets:
  - Self-piercing barbs for quick one-step emitter insertion into ½" or ¾" drip tubing
  - Outlet barb securely retains XQ ¼" Distribution Tubing
  - 10-32 threaded inlet that easily threads into a PolyFlex Riser (see page 183), 1032 Thread adapter (page 183) or 1800 Xeri-Bubbler Adapter (page 183)
- Inlet and outlet barbs securely retain ¼" Distribution Tubing (XQ)
- Robust design - durable plastic construction is UV-resistant and color-coded to identify flow rate

Operating Range*

- Flow: 5 to 24 gph (18.93 to 90.84 l/h)
- Pressure: 10 to 50 psi (0.7 to 3.5 bar)
- Required filtration: 100 mesh (150 micron)

* ***Note:*** *Use a PC Diffuser Cap to eliminate squirting water when using a PC Module staked at the end of 1/4" Distribution Tubing (XQ) or on a PolyFlex Riser (PFR/FRA)*

How To Specify

PC - 05 - 1032

Optional
1032 threaded inlet

Flow
5 gph (18.93 l/h)
7 gph (26.50 l/h)
10 gph (37.85 l/h)
12 gph (45.42 l/h)
18 gph (68.13 l/h)
24 gph (90.84 l/h)

Model
PC: Pressure-Compensating Module

Models: barb inlet x barb outlet

- PC-05: Light brown, 5 gph (18.93 l/h)
- PC-07: Violet, 7 gph (26.50 l/h)
- PC-10: Green, 10 gph (37.85 l/h)
- PC-12: Dark brown, 12 gph (45.42 l/h)
- PC-18: White, 18 gph (68.13 l/h)
- PC-24: Orange, 24 gph (90.84 l/h)

Models: 10-32 thread inlet x barb outlet

- PC-05-1032: Light brown, 5 gph (18.93 l/h)
- PC-07-1032: Violet, 7 gph (26.50 l/h)
- PC-10-1032: Green, 10 gph (37.85 l/h)

Models: PC Diffuser Caps

(see page 182 for complete information)

- PC Diffuser: Black
- PC-DIFF-PPL: Purple, to designate non-potable water

PC Module with PC Diffuser Cap on PolyFlex Riser

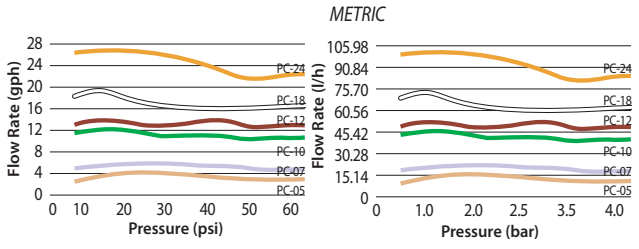
Pressure-Compensating Module Models

Model	Inlet Type/ Outlet/Color	Nominal Flow gph	Filtration Required mesh
PC-05	Barb / light brown	5	100
PC-07	Barb / violet	7	100
PC-10	Barb / green	10	100
PC-12	Barb / dark brown	12	100
PC-18	Barb / white	18	100
PC-24	Barb / orange	24	100
PC-05-1032	10-32T / light brown	5	100
PC-07-1032	10-32T / violet	7	100
PC-10-1032	10-32T / green	10	100

Pressure-Compensating Module Models METRIC

Model	Inlet Type/ Outlet/Color	Nominal Flow l/h	Filtration Required micron
PC-05	Barb / light brown	18.93	150
PC-07	Barb / violet	26.50	150
PC-10	Barb / green	37.85	150
PC-12	Barb / dark brown	45.42	150
PC-18	Barb / white	68.13	150
PC-24	Barb / orange	90.84	150
PC-05-1032	10-32T / light brown	18.93	150
PC-07-1032	10-32T / violet	26.50	150
PC-10-1032	10-32T / green	37.85	150

Pressure-Compensating Modules Performance



SQ Nozzle Installed on PolyFlex Riser with Nozzle Adapter

SQ Nozzles with Screens

One Nozzle…Two Throws

With a simple turn of the nozzle to the next preset stop, the Rain Bird SQ Nozzle adjusts from a 2.5' (0.8 m) throw to a 4' (1.2 m) throw. It's like having two nozzles in one.

Can be used on…

The SQ Nozzle is an ideal solution for a wide range of difficult-to-design areas, thanks to its compatibility with popular irrigation products.

1800® Series Spray Heads | Xeri-Pop Spray Heads | Polyflex Risers | Schedule 80 Risers

SQ Series, Square Pattern Nozzles (formerly known as XPCN)

The Most Precise and Efficient, Low-Volume Spray Solution for Irrigation of Small Areas with Dense Plantings

- Square spray pattern and pressure compensation offer increased efficiency and control, reducing overspray, property damage and liability
- Unique edge to edge capabilities for non-turf applications reduces the number of nozzles needed, which decreases cost and dramatically reduces installation time
- Simplify design and installation with the flexibility of applications: one nozzle throws 2.5' or 4' (0.8 m or 1.2 m) and can be used on a variety of spray heads and risers
- Meets micro irrigation system requirement for less than 26 gph flow rate at 30 psi

Features

- Square spray pattern with edge-to-edge coverage allows you to easily design and install in small spaces
- Pressure compensation design delivers uniform flow over the pressure range
- Available in 3 models—quarter, half and full patterns with matched precipitation rate
  - Virtual no-mist performance from 20 psi to 50 psi
  - Two throw distances in each nozzle. One simple click adjusts to 2.5' or 4' (0.8 m or 1.2 m)
  - Shipped with blue filter screen (0.02" x 0.02") to maintain precise distance of flow, and to prevent clogging
- Compatible with all 1800 Sprays, Xeri-Pops, New PolyFlex Riser Adapter, UNI-Spray and SCH 80 risers

Operating Range

- Pressure: 20 to 50 psi (1.4 to 3.5 bar)
- Flow rates: 6, 12 and 24 gph (22.7, 45.4 and 90.8 l/h)
- Required filtration: 40 mesh

Models

- SQ QTR: SQ Nozzle, quarter pattern
- SQ HLF: SQ Nozzle, half pattern
- SQ FUL: SQ Nozzle, full pattern
- SQ ADP12: SQ Nozzle Adapter with 12" PolyFlex Riser
- SQ ADP24: SQ Nozzle Adapter with 24" PolyFlex Riser
- SQ ADP: SQ PolyFlex Riser Adapter only

* ***Note:*** *A PA-8S Plastic Shrub Adapter (see page 19) is needed when using an SQ Series Nozzle mounted on a SCH 80 riser.*

Water Saving

SQ Series Nozzles provide a precise square wetting pattern and efficient water placement with pressure compensation – resulting in up to 65% water savings. They are great for narrow planting beds, parking lot islands, walkways, parkways, and street medians.

SQ Nozzle Performance

2.5 feet throw @ 6" height above grade

Nozzle	Pressure psi	Throw Radius ft.	Flow gph	Flow gpm	Precip. Rate w/no overlap in/h
Q	20	2.5	6.4	0.11	1.64
	30	2.5	7.4	0.12	1.90
	40	3.0	7.4	0.12	1.32
	50	3.0	7.4	0.12	1.32
H	20	2.5	10.2	0.17	1.31
	30	2.5	12.2	0.20	1.57
	40	3.0	13.7	0.23	1.22
	50	3.0	13.7	0.23	1.22
F	20	2.5	20.0	0.33	1.28
	30	2.5	24.2	0.40	1.55
	40	3.0	27.3	0.46	1.22
	50	3.0	27.3	0.46	1.22

SQ Nozzle Performance — METRIC

0.8 m throw @ 0.15 m height above grade

Nozzle	Pressure bar	Throw Radius m.	Flow lph	Flow lpm	Precip. Rate w/no overlap mm/h
Q	1.4	0.8	24	0.40	42
	2.1	0.8	28	0.47	48
	2.8	0.9	28	0.47	34
	3.4	0.9	28	0.47	34
H	1.4	0.8	39	0.65	33
	2.1	0.8	46	0.77	40
	2.8	0.9	52	0.87	31
	3.4	0.9	52	0.87	31
F	1.4	0.8	76	1.27	33
	2.1	0.8	92	1.53	39
	2.8	0.9	103	1.72	31
	3.4	0.9	103	1.72	31

SQ Nozzle Performance

4 feet throw @ 6" height above grade

Nozzle	Pressure psi	Throw Radius ft.	Flow gph	Flow gpm	Precip. Rate w/no overlap in/h
Q	20	4.0	6.4	0.11	0.64
	30	4.0	7.4	0.12	0.74
	40	4.5	7.4	0.12	0.59
	50	4.5	7.4	0.12	0.59
H	20	4.0	10.2	0.17	0.51
	30	4.0	12.2	0.20	0.61
	40	4.5	13.7	0.23	0.54
	50	4.5	13.7	0.23	0.54
F	20	4.0	20.0	0.33	0.50
	30	4.0	24.2	0.40	0.61
	40	4.5	27.3	0.46	0.54
	50	4.5	27.3	0.46	0.54

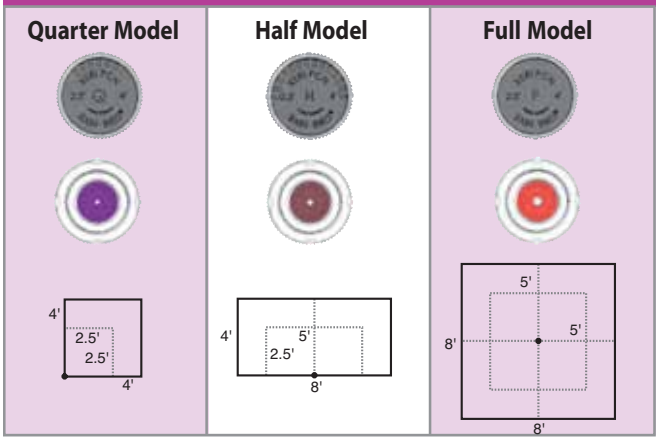
SQ Nozzle Performance — METRIC

1.2 m throw @ 0.15 m height above grade

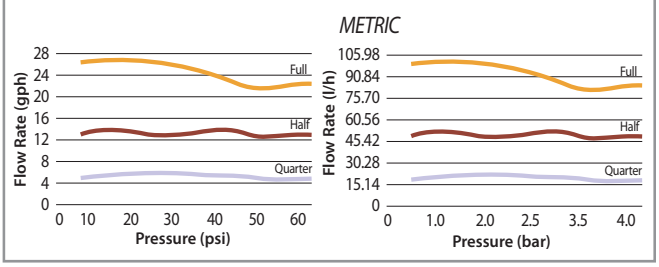
Nozzle	Pressure bar	Throw Radius m.	Flow lph	Flow lpm	Precip. Rate w/no overlap mm/h
Q	1.4	1.2	24	0.40	16
	2.1	1.2	28	0.47	19
	2.8	1.4	28	0.47	15
	3.4	1.4	28	0.47	15
H	1.4	1.2	39	0.65	13
	2.1	1.2	46	0.77	16
	2.8	1.4	52	0.87	14
	3.4	1.4	52	0.87	14
F	1.4	1.2	76	1.27	13
	2.1	1.2	92	1.53	15
	2.8	1.4	103	1.72	14
	3.4	1.4	103	1.72	14

Performance data taken in zero wind conditions

SQ Nozzles



SQ Nozzle Performance



Xeri-Pop™ Micro-Spray

The Xeri-Pop™ Micro-Spray Makes It Easy to Integrate a Durable Micro-Spray into a Low-Volume Irrigation Design

- The only pop-up spray that works in low-volume low-pressure application, and this is the perfect solution to vandal-prone areas
- Xeri-Pops can be installed and located in nearly any location and are ideal for small, odd-shaped planting beds; the 12" version is perfect for annual flower beds
- Xeri-Pops work with Rain Bird 5' and 8' MPR nozzles and SQ Series Nozzles — nozzles with square spray patterns and adjustable throws of 2.5' and 4'

Features

- The Xeri-Pop can operate with 20 to 50 psi base pressure when water is supplied via ¼" Distribution Tubing (XQ)
- The flexibility of ¼" tubing allows the Xeri-Pop to be easily located and relocated as planting conditions dictate
- A durable, plastic snap-collar (on 4" and 6" models) secures the ¼" tubing to the outside of the Xeri-Pop case
- The Xeri-Pop's ¼" Distribution Tubing can readily connect to ½" or ¾" polyethylene tubing or to a multi-outlet manifold (EMT-6XERI). Connections to polyethylene tubing are accomplished with either an SPB-025 ¼" Self-piercing barb Connector or an XBF1CONN ¼" barb Connector
- External parts are UV-resistant and available in 4", 6" and 12" pop up heights

Operating Range

- Pressure: 20 to 50 psi (1.4 to 3.5 bar)
- Filtration: Depends on nozzle used with Xeri-Pop

Models

- XP-400X: 4-inch pop-up
- XP-600X: 6-inch pop-up
- XP-1200X: 12-inch pop-up

Nozzle Options

- SQ Series Nozzles (page 176)
- 5 Series MPR Nozzle (all configurations)
- 5 Series Plastic Bubbler
- 8 Series MPR Nozzle (8H, 8T and 8Q)

12" Xeri-Pop in planting bed

XP-400X

XP-600X

XP-1200X

How To Specify

XP - 600X

Model
Xeri-Pop

Pop-Up Height
400X = 4" Pop-up
600X = 6" Pop-up
1200X = 12" Pop-up

Always install a PCS-010, -020, 030, or -040 Pressure-Compensating Screen whenever a 5B Bubbler Nozzle is installed on a Xeri-Pop.

Xeri-Bubblers™

Ideal for Shrub Plantings, Trees, Containers, and Flower Beds

Features

- Adjust flow and radius by turning outer cap
- Clean by completely unscrewing cap from base unit
- Three convenient installation connections available for design flexibility: 10-32 self-tapping thread, ¼" barb, and 5" spike

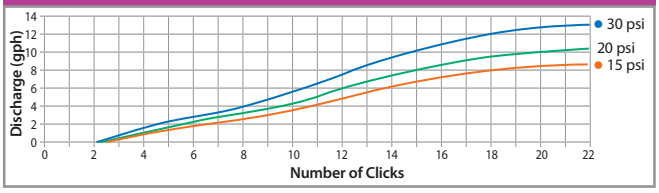
Operating Range

- SXB Series flow: 0 to 13 gph (0 to 49.21 l/h)
- UXB Series flow: 0 to 35 gph (0 to 132.48 l/h)
- Pressure: 15 to 30 psi (1.0 to 2.1 bar)

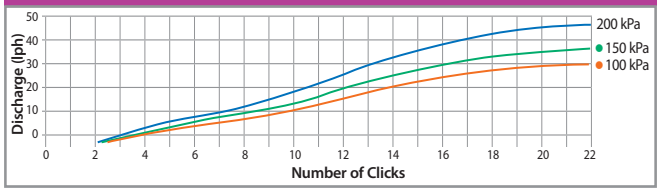
Models

- SXB-180-1032: Half-circle, 5 streams, 10-32 thread
- SXB-180-025: Half-circle, 5 streams, ¼" barb
- SXB-180-SPYK: Half-circle, 5 streams, 5" spike; includes barb x barb coupler
- SXB-360-1032: Full-circle, 8 streams, 10-32 thread
- SXB-360-025: Full-circle, 8 streams, ¼" barb
- SXB-360-SPYK: Full-circle, 8 streams, 5" spike includes barb x barb coupler
- UXB-360-1032: Full-circle, umbrella, 10-32 thread
- UXB-360-025: Full-circle, umbrella, ¼" barb
- UXB-360-SPYK: Full-circle, umbrella, 5" spike includes barb x barb coupler

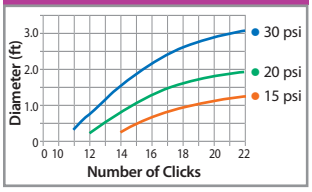
SXB Flow Rate 360° and 180°



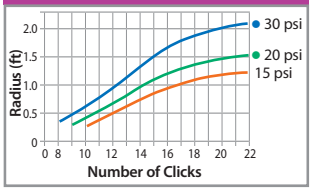
SXB Flow Rate 360° and 180° METRIC



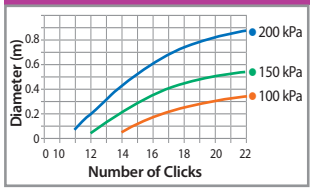
SXB Diameter of Throw 360°



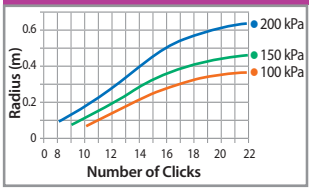
SXB Radius of Throw 180°



SXB Diameter of Throw 360° METRIC



SXB Radius of Throw 180° METRIC



How To Specify

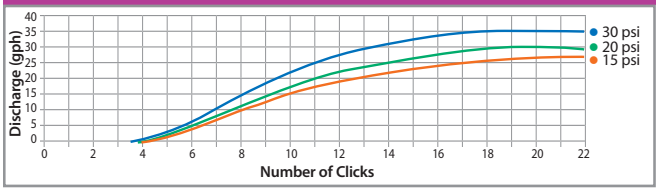
SXB - 180 - 1032

Connection
1032: 10-32 self-tapping thread
025: 1/4" barb
SPYK: 5" spike

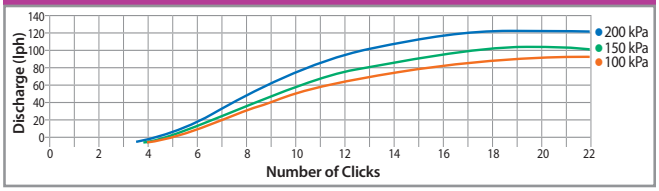
Pattern
180 = Half circle
360 = Full-circle

Model
SXB: Stream Bubbler
UXB: Umbrella Bubbler

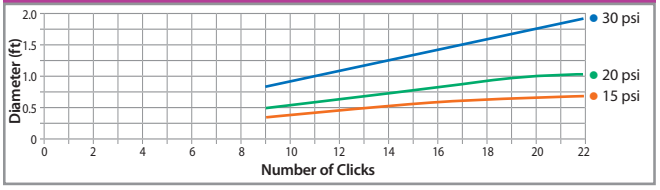
UXB Flow Rate



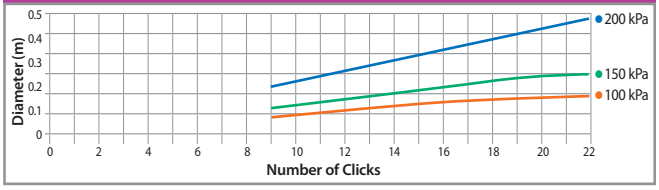
UXB Flow Rate METRIC



UXB Diameter of Throw



UXB Diameter of Throw METRIC



Xeri-Sprays™ and Misters

Ideal for Ground Cover, Mass Plantings, Annual Flower Beds, and Containers

Features

- Adjust flow/radius by turning integral ball valve
- Uniform emission pattern provides excellent distribution
- 10-32 self-tapping threads fit into ½" x 10-32 adapter (10-32A); 1800 Xeri-Bubbler™ adapter (XBA-1800); and PolyFlex Riser (PFR-12)

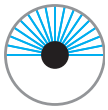
Operating Range

- Flow: 0 to 31 gph (0 to 117.34 l/h)
- Pressure: 10 to 30 psi (0.75 to 2.1 bar)
- Radius: 0 to 13.4 feet (0 to 4.1 m) full-circle; 0 to 10.6 feet (0 to 3.2 m) quarter- and half-circle

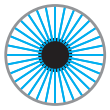
Models

- XS-090: Quarter-circle, spray
- XS-180: Half-circle, spray
- XS-360: Full-circle, stream spray
- X360 ADJMST: Full-circle, mist

XS-090



XS-180



XS-360

XS-090

XS-180

XS-360

360 ADJMST

Xeri-Spray™ 360° True Spray

Ideal for Mass Plantings, Ground Cover, Annual Flower Beds and Containers

Features

- True micro-spray with full-circle fan spray pattern
- Adjust flow/radius by turning outer cap
- Three convenient installation connections for design flexibility: 10-32 self-tapping thread, ¼" barb and 5" spike
- Easily cleaned by completely unscrewing cap from base unit

Operating Range

- Flow: 0 to 24.5 gph (0 to 92.7 l/h)
- Pressure: 15 to 30 psi (1.0 to 2.1 bar)
- Radius: 0 to 6.7 feet (0 to 2.0 m)

Models

- XS-360TS-1032: 10-32 threads
- XS-360TS-025: ¼" barb
- XS-360TS-SPYK: 5" spike; includes barb x barb coupler

XS-360TS

XS-360TS-025

XS-360TS-1032

XS-360TS-SPYK

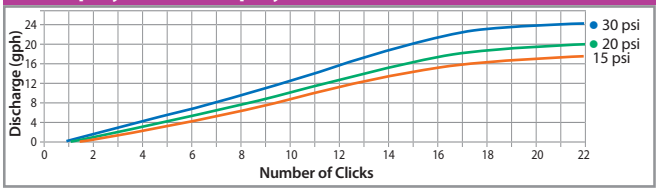
Xeri-Sprays™ and Misters Performance

Pressure psi	Flow gph	XS-90 Radius of Throw ft.	XS-180 Radius of Throw ft.	XS-360 Radius of Throw ft.	360 Mister Radius of Throw ft.
10	0-16.7	0-6.4	0-6.7	0-9.2	0-1.5
15	0-21.0	0-8.1	0-8.1	0-11.3	0-1.3
20	0-24.5	0-9.4	0-9.5	0-12.9	0-1.5
25	0-28.0	0-9.8	0-10.1	0-13.2	0-1.4
30	0-31.0	0-10.3	0-10.6	0-13.4	0-1.3

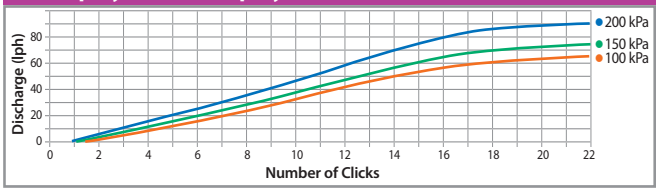
Xeri-Sprays™ and Misters Performance METRIC

Pressure bar	Flow l/h	XS-90 Radius of Throw m.	XS-180 Radius of Throw m.	XS-360 Radius of Throw m.	360 Mister Radius of Throw m.
0.7	0-63.21	0-2.0	0-2.0	0-2.8	0-0.46
1.0	0-79.49	0-2.5	0-2.5	0-3.4	0-0.40
1.4	0-92.73	0-2.9	0-2.9	0-3.9	0-0.44
1.7	0-105.98	0-3.0	0-3.1	0-4.0	0-0.43
2.1	0-117.34	0-3.1	0-3.2	0-4.1	0-0.40

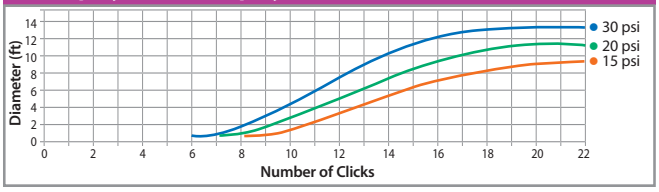
Xeri-Spray 360° True Spray Flow Rate



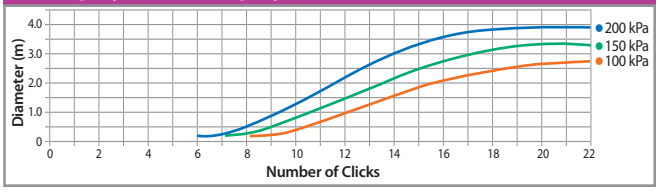
Xeri-Spray 360° True Spray Flow Rate METRIC



Xeri-Spray 360° True Spray Diameter of Throw



Xeri-Spray 360° True Spray Diameter of Throw METRIC



Diffuser Bug Cap

Features

- Prevents bugs and other debris from clogging ¼" Distribution Tubing
- Barbed inlet fits into ¼" Distribution Tubing (XQ)
- Flanged shield diffuses water to minimize soil erosion at emission point

Operating Range

- Pressure: 0 to 50 psi (0 to 3.5 bar)

Models

- DBC-025: Black

DBC-025

PC Diffuser Cap

Features

- Cap snaps securely onto the PC Module and XB emitter outlet to create bubbler effect and prevent wash out
- Designed for quick and easy installation
- Made of UV-resistant polyethylene material

Models

- PC Diffuser: Black
- PC-DIFF-PPL: Purple to designate non-potable water

PC Diffuser

PC-DIFF-PPL

Suggested Applications

A. 1/4" tubing, 1/4" stake, PC Module, Diffuser Bug Cap. Used for runs greater than 5 feet from main line

B. 1/4" tubing, 1/4" stake, Diffuser Bug Cap. Used for runs up to 5 feet from main line

(Drip emitter not shown – installed directly into lateral line)

Universal ¼" Tubing Stake

Features

- Holds ¼" Distribution Tubing and emitter or Diffuser Bug Cap firmly in place at the root zone of the plant
- Designed to securely hold Rain Bird and other manufacturers' ¼" Distribution Tubing — 0.16" to 0.18" I.D. and 0.22" to 0.25" O.D.
- Rigid stake featuring a flat enlarged head designed to withstand hammering into tough soil

Note: If emitter is installed at inlet to distribution tubing, use a Diffuser Bug Cap (DBC-025) at outlet of tubing to prevent bugs from clogging tubing and to help hold tubing in place

Model

- TS-025

TS-025

¼" Tubing Stake with Cap

Features

- Locking cap holds tubing in place
- Used for holding ¼" Distribution Tubing (XQ) in place at the plant root zone
- Accepts ¼" Distribution Tubing from 0.19 O.D. to 0.256 O.D.
- Bug cap included
- Constructed of UV-resistant plastic material

Model

- TS-025WCAP

TS-025WCAP

12" PolyFlex Riser

Features

- 12" riser that is used with any 10-32 threaded emission device to deliver water directly to a plant. These include Xeri-Bugs, PC Modules, Xeri-Bubblers and Xeri-Sprays
- Extremely rugged and reliable – constructed of thick-walled, high-density polyethylene
- Can be used with a riser-stake (RS-025T)

Operating Range

- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Model

- PFR-12

PFR-12

PolyFlex Riser and Adapter Assemblies

Features

- 12" or 24" riser that is pre-assembled with a ½" male threaded base that simplifies installation
- Use with any 10-32 threaded emission device to deliver water directly to a plant. These include Xeri-Bugs, PC Modules, Xeri-Bubblers and Xeri-Sprays
- Newly-designed adapter with larger tabs makes installation quicker and easier; can be used on PVC laterals, or with any ½" female threaded adapter
- Adapter made of heavy-duty Marlex®, which requires no Teflon® tape, saving time during installation
- Extremely rugged and reliable PolyFlex Riser constructed of thick-walled, high-density polyethylene

Operating Range

- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Models

- PFR-FRA: 12" (30.5 cm) PolyFlex Riser and adapter
- PFR-FRA24: 24" (61.0 cm) PolyFlex Riser and adapter

PFR-FRA

PolyFlex Riser and Stake Assembly

Features

- 12" riser that is pre-assembled with a 7" (30.5 cm) stake
- Use with any 10-32 threaded emission device to deliver water directly to a plant. These include Xeri-Bugs, PC Modules, Xeri-Bubblers and Xeri-Sprays
- Saves time and money when installing a low-volume irrigation system
- Extremely rugged and reliable PolyFlex Riser constructed of thick-walled, high-density polyethylene

Operating Range

- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Model

- PFR-RS: 12" (30.5 cm) PolyFlex Riser and 7" (30.5 cm) stake

PFR-RS

Riser Stake-Threaded

Features

- Rugged 5" (12.7 cm) stake for use with PolyFlex Risers
- Constructed of UV-resistant plastic material
- Barbed side inlet accepts ¼" Distribution Tubing (XQ)
- 10-32 threaded outlet permits easy threading of 12" (30.5 cm) PolyFlex Riser (PFR-12)

Operating Range

- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Model

- RS-025T

RS-025T

10-32 Thread Adapter

Features

- Inlet: ½" FPT that screws onto any ½" MPT riser
- Outlet: 10-32 threads that accept Xeri-Bugs, PC Modules, Xeri-Bubblers and Xeri-Sprays with 10-32 threads
- Constructed of UV-resistant plastic material

Operating Range

- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Model

- 10-32A

10-32A

1800 Xeri-Bubbler Adapter

Features

- Inlet: ½" female threads that screw onto a Rain Bird 1800 series or UNI-Spray or shrub adapter
- Outlet: 10-32 threads that accept any emission device with 10-32 threads including Xeri-Bugs, PC Modules, Xeri-Bubblers and Xeri-Sprays
- Sits at grade when installed on a spray head for a robust installation

Operating Range

- Pressure: 15 to 50 psi (1.0 to 3.5 bar)

Model

- XBA-1800

XBA-1800

XFD Dripline

Available in Purple for Non-Potable water

XFD Dripline Offers Improved Flexibility for Kink Resistance and Easy Installation

XFD On-surface Dripline

The Most Flexible, Pressure-Compensating Inline Emitter Tubing Available to Irrigate Ground Cover, Dense Plantings, Hedge Rows and More

- Extra flexible tubing for fast, easy installation
- Dual-layered tubing (brown over black or purple over black) provides unmatched resistance to chemicals, UV damage and algae growth
- Patent pending emitter design provides for increased reliability
- Longer lateral runs than competition

Features

- Unique material offers significantly greater flexibility, allowing tighter turns with fewer elbows for easier installation
- Choice of flow rates, spacing and coil lengths provides design flexibility for a variety of non-turfgrass applications
- Accepts Rain Bird Easy Fit Compression Fittings, XF Dripline Insert Fittings and 17mm insert fittings
- Use an Air/Vaccum Relief Valve Kit when installation is below soil

Operating Range

- Pressure: 8.5 to 60 psi (0.58 to 4.1 bar)
- Flow rates: 0.6 gph and 0.9 gph (2.3 l/h and 3.5 l/h)
- Temperature: Water up to 100° F (37.8C); Ambient up to 125° F (51.7C)
- Required filtration: 120 mesh

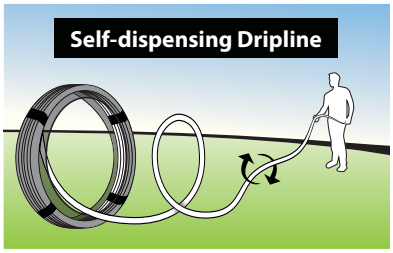
Specifications

- Outside diameter: 0.634" (16.1 mm)
- Inside diameter: 0.536" (13.6 mm)
- Wall thickness: 0.049" (1.2 mm)
- Spacing: 12", 18" or 24"
- Lengths: 100', 250', and 500' coils
- Use with XF Dripline Insert Fittings (see page 186), Rain Bird Easy Fit Compression Fittings (see page 192) and 17mm Insert Fittings

How To Specify

XFD - P - 09 - 12 - 100

- **Model**: XFD Dripline
- **Optional**: Purple
- **Flow Rate**: 06 = .61 gph (2.3 l/h); 09 = .92 gph (3.5 l/h)
- **Emitter Spacing**: 12 = 12" (30.5 cm); 18 = 18" (45.7 cm); 24 = 24" (61.0 cm)
- **Length of Tubing**: 100 = 100' (30.5 m); 250 = 250' (76.2 m); 500 = 500' (152.4 m)



Self-Dispensing Coil Reduces Layout Time and Improves Ease of Installation

XFD Dripline

Water Saving

XFD Dripline offers up to 60% water savings due to zero wind loss. It can be installed at grade, just below grade, or under mulch.

XFD On-surface Dripline Models

Model	Flow gph	Spacing in.	Coil Length ft.
XFD-06-12-100	0.60	12	100
XFD-06-12-250	0.60	12	250
XFD-06-12-500	0.60	12	500
XFD-06-18-100	0.60	18	100
XFD-06-18-250	0.60	18	250
XFD-06-18-500	0.60	18	500
XFD-06-24-500	0.60	24	500
XFD-09-12-100	0.90	12	100
XFD-09-12-250	0.90	12	250
XFD-09-12-500	0.90	12	500
XFD-09-18-100	0.90	18	100
XFD-09-18-250	0.90	18	250
XFD-09-18-500	0.90	18	500
XFD-09-24-500	0.90	24	500
XFDP-06-12-500 (Purple)	0.60	12	500
XFDP-06-18-500 (Purple)	0.60	18	500
XFDP-09-12-500 (Purple)	0.90	12	500
XFDP-09-18-500 (Purple)	0.90	18	500

XFD On-surface Dripline Models — METRIC

Model	Flow l/h	Spacing cm	Coil Length m
XFD-06-12-100	2.30	30.5	30.5
XFD-06-12-250	2.30	30.5	76.5
XFD-06-12-500	2.30	30.5	152.9
XFD-06-18-100	2.30	45.7	30.5
XFD-06-18-250	2.30	45.7	76.5
XFD-06-18-500	2.30	45.7	152.9
XFD-06-24-500	2.30	61.0	152.9
XFD-09-12-100	3.50	30.5	30.5
XFD-09-12-250	3.50	30.5	76.5
XFD-09-12-500	3.50	30.5	152.9
XFD-09-18-100	3.50	45.7	30.5
XFD-09-18-250	3.50	45.7	76.5
XFD-09-18-500	3.50	45.7	152.9
XFD-09-24-500	3.50	61.0	152.9
XFDP-06-12-500 (Purple)	2.30	30.5	152.9
XFDP-06-18-500 (Purple)	2.30	45.7	152.9
XFDP-09-12-500 (Purple)	3.50	30.5	152.9
XFDP-09-18-500 (Purple)	3.50	45.7	152.9

XFD On-surface Dripline Maximum Lateral Lengths (Feet)

Inlet Pressure psi	Maximum Lateral Length (feet) 12" Spacing Nominal Flow (gph): 0.6	0.9	18" Spacing Nominal Flow (gph): 0.6	0.9	24" Spacing Nominal Flow (gph): 0.6	0.9
15	273	155	314	250	424	322
20	318	169	353	294	508	368
30	360	230	413	350	586	414
40	395	255	465	402	652	474
50	417	285	528	420	720	488
60	460	290	596	455	780	514

XFD On-surface Dripline Maximum Lateral Lengths (Meters) — METRIC

Inlet Pressure bar	Maximum Lateral Length (Meters) 30.5 cm Nominal Flow (l/h): 2.3	3.41	45.7 cm Nominal Flow (l/h): 2.3	3.41	61.0 cm Nominal Flow (l/h): 2.3	3.41
1.0	83.2	47.2	95.7	76.2	129.2	98.2
1.4	96.9	51.5	107.6	89.6	154.8	112.2
2.1	109.7	70.1	125.9	106.7	178.6	123.2
2.8	120.4	77.7	141.7	122.5	198.7	144.5
3.5	127.1	86.9	160.9	128.0	219.5	148.7
4.1	140.2	88.4	181.7	138.7	237.7	156.7

XFD On-surface Dripline Flow(per 100 Feet of Tubing)

Emitter Spacing	0.6 gph Emitter		0.9 gph Emitter	
12"	61.0 gph	1.02 gpm	92.0 gph	1.53 gpm
18"	41.0 gph	0.68 gpm	61.0 gph	1.02 gpm
24"	31.0 gph	0.51 gpm	46.0 gph	0.77 gpm

XFD On-surface Dripline Flow(per 100 Meters of Tubing)

Emitter Spacing	2.3 l/h Emitter		3.41 l/h Emitter	
0.30 meter	757.9 l/h	12.6 l/m	1136.7 l/h	18.9 l/m
0.46 meter	502.2 l/h	8.4 l/m	741.3 l/h	12.4 l/m
0.61 meter	378.7 l/h	6.3 l/m	559.0 l/h	9.3 l/m

XFS Sub-Surface Dripline

Irrigation Association Show Winner

XFS Dripline offers increased flexibility for easy installation

XFS Sub-Surface Dripline with Copper Shield™ Technology

How To Specify

XFS - P - 09 - 12 - 100

- **Optional** P = Purple over black
- **Model** XFS Sub-Surface Dripline
- **Flow Rate** 06 = .61 gph (2.3 l/h) 09 = .92 gph (3.5 l/h)
- **Emitter Spacing** 12 = 12" (30.5 cm) 18 = 18" (45.7 cm) 24 = 24" (61.0 cm)
- **Length of Tubing** 100 = 100' (30.5 m) 500 = 500' (152.4 m)

XFS Sub-Surface Dripline with Copper Shield™ Technology

Sub-Surface Drip Irrigation (SDI) perfect for small, narrow and tight planting areas, switchbacks, as well as all turf landscapes

- Rain Bird® XFS Sub-Surface Dripline with Copper Shield™ Technology is the latest innovation in the Rain Bird Xerigation® Family. Rain Bird's patent-pending Copper Shield Technology protects the emitter from root intrusion, creating a long-lasting, low maintenance sub-surface drip irrigation system for use under turf grass or shrub and groundcover areas
- A proprietary tubing material makes the XFS Sub-Surface Dripline with Copper Shield the most flexible tubing in the industry, and the easiest sub-surface dripline to design with and install
- It accepts Rain Bird Easy Fit Compression Fittings, XF Dripline Barbed Insert Fittings and other 17 mm barbed insert fittings

Features

Simple

- Rain Bird's low-profile emitter design reduces in-line pressure loss, allowing longer lateral runs, simplifying design and reducing installation time
- Variety of emitter flow rates, emitter spacing and coil lengths provide design flexibility for either sub-surface turf or sub-surface shrub and groundcover applications

Reliable

- XFS Sub-Surface Dripline emitters are protected from root intrusion by Rain Bird's patent-pending Copper Shield™ Technology resulting in a system that does not require maintenance or replacement of chemicals to prevent root intrusion
- The pressure-compensating emitter design provides a consistent flow over the entire lateral length ensuring higher uniformity for increased reliability in the pressure range of 8.5 to 60 psi

Durable

- Dual-layered tubing (copper over black) provides unmatched resistance to chemicals, algae growth and UV damage
- Grit Tolerant: Rain Bird's proprietary emitter design resists clogging by use of an extra-wide flow path combined with a self-flushing action

Operating Range

- Pressure: 8.5 to 60 psi (0.58 to 4.14 bar)
- Flow rates: 0.6 and 0.9 gph (2.3 l/hr and 3.5 l/hr)
- Temperature:
  - Water: Up to 100°F (37.8° C)
  - Ambient: Up to 125°F (51.7° C)
- Required Filtration: 120 mesh

Specifications

- Dimensions: OD: 0.634" (16mm); ID: 0.536" (13.6mm); Thickness: 0.049" (1.2mm)
- 12", 18", 24" (30.5 cm, 45.7 cm, 61.0 cm) spacing
- Available in 100' and 500' (30.5 m and 152.4 m) coils
- Coil Color: Copper

XFS Sub-Surface Dripline Models

Model	Flow gph	Spacing in.	Coil Length ft.
XFS-06-12-100	0.60	12	100
XFS-06-12-500	0.60	12	500
XFS-06-18-100	0.60	18	100
XFS-06-18-500	0.60	18	500
XFS-06-24-500	0.60	24	500
XFS-09-12-100	0.90	12	100
XFS-09-12-500	0.90	12	500
XFS-09-18-100	0.90	18	100
XFS-09-18-500	0.90	18	500
XFS-09-24-500	0.90	24	500
XFSP-06-12-500 (Purple)	0.60	12	500
XFSP-06-18-500 (Purple)	0.60	18	500
XFSP-06-24-500 (Purple)	0.60	24	500
XFSP-09-12-500 (Purple)	0.90	12	500
XFSP-09-18-500 (Purple)	0.90	18	500
XFSP-09-24-500 (Purple)	0.90	24	500

XFS Sub-Surface Dripline Models — METRIC

Model	Flow l/h	Spacing cm	Coil Length m
XFS-06-12-100	2.30	30.5	30.5
XFS-06-12-500	2.30	30.5	152.9
XFS-06-18-100	2.30	45.7	30.5
XFS-06-18-500	2.30	45.7	152.9
XFS-06-24-500	2.30	61.0	152.9
XFS-09-12-100	3.50	30.5	30.5
XFS-09-12-500	3.50	30.5	152.9
XFS-09-18-100	3.50	45.7	30.5
XFS-09-18-500	3.50	45.7	152.9
XFS-09-24-500	3.50	61.0	152.9
XFSP-06-12-500 (Purple)	2.30	30.5	152.9
XFSP-06-18-500 (Purple)	2.30	45.7	152.9
XFSP-06-24-500 (Purple)	2.30	61.0	152.9
XFSP-09-12-500 (Purple)	3.50	30.5	152.9
XFSP-09-18-500 (Purple)	3.50	45.7	152.9
XFSP-09-24-500 (Purple)	3.50	61.0	152.9

XFS Sub-Surface Dripline Maximum Lateral Lengths (Feet)

Inlet Pressure psi	Maximum Lateral Length (feet) 12" Spacing Nominal Flow (gph): 0.6	0.9	18" Spacing Nominal Flow (gph): 0.6	0.9	24" Spacing Nominal Flow (gph): 0.6	0.9
15	273	155	314	250	424	322
20	318	169	353	294	508	368
30	360	230	413	350	586	414
40	395	255	465	402	652	474
50	417	285	528	420	720	488
60	460	290	596	455	780	514

XFS Sub-Surface Dripline Maximum Lateral Lengths (Meters) — METRIC

Inlet Pressure bar	Maximum Lateral Length (Meters) 30.5 cm Nominal Flow (l/h): 2.3	3.41	45.7 cm Nominal Flow (l/h): 2.3	3.41	61.0 cm Nominal Flow (l/h): 2.3	3.41
1.0	83.2	47.2	95.7	76.2	129.2	98.2
1.4	96.9	51.5	107.6	89.6	154.8	112.2
2.1	109.7	70.1	125.9	106.7	178.6	123.2
2.8	120.4	77.7	141.7	122.5	198.7	144.5
3.5	127.1	86.9	160.9	128.0	219.5	148.7
4.1	140.2	88.4	181.7	138.7	237.7	156.7

XFS-Sub-surface Dripline Flow (per 100 Feet of Tubing)

Emitter Spacing	0.6 gph Emitter		0.9 gph Emitter	
12"	61.0 gph	1.02 gpm	92.0 gph	1.53 gpm
18"	41.0 gph	0.68 gpm	61.0 gph	1.02 gpm
24"	31.0 gph	0.51 gpm	46.0 gph	0.77 gpm

XFS-Sub-surface Dripline Flow (per 100 Meters of Tubing)

Emitter Spacing	2.3 l/h Emitter		3.41 l/h Emitter	
0.30 meter	757.9 l/h	12.6 l/m	1136.7 l/h	18.9 l/m
0.46 meter	502.2 l/h	8.4 l/m	741.3 l/h	12.4 l/m
0.61 meter	378.7 l/h	6.3 l/m	559.0 l/h	9.3 l/m

XF Series Blank Tubing

Features:

- Greater flexibility is easier to install and saves time
- Brown color matches landscape and blends with mulch. Matches XF Series Dripline inline emitter tubing
- Compatible with XF Series Dripline (0.536" I.D. x 0.634" O.D.)
- Accepts Rain Bird Easy Fit Compression Fittings, XF Dripline Insert Fittings, and 17mm insert fittings
- Not compatible with 16 mm fittings

Specifications

- Outside Diameter: 0.634" (16.1mm)
- Inside Diameter: 0.536" (13.6mm)
- Wall Thickness: 0.049" (1.2mm)

XFD100

Models:

- XFD100: 100 ft. coil (30m) | • XFD500: 500 ft. coil (152m)

Tubing Friction Loss Characteristics

O.D. .634" I.D. .536"			*O.D. 16.1mm I.D. 13.6mm METRIC*		
Flow gpm	**Velocity fps**	**Loss psi**	**Flow l/h**	**Velocity m/s**	**Loss bar**
0.50	0.70	0.27	113.56	0.21	0.06
1.00	1.40	0.97	227.12	0.43	0.22
1.50	2.10	2.06	340.69	0.64	0.46
2.00	2.80	3.50	454.25	0.85	0.79
2.50	3.50	5.29	567.81	1.07	1.20
3.00	4.20	7.42	681.37	1.28	1.68
3.50	4.90	9.87	794.94	1.49	2.23
4.00	5.60	2.64	908.50	1.71	2.86
4.50	6.30	15.72	1022.06	1.92	3.56
5.00	7.00	19.11	1135.62	2.13	4.32
5.50	7.70	22.80	1249.19	2.35	5.16
6.00	8.40	26.78	1362.75	2.56	6.06

Psi Loss Per 100 Feet of Pipe (psi/100ft.) *bar Loss per 100 Meters of Pipe (bar/100m)*

Note: *Use of tubing at flows shown in dark shaded area is not recommended, as velocities exceed 5 ft/sec (1.5 m/s)*

XF Dripline Insert Fittings

Features

- Complete line of 17mm insert fittings to simplify installation of XF Series Dripline
- High quality barbs grab tubing for a secure fit
- Unique barb design to reduce insertion force and still retain a secure fit
- Non-obtrusive colored fittings to compliment natural earth tones

Operating Range

- Pressure: 0 to 50 psi (1.0 to 3.5 bar) (if using 60 psi (4.1 bar) clamps will be required)

Models

- XFF-COUP: 17mm Barb x Barb Coupling
- XFF-ELBOW: 17mm Barb x Barb Elbow
- XFF-MA-050: 17mm Barb x 1/2" MPT Male Adapter
- XFF-TEE: 17mm Barb x Barb x Barb Tee
- XFF-TMA-050: 17mm Barb x 1/2" MPT x 17mm Barb Tee Male Adapter
- XFF-MA-075: 17mm Barb x 3/4" MPT Male Adapter
- XFD-CROSS: Barb cross 17mm x 17mm x 17mm x 17mm
- XFD-TFA-075: Barb tee female adapter 17mm x 3/4"FPT x 17mm
- LD16STK: 7 ¾" barbed tubing plastic stake
- FITINS-TOOL: XF Fitting Insertion Tool. Compatible with XFF-COUP, XFF-ELBOW, & XFF-TEE

XFD-CROSS

XFF-TFA-075

XFD-FA-075

LD16STK

FITINS-TOOL

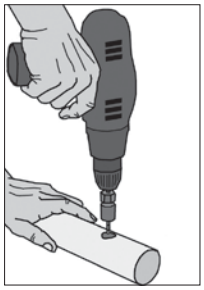
Landscape Drip

XF Series Dripline Insert Adapter for 1", 1½" or larger PVC

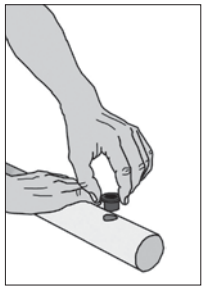
- Connects XF Series Dripline and Blank Tubing to PVC mainlines at low pressures.
- UV stabilized for long life
- Easy to use Ratchet Clamp secures tubing to adapter

Model

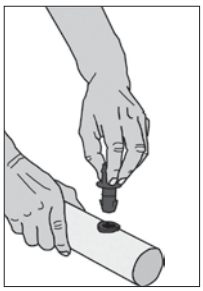
- XFPVCADP: Adaptor for use with 1" PVC pipe
- XFPVCBIT: Drill bit for use with XFPVCADP 1" adapter NEW
- XFD-INPVC: Adaptor for use with 1 1/2" PVC pipe or larger NEW



Drill hole using 5/8" hole saw size.* Use low speed drill. Remove burrs from hole



Remove shavings and place appropriate grommet firmly in hole with flange facing out



Push XF Series Dripline Insert Adapter into grommet until flange and grommet are flush

XFPVCADP

XFDPVCBIT

* *XFPVCBIT drill bit should be used for drilling holes for the XFPVCADP 1" Adapter. Bit to be used in PVC or PE pipe only. Not suitable for any other materials.*

XFD-INPVC

Air/Vacuum Relief Valve Kit

Features

- Use with Rain Bird XF-Series or Landscape Dripline inline emitter tubing when installation is below soil*
- Made of quality rust-proof materials
- Fits inside an SEB 7XB emitter box

**Rain Bird recommends XFS dripline with Copper Shield™ for subsurface installations, including installations under turf grass.*

Model

- ARV050: ½" Air Relief Valve
- ARV075: ¾" Air Relief Valve

Maximum Length of Dripline Useable with the ARV				
	1/2" ARV		3/4" ARV	
Emitter Spacing	0.61 GPH	0.92 GPH	0.61 GPH	0/92 GPH
12"	639'	424'	1918'	1272'
18"	958'	636'	2877'	1908'
24"	1278'	848'	3836'	2543'
ARV Capacity				
Total Flow (GPM)	6.5		19.5	
Total Flow (GPH)	390		1170	

Maximum Length of Dripline Useable with the ARV METRIC				
	1/2" ARV		3/4" ARV	
Emitter Spacing	2.3 l/h	3.4 l/h	2.3 l/h	3.4 l/h
0.30 m	195	129	585	388
0.46 m	292	194	877	582
0.61 m	390	258	1169	775
ARV Capacity				
Total Flow (l/m)	24.6		73.8	
Total Flow (l/h)	1476		4429	

ARV050

ARV075

Install Air/Vacuum Relief Valves correctly by:

Locating at the highest point(s) of the dripline zone. Install the valve in an exhaust header or a line that runs perpendicular to the lateral rows to ensure all rows of the dripline can take advantage of the air/vacuum relief valve

Drip System Operation Indicator

Features

- Stem rises 6" for clear visibility
- When stem is extended, drip system is charged to a minimum of 20 psi
- VAN Nozzle is tightened to no flow but can be opened to observe wetting pattern
- Includes 16" of ¼" distribution tubing with connection fitting pre-installed

Model

- OPERIND

OPERIND

XQ ¼" Distribution Tubing

The strongest and most flexible ¼" Distribution Tubing available to extend emitter outlets to desirable discharge locations

- Unique blend of polymers that give it the flexibility of vinyl with hold of poly.
- New textured finish improves handling.
- Self extracting coiling feature makes it easy to use, store and eliminates waste.
- Patent Pending XQ Bucket makes using and storing large coils easy and efficient.

Features

- Fits over barbed outlet ports and all Xerigation emission devices and ¼" transfer fittings
- Unique coiling method allows tubing to remain coiled as tubing is extracted.
- Extruded from UV-resistant polyethylene resin materials
- 60 psi rating exceeds competitor's specifications

Specifications

- Outside Diameter: 0.25" (6.3 mm)
- Inside Diameter: 0.17" (4.3 mm)
- Wall Thickness: .04" (1.0 mm)
- Lengths: 100' and 1000' coils

Operating Range

- Pressure: 0 to 60 psi (0 to 4.1 bar)

Models

- XQ-100: 100-foot (30m) coil ¼" distribution tubing
- XQ-1000: 1000-foot (305m) coil ¼" distribution tubing
- XQ-1000-B: 1000-foot (305m) coil ¼" distribution tubing in a bucket

XQ ¼" Distribution Tubing Friction Loss Characteristics

O.D. .25" I.D. .17"			*O.D. 6.3mm I.D. 4.3mm*		*METRIC*	
Flow gph	**Velocity fps**	**Loss psi**	**Flow m^3/h**	**Flow l/h**	**Velocity m/s**	**Loss bar**
1	0.27	0.16	0.00	3.79	0.08	0.01
2	0.53	0.59	0.01	7.58	0.16	0.04
3	0.80	1.24	0.01	11.6	0.24	0.09
4	1.06	2.12	0.02	15.14	0.32	0.15
5	1.33	3.20	0.02	18.92	0.41	0.22
6	1.59	4.49	0.02	22.71	0.48	0.31
7	1.86	5.97	0.03	26.50	0.57	0.41
8	2.13	7.64	0.03	30.28	0.65	0.53
9	2.39	9.50	0.03	34.07	0.73	0.66
10	2.66	11.54	0.04	37.85	0.81	0.80
11	2.92	13.79	0.04	41.64	0.89	0.95
12	3.19	16.17	0.05	45.42	0.97	1.12
13	3.45	18.75	0.05	49.21	1.05	1.29
14	3.72	21.50	0.05	52.99	1.13	1.48
15	3.98	24.43	0.06	56.78	1.21	1.69
16	4.25	27.53	0.06	60.56	1.30	1.90
17	4.52	30.80	0.06	64.35	1.38	2.13
18	4.78	34.23	0.07	68.13	1.46	2.36
19	5.05	37.83	0.07	71.92	1.54	2.61
20	5.31	41.60	0.08	75.70	1.62	2.87
25	6.64	62.86	0.09	94.63	2.03	4.34
30	7.97	88.08	0.11	113.55	2.43	6.08

Psi Loss Per 100 Feet of tubing; C=150 *bar Loss per 100 Meters of tubing*

Note: *Use of tubing at flows shown in dark shaded area is not recommended, as velocities exceed 5 ft/sec (1.5 m/s)*

XQ-100 and XQ-1000 ¼" Tubing

XQ-1000-B ¼" Tubing

XT-700 Distribution Tubing

Durable, thick-walled distribution tubing stands up to harsh conditions and performs well in all climates

Features

- Thick-walled, flexible tubing resists kinks and damage caused by routine landscape maintenance activities
- Extruded from UV-resistant polyethylene resin materials

Operating Range

- Pressure: 0 to 60 psi (0 to 4.1 bar)

Specifications

- Outside diameter: 0.700" (18 mm)
- Inside diameter: 0.580" (15 mm)
- Wall thickness: 0.06" (1.5 mm)

Models

- XT-700-100: 100-foot coil (30 m)
- XT-700-500: 500-foot coil (152 m)

XT-700-100

Note: For both water conservation and appearance, it is recommended that a 2" to 3" (5 to 8 cm) mulch cover be placed on top of the tubing

XT-700 Tubing Friction Loss Characteristics

O.D. .700" I.D. .580"			*O.D. 18 mm I.D. 15 mm METRIC*			
Flow gpm	**Velocity fps**	**Loss psi**	**Flow m^3/h**	**Flow l/h**	**Velocity m/s**	**Loss bar**
0.50	0.61	0.19	0.11	0.03	0.19	0.01
1.00	1.21	0.69	0.23	0.06	0.37	0.05
1.50	1.82	1.45	0.34	0.09	0.56	0.10
2.00	2.43	2.47	0.45	0.13	0.74	0.17
2.50	3.03	3.74	0.57	0.16	0.92	0.26
3.00	3.64	5.24	0.68	0.19	1.11	0.36
3.50	4.24	6.97	0.79	0.22	1.29	0.48
4.00	4.85	8.93	0.91	0.25	1.48	0.62
4.50	5.46	11.10	1.02	0.28	1.67	0.77
5.00	6.06	13.50	1.14	0.32	1.85	0.93
5.50	6.67	16.10	1.25	0.35	2.03	1.11
6.00	7.28	18.92	1.36	0.38	2.22	1.31

psi Loss per 100 Feet of Pipe (psi/100ft.) *bar Loss per 100 Meters of Pipe (bar/100m)*

Note: *Use of tubing at flows shown in dark shaded area is not recommended, as velocities exceed 5 ft/sec (1.5 m/s)*

XBS - Black Stripe Tubing

High quality, flexible tubing for use in any low-volume irrigation system

- ½" blank tubing extruded from polyethylene resin materials for consistent durability
- Available in 5 color stripes to differentiate zones
- UV-resistant for installations at or below grade

Features

- Compact coils for easy storage and shipping

Specifications

- Outside diameter: 0.705" (18 mm)
- Inside diameter: 0.615" (15.6 mm)
- Wall thickness: 0.045" (1.2 mm)
- Lengths: 100' and 500' coils

Operating Range

- Pressure: 0 to 60 psi (0 to 4.1 bar)

Models

- XBS100: 100 ft. (30m) coil with green striping
- XBS500: 500 ft. (152m) coil with green striping
- XBS100B: 100 ft. (30m) coil with black striping
- XBS500B: 500 ft. (152m) coil with black striping
- XBS100R: 100 ft. (30m) coil with red striping
- XBS500R: 500 ft. (152m) coil with red striping
- XBS500P: 500 ft. (152m) coil with purple striping
- XBS500Y: 500 ft. (152m) coil with yellow striping

XBS - Tubing Friction Loss Characteristics

O.D. .705" I.D. .615"			*O.D. 18 mm I.D. 15.5 mm METRIC*			
Flow gpm	**Velocity fps**	**Loss psi**	**Flow m^3/h**	**Flow l/h**	**Velocity m/s**	**Loss bar**
0.50	0.54	0.14	0.11	113.6	0.16	0.03
1.00	1.08	0.52	0.23	227.1	0.33	0.12
1.50	1.62	1.09	0.34	340.7	0.49	0.25
2.00	2.16	1.86	0.45	454.3	0.66	0.42
2.50	2.70	2.81	0.57	567.8	0.82	0.64
3.00	3.24	3.94	0.68	681.4	0.99	0.89
3.50	3.78	5.24	0.79	794.9	1.15	1.19
4.00	4.31	6.71	0.91	908.5	1.32	1.52
4.50	4.85	8.35	1.02	1022.1	1.48	1.89
5.00	5.39	10.15	1.14	1135.6	1.64	2.30
5.50	5.93	12.11	1.25	1249.2	1.81	2.74
6.00	6.47	14.22	1.36	1362.8	1.97	3.22

Psi Loss Per 100 Feet of Pipe (psi/100ft.) *bar Loss per 100 Meters of Pipe (bar/100m)*

Note: *Use of tubing at flows shown in dark shaded area is not recommended, as velocities exceed 5 ft/sec (1.5 m/s)*

Black Stripe Tubing

Easy Fit Compression Fitting System

Complete system of compression fittings and adapters for all tubing connection needs in a low-volume system

- Reduces inventory costs: Multi-diameter compression fittings work with a wide range of ½" polyethylene tubing sizes (0.630" to 0.669" or 16mm - 17mm outside diameter)
- Saves time and effort: 50% less force is required to connect tubing and fittings versus competitive compression fittings. Adapters swivel for easy installation
- Provides increased flexibility: Just three Easy Fit Fittings and five Easy Fit Adapters are needed to make over 160 combinations of connections, accommodating countless installation and maintenance situations

Friction Loss per Fitting

Flow gpm	Loss psi	METRIC Flow l/h	Loss bar
0.00	0.00	0.00	0.00
1.00	0.39	227.1	0.03
2.00	0.64	454.3	0.04
3.00	0.82	681.4	0.06
4.00	1.45	908.5	0.10
5.00	1.90	1135.6	0.13
6.00	2.57	1362.8	0.18

Note: *Use of fittings at flows shown in dark shaded area is not recommended. (Friction loss shown is with XBS Tubing)*

Features

- Works with all ½" polyethylene tubing from 16-17mm OD, including Rain Bird XFD Dripline, XFS Dripline, 16mm Blank Tubing, other 17mm dripline and blank tubing
- Patented fittings and adapters are molded from UV-resistant and durable ABS materials
- Removable flush caps can be used to flush end of line and temporarily cap off lines for later expansion

Operating Range

- Pressure: 0 to 60 psi (0 to 4.1 bar)
- Accepts tubing O.D. of 0.630" to 0.669" (16-17mm)

Models

- **Easy Fit Fittings**
  - MDCFCOUP: Coupling
  - MDCFEL: Elbow
  - MDCFTEE: Tee
- **Easy Fit Adapters**
  - MDCF50MPT: ½" Male Pipe Thread Adapter
  - MDCF75MPT: ¾" Male Pipe Thread Adapter
  - MDCF50FPT: ½" Female Pipe Thread Adapter
  - MDCF75FPT: ¾" Female Pipe Thread Adapter
  - MDCF75FHT: ¾" Female Hose Thread Adapter
  - MDCFCAP: Removable Flush Cap For Easy Fit Fittings (Black)
  - MDCFPCAP: Removable Flush Cap For Easy Fit Fittings (Purple, to designate non-potable water)

Note: *Easy Fit Adapters are not barbed fittings*
They are to be used only with Easy Fit Compression Fittings

¼" Landscape Dripline

Rain Bird ¼" Dripline is a perfect choice for small-sized areas such as planter boxes, container gardens, loops around trees, vegetable gardens and shrubs

Features

- Simple to use, as the flexible tubing makes watering pots and container gardens easy
  - ¼" tubing size complements the aesthetics of any garden
  - Clog resistance through built-in filtration and two outlet holes, 180 degrees apart
- Brown tubing complements Rain Bird XF Dripline
  - Unobtrusive size and flexibility provide a low-profile, aesthetically pleasing means to irrigate plants
- Works with Rain Bird ¼" barbed Fittings.
- Comes in 2 spacings (6" (15.25 cm) and 12" (30.5 cm)) and a coil length of 100' (30.5 m) for design flexibility

Operating Range

- 10 to 40 psi (0.7 to 2.7 bar)
- Flow rate at 30 psi (2.0 bar): 0.8gph (3.0 l/h)
- Required filtration: 200 mesh (75 micron)

Specifications

- Outside diameter: 0.250" (6 mm)
- Inside diameter: 0.170" (4 mm)
- Wall thickness: 0.040" (1 mm)
- Spacing: 6" or 12" (15.25 cm and 30.5 cm)
- Length: 100' (30.5 m) coils

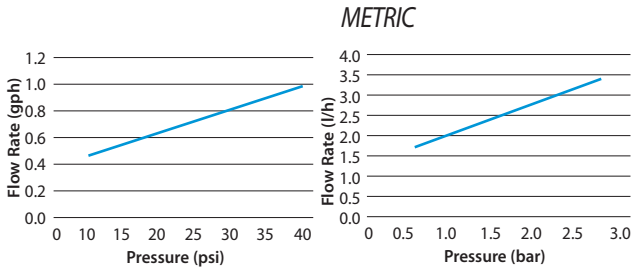
Models

- LDQ0806100
- LDQ0812100

Flow Characteristics

Model	Flow at 30 psi (gph)	(l/h)	Spacing (in.)	(cm)	Coil Length (ft.)	(m)
LDQ0806100	0.8	3.0	6	15.25	100	30.50
LDQ0812100	0.8	3.0	12	30.5	100	30.5

¼" Landscape Dripline Performance



Maximum Length of Run (Feet)

Emitter Spacing	Maximum Length of Run	Flow per Ft. @ 15 psi
6"	19 feet	1 gph/ft.
12"	33 feet	0.5 gph/ft.

LDQ-08-06-100

¼" Landscape Dripline in Potted Plant

Water Saving

Save water and time by using ¼" Landscape Dripline in hanging baskets and potted plants.

¼" Barb Transfer Fittings

Features

- Used to connect ¼" Distribution Tubing (XQ) in different configurations or attach ¼" tubing to ½" or ¾" tubing
- Newly designed connectors have self-piercing barbs that easily puncture ½" or ¾" tubing
- Stem on fittings allows simple, quick installation using Xeriman™ Tool (XM-TOOL)
- Rugged plastic construction

Operating Range*

- Pressure: 0 to 50 psi (0 to 3.5 bar)

** with polyethylene tubing*

Models

- XBF1CONN: ¼" barb connector
- XBF2EL: ¼" barb x barb elbow
- XBF3TEE: ¼" barb x barb x barb tee

XBF1CONN

XBF2EL

XBF3TEE

Subterranean Emitter Box

Features

- Provides convenient access to subsurface emitter while protecting against vandalism. Ideal for multi-outlet devices (such as Xeri-Bird 8) and Air Vacuum Relief Valve Kit
- New larger body allows more room for components and distribution tubing
- Rugged, UV-resistant thermoplastic construction
- Available with black top

Dimensions

- Height: 9.0" (22.9 cm)
- Top Diameter: 6.4" (16.3 cm)
- Base Diameter: 9.8" (24.9 cm)

Model

- SEB 7XB

SEB 7XB

Galvanized Tie-Down Stake

Features

- 12-gauge galvanized steel rod comes pre-bent to staple distribution tubing, XF Dripline or XBS Tubing to finished grade
- Notched sides help secure stake in ground
- Sturdy, long-lasting and corrosion-resistant

Model

- TDS-050 w/bend

TDS-050 w/bend

Tubing Goof Plug

Features

- Used to plug unwanted holes in tubing
- New design works with Xeriman™ Tool (XM-TOOL) for a quick, easy installation

Model

- EMA-GPX

EMA-GPX

Tubing Cutter

Features

- Re-designed Xerigation Tubing Cutter allows for easier and cleaner cuts of all low-volume tubing
- Unique design provides two different-sized wells (one for ½" - ¾" tubing and one for ¼" tubing:, giving more leverage so less force is needed to cut any tubing
- Tubing Cutter is lightweight with stainless steel blades. Replacement blades available (PPC-200XBLD)

Model

- PPC-200X: Tubing cutter
- PPC-200XBLD: Replacement blade

Improved Dual-well Design Allows for Clean Cuts

PPC-200X

Xeriman™ Tool

Features

- Provides fast, easy, one-step installation of Xeri-Bug™ emitters and PC Modules directly into ½" or ¾" drip tubing, XF Dripline or Landscape Dripline
- Cuts emitter installation time by 50%
- All-in-one tool inserts emitters, removes emitters, inserts ¼" barbed fittings and installs goof plugs

Model

- XM-TOOL

One Step Xeri-Bug™ Insertion

Xeri-Bug™ Removal

Goof Plug Insertion

XM-TOOL

Xeri-Caps™ for Spray Heads

Features

- Helps to retrofit a spray head system to a drip system by capping off any unused spray heads

Operating Range

- Pressure: Up to 70 psi (4.8 bar)

Dimension

- Width: 2¼" (5.7 cm)

Models

- XC-1800: fits Rain Bird 1800 Series Spray Bodies

Rain Bird® XC-1800

Spray-to-Drip Retrofit Kit

Simple kit that easily converts a conventional spray zone to a low-volume irrigation zone

Features

- 1800 Series Spray Body that contains a filter, pressure regulator, and ½" male threaded outlet
- Permits convenient conversion to drip tubing when used with Easy Fit Fitting and female adapter
  - Can be installed above or below grade
- Internal assembly can be removed and easily dropped into any 1804, 1806 or 1812 Spray Head Body to easily retrofit existing system to Xerigation products
- Provides 30 psi (2.1 bar) pressure regulation and 200-mesh (75-micron) screen
- If retrofit flow is less than 3 gpm, replace electronic valve with a Rain Bird Low Flow Valve

Operating Range

- Flow: 0.50 to 4.00 gpm (1.9 to 15.1 l/m)
- Inlet pressure: 15 to 70 psi (1.0 to 4.8 bar)
- Regulated pressure: 30 psi (2.1 bar)
- Filtration: 200 mesh (75 micron)

Dimensions

- ½" female-threaded inlet
- ½" male-threaded swivel outlet
- Height: 7" (17.8 cm)
- Width: 2" (5.1 cm)

Model

- RETRO-1800

RETRO-1800

Converts 1800 Spray Bodies to Dripline

Water Saving

Designed specifically for areas with water restrictions, our Spray-to-Drip Retrofit Kit allows use of existing 1800 Series Spray Bodies as drip irrigation connection points.

Control Zone Kit Selection Guide

This easy-to-use selection tool is available at www.rainbird.com/CZK and will help identify the most appropriate Control Zone Kit for the application.

XCZ-150-PRB-COM
FLOW: 15 - 40 gpm

FLOW: 15 - 40 gpm — Page 203

XCZ-100-PRB-COM
FLOW: 3 - 20 gpm

XCZ-100-PRB-LC
FLOW: 3 - 20 gpm

XCZ-100-PRBR
FLOW: 3 - 20 gpm

FLOW: 3 - 20 gpm — Pages 201 - 202

XCZ-100-PRF
FLOW: 3 - 15 gpm

XCZF-100-PRF
FLOW: 3 - 15 gpm

XACZ-100-PRF
FLOW: 3 - 15 gpm

XCZF-175-PRF
FLOW: 3 - 15 gpm

FLOW: 3 - 15 gpm | **3 - 10 gpm** — Pages 199 - 200

XCZ-075-PRF
FLOW: 0.2 - 5 gpm

XCZ-LF-100-PRF
FLOW: 0.2 - 5 gpm

XACZ-075-PRF
FLOW: 0.2 - 5 gpm

FLOW: 0.2 - 5 gpm — Pages 198 - 199

Online Control Zone Kit Selection Guide

Rain Bird Control Zone Kits provide all of the components necessary for on/off control, filtration and pressure regulation of a low-volume irrigation zone, making the kits simple to order and easy to install.

This quick selection tool will help you find the appropriate control zone kit for your application. By answering a few simple questions, the selection guide will provide recommended control zone kits best suited for your application. Simply click on the kit image for detailed information and specifications.

Features

- Includes detailed drawings and specifications for each kit
- Available at www.rainbird.com/CZK

Control Zone Kits

Rain Bird Control Zone Kits provide all of the components necessary for on/off control, filtration, and pressure regulation in a single package, making them simple to order and easy to install.

- Rain Bird Control Zone Kits are the most reliable kits and contain revolutionary products such as the Low Flow Valve, Pressure Regulating (PR) Filter, Quick Check Basket Filter, and the Pressure Regulating (PR) Quick Check Basket Filter
- All kits in every category use the innovative PR Filter which combines the filter and pressure regulator into one unit. The PR Filter eliminates a separate component to help avoid leaks either during installation or over the life of the kit in the field. Most PR Filter kits come assembled to save installation time and avoid in-field mistakes
- Rain Bird offers the most complete line of Control Zone Kits, giving contractors and specifiers the flexibility to meet every need from 0.2 to 40 gpm. Choose from:
- ¾", 1" or 1½" inlet opening
- Low Flow Valve, Anti-Siphon Valve, DV Valve, or PESB Valve
- Pressure Regulating RBY Filter, Pressure Regulating Quick Check Basket Filter, or Quick Check Basket Filter

Use the chart below to identify the most appropriate kit or see pages 198-208 for specific detailed information on these kits and their individual components. Also available is the interactive Control Zone Kit Pyramid Selection Guide for selection and detailed specification information; found at www.rainbird.com/CZK

Control Zone Selection Chart

Model	Size (Inlet x Outlet)	Flow Range	Inlet Pressure Range	Valve	Filter	Outlet Pressure
COMMERCIAL HIGH FLOW: 15–40 gpm						
XCZ-150-PRB-COM	1½" x 2 @ 1"	15 -40 gpm	15 - 150 psi	150-PESB	1" Quick Check PR Basket Filter (2)	40 psi
COMMERCIAL MEDIUM FLOW: 3–20 gpm						
XCZ-100-PRB-COM	1" x 1"	3 - 20 gpm	15 - 150 psi	100-PESB	1" Quick Check PR Basket Filter	40 psi
XCZ-100-PRBR	1" x 1"	5 - 15 gpm	15 - 150 psi	100-PESBR	1" PR Basket Filter	40 psi
XCZ-100-PRB-LC	1" x 1"	5 - 20 gpm	15 - 150 psi	100-PGA	1" PR Basket Filter	40 psi
RESIDENTIAL/LIGHT COMMERCIAL MEDIUM FLOW: 3–15 gpm						
XCZF-100-PRF	1" x 1"	3 - 15 gpm	15 - 150 psi	100-DVF	1" PR RBY Filter	40 psi
XCZF-175-PRF	1" x ¾"	3 - 10 gpm	15 - 120 psi	100-DVF	3/4" PR RBY Filter	30 psi
XCZ-100-PRF	1" x 1"	3 - 15 gpm	15 - 150 psi	100-DV	1" PR RBY Filter	40 psi
XACZ-100-PRF	1" x 1"	3 - 15 gpm	15 - 150 psi	100-ASVF	1" PR RBY Filter	40 psi
RESIDENTIAL/LIGHT COMMERCIAL LOW FLOW: 0.2–5 gpm						
XCZ-LF-100-PRF	1" x ¾"	0.2 - 5 gpm	15 - 120 psi	LFV-100	3/4" PR RBY Filter	30 psi
XCZ-075-PRF	1" x ¾"	0.2 - 5 gpm	15 - 120 psi	LFV-075	3/4" PR RBY Filter	30 psi
XACZ-075-PRF	1" x ¾"	0.2 - 5 gpm	15 - 120 psi	ASV-LFV-075	3/4" PR RBY Filter	30 psi

**Available with BSP threads*

Water Saving $ Combine a Xerigation Control Zone Kit with a Rain Bird controller product to precisely regulate zone watering times.

Low Flow Control Zone Kits with PR Filter

- Reliable Control Zone Kits that include the Low Flow Valve, the only valve on the market that can handle low flows (below 3 gpm) without weeping
- Shorter kits with only two components (valve plus pressure-regulating filter) mean that you can fit more Control Zone Kits in a valve box, saving time and money
- These PR Filter kits provide on/off control, filtration, and pressure regulation with fewer components; so there is less chance of leakage at the connections, both at installation and over the life of the system

Operating Range

- Flow: 0.20 to 5.0 gpm (0.8 to 18.9 l/m)
- Inlet pressure: 20 to 150 psi (1.4 to 10.3 bar)
- Regulated pressure: 30 psi (2.1 bar)
- Filtration: 200 mesh stainless steel screen (75 micron)

Models

- XCZ-075-PRF: ¾" Low Flow Valve with ¾" PR RBY Filter (Assembled)
- XCZ-LF-100-PRF: 1" Low Flow Valve with ¾" PR RBY Filter

Replacement Screen

- RBY-200SSMX (200 mesh stainless steel screen)

Minimum Inlet Pressure for 30 psi Outlet Pressure

	Inlet Pressure (psi)	
Flow (gpm)	XCZ-075-PRF	XCZ-LF-100-PRF
0.2	34.4	34.6
1.0	36.1	36.5
3.0	38.1	38.1
5.0	43.4	42.0

Minimum Inlet Pressure for 2.1 bar Outlet Pressure

	Inlet Pressure (bar)	
Flow (l/m)	XCZ-075-PRF	XCZ-LF-100-PRF
0.8	2.4	2.4
3.8	2.5	2.5
11.4	2.6	2.6
18.9	3.0	2.9

Four Control Zone Kits in a Standard Valve Box

XCZ-075-PRF

XCZ-LF-100-PRF

Low Flow Control Zone Kits with Anti-Siphon Valve and PR Filter

- Reliable Control Zone Kits that include the Low Flow Valve, the only valve on the market that can handle low flows (below 3 gpm) without weeping
- Complete, two-piece Control Zone Kits include the field-proven Low Flow Anti-Siphon Valve that has an atmospheric vacuum breaker for backflow prevention and an IAPMO rating
- These PR Filter kits provide on/off control, filtration, and pressure regulation with only two parts; so there is less chance of leakage at the connections, both at installation and over the life of the system

Operating Range

- Flow: 0.20 to 5.0 gpm (0.8 to 18.9 l/m)
- Inlet pressure: 20 to 150 psi (1.4 to 10.3 bar)
- Filtration: 200 mesh stainless steel screen (75 micron)
- Regulated pressure: 30 psi (2.1 bar)

Models

- XACZ-075-PRF: ¾" Low Flow Anti Valve with ¾" PR RBY Filter

Replacement Screen

- RBY-200SSMX (200 mesh stainles steel screen)

Stainless Steel Screen

XACZ-075-PRF

Minimum Inlet Pressure for 30 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) XACZ-075-PRF
0.2	37.4
1.0	39.1
3.0	40.0
5.0	49.7

Minimum Inlet Pressure for 2.1 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) XACZ-075-PRF
0.8	2.6
3.8	2.7
11.4	2.8
18.9	3.4

Medium Flow Control Zone Kits with Anti-Siphon Valve and PR Filter

- Complete, two-piece Control Zone Kits include the field-proven ASVF valve which has an atmospheric vacuum breaker for backflow prevention and an IAPMO rating
- These PR Filter kits provide on/off control, filtration, and pressure regulation with only two parts; so there is less chance of leakage at the connections, both at installation and over the life of the system

Operating Range

- Flow: 3.0 to 15.0 gpm (11.4 to 56.8 l/m)
- Inlet pressure: 20 to 150 psi (1.4 to 10.3 bar)
- Filtration: 200 mesh stainless steel screen (75 micron)
- Regulated pressure: 40 psi (2.8 bar)

Models

- XACZ-100-PRF: 1" ASVF with 1" PR RBY Filter

Replacement Screen

- RBY-200SSMX (200 mesh stainless steel screen)

Stainless Steel Screen

XACZ-100-PRF

Minimum Inlet Pressure for 40 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) XACZ-100-PRF
3.0	43.3
5.0	44.7
7.0	46.2
9.0	47.3
11.0	50.8
13.0	55.4
15.0	59.7

Minimum Inlet Pressure for 2.8 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) XACZ-100-PRF
11.4	3.0
18.9	3.1
26.5	3.2
34.1	3.3
41.6	3.5
49.2	3.8
56.8	4.1

Medium Flow Control Zone Kits with PR Filter, Flow Control

- Reliable Control Zone Kit that includes a DV valve with flow control for easier system tuning
- These PR Filter kits provide on/off control, filtration, and pressure regulation with only two parts; so there is less chance of leakage at the connections, both at installation and over the life of the system

Operating Range

- Flow: 3.0 to 10.0 gpm (11.4 to 37.9 l/m)
- Inlet pressure: 20 to 120 psi (1.4 to 8.3 bar)
- Filtration: 200 mesh stainless steel screen (75 micron)
- Regulated pressure: 30 psi (2.1 bar)

Models

- XCZF-175-PRF: 1" DVF Valve with 3/4" PR Filter, and MDCF fitting (16-17mm tubing)

Replacement Screen

- RBY-200SSMX (200 mesh stainless steel screen)

XCZF-175-PRF

Medium Flow Control Zone Kits with PR Filter

- Shorter kits with only two components (valve plus pressure-regulating filter) mean that you can fit more Control Zone Kits in a valve box, saving time and money
- These PR Filter kits provide on/off control, filtration, and pressure regulation with only two parts; so there is less chance of leakage at the connections, both at installation and over the life of the system

Operating Range

- Flow: 3.0 to 15.0 gpm (11.4 to 56.8 l/m)
- Inlet pressure: 20 to 150 psi (1.4 to 10.3 bar)
- Filtration: 200 mesh stainless steel screen (75 micron)
- Regulated pressure: 40 psi (2.8 bar)

Models

- XCZ-100-PRF: 1" DV Valve with 1" PR Filter (Assembled)*
- XCZF-100-PRF: 1" DV Valve with 1" PR Filter, and MDCF fitting (16-17mm tubing)*

** Available with BSP threads*

Replacement Screen

- RBY-200SSMX (200 mesh stainless steel screen)

XCZ-100-PRF

XCZF-100-PRF

Minimum Inlet Pressure for 30 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) XCZF-175-PRF
3.0	32.7
5.0	36.4
10.0	56.7
15.0	75.5

Minimum Inlet Pressure for 40 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) XCZ-100-PRF	Inlet Pressure (psi) XCZF-100-PRF
3.0	42.9	40.3
5.0	44.1	42.1
10.0	48.5	54.2
15.0	55.5	68.6

Minimum Inlet Pressure for 2.1 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) XCZF-175-PRF
11.4	2.3
18.9	2.5
37.9	3.9
56.8	5.2

Minimum Inlet Pressure for 2.8 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) XCZ-100-PRF	Inlet Pressure (bar) XCZF-100-PRF
11.4	3.0	2.8
18.9	3.0	2.9
37.9	3.3	3.7
56.8	3.8	4.7

Medium Flow Light Commercial Control Zone Kit with Pressure Regulating, Basket Filter

NEW

- Complete kit is the simplest, smallest and most reliable Control Zone Kit for light commercial applications between 5 and 20 gpm (11 and 76 l/m)
- Contains the reliable, flexible and proven PGA valve with the rugged pressure regulating basket filter
- This PR Filter kit provides on/off control, filtration, and pressure regulation with only two parts; so there is less chance of leakage at the connections, both at installation and over the life of the system
- The "No Spill" feature of the basket filter ensures dirt does not fall back into the filter during cleanup operation. The threaded filter top with 0-ring makes it easy to remove and clean that stainless steel filter screen

Minimum Inlet Pressure for 40 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) XCZ-100-PRB-LC
5.0	43.0
10.0	48.0
15.0	56.0
20.0	65.0

Minimum Inlet Pressure for 2.8 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) XCZ-100-PRB-LC
18.9	2.9
37.9	3.3
56.8	3.8
75.7	4.5

Operating Range

- Flow: 5.0 to 20 gpm (11,4 to 75.7 l/m)
- Inlet Pressure: 15 to 150 psi (1,0 to 10,3 bar)
- Regulating Pressure: 40 psi (2,7 bar)
- Filtration: 200 mesh (75 micron) stainless steel
- Temperature: Up to 150 degree F (66 degree C)

Model

- XCZ-100-PRB-LC: 1" PGA Valve with 1" Pressure Regulating (40 psi), Basket Filter

Replacement Filter Screens

- QKCHK-100M: 100 mesh stainless steel screen, red
- QKCHK-120M: 120 mesh stainless steel screen, green
- QKCHK-200M: 200 mesh stainless steel screen, white

Replacement Cap

- BFCAP (Complete cap with body o-ring)

Stainless Steel Screen

XCZ-100-PRB-LC

Medium Flow Commercial Control Zone Kit with Pressure Regulating, Basket Filter

NEW

- Complete kit is the simplest, smallest and most reliable Control Zone Kit for commercial applications between 3 and 20 gpm (11 and 76 l/m)
- Contains the reliable, proven PESB Valve which provides patented scrubbing action, making this kit ideal for commercial dirty water applications
- Includes the Pressure Regulating, Quick-Check Basket Filter that has a clear indicator which goes from green to red, telling you when to clean the filter. This reduces maintenance and takes the guesswork out of cleaning the filter. In addition, the threaded top makes it easy to remove and clean the stainless steel screen
- Basket Filter and Pressure Regulator have been combined for one smaller Pressure Regulating, Quick-Check Basket filter that is 24% smaller than the previous unit

Minimum Inlet Pressure for 40 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) XCZ-PRB-100-COM	Inlet Pressure (psi) XCZ-100-PRBR
3	42.0	—
5	44.0	45.0
10	47.3	49.0
15	53.0	57.0
20	62.5	—

Minimum Inlet Pressure for 2.8 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) XCZ-PRB-100-COM	Inlet Pressure (bar) XCZ-100-PRBR
11.4	2.9	—
18.9	3.0	3.1
37.9	3.3	3.4
56.8	3.6	3.9
75.7	4.3	—

Operating Range

- Flow: 3.0 to 20.0 gpm (11.4 to 75.7 l/m)
- Inlet Pressure: 15 to 150 psi (1,0 to 10,3 bar)
- Regulating Pressure: 40 psi (2,7 bar)
- Filtration: 200 mesh (75 micron) stainless steel
- Temperature: Up to 150º F (66º C)

Model

- XCZ-PRB-100-COM: 1" Ball Valve with 1" PESB Valve and 1" Pressure Regulating (40 psi), Quick-Check Basket Filter
- XCZ-100-PRBR: 1" PESBR Valve and 1" Pressure Regulating (40psi) Basket Filter

Replacement Screen

- QKCHK100M (100 mesh stainless steel screen)
- QKCHK120M (120 mesh stainless steel screen)
- QKCHK200M (200 mesh stainless steel screen)

Replacement Cap

- QKCHKCAP (Complete cap with body o-ring)

XCZ-100-PRBR

XCZ-PRB-100-COM

High Flow Commercial Control Zone Kit with 2 Pressure Regulating, Basket Filters

NEW

- Highest flow Control Zone Kit on the market for large, commercial drip zones 15.0 to 40.0 gpm (56,8 to 151,4 l/m)
- Contains the reliable, proven 1 ½"PESB Valve which provides patented scrubbing action, making this kit ideal for commercial dirty water applications
- Includes 2 Pressure Regulating, Quick-Check Basket Filter that have a clear indicator which goes from green to red, telling you when to clean the filter. This reduces maintenance and takes the guesswork out of cleaning the filter. In addition, the threaded top makes it easy to remove and clean the stainless steel screen
- Basket Filter and Pressure Regulator have been combined for one smaller Pressure Regulating, Quick-Check Basket filter that is 22% smaller than the previous unit

Operating Range

- Flow: 15.0 to 40.0 gpm (56,8 to 151,4 l/m)
- Inlet Pressure: 20 to 150 psi (1,4 to 10,3 bar)
- Regulating Pressure: 40 psi (2,7 bar)
- Filtration: 200 mesh (75 micron) stainless steel
- Temperature: Up to 150º F (66º C)

Models

- XCZ-PRB-150-COM: 1 1/2" PESB Valve with two 1" Pressure Regulating (40 psi), Quick-Check Basket Filters

Replacement Screen

- QKCHK100M (100 mesh stainless steel screen)
- QKCHK120M (120 mesh stainless steel screen)
- QKCHK200M (200 mesh stainless steel screen)

Replacement Cap

- QKCHKCAP (Complete cap with body o-ring)

Minimum Inlet Pressure for 40 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) XCZ-PRB-150-COM
15.0	40.0
20.0	49.0
25.0	50.2
30.0	53.5
35.0	56.1
40.0	60.7

Minimum Inlet Pressure for 2.8 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) XCZ-PRB-150-COM
56.8	2.8
75.7	3.4
94.7	3.5
113.6	3.7
132.5	3.9
151.4	4.2

XCZ-PRB-150-COM

Low Flow Valves

Valves designed exclusively for the low flow rates of a drip irrigation system (0.2 - 8.0 gpm; 0.6 to 30 l/m)

- The only valves in the industry made specifically for drip irrigation systems, making these the only valves that can effectively handle particles at low flow rates – patented design
- These valves contain all of the features of reliable Rain Bird DV or ASVF valves, coupled with a unique diaphragm design that allows particles to pass through at extremely low flow rates, thereby preventing weeping of the valve
- Allows the filter to be safely placed downstream of the valve since these valves handle all sizes of particles

Features

- Unique "double-knife" diaphragm coupled with ½" diameter seat for flawless operation at low flow rates
- Low Flow Valve is available in ¾" In-line model, and ¾" Anti-Siphon Valve
- Double-filtered pilot flow design for maximum reliability
- External bleed to manually flush the system of dirt and debris during installation and system start-up
- Internal bleed for spray-free manual operation.

Operating Range

- Flow: 0.20 to 8.0 gpm (0.6 to 30.0 l/m)
- Pressure: 15 to 150 psi (1.0 to 10.3 bar)

Electrical Specifications

- 24 VAC 50/60 Hz (cycles/sec) solenoid
- Inrush current: 0.30 (7.2 VA) at 60 Hz
- Holding current: 0.19 A (4.56 VA)

Models

- LFV-075: ¾" Low Flow DV Valve
- LFV-100*: 1" Low Flow DV Valve
- ASV-LF-075: ¾" Low Flow Anti-Siphon Valve

**Available with BSP threads*

Replacement Diaphragm

- LFVDIAPHRM: Low Flow Valve Diaphragm Spare Part

Pressure Loss Characteristics

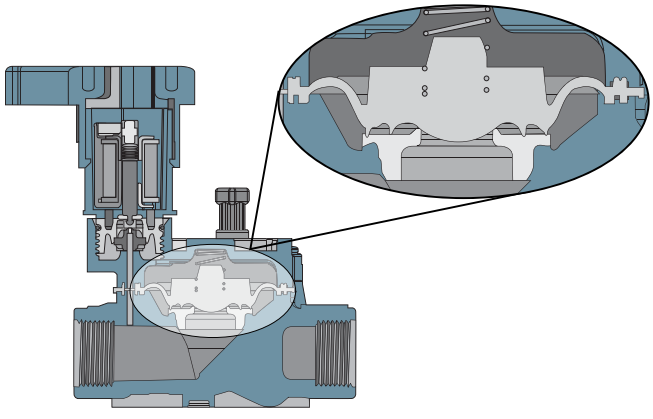
Flow gpm	LFV-075 psi	LFV-100 psi	ASV-LF-075 psi
0.2	3.0	3.0	2.5
1.0	3.2	3.2	3.1
2.0	3.3	3.3	3.7
4.0	3.6	3.6	4.6
6.0	4.2	4.2	5.3
8.0	5.1	5.1	5.7

Pressure Loss Characteristics METRIC

Flow l/m	LFV-075 bar	LFV-100 bar	ASV-LF-075 bar
0.6	0.21	0.21	0.17
3.6	0.22	0.22	0.22
7.8	0.23	0.23	0.27
15.0	0.25	0.25	0.31
22.8	0.28	0.28	0.35
30.0	0.35	0.35	0.39

ASV-LF-075

LFV-075



Unique Diaphragm Design

Pressure-Regulating Filter (RBY)

Unique, compact unit that combines filtration and pressure regulation in one piece for protection of downstream components in a low-volume irrigation system

- Reduces the number of components in a control zone, making it smaller and easier to install. More control zones can fit in one valve box!
- Combination unit reduces the number of connections, making installation easier and faster
- Increased reliability -- fewer parts and fewer threaded connections mean less chance of a leak both at installation and also over the life of the system

Features

- Static RBY filter regulates pressure to a nominal 30 or 40 psi (2.0 or 2.8 bar)
  - PR RBY Filter Cap has sealing O-ring and unthreads to provide access to the filter element for easy cleaning
- 30 or 40 psi pressure regulator is integrated into the filter body
- Robust body and cap are made of glass-filled polypropylene and provide 150 psi (10.3 bar) pressure rating
- Works with all valves to create a simple, efficient control zone
- Comes with 200 mesh (75 micron) stainless steel screen pre-assembled (replacement filter elements are available for RBY filter)

Operating Range

- Flow
  - ¾" units: 0.20 to 5.0 GPM (0.8 to 18.9 l/m)
  - 1" units: 3.0 to 15.0 GPM (11.4 to 56.8 l/m)
- Inlet pressure: 20 to 150 psi (1.4 to 10.3 bar)
- Regulated pressure:
  - ¾" units: 30 psi (2.1 bar)
  - 1" units: 40 psi (2.8 bar)
- Filtration: 200 mesh (75 micron)

Models

- PRF-075-RBY: ¾" PR RBY Filter
- PRF-100-RBY: 1" PR RBY Filter*

**Available with BSP Threads*

Components of Control Zone Kits Found on pg. 198-204

Replacement Screen

- RBY-200SSMX (200 mesh stainless steel screen)

Pressure Loss Characteristics

Flow gpm	PRF-075-RBY psi	PRF-100-RBY psi
0.2	3.0	N/A
1.0	4.0	N/A
3.0	6.1	0.8
5.0	10.0	2.0
8.0	N/A	3.8
10.0	N/A	5.2
15.0	N/A	12.0

Pressure Loss Characteristics METRIC

Flow l/m	PRF-075-RBY bar	PRF-100-RBY bar
0.8	0.21	N/A
3.8	0.28	N/A
11.4	0.42	0.06
18.9	0.69	0.14
30.3	N/A	0.26
37.9	N/A	0.36
56.8	N/A	0.83

Note: *Pressure loss for 200 mesh filter screen*

PRF-075-RBY and PRF-100-RBY

Inline RBY Filter

Static filter helps prevent plugging in a drip irrigation system

- A simple and reliable filter for low-volume irrigation systems
- Simple to clean, as cap has a sealing O-ring and unthreads to provide access to the stainless steel filter element
- Strong and reliable due to its robust design and glass-filled polypropylene construction

Features

- Male x Male threaded connections for direct connection to valves and pressure regulators
- Replacement stainless steel elements are available in 200 mesh (75 micron)

Operating Range

- Flow:
  - ¾" units: 0.20 to 12.0 gpm (0.8 to 45.4 l/m)
  - 1" units: 0.20 to 18.0 gpm (0.8 to 68.1 l/m)
- Pressure: 20 to 150 psi (1.4 to 10.3 bar)
- Filtration: 200 mesh (75 micron)

Models

- RBY075MPTX: ¾" Inline RBY Filter with 200 Mesh Screen
- RBY100MPTX: 1" Inline RBY Filter with 200 Mesh Screen*

** Available with BSP threads*

Replacement screen:

- RBY-200SSMX (200 mesh stainless steel screen)

Pressure Loss Characteristics

Flow Rate gpm	RBY075MPTX psi	RBY100MPTX psi
1.00	0.1	0.1
3.00	0.4	0.3
5.0	1.1	0.5
7.0	1.6	0.8
9.0	2.7	1.4
12.0	4.5	2.2
14.0	--	3.0
16.0	--	3.8
18.0	--	4.7

Pressure Loss Characteristics **METRIC**

Flow Rate l/m	RBY075MPTX bar	RBY100MPTX bar
0.8	0.00	0.00
3.8	0.01	0.01
11.4	0.03	0.02
18.9	0.08	0.03
26.5	0.11	0.06
34.1	0.19	0.10
45.4	0.31	0.15
53.0	--	0.21
60.6	--	0.26
68.1	--	0.32

Note: *Pressure loss for 200 mesh filter screen*

RBY075MPTX

Quick-Check Basket Filter

The only commercial-grade filter with a clean/dirty indicator for low-volume irrigation zones

- Reduces maintenance and labor costs — the indicator tells you when to clean the filter, taking the guesswork out of cleaning the filter
- Provides increased reliability – "No-spill" feature ensures dirt does not fall back into the filter during cleanup operation
- Simplifies installation and maintenance – threaded top with O-ring makes it easy to remove and clean the screen

Features

- Available in ¾" and 1" models
- Comes pre-assembled with 200 mesh (75 micron) stainless steel screen (other screen sizes available)
- Also available in Commercial Control Zone Kits (XCZ-PRB-100-COM and XCZ-PRB-150-COM)

Operating Range

- Flow
  - ¾" Basket Filter: 0.20 to 12.0 gpm (0.8 to 45.4 l/m)
  - 1" Basket Filter: 3.0 to 20.0 gpm (11.4 to 75.7 l/m)
- Pressure: 0-150 psi (0 to 10.3 bar)

Models

- QKCHK-075: ¾" Basket Filter with 200 mesh screen
- QKCHK-100*: 1" Basket Filter with 200 mesh stainless steel screen

** Available with BSP threads*

Replacement Filter Screens

- QKCHK-100M: 100 mesh screen, red
- QKCHK-200M: 200 mesh stainless steel screen, white

Replacement Cap

- QKCHKCAP (Complete cap with body o-ring)

QKCHK-075

Pressure Loss Characteristics - QKCHK-075

Flow Rate gpm	200/150 mesh screen psi
0.20	0.0
2.00	0.0
4.00	0.1
6.0	0.4
8.0	0.9
10.0	1.3
12.0	2.0

Pressure Loss Characteristics - QKCHK-075 METRIC

Flow Rate l/m	75/100 micron screen bar
0.8	0.00
7.6	0.00
15.1	0.01
22.7	0.03
30.3	0.06
37.9	0.09
45.4	0.14

Pressure Loss Characteristics - QKCHK-100

Flow Rate gpm	200/150 mesh screen psi
3.0	0.0
5.0	0.0
7.0	0.4
9.0	0.7
11.0	1.1
14.0	1.6
17.0	2.3
20.0	3.2

Pressure Loss Characteristics - QKCHK-100 METRIC

Flow Rate l/m	75/100 micron screen bar
11.4	0.01
18.9	0.01
26.5	0.03
34.1	0.05
41.6	0.08
53.0	0.11
64.4	0.16
75.7	0.22

Note: *Pressure loss for 200 mesh filter screen*

Pressure Regulating Basket Filters

NEW

The only commercial-grade filter with built in pressure regulator for low-volume irrigation zones

- Reduces maintenance and labor costs - 40% larger filter surface than standard filters means less frequent cleaning
- Provides increased reliability – "No Spill" feature ensures dirt does not fall back into the filter during cleanup operation
- Simplifies installation and maintenance – threaded top with 0-ring makes it easy to remove and clean that stainless steel filter screen
- Efficient design – combines filtration and pressure regulation in one compact unit with fewer connections

Features

- Available in 1" model
- Comes pre-assembled with 200 mesh (75 micron) stainless steel screen (other screen sizes available)
- Built-in 40 psi (2,7 bar) pressure regulator
- Also available in Light Commercial Control Zone Kits (XCZ-100-PRB-LC)

Operating Range

- Flow: 5.0 to 20 gpm (18.9 to 75.7 l/m)
- Inlet Pressure: 15 to 150 psi (1,0 to 10,3 bar)
- Regulating Pressure: 40 psi (2,7 bar)
- Filtration: 200 mesh (75 micron) stainless steel
- Temperature: Up to 150 degree F (66 degree C)

Components of Control Zone Kits Found on pg. 198-204

Models

- PRB-100: 1" Basket Filter with built-in Pressure Regulator (40 psi) and 200 mesh (75 micron) stainless steel screen

Replacement Filter Screens

- QKCHK-100M: 100 mesh stainless steel screen, red
- QKCHK-120M: 120 mesh stainless steel screen, green
- QKCHK-200M: 200 mesh stainless steel screen, white

Replacement Cap

- BFCAP (Complete cap with body o-ring)

Minimum Inlet Pressure for 40 psi Outlet Pressure	
Flow (gpm)	Inlet Pressure (psi) PRB-100
3.0	40.0
5.0	40.0
10.0	42.6
15.0	48.2
20.0	60.0

Minimum Inlet Pressure for 2.8 bar Outlet Pressure	
Flow (l/m)	Inlet Pressure (bar) PRB-100
11.4	2.8
18.9	2.8
37.9	2.9
56.8	3.3
75.7	4.1

Stainless Steel Screen

PRB-100

BFCAP

Pressure Regulating, Quick-Check Basket Filters

NEW

The only commercial-grade filter with built-in pressure regulator with a clean/dirty indicator for low-volume irrigation zones

- Reduces maintenance and labor costs-the indicator tells you when to clean the filter, taking the guesswork out of cleaning the filter
- Provides increased reliability – "No-spill" feature ensures dirt does not fall back into the filter during cleanup operation
- Simplifies installation and maintenance – threaded top with O-ring makes it easy to remove and clean the stainless steel filter screen
- Efficient design – combines filtration and pressure regulation in one compact unit with fewer connections

Features

- Available in 1" model
- Comes pre-assembled with 200 mesh (75 micron) stainless steel screen (other screen sizes available)
- Built-in 40 psi (2,7 bar) pressure regulator
- Also available in Commercial Control Zone Kits (XCZ-PRB-100-COM AND XCZ-PRB-150-COM

Operating Range

- Flow: 3.0 to 20.0 gpm (11.4 to 75.7 l/m)
- Inlet Pressure: 15 to 150 psi (1,0 to 10,3 bar)
- Regulating Pressure: 40 psi (2,7 bar)
- Filtration: 200 mesh (75 micron) stainless steel
- Temperature: Up to 150º F (66º C)

Components of Control Zone Kits Found on pg. 198-204

Models

- PRB-QKCHK-100: 1" Basket Filter with built-in Pressure Regulator (40 psi) and 200 mesh (75 micron) stainless steel screen

Replacement Filter Screens

- QKCHK-100M: 100 mesh stainless steel screen, red
- QKCHK120M: 120 mesh stainless steel screen, green
- QKCHK-200M: 200 mesh stainless steel screen, white

Replacement Cap

- QKCHKCAP (Complete cap with body o-ring)

Minimum Inlet Pressure for 40 psi Outlet Pressure

Flow (gpm)	Inlet Pressure (psi) PRB-QKCHK-100
3.0	40.0
5.0	40.0
10.0	42.6
15.0	48.2
20.0	56.4

Minimum Inlet Pressure for 2.8 bar Outlet Pressure

Flow (l/m)	Inlet Pressure (bar) PRB-QKCHK-100
11.4	2.8
18.9	2.8
37.9	2.9
56.8	3.3
75.7	3.9

Stainless Steel Screen

PRB-QKCHK-100

Inline Pressure Regulators

Features

- Can be installed above or below grade
- Preset outlet pressures: 30 psi (2.0 bar) and 40 psi (2.8 bar)
- ¾" or 1" NPT female-threaded inlet and outlet

Operating Range

- Flow
  - PSI-L30X-075: 0.10 to 5.0 gpm; 6 to 300 gph (0.4 to 18.9 l/m)
  - PSI-M30X-075, psi-M40X-075: 2.0 to 10.0 gpm; 120 to 600 gph (7.8 to 37.9 l/m)
  - PSI-M40X-100: 2.0 to 20.0 gpm; 120 to 900 gph (7.8 to 56.8 l/m)
- Inlet Pressure: 10-150 psi (0.7 to 10.3 bar)

Models

- PSI-L30X-075: ¾" 30 psi (2.1 bar) regulator for low flow (red label)
- PSI-M30X-075: ¾" 30 psi (2.1 bar) regulator for medium flow (yellow label)
- PSI-M40X-075: ¾" 40 psi (2.8 bar) regulator for medium flow (yellow label)
- PSI-M40X-100: 1" 40 psi (2.8 bar) regulator for medium flow

Retrofit Pressure Regulator

Features

- Provides convenient 30 psi (2.1 bar) pressure regulation at the riser for any ½" FPT emission device or compression adapter
- Can be installed above or below grade
- Can be used with Xeri-Bird™ 8 Multi-Outlet Emission Device (see page 173)

Operating Range

- Flow: 0.50 to 4.00 gpm; 30 to 240 gph (1.9 to 15.1 l/m)
- Inlet Pressure: 15 to 70 psi (1.0 to 4.8 bar)

Dimensions

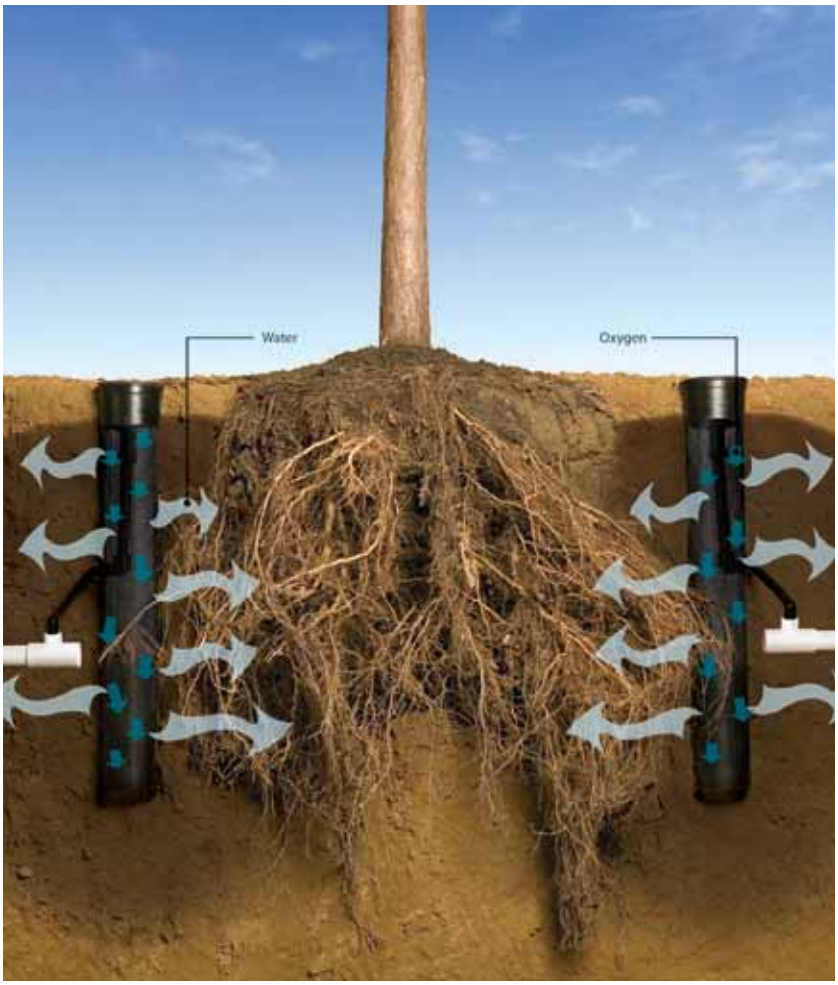
- ½" female-threaded inlet
- Height: 4" (10 cm)

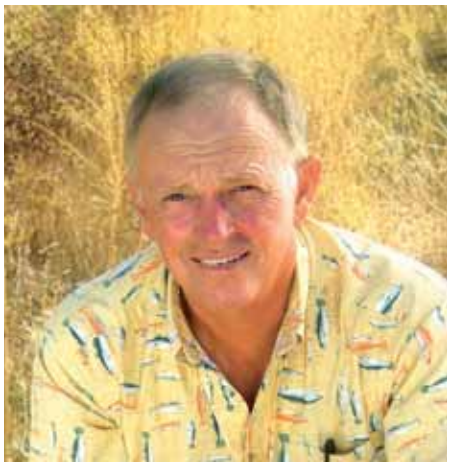
Model

- PRS-050-30

PSI-L30X-075, PSI-M40X-075, PSI-M40X-100

PRS-050-30





"On previous projects, I had installed a plastic tube with about a dozen hand-drilled holes and a retrofitted bubbler, but I've never been completely satisfied with this do-it-yourself method. At a recent job we needed to plant 200 valley oak seedlings on a 20-acre site and used the Rain Bird RWS. One year after planting, the trees show extremely good vitality. If you're looking for long-term vitality and healthy trees this is an excellent tool."

Greg Houck

Ad Land Venture

Water Saving Tips

Root Watering Series

- RWS is more efficient than above ground bubblers in distributing water to tree and shrub root zones
- Highest efficiency solution for tree irrigation – up to 95% emission uniformity with minimal wind, evaporation, or edge control losses
- RWS' dedicated subsurface irrigation zones reduce stress of trees and shrubs brought on by strict turf watering restrictions

SA Series

Swing Assemblies Connect Heads to Lateral Pipes

- Quality alternative to locally assembled swing pipe/spiral barb fittings that do not carry a manufacturer's warranty
- Comprehensive range of products support a variety of landscape solutions
- Complementary engineered fittings and spray heads instill confidence in product specification

Specifications

The operating range of the Rain Bird Swing Assemblies matches or exceeds the operating range for most ½" (1.3 cm) sprays and ¾" (1.9 cm) rotors

- Operating pressure: Up to 80 psi (5.5 bar)
- Surge pressure: Up to 240 psi (16.6 bar)
- Temperature: Up to 110° F (43° C)
- Maximum flow: 8 gpm (0.5 l/sec)
- Pressure loss at 6 gpm (0.38 l/sec) is 2.0 psi (0.14 bar)

Unique Rain Bird system offering:
Swing Assemblies, Saddle Tees, and Spray Heads

How To Specify

SA 12 5050

Inlet/Outlet
050: ½" x ½"
5050: ½" x ½"
5075: ½" x ¾"
7575: ¾" x ¾"

Length
18"
12"
6"

Model
Swing Assembly

SA Series

SA Series Swing Assemblies Specifications

Model Number	Part Number	Length		Inlet		Outlet	
		US	METRIC	US	METRIC	US	METRIC
SA-6050	A48030	6"	15.2 cm	½"	1.3 cm	½"	1.3 cm
SA-65075	A48055	6"	15.2 cm	½"	1.3 cm	¾"	1.9 cm
SA-125050	A48035	12"	30.5 cm	½"	1.3 cm	½"	1.3 cm
SA-125075	A48045	12"	30.5 cm	½"	1.3 cm	¾"	1.9 cm
SA-127575	A48050	12"	30.5 cm	¾"	1.9 cm	¾"	1.9 cm
SA-185050	A48065	18"	45.7 cm	½"	1.3 cm	½"	1.3 cm

SPX Series Swing Pipe

Swing Pipe with Spiral Barb Fittings Provides a Flexible Swing Assembly for Sprays and Rotors

Features and Benefits

- **SPX-FLEX100**
  - Superior flexibility allows pipe to be efficiently routed around hardscape, terraces, and uneven terrain to turn landscape design into reality
  - Textured surface makes product easier to handle, contributing to labor efficiency, especially under wet conditions
  - Up to 30% more flexible than competitive flexible pipe*
  - Enhanced kink resistance
  - Quick and easy installation lowers material and labor costs
  - Installs quickly leaving time for additional system installations and incremental revenue opportunities

** Based on tests conducted at the Rain Bird Product Research Center. Tests conducted on Rain Bird and principal competitors' swing pipe*

Up to 30% more flexible than competitors

SPX-FLEX100

Specifications

- Inside diameter: 0.49" (1.24 cm)
- Operating pressure: Up to 80 psi (5.5 bar)
- Temperature: Up to 110° F (43° C)

Models

- SPX-FLEX-100: 100' (30 m) coil

SB Series Spiral Barb Fittings

A Natural Product Complement to SPX Series Swing Pipe

Features and Benefits

- Fittings are made of robust acetal material to make connecting swing pipe fast and easy
- Easy twist-in insertion – no glue or clamps needed for installation
- Aggressive barb lip makes a secure connection that is less likely to leak
- Broad range of shapes and sizes allow the contractor to choose the best fitting for the application
- Extended length and aggressive barb lip prevent blow outs, reducing likelihood of contractor call backs

Specifications

- Operating pressure: Up to 80 psi (5.5 bar)
- Temperature: Up to 110° F (43° C)

Models

- SBE-050: ½" M NPT x ½" barb elbow
- SBE-050B: ½" M NPT x ½" barb elbow - bulk package
- SBE-075: ¾" M NPT x ½" barb elbow
- SBE-075B: ¾" M NPT x ½" barb elbow - bulk package
- SBA-050: ½" M NPT x ½" barb adapter
- SBA-075: ¾" M NPT x ½" barb adapter
- SB-TEE: ½" barb x ½" barb x ½" barb tee
- SB-CPLG: ½" barb x ½" barb coupling
- SBFE-050: ½" F NPT x ½" barb elbow
- SB-NPT-TEE: ½" M NPT x ½" barb x ½" spiral barb tee

RWS-B-1401

RWS-M-B-1401

RWS-S-B-1401

RWS Series

Root Watering Series promotes deep root growth and healthy tree development

- Subsurface aeration and irrigation prevents tree and shrub transplant shock
- Subsurface deep root watering and aeration ensures tree health and promotes accelerated growth
- Highest efficiency solution for tree irrigation - up to 95% emission uniformity with minimal wind, evaporation, or edge control losses

Features and Benefits

- Aesthetically designed subsurface bubbler contributes to a landscape's natural appearance
- Locking grate at grade deters vandals
- Helps prevent shallow root growth and hardscape damage
- Aesthetically attractive below grade installation
- Self-contained and factory assembled units for assured reliability
- Variety of models available to accommodate design flexibility:

For the RWS Model:

- 4" (10.2 cm) retaining cap and vandal resistant locking grate tops a 36" semi-rigid mesh tube
- Factory installed swing assemblies (excluding RWS-BGX) with a 1401 (0.25 gpm; 1.2 l/m), 1402 (0.5 gpm; 1.8 l/m), or 1404 (1.00 gpm; 3.6 l/m) bubbler on a fixed riser makes connecting to lateral lines easy
- Optional sand sock is ideal for use in sandy soil

For the RWS - Mini:

- 4" (10.2 cm) retaining cap and vandal resistant locking grate tops a 18" semi-rigid mesh tube
- Factory installed ½" spiral barb elbow with a 1401 or 1402 bubbler makes connecting to lateral lines easy
- Optional sand sock is ideal for use in sandy soil

For the RWS - Supplemental:

- 2" (5.1 cm) snap-on cap and base cap enclose a 10" (25.4 cm) semi-rigid mesh tube
- Factory installed ½" spiral barb elbow with 1401 bubbler makes connecting to lateral lines easy
- Right size for shrubs

RWS-Sock

Designed to fit over the RWS and RWS-Mini units. Ideal for use in sandy soil, it will deter fine soil from infiltrating into the RWS canister

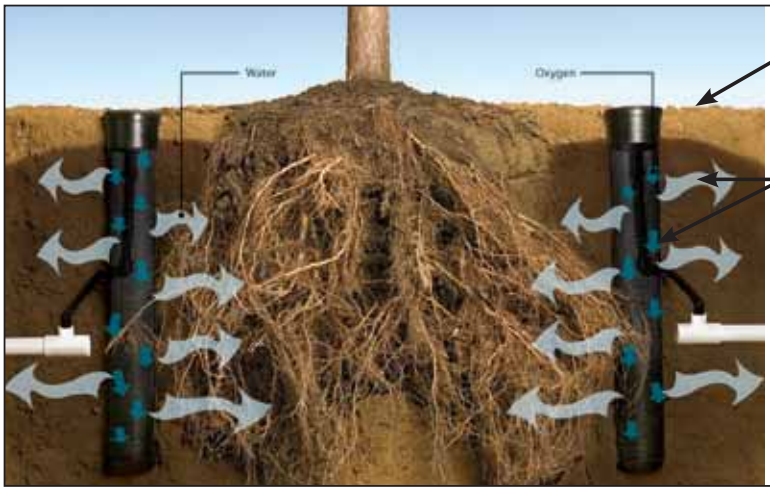
RWS integrated collar and locking grate retainer

Dimensions

- Root Watering: 4" (10.2 cm) diameter x 36" (91.5 cm) length
- Root Watering – Mini: 4" (10.2 cm) diameter x 18" (45.7 cm) length
- Root Watering – Supplemental: 2" (5.1 cm) diameter x 10" (25.4 cm) length

Models /Specifications

Model	Bubbler	Check Valve	Swing Assembly w/ ½" (15/21) M NPT inlet	Spiral Barb Elbow w/ ½" (15/21) M NPT inlet
Root Watering (with 4" (10.2 cm) vandal-resistant locking grate)				
RWS	Ideal for ¼" drip tubing or customer provided hardware	–	–	–
RWS-B-C-1401	0.25 gpm (1.2 l/m)	✔	✔	–
RWS-B-1401	0.25 gpm (1.2 l/m)	–	✔	–
RWS-B-X-1401	0.25 gpm (1.2 l/m)	–	✔ (18")	–
RWS-B-C-1402	0.50 gpm (1.8 l/m)	✔	✔	–
RWS-B-1402	0.50 gpm (1.8 l/m)	–	✔	–
RWS-B-C-1404	1.00 gpm (3.6 l/m)	✔	✔	–
Root Watering - Mini (with 4" (10.2 cm) vandal-resistant locking grate)				
RWS-M	Ideal for ¼" drip tubing or customer provided hardware	–	–	–
RWS-M-B-C-1401	0.25 gpm (1.2 l/m)	✔	–	✔
RWS-M-B-1401	0.25 gpm (1.2 l/m)	–	–	✔
RWS-M-B-C-1402	0.50 gpm (1.8 l/m)	✔	–	✔
RWS-M-B-1402	0.50 gpm (1.8 l/m)	–	–	✔
Root Watering - Supplemental (with 2" (5.1 cm) snap-on cap and base)				
RWS-S-B-C-1401	0.25 gpm (1.2 l/m)	✔	–	✔
RWS-S-B-1401	0.25 gpm (1.2 l/m)	–	–	✔
Root Watering - Accessories				
RWS-SOCK (Root Watering Sand Sock)				
RWS- GRATE-P (Root Watering Series Purple Grate for RWS and RWS Mini)				



Install product even with finish grade

Oxygen and water circulation promote healthy plant growth

Position units evenly spaced around root ball

How To Specify

RWS - x - x - x - xxxx

Bubbler Model
1401
1402
1404

Optional
C: Check Valve

Bubbler
B: Bubbler pre-installed

Other Size
M: RWS-Mini (4" (10.2 cm) x 18" (45.7 cm))
S: RWS-Supplemental (2" (5.1 cm) x 10" (25.4 cm))

Model
RWS Root Watering Series

A variety of valve box sizes and shapes makes it easy to choose the right box for the job. Black bodies and lids are made of 100% recycled materials

Interlocking Bottoms for Deep Installations

International non-potable symbol and language

VB Series Valve Boxes

Valve Boxes provide superior box strength for better valve protection

- Wide flange with corrugated structure provides superior box strength for better valve protection
- Unique shovel access slot provides superior accessibility for service
- Lids with no holes reduce danger from bees, spiders, and snakes
- Earth-friendly LEED-compliant material made of 100% recycled materials (black boxes only)

Features and Benefits

These features apply to the **Standard, Jumbo, Super Jumbo, Maxi Jumbo, and 10" Round** Valve Boxes:

- Unique bolt hole knock-out design in lid keeps hazardous insects and pests out of the box
- Shovel access on body allows for easy lid removal
- Knock-out retainers securely hold removed knock-outs above the pipe, keeping dirt out during backfill
- Beveled lid edges help prevent damage to lids from lawn equipment
- Interlocking bottoms allow boxes to mate securely together bottom-to-bottom for deep installations
- Lid marking area provides dedicated location for identification

Dimensions and Additional Features by Model

STANDARD RECTANGULAR SERIES (VB-STD)

- Dimensions: 21.8" L x 16.6" W x 12.0" H (55.4 cm x 42.2 cm x 30.5 cm)
- Two large center knock-outs accommodate up to 3½" (8.9 cm) diameter pipe and eleven knock-outs accommodate up to 2" (5.0 cm) diameter pipe
- VB-STD: Black body and green lid
- VB-STDP: Black body and purple lid with bilingual non-potable warning
- VB-STD-B: Black body only
- VB-STD-L: Green lid
- VB-STDP-L: Purple lid with bilingual non-potable warning
- VB-STDBKL: Black lid
- VB-STD-H: Black body and green lid with locking hex bolt

Standard 6" extension dimensions: 20.0" L x 14.75" W x 6.75" H (50.8 cm x 37.5 cm x 17.1 cm)

- VB-STD-6EXT: 6" standard extension black body and green lid
- VB-STD-6EXT-B: 6" standard extension black body only

JUMBO RECTANGULAR SERIES (VB-JMB)

- Dimensions: 26.3" L x 19.8" W x 12.1" H (66.8 cm x 50.3 cm x 30.7 cm)
- Two large center knock-outs accommodate up to 3½" (8.9 cm) diameter pipe. (Extension does not have knock-outs)
- VB-JMB: Black body and green lid
- VB-JMBP: Black body and purple lid with bilingual non-potable warning
- VB-JMB-B: Black body only
- VB-JMB-L: Green lid
- VB-JMBP-L: Purple lid with bilingual non-potable warning
- VB-JMBBKL: Black lid
- VB-JMB-H: Black body and green lid with locking hex bolt

- Jumbo 6" extension dimensions: 24.4" L x 17.9" W x 6.75" H (62.0 cm x 45.5 cm x 17.1 cm)
- VB-JMB-6EXT: 6" jumbo extension black body and green lid
- VB-JMB-6EXT-B: 6" jumbo extension black body only

SUPER JUMBO RECTANGULAR SERIES (VB-SPR)

- Dimensions: 33.1" L x 23.8" W x 15.0" H (84.1 cm x 60.5 cm x 38.1 cm)
- Fourteen knock-outs accommodate up to 3½" (8.9 cm) diameter pipe
- Includes two stainless steel bolts and clips to securely fasten the lid to the body
- VB-SPR-H: Black body and green lid with 2 locking hex bolts
- VB-SPR-L: Green lid
- VB-SPR-PL: Purple Lid - only fits VB-SPR valve boxes which have the following dimensions: 33.1" L x 23.8" W x 15.0" H (84.1 cm x 60.5 cm x 38.1 cm)

MAXI JUMBO RECTANGULAR SERIES (VB-MAX)

- Dimensions: 40.3" L x 27.1" W x 18.0" H (102.4 cm x 68.8 cm x 45.7 cm)
- Eighteen knock-outs accommodate up to 3½" (8.9 cm) diameter pipe
- Includes two stainless steel bolts and clips to securely fasten the lid to the body
- VB-MAX-H: Black body and green lid with 2 locking hex bolts
- VB-MAX-L: Green lid
- VB-MAX-PL: Purple Lid - only fits VB-MAX valve boxes which have the following dimensions: 40.3" L x 27.1" W x 18.0" H (102.4 cm x 68.8 cm x 45.7 cm)

VB-SPR-PL

VB-MAX-PL


VB-STD


VB-JMB


VB-SPR


VB-MAX


VB-10RND


VB-7RND


VB-6RND


VB-STD-6EXT


Valve Box Lids - Green, Purple (to Indicate Non-potable Water), Black

VB Series Valve Boxes (cont.)

10" ROUND SERIES (VB-10RND)

- Dimensions: 10.25" Top D x 10.0" H x 13.75" Bottom D (26.0 cm x 25.4 cm x 34.9 cm)
- Four equally spaced knock-outs accommodate up to 2" (5.0 cm) diameter pipe. (Extension does not have knock-outs)
- VB-10RND: Black body and green lid
- VB-10RND-B: Black body only
- VB-10RND-L: Green lid
- VB-10RNDP-L: Purple lid with bilingual non-potable warning
- VB-10RNDBKL: Black lid
- VB-10RND-H: Black body and green lid with locking hex bolt

7" ROUND SERIES (VB-7RND)

- Dimensions: 6.4" Top D x 9.0" H x 9.8" Bottom D (16.3 cm x 22.9 cm x 24.9 cm)
- Two pre-molded side openings accommodate up to 2" (5.0 cm) diameter pipe
- VB-7RND: Black body and green lid
- VB-7RNDP: Black body and purple lid
- VB-7RNDBK: Black Body and black lid

6" ROUND SERIES (VB-6RND)

- Dimensions: 6.1" Top D x 9.0" H x 8.3" Bottom D (15.5 cm x 22.9 cm x 21.1 cm)
- Two pre-molded side openings accommodate up to 2" (5.0 cm) diameter pipe
- VB-6RND: Green body and green lid

LOCKING SYSTEMS

VANDAL RESISTANT

- VB-LOCK-H: Hex head 3/8" x 2 1/4" (1.0 x 5.7 cm) bolt, washer, and clip
- VB-LOCK-P: Penta head 3/8" x 2 1/4" (1.0 x 5.7 cm) bolt, washer, and clip

Purple Valve Box Lids to Identify Non-potable Irrigation Systems

16A-FDV / 16A-FDV-075

Drain Valves Evacuate Lateral Lines After Each Irrigation Cycle to Reduce Damage Caused by Freezing

Features and Benefits

- Automatically drains water lines to prevent freezing
- Plastic perforated cap screens out large particles
- Dispersion pad filters out small particles

Specifications

- Pressure: Up to 125 psi (8.5 bar)
- Flow: 1 gpm (0.23 m^3/h; 0.06 l/s) maximum rate before sealing
- Average opening pressure when installed vertically: 2.5 psi (0.2 bar)
- Average closing pressure when installed vertically: 5.5 psi (0.4 bar)
- Diameter: 1 3/8" (3.5 cm), Length: 1" (2.5 cm)

Models

- 16A-FDV: ½" (15/21) male threaded inlet
- 16A-FDV-075: ¾" (20/27) male threaded inlet

16A-FDV

Rewards Program

Rain Bird offers Rewards programs for irrigation contractors and public or nonprofit agencies. With Rain Bird Rewards and Agency Rewards you can earn valuable Rewards Points just for buying the most extensive line of landscape irrigation products available. Redeem Rewards Points for more Rain Bird product, marketing literature or other items designed to help your organization succeed.

Water Saving Tips

- Rain Bird Rewards offers professional marketing materials that contractors can use to communicate the benefits and advantages of water-saving products to their customers
- Water efficient products brochure, postcard and door hanger showcase the Rain Bird products that offer water savings
- A series of white papers exploring causes and potential solutions to the growing global water crisis; TV Public Service Announcements with tips for homeowners on reducing outdoor water waste; and elementary and middle school water education curriculums

Rewards Programs

Rain Bird® Rewards

It pays to install Rain Bird. Contractors can earn points from their Rain Bird purchases and redeem those points for valuable rewards. All professional landscape and irrigation contractors can join. There are no purchase or eligibility requirements at the Rewards level. Contractors can earn points on these professional Rain Bird Landscape Irrigation Products*: sprays, rotors, valves, controllers, landscape drip, pump stations, and accessories.

At the Select Contractor® levels there are certain purchase and professional responsibility requirements contractors must meet and maintain. Please call your Rain Bird Sales Representative or the Rewards Program office for more information.

Contractors can redeem points for these great items:

- Advertising and marketing services
- Merchandise including electronics, apparel and tools
- Gift cards
- Distributor credit
- Irrigation training
- Cash

** Program members earn points by purchasing qualifying Rain Bird Landscape Irrigation Products from authorized Rain Bird distributors. Landscape Irrigation Products include all residential, commercial, landscape drip and accessories products, but do not include golf, central control, agricultural or consumer products and parts, or any other products that Rain Bird designates as non-qualifying. Rain Bird reserves the right to amend or discontinue the Rain Bird Rewards or Rain Bird Agency Rewards programs in accordance with the respective Program Agreements (available at www.rainbird.com/rewards).*

Rain Bird® Agency Rewards™

Rain Bird knows that agencies must make the most of every dollar spent on irrigation. Rain Bird Agency Rewards helps them reinvest their irrigation budget in their agency and their people. Program rewards include:

- Irrigation training
- Professional development funds
- Product and industry reference literature
- Distributor credit

How to Order Brochures

- Order through your Rain Bird Distributor Service Representative
- Model Numbers:

  D39706x Rain Bird Rewards Program Brochure
  D39551x Rain Bird Rewards Enrollment Brochure
  D39561x Rain Bird Rewards Enrollment Brochure (Canada Only)
  D37341x Rain Bird Agency Enrollment Brochure
  D39560x Rain Bird Agency Enrollment Brochure (Canada Only)
  D39860x Rain Bird Agency Program Brochure

Program Enrollment Information

To enroll in Rain Bird Rewards or Rain Bird Agency Rewards, or for additional program information, please visit www.rainbird.com/rewards or call the Rain Bird Rewards Program Office at 1 (888) 370-1814.

Design & Technical Resources

Rain Bird has an extensive and growing Design and Technical Resource library. If you need a Water Savings Calculator, or you want to learn more about Irrigation and Landscape Drip Application Design, Rain Bird has helpful resources available. Be sure to check out the Webinar Section, where you can sign up for webinars about new products, troubleshooting tips, and water conservation initiatives that affect the irrigation industry.

Please go to:
http://www.rainbird.com/landscape/resources

Design & Technical Resources Web Page

The Right Choice Presentation Folder

A simple presentation folder with business card holder that can be used when assembling bids and product information for residential customers.

How to Order

- Contractors can order through Rain Bird Rewards @ www.rainbird.com/rewards or by calling 1 (888) 370-1814.

The Right Choice Folder
D38682x

"The Intelligent Use of Water" Water Efficient Systems Overview – Brochure, Postcards, Sell Sheet and Door Hanger

Contractors can utilize these selling tools when promoting the installation of a water efficient irrigation system. Specific features of our water efficient products are showcased in these materials, as well as a product solution guide to common irrigation problems.

How to Order

- Contractors can order through Rain Bird Rewards @ ww2.rainbird.com/rewards or by calling 1 (888) 370-1814.

"The Intelligent Use of Water"
Water Efficient Systems Overview Materials

Right Choice Product Sheets

Individual product sheets are offered for many of our residential irrigation products. These product sheets can be inserted into Rain Bird's Presentation Folder or Expanded Folder. Each product sheet explains the product benefits to the residential customer.

How to Order

- Contractors can order through Rain Bird Rewards @ ww2.rainbird.com/rewards or by calling 1 (888) 370-1814.

Right Choice Product Sheets

Right Choice for a Beautiful Landscape CD

This CD is an interactive tool for educating prospective customers about irrigation basics, benefits of an automatic sprinkler system and how to choose a contractor. The CD can be customized with contractor's company logo, contact information and a brief description of services.

How to Order

- Contractors can order through Rain Bird Rewards @ ww2.rainbird.com/rewards or by calling 1 (888) 370-1814.

The Right Choice CD
D39509x

Right Choice - Choosing an Irrigation Contractor

This brochure teaches the homeowner what to expect when having an irrigation system installed at their home. It provides good questions to ask the contractor before hiring them and also advice on what to avoid when choosing an irrigation contractor.

How to Order

- Contractors can order through Rain Bird Rewards @ ww2.rainbird.com/rewards or by calling 1 (888) 370-1814.

Right Choice - Choosing an Irrigation Contractor
D38537x

Right Choice - Door Hangers

Use these marketing tools to help market services to a neighborhood. Contractor's can hang these door hangers on surrounding neighbor's houses once they have completed service. Door hangers available for: New Installation, Winterization and Spring Start-Up.

How to Order

- Contractors can order through Rain Bird Rewards @ ww2.rainbird.com/rewards or by calling 1 (888) 370-1814.

The Right Choice Door Hangers

Right Choice - Water Savings Tips

Simple, yet effective tips will help conserve water and save money.

How to Order

- Contractors can order through Rain Bird Rewards @ ww2.rainbird.com/rewards or by calling 1 (888) 370-1814.

The Right Choice Watering Tips
D39498x

Naples Botanical Garden (Naples, FL)

The Intelligent Use of Water

The Naples Botanical Garden was selected as the 2009 Rain Bird Intelligent Use of Water Leadership Award winner. Having adopted the water use goals for LEED Gold Certification, the garden is a leader in freshwater conservation and management and incorporates numerous water conserving features into its design. Parking lot bio-swales capture rainwater that filters through the ground, carrying water to the giant entry feature bio-swale, the Rain Garden. A "River of Grass" garden feature serves as a natural filtration system before the water is slowly released to the preserve area. The primary irrigation system for the garden implements soil moisture detectors that direct water as needed through drip emitters. The system has allowed the garden to reduce water use by 50 percent.

Water Saving — Water Conservation Initiatives

- Since 1933 Rain Bird has focused on developing products and technologies that use water in the most efficient manner possible. This commitment to The Intelligent Use of Water® extends to education, training, services for the industry and the community. For information visit www.rainbird.com/iuow
- The Intelligent Use of Water Award recognizes individuals' and organizations' contributions to reducing outdoor water waste. The Intelligent Use of Water Film Competition (www.iuowfilm.com), is an opportunity for both amateur and professional filmmakers to draw attention to the need to use water wisely
- The Intelligent Use of Water Summit Series convenes water experts from around the world – many of them from the green industry – to discuss conservation strategies and initiatives

How to Use This Catalog

Precipitation Rates

Rain Bird has calculated for you the precipitation rates for our comprehensive lines of impacts, sprays, and rotors. These rates are an indication of the approximate rate at which water is being applied. The equations used to calculate the precipitation rates are as follows:

■ **Square Spacing**

U.S.: $PR = \frac{96.3 \times gpm}{S \times S}$

Metric: $PR = \frac{1000 \times m^3/h}{S \times S}$

▲ **Triangular Spacing**

U.S.: $PR = \frac{96.3 \times gpm}{S \times L}$

Metric: $PR = \frac{1000 \times m^3/h}{S \times L}$

96.3 = Constant (inches/square foot/hour)
1000 = Constant (millimeter/square meter/hour)
gpm = Gallons per minute (applied to area by sprinklers)
m^3/h = Cubic meters per hour (applied to area by sprinklers)
S = Spacing between sprinklers
L = Spacing between rows (S x 0.866)

Specification Information

The information in this catalog was accurate at the time of printing and may be used for proper specification of each product. For the most up-to-date information, go to the Rain Bird web site at www.rainbird.com.

ASAE Test Certification Statement

Rain Bird Corporation certifies that pressure, flow rate, and radius data for its products were determined and listed in accordance with ASAE Standard S398.1, Procedure for Sprinkler Testing and Performance Reporting, and are representative of performance of production sprinklers at the time of publication. Actual product performance may differ from the published specifications due to normal manufacturing variations and sample selection. All other specifications are solely the recommendations of Rain Bird Corporation.

Reference Charts

Information contained in this catalog is based upon generally accepted formulas, computations, and trade practices. Rain Bird Corporation, and its subsidiaries and affiliates, shall not be responsible or liable therefore if any problems, difficulties, or injuries should arise from or in connection with the use or application of this information, or if there is any error herein, typographical or otherwise.

Technical Support

Rain Bird Technical Support has the answers to your specific product and water-management questions. Call our toll-free Technical Service or Spec Hotline numbers, or for maximum convenience, access the Rain Bird web site. You'll get expert advice and the right solutions.

Technical Service	Spec Hotline	Internet Address
1-800-RAINBIRD (1-800-724-6247)	1-800-458-3005	www.rainbird.com

Pressure Loss Through Water Meters

Pressure Loss: psi
Nominal Size

Flow gpm	5/8"	3/4"	1"	1 1/2"	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			
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		
65				8.3	3.2	1.1	
70				9.8	3.7	1.3	
75				11.2	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

PVC Class 160 IPS Plastic Pipe

(1120, 1220) SDR 26 C=150

psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 1" through 6" Flow 1 through 600 gpm

Size	1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
O.D.	1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
I.D.	1.195		1.532		1.754		2.193		2.655		3.230		4.154		6.115	
Wall Thk	0.06		0.064		0.073		0.091		0.110		0.135		0.173		0.225	
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
1	0.29	0.02	0.17	0.01	0.13	0.00	0.08	0.00	0.06	0.00	0.04	0.00	0.02	0.00	0.01	0.00
2	0.57	0.06	0.35	0.02	0.27	0.01	0.17	0.00	0.12	0.00	0.08	0.00	0.05	0.00	0.02	0.00
3	0.86	0.14	0.52	0.04	0.40	0.02	0.25	0.01	0.17	0.00	0.12	0.00	0.07	0.00	0.03	0.00
4	1.14	0.23	0.70	0.07	0.53	0.04	0.34	0.01	0.23	0.00	0.16	0.00	0.09	0.00	0.04	0.00
5	1.43	0.35	0.87	0.11	0.66	0.05	0.42	0.02	0.29	0.01	0.20	0.00	0.12	0.00	0.05	0.00
6	1.72	0.49	1.04	0.15	0.80	0.08	0.51	0.03	0.35	0.01	0.23	0.00	0.14	0.00	0.07	0.00
7	2.00	0.66	1.22	0.20	0.93	0.10	0.59	0.03	0.41	0.01	0.27	0.01	0.17	0.00	0.08	0.00
8	2.29	0.84	1.39	0.25	1.06	0.13	0.68	0.04	0.46	0.02	0.31	0.01	0.19	0.00	0.09	0.00
9	2.57	1.04	1.57	0.31	1.20	0.16	0.76	0.05	0.52	0.02	0.35	0.01	0.21	0.00	0.10	0.00
10	2.86	1.27	1.74	0.38	1.33	0.20	0.85	0.07	0.58	0.03	0.39	0.01	0.24	0.00	0.11	0.00
11	3.15	1.51	1.91	0.45	1.46	0.23	0.93	0.08	0.64	0.03	0.43	0.01	0.26	0.00	0.12	0.00
12	3.43	1.78	2.09	0.53	1.59	0.27	1.02	0.09	0.70	0.04	0.47	0.01	0.28	0.00	0.13	0.00
14	4.00	2.36	2.44	0.71	1.86	0.37	1.19	0.12	0.81	0.05	0.55	0.02	0.33	0.01	0.15	0.00
16	4.58	3.02	2.78	0.90	2.12	0.47	1.36	0.16	0.93	0.06	0.63	0.02	0.38	0.01	0.17	0.00
18	5.15	3.76	3.13	1.12	2.39	0.58	1.53	0.20	1.04	0.08	0.70	0.03	0.43	0.01	0.20	0.00
20	5.72	4.57	3.48	1.36	2.66	0.71	1.70	0.24	1.16	0.09	0.78	0.04	0.47	0.01	0.22	0.00
22	6.29	5.45	3.83	1.63	2.92	0.84	1.87	0.28	1.27	0.11	0.86	0.04	0.52	0.01	0.24	0.00
24	6.87	6.40	4.18	1.91	3.19	0.99	2.04	0.33	1.39	0.13	0.94	0.05	0.57	0.01	0.26	0.00
26	7.44	7.43	4.53	2.22	3.45	1.15	2.21	0.39	1.51	0.15	1.02	0.06	0.62	0.02	0.28	0.00
28	8.01	8.52	4.87	2.54	3.72	1.32	2.38	0.44	1.62	0.18	1.10	0.07	0.66	0.02	0.31	0.00
30	8.58	9.68	5.22	2.89	3.98	1.50	2.55	0.50	1.74	0.20	1.17	0.08	0.71	0.02	0.33	0.00
35	10.01	12.87	6.09	3.84	4.65	1.99	2.97	0.67	2.03	0.26	1.37	0.10	0.83	0.03	0.38	0.00
40	11.44	16.48	6.96	4.92	5.31	2.55	3.40	0.86	2.32	0.34	1.57	0.13	0.95	0.04	0.44	0.01
45	12.87	20.49	7.83	6.12	5.98	3.17	3.82	1.07	2.61	0.42	1.76	0.16	1.07	0.05	0.49	0.01
50	14.30	24.90	8.70	7.43	6.64	3.85	4.25	1.30	2.90	0.51	1.96	0.20	1.18	0.06	0.55	0.01
55	15.73	29.70	9.57	8.87	7.30	4.59	4.67	1.55	3.19	0.61	2.15	0.24	1.30	0.07	0.60	0.01
60	17.16	34.89	10.44	10.42	7.97	5.39	5.10	1.82	3.48	0.72	2.35	0.28	1.42	0.08	0.66	0.01
65	18.59	40.45	11.31	12.08	8.63	6.25	5.52	2.11	3.77	0.83	2.55	0.32	1.54	0.09	0.71	0.01
70	20.02	46.40	12.18	13.85	9.29	7.17	5.95	2.42	4.06	0.95	2.74	0.37	1.66	0.11	0.76	0.02
75			13.05	15.74	9.96	8.15	6.37	2.75	4.35	1.08	2.94	0.42	1.78	0.12	0.82	0.02
80			13.92	17.74	10.62	9.18	6.80	3.10	4.64	1.22	3.13	0.47	1.89	0.14	0.87	0.02
85			14.79	19.84	11.29	10.27	7.22	3.46	4.93	1.37	3.33	0.53	2.01	0.15	0.93	0.02
90			15.66	22.05	11.95	11.42	7.64	3.85	5.22	1.52	3.52	0.59	2.13	0.17	0.98	0.03
95			16.53	24.37	12.61	12.62	8.07	4.26	5.51	1.68	3.72	0.65	2.25	0.19	1.04	0.03
100			17.41	26.80	13.28	13.87	8.49	4.68	5.80	1.85	3.92	0.71	2.37	0.21	1.09	0.03
110			19.15	31.97	14.61	16.55	9.34	5.58	6.37	2.20	4.31	0.85	2.60	0.25	1.20	0.04
120					15.93	19.44	10.19	6.56	6.95	2.59	4.70	1.00	2.84	0.29	1.31	0.04
130					17.26	22.54	11.04	7.60	7.53	3.00	5.09	1.16	3.08	0.34	1.42	0.05
140					18.59	25.85	11.89	8.72	8.11	3.44	5.48	1.33	3.31	0.39	1.53	0.06
150					19.92	29.37	12.74	9.91	8.69	3.91	5.87	1.51	3.55	0.44	1.64	0.07
160							13.59	11.16	9.27	4.40	6.26	1.70	3.79	0.50	1.75	0.08
170							14.44	12.49	9.85	4.93	6.66	1.90	4.02	0.56	1.86	0.09
180							15.29	13.88	10.43	5.48	7.05	2.11	4.26	0.62	1.97	0.09
190							16.14	15.34	11.01	6.05	7.44	2.33	4.50	0.69	2.08	0.10
200							16.99	16.87	11.59	6.65	7.83	2.56	4.73	0.75	2.18	0.11
225							19.11	20.98	13.04	8.27	8.81	3.19	5.33	0.94	2.46	0.14
250									14.49	10.06	9.79	3.87	5.92	1.14	2.73	0.17
275									15.94	11.99	10.77	4.62	6.51	1.36	3.00	0.21
300									17.39	14.09	11.75	5.43	7.10	1.60	3.28	0.24
325									18.83	16.34	12.73	6.29	7.69	1.85	3.55	0.28
350											13.70	7.22	8.29	2.12	3.82	0.32
375											14.68	8.20	8.88	2.41	4.10	0.37
400											15.66	9.24	9.47	2.72	4.37	0.41
425											16.64	10.34	10.06	3.04	4.64	0.46
450											17.62	11.49	10.65	3.38	4.92	0.51
475											18.60	12.70	11.24	3.73	5.19	0.57
500											19.58	13.97	11.84	4.11	5.46	0.63
550													13.02	4.90	6.01	0.75
600													14.20	5.75	6.55	0.88

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q^{1.852}}{d^{4.866}}\right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

PVC Class 200 IPS Plastic Pipe

(1120, 1220) SDR 21 C=150

psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 3/4" through 6" Flow 1 through 600 gpm

Size	3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
O.D.	1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
I.D.	0.930		1.189		1.502		1.720		2.149		2.601		3.166		4.072		5.993	
Wall Thk	0.060		0.063		0.079		0.090		0.113		0.137		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	0.29	0.02	0.18	0.01	0.14	0.00	0.09	0.00	0.06	0.00	0.04	0.00	0.02	0.00	0.01	0.00
2	0.94	0.22	0.58	0.07	0.36	0.02	0.28	0.01	0.18	0.00	0.12	0.00	0.08	0.00	0.05	0.00	0.02	0.00
3	1.42	0.46	0.87	0.14	0.54	0.04	0.41	0.02	0.27	0.01	0.18	0.00	0.12	0.00	0.07	0.00	0.03	0.00
4	1.89	0.79	1.16	0.24	0.72	0.08	0.55	0.04	0.35	0.01	0.24	0.01	0.16	0.00	0.10	0.00	0.05	0.00
5	2.36	1.19	1.44	0.36	0.91	0.12	0.69	0.06	0.44	0.02	0.30	0.01	0.20	0.00	0.12	0.00	0.06	0.00
6	2.83	1.67	1.73	0.50	1.09	0.16	0.83	0.08	0.53	0.03	0.36	0.01	0.24	0.00	0.15	0.00	0.07	0.00
7	3.31	2.22	2.02	0.67	1.27	0.22	0.97	0.11	0.62	0.04	0.42	0.01	0.29	0.01	0.17	0.00	0.08	0.00
8	3.78	2.84	2.31	0.86	1.45	0.28	1.10	0.14	0.71	0.05	0.48	0.02	0.33	0.01	0.20	0.00	0.09	0.00
9	4.25	3.53	2.60	1.07	1.63	0.34	1.24	0.18	0.80	0.06	0.54	0.02	0.37	0.01	0.22	0.00	0.10	0.00
10	4.72	4.29	2.89	1.30	1.81	0.42	1.38	0.22	0.88	0.07	0.60	0.03	0.41	0.01	0.25	0.00	0.11	0.00
11	5.20	5.12	3.18	1.55	1.99	0.50	1.52	0.26	0.97	0.09	0.66	0.03	0.45	0.01	0.27	0.00	0.13	0.00
12	5.67	6.02	3.47	1.82	2.17	0.58	1.66	0.30	1.06	0.10	0.72	0.04	0.49	0.02	0.30	0.00	0.14	0.00
14	6.61	8.00	4.05	2.42	2.54	0.78	1.93	0.40	1.24	0.14	0.85	0.05	0.57	0.02	0.34	0.01	0.16	0.00
16	7.56	10.24	4.62	3.10	2.90	0.99	2.21	0.51	1.42	0.17	0.97	0.07	0.65	0.03	0.39	0.01	0.18	0.00
18	8.50	12.74	5.20	3.85	3.26	1.24	2.49	0.64	1.59	0.22	1.09	0.09	0.73	0.03	0.44	0.01	0.20	0.00
20	9.45	15.48	5.78	4.68	3.62	1.50	2.76	0.78	1.77	0.26	1.21	0.10	0.82	0.04	0.49	0.01	0.23	0.00
22	10.39	18.46	6.36	5.59	3.98	1.79	3.04	0.93	1.95	0.31	1.33	0.12	0.90	0.05	0.54	0.01	0.25	0.00
24	11.34	21.69	6.93	6.56	4.35	2.11	3.31	1.09	2.12	0.37	1.45	0.15	0.98	0.06	0.59	0.02	0.27	0.00
26	12.28	25.15	7.51	7.61	4.71	2.44	3.59	1.26	2.30	0.43	1.57	0.17	1.06	0.06	0.64	0.02	0.30	0.00
28	13.22	28.85	8.09	8.73	5.07	2.80	3.87	1.45	2.48	0.49	1.69	0.19	1.14	0.07	0.69	0.02	0.32	0.00
30	14.17	32.77	8.67	9.92	5.43	3.18	4.14	1.65	2.65	0.56	1.81	0.22	1.22	0.08	0.74	0.02	0.34	0.00
35	16.53	43.59	10.11	13.19	6.34	4.23	4.83	2.19	3.10	0.74	2.11	0.29	1.43	0.11	0.86	0.03	0.40	0.01
40	18.89	55.80	11.56	16.89	7.24	5.42	5.52	2.80	3.54	0.95	2.42	0.37	1.63	0.14	0.99	0.04	0.45	0.01
45			13.00	21.00	8.15	6.74	6.21	3.48	3.98	1.18	2.72	0.47	1.83	0.18	1.11	0.05	0.51	0.01
50			14.45	25.51	9.05	8.18	6.90	4.23	4.42	1.43	3.02	0.57	2.04	0.22	1.23	0.06	0.57	0.01
55			15.89	30.43	9.96	9.76	7.59	5.05	4.86	1.71	3.32	0.67	2.24	0.26	1.35	0.08	0.63	0.01
60			17.34	35.75	10.86	11.47	8.28	5.93	5.31	2.01	3.62	0.79	2.45	0.30	1.48	0.09	0.68	0.01
65			18.78	41.46	11.77	13.30	8.98	6.88	5.75	2.33	3.92	0.92	2.65	0.35	1.60	0.10	0.74	0.02
70					12.68	15.25	9.67	7.89	6.19	2.67	4.23	1.05	2.85	0.41	1.72	0.12	0.80	0.02
75					13.58	17.33	10.36	8.96	6.63	3.03	4.53	1.20	3.06	0.46	1.85	0.14	0.85	0.02
80					14.49	19.53	11.05	10.10	7.08	3.42	4.83	1.35	3.26	0.52	1.97	0.15	0.91	0.02
85					15.39	21.84	11.74	11.30	7.52	3.82	5.13	1.51	3.46	0.58	2.09	0.17	0.97	0.03
90					16.30	24.28	12.43	12.56	7.96	4.25	5.43	1.68	3.67	0.65	2.22	0.19	1.02	0.03
95					17.20	26.83	13.12	13.88	8.40	4.70	5.74	1.86	3.87	0.71	2.34	0.21	1.08	0.03
100					18.11	29.51	13.81	15.26	8.85	5.16	6.04	2.04	4.08	0.78	2.46	0.23	1.14	0.04
110					19.92	35.20	15.19	18.20	9.73	6.16	6.64	2.43	4.48	0.94	2.71	0.27	1.25	0.04
120							16.57	21.38	10.61	7.24	7.25	2.86	4.89	1.10	2.96	0.32	1.36	0.05
130							17.95	24.79	11.50	8.39	7.85	3.31	5.30	1.27	3.20	0.37	1.48	0.06
140							19.33	28.44	12.38	9.62	8.45	3.80	5.71	1.46	3.45	0.43	1.59	0.07
150									13.27	10.93	9.06	4.32	6.11	1.66	3.70	0.49	1.71	0.07
160									14.15	12.32	9.66	4.87	6.52	1.87	3.94	0.55	1.82	0.08
170									15.04	13.78	10.27	5.44	6.93	2.09	4.19	0.61	1.93	0.09
180									15.92	15.32	10.87	6.05	7.34	2.33	4.43	0.68	2.05	0.10
190									16.81	16.93	11.47	6.69	7.74	2.57	4.68	0.76	2.16	0.12
200									17.69	18.62	12.08	7.35	8.15	2.83	4.93	0.83	2.27	0.13
225									19.90	23.15	13.59	9.14	9.17	3.51	5.54	1.03	2.56	0.16
250											15.10	11.11	10.19	4.27	6.16	1.26	2.84	0.19
275											16.61	13.26	11.21	5.09	6.77	1.50	3.13	0.23
300											18.11	15.57	12.23	5.98	7.39	1.76	3.41	0.27
325											19.62	18.06	13.25	6.94	8.01	2.04	3.70	0.31
350													14.26	7.96	8.62	2.34	3.98	0.36
375													15.28	9.04	9.24	2.66	4.27	0.41
400													16.30	10.19	9.85	2.99	4.55	0.46
425													17.32	11.40	10.47	3.35	4.83	0.51
450													18.34	12.67	11.09	3.72	5.12	0.57
475													19.36	14.00	11.70	4.11	5.40	0.63
500															12.32	4.52	5.69	0.69
550															13.55	5.40	6.26	0.82
600															14.78	6.34	6.82	0.97

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q^{1.852}}{d^{4.866}} \right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

PVC Class 315 IPS Plastic Pipe

(1120, 1220) SDR 13.5 C=150

PVC Class 315 IPS Plastic Pipe
psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 1/2" through 6" Flow 1 through 600 gpm

Size	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
O.D.	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
I.D.	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	0.80	0.22	0.51	0.07	0.33	0.02	0.20	0.01	0.16	0.00	0.10	0.00	0.07	0.00	0.05	0.00	0.03	0.00	0.01	0.00
2	1.59	0.78	1.02	0.26	0.65	0.09	0.41	0.03	0.31	0.01	0.20	0.00	0.14	0.00	0.09	0.00	0.06	0.00	0.03	0.00
3	2.39	1.65	1.53	0.56	0.98	0.19	0.61	0.06	0.47	0.03	0.30	0.01	0.20	0.00	0.14	0.00	0.08	0.00	0.04	0.00
4	3.19	2.81	2.04	0.96	1.30	0.32	0.82	0.10	0.62	0.05	0.40	0.02	0.27	0.01	0.18	0.00	0.11	0.00	0.05	0.00
5	3.98	4.25	2.56	1.44	1.63	0.48	1.02	0.16	0.78	0.08	0.50	0.03	0.34	0.01	0.23	0.00	0.14	0.00	0.06	0.00
6	4.78	5.96	3.07	2.02	1.95	0.67	1.23	0.22	0.94	0.11	0.60	0.04	0.41	0.02	0.28	0.01	0.17	0.00	0.08	0.00
7	5.58	7.92	3.58	2.69	2.28	0.89	1.43	0.29	1.09	0.15	0.70	0.05	0.48	0.02	0.32	0.01	0.19	0.00	0.09	0.00
8	6.37	10.14	4.09	3.44	2.60	1.15	1.63	0.37	1.25	0.19	0.80	0.06	0.54	0.03	0.37	0.01	0.22	0.00	0.10	0.00
9	7.17	12.61	4.60	4.28	2.93	1.42	1.84	0.46	1.40	0.24	0.90	0.08	0.61	0.03	0.41	0.01	0.25	0.00	0.12	0.00
10	7.97	15.33	5.11	5.20	3.25	1.73	2.04	0.56	1.56	0.29	1.00	0.10	0.68	0.04	0.46	0.01	0.28	0.00	0.13	0.00
11	8.77	18.28	5.62	6.21	3.58	2.06	2.25	0.67	1.72	0.35	1.10	0.12	0.75	0.05	0.51	0.02	0.31	0.01	0.14	0.00
12	9.56	21.47	6.13	7.29	3.90	2.42	2.45	0.78	1.87	0.41	1.20	0.14	0.82	0.05	0.55	0.02	0.33	0.01	0.15	0.00
14	11.16	28.56	7.16	9.70	4.55	3.22	2.86	1.04	2.18	0.54	1.40	0.18	0.95	0.07	0.64	0.03	0.39	0.01	0.18	0.00
16	12.75	36.56	8.18	12.41	5.20	4.13	3.27	1.33	2.50	0.69	1.60	0.23	1.09	0.09	0.74	0.04	0.44	0.01	0.21	0.00
18	14.34	45.46	9.20	15.44	5.85	5.13	3.68	1.66	2.81	0.86	1.80	0.29	1.23	0.11	0.83	0.04	0.50	0.01	0.23	0.00
20	15.94	55.25	10.22	18.76	6.50	6.24	4.09	2.02	3.12	1.05	2.00	0.35	1.36	0.14	0.92	0.05	0.56	0.02	0.26	0.00
22	17.53	65.90	11.24	22.37	7.15	7.44	4.49	2.40	3.43	1.25	2.20	0.42	1.50	0.17	1.01	0.06	0.61	0.02	0.28	0.00
24	19.12	77.41	12.27	26.28	7.80	8.74	4.90	2.82	3.74	1.47	2.40	0.49	1.63	0.20	1.10	0.07	0.67	0.02	0.31	0.00
26			13.29	30.48	8.45	10.14	5.31	3.27	4.06	1.70	2.60	0.57	1.77	0.23	1.19	0.09	0.72	0.03	0.33	0.00
28			14.31	34.95	9.10	11.62	5.72	3.76	4.37	1.95	2.79	0.66	1.91	0.26	1.29	0.10	0.78	0.03	0.36	0.00
30			15.33	39.71	9.75	13.21	6.13	4.27	4.68	2.22	2.99	0.75	2.04	0.29	1.38	0.11	0.83	0.03	0.38	0.01
35			17.89	52.82	11.38	17.57	7.15	5.68	5.46	2.95	3.49	0.99	2.38	0.39	1.61	0.15	0.97	0.04	0.45	0.01
40					13.00	22.49	8.17	7.27	6.24	3.77	3.99	1.27	2.72	0.50	1.84	0.19	1.11	0.06	0.51	0.01
45					14.63	27.96	9.19	9.03	7.02	4.69	4.49	1.58	3.06	0.62	2.07	0.24	1.25	0.07	0.58	0.01
50					16.25	33.98	10.22	10.98	7.80	5.70	4.99	1.92	3.41	0.76	2.30	0.29	1.39	0.09	0.64	0.01
55					17.88	40.53	11.24	13.10	8.58	6.80	5.49	2.29	3.75	0.90	2.53	0.35	1.53	0.10	0.71	0.02
60					19.50	47.61	12.26	15.38	9.36	7.99	5.99	2.69	4.09	1.06	2.76	0.41	1.67	0.12	0.77	0.02
65							13.28	17.84	10.14	9.26	6.49	3.12	4.43	1.23	2.99	0.47	1.81	0.14	0.83	0.02
70							14.30	20.46	10.92	10.62	6.99	3.58	4.77	1.41	3.22	0.54	1.95	0.16	0.90	0.02
75							15.32	23.25	11.70	12.07	7.49	4.07	5.11	1.61	3.45	0.62	2.08	0.18	0.96	0.03
80							16.34	26.19	12.48	13.60	7.99	4.59	5.45	1.81	3.68	0.69	2.22	0.20	1.03	0.03
85							17.37	29.30	13.26	15.21	8.48	5.13	5.79	2.02	3.90	0.78	2.36	0.23	1.09	0.03
90							18.39	32.57	14.04	16.91	8.98	5.70	6.13	2.25	4.13	0.86	2.50	0.25	1.15	0.04
95							19.41	36.00	14.82	18.69	9.48	6.30	6.47	2.49	4.36	0.95	2.64	0.28	1.22	0.04
100									15.60	20.55	9.98	6.93	6.81	2.73	4.59	1.05	2.78	0.31	1.28	0.05
110									17.16	24.51	10.98	8.27	7.49	3.26	5.05	1.25	3.06	0.37	1.41	0.06
120									18.72	28.79	11.98	9.71	8.17	3.83	5.51	1.47	3.33	0.43	1.54	0.07
130											12.98	11.26	8.85	4.44	5.97	1.70	3.61	0.50	1.67	0.08
140											13.97	12.91	9.54	5.10	6.43	1.95	3.89	0.58	1.80	0.09
150											14.97	14.67	10.22	5.79	6.89	2.22	4.17	0.65	1.92	0.10
160											15.97	16.53	10.90	6.52	7.35	2.50	4.45	0.74	2.05	0.11
170											16.97	18.49	11.58	7.30	7.81	2.80	4.72	0.82	2.18	0.13
180											17.97	20.56	12.26	8.11	8.27	3.11	5.00	0.92	2.31	0.14
190											18.97	22.72	12.94	8.97	8.73	3.44	5.28	1.01	2.44	0.15
200											19.96	24.98	13.62	9.86	9.19	3.78	5.56	1.11	2.57	0.17
225													15.32	12.26	10.34	4.70	6.25	1.38	2.89	0.21
250													17.03	14.90	11.48	5.71	6.95	1.68	3.21	0.26
275													18.73	17.77	12.63	6.82	7.64	2.01	3.53	0.31
300															13.78	8.01	8.34	2.36	3.85	0.36
325															14.93	9.28	9.03	2.73	4.17	0.42
350															16.08	10.65	9.73	3.14	4.49	0.48
375															17.23	12.10	10.42	3.56	4.81	0.54
400															18.38	13.63	11.12	4.01	5.13	0.61
425															19.52	15.25	11.81	4.49	5.45	0.68
450																	12.51	4.99	5.77	0.76
475																	13.20	5.52	6.09	0.84
500																	13.89	6.07	6.41	0.92
550																	15.28	7.23	7.06	1.10
600																	16.67	8.50	7.70	1.30

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q1.852}{d4.866}\right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

PVC Schedule 40 IPS Plastic Pipe

(1120, 1220) C=150

psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 1/2" through 6" Flow 1 through 600 gpm

Size	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
O.D.	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
I.D.	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	1.06	0.43	0.60	0.11	0.37	0.03	0.21	0.01	0.16	0.00	0.10	0.00	0.07	0.00	0.04	0.00	0.03	0.00	0.01	0.00
2	2.11	1.55	1.20	0.39	0.74	0.12	0.43	0.03	0.32	0.02	0.19	0.00	0.13	0.00	0.09	0.00	0.05	0.00	0.02	0.00
3	3.17	3.28	1.80	0.83	1.11	0.26	0.64	0.07	0.48	0.03	0.29	0.01	0.20	0.00	0.13	0.00	0.08	0.00	0.03	0.00
4	4.22	5.58	2.41	1.42	1.48	0.44	0.86	0.12	0.64	0.06	0.38	0.02	0.26	0.01	0.17	0.00	0.10	0.00	0.04	0.00
5	5.28	8.43	3.01	2.15	1.86	0.66	1.07	0.17	0.80	0.09	0.48	0.02	0.33	0.01	0.22	0.00	0.13	0.00	0.06	0.00
6	6.34	11.81	3.61	3.01	2.23	0.93	1.29	0.24	0.96	0.12	0.57	0.03	0.40	0.01	0.26	0.01	0.15	0.00	0.07	0.00
7	7.39	15.71	4.21	4.00	2.60	1.24	1.50	0.33	1.12	0.16	0.67	0.05	0.46	0.02	0.30	0.01	0.18	0.00	0.08	0.00
8	8.45	20.12	4.81	5.12	2.97	1.58	1.72	0.42	1.28	0.20	0.76	0.06	0.53	0.02	0.35	0.01	0.20	0.00	0.09	0.00
9	9.50	25.01	5.41	6.37	3.34	1.97	1.93	0.52	1.44	0.25	0.86	0.07	0.59	0.03	0.39	0.01	0.23	0.00	0.10	0.00
10	10.56	30.40	6.02	7.74	3.71	2.39	2.15	0.63	1.60	0.31	0.96	0.09	0.66	0.04	0.43	0.01	0.25	0.00	0.11	0.00
11	11.61	36.26	6.62	9.23	4.08	2.85	2.36	0.75	1.76	0.37	1.05	0.11	0.73	0.04	0.48	0.02	0.28	0.00	0.12	0.00
12	12.67	42.59	7.22	10.84	4.45	3.35	2.57	0.88	1.91	0.43	1.15	0.12	0.79	0.05	0.52	0.02	0.30	0.00	0.13	0.00
14	14.78	56.64	8.42	14.42	5.20	4.45	3.00	1.17	2.23	0.57	1.34	0.16	0.92	0.07	0.61	0.02	0.35	0.01	0.16	0.00
16	16.89	72.52	9.63	18.46	5.94	5.70	3.43	1.50	2.55	0.73	1.53	0.21	1.06	0.09	0.69	0.03	0.40	0.01	0.18	0.00
18	19.01	90.17	10.83	22.95	6.68	7.09	3.86	1.87	2.87	0.91	1.72	0.26	1.19	0.11	0.78	0.04	0.45	0.01	0.20	0.00
20	21.12	109.58	12.03	27.89	7.42	8.62	4.29	2.27	3.19	1.10	1.91	0.32	1.32	0.13	0.87	0.05	0.50	0.01	0.22	0.00
22			13.24	33.27	8.17	10.28	4.72	2.71	3.51	1.32	2.10	0.38	1.45	0.15	0.95	0.06	0.55	0.01	0.24	0.00
24			14.44	39.08	8.91	12.07	5.15	3.18	3.83	1.55	2.29	0.45	1.58	0.18	1.04	0.07	0.60	0.02	0.27	0.00
26			15.64	45.32	9.65	14.00	5.58	3.69	4.15	1.79	2.49	0.52	1.71	0.21	1.13	0.08	0.66	0.02	0.29	0.00
28			16.85	51.98	10.39	16.06	6.01	4.23	4.47	2.06	2.68	0.59	1.85	0.24	1.22	0.09	0.71	0.02	0.31	0.00
30			18.05	59.05	11.14	18.24	6.44	4.80	4.79	2.34	2.87	0.67	1.98	0.27	1.30	0.10	0.76	0.03	0.33	0.00
35					12.99	24.26	7.51	6.39	5.58	3.11	3.35	0.89	2.31	0.36	1.52	0.13	0.88	0.03	0.39	0.00
40					14.85	31.06	8.58	8.18	6.38	3.98	3.82	1.15	2.64	0.46	1.74	0.17	1.01	0.04	0.44	0.01
45					16.71	38.62	9.65	10.17	7.18	4.95	4.30	1.42	2.97	0.58	1.95	0.21	1.13	0.06	0.50	0.01
50					18.56	46.94	10.73	12.36	7.98	6.02	4.78	1.73	3.30	0.70	2.17	0.25	1.26	0.07	0.56	0.01
55							11.80	14.74	8.78	7.18	5.26	2.06	3.63	0.84	2.39	0.30	1.39	0.08	0.61	0.01
60							12.87	17.32	9.57	8.43	5.74	2.43	3.96	0.98	2.60	0.36	1.51	0.09	0.67	0.01
65							13.94	20.08	10.37	9.78	6.21	2.81	4.29	1.14	2.82	0.41	1.64	0.11	0.72	0.01
70							15.02	23.03	11.17	11.21	6.69	3.23	4.62	1.31	3.04	0.47	1.76	0.13	0.78	0.02
75							16.09	26.17	11.97	12.74	7.17	3.66	4.95	1.48	3.25	0.54	1.89	0.14	0.83	0.02
80							17.16	29.49	12.77	14.36	7.65	4.13	5.28	1.67	3.47	0.60	2.02	0.16	0.89	0.02
85							18.23	32.99	13.56	16.06	8.13	4.62	5.60	1.87	3.69	0.68	2.14	0.18	0.94	0.02
90							19.31	36.67	14.36	17.85	8.61	5.14	5.93	2.08	3.91	0.75	2.27	0.20	1.00	0.03
95									15.16	19.73	9.08	5.68	6.26	2.30	4.12	0.83	2.39	0.22	1.06	0.03
100									15.96	21.69	9.56	6.24	6.59	2.53	4.34	0.91	2.52	0.24	1.11	0.03
110									17.55	25.88	10.52	7.44	7.25	3.01	4.77	1.09	2.77	0.29	1.22	0.04
120									19.15	30.40	11.47	8.74	7.91	3.54	5.21	1.28	3.02	0.34	1.33	0.05
130											12.43	10.14	8.57	4.11	5.64	1.48	3.28	0.40	1.44	0.05
140											13.39	11.63	9.23	4.71	6.08	1.70	3.53	0.45	1.55	0.06
150											14.34	13.21	9.89	5.35	6.51	1.93	3.78	0.52	1.67	0.07
160											15.30	14.89	10.55	6.03	6.94	2.18	4.03	0.58	1.78	0.08
170											16.25	16.65	11.21	6.74	7.38	2.44	4.28	0.65	1.89	0.09
180											17.21	18.51	11.87	7.50	7.81	2.71	4.54	0.72	2.00	0.10
190											18.17	20.46	12.53	8.29	8.25	2.99	4.79	0.80	2.11	0.11
200											19.12	22.50	13.19	9.11	8.68	3.29	5.04	0.88	2.22	0.12
225													14.84	11.33	9.76	4.09	5.67	1.09	2.50	0.15
250													16.48	13.77	10.85	4.98	6.30	1.33	2.78	0.18
275													18.13	16.42	11.93	5.94	6.93	1.58	3.05	0.22
300															13.02	6.97	7.56	1.86	3.33	0.25
325															14.10	8.09	8.19	2.16	3.61	0.29
350															15.19	9.27	8.82	2.47	3.89	0.34
375															16.27	10.54	9.45	2.81	4.16	0.38
400															17.36	11.87	10.08	3.16	4.44	0.43
425															18.44	13.28	10.71	3.54	4.72	0.48
450															19.53	14.76	11.34	3.93	5.00	0.54
475																	11.97	4.35	5.28	0.59
500																	12.60	4.78	5.55	0.65
550																	13.86	5.70	6.11	0.78
600																	15.12	6.70	6.66	0.91

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q1.852}{d4.866} \right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

PVC Schedule 80 IPS Plastic Pipe

(1120, 1220) C=150

psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 1/2" through 6" Flow 1 through 600 gpm

Size	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
O.D.	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
I.D.	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	1.37	0.81	0.74	0.18	0.45	0.05	0.25	0.01	0.18	0.01	0.11	0.00	0.08	0.00	0.05	0.00	0.03	0.00	0.01	0.00
2	2.74	2.92	1.48	0.66	0.89	0.19	0.50	0.05	0.36	0.02	0.22	0.01	0.15	0.00	0.10	0.00	0.06	0.00	0.02	0.00
3	4.11	6.18	2.23	1.39	1.34	0.40	0.75	0.10	0.54	0.05	0.33	0.01	0.23	0.01	0.15	0.00	0.08	0.00	0.04	0.00
4	5.48	10.52	2.97	2.37	1.78	0.69	1.00	0.17	0.73	0.08	0.43	0.02	0.30	0.01	0.19	0.00	0.11	0.00	0.05	0.00
5	6.85	15.90	3.71	3.57	2.23	1.04	1.25	0.25	0.91	0.12	0.54	0.03	0.38	0.01	0.24	0.00	0.14	0.00	0.06	0.00
6	8.22	22.27	4.45	5.01	2.68	1.45	1.50	0.36	1.09	0.16	0.65	0.05	0.45	0.02	0.29	0.01	0.17	0.00	0.07	0.00
7	9.59	29.62	5.19	6.66	3.12	1.93	1.75	0.47	1.27	0.22	0.76	0.06	0.53	0.03	0.34	0.01	0.20	0.00	0.09	0.00
8	10.96	37.92	5.94	8.53	3.57	2.47	2.00	0.61	1.45	0.28	0.87	0.08	0.61	0.03	0.39	0.01	0.22	0.00	0.10	0.00
9	12.33	47.16	6.68	10.60	4.01	3.07	2.25	0.75	1.63	0.35	0.98	0.10	0.68	0.04	0.44	0.01	0.25	0.00	0.11	0.00
10	13.70	57.30	7.42	12.88	4.46	3.74	2.50	0.91	1.82	0.42	1.09	0.12	0.76	0.05	0.49	0.02	0.28	0.00	0.12	0.00
11	15.07	68.35	8.16	15.37	4.91	4.46	2.75	1.09	2.00	0.50	1.20	0.14	0.83	0.06	0.53	0.02	0.31	0.01	0.14	0.00
12	16.44	80.29	8.90	18.05	5.35	5.23	3.00	1.28	2.18	0.59	1.30	0.17	0.91	0.07	0.58	0.02	0.33	0.01	0.15	0.00
14			10.39	24.01	6.24	6.96	3.50	1.70	2.54	0.78	1.52	0.22	1.06	0.09	0.68	0.03	0.39	0.01	0.17	0.00
16			11.87	30.74	7.14	8.91	4.00	2.18	2.90	1.00	1.74	0.29	1.21	0.12	0.78	0.04	0.45	0.01	0.20	0.00
18			13.36	38.22	8.03	11.08	4.50	2.71	3.27	1.24	1.96	0.36	1.36	0.15	0.87	0.05	0.50	0.01	0.22	0.00
20			14.84	46.45	8.92	13.47	5.00	3.30	3.63	1.51	2.17	0.43	1.51	0.18	0.97	0.06	0.56	0.02	0.25	0.00
22			16.32	55.40	9.81	16.06	5.50	3.93	3.99	1.80	2.39	0.52	1.67	0.21	1.07	0.07	0.61	0.02	0.27	0.00
24			17.81	65.08	10.70	18.87	6.00	4.62	4.36	2.12	2.61	0.61	1.82	0.25	1.17	0.09	0.67	0.02	0.30	0.00
26			19.29	75.47	11.60	21.88	6.50	5.36	4.72	2.46	2.82	0.70	1.97	0.29	1.26	0.10	0.73	0.03	0.32	0.00
28					12.49	25.10	7.00	6.14	5.08	2.82	3.04	0.81	2.12	0.34	1.36	0.11	0.78	0.03	0.34	0.00
30					13.38	28.51	7.50	6.98	5.45	3.20	3.26	0.92	2.27	0.38	1.46	0.13	0.84	0.03	0.37	0.00
35					15.61	37.92	8.75	9.28	6.35	4.26	3.80	1.22	2.65	0.51	1.70	0.17	0.98	0.04	0.43	0.01
40					17.84	48.55	10.00	11.88	7.26	5.45	4.35	1.56	3.03	0.65	1.94	0.22	1.12	0.06	0.49	0.01
45							11.25	14.78	8.17	6.78	4.89	1.94	3.41	0.81	2.19	0.27	1.26	0.07	0.55	0.01
50							12.51	17.96	9.08	8.24	5.43	2.36	3.78	0.98	2.43	0.33	1.40	0.09	0.62	0.01
55							13.76	21.42	9.99	9.83	5.98	2.82	4.16	1.17	2.67	0.40	1.53	0.10	0.68	0.01
60							15.01	25.16	10.89	11.54	6.52	3.31	4.54	1.37	2.91	0.47	1.67	0.12	0.74	0.02
65							16.26	29.18	11.80	13.38	7.06	3.84	4.92	1.59	3.16	0.54	1.81	0.14	0.80	0.02
70							17.51	33.47	12.71	15.35	7.61	4.40	5.30	1.83	3.40	0.62	1.95	0.16	0.86	0.02
75							18.76	38.02	13.62	17.44	8.15	5.00	5.68	2.08	3.64	0.71	2.09	0.18	0.92	0.03
80							20.01	42.84	14.52	19.65	8.69	5.64	6.06	2.34	3.89	0.80	2.23	0.21	0.98	0.03
85									15.43	21.99	9.24	6.31	6.43	2.62	4.13	0.89	2.37	0.23	1.05	0.03
90									16.34	24.44	9.78	7.01	6.81	2.91	4.37	0.99	2.51	0.26	1.11	0.04
95									17.25	27.01	10.32	7.75	7.19	3.22	4.61	1.09	2.65	0.28	1.17	0.04
100									18.16	29.70	10.87	8.52	7.57	3.54	4.86	1.20	2.79	0.31	1.23	0.04
110									19.97	35.42	11.95	10.16	8.33	4.22	5.34	1.43	3.07	0.37	1.35	0.05
120											13.04	11.93	9.08	4.95	5.83	1.68	3.35	0.44	1.48	0.06
130											14.12	13.84	9.84	5.74	6.31	1.95	3.63	0.51	1.60	0.07
140											15.21	15.87	10.60	6.59	6.80	2.24	3.91	0.58	1.72	0.08
150											16.30	18.03	11.35	7.49	7.29	2.54	4.19	0.66	1.85	0.09
160											17.38	20.32	12.11	8.44	7.77	2.87	4.47	0.74	1.97	0.10
170											18.47	22.73	12.87	9.44	8.26	3.21	4.74	0.83	2.09	0.11
180											19.56	25.27	13.63	10.49	8.74	3.56	5.02	0.93	2.22	0.13
190													14.38	11.59	9.23	3.94	5.30	1.02	2.34	0.14
200													15.14	12.75	9.71	4.33	5.58	1.12	2.46	0.15
225													17.03	15.85	10.93	5.39	6.28	1.40	2.77	0.19
250													18.92	19.26	12.14	6.54	6.98	1.70	3.08	0.23
275													20.82	22.97	13.36	7.81	7.67	2.03	3.38	0.28
300															14.57	9.17	8.37	2.38	3.69	0.33
325															15.79	10.63	9.07	2.76	4.00	0.38
350															17.00	12.20	9.77	3.17	4.31	0.43
375															18.21	13.86	10.46	3.60	4.62	0.49
400															19.43	15.61	11.16	4.05	4.92	0.55
425																	11.86	4.54	5.23	0.62
450																	12.56	5.04	5.54	0.69
475																	13.26	5.57	5.85	0.76
500																	13.95	6.13	6.15	0.84
550																	15.35	7.31	6.77	1.00
600																	16.74	8.58	7.38	1.17

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q^{1.852}}{d^{4.866}} \right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

Polyethylene (PE) SDR Pressure Rated Tube

(2306, 3206, 3306) SDR 7, 9, 11.5, 15 C=150

psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 1/2" through 6" Flow 1 through 600 gpm

Size I.D.	1/2" 0.622		3/4" 0.824		1" 1.049		1 1/4" 1.380		1 1/2" 1.610		2" 2.067		2 1/2" 2.469		3" 3.068		4" 4.026		6" 6.065	
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	1.06	0.43	0.60	0.11	0.37	0.03	0.21	0.01	0.16	0.00	0.10	0.00	0.07	0.00	0.04	0.00	0.03	0.00	0.01	0.00
2	2.11	1.55	1.20	0.39	0.74	0.12	0.43	0.03	0.32	0.02	0.19	0.00	0.13	0.00	0.09	0.00	0.05	0.00	0.02	0.00
3	3.17	3.28	1.80	0.83	1.11	0.26	0.64	0.07	0.47	0.03	0.29	0.01	0.20	0.00	0.13	0.00	0.08	0.00	0.03	0.00
4	4.22	5.58	2.41	1.42	1.48	0.44	0.86	0.12	0.63	0.05	0.38	0.02	0.27	0.01	0.17	0.00	0.10	0.00	0.04	0.00
5	5.28	8.43	3.01	2.15	1.86	0.66	1.07	0.17	0.79	0.08	0.48	0.02	0.34	0.01	0.22	0.00	0.13	0.00	0.06	0.00
6	6.34	11.81	3.61	3.01	2.23	0.93	1.29	0.24	0.95	0.12	0.57	0.03	0.40	0.01	0.26	0.01	0.15	0.00	0.07	0.00
7	7.39	15.71	4.21	4.00	2.60	1.24	1.50	0.33	1.10	0.15	0.67	0.05	0.47	0.02	0.30	0.01	0.18	0.00	0.08	0.00
8	8.45	20.12	4.81	5.12	2.97	1.58	1.72	0.42	1.26	0.20	0.76	0.06	0.54	0.02	0.35	0.01	0.20	0.00	0.09	0.00
9	9.50	25.01	5.41	6.37	3.34	1.97	1.93	0.52	1.42	0.24	0.86	0.07	0.60	0.03	0.39	0.01	0.23	0.00	0.10	0.00
10	10.56	30.40	6.02	7.74	3.71	2.39	2.15	0.63	1.58	0.30	0.96	0.09	0.67	0.04	0.43	0.01	0.25	0.00	0.11	0.00
11	11.61	36.26	6.62	9.23	4.08	2.85	2.36	0.75	1.73	0.35	1.05	0.11	0.74	0.04	0.48	0.02	0.28	0.00	0.12	0.00
12	12.67	42.59	7.22	10.84	4.45	3.35	2.57	0.88	1.89	0.42	1.15	0.12	0.80	0.05	0.52	0.02	0.30	0.00	0.13	0.00
14	14.78	56.64	8.42	14.42	5.20	4.45	3.00	1.17	2.21	0.55	1.34	0.16	0.94	0.07	0.61	0.02	0.35	0.01	0.16	0.00
16	16.89	72.52	9.63	18.46	5.94	5.70	3.43	1.50	2.52	0.71	1.53	0.21	1.07	0.09	0.69	0.03	0.40	0.01	0.18	0.00
18	19.01	90.17	10.83	22.95	6.68	7.09	3.86	1.87	2.84	0.88	1.72	0.26	1.21	0.11	0.78	0.04	0.45	0.01	0.20	0.00
20			12.03	27.89	7.42	8.62	4.29	2.27	3.15	1.07	1.91	0.32	1.34	0.13	0.87	0.05	0.50	0.01	0.22	0.00
22			13.24	33.27	8.17	10.28	4.72	2.71	3.47	1.28	2.10	0.38	1.47	0.16	0.95	0.06	0.55	0.01	0.24	0.00
24			14.44	39.08	8.91	12.07	5.15	3.18	3.78	1.50	2.29	0.45	1.61	0.19	1.04	0.07	0.60	0.02	0.27	0.00
26			15.64	45.32	9.65	14.00	5.58	3.69	4.10	1.74	2.49	0.52	1.74	0.22	1.13	0.08	0.66	0.02	0.29	0.00
28			16.85	51.98	10.39	16.06	6.01	4.23	4.41	2.00	2.68	0.59	1.88	0.25	1.22	0.09	0.71	0.02	0.31	0.00
30			18.05	59.05	11.14	18.24	6.44	4.80	4.73	2.27	2.87	0.67	2.01	0.28	1.30	0.10	0.76	0.03	0.33	0.00
35					12.99	24.26	7.51	6.39	5.52	3.02	3.35	0.89	2.35	0.38	1.52	0.13	0.88	0.03	0.39	0.00
40					14.85	31.06	8.58	8.18	6.30	3.86	3.82	1.15	2.68	0.48	1.74	0.17	1.01	0.04	0.44	0.01
45					16.71	38.62	9.65	10.17	7.09	4.80	4.30	1.42	3.02	0.60	1.95	0.21	1.13	0.06	0.50	0.01
50					18.56	46.94	10.73	12.36	7.88	5.84	4.78	1.73	3.35	0.73	2.17	0.25	1.26	0.07	0.56	0.01
55							11.80	14.74	8.67	6.96	5.26	2.06	3.69	0.87	2.39	0.30	1.39	0.08	0.61	0.01
60							12.87	17.32	9.46	8.18	5.74	2.43	4.02	1.02	2.60	0.36	1.51	0.09	0.67	0.01
65							13.94	20.08	10.24	9.49	6.21	2.81	4.36	1.18	2.82	0.41	1.64	0.11	0.72	0.01
70							15.02	23.03	11.03	10.88	6.69	3.23	4.69	1.36	3.04	0.47	1.76	0.13	0.78	0.02
75							16.09	26.17	11.82	12.36	7.17	3.66	5.03	1.54	3.25	0.54	1.89	0.14	0.83	0.02
80							17.16	29.49	12.61	13.93	7.65	4.13	5.36	1.74	3.47	0.60	2.02	0.16	0.89	0.02
85							18.23	32.99	13.40	15.58	8.13	4.62	5.70	1.95	3.69	0.68	2.14	0.18	0.94	0.02
90							19.31	36.67	14.18	17.32	8.61	5.14	6.03	2.16	3.91	0.75	2.27	0.20	1.00	0.03
95									14.97	19.14	9.08	5.68	6.37	2.39	4.12	0.83	2.39	0.22	1.06	0.03
100									15.76	21.05	9.56	6.24	6.70	2.63	4.34	0.91	2.52	0.24	1.11	0.03
110									17.34	25.11	10.52	7.44	7.37	3.14	4.77	1.09	2.77	0.29	1.22	0.04
120									18.91	29.49	11.47	8.74	8.04	3.68	5.21	1.28	3.02	0.34	1.33	0.05
130											12.43	10.14	8.71	4.27	5.64	1.48	3.28	0.40	1.44	0.05
140											13.39	11.63	9.38	4.90	6.08	1.70	3.53	0.45	1.55	0.06
150											14.34	13.21	10.05	5.56	6.51	1.93	3.78	0.52	1.67	0.07
160											15.30	14.89	10.72	6.27	6.94	2.18	4.03	0.58	1.78	0.08
170											16.25	16.65	11.39	7.01	7.38	2.44	4.28	0.65	1.89	0.09
180											17.21	18.51	12.06	7.80	7.81	2.71	4.54	0.72	2.00	0.10
190											18.17	20.46	12.73	8.62	8.25	2.99	4.79	0.80	2.11	0.11
200											19.12	22.50	13.40	9.48	8.68	3.29	5.04	0.88	2.22	0.12
225													15.08	11.78	9.76	4.09	5.67	1.09	2.50	0.15
250													16.75	14.32	10.85	4.98	6.30	1.33	2.78	0.18
275													18.43	17.08	11.93	5.94	6.93	1.58	3.05	0.22
300															13.02	6.97	7.56	1.86	3.33	0.25
325															14.10	8.09	8.19	2.16	3.61	0.29
350															15.19	9.27	8.82	2.47	3.89	0.34
375															16.27	10.54	9.45	2.81	4.16	0.38
400															17.36	11.87	10.08	3.16	4.44	0.43
425															18.44	13.28	10.71	3.54	4.72	0.48
450															19.53	14.76	11.34	3.93	5.00	0.54
475																	11.97	4.35	5.28	0.59
500																	12.60	4.78	5.55	0.65
550																	13.86	5.70	6.11	0.78
600																	15.12	6.70	6.66	0.91

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q1.852}{d4.866}\right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

Schedule 40 Standard Steel Pipe

psi Loss per 100 Feet of Pipe (psi/100 ft.)

Sizes 1/2" through 6" Flow 1 through 600 gpm

Size	1/2"		3/4"		1"		1 1/4"		1 1/2"		2"		2 1/2"		3"		4"		6"	
O.D.	0.840		1.050		1.315		1.660		1.900		2.375		2.875		3.500		4.500		6.625	
I.D.	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	1.06	0.91	0.60	0.23	0.37	0.07	0.21	0.02	0.16	0.01	0.10	0.00	0.07	0.00	0.04	0.00	0.03	0.00	0.02	0.00
2	2.11	3.28	1.20	0.83	0.74	0.26	0.43	0.07	0.32	0.03	0.19	0.01	0.13	0.00	0.09	0.00	0.05	0.00	0.03	0.00
3	3.17	6.94	1.80	1.77	1.11	0.55	0.64	0.14	0.48	0.07	0.29	0.02	0.20	0.01	0.13	0.00	0.08	0.00	0.05	0.00
4	4.22	11.81	2.41	3.01	1.48	0.93	0.86	0.24	0.64	0.12	0.38	0.03	0.26	0.01	0.17	0.01	0.10	0.00	0.06	0.00
5	5.28	17.85	3.01	4.54	1.86	1.40	1.07	0.37	0.80	0.18	0.48	0.05	0.33	0.02	0.22	0.01	0.13	0.00	0.08	0.01
6	6.34	25.01	3.61	6.37	2.23	1.97	1.29	0.52	0.96	0.25	0.57	0.07	0.40	0.03	0.26	0.01	0.15	0.00	0.10	0.01
7	7.39	33.27	4.21	8.47	2.60	2.62	1.50	0.69	1.12	0.34	0.67	0.10	0.46	0.04	0.30	0.01	0.18	0.00	0.11	0.02
8	8.45	42.59	4.81	10.84	2.97	3.35	1.72	0.88	1.28	0.43	0.76	0.12	0.53	0.05	0.35	0.02	0.20	0.00	0.13	0.04
9	9.50	52.96	5.41	13.48	3.34	4.16	1.93	1.10	1.44	0.53	0.86	0.15	0.59	0.06	0.39	0.02	0.23	0.01	0.14	0.05
10	10.56	64.35	6.02	16.38	3.71	5.06	2.15	1.33	1.60	0.65	0.96	0.19	0.66	0.08	0.43	0.03	0.25	0.01	0.16	0.08
11	11.61	76.76	6.62	19.54	4.08	6.04	2.36	1.59	1.76	0.77	1.05	0.22	0.73	0.09	0.48	0.03	0.28	0.01	0.18	0.11
12	12.67	90.17	7.22	22.95	4.45	7.09	2.57	1.87	1.91	0.91	1.15	0.26	0.79	0.11	0.52	0.04	0.30	0.01	0.19	0.14
14	14.78	119.93	8.42	30.53	5.20	9.43	3.00	2.48	2.23	1.21	1.34	0.35	0.92	0.14	0.61	0.05	0.35	0.01	0.22	0.24
16	16.89	153.53	9.63	39.08	5.94	12.07	3.43	3.18	2.55	1.55	1.53	0.45	1.06	0.18	0.69	0.07	0.40	0.02	0.26	0.38
18	19.01	190.91	10.83	48.59	6.68	15.01	3.86	3.95	2.87	1.92	1.72	0.55	1.19	0.22	0.78	0.08	0.45	0.02	0.29	0.57
20			12.03	59.05	7.42	18.24	4.29	4.80	3.19	2.34	1.91	0.67	1.32	0.27	0.87	0.10	0.50	0.03	0.32	0.00
22			13.24	70.44	8.17	21.76	4.72	5.73	3.51	2.79	2.10	0.80	1.45	0.33	0.95	0.12	0.55	0.03	0.35	0.00
24			14.44	82.74	8.91	25.56	5.15	6.73	3.83	3.28	2.29	0.94	1.58	0.38	1.04	0.14	0.60	0.04	0.38	0.00
26			15.64	95.94	9.65	29.64	5.58	7.81	4.15	3.80	2.49	1.09	1.71	0.44	1.13	0.16	0.66	0.04	0.42	0.00
28			16.85	110.04	10.39	34.00	6.01	8.95	4.47	4.36	2.68	1.25	1.85	0.51	1.22	0.18	0.71	0.05	0.45	0.00
30			18.05	125.02	11.14	38.62	6.44	10.17	4.79	4.95	2.87	1.42	1.98	0.58	1.30	0.21	0.76	0.06	0.48	0.00
35					12.99	51.37	7.51	13.53	5.58	6.59	3.35	1.89	2.31	0.77	1.52	0.28	0.88	0.07	0.56	0.00
40					14.85	65.76	8.58	17.32	6.38	8.43	3.82	2.43	2.64	0.98	1.74	0.36	1.01	0.09	0.64	0.00
45					16.71	81.78	9.65	21.53	7.18	10.48	4.30	3.02	2.97	1.22	1.95	0.44	1.13	0.12	0.72	0.00
50					18.56	99.37	10.73	26.17	7.98	12.74	4.78	3.66	3.30	1.48	2.17	0.54	1.26	0.14	0.80	0.00
55							11.80	31.21	8.78	15.20	5.26	4.37	3.63	1.77	2.39	0.64	1.39	0.17	0.88	0.00
60							12.87	36.67	9.57	17.85	5.74	5.14	3.96	2.08	2.60	0.75	1.51	0.20	0.96	0.00
65							13.94	42.52	10.37	20.70	6.21	5.95	4.29	2.41	2.82	0.87	1.64	0.23	1.04	0.00
70							15.02	48.77	11.17	23.74	6.69	6.83	4.62	2.77	3.04	1.00	1.76	0.27	1.12	0.00
75							16.09	55.40	11.97	26.98	7.17	7.76	4.95	3.14	3.25	1.14	1.89	0.30	1.20	0.00
80							17.16	62.43	12.77	30.40	7.65	8.74	5.28	3.54	3.47	1.28	2.02	0.34	1.28	0.00
85							18.23	69.84	13.56	34.01	8.13	9.78	5.60	3.96	3.69	1.43	2.14	0.38	1.36	0.00
90							19.31	77.63	14.36	37.80	8.61	10.87	5.93	4.40	3.91	1.59	2.27	0.42	1.44	0.00
95									15.16	41.77	9.08	12.02	6.26	4.87	4.12	1.76	2.39	0.47	1.52	0.00
100									15.96	45.93	9.56	13.21	6.59	5.35	4.34	1.93	2.52	0.52	1.60	0.00
110									17.55	54.79	10.52	15.76	7.25	6.38	4.77	2.31	2.77	0.61	1.76	0.00
120									19.15	64.36	11.47	18.51	7.91	7.50	5.21	2.71	3.02	0.72	1.92	0.00
130											12.43	21.47	8.57	8.69	5.64	3.14	3.28	0.84	2.08	0.00
140											13.39	24.62	9.23	9.97	6.08	3.60	3.53	0.96	2.25	0.00
150											14.34	27.97	9.89	11.33	6.51	4.09	3.78	1.09	2.41	0.00
160											15.30	31.52	10.55	12.77	6.94	4.61	4.03	1.23	2.57	0.00
170											16.25	35.26	11.21	14.28	7.38	5.16	4.28	1.38	2.73	0.00
180											17.21	39.19	11.87	15.87	7.81	5.74	4.54	1.53	2.89	0.00
190											18.17	43.32	12.53	17.54	8.25	6.34	4.79	1.69	3.05	0.00
200											19.12	47.63	13.19	19.29	8.68	6.97	5.04	1.86	3.21	0.00
225													14.84	23.99	9.76	8.67	5.67	2.31	3.61	0.00
250													16.48	29.15	10.85	10.54	6.30	2.81	4.01	0.00
275													18.13	34.77	11.93	12.57	6.93	3.35	4.41	0.00
300															13.02	14.76	7.56	3.93	4.81	0.00
325															14.10	17.12	8.19	4.56	5.21	0.00
350															15.19	19.63	8.82	5.23	5.61	0.00
375															16.27	22.31	9.45	5.95	6.01	0.00
400															17.36	25.14	10.08	6.70	6.41	0.00
425															18.44	28.12	10.71	7.49	6.82	0.00
450															19.53	31.25	11.34	8.33	7.22	0.00
475																	11.97	9.21	7.62	0.00
500																	12.60	10.12	8.02	0.00
550																	13.86	12.08	8.82	0.00
600																	15.12	14.19	9.62	0.00

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q^{1.852}}{d^{4.866}}\right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

Type K Copper Water Tube

C=140

psi Loss per 100 Feet of Tube (psi/100 ft.)

Sizes 1/2" through 3" Flow 1 through 600 gpm

Size O.D. I.D. Wall Thk	1/2" 0.625 0.5270 0.049		5/8" 0.750 0.652 0.049		3/4" 0.875 0.745 0.065		1" 1.125 0.995 0.065		1 1/4" 1.375 1.245 0.065		1 1/2" 1.625 1.481 0.072		2" 2.125 1.959 0.083		2 1/2" 2.625 2.435 0.095		3" 3.125 2.907 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	1.47	1.09	0.96	0.39	0.74	0.20	0.41	0.05	0.26	0.02	0.19	0.01	0.11	0.00	0.07	0.00	0.05	0.00
2	2.94	3.94	1.92	1.40	1.47	0.73	0.83	0.18	0.53	0.06	0.37	0.03	0.21	0.01	0.14	0.00	0.10	0.00
3	4.41	8.34	2.88	2.96	2.21	1.55	1.24	0.38	0.79	0.13	0.56	0.05	0.32	0.01	0.21	0.00	0.15	0.00
4	5.88	14.20	3.84	5.04	2.94	2.63	1.65	0.64	1.05	0.22	0.74	0.09	0.43	0.02	0.28	0.01	0.19	0.00
5	7.35	21.46	4.80	7.62	3.68	3.98	2.06	0.97	1.32	0.33	0.93	0.14	0.53	0.04	0.34	0.01	0.24	0.01
6	8.83	30.06	5.77	10.67	4.42	5.58	2.48	1.36	1.58	0.46	1.12	0.20	0.64	0.05	0.41	0.02	0.29	0.01
7	10.30	39.98	6.73	14.20	5.15	7.42	2.89	1.82	1.84	0.61	1.30	0.26	0.75	0.07	0.48	0.02	0.34	0.01
8	11.77	51.19	7.69	18.17	5.89	9.50	3.30	2.32	2.11	0.78	1.49	0.34	0.85	0.09	0.55	0.03	0.39	0.01
9	13.24	63.65	8.65	22.60	6.62	11.81	3.71	2.89	2.37	0.97	1.68	0.42	0.96	0.11	0.62	0.04	0.44	0.02
10	14.71	77.35	9.61	27.46	7.36	14.35	4.13	3.51	2.64	1.18	1.86	0.51	1.06	0.13	0.69	0.05	0.48	0.02
11	16.18	92.26	10.57	32.76	8.10	17.12	4.54	4.19	2.90	1.41	2.05	0.60	1.17	0.16	0.76	0.05	0.53	0.02
12	17.65	108.38	11.53	38.48	8.83	20.11	4.95	4.92	3.16	1.65	2.23	0.71	1.28	0.18	0.83	0.06	0.58	0.03
14			13.45	51.17	10.30	26.75	5.78	6.54	3.69	2.20	2.61	0.94	1.49	0.24	0.96	0.08	0.68	0.04
16			15.38	65.51	11.78	34.24	6.60	8.38	4.22	2.82	2.98	1.21	1.70	0.31	1.10	0.11	0.77	0.05
18			17.30	81.46	13.25	42.58	7.43	10.42	4.74	3.50	3.35	1.50	1.92	0.39	1.24	0.13	0.87	0.06
20			19.22	98.99	14.72	51.74	8.25	12.66	5.27	4.25	3.72	1.83	2.13	0.47	1.38	0.16	0.97	0.07
22					16.19	61.72	9.08	15.10	5.80	5.07	4.10	2.18	2.34	0.56	1.52	0.19	1.06	0.08
24					17.66	72.50	9.90	17.74	6.33	5.96	4.47	2.56	2.55	0.66	1.65	0.23	1.16	0.10
26					19.14	84.07	10.73	20.57	6.85	6.91	4.84	2.97	2.77	0.76	1.79	0.26	1.26	0.11
28							11.55	23.59	7.38	7.93	5.21	3.41	2.98	0.87	1.93	0.30	1.35	0.13
30							12.38	26.80	7.91	9.01	5.59	3.87	3.19	0.99	2.07	0.34	1.45	0.15
35							14.44	35.65	9.22	11.98	6.52	5.15	3.73	1.32	2.41	0.46	1.69	0.19
40							16.50	45.64	10.54	15.34	7.45	6.59	4.26	1.69	2.76	0.59	1.93	0.25
45							18.57	56.75	11.86	19.07	8.38	8.19	4.79	2.10	3.10	0.73	2.18	0.31
50									13.18	23.17	9.31	9.96	5.32	2.55	3.44	0.89	2.42	0.37
55									14.49	27.64	10.24	11.88	5.85	3.05	3.79	1.06	2.66	0.45
60									15.81	32.47	11.17	13.95	6.39	3.58	4.13	1.24	2.90	0.52
65									17.13	37.65	12.11	16.18	6.92	4.15	4.48	1.44	3.14	0.61
70									18.45	43.18	13.04	18.56	7.45	4.76	4.82	1.65	3.38	0.70
75									19.77	49.06	13.97	21.08	7.98	5.41	5.17	1.88	3.63	0.79
80											14.90	23.76	8.52	6.09	5.51	2.11	3.87	0.89
85											15.83	26.58	9.05	6.81	5.86	2.37	4.11	1.00
90											16.76	29.54	9.58	7.58	6.20	2.63	4.35	1.11
95											17.69	32.65	10.11	8.37	6.55	2.91	4.59	1.23
100											18.62	35.90	10.64	9.21	6.89	3.19	4.83	1.35
110													11.71	10.98	7.58	3.81	5.32	1.61
120													12.77	12.90	8.27	4.48	5.80	1.89
130													13.84	14.96	8.96	5.19	6.28	2.19
140													14.90	17.15	9.65	5.95	6.77	2.51
150													15.97	19.49	10.33	6.76	7.25	2.86
160													17.03	21.96	11.02	7.62	7.73	3.22
170													18.10	24.57	11.71	8.53	8.22	3.60
180													19.16	27.31	12.40	9.48	8.70	4.00
190															13.09	10.47	9.18	4.42
200															13.78	11.52	9.67	4.86
225															15.50	14.32	10.88	6.05
250															17.22	17.40	12.08	7.35
275															18.95	20.76	13.29	8.77
300																	14.50	10.30
325																	15.71	11.94
350																	16.92	13.70
375																	18.13	15.56
400																	19.34	17.53
425																		
450																		
475																		
500																		
550																		

Note: Dark shaded area of chart indicates velocities over 5' per second. 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: $\left[hf = 0.2083 \left(\frac{100}{c}\right) 1.852 \frac{Q^{1.852}}{d^{4.866}}\right]$ x .433 psi for change in psi per foot of elevation. Pressure loss for uphill elevation and pressure gain for downhill elevation changes.

Pump Station Specification Guide for Low Profile and D-Series Pumps

Select Required Flow within the Desired Pressure Column

Rain Bird® Low Profile (LP) Pump Stations

Vertical Multi-Stage Pump Type

Pump Model	hp	Flanged Connections Inlet/Disch.	(Differential Pressure- psiG) Boost at Maximum Flow (gpm)											
			15 psiG	20 psiG	30 psiG	40 psiG	50 psiG	60 psiG	70 psiG	80 psiG	90 psiG	100 psiG	110 psiG	120 psiG
CR3-3	0.5	2"	22	20	12									
CR3-4	0.75	2"			18	12								
CR3-5	0.75	2"				18	14							
CR5-2	0.75	2"	30	23										
CR10-1	0.75	2"	15											
CR3-6	1	2"					18	14	10					
CR5-3	1	2"		40	23									
CR3-7	1.5	2"						18	15	10				
CR5-4	1.5	2"			37	23								
CR5-5	1.5	2"				35	27	17						
CR10-2	1.5	2"		60	55									
CR3-10	2	2"								18	16	14	12	8
CR5-7	2	2"					37	34	27	20				
CR15-1	2	3"	110	80										
CR10-3	3	2"				60	45							
CR10-4	3	2"					60	55	45	30				
CR20-1	3	3"	130	110										

Horizontal End-Suction Pump Type

Pump Model	hp	Flanged Connections Inlet/Disch.	(Differential Pressure- psiG) Boost at Maximum Flow (gpm)											
			15 psiG	20 psiG	30 psiG	40 psiG	50 psiG	60 psiG	70 psiG	80 psiG	90 psiG	100 psiG	110 psiG	120 psiG
CP0590T	1	2"		35										
CP0590T	2	3"			55	30								
1WC	2	2"				27-40	15-20							
1WC	3	2"					25-42	15-30						
CT1090T	3	3"			70	60	30							
CP1090T	5	3"				95	85	70	50					
1WC	5	2"						35-47	17-50	17-50	20-30			
1.5WH	5	4"			140-165	90-135	75-90							
1WC	7.5	2"								45-55	35-55	20-45		
1.25W	7.5	4"				140-160	105-160	65-125	65-75					
1.5WH	7.5	4"			170-215	140-195	95-165	80-125						
CP10150T	7.5	4"		180	190	190	170	130						
2WH	7.5	4"			200-235	115-185								
1.25Y	7.5	4"					145	125	100	65				
1.25Y	10	4"					150-160	130-160	105-145					
1.5WH	10	4"				200-235	170-215	130-190	90-150					
CP1090T	10	4"									105	88	60	
CP10150T	10	4"					215	204	180	130				

D Series Pumps

Pump Model	hp	Flanged Connections Inlet/Disch.	(Differential Pressure- psiG) Boost at Maximum Flow (gpm)											
			15 psiG	20 psiG	30 psiG	40 psiG	50 psiG	60 psiG	70 psiG	80 psiG	90 psiG	100 psiG	110 psiG	120 psiG
Custom Builds No Model Numbers	5	2"						60	60	50				
	5	2"								60	50	50		
	5	2"									60			
	7.5	2"										60		
	5	3"		100	100	90	50							
	5	3"					100	90	80					
	7.5	3"							100	100	80			
	10	3"									100	100		
	10	3"											100	90
	5	3"		120	120	100								
	7.5	3"					120	120						
	10	3"							120	120				
	2(5)	3"									120			
	3	4"		150										
	5	4"		180	130									
	7.5	4"			180	160	130							
	7.5	4"				180	150							
	7.5	4"					170	140						
	10	4"						180	160	140				
	2(5)	4"					220							
	2(7.5)	4"						200	200	200	160	120		
	2(10)	4"									200	200		
	2(10)	4"											200	180
	7.5	4"		260	260	190								
	2(5)	4"				230								
	2(7.5)	4"					240	240						
	2(10)	4"							240	240	210			
	2(3)	6"		300										
	2(5)	6"		360	240									
	2(7.5)	6"			360	330	270							
	2(7.5)	6"				360	310							
	2(7.5)	6"					340	280						

Pump Station Specification Guide for LP and D-Series Pumps

Flow Rate in Gallons per Minute (gpm)	Pipe Diameter in Inches									
gpm	0.5	0.75	1	1.5	2	2.5	3	4	6	8
1	1.6	0.7	0.4	0.2	0.1	0.1	0	0	0	0
2	3.3	1.5	0.8	0.4	0.2	0.1	0.1	0.1	0	0
3	4.9	2.2	1.2	0.5	0.3	0.2	0.1	0.1	0	0
4	6.5	2.9	1.6	0.7	0.4	0.3	0.2	0.1	0	0
5	8.2	3.6	2	0.9	0.5	0.3	0.2	0.1	0.1	0
6	9.8	4.4	2.5	1.1	0.6	0.4	0.3	0.2	0.1	0
7	11.4	5.1	2.9	1.3	0.7	0.5	0.3	0.2	0.1	0
8	13.1	5.8	3.3	1.5	0.8	0.5	0.4	0.2	0.1	0.1
9	14.7	6.5	3.7	1.6	0.9	0.6	0.4	0.2	0.1	0.1
10	16.3	7.3	4.1	1.8	1	0.7	0.5	0.3	0.1	0.1
15	24.5	10.9	6.1	2.7	1.5	1	0.7	0.4	0.2	0.1
20	32.7	14.5	8.2	3.6	2	1.3	0.9	0.5	0.2	0.1
25	40.9	18.2	10.2	4.5	2.6	1.6	1.1	0.6	0.3	0.2
30	49	21.8	12.3	5.4	3.1	2	1.4	0.8	0.3	0.2
35	57.2	25.4	14.3	6.4	3.6	2.3	1.6	0.9	0.4	0.2
40	65.4	29	16.3	7.3	4.1	2.6	1.8	1	0.5	0.3
45	73.5	32.7	18.4	8.2	4.6	2.9	2	1.1	0.5	0.3
50	81.7	36.3	20.4	9.1	5.1	3.3	2.3	1.3	0.6	0.3
60	98	43.6	24.5	10.9	6.1	3.9	2.7	1.5	0.7	0.4
70	114.4	50.8	28.6	12.7	7.1	4.6	3.2	1.8	0.8	0.4
80	130.7	58.1	32.7	14.5	8.2	5.2	3.6	2	0.9	0.5
90	147.1	65.4	36.8	16.3	9.2	5.9	4.1	2.3	1	0.6
100	163.4	72.6	40.9	18.2	10.2	6.5	4.5	2.6	1.1	0.6
125	204.3	90.8	51.1	22.7	12.8	8.2	5.7	3.2	1.4	0.8
150	245.1	108.9	61.3	27.2	15.3	9.8	6.8	3.8	1.7	1
175	286	127.1	71.5	31.8	17.9	11.4	7.9	4.5	2	1.1
200	326.8	145.2	81.7	36.3	20.4	13.1	9.1	5.1	2.3	1.3
225	367.7	163.4	91.9	40.9	23	14.7	10.2	5.7	2.6	1.4
250	408.5	181.6	102.1	45.4	25.5	16.3	11.3	6.4	2.8	1.6
275	449.4	199.7	112.3	49.9	28.1	18	12.5	7	3.1	1.8
300	490.2	217.9	122.6	54.5	30.6	19.6	13.6	7.7	3.4	1.9
325	531.1	236	132.8	59	33.2	21.2	14.8	8.3	3.7	2.1
350	571.9	254.2	143	63.5	35.7	22.9	15.9	8.9	4	2.2
375	612.8	272.3	153.2	68.1	38.3	24.5	17	9.6	4.3	2.4
400	653.6	290.5	163.4	72.6	40.9	26.1	18.2	10.2	4.5	2.6
425	694.5	308.6	173.6	77.2	43.4	27.8	19.3	10.9	4.8	2.7
450	735.3	326.8	183.8	81.7	46	29.4	20.4	11.5	5.1	2.9
475	776.2	345	194	86.2	48.5	31	21.6	12.1	5.4	3
500	817	363.1	204.3	90.8	51.1	32.7	22.7	12.8	5.7	3.2

Values represent velocity in feet per second

Orange = Recommended inlet/discharge velocity. Typical is 5.0 ft/s

Customer Service

At Rain Bird, we believe when you purchase our products, you should also receive the support you need to ensure that they perform as designed. Like our products, Rain Bird customer service is designed to exceed expectations. When you call with questions about orders or new products, you get the support you need from the top water management professionals in the industry – support that originates from our headquarters in Azusa, California, or our Customer Service Center in Tucson, Arizona and is backed by our vast global network of distributor-partners.

Worry-Free Warranties

Our comprehensive product warranties make it even easier to choose Rain Bird and relax. Most Rain Bird Landscape Irrigation products are warranted to the trade for a period of either three or five years from the date of original purchase. A Rain Bird warranty is hassle-free support that enables maximum peak performance by irrigation system professionals. For you, it's the added peace of mind of knowing Rain Bird is there when you need it.

Rain Bird's Professional Customer Satisfaction Policy

Rain Bird will repair or replace at no charge any Rain Bird professional product that fails in normal use within the warranty period stated below. You must return it to the dealer or distributor where you bought it. Product failures due to acts of God including without limitation, lightning and flooding, are not covered by this warranty. This commitment to repair or replace is our sole and total warranty.

Implied Warranties of Merchantability and Fitness, if Applicable, are Limited to One Year from the Date of Sale.

We will not, under any circumstances be liable for incidental or consequential damages, no matter how they occur.

I. Landscape Irrigation Products

1800 Series Pop-Up Spray Heads, U-Series Nozzles, Brass MPR Nozzles, A-8S and PA-8S-PRS Shrub Adapters, and 1300 and 1400 Bubblers, 5000 Series Rotors, 5500 Series Rotors, 7005/8005 Rotors, Falcon® 6504 Series Rotors, DV, PEB, PESB, and PESB-R Plastic Valves – 5 years

Lake Management Aerator: LM10, LM11, LM20, LM30 – 3 years

Lake Management Aerator: LMM – 2 years

Lake Management Aerator Lights – 1 year

C2 Power Unit – 2 Years

All other Landscape Irrigation products – 3 years

II. Golf Products

Golf Rotors: TG-25, DR, DH, DS, ESR, EAGLE™ Series and EAGLE IC™ Series Golf rotors - 3 years.

Additionally, any TG-25, DR, DH, DS, EAGLE™ Series and EAGLE IC™ Series Golf Rotor sold and installed in conjunction with a Rain Bird Swing Joint - 5 years. Proof of concurrent installation is required.

Swing Joints – 5 years

Brass Remote Control Valves, and Brass Quick Coupling Valves and Keys – 3 years

Filtration system controllers – 3 years

LINK Radios – 3 years

Lake Management Aerator: LM10, LM11, LM20, LM30 – 3 years

Lake Management Aerator: LMM – 2 years

Lake Management Aerator Lights – 1 year

Hose Reels – 2 years

All other golf products – 1 year

III. Agricultural Products

LF Series Sprinklers – 5 years

Other Impact Sprinklers – 2 years

All other AG products – 1 year

IV. Pump Stations

Rain Bird guarantees that its pump station will be free of manufacturer defects for one year from date of authorized start-up but not beyond sixteen months from date of invoice.

Start-up by other than Rain Bird Authorized personnel will void these terms and conditions.

Provided that all installation, start-up and operation responsibilities have been properly executed, Rain Bird will replace or repair, at Rain Bird's option, any part found to be defective under normal recommended use during this period. Repairs performed at Rain Bird's expense must be authorized by Rain Bird prior to repairs being performed. Upon request, Rain Bird shall provide advice on trouble-shooting a defect during the effective period of this Customer Satisfaction Policy. However, no service, replacement or repair under this Customer Satisfaction Policy will be rendered while the customer is in default of any payments due to Rain Bird.

Rain Bird will not accept responsibility for costs associated with the removal, replacement, or repair of equipment in difficult-to-access locations. Difficult-to-access locations include (but are not limited to) locations where any of the following are required:

1) Cranes larger than 15 tons

2) Divers

For more information, see your Rain Bird Distributor. To find the nearest authorized distributor in your area, visit www.rainbird.com or call 1-800-RAINBIRD

3) Barges

4) Helicopters

5) Dredging

6) Any other unusual means or requirements

Such extraordinary cost shall be the responsibility of the customer, regardless of the reason requiring removal of the equipment from service.

The terms and conditions of this Customer Satisfaction Policy do not cover damage caused by or resulting from the following:

1) Misapplication, abuse, or failure to conduct routine maintenance (to include winterization/winter lay-up procedures)
2) Pumping of liquids other than fresh water as defined by the U.S. Environmental Protection Agency, unless the pump station is specifically designed to do so
3) Use of free chlorine or other strong biocides
4) Exposure to electrolysis, erosion, or abrasion
5) Presence of destructive gases or chemicals
6) Over voltage or low voltage
7) Electrical phase loss or reversal
8) Exposure to incoming power lacking circuit breaker or fused protection
9) Using the control panel as a service disconnect
10) Lightning or other Act of Nature.
11) Failure of pump packing seal (unless the failure occurs on initial start-up).

The foregoing terms and conditions constitute Rain Bird's entire Customer Satisfaction Policy. Rain Bird does not offer any other or additional warranty, with respect to the pumping system or its components. Rain Bird makes no implied warranty, with respect to fitness for a particular purpose or merchantability of the pumping system or its components. Components manufactured by others (as noted on the Pump Station Quotation) are covered solely by and to the extent of the warranty, if any, offered by the manufacturer. Rain Bird shall not be liable to the customer or any other person or entity for any liability, loss, or damage caused or alleged to be caused, directly or indirectly, by the pump system. Rain Bird shall not be responsible for incidental, consequential, collateral or indirect damages or loss of profit or damages related to the customer's business operations, nor for those caused by Acts of Nature. In no case and under no circumstances shall Rain Bird's liability exceed the Rain Bird Corporation's net sale price of the pump system.

Laws concerning customer warranties and disclaimers vary from state to state, and therefore some of the foregoing limitations may not apply to you.

V. All Other Products - 1 year

References for pages 2-6

[1] Derived from Bernouli's equation (5.19). Refer to Roberson/Crowe, Engineering Fluid Mechanics (Fourth Edition), Houghton Mifflin Co., Boston MA 1990.

[2] U-Series nozzle water savings based on manufacturer's testing. Rotary-type nozzles use 20% – 30% less water than traditional spray heads because they operate with lower precipitation rates, greater uniformity of distribution, and a greater radius of coverage, according to the Metropolitan Water District of Southern California. Savings of 22% – 41% were also shown with rotary-type nozzles (please see complete study at http://www.cuwcc.org/landscape_task_force/Solomon_Kissinger_Landscape_Irrigation_Report_05-06-05.).

[3] Based on water agency (Irvine Ranch Water District, City of Santa Barbara, Cities of Boulder, Longmont, Greenly) and manufacturer case studies of ET-type controllers.

[4] Water savings confirmed in the Soil Moisture Sensor Controller & Rain Sensor Testing Final Report (January 17, 2010), conducted by the Agricultural and Biological Engineering Department at the University of Florida.

[5] Bilderback, T.E., and M.A. Powell, Efficient Irrigation. North Carolina Extension Service, Publication Number AG-508-6, March 1996. 21 January 2005.

[6] The 5000 PRS Rotor has been awarded the Smart Approved WaterMark Certification, Australia's outdoor water-saving labeling program for products that help reduce water use outside the home. An independent testing panel confirmed that the Rain Bird 5000 PRS delivers 15% – 45% water savings when compared to non-pressure regulated competitive rotors.

[7] Rain Bird's MPR Nozzles consume 3.70 gpm versus 1.60 gpm for rotary nozzles, which is about 60% less flow.

[8] Water savings are average values for multiple installations. Case studies verifying these water savings can be found on the LEED website as well as www.rainbird.com/landscape/site_reports/index.htm.

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For over 75 years, Rain Bird has been dedicated to using water responsibly. We call it The Intelligent Use of Water™ and it's the thinking behind our full suite of water-saving tools, training, services and products. Because of these solutions, Rain Bird is better positioned than any other irrigation manufacturer to help you efficiently source, design, schedule, apply and maintain the world's most precious resource.

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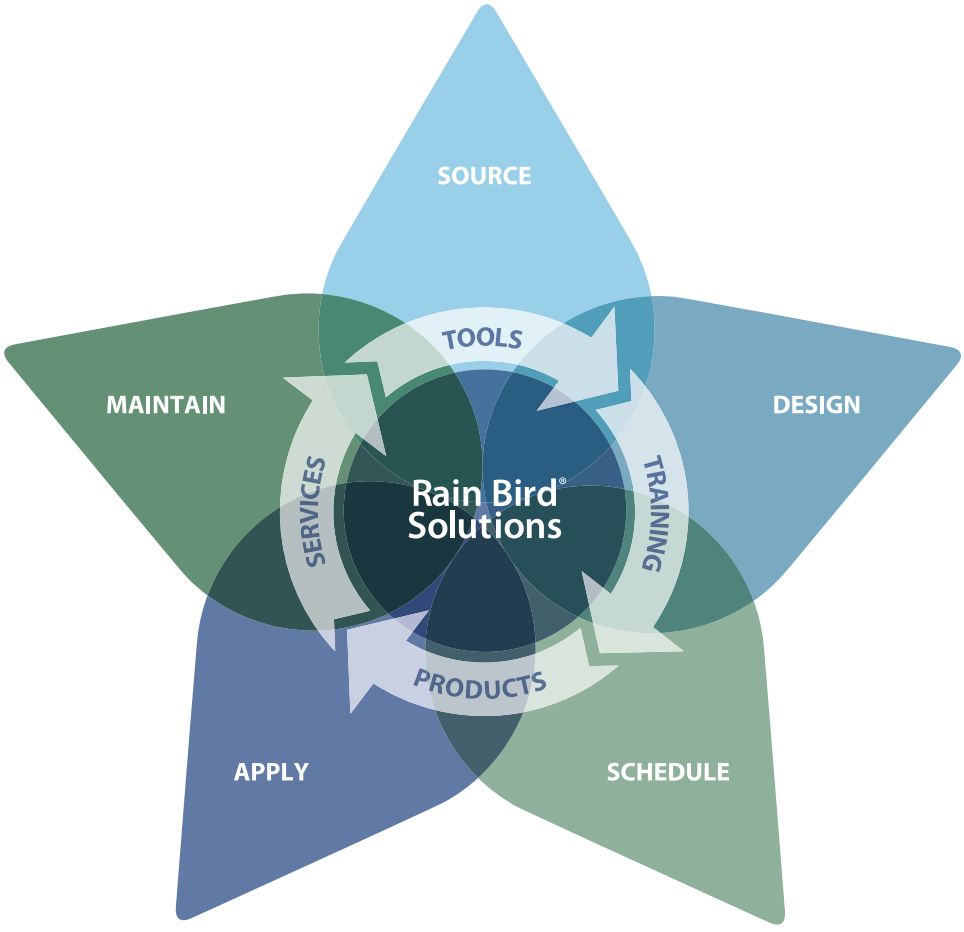
The Intelligent Use of Water™



SOURCE — Tap into underutilized supplies such as underground well water, gray water, black water, HVAC condensate and rainwater.

DESIGN — Create landscapes as sustainable as they are beautiful.

SCHEDULE — Optimize the timing, quantity and frequency of water applied to the landscape with leading-edge water management controls.

APPLY — Distribute water to the landscape as efficiently as possible.

MAINTAIN — Maintain every aspect of the system to ensure efficient and affordable water use for the long haul.

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- Summits convene water, environmental and green industry experts from around the world to discuss strategies and initiatives in outdoor water conservation
- Past Summit locations: California; Arizona; Washington, DC; France; Spain; Australia
- View past Summit proceedings (via video and PDFs) at: http://www.rainbird.com/corporate/IUOW/summits.htm

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- The top short film submissions (1-10 minutes in length) are shown at a special screening event in LA
- Winners receive cash prizes
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Rain Bird educates our industry and our communities on water conservation

- Rain Bird has published four white papers that examine the global water crisis and explore potential solutions
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- Rain Bird has published two educational curricula for elementary students and their teachers on water conservation
- Curricula available for free at: http://www.rainbird.com/corporate/IUOW/education.htm

Rain Bird sponsors National Public Gardens Day

- In partnership with the American Public Gardens Assoc. (APGA), Rain Bird seeks to raise awareness of the role botanic gardens, arboreta, conservatories and zoological gardens play as stewards of the environment
- National spokesperson Paul James (host of HGTV's Gardening by the Yard) conducts interviews with print, TV, radio and online outlets from across the country and hosts TV and radio public service announcements focusing on public gardens' educational activities in plant management and water conservation
- Celebrated the Friday before Mother's Day
- Visit http://nationalpublicgardensday.org to learn more

Rain Bird's Intelligent Use of Water Awards provide grants to promote outdoor water conservation

- The interactive grant program awards funds to water conservation and environmental sustainability projects that promote water conservation and green spaces in communities around the world.
- Visit http://IUOWAwards.com to learn more

The Intelligent Use of Water.™

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At Rain Bird, we believe it is our responsibility to develop products and technologies that use water efficiently. Our commitment also extends to education, training and services for our industry and our communities.

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